

Subwoofer Amplification

APPLICATION NOTE

REV. 1.0 | 7-12-2023



AMINA
IMMERSIVE INVISIBLE SOUND

Introduction

Amina's range of hidden subwoofers are exclusively passive, meaning they must be powered by an external amplifier.

Other than the ALF40 and ALF80 subwoofers (which feature on-board passive filters), Amina subwoofers also each require DSP (digital signal processing) protection to be applied.

DSP can be applied by using an amplifier with DSP capabilities, or by using a standalone DSP processor

This application note will outline the critical amplifier features needed when sourcing equipment to drive an Amina sub, as well as making some specific suggestions around suitable choices.



Each Amina subwoofer model has slightly different requirements in terms of DSP protection, each of which is critical in terms of preventing the subwoofer drivers from exceeding their thermal and mechanical limits. In every case DSP protection must be configured and applied prior to using the subwoofers, and the protection settings must not be client-accessible, ideally by being password protected. Beyond protection, DSP can also be used to optimise the subwoofer's performance to the space it is installed into - optimisation files can be downloaded from the technical assets section of the website.

The below table outlines all critical protection requirements; further details are available on the individual subwoofer datasheets.

Model	HPF	Slope dB/Oct.	PEQ1	Gain	Slope	PEQ2	Gain	Slope	PEQ3	Gain	Slope	LPF	Power Limit (W/Vrms)
ALF40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	30W @ 8Ω / 15Vrms
ALF50CV	TBC	N/A	TBC	N/A	N/A	TBC	N/A	N/A	TBC	N/A	N/A	TBC	150W @ 4Ω / 24Vrms
ALF80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	150W @ 4Ω / 24Vrms
ALF100SM	25Hz	24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	≤160Hz	200W @ 4Ω / 28Vrms
ALF100CV	28Hz	24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	≤120Hz	200W @ 4Ω / 28Vrms
ALF120	24Hz	48	175Hz	-10dB	10	120Hz	-8dB	10	54Hz	-2dB	3.5	≤135Hz	50W @ 6Ω / 17Vrms

Recommendations

A standalone DSP processor (recommendations overleaf) can be connected in-line between the audio source and any appropriately specified power amplifier, providing ultimate flexibility around amplifier choices. However in many cases a DSP enabled amplifier will save rack space and keep the number of connection points in a signal chain at a minimum so will likely be preferable. There are a great number of suitable DSP enabled amplifiers that can be considered - too many to list - but on the next page is a growing list of recommendations from our integration partners. If you have experience using an amplifier not listed, please share details with support@aminasound.com so it can be added to this list.

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REV. 1.0 | 28-11-2023



Recommendations (cont.)

Each project will have different feature requirements around amplifier connectivity, integration with control systems and even the physical size of the amplifiers, requiring some investigation and integration expertise. Before choosing an amplifier from this list, be sure it fully meets your project requirements.

Standalone DSP Processors:

T.Racks 4x4 mini
MiniDSP HD 2x4
MiniDSP Flex

DSP amps for ALF50SM 150W RMS

Audio Control RS-500 - 1 x 500W
LEA CS 352 - 2 x 350W
Powersoft Mezzo 322A / AD* - 2 x 160W

DSP amps for ALF100SM & ALF100CV 200W RMS

Audio Control RS-500 - 2 x 500W
Powersoft Mezzo 322A / AD* - 1 x 320W (bridged/power-share)
MiniDSP PWR-ICE125 - 1 x 450W (bridged)**
MiniDSP PWR-ICE250 - 2x250W**
LEA CS 352 - 2 x 350W
T.Racks 4.250 - 4 x 350W ***
T.Amp Quadro 500DSP - 4 x 500W
Samson SXD3000 - 2 x 450W ***
Klipsch KDA-500 - 2 x 500w

Alternative Options:

When using an AVR, the line-level LFE pre-out can potentially be looped back to a Zone2 / Zone3 input to power a passive subwoofer. Check with the AVR manufacturer if this is supported or if they expect any performance issues. This 'workaround' is likely most suitable for the ALF120 as AVR power levels are generally quite modest.

DSP amps for ALF120 50W RMS

Amina A100Q - factory pre-configured with no end-user controls
MiniDSP PWR-ICE125 - 2 x 250W**
LEA CS 84 - 4 x 80W

*The use of auto setup or impedance sensing feature is strongly discouraged. If essential, speaker protection must be in place.

** Plate + backbox form factor

*** Fan cooling (potential noise issue)

Documenting DSP Parameters (Important!)

It is always good practice to document all aspects of a CI installation, including any DSP configuration. Documentation is particularly important when the DSP is used for subwoofer or loudspeaker protection. The Amina warranty stipulates that any DSP protection must be recorded by way of a saved configuration file, or thorough images or a video of the setup screens showing all parameters. All of the above DSP amplifier recommendations have a password protection feature which is a requirement when relying on DSP protection alone. This documentation can be submitted to and stored by Amina for convenience, otherwise it must be produced on request in the event of a warranty claim.

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