

Genelec Analog System Selection

Introduction

This Analog System Selection guide prevents monitors being used in rooms that are too large or at listening distances that are too long. The recommendation allows larger monitors to be used if the customer desires. The advantage of 'over specifying' monitors is that distortion is reduced for a given SPL output, directivity is better controlled and the midrange becomes smoother.

Selecting the Right Model

Use the following chart as a guide for product and system selection and follow these three simple steps:

1. Calculate the room volume and find the highest row in the table column 'Room Volume up to' that is not smaller than your room volume.
2. Measure the listening distance to the center of the listening area and find the highest row in the table column 'Listening Distance up to' that is not shorter than your listening distance.
3. If there are two different rows selected in the previous two steps, select the models from the row that is lowest in the table, i.e. the larger system of the two if there are two different lines recommended.

Note:

a) These recommendations are for the minimum sized system that can be expected to give an SPL suitable for most professional audio applications. Larger systems can be selected as they offer higher SPL and an increased directivity control. The main concern is to keep the whole system in balance (do not select 1036A's for the front channels and have 8030A's for the rears with a 7070A subwoofer for the LFE channel and bass management!)

b) Additional separate subwoofers can be used on the rear channels too (not detailed below).

c) If space or finances are limited, rear/side monitors can be compromised slightly by selecting the next sized model down in the range (use 8040A's instead of 8050A's).

Room Volume up to m ³ (ft ³)	Listening Distance up to m (ft)	Typical Listening Distance m (ft)	Front Speakers Stereo & LCR	Side and Rear Speakers (per channel)	Subwoofers for 2-channel Stereo ¹⁾	Subwoofers for 5-channel Surround ²⁾
55 (1,950)	1.8m (5' 10")	1.2m (3' 11")	6010A	6010A	5040A	5040A
65 (2,300)	1.8m (5' 10")	1.2m (3' 11")	8020B	8020B	7050B	7050B
75 (2,600)	2.0m (6' 6")	1.3m (4' 3")	8030A	8030A	7050B	7060B
75 (2,600)	2.0m (6' 6")	1.3m (4' 3")	8130A	8130A	7050B ³⁾	7060B ³⁾
85 (3,000)	2.2m (7' 2")	1.4m (4' 7")	8040A	8040A	7060B	7070A or 2 x 7060B
95 (3,400)	2.3m (7' 6")	1.5m (4' 11")	8050A	8050A	7070A or 2 x 7060B	7071A or 2 x 7070A ⁴⁾
110 (3,900)	2.4m (7' 10")	1.6m (5' 2")	1032A	1032A	7070A or 2 x 7060B	7071A or 2 x 7070A ⁴⁾
125 (4,400)	3.5m (11' 5")	2.3m (7' 6")	1037C, 1038CF	1037C, 1038CF	7071A or 2 x 7070A	7073A or 2 x 7071A ⁴⁾
170 (6,000)	4.0m (13' 1")	2.5m (8' 2")	1038B, 1038BC	1038B, 1038BC	7071A or 2 x 7070A	7073A or 2 x 7071A ⁴⁾
200 (7,000)	4.5m (14' 9")	2.8m (9' 2")	1034B, 1034BC	1038B, 1038BC	7073A or 2 x 7071A	2 x 7073A ⁴⁾
240 (8,500)	4.7m (15' 5")	3.0 (9' 10")	1039A	1038B or larger	7073A or 2 x 7071A	2 x 7073A ⁴⁾
400 (14,000)	5.5m (18' 0")	3.5m (11' 5")	1035B	1038B or larger	2 x 7073A	3 x 7073A ⁴⁾
400 (14,000)	5.5m (18' 0")	3.5m (11' 5")	1036A	1038B or larger	2 x 7073A ⁵⁾	3 x 7073A ⁵⁾

Table Notes:

- 1) If the system is planned to be eventually upgraded to surround, it is recommended to select the subwoofer model from the '5-channel surround' column for future SPL compatibility. In addition, selecting the larger of the two subwoofers will give additional headroom and lower distortion in a stereo system.
 - 2) This table assumes that the bass management system built into the subwoofers is used. This is a situation normally encountered in the music industry. Fewer or smaller subwoofers maybe sufficient if the subwoofer is required to reproduce the LFE channel only. This is a situation normally encountered in the movie industry.
 - 3) When using the digital input, the **8130A** cannot be used with the **LSE™ Series** subwoofer analogue crossover filters. The subwoofer can be used for reproducing the LFE channel only.
 - 4) Additional subwoofers of the same type may be required in a larger room with bass heavy program material.
 - 5) Subwoofers are not necessarily required for a stereo **1036A** installation as these monitors are already full range. For surround systems, use the monitor section in the console to route the LFE signal to the front loudspeakers. Alternatively, subwoofers can be used to reproduce the LFE channel only.
- > The column labeled "Typical Listening Distance" is, in our experience, the average distance between the loudspeaker and the listening position in studio control rooms.
- > The column labeled "Listening Distance up to" is, in our experience, a maximum distance up to which the listener will receive accurately the direct sound. Beyond this point, chances are that the reflected sound becomes higher than the direct sound, degrading sound reproduction accuracy.
- > For the **1000 Series** discontinued products, please use replacement models reference: 1029A replaced by 8030A, 1030A replaced by 8040A, 1031A replaced by 8050A.

Monitor Selection Examples

1. If the room is 4 m (13') wide, 7 m (23') long and 3 m (10') high, then the room volume is 84 m³ (2990 ft³). This limits the loudspeaker selection to 8040A or larger. If the listening distance is then measured to be say 1.9m (6' 3") then the selected front loudspeakers are confirmed as being 8040A or larger.
2. If the room is 6 m (19 1/2') wide, 13 m (43') long and 2.5 m (8') high, then the room volume is 195 m³ (6700 ft³). This limits the loudspeaker selection to 1034B or larger. If the listening distance is then measured to be say 5m (16' 5") then the selected front loudspeakers should then be 1035B or larger as the 1034B should only be used up to 4.5 m (14' 9").

Multiple Subwoofers

When two or more subwoofers (except the 7050B as it does not have a sum output) are positioned close to one another mutual coupling is the fortunate by-product. This is due to the long wavelengths, associated with low frequencies, causing constructive superimposition. For mutual coupling, the subwoofers must be placed within ½ a wavelength of one another (85 Hz upper crossover frequency ½ wavelength is approximately 2 m). For example, two subwoofers give a 6 dB increase in acoustical output at the listening position (see Table below).

Total number of subwoofers	SPL increase compared to a single subwoofer	7060B	7070A	7071A	7073A
1	0.0 dB	113 dB	117 dB	123 dB	129 dB
2	6.0 dB	119 dB	123 dB	129 dB	135 dB
3	9.5 dB	122.5 dB	126.5 dB	132.5 dB	138.5 dB
4	12.0 dB	125 dB	129 dB	135 dB	141 dB

Subwoofer Mutual Coupling SPL Table