

The XiB4 amplifier from Linea Research represents an industry first. Never before has it been possible to economically purchase a shallow 2U rack mounting 4 channel power amplifier with this level of flexibility and power density. XiB4 integrates light-weight power supplies, high power sonically transparent class D amplifiers, full system monitoring (including 'end of line') and a fully featured USB or network controlled 24 bit 96kHz DSP processing platform as standard.

- Sonically proven Linea Class D Amplifiers
- Four 1250W Bridgeable Channels
- 2 Ohm and 70V / 100V Line Capability
- 96kHz DSP with Real-Time Monitoring
- Extremely Rugged with Abuse Logging
- Live Network & USB Control and Monitoring or 'Configure & Leave' Operation

Ethos

In common with all Linea products, XiB4 is designed to provide a solution rather than be just a component in a system.

From the very first project concepts we considered the critical issues that would be confronted by our customers such as integration, cost, serviceability, size and flexibility.

However, above all XiB4 sounds superb, and this is not just our opinion. We realise that innovative designs and production techniques are of little value if audio performance is compromised. Sonics are at the heart of Linea's philosophy and we set extremely high standards for ourselves.

Modern Amplifier Design

Each XiB4 contains four 1250W channels of class D amplification. The benefits in efficiency and power density that modern class D switching amplifiers have over conventional types are well known. Equally recognised is the detrimental effect on sound quality that such an approach can often bring.

To achieve top-flight performance a 'back to basics' approach was employed. Rather than trying to invent ever more complicated schemes for getting around the inherent difficulties with class D, effort was concentrated on identifying and eliminating the problems associated with well known topologies and optimising these solutions to take advantage of modern state-of-the-art power semiconductors.

The resulting design has a short signal path and turns the limited negative

feedback inherently available in switching designs from a problem to an advantage. This directly results in clean, fast amplification that does not compromise the high efficiency of class D. In fact, the XiB4 is so efficient that even though capable of a total power output in excess of 5000W, the variable-speed fans only run at high speed under extreme conditions.

Power Supply

The advantages of switching technology have been carried through to the power supply. Linea's team have developed an extremely efficient light weight power supply to partner the amplifiers. The design has been evolved in harmony with the amplifier section and therefore achieves an optimum match between the two saving significant space. This holistic approach also yields some important performance benefits by eliminating potential sources of noise and distortion.

supply voltage which means that the unit is suitable for global operation without requiring any reconfiguration

Digital Signal Processing

Each pair of XiB4 channels contains a complete 96kHz digital loudspeaker management and control subsystem.

Although significant expertise was required to integrate the DSP and supporting electronics tightly with the amplifiers, the XiB4 DSP platform is in no way compromised, containing as it does an extremely powerful state-of-the-art SHARC based DSP engine. Critical components in the audio path, so important to the sound quality, have been selected with great care and after extensive listening tests. Our choices have resulted in performance that in independent assessment equals the finest stand alone processors.

A simple PC connection allows customers to manipulate the DSP parameters so as to optimise the performance and develop settings for particular applications.

These settings are stored in the XiB4 so a PC is not necessary for operation.

XiB4 also has the capability to recall up to four different sets of settings (Voices) by the means of rear panel contact closure inputs. This can be particularly important in voice evacuation applications where, for example, it may be required to mute the current source of audio, switch to an alternate input carrying an evacuation message and broadcast it with different level and EQ settings. Each pair of XiB4 channels can automatically do this

either independently or collectively.

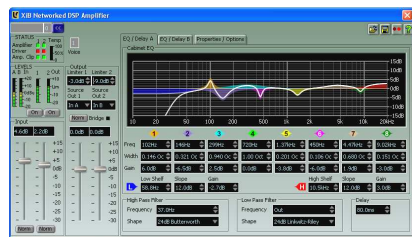


Other useful features are also provided such as the intelligent detection of the mains

PC Control and Telemetry

XiB4 is network-able as standard; there are no expensive options to purchase. Linea's widely used PodWare PC application provides real-time control and monitoring functions to either single units or whole networks of products. Indeed, in addition to XiB4, PodWare offers a unified interface to control any products that conform to the BvNET / Obcom standard including powered speakers and digital crossovers.

A PC connects to XiB4 either directly via USB or via BvNet using a BvNet Interface. Networked XiB4s allow system installers to more easily optimise the performance of individual speakers in a space. This can solve a number of common problems that cannot be addressed adequately with the traditional approach of one centralised system controller. In addition to control, networked XiB4s and PodWare allow all

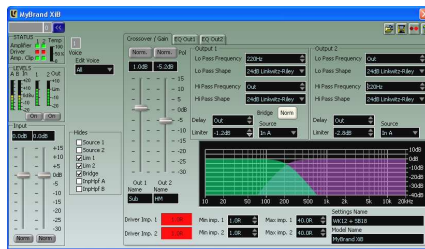


the important system parameters to be monitored and displayed, alarms being raised if problems are detected. This monitoring extends to load impedance and so can give early warning of impending driver failure, useful in all situations but a vital requirement in life safety applications.

OEM Features

As an OEM, PodWare will allow you to create 'Preset' files which apply crossover, limiter, driver delay and EQ settings etc to XiB4 in a secure tamper-proof manner.

These files may then be loaded by the User to optimise XiB4 for a given loudspeaker system, without them having



to worry about the settings or be able to view them. The User can then apply 'local' adjustments such as EQ, Gain and Delay etc which act as an overlay to the OEM settings.

These User settings may be disabled by activating the recessed front panel *User DSP defeat* button, which restores the Unit to the original 'safe' OEM settings.

Protection Systems

Sophisticated micro-processor controlled amplifier protection systems continuously



monitor all aspects of performance to assure the XiB4 and drivers are always working within their safe operating areas. One of the aims of the system is to produce an output whenever it is deemed safe to do so even under extreme or abusive conditions.

If circumstances dictate that full power is not possible, the XiB4 will progressively decrease the audio level while endeavouring to find a stable operating level. Muting will only occur when it is absolutely not safe to continue. At this point the unit will shut down until it is safe to deliver power again, automatically recovering in an elegant manner.

Total Design and Manufacture

XiB4's modular design is highly evolved with a low component count and excellent manufacturability. These attributes translate directly to high reliability and lower costs.

Linea's production team combine this solid engineering with state of the art production facilities and custom designed automatic test equipment to produce the products efficiently, consistently and economically.

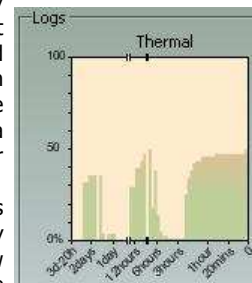
Linea Research attaches great importance to traceability in the manufacturing process. To this end every XiB4 and every sub-assembly inside an XiB4 has a unique bar coded serial number. This allows the fully automated manufacturing and quality assurance tracking system to establish the precise build standard of a particular unit right down to component level.

This sort of traceability, as well as a step to achieving ISO9001 accreditation, can give customers confidence that Linea can quickly establish the history of a given unit should that ever be required.

Abuse Monitoring

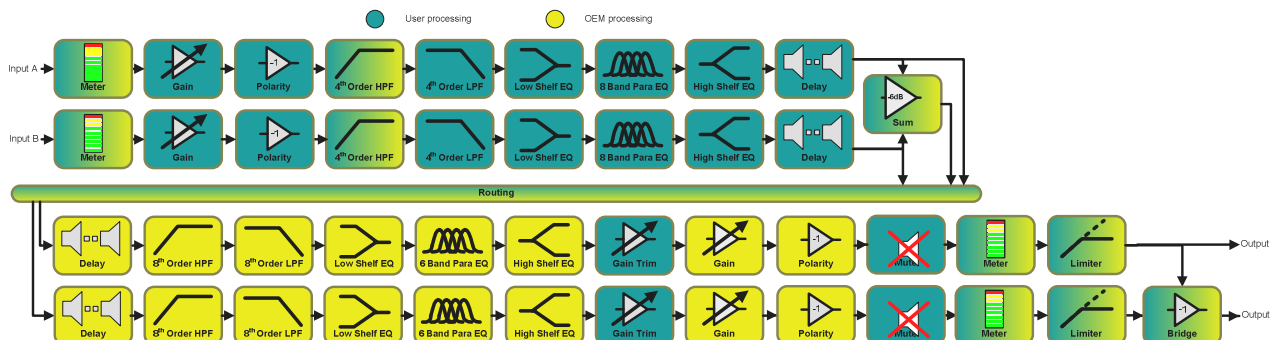
Even without a PC connection, XiB4 continuously records logs against time for the temperature readings, the state of amplifier protection and the peak output current levels. Moreover it does thus for up to 3 days in to the past.

These logs may be viewed at any time and their data can easily be exported to a spreadsheet for further analysis. This makes it easy to assess how systems have been used when customers have reported problems.



Signal Processing Block Diagram

Please note that each XiB4 contains two of these processing blocks, one for each pair of channels.



Technical Specifications

AUDIO

Input impedance	10k balanced
Max Input level	+20dBu
Frequency Response	20Hz - 20kHz+/-0.5dB 4 Ohm load
Output noise	-106dB A weighted Ref max output, 22kHz BW
Distortion	<0.05% (1kHz, -3dB output, 22kHz BW)

PROTECTION SYSTEMS

Output over current	Initially gain reduced to maintain control, persistent over current causes shutdown
Over temperature	limiters applied, persistent over temperature causes shutdown
Mains Brownout	Automatic protection & recovery
Switch on surge	Soft-start current inrush limiting
DC on output	Immediate shutdown, power cycle to recover

INDICATORS & CONTROLS

Per channel	Sig, Limit -6dB, Limit
Per channel pair	Power, Protect, Bridge, Network, User DSP active
Controls per channel pair	
Front panel	User DSP Defeat (can be disabled with PodWare) Power switch
Rear panel	Two Contact closure inputs Shutdown input
Monitoring facilities	Input signal level Output signal level Output current level Temperature Limiter operation Protection system operation Driver impedance

AMPLIFIERS

Type	High efficiency class D
Number of channels	Four
Output power (RMS program, 20Hz-20kHz all channels driven)	
per channel	1250W in to 2 Ohms 800W in to 4 Ohms 450W in to 8 Ohms
per bridged pair	2500W in to 4 Ohms 1600W in to 8 Ohms 900W in to 16 Ohms
Slew rate	>80V/us
Damping factor	120 ref 8 Ohms
Efficiency	>90% typical

POWER SUPPLIES

Type	High current, high freq. switch-mode
Number	Two, fully independent
Efficiency	>90% typical
Input voltage	115v / 230v nominal +/- 10%
Input voltage selection	Automatic
Mains frequency range	45 - 65Hz
Other features	Automatic soft-start Automatic brownout recovery Remote shutdown Automatic over voltage protection

THERMAL

One variable speed fan per pair of channels and additionally
One variable speed fan per unit

Airflow is from the rear to the front

ACCESSORIES

Airflow filtering kit
Rear rack support kit

PHYSICAL

Height	2RU, 88mm
Width	19", 482mm (front panel) 16.8", 427mm (rear chassis)
Depth	14", 360mm (behind rack) 1.4", 35mm (forward of rack)
Weight	20 pounds, 9 Kgs
Operating temperature range	0 to +40°C
Relative humidity range	0 to 80% (non-condensing)

CONNECTIONS

Mains (per XiB4)	Neutrik 'Powercon'
Audio input (per channel)	3 pin female XLR
Audio link (per channel)	3 pin male XLR
Output (per channel)	Neutrik NL4 'Speakon'
USB	Type B (peripheral type)
Network (input & link)	2x RJ45 socket
Auxiliary (input & link)	2x RJ45 socket

Regulatory compliance

This product complies with the EMC & LVD directives as issued by the Commission of the European Community. Compliance with these directives implies conformity with the following European standards:

- EN55103-1 Electromagnetic Interference (Emission)
- EN55103-2 Electromagnetic Susceptibility (Immunity)
- EN60065 Electrical safety

XiB4 also meets the requirements of FCC part 15B.

E&OE