



AIWX Installers' Project Check List

Please use the following project check list to assist you in planning the installation of Amina AIWX speakers correctly and efficiently.

Consideration should be given to all of the following categories:

- 1. Speaker Choice**
- 2. How many speakers?**
- 3. Positioning the speakers**
- 4. Room construction** (*new-build, heritage, retrofit?*)
- 5. Sound proofing – IMPORTANT CONSIDERATION**
- 6. Cabling**
- 7. Testing**
- 8. Preparation for plastering**
- 9. Plastering and final finish**





1. Speaker Choice

Amina Technologies AIWX speakers are compatible with all standard audio amplifiers, they are passive and come supplied with an in-line protection device.

There are **five models** in the AIWX range. Referring to Table 1 below, select the model appropriate for the type of audio system that is being installed.

	Room Size											
	<9 sq.m				9 - 25 sq.m				>25 sq.m			
	Background Music	Foreground Music/HiFi	Home Cinema	PA	Background Music	Foreground Music/HiFi	Home Cinema	PA	Background Music	Foreground Music/HiFi	Home Cinema	PA
AIW1X (20w)	●				●				●			
AIW2X (20w+20w)	●				●				●			
AIW3X (40w)	●	●	●		●	●			●			
AIW4X (40w+40w)	●	●			●	●			●	●		
AIW5X (80w)		●	●	●		●	●	●		●	●	●

AIW2X and AIW4X are **dual-channel** speakers. They feature two input connectors for connecting a 2-channel feed (i.e. stereo) and output this as mono. They are useful in situations where only one speaker is required, for example in small rooms.

Note 1:

For home cinema applications be sure to set the AIW3X or AIW5X speakers to “small” on the AV amplifier [alternatively set the amplifier’s internal crossover to 100Hz].

Note 2:

For home cinema and HiFi applications (i.e. the main listening room) a subwoofer is recommended. For other rooms a subwoofer is optional.



2. How Many Speakers?

For **residential** applications the audio system itself usually dictates the number of speakers required.

As a general rule:

Stereo - 2 speakers (or 1 dual-channel speaker in very small rooms, e.g. bathroom, walk-in wardrobe)

5.1 Home cinema - 5 speakers (plus a subwoofer)

7.1 Home cinema - 7 speakers (plus a subwoofer)

Note:

For stereo music systems in **very large rooms** it may be beneficial to use **4 or more speakers** to provide the required audio coverage, especially if the end user's expectation is to be able to play music at high volume levels.

For **commercial** applications, Amina Technologies Ltd are happy to provide assistance to installers in specifying the necessary amount and positioning of speakers.



3. Positioning the Speakers

For background music, foreground music and PA applications the wide dispersion and excellent room filling properties of AIWX speakers allows significant flexibility with positioning.

For background music applications the most even audio coverage in a room will be obtained by installing the speakers in the **ceiling**, spacing them evenly. In rooms with ceilings higher than 4m, coverage will be excellent, but the sound (as with any type of speaker) becomes more “spacious”, i.e reverberant.

Alternatively, excellent audio coverage can be obtained by positioning speakers above head height in the walls of the room.

For HiFi and home cinema applications, it is advisable to follow the guideline layouts shown in Figures 1 and 2 below for such systems. Ideally, the speakers should be approximately at ear level to the listeners, but the wide dispersion of AIWX speakers enables a large degree of flexibility in regards to this.

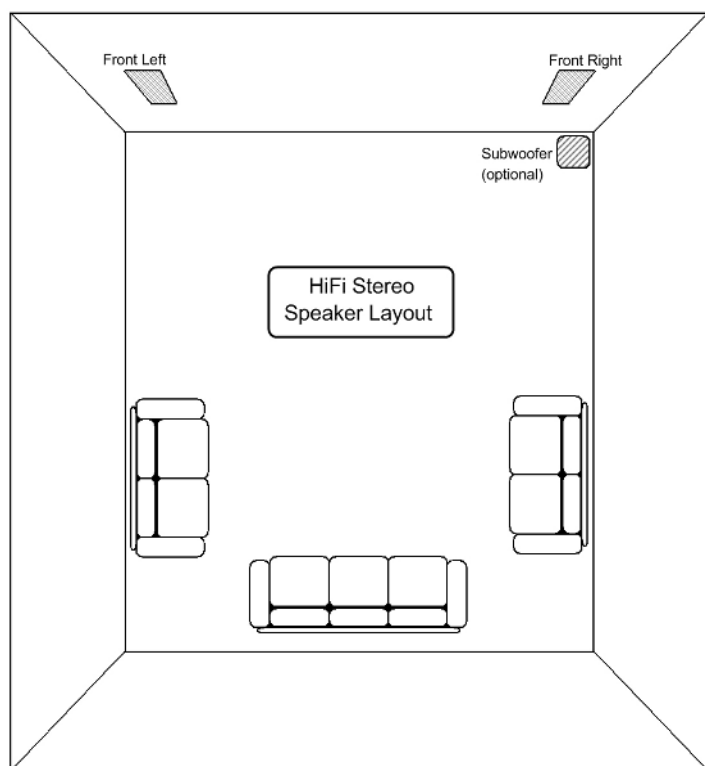


Figure 1

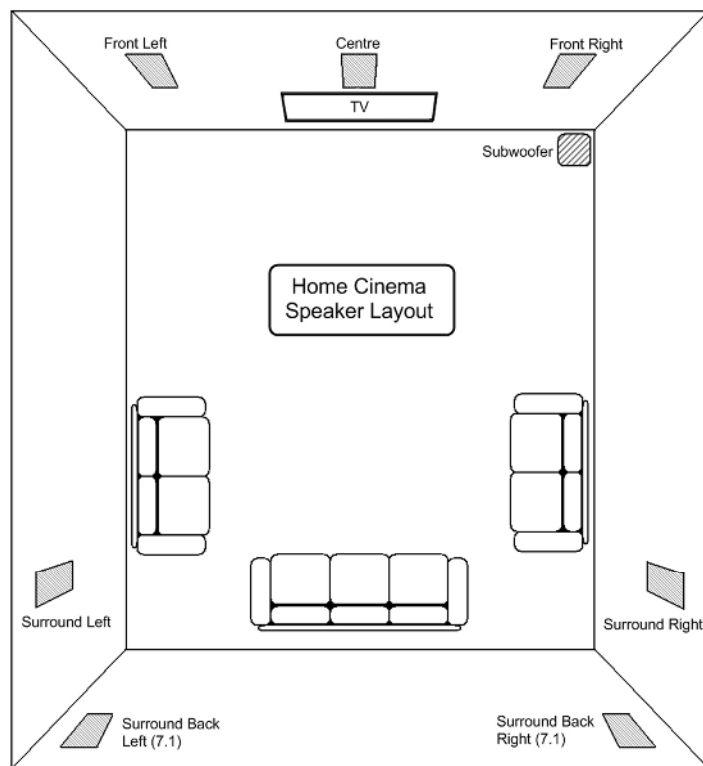



Figure 2



4. Room Construction (new-build, heritage, retrofit?)

AIWX speakers can be installed into nearly every type of wall or ceiling.

 For full details on installing the speakers please refer to the **AIWX series instruction guide**.

Plasterboard walls or ceilings with 75mm cavity or more – use the supplied speaker mounting blocks or alternatively we recommend using our optional Amina Backbox FS.

Solid walls or ceilings – use the Amina Backbox SW. It is vital that the Backbox SW is installed at the correct depth to ensure that only a 2mm skim coat of plaster is eventually applied to the speaker front.

Lathe and Plaster – It is possible to install AIWX speakers in traditional/heritage buildings. It is recommended that the installer discuss their exact requirements with Amina Technologies (+44 (0)1480 354390).

New-builds – Installation of AIWX speakers is even easier in new-builds or full renovations. The AIWX speakers should be installed before any finish plastering is carried out.

Retrofitting – There are two options when installing AIWX speakers into rooms that have already been plastered.

- 1) Install the speaker in the same way as if it were in a new-build. The entire wall/ceiling will then need to be plastered over again. State retro-fit at the time of ordering and Amina Technologies can supply adjustment shims to account for the existing plaster thickness.*
- 2) Cut the aperture for the speaker as per normal and also remove approximately 30 – 40mm of the existing 2mm skim of plaster carefully from the area directly around the perimeter of the aperture. This then allows joint tape to be applied over the edge of the speaker and existing plasterboard. The whole area is then patch plastered and blended into the surrounding, existing plaster. The wall/ceiling will require re-painting.*

Wood panelling – AIW5X speakers can be installed behind wooden or MDF/Ply structures. Amina Technologies supply special adhesive and specific installation instructions for such cases.



5. Sound Proofing

Any requirement for sound proofing should be identified as **early as possible** in the project planning stage.

Depending on the construction of the building and installation techniques, AIWX speakers might transmit audio to other areas of the building to some extent.

Note:

AIWX speakers radiate sound over 360 degrees in their raw, un-installed state. In the case of a cavity wall installation with plasterboard (dry wall) on both sides, but no sound proofing precautions, the plasterboard behind the speaker stops some, but not all of the sound going into the adjacent room. Depending on the construction of the building, some sound may also transfer to rooms above.

Amina Technologies can make no guarantees as to whether unwanted sound transmission will occur as a result of installing AIWX speakers into a building. This is due to the varying types of building construction that the installer may encounter.

In solid walls/ceilings the rearward output from AIWX speakers is effectively sealed within the Backbox SW and adjacent blocks/bricks/stone. Sound leakage to other rooms is normally minimal if not close to zero.

In plasterboard (dry wall) cavity walls/ceilings we recommend the use of the Amina Backbox FS for all applications where unwanted sound encroachment is a concern. Depending on the building and the end user's requirement, extra sound proofing may be required if transmission to adjacent rooms must be reduced further. Amina Technologies recommend Acoustiblok products in this instance (www.acoustiblokuk.com).



6. Cabling

For new-builds and complete refits, cabling for the speakers should be done at the **first fix** stage.

When retrofitting AIWX speakers, cabling will be trickier and “making good” will be necessary where holes have been made, or cable routes have been chased out. Running cables behind skirting boards may help minimise the amount of work needed.

Always use loudspeaker cable with conductors of at least **2.5mm diameter (14AWG)**. This ensures minimal cable losses, which could lead to reduced sound output, or even a reduction in sound quality.

Check the **electrical continuity** of cable before connecting it to the speaker.

Ensure that when the speaker is in position the **cable cannot come into contact** with the rear surface of the active panel. It is advisable to fix the cable to the inside of wall/ceiling joists to stop them potentially moving or causing rattles.

In cavity ceiling installations it is very important to lay a piece of fibre insulation material across the back of the speaker. This is to catch any debris that might fall onto the rear of the speaker and cause rattling or buzzing.

Check there are no loose strands of cable that could cause a short circuit.

Use a **high quality crimping tool** to ensure a reliable connection between cable and speaker input butt-splices.



7. Testing



IMPORTANT: test AIWX speakers before they are plastered over.

Using a resistance meter, check at the amplifier end of the speaker cable that the speaker measures **8–9 ohms** [NOTE: *do not* have the APU protection unit connected at this stage]. If 8–9 ohms isn't obtained, check the cable and connection integrity. If necessary, disconnect the speaker entirely and take the reading directly at the speaker input.

Note:

If the speaker/cable combination measures 10-12 ohms, this suggests that the speaker cable is not of sufficient quality or cross-sectional area.

It is important to then test each speaker individually with a “**tone-sweep**” from a test CD or DVD [NOTE: the APU protection unit *should* be connected at this stage]. Test only at moderate volume levels and check for any loud buzzes or rattles which may be caused by loose fixings, un-secured cables or even the plasterboard itself if it is not secured tightly enough to the joists. Use extra screws to secure the plasterboard to the joists around the speaker area if necessary.

Keeping the volume setting on the amplifier constant, check that all speakers play at the same loudness by using a test signal (e.g. white noise) [NOTE: AIW5X will be slightly louder than an AIW3X which will, in turn, be slightly louder than an AIW1X]

If tests are done with music, don't worry if the sound quality is judged to be slightly “bright”, or “thin”. This is normal and is due to the active surface of the speaker being under-damped prior to the plaster application.



8. Preparation for Plastering

The following must be carried out before plastering:

! **IMPORTANT:** check that the speaker's front face is level with the rest of the wall/ceiling [the exception being if you are patch-plastering speakers in a retro-fit situation].

Apply a thin coat of **PVA/water mix (1:5)** to the speaker front face with a brush or roller. It should dry in approximately 10 - 20 minutes.

Apply plasterers' **joint tape** to the perimeter of the speaker.

! **IMPORTANT:** do not use any **silicone** based products in the room with the speaker(s) before they have been plastered. If silicone vapour adheres to the speaker face it may subsequently stop plaster bonding to it.

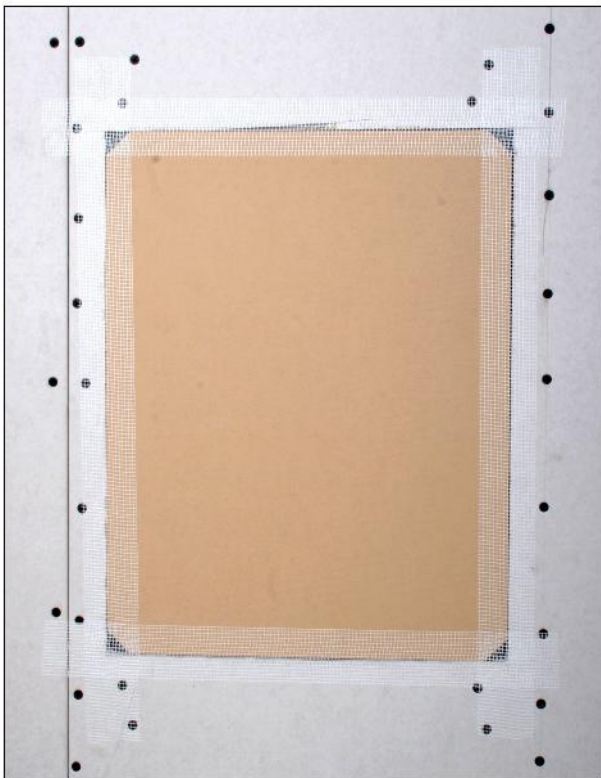


Image 1. AIWX speaker in dry wall ready for plastering

Note the extra dry wall screws around the speaker to ensure the dry wall board is firmly attached to the wall joists.

Note the small gap between speaker and dry wall cut out. This is ideal, but for gaps larger than 3mm we recommend a non-silicone based filler is used to fill the gap prior to applying the joint tape.

Note full details on installing the speakers are found in the AIWX Series Instruction Guide



9. Plastering and Final Finish

There are no special requirements for the type of plaster or plastering technique to be used when installing AIWX speakers.

In traditional buildings **lime plaster** can be used, but the coat thickness must be kept as close to 2mm as possible.

If before plastering the surface of the speaker is accidentally dented, contact Amina Technologies for advice. It is very likely that if a minor dent has not broken through the paper skin it can simply be ignored and plastered over – audio performance will not be affected.

⚠ Important: Apply no more than a 2mm thick “finish” skim of plaster.

⚠ NEVER use steel mesh with or apply render coats to AIWX speakers.

Paint the wall/ceiling, or apply wall-paper as per normal.

Do not tile over AIWX speakers. In bathrooms, install the speakers in the ceiling, for example.

Do not hang pictures in front of AIWX speakers.

If installed correctly you will not see the AIWX speakers at all once the final wall finish has been applied.

