Pitt & Giblin

Superwax Mini
User Manual

Draft - October 2021

Important Safety Information

Read this manual before first use and retain it for future reference

Always follow all safety instructions

Manual Handling

- Superwax and Superwax Mini are heavy (approximately 90kg and 35kg respectively, per loudspeaker). Always use proper lifting technique and ensure there are sufficient people present to lift them safely before attempting to do so.

Electrical Safety

- This device requires a protective earth connection (3-pin IEC / power cord). Always ensure that the device is properly grounded.

- Care should be taken to route the power cord such that it cannot be pinched, walked upon, or stressed in any way.

- If the power cord is damaged, replace it immediately with an equivalent type.

Moisture

- Do not use this product in moist or wet conditions.

- Make sure that no liquids can be spilled or splashed on the product. Do not place objects containing liquids on the product.

- If liquid should spill into the product, do not use it anymore. Unplug the power cord and contact Pitt & Giblin.

Heat and ventilation

- This product contains components that can get warm and require proper ventilation in order to function properly.

- Do not block any of the ventilation openings on the amplifier module.

- Do not use the product in the direct vicinity of a heat source.

Sound pressure levels

- This device is capable of producing sound pressure levels that can cause hearing impairment. Local laws regarding exposure to such sound pressure levels should be observed and hearing protection used if necessary.

Mounting precautions

- Make sure that all load–bearing components and structures have suitable load limits for the weight of the device, taking legally applicable safety factors into account.

Cleaning

- Use only a dry or damp cloth to clean the product.

Maintenance and service

- This product may only be serviced by Pitt & Giblin, or an approved and qualified technician. Any attempt at servicing or disassembling the product beyond the measures explicitly mentioned in this manual will void the manufacturer's warranty.

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General Information

Introduction

Thank you for purchasing a Pitt & Giblin audio system.

We are delighted to offer what we hope will be a musical experience of unparalleled enjoyment.

Superwax Mini is an active loudspeaker system which couples novel acoustical design and technologies with bespoke manufacturing, using only the highest grade materials and components, to provide a listening experience which comprehensively outperforms traditional hifi systems, without the clutter and complication.

Turn it up.

Handling & Unpacking

Superwax Mini comes in custom-manufactured timber crates for safe transportation.

Each Superwax Mini crate weighs approximately 45kg. We suggest using at least two capable people to lift them.

To unpack your speakers, you will require a #2 Phillips head screwdriver. Due to the quantity of screws used to ensure the solidity of the box, an electric screwdriver is recommended.

When unpacking Superwax Mini, we recommend moving the crate near to where the speakers are to be placed before opening it. The top panel should be removed first, followed by the smaller side panels.

Care should be taken when cutting packaging tape to ensure you do not mark the loudspeaker cabinets.

In The Box

Each box contains one loudspeaker. One box also contains:

- 2x IEC power cords.
- 1x SPDIF (coaxial) cable - digital link to allow communication between the speakers.
- 1x Hypex IR remote control.

If any of the above is missing, please contact us: contact@pittandgiblin.com.au

Quality Assurance

Before shipping, every product undergoes a comprehensive quality assurance process:

- Each loudspeaker driver is individually tested before loading into the cabinets.
- Each cabinet is thoroughly inspected for finish defects.
- Each finished loudspeaker is acoustically measured to ensure it corresponds with our reference.
- Each loudspeaker's amplifier module is tested to ensure communication with its pair.

If any damage appears to have occurred during shipping, please retain all packaging materials, and contact us immediately: contact@pittandgiblin.com.au

A note about the construction of our bronze waveguides:

Each waveguide is individually sand-cast in solid bronze, and hand-finished to a smooth lustre. Due to the inherent nature of the casting process, each waveguide has a different appearance, and slightly different texture. This is one of the things we love about our cast waveguides. Rest assured that every waveguide we ship has been thoroughly tested to ensure its acoustic output corresponds with our reference, and any variations in appearance are purely cosmetic.

Product Overview

Front

1. Waveguide - solid sand-cast bronze, hand finished, and high frequency transducer
2. Cabinet - veneered void-free birch plywood, extensively braced.
3. Mid/low frequency transducer
4. Status indicator light and IR receiver (primary (L) loudspeaker only)
5. Stand

Rear

6. Low frequency bass reflex port
7. Name plate and serial number
8. Amplifier/DSP module
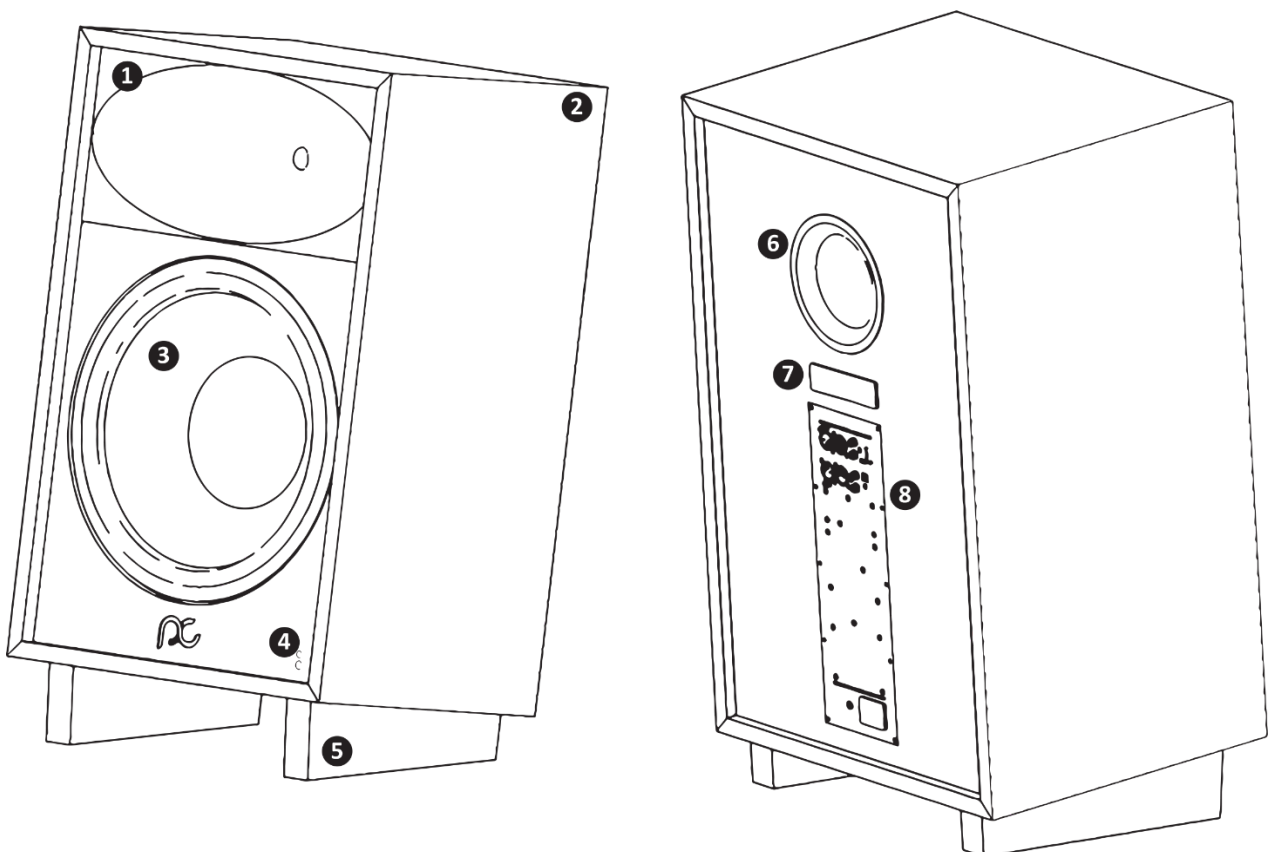
Amplifier/DSP Module

1. Balanced analogue input and pass-through (XLR) - mono
2. Unbalanced analogue inputs - left and right (RCA)
3. USB Mini-B - factory use only - NOT for music input
4. Protection/preset selection indicator lights, *Select* button
5. AES digital input and pass-through (XLR)
6. SPDIF - Coaxial input and output (RCA)
7. SPDIF - Optical input (Toslink)
8. Power switch and mains power input (IEC, 110 - 240V AC, 50 - 60Hz)
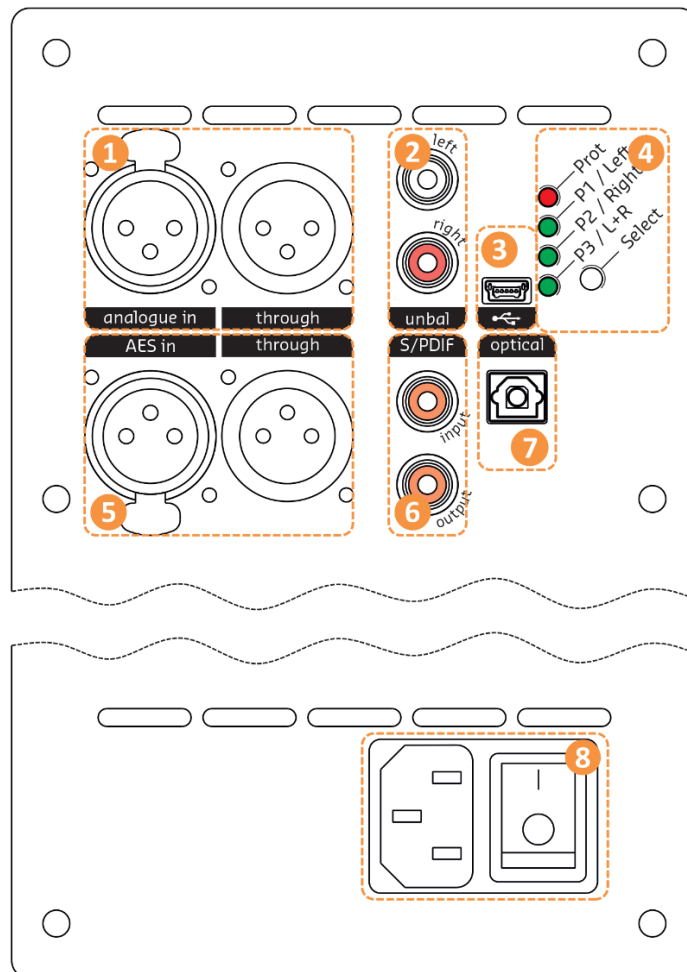
Available Inputs

You can connect a total of up to five sources (three digital, two analogue) directly to the loudspeakers:

Digital:

- AES (XLR)
- SPDIF - coaxial (RCA)
- SPDIF - optical (Toslink)

Analogue:

- Balanced analogue (XLR)
- Unbalanced analogue (RCA)

Primary / Secondary

The amplifier modules are configured as a *primary* and a *secondary*. The primary loudspeaker functions as the input for all digital sources, and receives commands from the IR remote control for source selection and volume adjustment. It then passes these commands, via a digital link (SPDIF - coaxial) cable to the secondary speaker.

All digital signal processing is done individually in each loudspeaker.

The primary may be identified as the left (L) loudspeaker on the nameplate, as well as the visible function light and IR receiver on the bottom of the front baffle.

Note that the digital link cable is still required for loudspeaker control with analogue sources, however it does NOT transfer analogue audio. For analogue sources, the source requires connection to each individual loudspeaker - see 'Making Connections' for more information.

Remote Control

Volume control, source selection and preset selection, among other functions, are done via the supplied infrared (IR) remote control.

The IR receiver is located next to the indicator light on the front of the primary (L) loudspeaker.

The remote control is powered by a lithium coin battery (CR 2032), in a compartment on the back of the remote control. The remote control does not come with a battery installed - the included battery must be installed as per the instructions included with the remote before first use.

The remote control functions are as follows:

1. Power ON / Standby
2. Increase volume (+1dB per press)
3. Decrease volume (-1dB per press)
4. Select previous source
5. Select next source
6. Mute / Unmute
7. Select preset 1 (natural)
8. Select preset 2 (live)
9. Select preset 3 (clean)
10. No function
11. Select (not required for use)

It is recommended that all operation of the loudspeakers is conducted via the remote control, as switching them off via the power switch or unplugging them from power severs the digital link, which will need to be reset (via the 'first use' procedure described below) before continued operation.

In standby mode, each loudspeaker consumes less than 0.5W of power.

Indicator Light

The status indicator light on the front of the primary (L) speaker indicates the current state of the loudspeakers, as follows:

Green - solid	Loudspeakers on and operational
Green - steady flashing	Loudspeakers on - searching for input

Green - single flash	IR remote control command received
Green/Red intermittent flash	**Clip indicator - turn volume down**
Red - slow flashing	High temperature, power output limited
Red - fast flashing	Over temperature limit - device switched off
Red - solid	Malfunction, device switched off

Product Usage

Superwax / Superwax Mini requires only an audio source and associated cabling for operation. For maximum performance, we recommend connecting any digital sources via a digital connection, to avoid unnecessary digital/analogue conversion. For analogue sources (i.e. record players, reel-to-reel tape), balanced connections are preferable where available. It is possible to use a preamplifier in front of the loudspeakers for volume control and source selection, however for maximum performance and ease of use, we recommend connecting sources to the loudspeakers directly.

Digital Input Details

AES and SPDIF - coaxial inputs accept all common sample rates up to 192kHz. SPDIF - Toslink accepts a sample rate up to 96kHz. All incoming digital signals are asynchronously resampled at 93.75kHz, for maximum source agnosticism. Latency with digital inputs is approximately 1.8ms.

Analogue Input Details

Balanced analogue inputs (XLR) have a maximum input level of 9 dBu (2.2V RMS), and an input impedance of 44kΩ (for balanced signals). Unbalanced analogue inputs (RCA) have a maximum input level of 9 dBu (2.18V RMS), and an input impedance of 54kΩ. Latency with analogue inputs is approximately 0.3ms.

Making Connections

Once the speakers are in position, use the included SPDIF coaxial cable to connect the SPDIF <u>output</u> on the primary (L) loudspeaker to the SPDIF <u>input</u> on the secondary (R) loudspeaker.

For any digital sources, plug them into the relevant input on the primary (L) loudspeaker.

For any analogue sources, plug the left channel into the relevant input on the primary (L) loudspeaker, and plug the right channel into the relevant input on the secondary (R) loudspeaker.

For unbalanced analogue (RCA) inputs, do NOT use the right (unbal right - red RCA) channel on the primary (L) speaker, or the left (unbal left - white RCA) channel on the secondary (R) speaker. When presented with a stereo input signal via the unbalanced analogue (RCA) inputs on a single amplifier, the signal is internally mixed to mono. For proper stereo audio, only use the required input on each speaker.

Lastly, plug a power cable (IEC) into each loudspeaker.

First Use

Before switching the loudspeakers on, ensure that any connected audio sources are either not active, or set to low level.

FIRST switch on the secondary (R) loudspeaker. One of the three green lights (P1, P2, P3) on the amplifier module should be flashing - if not, momentarily press the *Select* button until one of the green lights begins flashing. Then, switch on the primary (L) loudspeaker.

When the loudspeakers are first powered on, the function light on the front of the primary (L) loudspeaker will either be solid or flashing green, depending on any incoming audio signals. The input comes pre-set to 'automatic switching', and so will switch to any audio signal incoming on the primary (L) loudspeaker.

Observe the rear of the two loudspeakers, and ensure the same light is illuminated on both speakers. If not, use the IR remote control to signal the

Switching Sources

Superwax and Superwax Mini come configured to automatically select the relevant source when a signal is presented at a given input. When the automatically selected input has no signal present for 15 seconds, the loudspeakers will automatically cycle through the available inputs.

When the source is set to automatic selection, the loudspeakers will also awake from sleep when presented with a signal at any input. They will then return to standby automatically after a period of 15 minutes with no input signal present.

The required input can also be manually selected via the IR remote control. Unfortunately, the Hypex IR remote control does not allow direct source selection, but rather only the ability to cycle through all sources. In addition, there is currently no available option to display the selected source. As such, we recommend leaving the loudspeakers on automatic source selection for most use cases. When one source is turned off and another turned on, note that the loudspeakers will wait until no signal has been received from the first source for 15 seconds before searching for the new input.

When manually switching inputs, they are ordered as follows:

- Automatic selection
- AES digital (XLR)
- SPDIF - coaxial digital (RCA)
- SPDIF - optical digital (Toslink)
- Balanced analogue (XLR)
- Unbalanced analogue (RCA)

Note the 'right' arrow on the IR remote control selects the next input, the 'left' arrow selects the previous input. The inputs are in a continuous loop, i.e. pressing 'right' when on the unbalanced analogue input will return to automatic selection.

Preset Options

The loudspeakers come configured with three preset system tuning configurations. These presets are not simply different equalisation - they are fundamentally different system tunings, with different frequency response, power response, crossover, and low frequency roll-off.

Preset 1 (Natural) is generally recommended as the default in most situations. Preset 2 (Live) is suitable for low-level listening, for music with overly 'thin' production, or for spaces with high levels of low frequency absorption. Preset 3 (Clean) is recommended in very small spaces where bass is excessive, or for nearfield listening in highly absorptive spaces such as recording studios. It should be noted that these are simply recommended starting points - the best preset is the one that sounds the best to you, with your music, in your room.

Preset 1 - Natural

Preset 1 is tailored to present a neutral in-room response. Specifically, it is designed to provide a flat frequency response within the listening window, and a smooth power response. This provides the best results in the majority of rooms. The low frequency roll-off is largely dictated by the interaction between the low frequency drive unit and the tuning of the bass reflex cabinet. This preset is generally recommended as the best option for most listening situations.

Preset 2 - Live

Preset 2 is designed to approximate the target response generally used in an amplified live music environment. The power response is similar to Preset 1, albeit with augmented low and very high frequency output. This preset is recommended when listening at low levels - the augmentation follows the ISO 226 equal-loudness contours, designed to compensate for the difference in frequency sensitivity of human hearing at low volume levels. It is also suitable for music with excessively 'thin' production, or where additional bass output and extension are desired. Note that due to the low frequency augmentation, maximum output capability is somewhat reduced.

Preset 3 - Clean

Preset 3 is designed to prioritise a flat on-axis frequency response. This results in a very slightly compromised power response compared to presets 1 and 2, and reduced low frequency output. It is suitable for very small rooms with excessive bass buildup, or for highly treated rooms where nearfield / close-proximity listening is desired.

The Link Between Presets and Inputs

Input selection is specific to the preset in use - when using a given preset, if you change the source, it affects the preset currently in use only. Also note each preset remembers (stays set to) the last-used source for that particular preset.

For most people, the most convenient option is to leave the input set to 'Automatic Selection' on all presets.

Volume Control

Volume control is via the IR remote control only. It is generally suggested that all sources be connected directly to the loudspeakers, with no pre-amplifier in the signal chain, and volume control conducted via the IR remote control.

If the use of a pre-amplifier is desirable, in order to maximise the available dynamic range of the overall system it is recommended that the pre-amplifier be set to maximum or near-maximum level, and the IR remote control then be used to set the volume to the loudest volume likely to be regularly used. Volume can then be attenuated via the pre-amplifier.
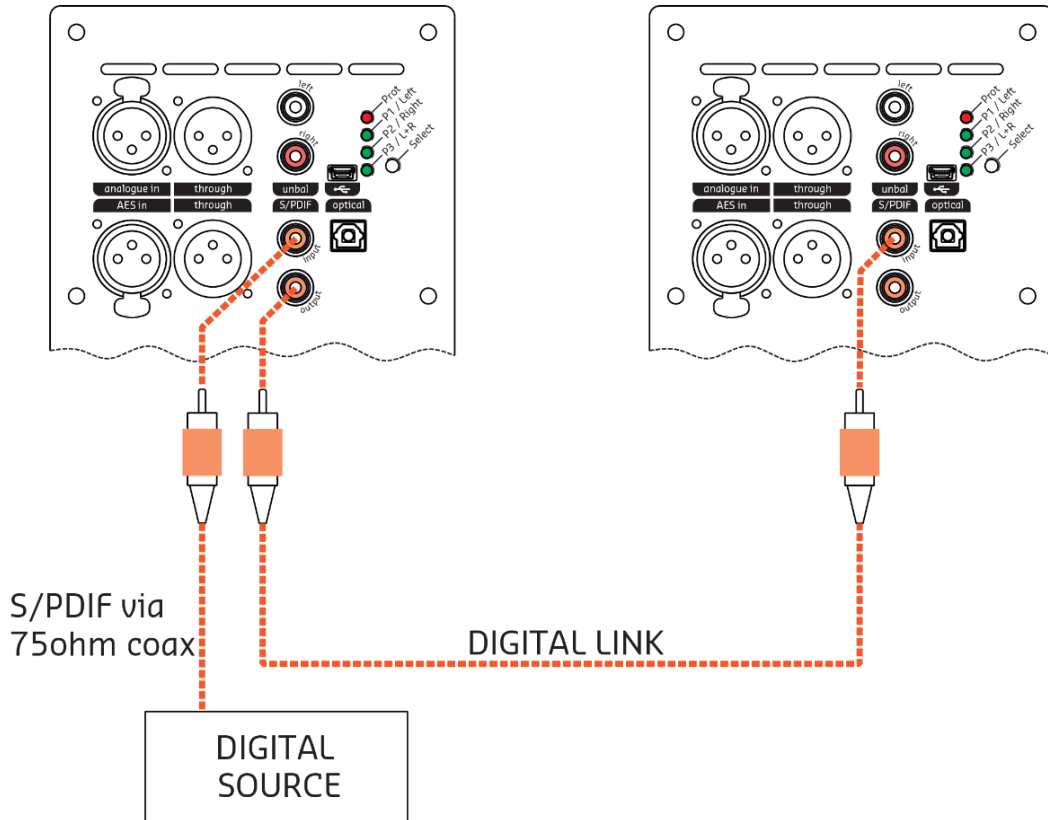
Example Configurations

The following configurations are examples of how the loudspeakers may be configured for different source types. Provided the required inputs are available, these configurations may all be connected at the same time. Note that the digital link cable (orange) is required for all configurations.
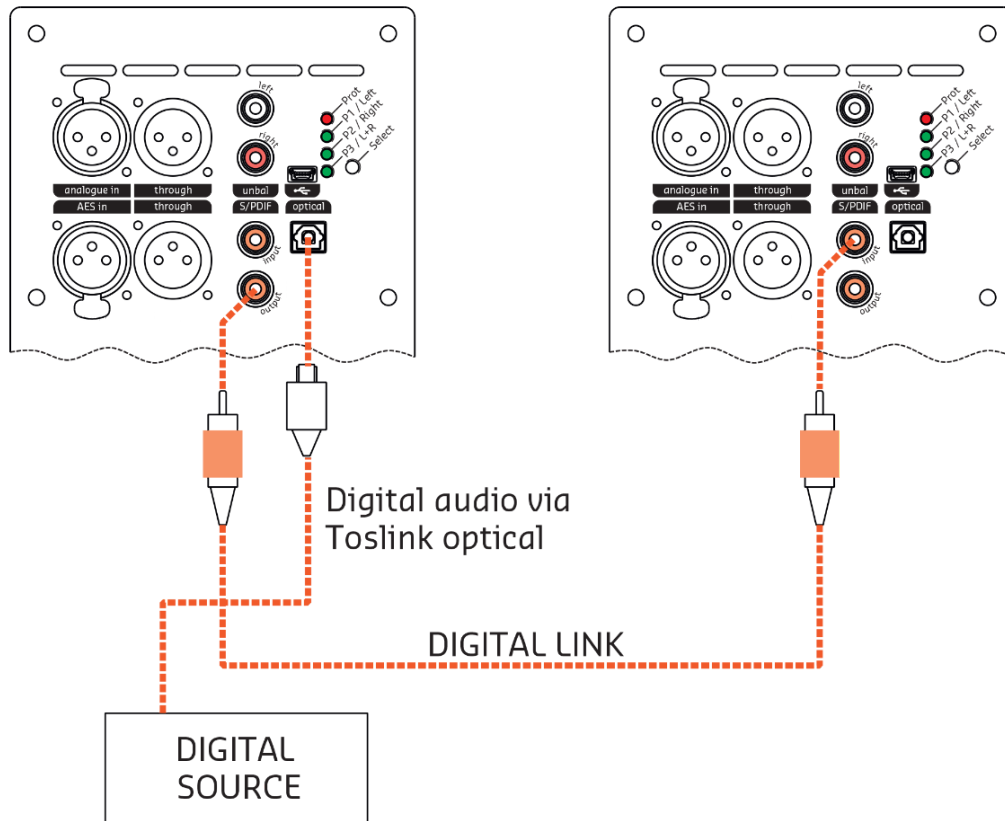
Digital Sources

When using a digital music source, it is generally recommended to maintain a digital signal from the source to the loudspeakers.
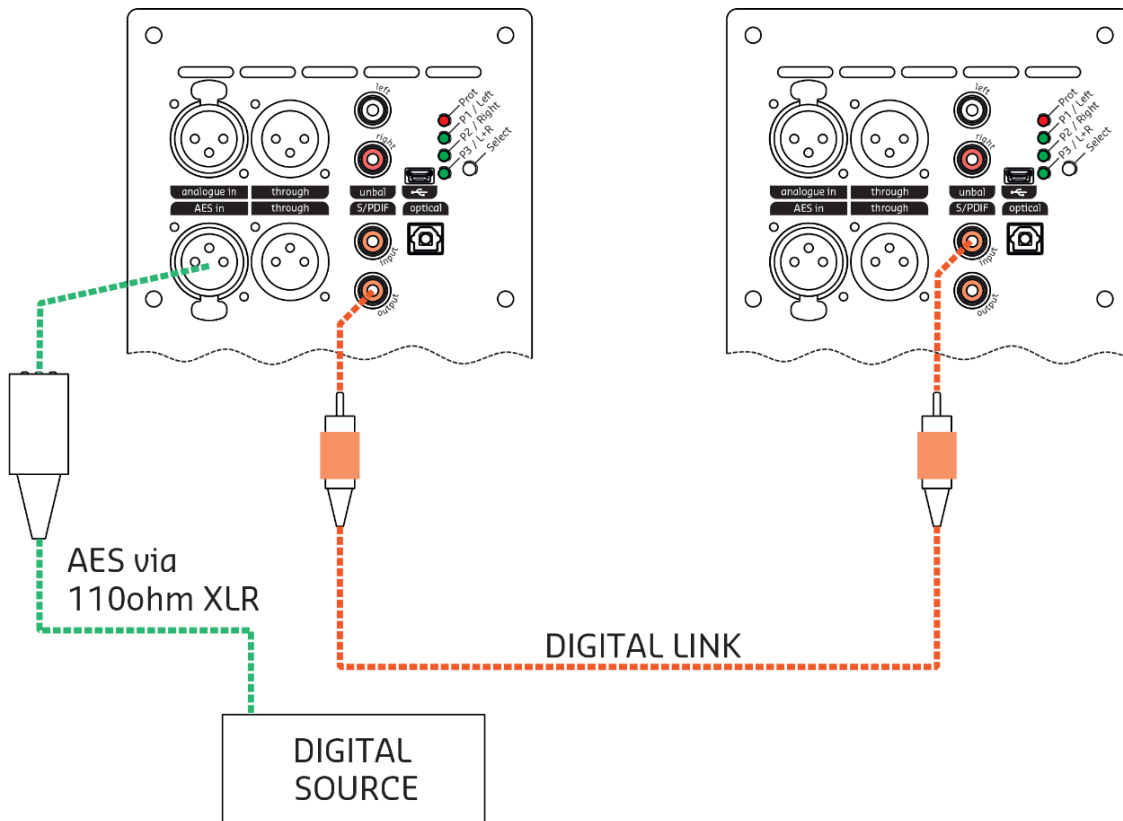
S/PDIF Coaxial (RCA)
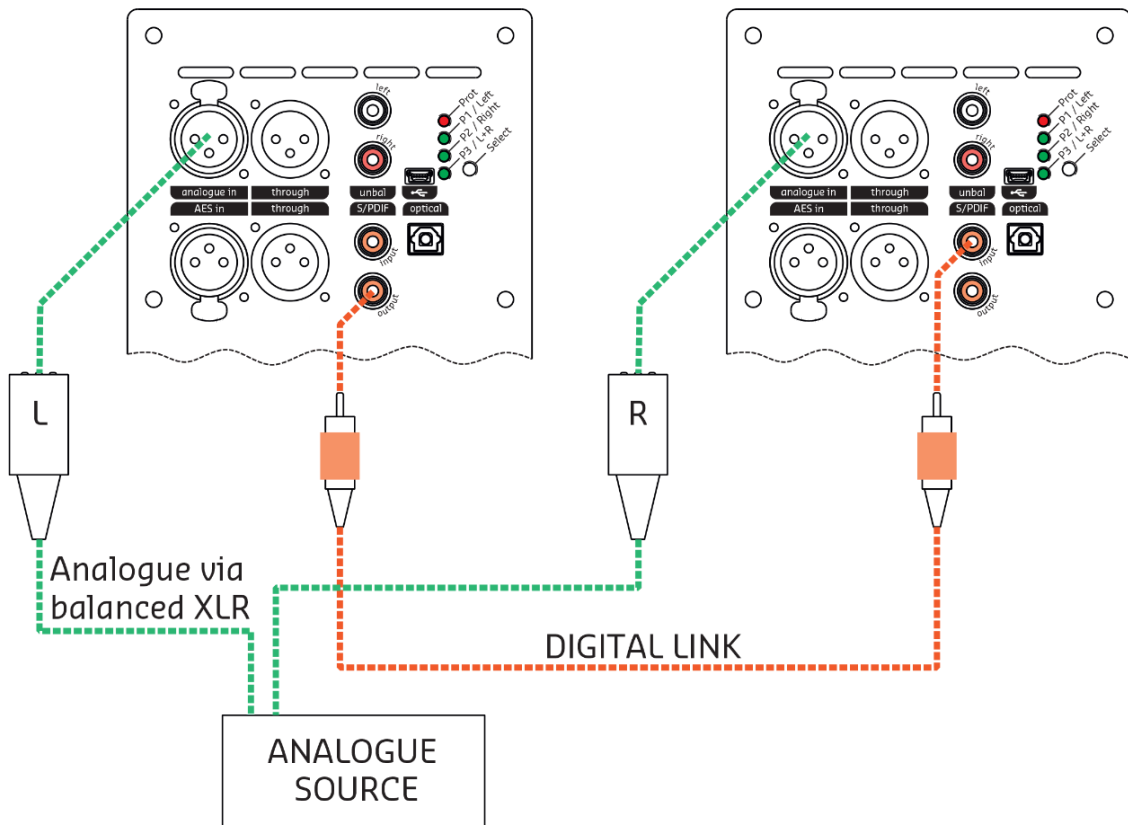
Use of a 75Ω shielded cable is strongly recommended.

S/PDIF Optical (Toslink)

Digital audio via
Toslink optical

DIGITAL LINK

DIGITAL
SOURCE

AES/EBU (XLR)

AES via
110ohm XLR

DIGITAL LINK

DIGITAL
SOURCE

Balanced Analogue (XLR)

Analogue via balanced XLR

DIGITAL LINK

ANALOGUE SOURCE

Unbalanced / Single-Ended Analogue (RCA)

Analogue via unbalanced RCA

DIGITAL LINK

ANALOGUE SOURCE
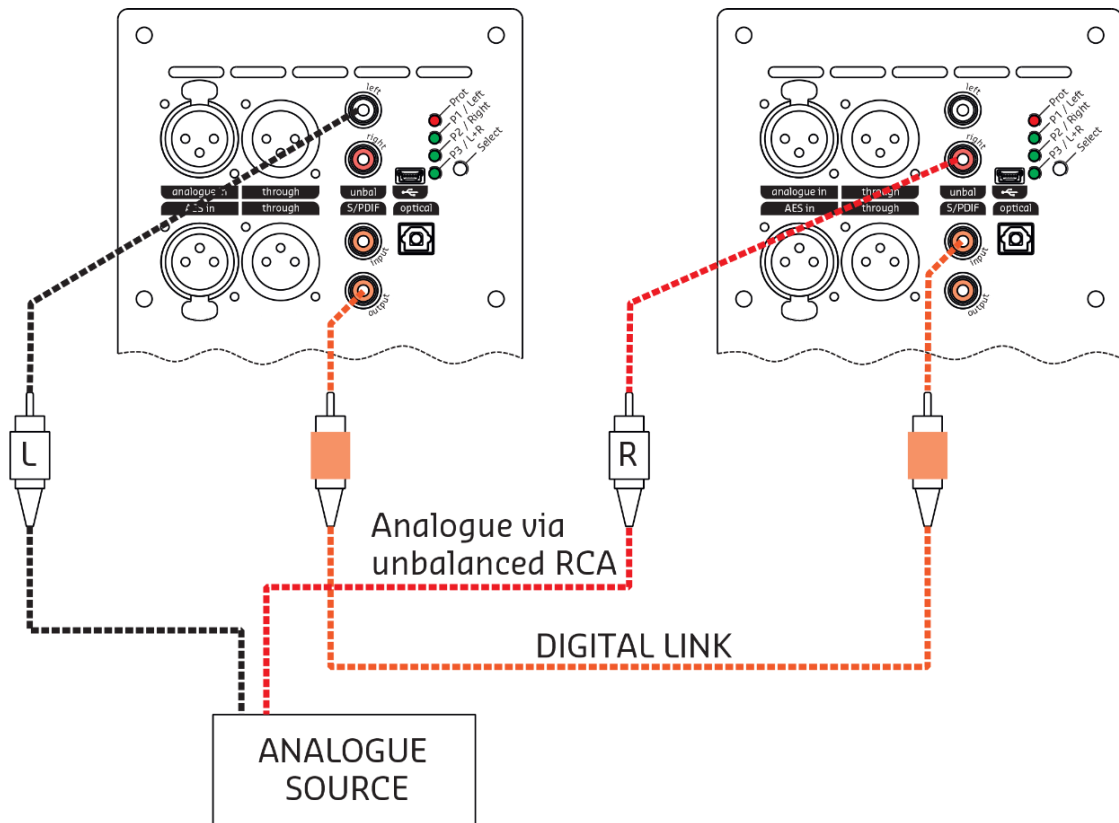
Sound Optimisation

Loudspeaker Placement

Loudspeaker placement is highly dependent on the size, shape and acoustic environment of the space within which they are to be operated. As such, the following advice is idealistic and general in nature, and should be taken as such.

The directivity of the system is highly considered, and engineered to achieve the best possible performance without being unnecessarily reliant on the room they are in or the placement within it.

Basic Positioning

A good starting point is positioning the loudspeakers approximately 2 to 2.5m apart (centre to centre), and approximately the same distance from the main listening position.

Placement Near Walls

It is strongly recommended to keep the listening position a minimum of 1m away from any walls, with greater distance being preferable.

Due to their controlled directivity, both Superwax and Superwax Mini may be placed relatively close to the front wall (the wall behind the speakers) with minimal effect on the sound from mid-bass through to high frequencies. As such, placement in relation to walls will primarily affect the perceived bass response, due to altering the interaction between the loudspeakers and modal resonances within the room. In general, in small to medium rooms, close placement (within approximately 0.8m) to the front wall is recommended. Note a minimum of around 100mm is recommended to ensure the bass reflex ports have room to breath. Where close placement is not desirable, it is recommended that the distance is substantially increased - ideally around 3m or greater.

Regarding side walls, where possible, it is recommended to maximise the distance between the loudspeakers and the walls. For narrow rooms, where placement directly adjacent to side walls is unavoidable, experimenting with additional toe-in is advisable. It is also recommended that, where the speakers are close to side walls, symmetry is maintained where possible, to ensure the acoustic presentation is centered.

Toe-In

Toe-in recommendations depend on the number of listeners and the listener's preferred 'presentation'. For two or more listeners, start with the loudspeakers pointing straight ahead, or with slight toe-in. For a single listener, start with sufficient toe-in so the loudspeakers are directed to a point approximately 0.5m either side of the listener. For a very 'focused' presentation, increase the toe-in so that each speaker is pointed directly at the listener. For a 'broader' presentation, experiment with minimal or zero toe-in. Where possible, for a single listener, it is preferable for the listener to be equidistant from each speaker.

Digital Room Correction

Digital room correction offers the potential to maximise the performance of the loudspeaker system in a given space by minimising the excitation of acoustic modal resonances (i.e. 'room modes' or 'standing waves'). Poorly implemented room correction

can and does cause more harm than good, and as such digital room correction may be implemented on a case-by-case basis. More details coming soon.

Troubleshooting

Audio is only coming from the primary loudspeaker

For analogue sources, ensure that the inputs are present at each speaker - see 'example configurations'.

If this does not resolve the problem, or if you are using a digital source, the digital link is likely not synchronized. In this case, switch both speakers off using the switch next to the power input, and wait until all lights have switched off on both speakers (occasionally one or both speakers may display a solid red light when switched off - this is not an error, but it may take a couple of minutes for them to turn off. Ensure they are off before proceeding.) Then follow the procedure outlined in 'first use' to synchronise the speakers.

Occasionally, after plugging the speakers in as described in 'first use' the 'Selection' button on the secondary speaker must be pressed to synchronise the speakers.

Synchronisation may be checked by using the IR remote control to place the speakers into standby - if correctly synchronised, the lights on the back of both speakers will switch off.

There is no audio

- The source may not be active - ensure that the source has active output and is correctly connected.
- The speakers may be muted - press the mute/unmute button on the IR remote control, or press the volume up button.
- The volume may be too low to hear - check the output level from the source, and if sufficiently high, press the volume up button on the remote control.
- The incorrect input may be selected - use the left or right arrow on the IR remote control to cycle through the inputs, waiting at least a few seconds on each one, until you hear audio. This may occur due to changing presets - see 'The Link Between Presets and Inputs' section of this manual.