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## DESIGN BRIEF

### A32 Reference Power Amplifier 4-pages



## Introduction

The A32 is a two-channel dual-mono power amplifier designed as the ideal output stage in a home theatre or hi-fi system.

## Audiophile Topology

The A32 is a high power fully balanced power amplifier, capable of delivering 250W per channel into an 8 ohm load. Balanced signal transmission means that two signal lines are used, which carry the same signal with opposite phase. Before the output stage the signals are mixed, and since any noise will be present in both lines with identical phase, such distortion products are cancelled out leaving only the pure original signal. Balanced topology therefore keeps the signal as free as possible from interference.

The A32 has a dual-mono topology together with a current feedback topology. Excellent 1% MELF resistors from Vishay are used, which in concert with a tight PCB-layout, give the A32 the best possible performance.

The circuit is fully-balanced all the way to the output stage and uses active temperature-compensated current sources, instead of passive resistors. The A32 uses 16 output devices from Toshiba for each channel to ensure high reliability and performance (high current output). These work in high bias class A/B configuration.

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The A32's outputs are fully protected against DC (servo-controlled), high temperature and speaker terminal shorting (the latter by the use of fast-blow fuses). Alternative methods of protection, such as current limiting, affect sonic performance when using low impedance speaker loads.

The amplifier incorporates two different kinds of standby mode. The first is the audiophile standby, in which all the power supplies remain active, only the speaker relay and idle current are lowered. This means that the amplifier will start at optimum performance and will not require any major warm-up time. The second standby mode turns off all of the analogue power supplies and will therefore require a warm-up period before the A32 will perform at optimum levels. This mode is best used if the amplifier remains idle for an extended period of time or if the owner wants to save mains power.

### **Audio connections**

For maximum flexibility both balanced and unbalanced inputs are provided, as well as twin sets of speaker terminals (for bi-wiring) together with trigger (4-15V) and RS232C inputs. If the unbalanced inputs are used, the A32 internally converts the signal to balanced, to take full advantage of its balanced design.

### **Shortest signal paths**

SMD technology is used whenever possible to keep the shortest possible signal path for the highest possible performance.

### **Clean power supply for the best possible performance**

The A32's massive 2000VA toroidal transformer has four separate windings - two for each (L&R) channel. This means that the channels are insulated from each other, minimizing cross-talk. Double rectifiers per channel are used to create a "floating ground" for the best possible galvanic insulation from the mains. The electrolytic bank is 90.000 uF per channel to ensure that is more than enough power available for even the deepest sonic transient.

The soft start circuit is relay controlled which means that it will not have any affect on the power supply when the amplifier has stabilized. More commonly used circuits built around NTC-resistors can adversely affect the power supply under heavy load conditions. The digital control functions have their own power supply using a separate transformer. All digital control functions are insulated from the analogue circuits by using either opto-couplers or relays. This configuration ensures that no digital disturbance can be transferred to the analogue circuits of the amplifier.

### **Careful design for operational stability**

As with all Primare units, the A32 is housed in an alloy heavy gauge steel chassis, which provides strength, rigidity, and temperature stability, while being effective at damping vibrations from external sources.

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### Using the A32 with other Primare products

Although the A32 is flexible enough to act as the output stage in virtually any system, it is ideal for use with other products in the Primare range, such as the Primare SP33 Processor, SPA23 processor/amp, PRE32 pre-amplifier or NP30 network player – in fact anything with pre-outs, including the I32 integrated amp. The A30.2 can be used to create modular systems with any desired number of matched output stages, and one or more A32 amplifiers can be powered on or off remotely from a SP33 or SPA23 using the trigger connections.

### Features and Specification

- 2000VA toroidal transformer.
- A total of 180,000 uF electrolytes in the power supply.
- Dual set of speaker terminals for each channel.
- Balanced (RCA) and Unbalanced (XLR) inputs.
- Input impedance: 15kohm, RCA and XLR
- Output Power (both channels driven): 2x250W 8 ohms load 20Hz-20Khz
- 2x400W 4 ohms load 20Hz-20kHz
- THD+N: below 0.05% in both cases.
- THD+N: 1kHz, 250W, 8 ohm load below 0.01%.
- Frequency response: 20Hz-100kHz –0.5dB
- Noise: below –100dBV
- Gain: 26dB unbalanced, 20dB balanced.
- Trigger input range: 4-15V.
- Temperature protection 70 degrees celcius.
- DC offset protection.
- Weight 40 kg.
- Dimensions 430 x 540 x 230mm (WxDxH)

**Ends**