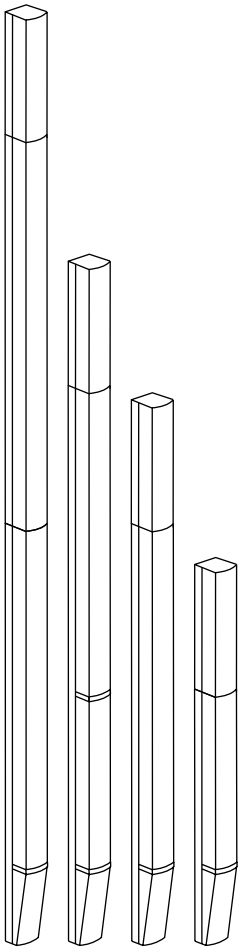
StepArray+

Self-powered digitally steerable column loudspeakers

User Manual



Active audio

L'acoustique active

Table of contents

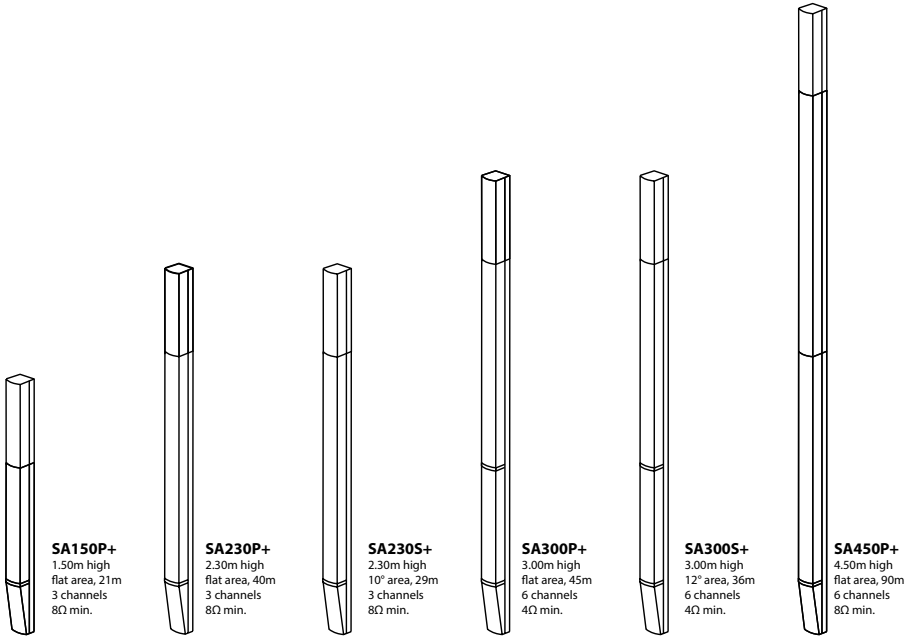
1. Introduction

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.

The StepArray+ range includes 6 models of column speakers, from 1.50m to 4.50m high.



2. System components

StepArray+ columns are made of two parts: a standard StepArray passive column, and its companion StepArray+ amplifier module.

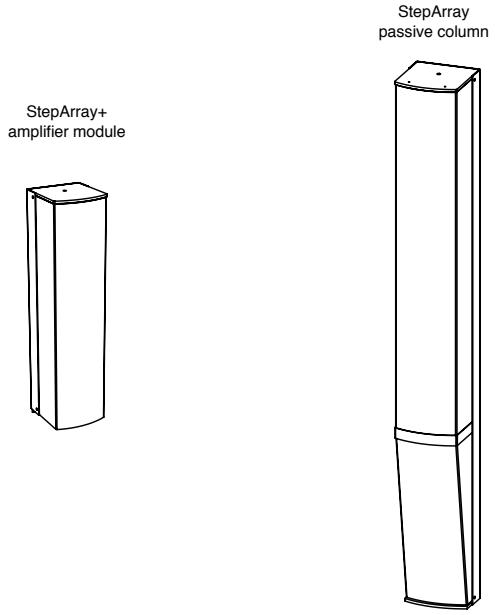


Figure 1 : *System components*

3. Assembling

1. Remove the back plate of the amplifier module.

2. Place the amplifier module at the top of the passive column.

3. Secure the amplifier module using the supplied M8 nut.

4. After wiring, close the connection box by mounting the back plate.

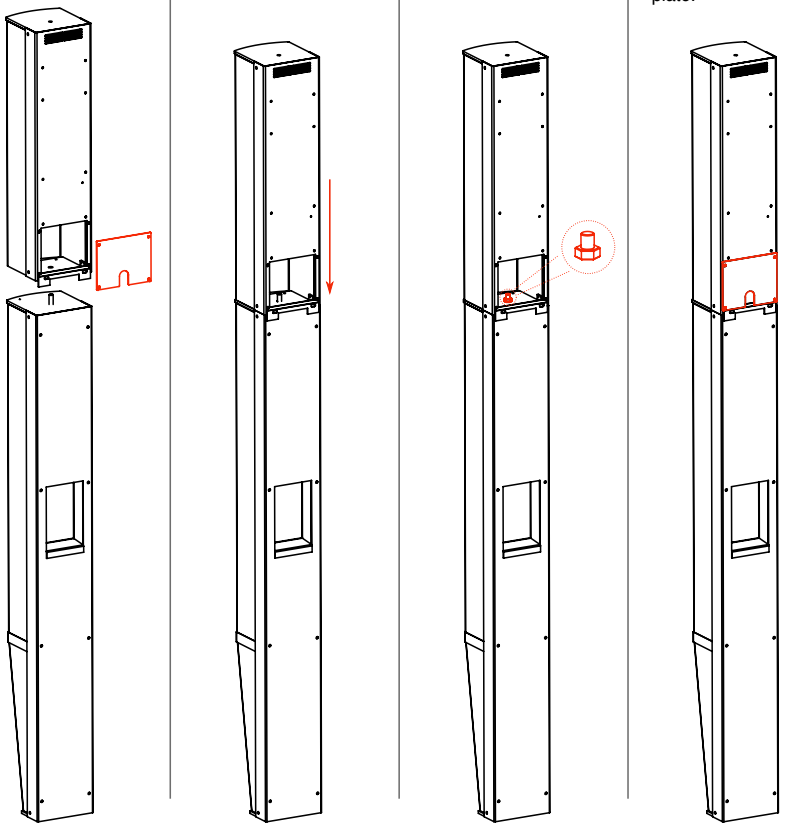


Figure 2 : *Assembling StepArray+ columns*

4. Wiring

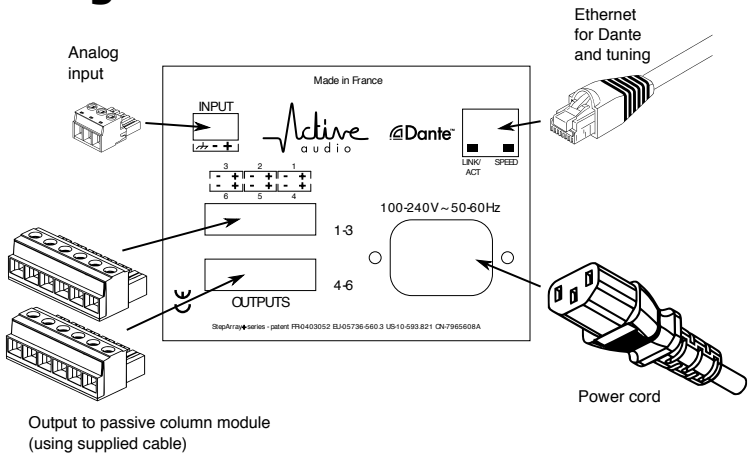


Figure 3 : *Wiring StepArray+ columns*

4.1. Example setup using Dante®

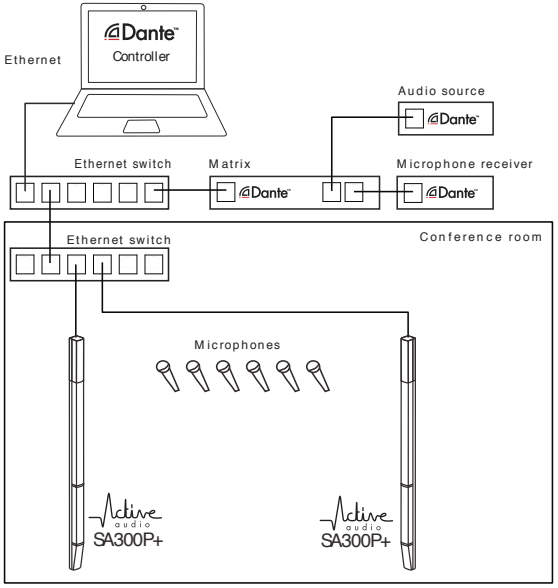


Figure 4 : *StepArray+ setup using Dante network*

5. StepArray+ control software

The StepArray+ control software is available for Windows and OSX operating systems. Installers can be found on the supplied USB key or on Active Audio's website by following this link: http://www.activeaudio.fr/ downloads.

5.1. System requirements

Processor	1Ghz or better
Memory	512Mbyte of RAM
Network	Standard wired Ethernet network interface (100Mbps or Gigabit). Wireless LAN (Wi-Fi) Ethernet interfaces are not supported
Operating System	Windows 7 SP1 or newer Mac OS X 10.7.5 or newer

5.2. Installation on Windows

Start the installer package by double-clicking on it, then follow the instructions.

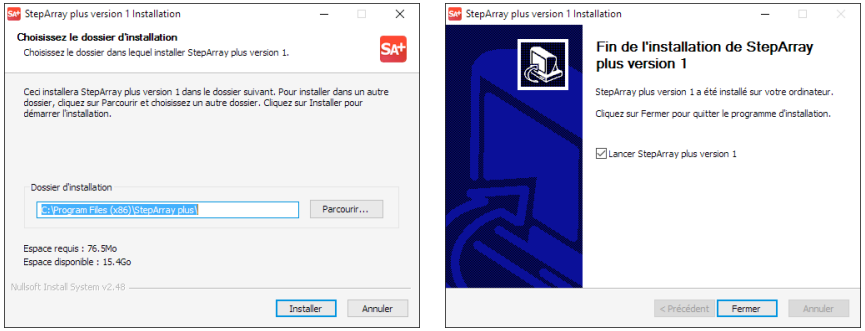


Figure 5 : *StepArray+ Software installation on Windows*

5.3. Installation on OS X

Start the installer package by double-clicking on it, then follow the instructions.

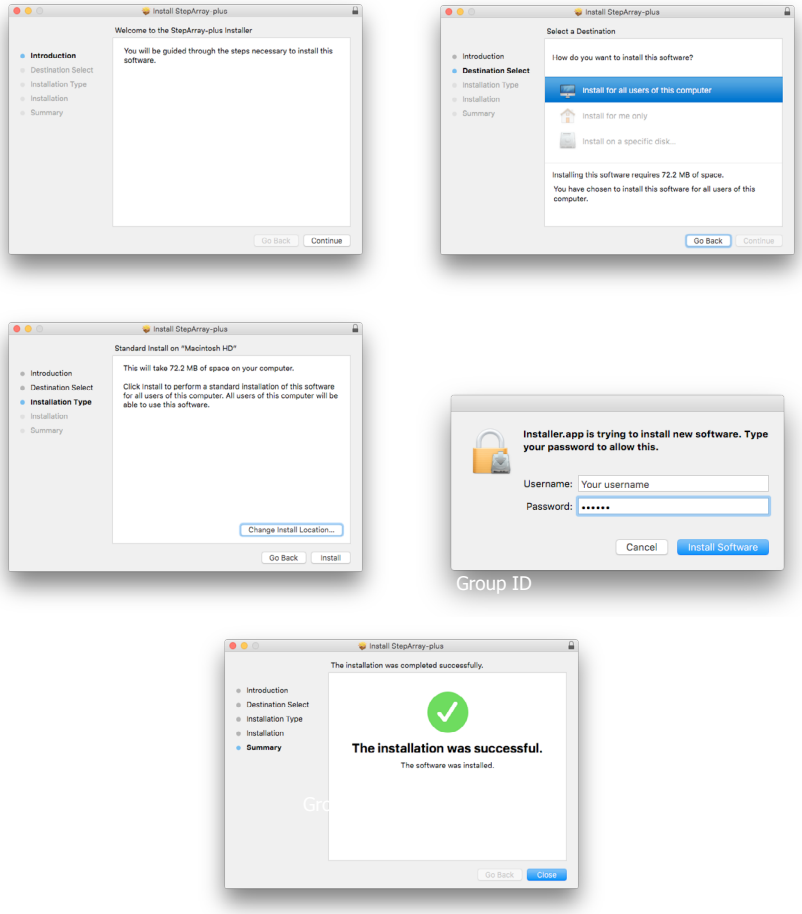


Figure 6 : *StepArray+ Software installation on OS X*

5.4. Using the StepArray+ software

The StepArray+ control software gives access to the following functions:

- input selection: Dante or analog input
- general output volume
- steering parameters for directivity control

The StepArray+ control software does not include Dante routing functionality. When using Dante to transmit audio, you will need the Dante Controller software to assign Dante channels to StepArray+ columns.
Dante Controller is available free of charge from the Audinate website: https://www.audinate.com/products/software/dante-controller.

When launching the StepArray+ control software, the first screen lists all the StepArray+ columns it can find on the network. The first connection to a StepArray+ column can take up to 1 minute: this is the time needed to initiate the communication.

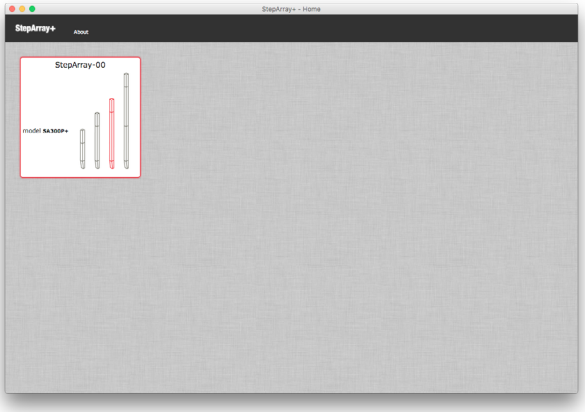


Figure 7 : *StepArray+ control software: main screen*

A click on a StepArray+ box leads to the settings screen of that specific column. All the parameters of the column can be changed within that screen.

Figure 8 : *StepArray+ control software: column settings screen*

6. Installation of the columns

StepArray+ columns are mounted vertically, usually on a wall, using the supplied brackets. Figure 9 illustrates the steps to follow for column mounting. See also figure 10 on the next page for technical drawings of the brackets.

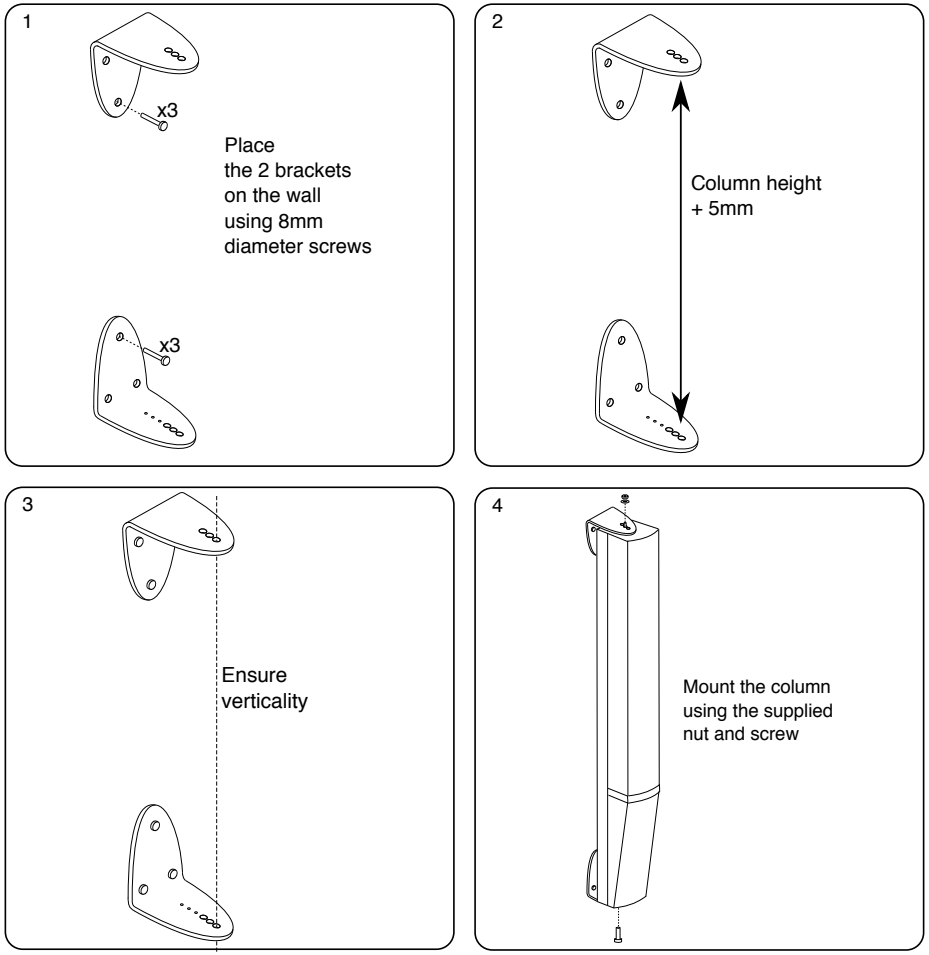


Figure 9 : *Column mounting on a wall*

It is important to ensure verticality when mounting StepArray+ columns.

6.1. Dimensions of the brackets

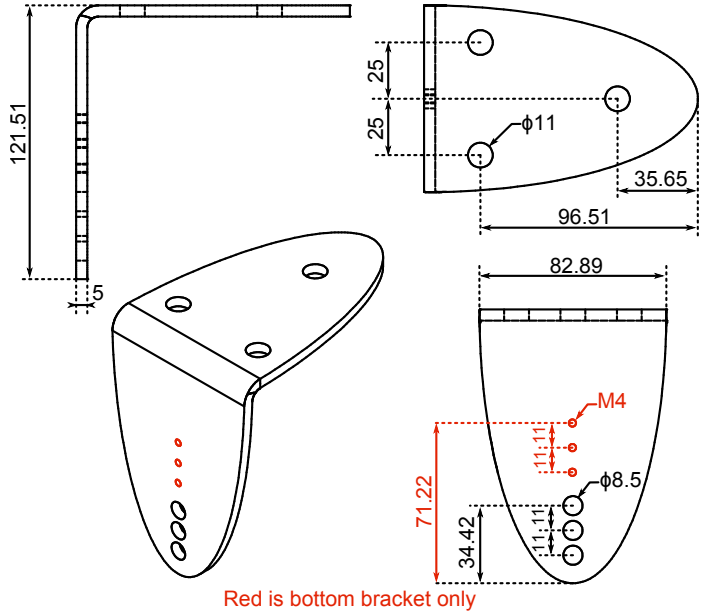


Figure 10 : *Fixing brackets for wall mounting of StepArray columns*

7. Specifications

SA150P+

Acoustical data

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

Mechanical data

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

Electrical data

max output power		450W
max continuous output power (25°)		300W
power consumption	Idle	22W
	Typ.	80W
	Max	500W
number of Channels		3
power supply		85-264VAC 45-65Hz

Inputs

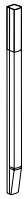
1x balanced analog 3-pin input
1x Dante™ input

Network

1x RJ45 connector, Dante™

max. operating ambient temperature	60°C

SA230P+



Acoustical data

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

Mechanical data

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

Electrical data

max output power		450W
max continuous output power (25°)		300W
power consumption	Idle	22W
	Typ.	80W
	Max	500W
number of Channels		3
power supply		85-264VAC 45-65Hz

Inputs

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

Network

1x RJ45 connector, Dante™

max. operating ambient temperature	60°C

SA230P+

Acoustical data

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

Mechanical data

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

Electrical data

max output power		450W
max continuous output power (25°)		300W
power consumption	Idle	22W
	Typ.	80W
	Max	500W
number of Channels		3
power supply		85-264VAC 45-65Hz

Inputs

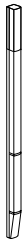
1x balanced analog 3-pin input
1x Dante™ input

Network

1x RJ45 connector, Dante™

max. operating ambient temperature	60°C

SA300P+



Acoustical data

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

Mechanical data

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

Electrical data

max output power		900W
max continuous output power (25°)		600W
power consumption	Idle	41W
	Typ.	150W
	Max	1000W
number of Channels		6
power supply		85-264VAC 45-65Hz

Inputs

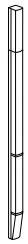
1x balanced analog 3-pin input
1x Dante™ input

Network

1x RJ45 connector, Dante™

max. operating ambient temperature	60°C

SA300S+



Acoustical data

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

Mechanical data

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

Electrical data

max output power		900W
max continuous output power (25°)		600W
power consumption	Idle	41W
	Typ.	150W
	Max	1000W
number of Channels		6
power supply		85-264VAC 45-65Hz

Inputs

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

Network

1x RJ45 connector, Dante™

max. operating ambient temperature	60°C

SA450P+

Acoustical data

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

Mechanical data

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

Electrical data

max output power		900W
max continuous output power (25°)		600W
power consumption	Idle	41W
	Typ.	150W
	Max	1000W
number of Channels		6
power supply		85-264VAC 45-65Hz

Inputs

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

Network

1x RJ45 connector, Dante™

max. operating ambient temperature	60°C

8. Acoustical data

All data presented below is obtained with columns in their nominal position and using nominal DSP filtering param- eters (flat EQ, etc).

8.1. Common data

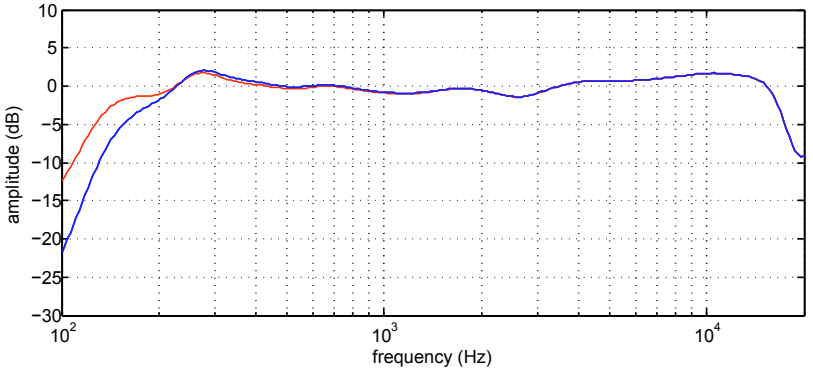


Figure 11 : *Frequency response (column SA250P / SA300P+). Average of the mesurements at 7, 10, 15, 20, 25, and 30m. In red: with bass high-pass on position «100Hz», in blue: with bass high-pass on position «200Hz».*

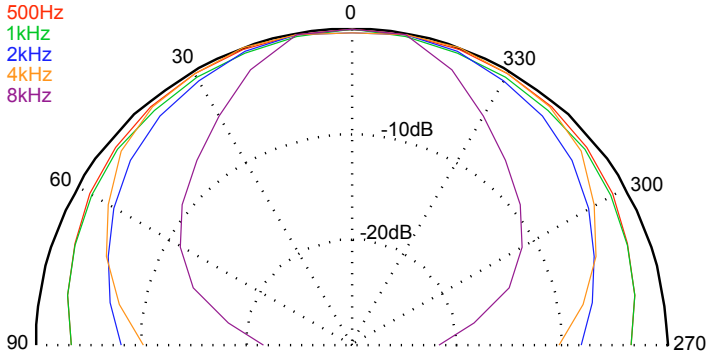


Figure 12 : *Horizontal directivity (column SA250P/SA300P+)*

8.2. SA100P / SA150P+ acoustical data[1]

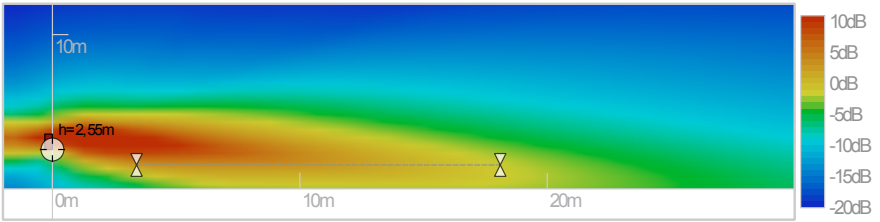


Figure 13 : *SA100P / SA150P+ vertical directivity: sound level for the voice octaves (500Hz,1kHz,2kHz) in the vertical median plane*

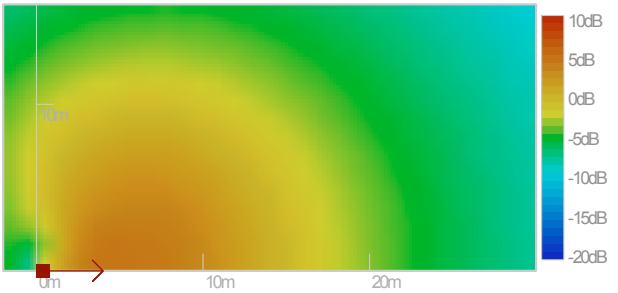


Figure 14 : *SA100P / SA150P+ horizontal directivity: sound level for the voice octaves (500Hz,1kHz,2kHz) on the listening plane*

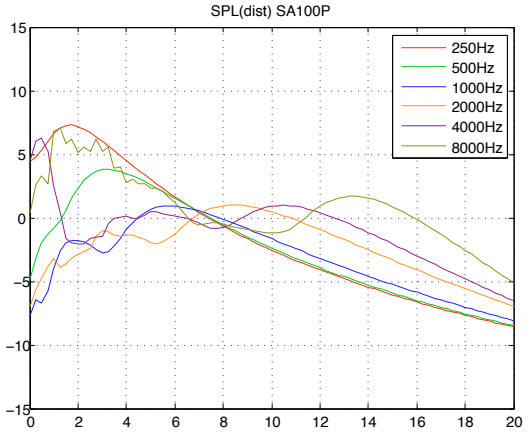


Figure 15 : *Sound level by octave in the axis of the listening plane in front of the column with respect to the distance from the column*

8.3. SA180P / SA230P+ acoustical data[1]

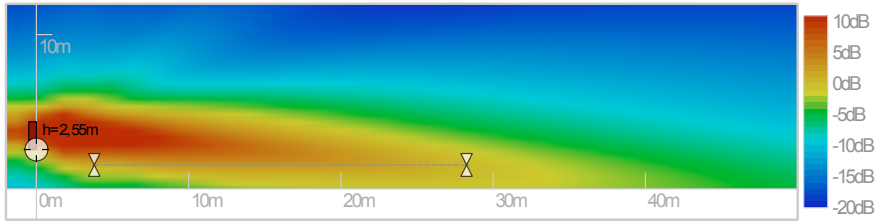


Figure 16 : *SA180P / SA230P+ vertical directivity: sound level for the voice octaves (500Hz,1kHz,2kHz) in the vertical median plane*

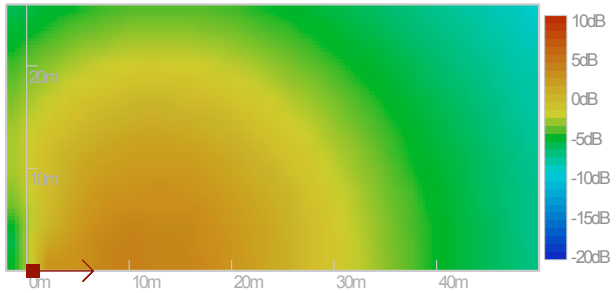


Figure 17 : *SA180P / SA230P+ horizontal directivity: sound level for the voice octaves (500Hz,1kHz,2kHz) on the listening plane*

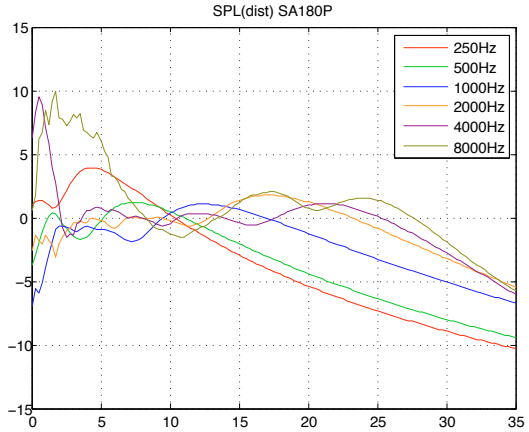


Figure 18 : *Sound level by octave in the axis of the listening plane in front of the column with respect to the distance from the column*

8.4. SA250P / SA300P+ acoustical data[1]

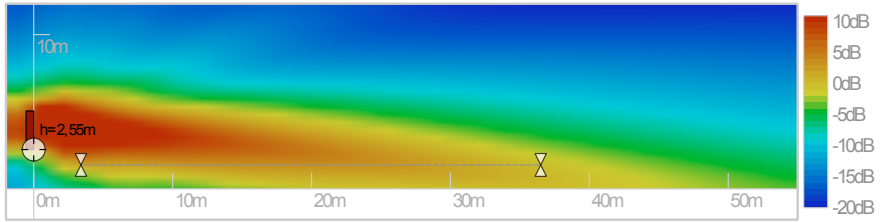


Figure 19 : *SA250P / SA300P+ vertical directivity: sound level for the voice octaves (500Hz,1kHz,2kHz) in the vertical median plane*

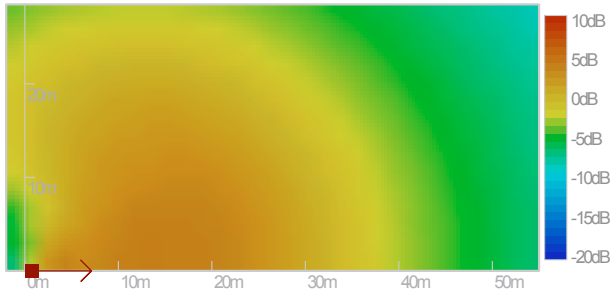


Figure 20 : *SA250P / SA300P+ horizontal directivity: sound level for the voice octaves (500Hz,1kHz,2kHz) on the listening plane*

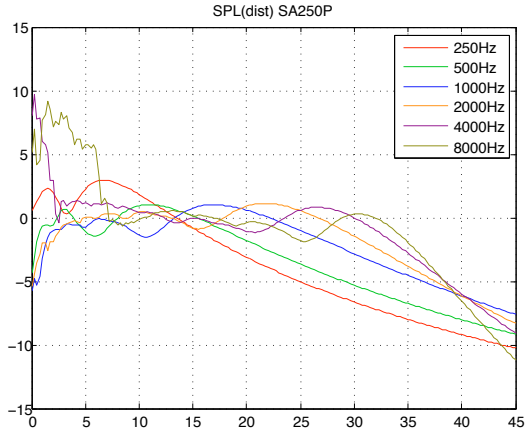


Figure 21 : *Sound level by octave in the axis of the listening plane in front of the column with respect to the distance from the column*

8.5. SA400P / SA450P+ acoustical data[1]

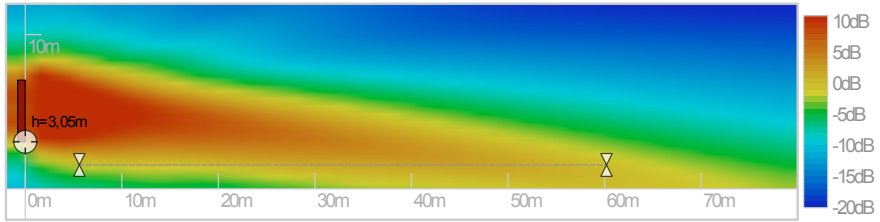


Figure 22 : *SA400P / SA450P+ vertical directivity: sound level for the voice octaves (500Hz,1kHz,2kHz) in the vertical median plane*

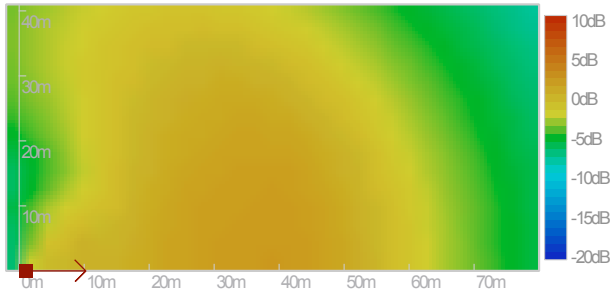


Figure 23 : *SA400P / SA450P+ horizontal directivity: sound level for the voice octaves (500Hz,1kHz,2kHz) on the listening plane*

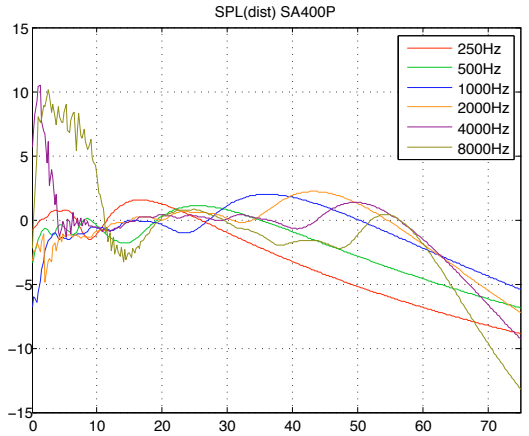


Figure 24 : *Sound level by octave in the axis of the listening plane in front of the column with respect to the distance from the column*

8.6. SA180S / SA230S+ acoustical data[1]

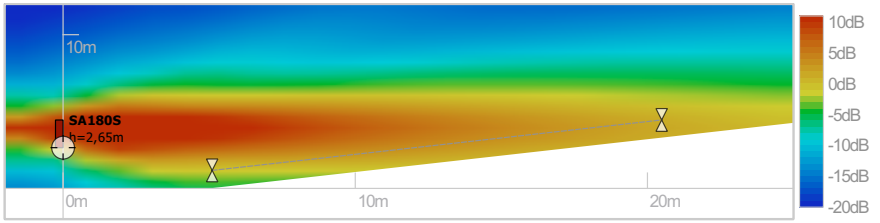


Figure 25 : *SA180S / SA230S+ vertical directivity: sound level for the voice octaves (500Hz,1kHz,2kHz) in the vertical median plane*

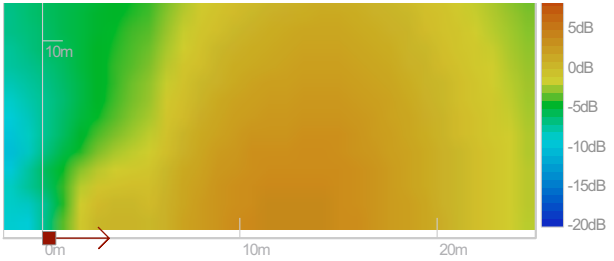


Figure 26 : *SA180S / SA230S+ horizontal directivity: sound level for the voice octaves (500Hz,1kHz,2kHz) on the listening plane*

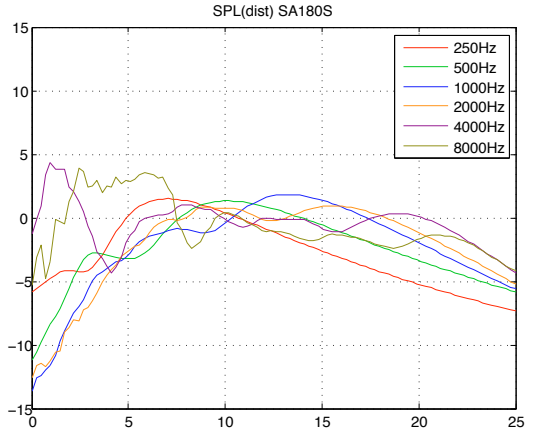


Figure 27 : *Sound level by octave in the axis of the listening plane in front of the column with respect to the distance from the column*

8.7. SA250S / SA300S+ acoustical data[1]

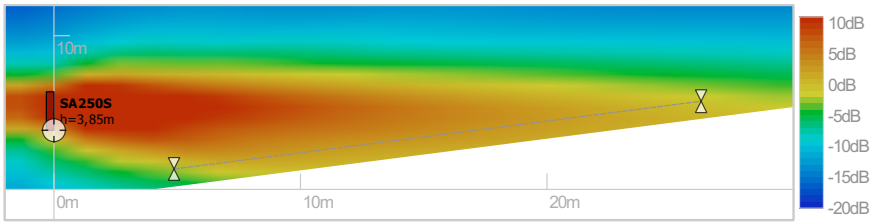


Figure 28 : *SA250S / SA300S+ vertical directivity: sound level for the voice octaves (500Hz,1kHz,2kHz) in the vertical median plane*

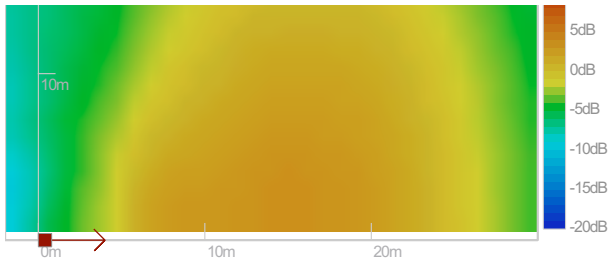


Figure 29 : *SA250S / SA300S+ horizontal directivity: sound level for the voice octaves (500Hz,1kHz,2kHz) on the listening plane*

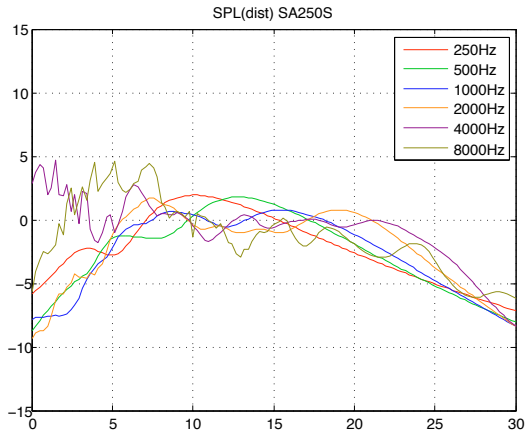


Figure 30 : *Sound level by octave in the axis of the listening plane in front of the column with respect to the distance from the column*

9. Declaration of conformity

CE

We,
ACTIVE AUDIO SAS,
8 Rue Johannes Gutenberg 44340 , France,

Declares under our sole responsability
that the following products

SA150P+, SA230P+, SA300P+, SA450P+,
SA230S+, SA300S+

complie with the council directive 2004/108/CE

Assessment of compliance is based on the following standards:
EN50081-1, EN61000, EN60065

Established on the 6th of January 2016
by Régis CAZIN, CEO.

www.activeaudio.fr
info@activeaudio.fr

Active Audio
8 Rue Johannes Gutenberg
44340 Bouguenais - France

Phone: +33 (0)2 404 666 64

Contact