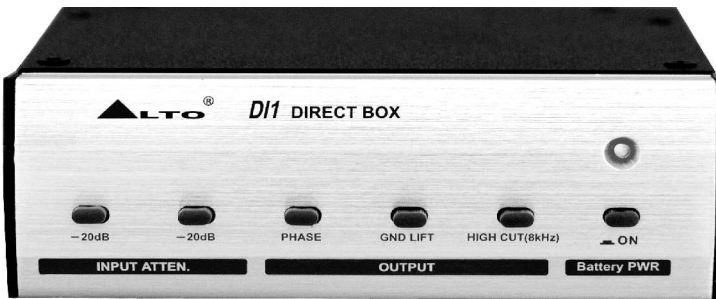


User's Manual

DI1

DIRECT BOX



www.altoproaudio.com
Version 2.0 Dec. 2002

— English —

SAFETY RELATED SYMBOLS



The symbol is used to indicate that some hazardous live terminals are involved within this apparatus, even under the normal operating conditions.



The symbol is used in the service documentation to indicate that specific component shall be only replaced by the component specified in that documentation for safety reasons.



Protective grounding terminal.



Alternating current /voltage.

ON: Denotes the apparatus turns on.

OFF: Denotes the apparatus turns off, because of using the single pole switch, be sure to unplug the AC power to prevent any electric shock before you proceed your service.

WARNING: Describes precautions that should be observed to prevent the danger of injury or death to the user.

CAUTION: Describes precautions that should be observed to prevent danger of the apparatus.

WARNING

• Power Supply

Ensure the source voltage matches the voltage of the power supply before turning ON the apparatus.

Unplug this apparatus during lightning storms or when unused for long periods of time.

• External Connection

The external wiring connected to the output hazardous live terminals requires

installation by an instructed person, or the use of ready-made leads or cords.

• Do not Remove any Cover

There are maybe some areas with high voltages inside, to reduce the risk of electric shock, do not remove any cover if the power supply is connected.

The cover should be removed by the qualified personnel only.

No user serviceable parts inside.

• Fuse

To prevent a fire, make sure to use fuses with specified standard (current, voltage, type). Do not use a different fuse or short circuit the fuse holder.

Before replacing the fuse, turn OFF the apparatus and disconnected the power source.

• Protective Grounding

Make sure to connect the protective grounding to prevent any electric shock before turning ON the apparatus.

Never cut off the internal or external protective grounding wire or disconnect the wiring of protective grounding terminal.

• Operating Conditions

This apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on this apparatus.

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Do not use this apparatus near water. Install in accordance with the manufacturer's instructions. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including am-

plifiers) that produce heat. Do not block any ventilation openings.

No naked flame sources, such as lighted candles, should be placed on the apparatus.

IMPORTANT SAFETY INSTRUCTIONS

- Read these instructions.
- Follow all instructions.
- Keep these instructions.
- Heed all warnings.
- Only use attachments/accessories specified by the manufacturer.

• Power Cord and Plug

Do not defeat the safety purpose of the polarized or grounding type plug.

A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

• Cleaning

When the apparatus needs a cleaning, you can blow off dust from the apparatus with a blower or clean with rag etc.

Don't use solvents such as benzol, alcohol, or other fluids with very strong volatility and flammability for cleaning the apparatus body. Clean only with dry cloth.

• Servicing

Refer all servicing to qualified personnel. To reduce the risk of electric shock, do not perform

any servicing other than that contained in the operating instructions unless you are qualified to do so .

Servicing is required when the apparatus has been damaged in any way ,such as 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.

Preface

Dear Customer:

Thanks for choosing ▲LTO DI1 Direct Box and thanks for choosing one of the results of ▲LTO AUDIO TEAM job and researches.

For our ▲LTO AUDIO TEAM, music and sound are more than a job...are first of all passion and let us say ..our obsession!

We have been designing professional audio products for a long time in cooperation with some of the major brands in the world in the audio field.

The ▲LTO line presents unparalleled analogue and digital products made by Musicians for Musicians in our R&D centers in Italy, Netherlands, United Kingdom and Taiwan. The core of our digital audio products is a sophisticated DSP (Digital Sound Processor) and a large range of state of the art algorithms which have been developed by our Software Team for the last 7 years.

Because we are convinced you are the most important member of ▲LTO AUDIO TEAM and the one confirming the quality of our job, we would like to share with you our work and our dreams, pay attention to your suggestions and your comments.

Following this idea we create our products and we will create the new ones! From our side, we guarantee you and we will guarantee you also in future the best quality, and the best fruits of our continuous researches and the best prices.

The DI1 Direct Box has several basic functions : converting a high impedance signal to a low impedance signal; converting a "hot" instrument or line level (and sometimes even speaker level signal) signal to a microphone level signal suitable for connection to the Mic Input of a mixing console etc. And it used to prevents hum and noise pick up due to special transformer decoupling.

Nothing else to add, but that we would like to thank all the people that made the ▲LTO DI1 Direct Box a reality available to our customers, thank our designers and all the ▲LTO staff, there to make possible the realization of products containing our idea of music and sound and there to support you, our customers, in the best way, conscious that you are our best richness.

Thank you very much.

▲LTO AUDIO TEAM

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1. INTRODUCTION

DI stands for " Direct Injection" and DI Boxes are also called Direct Boxes. You need to use Direct Boxes if you wish to convert a high impedance instrument signal or an unbalanced signal into a format that will be suitable for direct connection into a mixer.

With the ALTO DI 1 Direct Box,

- a. You can convert a high impedance signal into a low impedance signal.
- b. You can convert an unbalanced signal into a balanced signal.
- c. You can convert a line level signal into a microphone level signal for connection into the Microphone input of the mixer.
- d. You can isolate the instrument on stage from the mixer. In such way you can eliminate noise caused by the ground loop.

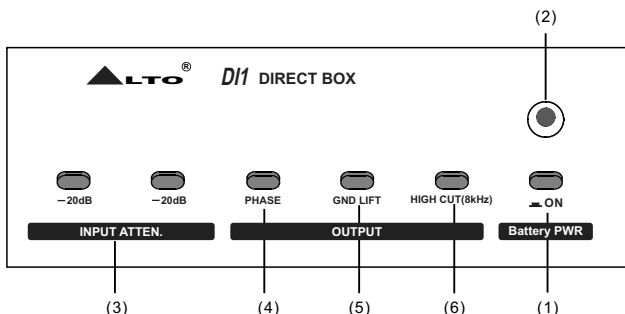
There are basically two different kind of Direct Boxes on the market: Passive and active. Both will be connected to the MIC input of the Mixer but active boxes such as your DI 1 perform better and produce better frequency response.

2. YOUR DI 1 FEATURES:

- XLR balanced input and output connectors
- Converts unbalanced input into balanced output
- Phase problems instantly corrected through PHASE INVERSION switch
- Ground loop problems eliminated via GND LIFT switch
- 8kHz High cut Filter available for guitar applications
- 1 CHANNEL Direct Box for applications in recording studio and stage
- Special transformer decoupling in order to avoid hum and noise pick-up
- Outstanding audio performances insured by ultra-low noise operational amplifiers

3. CONTROL ELEMENTS

3.1 The Front Panel



1. Battery Power Switch

This push-button will activate the power supplied by the internal 9 Volt Battery (not supplied). The (2) Led will blink at several seconds intervals. If you are using your DI 1 with external phantom power you can release the switch in order to preserve the battery life.

2. Power LED

When operating with phantom power this LED will light up continuously. If you are using the internal 9 Volt battery, the LED will blink at several seconds intervals.

3. 20dB Attenuation Switches on input

Press either of these switches and you will attenuate the input signal by 20dB. In such way you can produce increased headroom and reduce the risk of distortion because of level peaks at input level when the input signal is quite hot.

4. Phase Inversion Switch

By pressing this switch you will reverse the signal phase by 180°. In normal situations, just forget about this switch but in case of inversion of the connectors this switch becomes very useful to compensate the phase cancellation

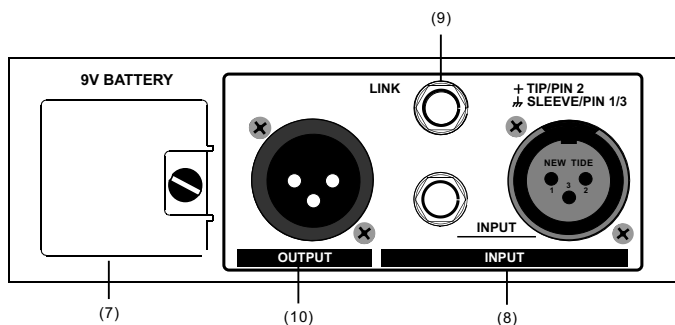
5. GND Lift Switch

This switch disconnects the input signal ground from the output signal ground. In this way you can avoid hum produced by ground loop.

6. High frequency Filter at 8 kHz

You can press this switch and activate the 8 kHz High Cut Filter when using an electric guitar with your DI 1 Direct Box.

3.2. The Rear Panel



7. The Battery compartment

You can insert or change the 9 Volt Battery by loosen the screw and open the compartment.

8. Input Connectors

Both XLR and unbalanced 1/4" TRS jack input connectors are supplied in your DI 1 Direct Box for maximum flexibility

9. Link Connector

This 1/4" TRS jack will output the incoming signal directly being wired in parallel with the Input Connectors.

10. Output Connector

Finally, the output signal at MIC level will be produced by this XLR output connector. You must pay particular attention to the wiring of this XLR connector if phantom power of +48V is supplied to your DI 1 box.

XLR Connector	Phantom Power Supply
PIN1 (Ground)	GND
PIN2	+48V
PIN3	+48V

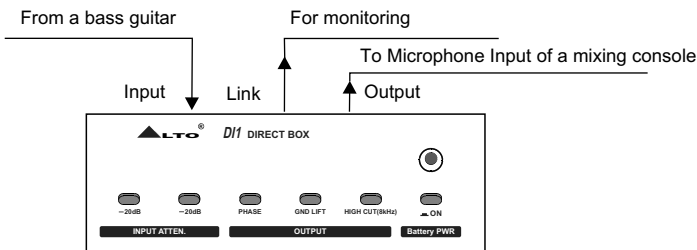
4. APPLICATIONS

So, we are telling you that after you have spent a fortune for your gear, you still need to by an extra piece of equipment such as the DI 1 box? You will be amazed how the DI 1 will transform your audio system whatever for studio or for live applications: No risk of miss-match impedance, no ground loop and hum.

Please look at the following examples of applications

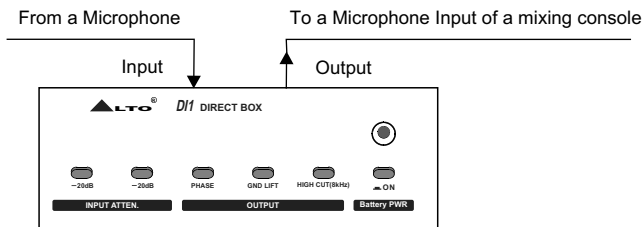
4.1 When the input signal is a Bass Guitar

You can connect your bass guitar directly into your DI 1. Then you can connect the DI 1 into the MIC input of your mixer. In such a way you do not need a Bass Amplifier on stage but you can still feed a Bass Amp using the Link Output connector of your DI 1.



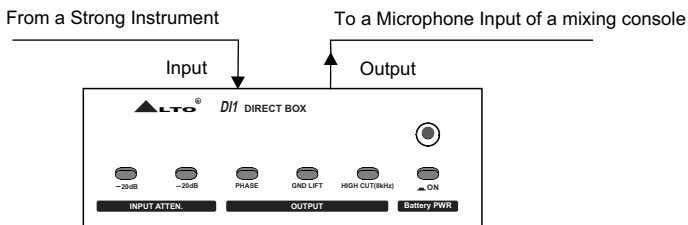
4.2 When the input signal is a microphone

In this way the unbalanced output of a microphone is converted into a balanced one. In such way you can cover a longer distance from the microphone to the mixer still avoiding noise problems.



4.3 How to convert a strong signal into MIC level signal

If you connect a line level signal or a speaker signal into a MIC input you would create a disaster. To avoid this just use either or both the 20dB Attenuation Switches on your DI 1.



4.4 How to isolate the instrument on stage from the mixing console

Tricky stuffs now from your DI 1 box. OK in order to avoid ground problem the ground connection of an instrument to the mixer should be made with the DI 1. But in some case the instrument will be connected to an amplifier as well through the same DI 1, so you have now a grounding point with the amplifier and another one with the mixer. If small differences occur in the ground of the amplifier and the mixer, AC current will flow into the shield. The resulting "ground loop" and 50/60 Hz noise will radiate from the shield to the center conductor and will produce hum.

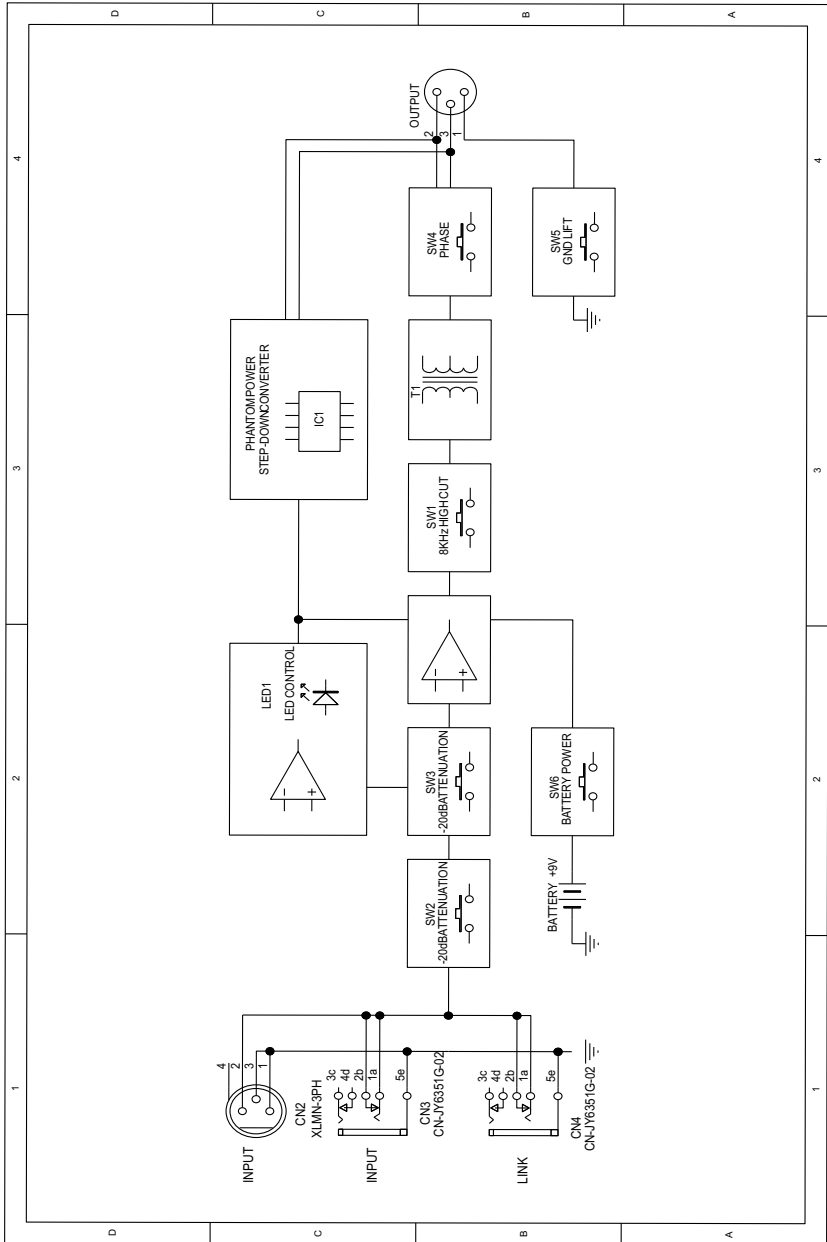
Fortunately your DI 1 is equipped with a GND Lift Switch that will eliminate the interference cause by the ground loop.

5. TECHNICAL SPECIFICATIONS

5.1 Specifications

Inputs	1/4" jack unbal. In/ Link Out XLR unbalanced In
Input Impedance	max 250kOhm
Maximum Input Level	+2/+22/+42 dBm
Outputs	XLR unbalanced Out
Load Impedance	>600Ohm
Maximum Output Level	+6dBm
System specifications	
Bandwidth(100kOhm)	10Hz to 200kHz(± 3 dBm)
Bandwidth(600Ohm)	10Hz to 45kHz(± 3 dBm)
Bandwidth(High Cut)	10Hz to 8kHz(± 3 dBm)
Noise Level	-105dBm
THD+N@ 1 KHz/1dBm	<0.01%
Power supply	
Phantom power	18V DC to 48V DC
Battery	9V blockcell 6LR91
Dimensions	128(W) \times 123.5(D) \times 44.2(H)mm
Weight	0.8Kg

5.2 Block Diagram



7. WARRANTY

1. WARRANTY REGISTRATION CARD

To obtain Warranty Service, the buyer should first fill out and return the enclosed Warranty Registration Card within 10 days of the Purchase Date.

All the information presented in this Warranty Registration Card gives the manufacturer a better understanding of the sales status, so as to purport a more effective and efficient after-sales warranty service.

Please fill out all the information carefully and genuinely, miswriting or absence of this card will void any of your warranty service.

2. RETURN NOTICE

2.1 In case of return for any warranty service, please make sure that the product is well packed in its original shipping carton, and it can protect your unit from any other extra damage.

2.2 Please provide a copy of your sales receipt or other proof of purchase with the returned machine, and give detail information about your return address and contact telephone number.

2.3 A brief description of the defect will be appreciated.

2.4 Please prepay all the costs involved in the return shipping, handling and insurance.

3. TERMS AND CONDITIONS

3.1 ▲LTO warrants that this product will be free from any defects in materials and/or workmanship for a period of 1 year from the purchase date if you have completed the Warranty Registration Card in time.

3.2 The warranty service is only available to the original consumer, who purchased this product directly from the retail dealer, and it can not be transferred.

3.3 During the warranty service, ▲LTO may repair or replace this product at its own option at no charge to you for parts or for labor in accordance with the right side of this limited warranty.

3.4 This warranty does not apply to the damages to this product that occurred as the following conditions:

- Instead of operating in accordance with the user's manual thoroughly, any abuse or misuse of this product.
- Normal tear and wear
- The product has been altered or modified in any way .
- Damage which may have been caused either directly or indirectly by another product/ force/etc.
- Abnormal service or repairing by anyone other than the qualified personnel or technician.

And in such cases, all the expenses will be charged to the buyer.

- 3.5 In no event shall ▲LTO be liable for any incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.
- 3.6 This warranty gives you the specific rights, and these rights are compatible with the state laws, you may also have other statutory rights that may vary from state to state.

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