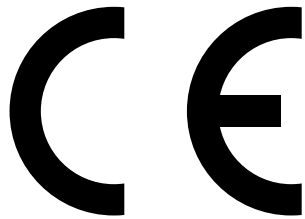


Ray-On Mini

manual





DECLARATION OF CONFORMITY

We,
ACTIVE AUDIO Sarl,
332 Boulevard Marcel Paul 44800 St Herblain, France,

Acknowledge our sole responsibility,
that the product RAY-ON MINI

In accordance with EMC directive 2004/1028/CE
is in compliance with the following norms of documents
EN50081-1, EN61000, EN 60065

Established: 1 september 2015
By: Régis CAZIN, Managing Director

Certification EN 52-24:2008 type B pending

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1 General Presentation

The Ray-On column loudspeakers are passive, and based on the DGRC principle. The range includes three column models, and a proximity speaker:

- R60, height 60cm;
- R100, height 1m;
- R200, height 2m;
- Ray-On Mini, a proximity speaker.



This technical manual is for Ray-On Mini. A specific technical manual is devoted to the R60, R100, and R200 columns speakers.

The Ray-On Mini is a proximity speaker dedicated mainly to voice reinforcement and ambient music in small venues. Made of aluminum, Ray-On loudspeakers can be installed outdoor. They are suited for airports, railway stations, churches, conference rooms, shopping malls, amusement parks, etc.

The Ray-On Mini speakers are compliant with standard EN5424 type B. They can be used in PA systems for safety announcements.

2 Positioning

The most important parameter for the installation of Ray-On loudspeaker is its mounting height because the range of the column directly depends on it.

Table 1 gives the minimum, maximum, and nominal values for Ray-On Mini mounting height¹.

		Hauteur de pose		
		Minimale	Nominale	Maximale
Ray-On Mini	Auditoire debout	1.90m	2.10m	2.50m
	Auditoire assis	1.50m	1.80m	2.20m

Table 1 – Ray-On Mini mounting height, **from floor to bottom of column** (meters).

3 CAD Modeling

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 indices, such as reverberation time, sound pressure level, STI, etc.

The sound radiation of the Ray-On loudspeakers can be predicted directly using CATT-Acoustic or EASE softwares.



A simple direct sound simulation tool is directly accessible on www.activeaudio.fr.

Direct sound prediction is also given in the technical characteristics section [6 on page 8](#).

¹ Ears are at 1.15m from floor for a seated audience, 1.55m for a standing audience.

4 Equalization and tuning

Ray-On loudspeakers may be used without any equalization, but using one is advised. Equalization flattens the column's frequency response and protects the loudspeakers by filtering low frequencies.

Two equalizations are specified:

- one for speech, which uses 4 cells (n°2-5);
- the other for music, which uses 6 cells (n°1-6).

The table 2 gives detailed information about these equalizations.. The corresponding frequency curves are presented in figure 1.

	Type	Paramètres
1	Parametric	Freq = 100 Hz ; Gain = +6 dB ; Width = 1.5 oct (Q=0.92)
2	2nd order high-pass	Fcut = 130 Hz ; -3dB @ Fcut (Butterworth)
3	Parametric	Freq = 190 Hz ; Gain = -3.0 dB ; Width = 0.4 oct (Q=3.6)
4	High-Shelv	Freq = 1800 Hz ; Gain = -5.0 dB
5	Parametric	Freq = 3600 Hz ; Gain = +5 dB ; Width = 0.5 oct (Q=1.3)
6	Parametric	Freq = 15 500 Hz ; Gain = +6.0 dB ; Width = 0.5 oct (Q=1.2)

Table 2 – Recommended equalization. Voice: cells 2-5. Music: cells 1-6.

If a subwoofer is used, it is advised not to activate the cell 1, frequencies under 180Hz being rendered by the sub. This allows the columns to not be driven with important levels of low frequencies.

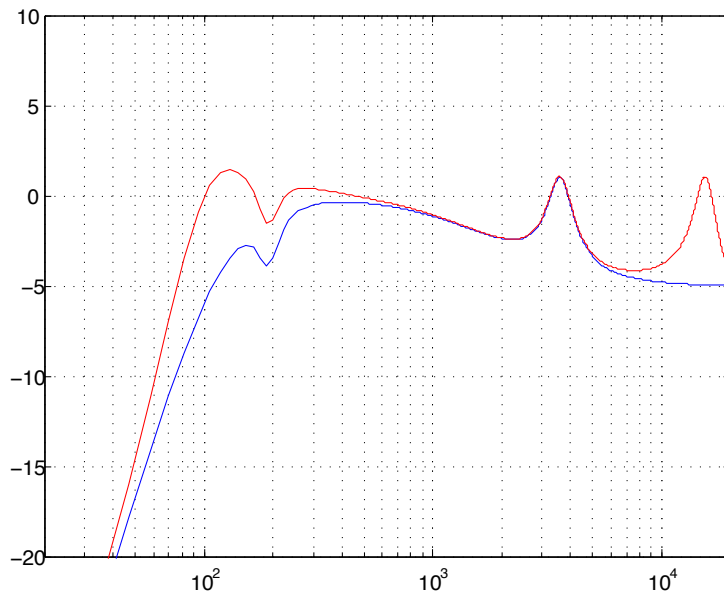
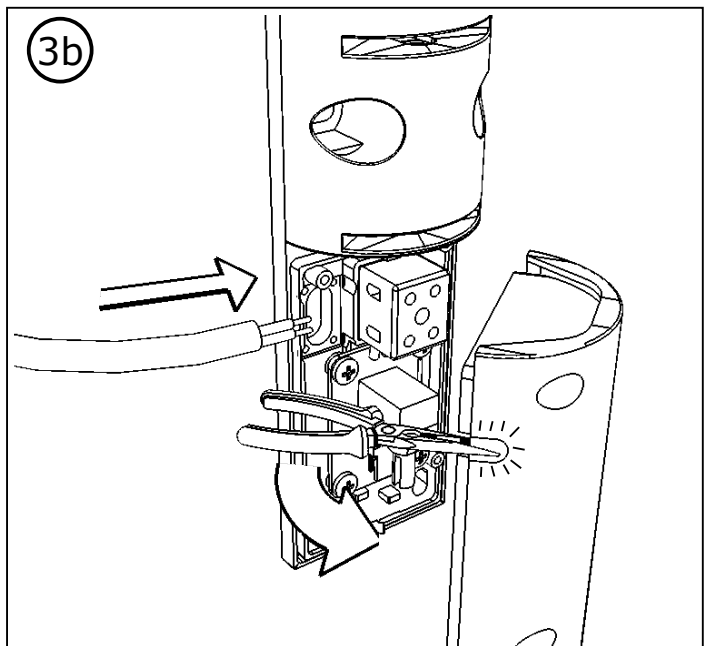
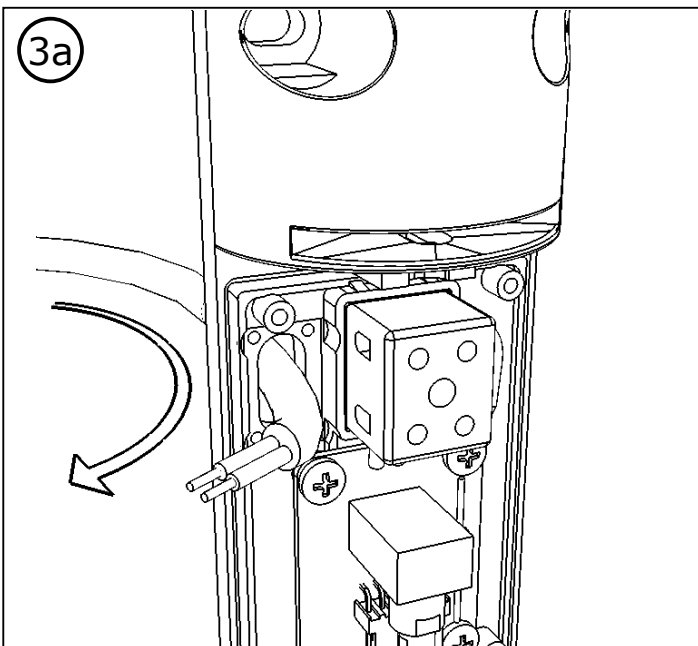
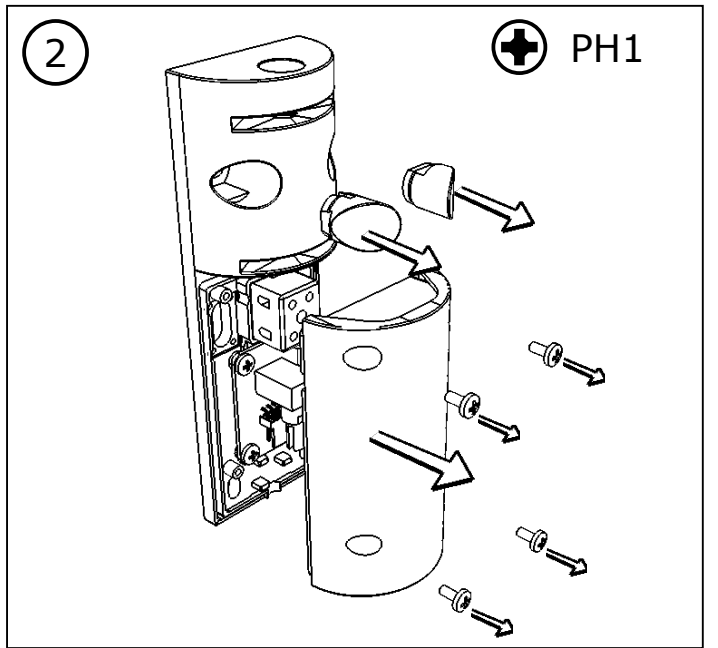
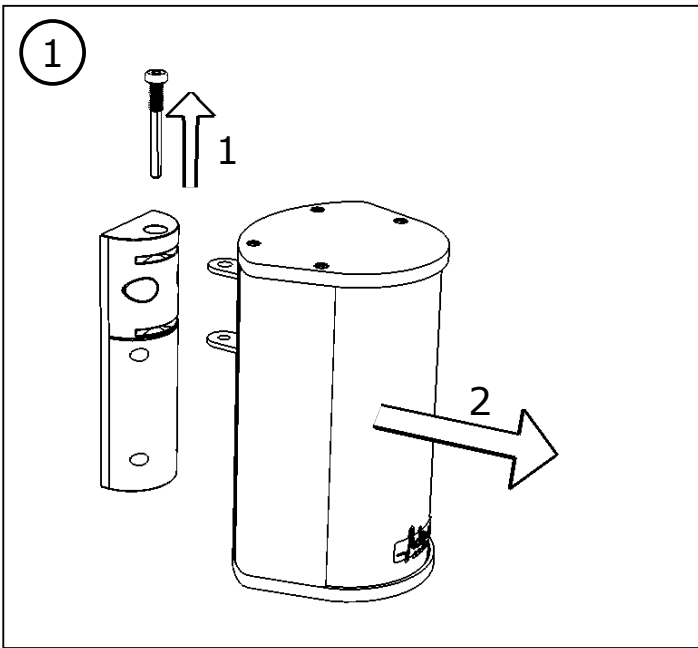
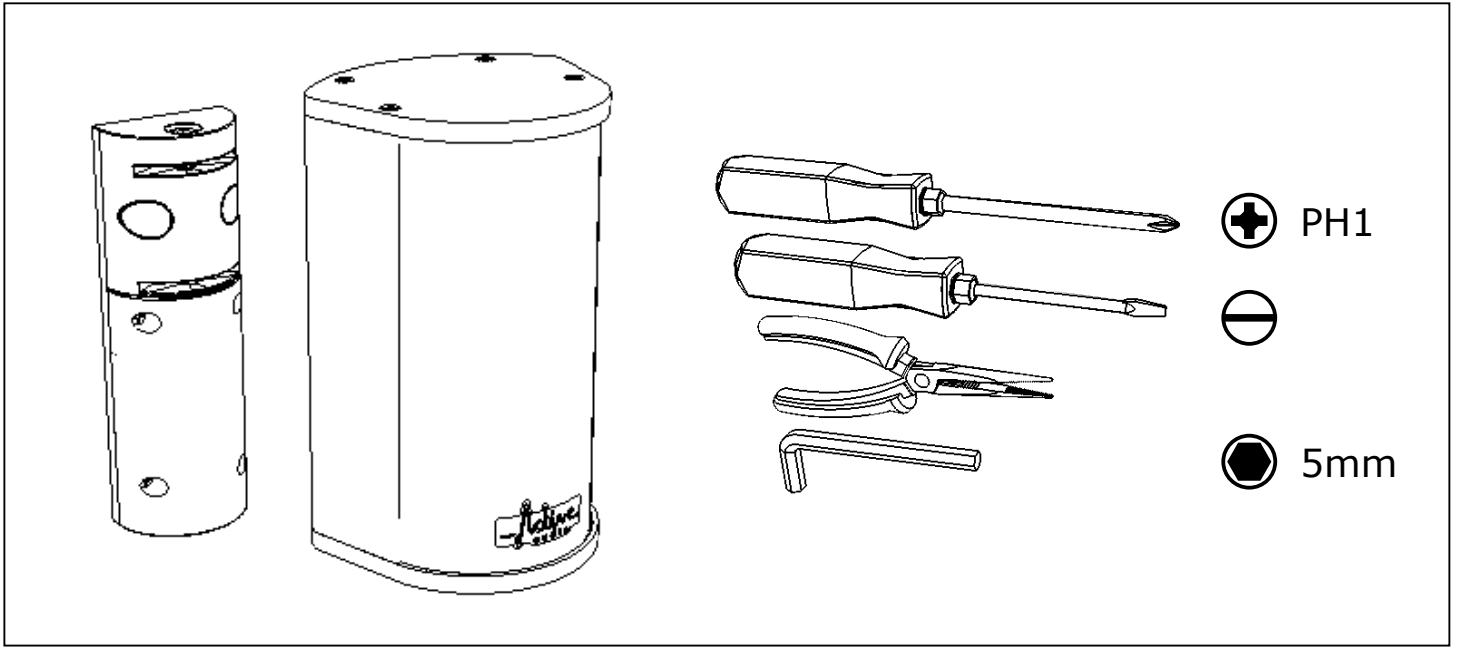
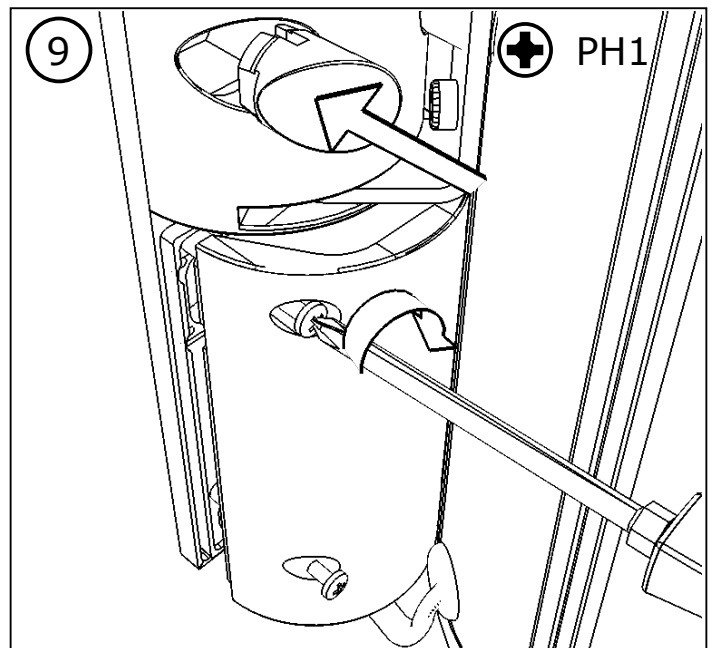
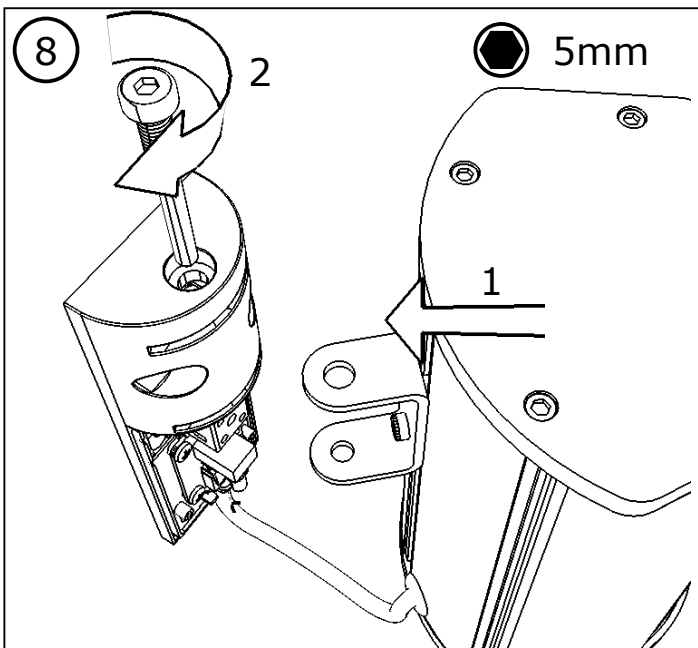
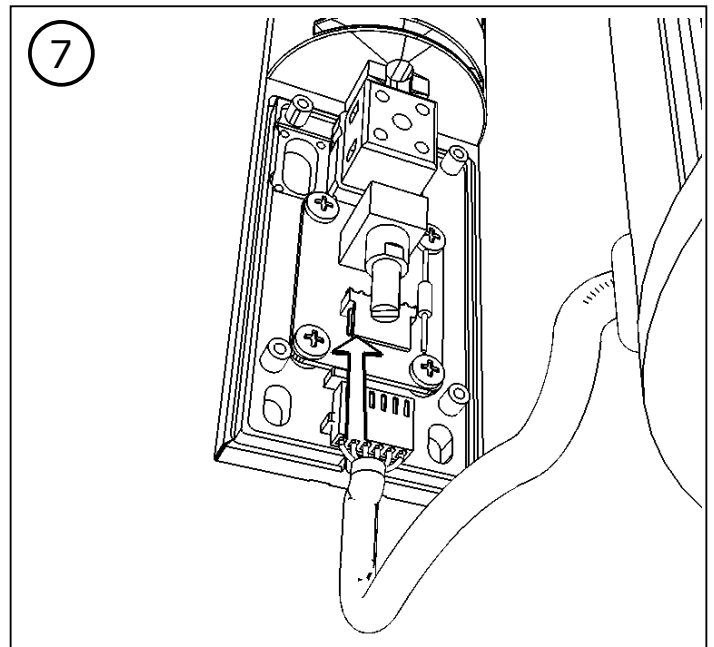
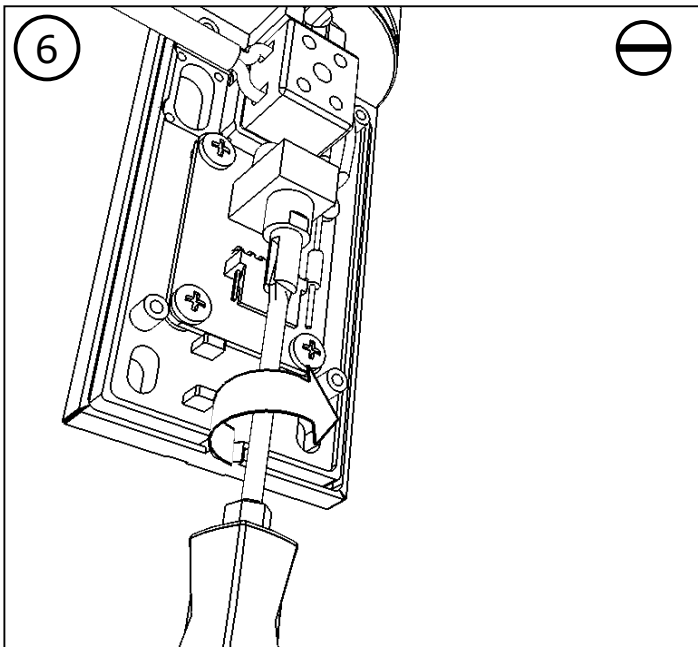
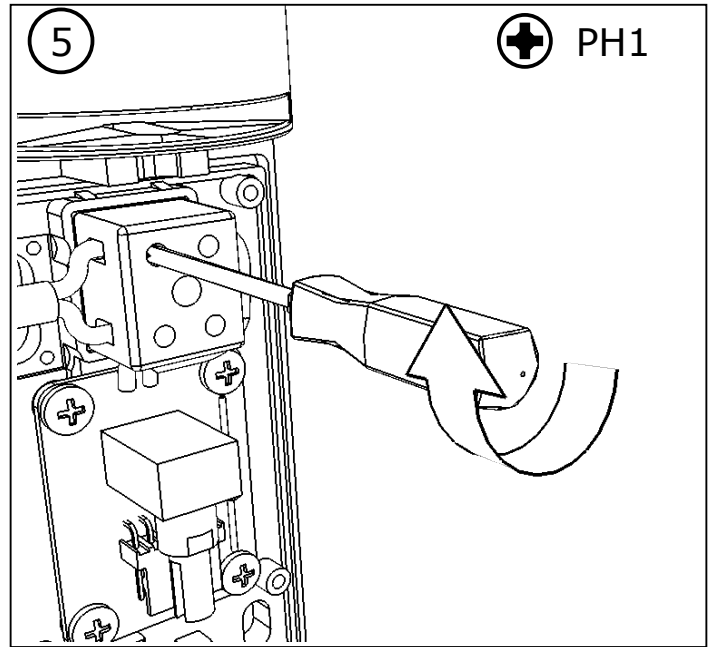
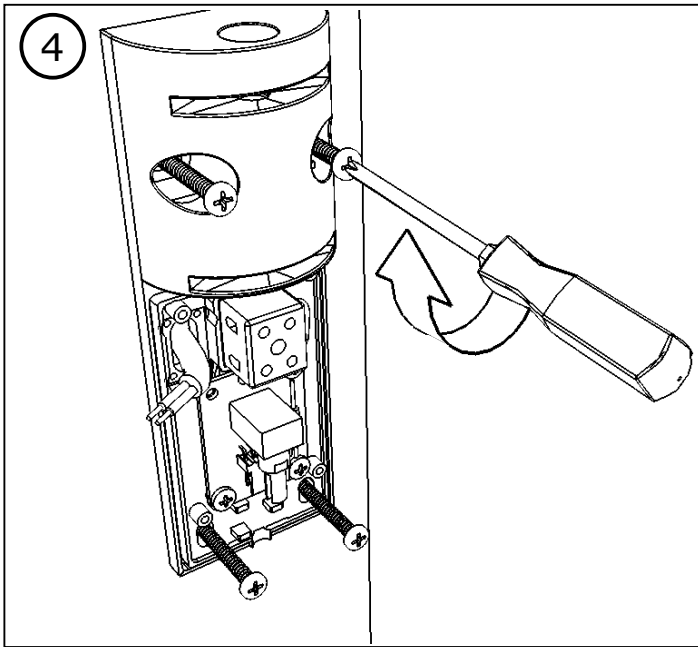


Figure 1 – Recommended equalization curve with (red) and without (blue) cells n°1 and n°6.





5 Installation and Wiring

Ray-On loudspeakers are vertically mounted, usually on a wall, using the supplied wall-mounting system. The previous two pages illustrate the steps to follow for column mounting.



100V: Power selection is made on the connection terminal.

6 Characteristics and Technical Drawings

6.1 General Characteristics

	Ray-On Mini	
	8 Ω mode	100V mode
Acoustical data²		
Continuous power	30W	7.5W / 15W / 30W
SPL max	97dB at 1m	91 / 94 / 97dB at 1m
Sensitivity	84dB / W at 1m	
Freq. bandwidth at -3dB/-10dB	150Hz - 16,5kHz / 120Hz - 18kHz	
Vertical -6dB opening angle	135° at 500Hz / 85° at 1kHz 40° at 2kHz / 30° at 4kHz	
Horizontal -6dB opening angle	280° at 500Hz / 180° at 1kHz 180° at 2kHz / 160° at 4kHz	
Loudspeakers	2 loudspeakers 70x70mm, outdoor	

	8 Ω mode	100V mode
Electrical data		
Nominal impedance	6 Ω	1333 / 667 / 333 Ω
Connectors	Ceramic terminal block screw	
Wire section	from 0,5 to 2,5mm ²	
Protection	Thermal fuse	

	8 Ω mode	100V mode
Mechanical data		
Materials	Body: aluminum ; Grid: steel treated against rust and UV	
Dimensions H x L x P	198 x 128 x 117 mm	
Net / shipping weight	2 / 2.7 kg	
Environment	IP54 ; from -25°C to +55°C, indoor / outdoor	
Colors	White (RAL9016 paintable) and Black (RAL9005)	
Mounting	Vertical mounting	
Mounting bracket	reinforced ABS	

	8 Ω mode	100V mode
Tuning and exploitation		
Mounting height (m)	1.80 seating / 2.10 standing	
Recom. equalization	Speech: 4 parametric cells / Music: 6 parametric cells	

²Unless specified otherwise, characteristics are measured with column at nominal mounting height on horizontal reflecting floor, and using recommended music equalization.

Modeling	EASE and CATT-Acoustic models available	
Miscellaneous	8 Ω mode	100V mode
Warranty	5 years	
Maintenance	No maintenance required	
Serial number	YYMMXXXX (YY: year - MM: month - XXXX: serial)	
Certification	EN54-24 type B for indoor and outdoor VA systems	

6.2 Technical drawings

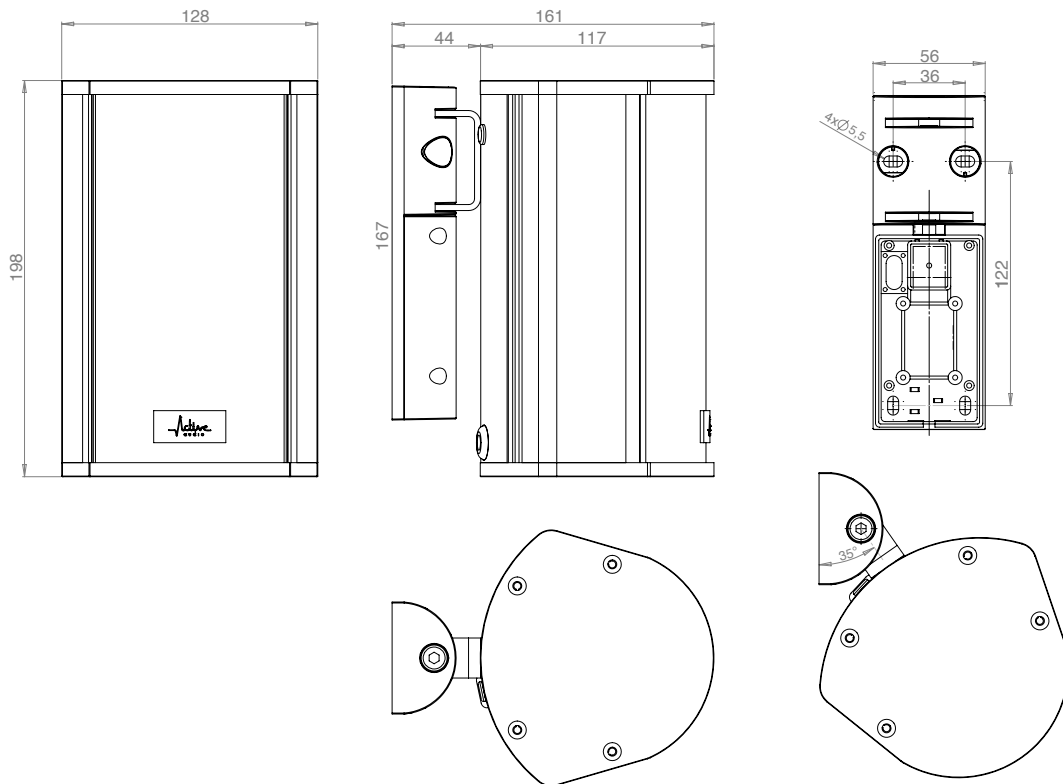
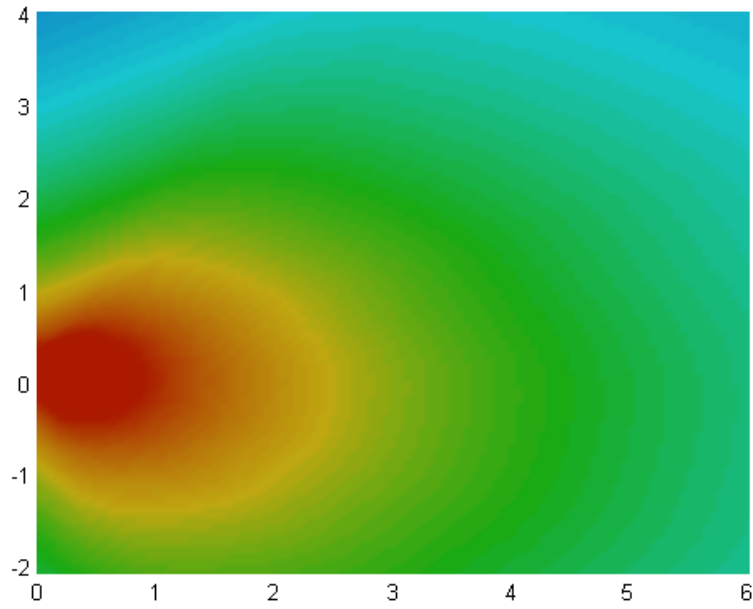
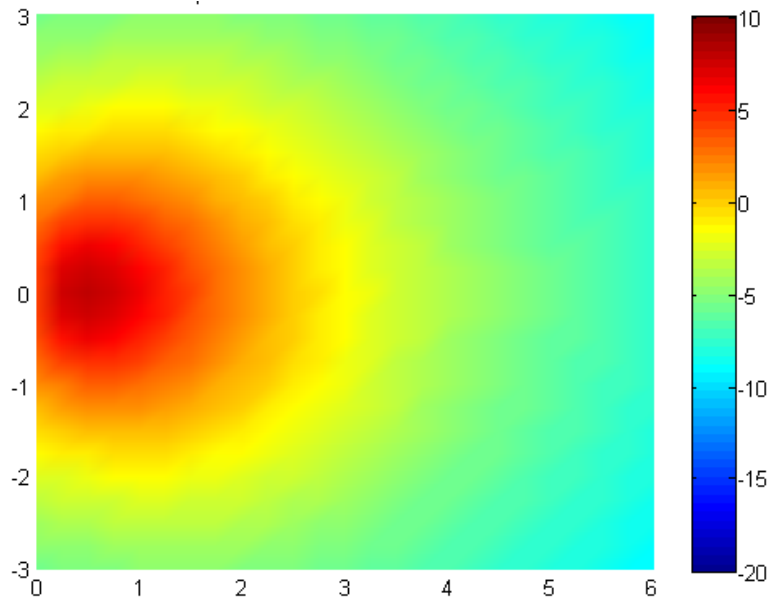


Figure 2 – Technical drawings

6.3 Acoustical data³



(a) Ray-On Mini vertical directivity: sound level for the speech octaves (500Hz,1kHz,2kHz) in the vertical median plane.



(b) Ray-On Mini horizontal directivity: sound level for the speech octaves (500Hz,1kHz,2kHz) on the listening plane (60cm below the column).

Figure 3 – Ray-On Mini: acoustical data

³Speaker in nominal position. The reference SPL is the mean level in the listening zone.

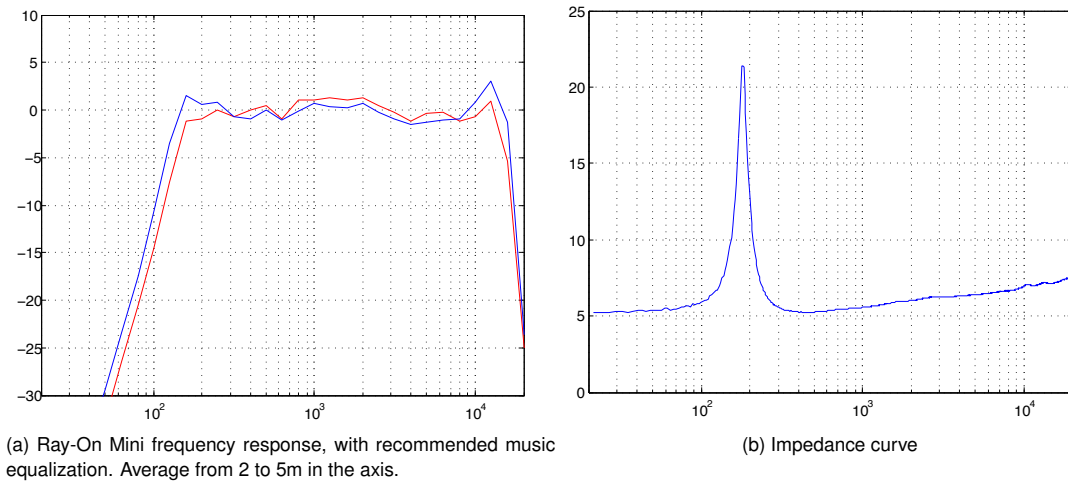


Figure 4 – Ray-On Mini: impedance and frequency response

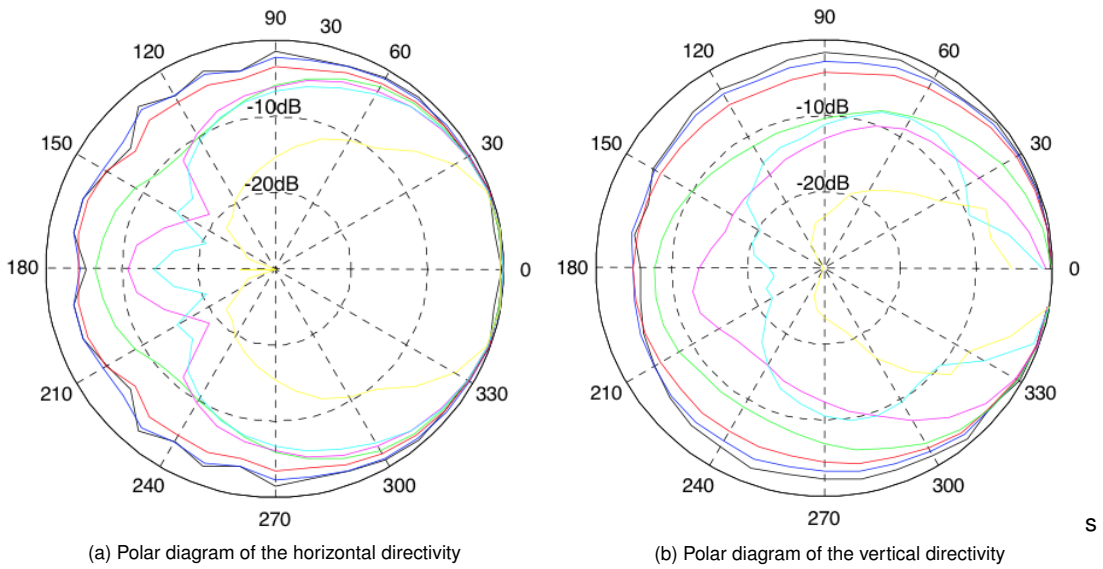


Figure 5 – Ray-On Mini: polar diagrams

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