

The X-POD family is the premier line of active loudspeaker drive systems from Linea Research. For the first time it is possible to buy 'off the shelf' a product integrating light-weight switching power supplies, sonically transparent class D amplifiers and networked 96kHz DSP processing in a small cost-effective footprint.

- Linea Research Class D Amplifier Design
- Dual 800w Output
- 96kHz DSP Options
- Integrated Switching Power Supply
- PC Control and Telemetry
- Compact and Lightweight
- Experienced Engineering Support

Ethos

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

From the very first project concepts we considered the critical issues that would confront our customers such as physical integration, cost, serviceability, international



operation and approvals.

Above all X-Pod 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. We set extremely high standards for ourselves and appreciate working with customers who do the same.

Modern Amplifier Design

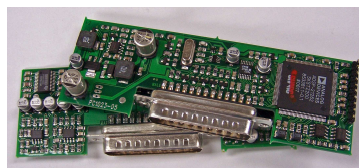
X-Pod contains two 600W (800W program) RMS channels of class D amplification. The benefits in efficiency and power density that modern class D switching (or PWM) amplifiers have over conventional types are well known. Equally recognised is the detrimental effect on sound quality that such approaches 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 into an advantage. This directly results in clean, fast amplification that does not compromise the high efficiency of class D. This efficiency, together with an Automatic Power Save feature ensures that your product can boast environment-preserving power economy.

Digital Signal Processing

Each X-Pod module contains a complete 96kHz digital loudspeaker management subsystem. Although significant expertise was required to miniaturise the DSP and supporting electronics this has been achieved without compromising audio performance. 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. X-Pod is available with various DSP options which may be selected depending on the processing and networking requirements. Details of the factory-fitted DSP option cards may be found in the appropriate data sheets for these. The main differences are:



	Settings		Network control
	OEM	User	
DspMini	✓		
Dsp.Net	✓	✓	✓

Power Supply

The advantages of switching technology have been carried through to the power supply. Linea's team have developed an extremely efficient lightweight 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. For example the power supply and amplifiers are both synchronised to frequencies related to the audio sample rate thus eliminating potential sources of noise and distortion.

More obvious features are also provided such as the intelligent detection of the mains supply voltage, which means that the module is suitable for global operation without requiring any reconfiguration.

PC Control

Linea's PodWare PC application provides real time control and monitoring functions to either single units or whole networks of products, depending on the DSP option chosen.

This can solve a number of common problems that cannot be addressed adequately with the traditional "one centralised system controller" approach.

Protection Systems

Sophisticated microprocessor controlled amplifier protection systems continuously monitor all aspects of performance to ensure that the X-Pod and drivers are always working within their safe operating areas. One of the aims of these systems is to endeavour 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 X-Pod module will progressively decrease the audio level while endeavouring to find a safe operating level. Muting will only occur when it is categorically unsafe to continue, at which point the unit will shut down until it is safe to deliver power again, automatically recovering in an elegant manner.

Small and Solid

The X-pod is supplied as a complete, cased, ready-to-go product only requiring the addition of a mounting plate and suitable connectors to realise a loudspeaker power module capable of meeting all international safety and EMC requirements.

Total Design & Manufacture

X-Pod's design is highly evolved with a low component count and excellent

manufacturability; these attributes translate directly to lower costs and high reliability.

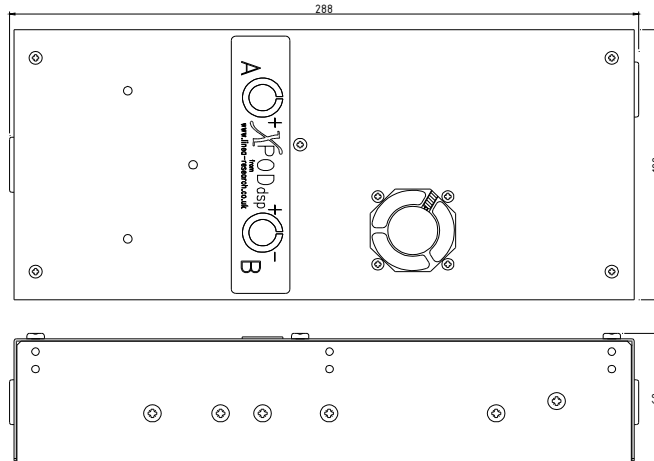
Linea's production team combine this solid engineering with state of the art production facilities and custom designed automatic test equipment to produce the products efficiently, consistently and economically.

Linea Research attaches great importance to traceability in the manufacturing process. To this end, every X-Pod and every sub-assembly inside an X-Pod 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 ISO9002 accreditation, can give customers confidence that Linea can quickly establish the history of a given module should that ever be required.

Mechanical Detail



System specification

Input impedance:	See DSP card specification
Maximum signal input for clip:	See DSP card specification
Output noise :	-105dB unweighted, referenced to maximum output (22kHz bandwidth)
Distortion:	<0.05% @ 1kHz -3dB output (22kHz BW)
Frequency response:	<10Hz - >20kHz +/- 0.25dB <5Hz - >30kHz +/- 1.0dB
Protection systems	
Over Current:	Initially limiters applied, persistent over current causes shutdown
Temperature:	limiters applied, persistent over temperature causes shutdown
Brownout:	Automatic protection & recovery
Mains:	Inrush current limiting
DC fault:	shut down power cycle to recover
Indicators and switches:	Various options – please refer to the DSP module data sheet

Amplifier Section

Number of channels:	two
Output power (sine wave):	600W RMS / ch. 20Hz-20kHz both channels driven into 8 Ohms with 235V mains. Duration limited by protection systems.
Output power (program):	800W RMS / ch. 20Hz-20kHz both channels driven into 8 Ohms with 235V mains
Slew rate:	>80V/us
Voltage gain:	34.5dB
Damping factor:	120 ref 8 Ohms
Efficiency:	>90% typical

Power Supply

Type:	High current, high freq. switch-mode
Efficiency:	>90% typical
Input voltage:	115v / 230v nominal +/- 10%
Input voltage selection:	Automatic
Mains frequency range:	45 - 65Hz
Mains fuse :	External
Recommended type:	T10AT
Other features:	Automatic soft-start Automatic brownout recovery Automatic over-voltage protection Remote shutdown Automatic power-save

Thermal

Semiconductor cooling:	Conduction - through base of module to an attached panel.
Internal cooling method:	Convection - mounting design should allow for some airflow. (Assisted by a small internal low-speed Fan).

Physical (excluding wiring)

Height:	61mm
Width:	128mm
Depth:	290mm
Weight (no interface panel):	1.78 kg
Mounting specification:	Available as a .PDF file on request
Mains connection:	3x ¼" spade terminals
Signal and comms connector:	2x 2mm 15 way connector
Amplifier output connections:	4x ¼" spade terminal