

## Introduction

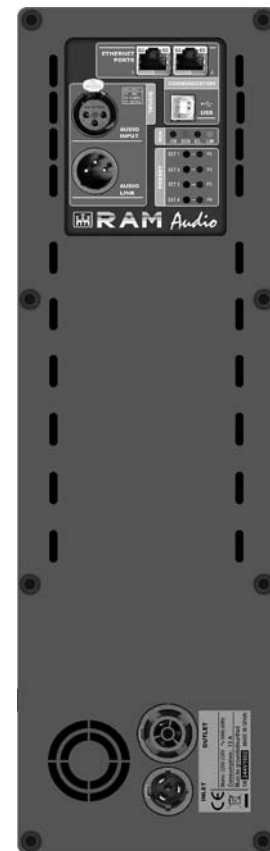
DSP\_PowerPack is the integral solution given by RAM Audio to the needs of many acoustic enclosures' manufacturers regarding self-powering their products.

After many years developing, designing and manufacturing external audio power amplifiers, we have put into this new project all our knowledge, experience and technology background that we have acquired during our career.

The result has been much more than a group of DSP, power modules and switching power supplies; we have developed a whole, integral and totally flexible and adaptable solution to meet any need on the market could show for adapting internal amplifiers to acoustic enclosures which are already developed and manufactured or in developing process.

With DSP\_PowerPack by RAM Audio we offer personalized solutions to each client and customized to each acoustic enclosure or system, because we think that amplification of an acoustic system must never reduce the sound quality of the original system, it should even improve it, if possible.

Nowadays, acoustics manufacturers demand high power amplification solutions for the current big subwoofers and there is a lack of it on the market. In order to satisfy this demand, our R+D department have developed the DSP\_PowerPack SUB Series, able to feed very powerful loudspeakers used in very demanding subs and obtaining an exceptional quality of sound and dynamics.



## DSP\_PowerPack: ASYM & SUB Series

RAM Audio has developed two different series for the DSP\_PowerPack project: **ASYM** and **SUB** series. Each one has been designed taking into account the implementation in different enclosure types:

**ASYM Series** are ready to work in 2-ways medium power systems which require different power values for each way. So, you can maximise the available power for the low/mid frequencies, and use a lower power in the high way. Also, this power can be optimised for different impedances, so you can choose between 8, 4 or 2 ohms configurations, individually per channel.

**SUB Series** are designed mainly to use in low frequency ways, where the power requirements are a lot higher. You can choose between three different models: the SB 3K which contains a single 3000W @4ohm channel (configurable also as two channels), or the more powerfull SB 6K Bi which includes two 3000W @4ohm channels, where you have the possibility to send the 2nd channel to an external speaker through the provided Speakon connector. Coming soon a three channels SB 6K Tri model will be ready, with the possibility to have a channel of 3000W together two channels of 1500W.

Both series include a high performances FIR DSP, designed specifically for this project. This DSP can be programmed directly by the manufacturer and it has the possibility to limit the access to the specific speaker process. The user has the option to recall predefined presets quickly, through the push buttons of the front panel. Also, it includes USB and a 2-ports Ethernet switch for an easy daisy chain connection, which permits if needed the control and monitoring of all the speakers through the RAM\_OCS application.

This DSP\_PowerPack contains an optimised ventilation system, inputs and thru XLR connectors, powerCon mains inlet-outlet connector, and optionally an aluminium back enclosure to install the modules in any box although it has not been designed as a self-amplified speaker.

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## DSP Specifications - RAM\_OCS Control

### Overall:

- High performance 96kHz 120dB 32 bits AD/DA converters
- 64 bit double-precision 96kHz DSP process
- 0.6ms minimum process latency time
- Up to 2700 taps custom FIR process

### Input Section:

- Gain, Mute and Phase inversion
- Input Delay: 0 to 130 meters
- Input EQ: 10 PEQ (Parametric, Shelving, LP, HP, BP, SB, AP)

### Output Section:

- Crossover Filters: FIR and IIR (up to 48dB/oct, Butterw./LR/Bessel)
- Output Delay: 0 to 18 meters (52ms) per channel
- Output IIR EQ: 12 filters per channel (Param. Shel, LP, HP, BP, SB, AP)
- Output FIR EQ: 20 filters per channel (Parametric, Shelving, LP, HP, BP, SB, AP), or Custom up to 2700 taps
- RMS and Peak limiter per channel

### Control & Monitor:

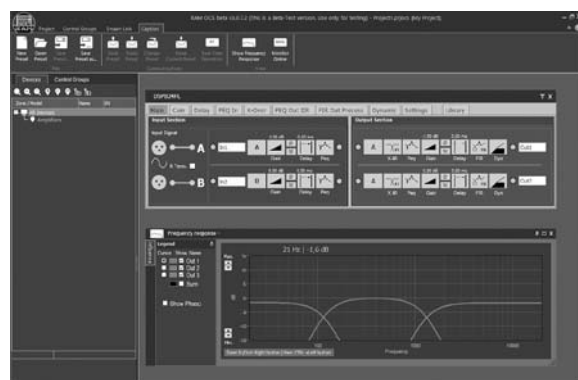
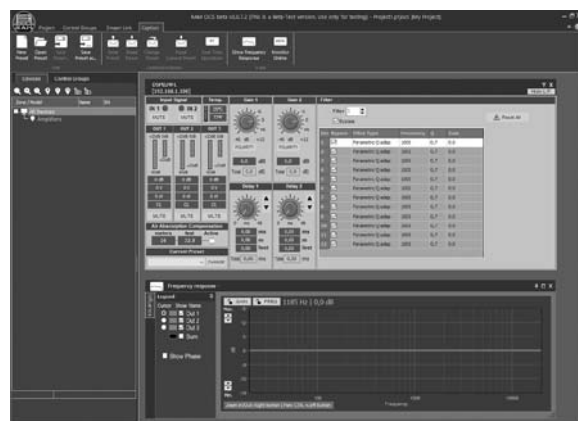
- Standby mode for remote turn-on (ASYM series)
- Real time impedance monitor (ASYM series)
- Stby., Signal, Lim, Temp and Prot monitor
- Input, Output, Temperature and Current meters (ASYM series)

### Communications:

- Two ports Ethernet switch for daisy chain connection
- USB 2.0 Type B port

### Overall:

- 20 Manufacturer preset memories library
- 5 User preset memories library
- 4 Quick Preset selection
- Manufacturer/User passwords
- Independent selectable output power per channel (Z dependant)
- User control groups for virtual Equalization, Gain and Delay
- Zone management for library, stand-by and alerts information
- Smaart® analysis software integration



## Amplifier Specifications:

Output Power Configuration (Selectable by channel)	ASYM Series				SUB Series						
	AS 2K3		AS 1K5		SB 3K		SB 6K Bi		SB 6K Tri		
	CH-A	CH-B	CH-A	CH-B	CH-A	CH-B	CH-A	CH-B	CH-A	CH-B	CH-C
8 ohm	1500W	400W	400W	400W	400W	400W	1500W	1500W	400W	400W	1500W
4 ohm	1500W	750W	750W	750W	750W	750W	3000W	3000W	750W	750W	3000W
2 ohm	750W	750W	750W	750W	1500W	1500W	1500W	1500W	1500W	1500W	1500W
Bridge 8 ohm	-	-	1500W		1500W		-	-	1500W		-
Bridge 4 ohm	-	-	1500W		3000W		-	-	3000W		-
<b>Total Harmonic Distortion</b>	<0.05%		<0.05%		<0.05%		<0.05%		<0.05%		
<b>Efficiency</b>	>90%		>90%		>90%		>90%		>90%		
<b>Damping Factor</b> (20-500Hz @8Ω)	>400		>400		>400		>400		>400		
<b>Voltage Gain</b>	26dB-38dB		26dB-38dB		26dB-38dB		26dB-38dB		26dB-38dB		
<b>Operational Mains voltage</b>	85-265V AC		85-265V AC		85-265V AC		85-265V AC		85-265V AC		
<b>Power Factor</b>	>0.95		>0.95		>0.95		>0.95		>0.95		
<b>Efficiency</b>	>90%		>90%		>90%		>90%		>90%		
<b>Dimensions</b>											
External Plate WxH	130x443 mm		130x443 mm		510x178 mm		500x330 mm		500x330 mm		
Internal Enclosure WxHxD	100x423x55 mm		100x423x55 mm		490x145x68 mm		467x297x68 mm		467x297x68 mm		
Occupied Volume (optional case)	2 l		2 l		4.2 l		9.4 l		9.4 l		
<b>Weight</b>	1.5 kg		1.5 kg		2.5 kg		3.1 kg		3.1 kg		
<b>Connections:</b>	XLR Input, XLR Link, powerCON True 1 in-out, USB, 2x RJ45, barrier strip (in optional case)										
<b>Protections:</b>	Turn-on transients, Over-heating, DC, RF, Short-circuit, mismatched loads, ICL™, PMS™										