

AMP-LC-2[™]

User Documentation

Low Cost 2-channel Audio Amplifier
Part Number: 990-aAMPLC2-UCT-02A

Version 02A
Jul 25, 2005





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!!! IMPORTANT NOTE !!!

This documentation applies to version 02A of the AMP-LC-2 audio amplifier. 02A refers to PCB version 02 along with its build options. Other versions of the PCB may not be accurately represented by this document. If you have a different version of the PCB, please refer to the relevant documentation (see 'Revision History' on page 7).

Legal Statement

The AMP-LC-2 PCB is copyright © & trademark ™ 2003-05 by UltraCade Technologies, All Rights Reserved. The AMP-LC-2 PCB and algorithms are Patent Pending. AMP-LC-2 is a trademark of UltraCade Technologies.

Package Contents

- User Documentation
- Audio Cable (3.5mm jack) 6ft
- HDD Power Cable Female Housing
- 4 x HDD Power Cable Female Pins
- AMP-LC-2 PCB
- HDD Power Cable Male Housing
- 4 x HDD Power Cable Male Pins
- Free Gift Offer Card

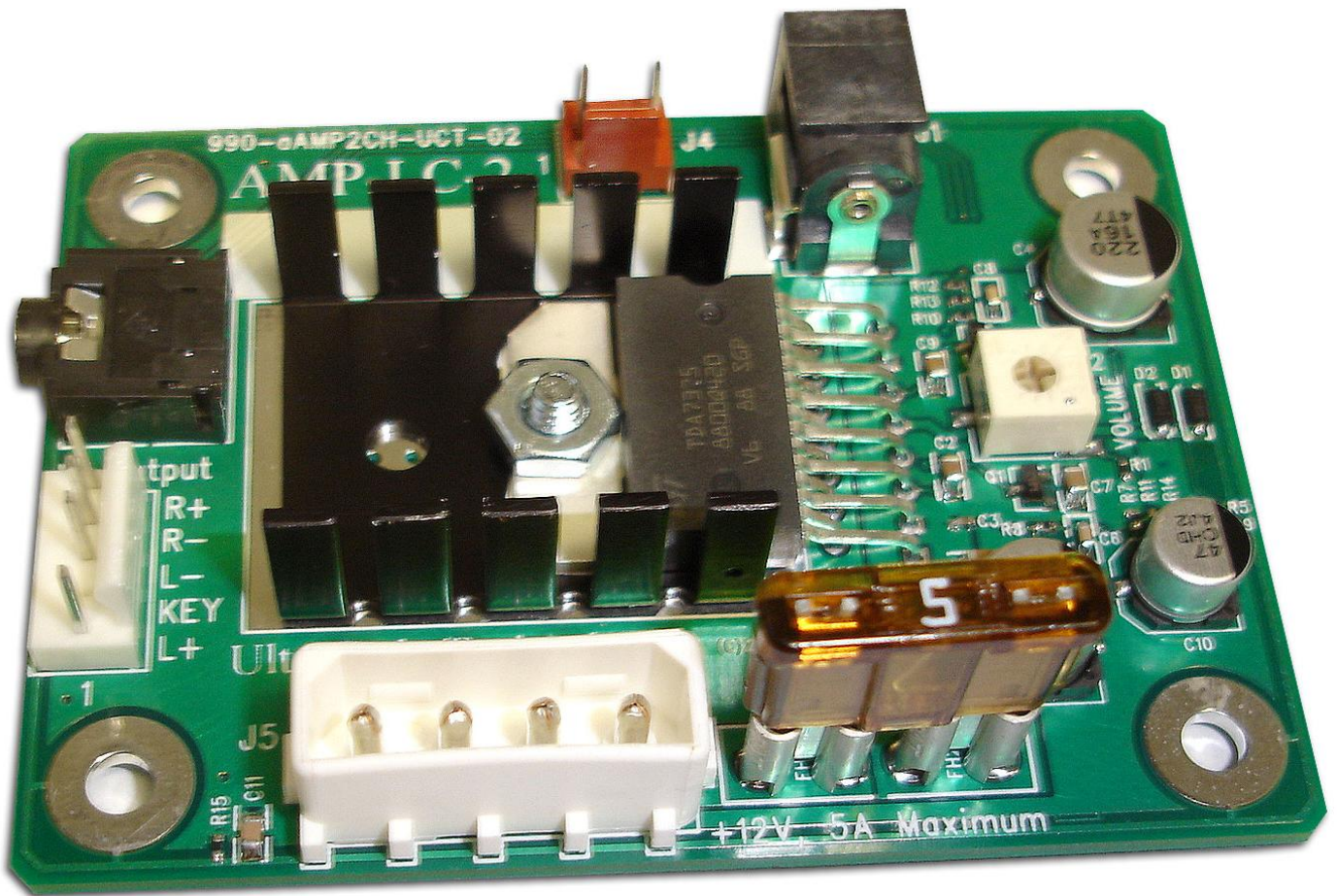
Overview

The AMP-LC-2 low cost stereo audio amplifier is part of UltraCade Technologies' portfolio of products focused at the arcade market. For more information and a full list of current products, please go to www.ultracade.com.

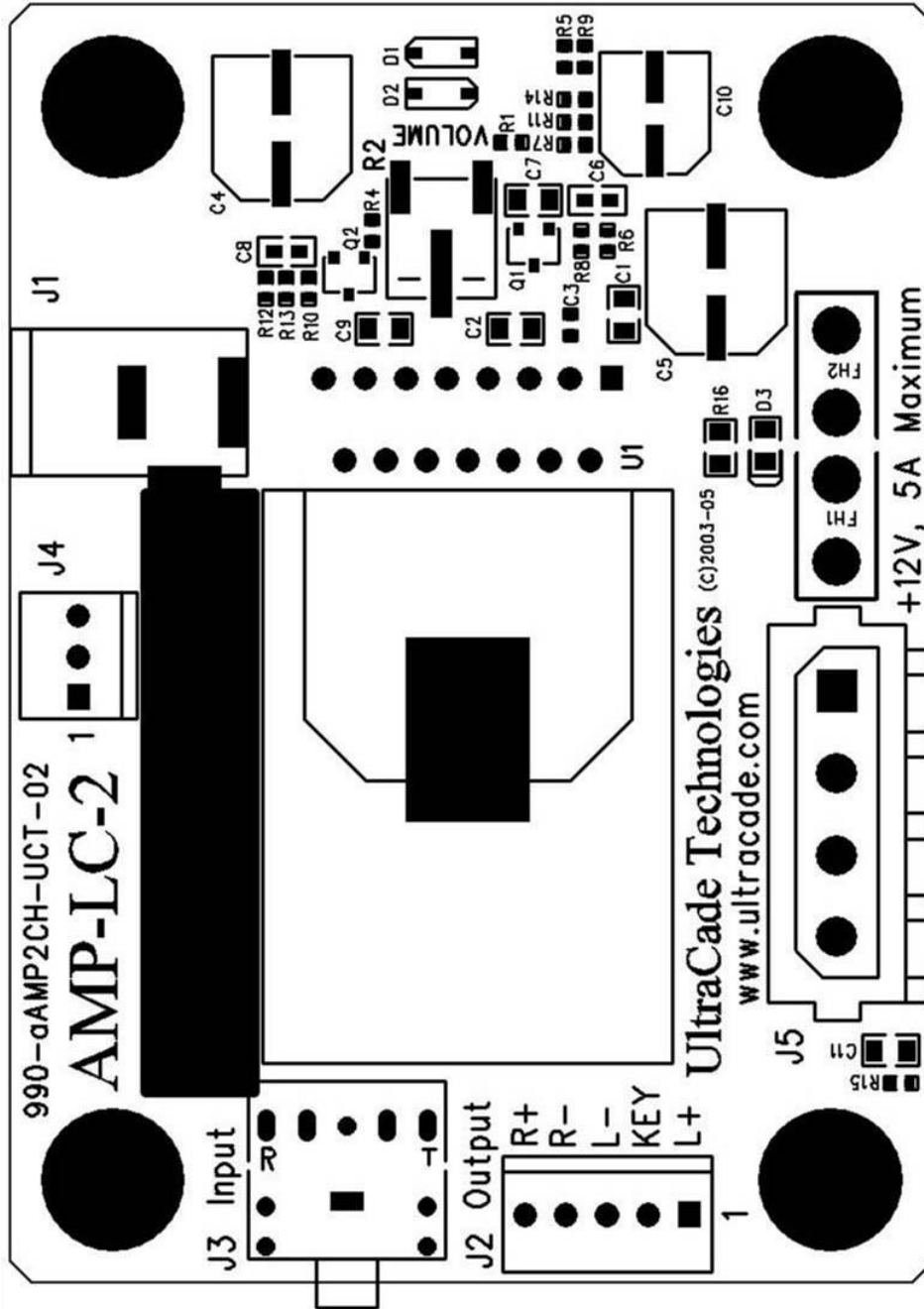
The AMP-LC-2 takes audio input from a standard 3.5mm jack plug. The signal is amplified by a 2x36W audio amplifier. The resulting output is available through a standard 4-pin 156mil Molex connector. Power is provided through a standard PC HDD (hard disk drive) connector. An optional external volume control is also supported.

The AMP-LC-2 is designed so that it fits seamlessly into the Happ Controls 2-channel audio amplifier housing. All connections are conveniently accessible through the housing.

Board Image



Board Layout





Power

Power at a nominal rate of +12vdc (not exceeding +18vdc) may be supplied to the AMP-LC-2 PCB from any one of 3 connectors (J1, J4, or J5). This provides a convenient range of connection options. However, it is important that only one of these power sources is connected at any given time.

J1 is a coaxial connector. The center pin is +12vdc and has a diameter of 2.1mm. The outside connection is for Ground.

J4 is a standard 3-pin Molex 100mil connector with the center pin removed. Pin 1 is +12vdc and is the closest to the audio connectors. Pin 3 is the Ground and is closest to the coaxial power connector.

J5 is a standard PC Hard Drive power connector, which brings in +12vdc, +5vdc, and two Ground pins. The +5vdc supply is closest to the audio connectors, but it is not required on this board. The +12vdc pin is closest to the fuse. The Ground pins are the two center pins.

The +12vdc supply is used to power the audio amplifier and discrete components. No other voltages are used.

Audio

The AMP-LC-2 input is from a pre-amplified signal through a 3.5mm stereo jack (standard PC output). Typical arcade or vending cabinets contain one or two 8 Ω speakers. The AMP-LC-2 bridges this gap. A standard 3.5mm stereo jack socket (J3) is provided to connect the PC audio input. The audio is then amplified by a 2x36W audio amplifier. Finally, the amplified audio is routed to the speakers through a standard 5-pin 100mil Molex connector (J2).

Volume control is provided through an on-board variable resistor (R2). Mono output is available by simply joining the left and right pins at the 3.5mm input jack. Fully amplified mono audio signals are then available on both of the left and the right positive/negative pair.

Peak audio power is 36W stereo; 18Wx2 through 4 ohm speakers, or 9Wx2 through 8 ohm speakers. Current draw is up to 3A per channel, with peaks up to 4.5A. The audio amplifier has best frequency response between 100Hz and 10KHz.



PCB Connectors

This section provides the part numbers and pin assignments for the mating connectors to all of the connectors on the PCB.

PCB Ref	PCB Connector Description	Required Mate Description	Parts Required	Supplier	Part Number	Inc. in packet
J1	Power - Coaxial	Female Pin hole Ø 2.1mm Ring - Ground Pin - +12vdc	1 x Power cable OR 1 x Female Coaxial	Happ Switchcraft	80-1153-00 S760	no no
J2	Audio output	Female, 5-pin 156mil header Pin1 - L+ Pin2 - Key (n/c) Pin3 - L- Pin4 - R- Pin5 - R+	1 x Custom cable OR 1 x Female housing 4 x Female terminal	Happ Molex Molex	96-0542-00 09-50-8051 08-50-0106	no no no
J3	Audio input	Male, stereo 3.5mm jack Tip - Left channel Ring - Right channel Base - Audio ground	1 x PC audio 6ft	UltraCade	115-AUDMINI-CBL	yes
J4	Power - Header	Female - 3-pin 100mil header Pin1 - +12vdc Pin2 - n/c Pin3 - Ground	1 x Female housing 2 x Female terminal	Molex Molex	22-01-2037 08-50-0108	no no
J5	Power - PC HDD	Female PC HDD connector Pin1 - +12vdc Pin2 - Ground Pin3 - Ground Pin4 - +5vdc	1 x Extension 2ft OR 1 x Female housing 4 x Female terminal 4 x Wire 1 x Male housing 4 x Male terminal	UltraCade AMP AMP {any} AMP AMP	115-HDDPWR-CBL 1-480424-0 60617-1 n/a 1-480426-0 61618-1	no yes yes no yes yes

Revision History

- Version 02A. PCB version 02:
 - 06/15/2005, DT. First release of the user documentation.
 - 07/25/2005, DT. Added basic amplifier specifications.



Contact Information

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