

USB-DI

USB Digital to Analog Converter with Isolated Outputs

Project Series

User's Manual

EMBED Word.Picture.8

IMPORTANT SAFETY INSTRUCTION – READ FIRST

This symbol, whenever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure-voltage that may be sufficient to constitute a risk of shock.

operating and maintenance accompanying literature.

manual.

This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.

Read instructions:

Retain these safety and operating instructions for future reference. Heed all warnings printed here and on the equipment. Follow the operating instructions printed in this user manual.

Do not open:

There are no user serviceable parts inside. Refer any service work to qualified technical personnel only.

Moisture:

To reduce the risk of fire or electrical shock do not expose the unit to moisture or use in damp or wet conditions. Do not place container of liquid on unit.

Heat:

Do not locate the unit close to excessive heat or direct sunlight, as this could cause a fire hazard. Locate the unit away from any equipment, which produces heat such as: power supplies, power amplifiers and heaters.

Environment:

Protect from excessive dirt, dust, heat, and vibration when operating and storing. Avoid tobacco ash, drink spillage and smoke, especially that associated with smoke machines.

Handling:

Protect the controls from damage during transit. Use adequate padding if you need to ship the unit. To avoid injury to yourself or damage to the equipment, take care when lifting, moving, or carrying the unit.

Servicing:

Unplug power immediately if equipment is exposed to moisture, the power supply becomes damaged during a lightning storm or if smoke odor or noise is noted. Refer servicing to qualified technical personnel only.

Installation:

Install the unit in accordance with the instructions printed in the user manual.

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INTRODUCTION

The USB-DI **Project Series** is a high quality Digital to Analog Converter for connecting a computer to a stereo or PA system. It takes in USB audio, converts it to analog audio and then isolates the output using custom transformers. The output isolation is key to removing ground loops and other system noise between the digital and analog audio systems.

A large knob on the front panel allows quick, precise control over the output level. A separate headphone output allows you to monitor the system. The front panel Main Outputs switch allows you to keep the isolated outputs at a fixed level while controlling level of the Headphones output.

The line level XLR outputs are available for connecting to all sorts of systems. The Main outputs are always isolated but allow you to control the ground reference to reduce noise.

The USB-DI **Project Series** is powered by USB, drawing less than 200mA and eliminating the need for an external power.

Key Features Include

USB Connectivity to Desktop and Laptop Computers

High Quality D to A Converter

Sample rates from 32kHz to 48kHz

Switchable Transformer isolated outputs

Front panel Volume control

Front panel 1/8-inch Headphone Monitor output

USB powered

Compact rugged package all Aluminum chassis

Stackable chassis

Perfect for connecting computers to any Audio System

Three Year Warranty

The USB-DI **Project Series** has been designed with a set of isolation transformers to eliminate the hum and buzz that may be caused by stray voltages and ground loops. Depending on your application, computers, optical projectors and many other consumer types of equipment can induce noise in your audio paths. The USB-DI **Project Series** is equipped to cover these problem areas and give you a great clean audio path.

CONNECTIONS

The 1/8-inch **MONITOR HEADPHONES** is stereo TRS jack. It can accommodate a wide variety of headphone models. Maximum output level is 150mW.

The **USB port** is USB 2.0 compliant and should be used to connect directly to one of the USB connections on your computer. This connection also powers the USB circuitry inside the USB-DI **Project Series**. To your computer this connection looks like a “USB Audio DAC” and your computer then controls the sample rate.

Since the USB connection will be carrying high quality digital audio to and from your computer as well as bus powering the USB interface, we suggest that you use a high quality shielded USB cable for best performance. Ideally you should connect directly to one of the USB ports on your computer. Connecting through a shared hub can reduce power and bandwidth that is available for each USB device and should be avoided when possible. Though the USB-DI **Project Series** is compatible with USB 1.1 and 2.0 interfaces, USB 2.0 is preferred for the cabling and computer connection as it allows for more system bandwidth.

The **XLR LEFT and RIGHT analog Outputs** can be connected to a variety of line level input products a few examples would be a mixers, receivers, or powered speakers.

NOTE: Before connecting the USB-DI box XLR OUTPUTS, make sure all audio levels are turned down or the system is not powered on. This helps to prevent any popping issues that would damage more sensitive equipment. It also helps to be in Variable output mode with the volume control fully CCW before powering up if connected to an audio system.

CONTROLS and OPERATION

FRONT PANEL

MAIN OUTPUTS FIXED/VARIABLE

Using the **FIXED** switch position. When the **MAIN OUTPUTS** switch of the **USB-DI** is set to **FIXED** (switch is engaged) the switch will light Blue. The outputs are fixed and will not vary with the **LEVEL** pot. The **LEVEL** pot will only adjust the signal level of the **MONITOR HEADPHONES**. The output of the USB-DI will default to 650mV RMS (-1.5dBu) max output.

Using the **VARIABLE** switch position. When the **MAIN OUTPUTS** switch of the of the UDB-DI is set to **VARIABLE** (switch is released) the switch will light Red. This function allows you to control the **LEFT** and **Right OUTPUTS** and the **MONITOR HEADPHONES** by varying the **LEVEL** pot from Min to Max.

NOTE: The LED function also doubles as a power indicator. The lit LED shows that there is a valid power connection thru the USB cable. If this LED is not lit the unit is not powered.

REAR PANEL

USB Connection

Connect the USB cable to the appropriate computer (digital USB) device and then to the USB connector on the USB-DI *Project Series*.

Once the USB connection is made and your computer is on, the unit will automatically connect and try to set your computer "Default Audio Device" to be "USB Audio DAC". Usually the computer will do this automatically whenever a USB device is first connected, but it is sometimes necessary to make the selection manually. The same settings may need to be made in your particular audio application as well (Check your application instructions). These settings should be made while the USB-DI *Project Series* and computer are connected.

LEFT and RIGHT OUTPUTS

Connect the line level XLR OUTPUT jacks to all sorts of systems using analog inputs.

GROUND LIFT

Ground Lift switch eliminates grounding loop hum. The switch adds another level of hum protection. It lifts pin-1 on the XLR jacks. Computers sometimes are a source for noise issues in audio setups.

OPERATION WITH A COMPUTER

Once the USB connection is made and your computer is on, your computer will power the USB interfaces circuitry over the USB bus and the unit will automatically connect and try to set your computer “Default Audio Device” to be “USB Audio DAC”. Usually the computer will do this automatically whenever a USB device is first connected, but it is sometimes necessary to make the selection manually. The same settings may need to be made in your particular audio application as well (Check your application instructions). These settings should be made while the USB-DI *Project Series* and computer are connected and powered on.

Your computer audio output “Speaker” is now set to be the “USB Audio DAC” and playback audio is routed to the USB-DI *Project Series*. This must be done while the USB-DI *Project Series* is connected to the computer and powered on. After the above settings are made, your computer will automatically reconfigure itself back to these settings every time the USB-DI *Project Series* is reconnected to the computer. Your recording software may also select which inputs or outputs are being used.

NOTE: The USB-DI *Project Series* interface uses the standard “USB Audio DAC”. This driver is built into most modern operating systems, including most current versions of Linux. Since some details of how the audio interface is set vary with different versions of Linux, the setup is beyond the scope of this document. The main key in setup is to look for “USB Audio DAC” as the recording source or playback monitor output while the USB-DI *Project Series* is connected.

APPLICATIONS

Audio interfaces

Audio sources from computers, Audio projectors and any other USB audio source to an analog audio interface, receivers, mixers and powered speakers.

When to use the Fixed versus the Variable switch

Monitoring the source signal. A separate headphone output allows you to monitor the input signal, in the **FIXED** mode. This will allow you to vary the output signal for the headphones without changing the gain out the Main outputs.

In the **FIXED** mode the signal gain will not vary and can be adjusted from the preamp section or mixer that the USB-DI has been connected to.

In the **VARIABLE** mode you will be able to adjust the output signal to the preamp or mixer from the USB-DI.

WARRANTY INFORMATION

Limited Warranty

Applied Research and Technology will provide warranty and service for this unit in accordance with the following warrants:

Applied Research and Technology (A R T) warrants to the original purchaser that this product and the components thereof will be free from defects in workmanship and materials for a period of **three years** from the date of purchase. Applied Research and Technology will, without charge, repair or replace, at its option, defective product or component parts upon prepaid delivery to the factory service department or authorized service center, accompanied by proof of purchase date in the form of a valid sales receipt.

Online Registration

We recommend that you register your product online to insure prompt warranty repair servicing on any repair issues. Please go to www.artproaudio.com. Select “*Support*”, then “*Product Registration*”. Then input your information here.

Exclusions

This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. This warranty is void if the serial number is altered, defaced, or removed.

A R T reserves the right to make changes in design or make additions to or improvements upon this product without any obligation to install the same on products previously manufactured.

A R T shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitations of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific rights and you may have other rights, which vary from state to state.

For units purchased outside the United States, an authorized distributor of Applied Research and Technology will provide service.

SERVICE

The following information is provided in the unlikely event that your unit requires service.

Be sure that the unit is the cause of the problem. Check to make sure the unit has power, all cables are connected correctly, and the cables themselves are in working condition. You may want to consult with your dealer for assistance in troubleshooting or testing your particular configuration.

If you believe that the ART unit is at fault, go to **www.artproaudio.com**.

Select “*Support*”, then “*Return Authorization Request*” to request a return authorization number.

If you are returning the unit for service, pack the unit in its original carton or a reasonable substitute. The original packaging may not be suitable as a shipping carton, so consider putting the packaged unit in another box for shipping. Print the RA number clearly on the outside of the shipping box. Print your return shipping address on the outside of the box.

Include, with your unit, a note with the RA number and your contact information, including a return shipping address (we cannot ship to a P.O. box) and a daytime phone number, and a description of the problem, preferably attached to the top of the unit. Also include a copy of your purchase receipt.

Fill in the following information for your reference:

Date of purchase _____

Purchased from _____

Serial number _____

SPECIFICATIONS

Input Connections:	USB 2.0
Output Connections:	Balanced XLR and 1/8-inch Headphone output
Max XLR output level:	+7.5dBu. Balanced line, Variable output mode. -1.5dBu Balanced Line, Fixed output mode
Headphone output:	150mW / channel max. @16 Ohms load.
Frequency Response:	20 Hz to 20 kHz +/- 1dB
THD:	<0.020% [typical]
Dynamic Range:	96dB "A" wtd. typ.
Supported Sample rates:	32kHz, 44.1kHz, 48kHz
Chassis Type:	All aluminum black anodized with integral rubber sides
Power Requirements:	USB bus powered, 500mA Max
Dimensions(HWD):	1.87-inch x 4.61-inch x 4.27-inch 47.5mm x 117mm x 108mm
Weight:	1.89 lbs. (0.86 kg) with packaging

Note: 0 dBu = 0.775Vrms

ART maintains a policy of constant product improvement.
Therefore, specifications are subject to change without notice.

Go to **HYPERLINK** <http://www.artproaudio.com> www.artproaudio.com for the latest information and support on the **USB-DI Project Series**.

www.artproaudio.com
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UDI-5004-101

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