



ADA1000
20-bit A/D - D/A Converter
User's Guide

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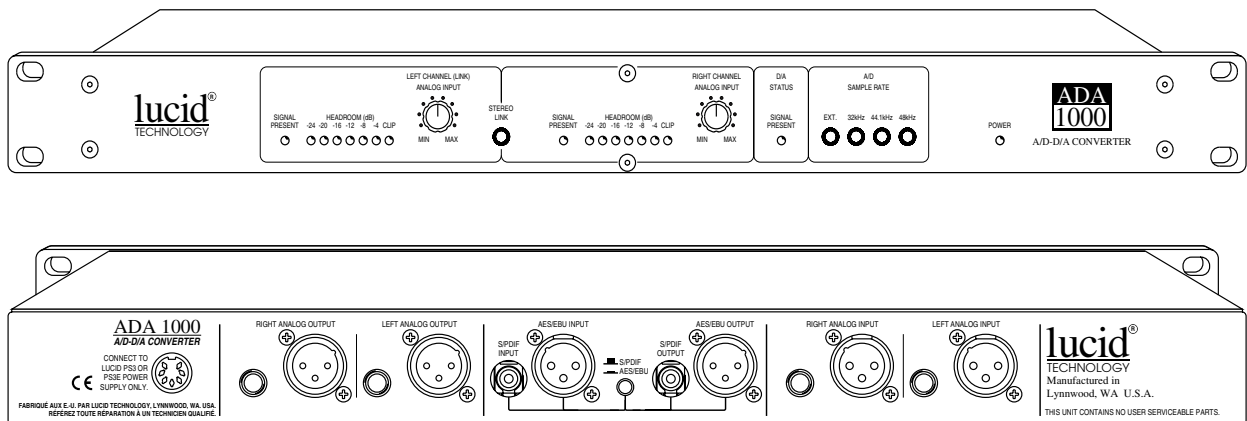
The logo for Lucid audio, featuring the word "lucid" in a lowercase, serif font. A thin, curved line arches over the letters "i" and "c", ending above the "d".

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Congratulations, you have very good taste in audio equipment. The Lucid Technology ADA1000 analog to digital & digital to analog converter will provide you with the cutting edge in 20 bit sound quality which, until recently, was limited to professional audio producers with large budgets.

This manual will lead you through connecting the ADA1000 and assist you in understanding its functions. It is assumed that you are reading this manual after purchasing the ADA1000 and that you have a basic understanding of digital audio.

The ADA1000 has been built to the highest standards of performance and reliability. Should you have any questions regarding the ADA1000 or any other Lucid Technology product, please feel free to contact us.



Equipment Markings

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user of the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product (i.e. this manual).

Caution To prevent electric shock, do not use the polarized plug supplied with the unit with any extension cord, receptacle, or other outlet unless the blades can be fully inserted.



WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE

AVIS: RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR

SEE OWNERS MANUAL. VOIR CAHIER D'INSTRUCTIONS.
No user serviceable parts inside. Refer servicing to qualified service personnel.
Il ne se trouve a l'interieur aucune piece pouvant etre reparaee l'usager.
S'adresser a un reparaateur competent.

Terms

Several notational conventions are used in this manual. Some paragraphs may use Note, *Caution*, or **Warning** as a heading or certain typefaces and capitalization are used to identify certain words. These are:

Note Identifies information that needs extra emphasis. A Note generally supplies extra information to help you to better use the product.

Caution Identifies information that, if not heeded, may cause damage to the Lucid product or other equipment in your system.

Warning Identifies information that, if ignored, may be hazardous to your health or that of others.

CAPITALS Controls, switches or other markings on the product’s chassis.

Important Safety Instructions

Please read and keep these instructions. Heed and follow all warnings and instructions.

Power Source This product is intended to operate from a power source that does not apply more than 250V rms between the power supply conductors or between either power supply conductor and ground. A protective ground connection, by way of the grounding conductor in the power cord, is essential for safe operation.

Grounding The chassis of this product is grounded through the grounding conductor of the power cord. To avoid electric shock, plug the power cord into a properly wired receptacle before making any connections to the product. A protective ground connection, by way of the grounding conductor in the power cord, is essential for safe operation. **Do not defeat the safety purpose of the grounding plug.** The grounding plug has two blades and a third grounding prong. The third prong is provided for your safety. When the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.

Danger from Loss of Ground

If the protective ground connection is lost, all accessible conductive parts, including knobs and controls that may appear to be insulated, can render an electric shock.

Proper Power Cord

Use only the power cord and connector specified for the product and your operating locale. Use only a cord that is in good condition. **Protect the power cord** from being walked on or pinched, particularly at plugs, onvenience receptacles, and the point where they exit from the apparatus.

Operating Location

Do not operate this equipment under any of the following conditions: explosive atmospheres, in wet locations, in inclement weather, improper or unknown AC mains voltage, or if improperly fused. Do not install near any heat source such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat. Unplug this apparatus during lightning storms or when unused for long periods of time.

Stay Out of the Box

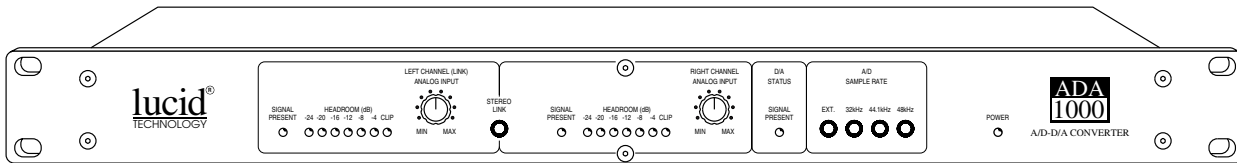
To avoid personal injury (or worse), do not remove the product covers or panels. Do not operate the product without the covers and panels properly installed. Only use accessories specified by the manufacturer.
Clean only with a damp cloth.

User-serviceable Parts

There are no user serviceable parts inside the ADA1000. In case of failure, refer all servicing to the factory. Servicing is required when the ADA1000 has been damaged in any way, such as when a power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

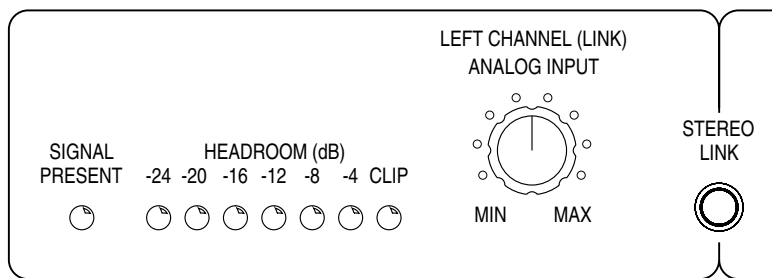
This section of the manual provides an overview of the functions and controls of the ADA1000. Please see the **ANALOG INPUT/OUTPUT CONNECTIONS** section (page 9) of this manual for wiring and connections.

FRONT PANEL:



The front panel of the ADA1000 has three main sections: The INPUT LEVEL CONTROL section, the D/A STATUS INDICATOR section, and the A/D SAMPLE RATE SELECTION section.

Input Level Control:



This section contains the analog input controls for the left and right analog inputs.

NOTE:

Descriptions of these controls apply to both channels.

SIGNAL PRESENT INDICATOR LED - This indicator shows the existence of analog input. The LED will light when signal level of -40dB or greater is detected.

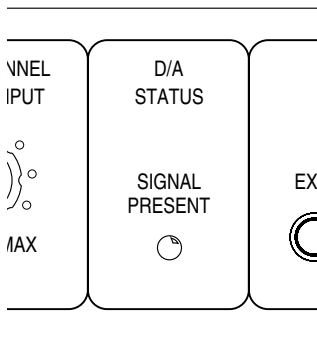
HEADROOM METER - This signal level meter is incremented in 4 dB steps. Please notice that this is a headroom meter designed to show the amount of signal headroom level before digital clipping (full scale). As with all analog to digital converters, it is best to run the signal as high on the headroom meter as possible without hitting the clip point.

NOTE:

Digital clipping results when incoming analog signals overdrive the ADA1000's A/D converter. For best results, test the audio coming into the ADA1000 for the highest peaks and adjust INPUT LEVEL controls so peaks do not light the clip LEDs.

CHANNEL INPUT LEVEL CONTROLS - The left and right channel input knobs are used to control the signal level coming into the analog inputs of the ADA1000. These controls operate over a 15 dB range. In STEREO LINK mode, the Left Channel input control becomes the master control for both left and right inputs.

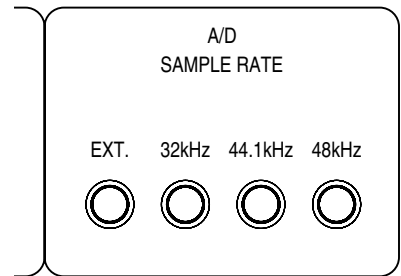
D/A Status Indicator



SIGNAL PRESENT LED - Lights to show that there is valid AES/EBU or S/PDIF format digital signal at the ADA1000's digital input port. This is especially useful to verify that the connections are correct when first hooking up the ADA1000 to a digital device. The ADA1000's D/A circuitry automatically locks to the sample rate of the incoming digital bit stream.

A/D Sample Rate Selection

These buttons choose between fixed sample rates of 48kHz, 44.1kHz, 32kHz, or a sample rate as determined by the sample rate coming into the digital input port.



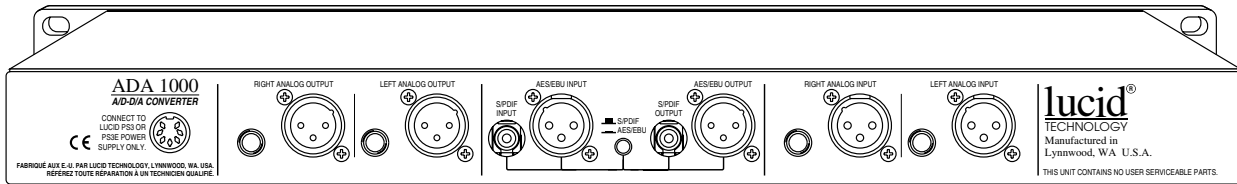
Power Indicator

POWER INDICATOR LED - confirms that the ADA1000 is plugged in and ready to go.

POWER

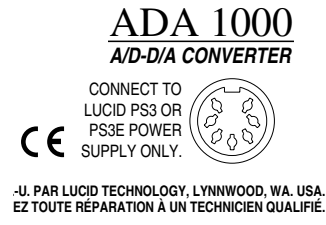


BACK PANEL:



Power Supply

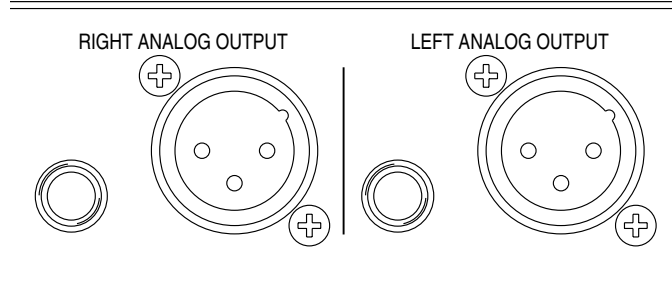
POWER SUPPLY CONNECTOR -The ADA1000 is designed to be used with the Lucid Technology PS3 or PS3E power supply only.



Analog Output Section

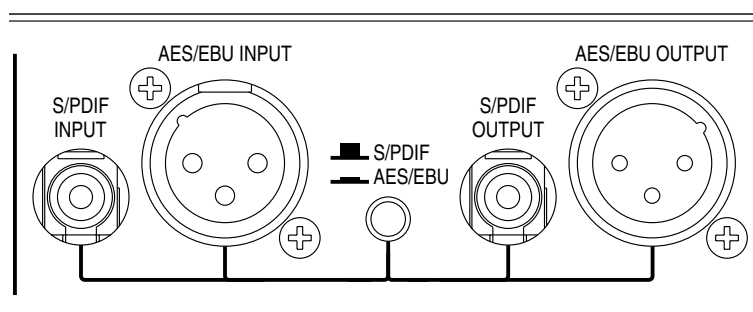
ANALOG OUTPUTS - These connections are for sending the analog signal from the D/A converter to external audio devices for transfer or monitoring. Both balanced XLR and un-balanced 1/4" connectors are provided.

See **ANALOG INPUT/OUTPUT CONNECTIONS** (page 9) for possible connector pinouts.



Digital Input/Output Section

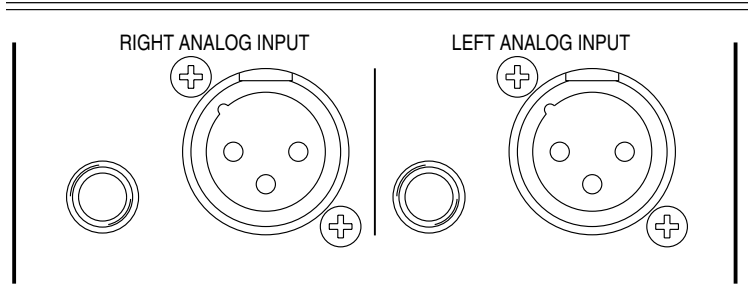
CONNECTORS - Both AES/EBU and S/PDIF digital formats are supported. The AES/EBU appears on an XLR-type connector. The S/PDIF appears on an RCA-style connector. Only one cable is needed for digital stereo information. See **ANALOG INPUT/OUTPUT CONNECTIONS** (page 9) for connector pinouts.



S/PDIF - AES/EBU SELECTION SWITCH - When the button is pressed in, the ADA1000 will process the information as AES/EBU format. When the button is released (the out position), the digital section will process the signal as S/PDIF information.

Analog Inputs

CONNECTORS - Both XLR and 1/4" balanced connectors are provided. These connectors interface with the output of the analog audio equipment (typically a mixing console) feeding the ADA1000. See **ANALOG INPUT/OUTPUT CONNECTIONS** (page 9) for connector pinouts.



Warranty

Following are the terms and limitations of the Lucid warranty.

Lucid expressly warrants to the original purchaser (Buyer), subject to the terms and conditions set forth below, that the Product will be free from defects in material and workmanship as a result of normal commercial use for one (1) year from the date of purchase.

Some Lucid products contain embedded software and may also be accompanied by control software intended to be run on a personal computer. Said software is specifically excluded from this warranty.

Lucid s warranty obligation is limited to the repair, replacement, or refund at Lucid s sole discretion, of the part or parts of the Product which may thus prove defective in materials or workmanship within one year from date of purchase under normal use and which our examination discloses to our satisfaction to be thus defective, provided that Buyer gives Lucid prompt notice of its warranty claim and satisfactory proof thereof.

Lucid will make every reasonable effort to ensure that parts are available to support the repair of our products under warranty. In the event that a product or component part thereof becomes obsolete, unavailable or irreparable, Lucid reserves the right to refund a prorated portion of the purchase price in full satisfaction of all warranty claims.

In order to serve you better we require that the Buyer shall, prior to shipping Product to Lucid for warranty service, contact Lucid and secure a Return Authorization Number that shall be included with the returned Product. This will facilitate our efforts to keep track of your Product and process your warranty repair as quickly as possible. Buyer will prepay all freight charges to ship the Product to Lucid for warranty inspection and service. This warranty is subject to Lucid s inspection of the Product at its facilities and, upon Lucid s request, satisfactory proof of purchase (dated copy of original retail dealer s invoice.)

Lucid reserves the right to effect repairs to the product with reconditioned components/parts. Products once repaired under warranty will be shipped to Buyer freight prepaid by Lucid via United Parcel Service (surface) or any similar shipper, to any location designated by buyer within the Continental United States. At Buyer s request and expense Product will be returned via airfreight. Outside the continental United States, repaired or replaced products will be returned freight collect.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, ARISING BY LAW OR OTHERWISE (INCLUDING, WITHOUT LIMITATION ANY OBLIGATIONS OF THE SELLER WITH RESPECT TO CONSEQUENTIAL DAMAGES) INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND OF ALL OTHER OBLIGATIONS OR LIABILITIES ON OUR PART, AND WE NEITHER ASSUME, NOR AUTHORIZE ANY OTHER PERSON TO ASSUME FOR US, ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF THE PRODUCT. THIS WARRANTY SHALL NOT APPLY TO THIS PRODUCT OR ANY PART THERE OF WHICH HAS BEEN SUBJECT TO ACCIDENT, NEGLIGENCE, ALTERATION, ABUSE, OR MISUSE. WE MAKE NO WARRANTY WHATSOEVER IN RESPECT TO ACCESSORIES OR PARTS NOT SUPPLIED BY US. THE TERM ORIGINAL PURCHASER, AS USED IN THIS WARRANTY SHALL BE DEEMED TO MEAN THAT PERSON OR COMPANY THAT ORIGINALLY PURCHASED THE PRODUCT.

This Lucid product has been designed and manufactured for use in professional/industrial systems and is not intended for other usage. This warranty only applies to Buyers using the Product in professional/industrial systems. With respect to others, including but not limited to consumers for personal, family, or household use, Lucid expressly disclaims all warranties, including but not limited to warranties of merchantability and fitness for a particular purpose and the express warranties as otherwise provided herein.

Lucid reserves the right to modify the design or make additions to, or improvements to, its product lines without making similar upgrades to Product purchased by Buyer. Lucid does not authorize any third party, including any dealer or sales representative, to assume any liability, effect any repairs or modifications to the Product, or make any additional warranties or representation regarding the Product or Product information on behalf of Lucid.

Lucid s total liability on any claim, whether in contract, tort (including negligence) or otherwise arising out of, connected with, or resulting from the manufacture, sale, delivery, resale, repair, replacement or use of Product will not exceed the purchase price of the Product or any part thereof which gives rise to the claim. In no event will Lucid be liable for any incidental or consequential damages including but not limited to damage for lost revenue, cost of capital, claims of customers for service interruptions or failure to supply, and costs and expenses incurred in connection with labor, overhead, transportation, installation or removal of products or substitute facilities or supply houses as a result of Product failure.

This limited warranty gives Buyer certain rights. Buyer may have additional rights under applicable law.

LIMITATION OF LIABILITY

The total liability of Lucid on any claim, whether in contract, tort (including negligence) or otherwise arising out of, connected with, or resulting from the manufacture, sale, delivery, resale, repair, replacement or use of any product will not exceed the price allocable to the product or any part thereof which gives rise to the claim. In no event will Lucid be liable for any incidental or consequential damages including but not limited to damage for loss of revenue, cost of capital, claims of customers for service interruptions or failure to supply, and costs and expenses incurred in connection with labor, overhead, transportation, installation or removal of products or substitute facilities or supply houses.

How to contact Lucid Tech Support

US callers should phone:	(425) 778-7728
International callers should phone:	(01) 425-778-7728
Fax:	(425) 778-7727
E-mail:	tech@lucidaudio.com
Web site:	www.lucidaudio.com

Servicing your Lucid product

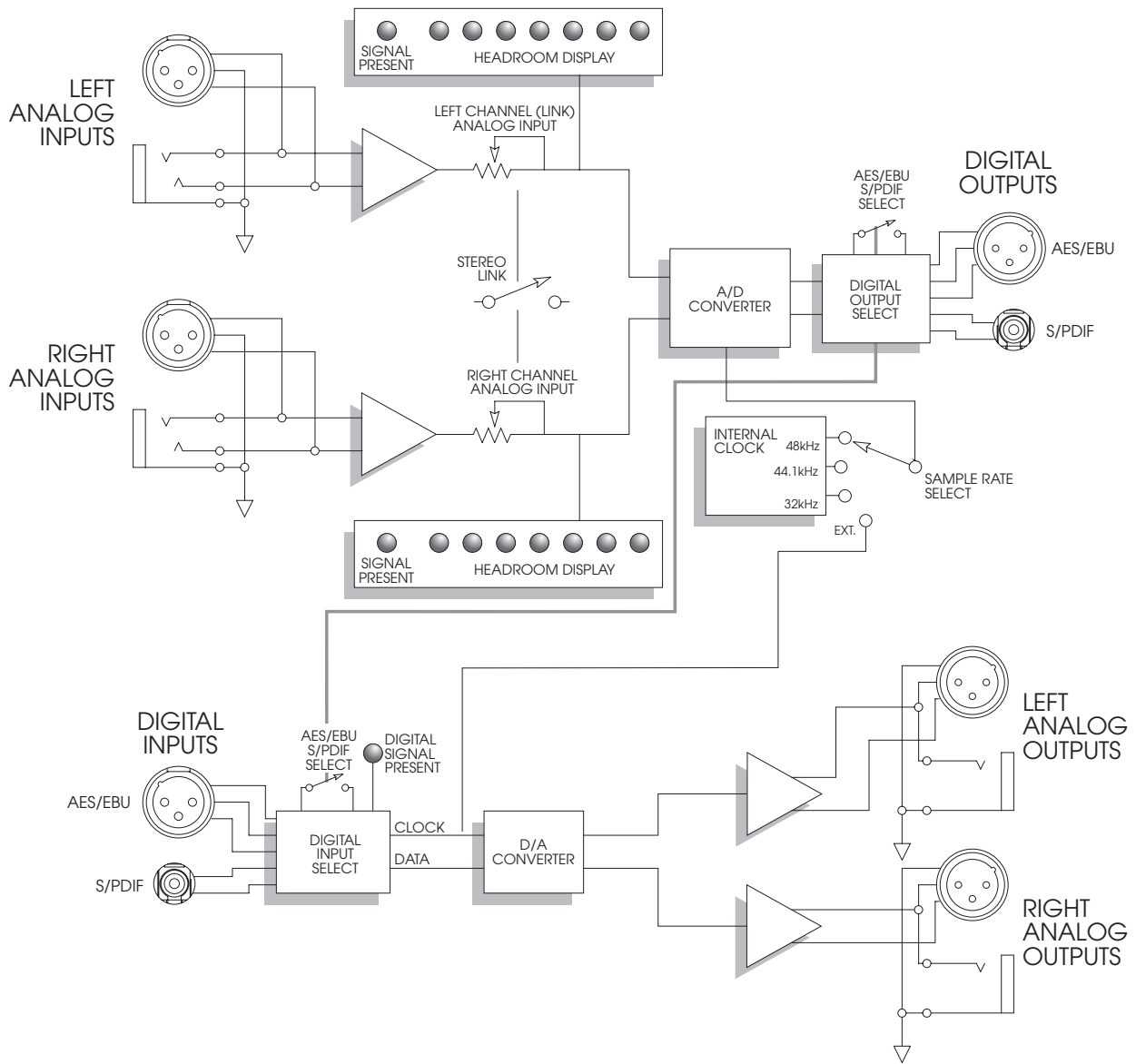
For US Customers:

If you have determined that your Lucid product requires repair services and you reside in the US, please contact our Customer Service Department for a return authorization (RA) number. Phone (425) 778-7728 or email: tech@lucidaudio.com

If the warranty period has passed, you ll be billed for all necessary parts, labor, packaging materials, and freight charges. Please remember, you must call for an RA number before sending the unit to Lucid.

For International Customers:

If you live outside of the United States, please contact your local Lucid dealer or distributor for instructions on how to obtain service.



A/D Section

Input Impedance:	20K Balanced, 10K Unbalanced
Maximum Input Level (Minimum Gain Setting):	+25 dBu Balanced
Maximum Input Level (Maximum Gain Setting):	+2 dBu Balanced
THD+N @ 1kHz (-1 dBFS):	<-90 dBFS
SNR (THD+N, @ 1kHz -60dBFS):	>95 dBFS A-Weighted)
Frequency Response (48 kHz Sample Rate):	+/-0.5 dB (20 Hz to 20kHz)
(44.1 kHz Sample Rate):	+/-0.5 dB (20 Hz to 20kHz)
(32 kHz Sample Rate):	+/-0.5 dB (20 Hz to 15kHz)
Input Level Control Range	18 dB
Input Headroom Indicators (per channel) CLIP	Signal present, -24, -20, -16, -12, -8, -4, &

D/A Section

Output Impedance:	580 ohms Balanced
Maximum Output Level (0 dBFS):	+25 dBu Balanced
THD+N @ 1kHz, (-1dBFS):	<-81 dBFS (A-Weighted)
SNR (THD+N, @ 1kHz -60dBFS):	>90dBFS (A-Weighted)
Frequency Response (48 kHz Sample Rate):	+/-0.5 dB (20 Hz to 20 kHz)
(44.1 kHz Sample Rate):	+/-0.5 dB (20 Hz to 20 kHz)
(32 kHz Sample Rate):	+/-0.5 dB (20 Hz to 15 kHz)
LED indicator	Signal Present

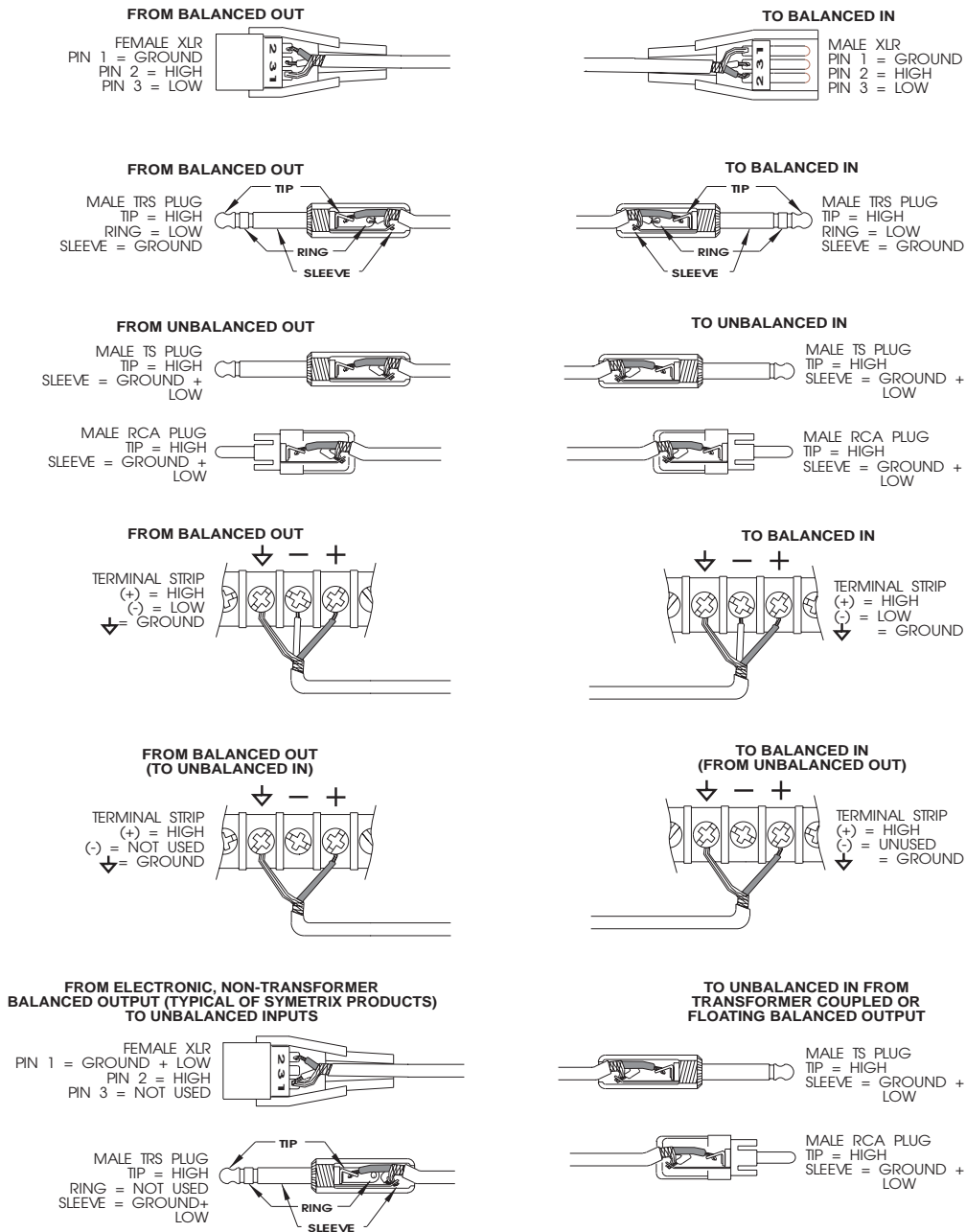
Power Supply

External middle of the line transformer,
UL listed and CE compliant

Lucid part number PS3	117vac (nominal)
Lucid part number PS3E	230vac (nominal)

Note: The maximum operating ambient temperature is 25 degrees C.

This diagram shows the typical connections for the ANALOG inputs and outputs for the ADA1000.



Declaration of Conformity

We, **Lucid**, 6408 216th St. SW, Mountlake Terrace, Washington, USA,
declare under our sole responsibility that the product:

ADA1000 A/D D/A CONVERTER

to which this declaration relates, is in conformity with the following standards:

EN 50081-1
Electromagnetic compatibility - Generic emission standard
Part 1: Residential, commercial, and light industry.

EN 50082-1
Electromagnetic compatibility - Generic immunity standard
Part 1: Residential, commercial, and light industry.

The technical construction file is maintained at:

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Mountlake Terrace, WA, 98043
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World Marketing Associates
P.O. Box 100
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Date of issue: 1 December 1996

Place of issue: Mountlake Terrace, Washington, USA

Authorized signature:



Dane Butcher, President, **Lucid**.

lucid

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