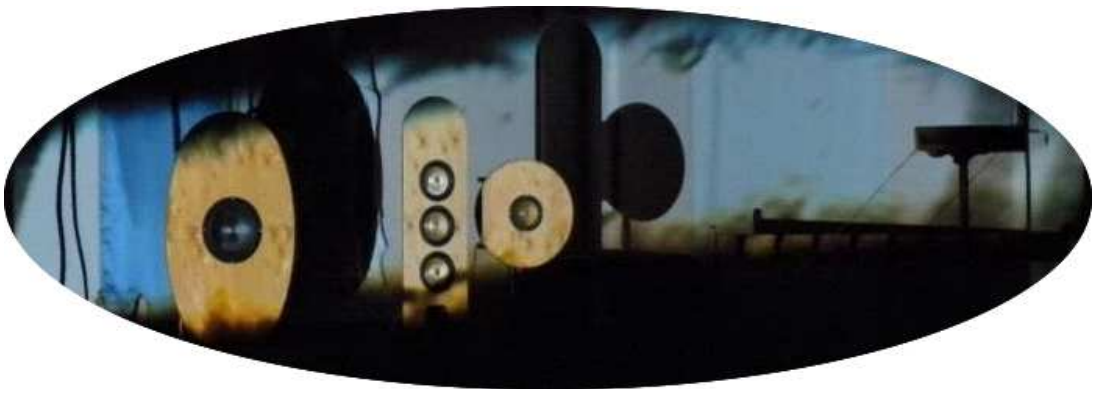
AUDIOR

ACUSMONIUM



ARS AUDIO

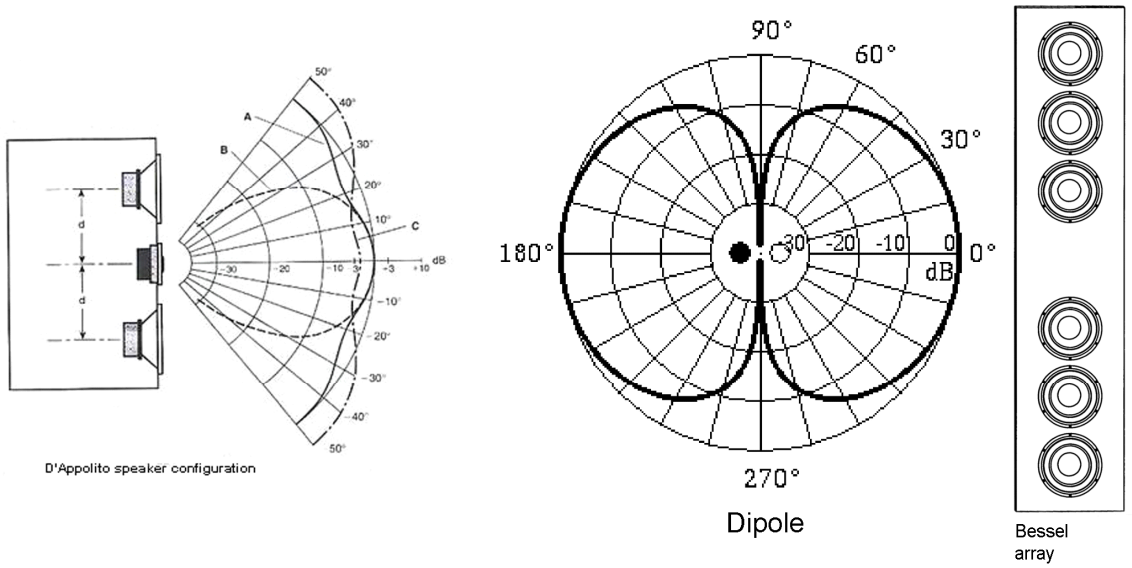
KIND
Audible Power Solutions

The mobile acousmonium AUDIOR has been designed for the performance in concert of acousmatic repertoire. AUDIOR combines the peculiarities of immersive listening (obtained with 2 rings of 8 broadband speakers around the audience) with those of an orchestra of speakers (obtained with set of narrowband speakers, subdivided in subwoofers / low-mid / mid / high / super high). This double-rings architecture derives from the acousmonium MOTUS, conceived and designed by Jonathan Prager. Thanks to these features, AUDIOR offers the possibility of dynamically combining volume, space, density and timbre. The presence of many narrow band loudspeakers (arranged in front of and around the public) guarantees the possibility of intervening on the timbre, while respecting a condition of immersive listening. The work of the performer on the timbre is supported by the adoption of both broadband and narrow band speakers, placed symmetrically in front and around the audience. The narrow band speakers reproduce only a part of the acoustic spectrum and can also be non-linear in the reproduction band. Besides, they have different types in order to play the best audio range which they are intended. In particular, the speakers for the middle range are of type dipolar, since they can modify the return of the stereo images, also taking advantage of the issue reflected back from the walls of the concert hall and from the distance of the speakers from the walls; the speakers for the high frequency are hyperbolic horns which allow a great deal of pressure and linearity of issue. The dipolar speakers, placed in the front section, offer the audience and the performer a high quality of listening, corroborated by the perception of a reflective rear space, which is added to the frontal emission, extending the point emission of the speakers.

The first version of the acousmonium AUDIOR, 2012
(Front detail)

Since 2012 the activities related to the AUDIOR acousmonium took place in Italy and in Switzerland. The AUDIOR acusmonium has so far enabled the realization of about forty concerts with the performance of works by a hundred composers from around the world, dozens of first performances, four monographic concerts (dedicated to Bernard Parmegiani, Jean-Claude Risset, Trevor Wishart, Brunhild and Luc Ferrari, Erik Mikael Karlsson), four sessions of dance and acusmatic music, a study meeting dedicated to Angelo Paccagnini, the concert cycles 'Chitarra e altre corde', 'Vox Humana', 'Fuoco Aria Terra Acqua - La Musica degli Elementi', Tsunami and Licheni'. Finally, we remember AUDIOR's participation in three festivals in Italy: the Festival 5 Giornate in Milan (editions 2014, 2017 and 2018) the ‘Contemporanea Acusmatica’ Festival in Udine (2017 edition), the festival ‘Musica e Suoni of Sarzana. Designed and built in 2012 by Eraldo Bocca, the mobile acousmonium AUDIOR currently consists of a total of 86 speakers (between full range and “narrow band”) and 80 amps, has one analog spatialization console of 32 channels and two 16 channel digital console. The acousmonium connections are made with a custom designed system, that allows rapid installation and a great flexibility of adaptation to the characteristics of the concert hall.

In order to construct the acousmonium AUDIOR, the main choice was to build acoustic loudspeakers of different sizes and powers, able to work in different environments and to obtaining good performance in even rooms with bad acoustics. This led to the construction of speakers in the configuration D'Appolito, dipolar and array. The D'Appolito configuration allows a better dispersion of the sound. The dipolar construction minimizes the lateral reflections, also taking advantage of the rear emissivity, to enrich the sound emission and drastically reduce the distortions of the speakers. The Bessell arrays speaker configuration have a projection of the sound with a cylindrical wave, avoiding in part the reflections of the floor and ceiling.



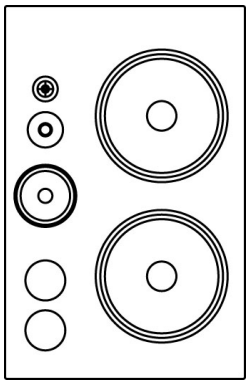
1. D'Appolito speaker configuration 2. Dipole 3. Bessel array

The division of the audio band between different speakers (Bass - Medium Bass - Medium - Medium High - High and Very High) allows the interpreter to obtain timbral variations by simply acting on the faders of the spatialization console. Besides, only passive loudspeakers were adopted, in order to minimize the distribution of the power supply, usually only two points, one placed at the spatialisation console and one placed at the front. Moreover, all the connections are made with industrial connectors to make installation quicker and safer. As told before, the speakers for the mid-range are dipolar to take advantage of the issue reflected back from the walls of the concert hall. The speakers for the high frequency are hyperbolic horns, which allow a great deal of pressure and linearity of issue.

In addition to being informed by Eraldo Bocca's forty-year experience in the construction of acoustic loudspeakers and environmental acoustics, the guidelines followed in the construction of the Acousmonium AUDIOR loudspeakers have been defined according to three factors: the first was the listening to the MOTUS Acousmonium in concert in the year 2011 (in the frame of Festival 5 Giornate, Milan); the second was the installation of the Acousmonium SATOR in the year in 2012 (auditorium of the Centro San Fedele, Milan); the third was the good advice of Annette Vande Gorne.

AUDIOR acousmonium speakers

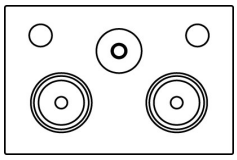
2 speakers Reflex (30-20.000 Hz 400w)



Stereo main speaker in large room

4 way 5 loudspeaker reflex
2 woofer 12”
1 midrange 6,5”
1 tweeter 1”
1 supertweeter 1/2”

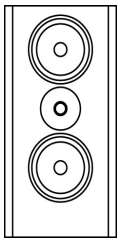
2 speakers Reflex (40-20.000 Hz) 100w



Stereo main speaker in mid room or stereo pair located in large room

2 way 3 loudspeaker reflex
2 Mid-woofer 6,5”
1 Tweeter 1,3/8”

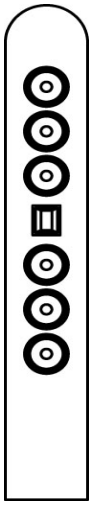
2 speakers Reflex (45-20.000 Hz) 80w



Stereo main speaker in small room or stereo pair located in mid room

2 way 3 loudspeaker reflex in D'Appolito configuration
2 Mid-woofer 6,5"
1 Dome Tweeter 1"

2 speakers dipolar (100-20.000 Hz) 120w

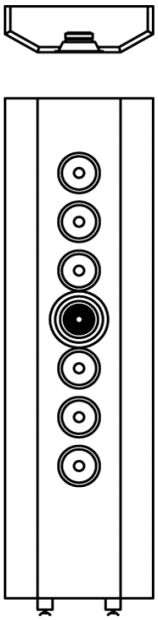


Stereo main speaker or stereo pair located

The dipolar speaker takes advantage of rear emission to better sound characterization, and to reduce the loudspeaker distortion.

2 way 7 loudspeaker
6 Mid-woofer 6,5" in array
1 Ribbon Tweeter

2 speakers Bessell array dipolar (80-20.000 Hz) 100w

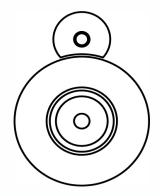


Stereo main speaker in reverberant room

The Bessell array is a sound projector that can reduce vertical emission and the dipolar emission reduces the loudspeaker distortion.

2 way 7 loudspeaker
6 Mid-woofer 6,5” in a Bessell array
1 Dome Tweeter with hyperbolic waveguide

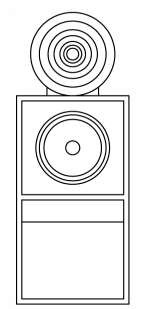
2 speakers sphere (100-20.000Hz)



For central stereo or stereo pair <u>located</u>

1 Mid-woofer 5” in spherical case
1 Tweeter 3/4” with wave guide

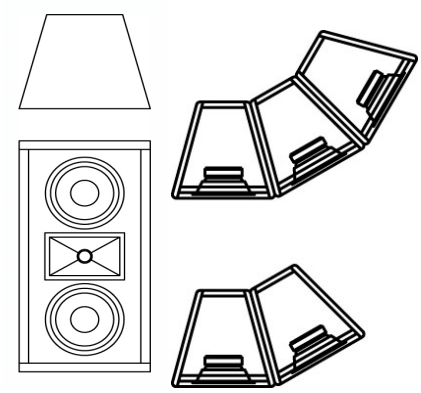
1 Central speaker



For mono central speaker

1 woofer 8”
1 Dome tweeter 1” with hyperbolic waveguide

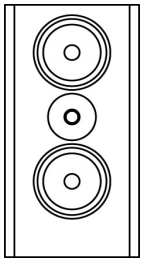
8 speakers Type M1 Reflex (40-20.000Hz) 100w



2 way 3 loudspeaker in D'Appolito configuration

2 x 6.5” woofers
1 horn tweeter 1”

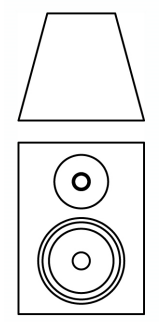
8 speakers Type C216 Reflex (50-20.000 Hz) 60w



2 way 3 loudspeaker in D'Appolito configuration

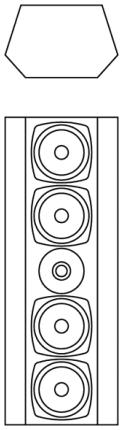
2 x 6.5” Mid-woofers
1 dome tweeter 1”

8 speakers Type C16 (50-20.000 Hz) 60w



2 way 2 loudspeaker
2 x 6.5” Mid-woofers
1 dome tweeter 1”

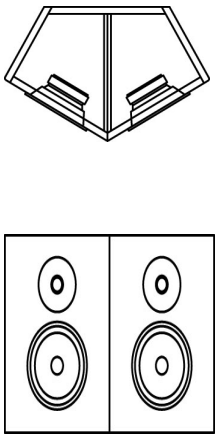
8 speakers Type C413 (50-20.000 Hz) 80w



2 way 5 loudspeaker in D'Appolito configuration

4 x 5” Mid-woofers
1 dome tweeter 1”

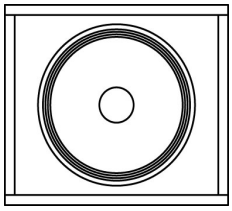
4 double speakers (60-20.000 Hz) 50+50w



2 Speakers in one case with 120 degree front

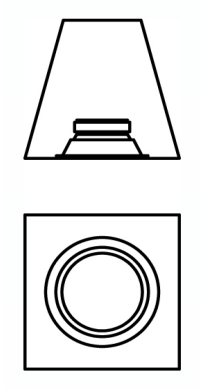
2 Mid-woofer 5”
2 dome tweeter 1”

4 speakers for Low-Mid (100-1500 Hz) 200w



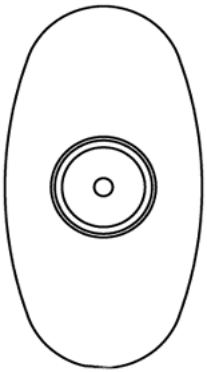
1 12” loudspeaker

4 speakers for Low-Mid or Mid (100-2000Hz) 100w



1 Speaker 8” alluminium cone

2 dipolar speakers for Mid (300-2500 Hz)

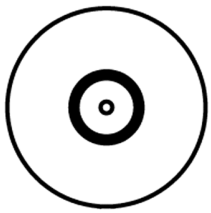


1 carbon fiber loudspeaker 10” on elliptic panel

The dimension of the panel is 50 x 105 cm

It is made to obtain a mechanical filter

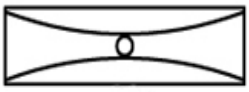
2 dipolar speakers High-Mid (400-4500 Hz)



1 Mid glass fiber 6,5” on round panel

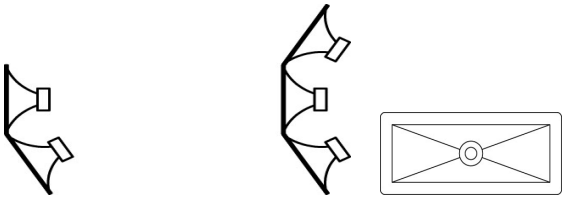
The dimension of the panel 45 cm is made to obtain a mechanical filter

6 wood hyperbolic horn

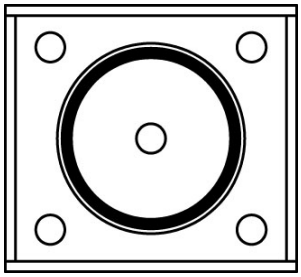


1 driver 1” (2,5 -20 Khz)

12 piezo supertweeter (3,5 - 20 kHz)

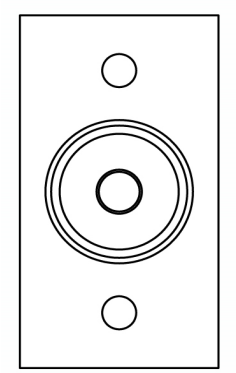


1 Subwoofer reflex 300w (30-200Hz) For large room



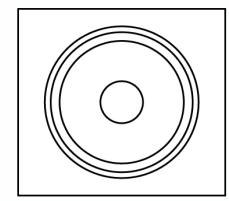
1 Loudspeaker 15”

2 Subwoofers reflex 150 w (30-200Hz) For mid room

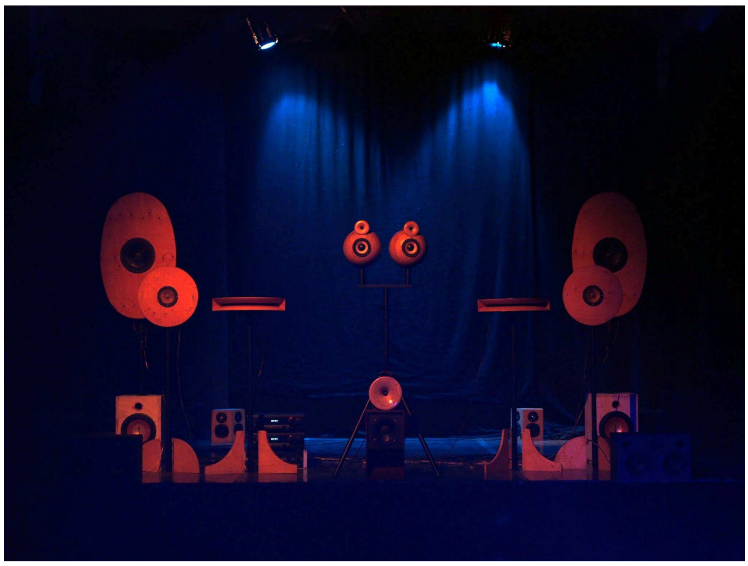


1 Loudspeaker 10”

2 Subwoofers reflex 150w (35-200Hz) For small room



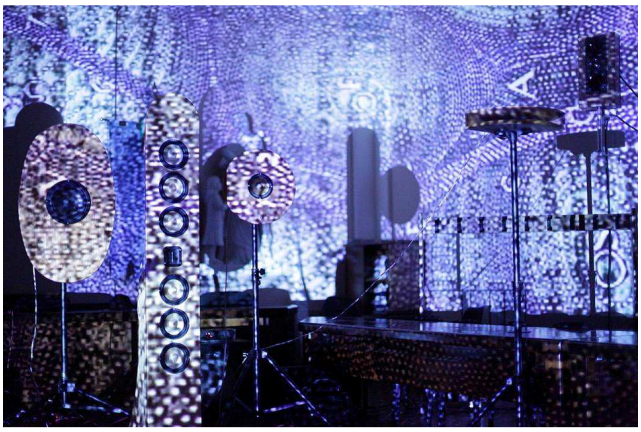
1 Loudspeaker 10”



The acousmonium AUDIOR at Teatro Espace, Turin 2017
(Front detail)

Interplay among sounds, images and gestures

The acousmatic works applied for theater, dance, cinema, video are part of the *acousmatic arts* which may include concrete or acousmatic music, radio creations and radio plays. As part of the concerts with the acousmonium AUDIOR, performances of acousmatic music and dance are also proposed. In this frame, electronic scenography may acquire importance, in fact, the images projected on the acousmonium light wood speakers cause their reflecting surfaces to return the light in a perspective fragmented by the distance - in depth and in width - of the pairs of speakers between them. While gestural and visual dimensions interplay with immersive listening, the body of the viewer is immersed in a network of vibrating forces with which it resonates in the context of a process of surfacing sound/light figures, visible and invisible architectures, slits that cross the public space, to unfold a logic of manifestation of a hidden dimension of things (Pitozzi, 2012).



Video projection on the front section of AUDIOR

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AUDIOR ASSOCIATION
www.audior.eu

The 'AUDIOR' Association was founded in 2015 by Eraldo Bocca and Dante Tanzi. Its associative goals relate to the study, the practice, the deepening and the diffusion of the acousmatic music (electroacoustic music on support in all its manifestations). For this aims the Association proposes to promote, develop and disseminate electroacoustic musical culture and artists (composers and performers) who express their spirit, enhancing their work, image and intelligence everywhere. - to promote, organize and manage didactic courses on the acusmonium instrument, of electroacoustic music history, master classes on the acusmonium, concert lessons, sound spatialization laboratories, electroacoustic design and construction workshops, phonographic recordings, seminars, workshops, traveling shows and any other initiative aimed at spreading the knowledge and practices of the acousmatic composition, of the spatialized interpretation, of electro-acoustic lute-making between young people and adults.

AUDIOR ASSOCIATION

Via Felice Masini 16 - 28066 Galliate

C O N T A C T S

Eraldo Bocca - eraldobocca@yahoo.it

Dante Tanzi - dante.tanzi@gmail.com

+ 39 3485808729 +39 3496840119

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