UNITED®

VINTAGE DIRECT

VINTAGE-STYLE LARGE-TRANSFORMER DIRECT INJECT BOX

Owner's Manual

THANK YOU!

Thank you for purchasing the United Studio Technologies Vintage Direct. We realize how many direct boxes are out there, and we are honored that you have given us a chance. We have done all that we can to exceed your expectations in a quality passive direct box, in terms of craftsmanship, feel, appearance, and most importantly, sound. This direct box should perform reliably under any condition, and last for more than a lifetime. We make our products not 'good for the price'; but to simply be the best we can make them. We have scrutinized and labored over not just the major parts like the transformer; but in every component from end to end, as well as the circuit design and mechanics. We used the highest quality gold contact switches we could obtain, and used some of the highest quality audiophile grade (PRP) resistors available, made specifically for United. With proper care, our products should last a lifetime of use and beyond.

CHAD KELLY

United Studio Technologies, LLC.

Baton Rouge, Louisiana USA

PRODUCT SERVICE

REGISTER YOUR PRODUCT

Before we begin, please take the time to visit **www.unitedstudiotech.com** to register your product. To ensure you receive proper and uninterrupted warranty support for your product, please register your unit within 14 days from purchase.

UPDATES TO THIS MANUAL

Occasionally, we may have updates to this manual. All current manuals can be downloaded at **www.unitedstudiotech.com**. For your convienence, every page of this manual displays the version number at the bottom of the page.

SAFETY

Warning: To reduce the risk of electric shock, do not open the device as there are no user-servicable parts inside. **Refer servicing to qualified personnel!**

1. Read and keep these instructions; heed all warnings, and follow all instructions.
2. Do not expose this device to rain and moisture.
3. Clean only with a dry cloth.
4. Servicing is required when the device has been damaged in *any* way.
5. Always connect with a standard 3 pin XLR (male XLR to female XLR) cable that is in good working order.
6. Always fully connect microphone cable on both ends before engaging +48v Phantom Power.
7. Always disengage +48v Phantom Power and give the microphone a few moments to fully discharge before disconnecting the microphone cable.
8. DO NOT pass this microphone signal directly through a TT (tiny telephone, tip-ring-sleeve) or TRS (¼ inch, tip-ring-sleeve) patchbay! A preamp, of course, can be followed by a patch bay; just not a microphone signal.
9. This microphone ships with a silica gel packet. Do not discard it; this ensures that moisture/humidity does not accumulate on the mic capsule diaphragm and that no part of the device begins to oxidize. If the silica package becomes lost or discolored, replace it with a new, good quality silica gel packet.

WARRANTY SERVICE

United warranties this product to be free from defect in materials and workmanship for one year from date of purchase, for the original purchaser to whom this equipment is registered. This warranty is non-transferrable.

This warranty is void in the event of damage incurred from unauthorized service to this unit, or from electrical or mechanical modification to this unit. This warranty does not cover damage resulting from abuse, accidental damage, misuse, improper electrical conditions such as mis-wiring, incorrect voltage or frequency, unstable power, disconnection from earth ground (for products requiring a 3 pin, grounded power cable), or from exposure to hostile environmental conditions such as moisture, humidity, smoke, fire, sand and other debris, and extreme temperatures.

United will, at it's sole discretion, repair or replace this product in a timely manner. This limited warranty extends only to products determined to be defective and does not cover incidental costs such as equipment rental, loss of revenue, etc. Please visit us at **www.unitedstudiotech.com** for more information on your warranty, or to request warranty service.

This warranty applies to products sold in the United States of America. For warranty information in any other country, please refer to your local distributor for United Studio Technologies. This warranty provides specific legal rights, which may vary from state to state. Depending on the state in which you live, you may have rights in addition to those covered in this statement. Please refer to your state laws or see your local retailer for more information.

NON-WARRANTY SERVICE

If you have a defective unit that is outside of our warranty period or conditions; we are still here for you and can get your unit working again for a modest service fee. Please visit us at **www.unitedstudiotech.com** to contact us about setting up a repair or for more information.

With the proper care, your United gear should last a lifetime and provide a lifetime of enjoyment. We believe the best advertisement we can have is a properly working unit being put to great use. Let's work together to make it happen.

CHAPTER 1:
LET'S GET STARTED!

1.1 HARDWARE CONTROLS

FRONT PANEL:

Attenuation Switch - Engages the output pad

Phase Inversion Switch - Engages an 180° phase inversion on the output.

Ground lift switch - Engages a ground lift, isolating the input from output ground.

Output Control - Three transformer-based output tap positions.

REAR PANEL:

Output XLR - Main direct injection output for connection to audio interfaces, mixers, recorders, etc.

Input 1/4" - Input for the Vintage Direct. This is where you will plug in your sound source; guitar, synthesizer, etc.

Thru-put 1/4" - Passive pass-thru for connecting a live guitar amp, pedalboard, or processor.

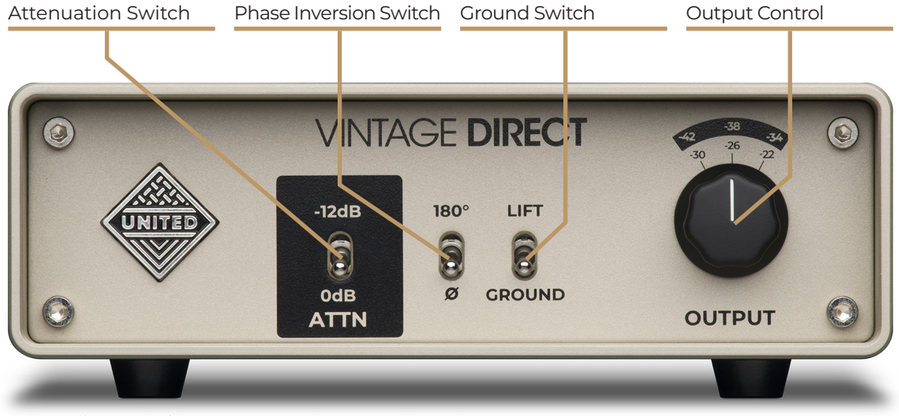


Fig. 1: The front panel of the Vintage Direct; this contains all controls.

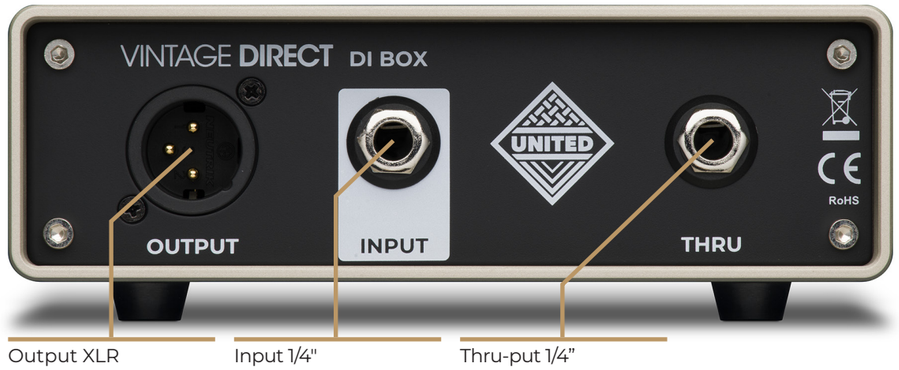
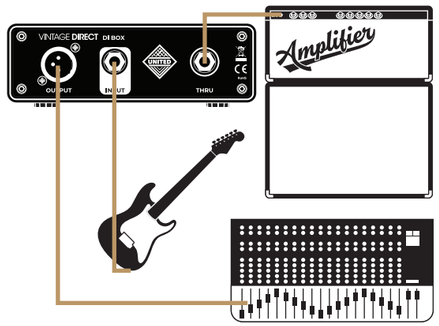


Fig. 2: The rear panel of the Vintage Direct; this contains all I/O.

1.2 **CONNECTIONS**

To operate, simply plug the source into the instrument input, and if an amplifier or guitar processor will be running at the same time as the DI capture, this can be connected to the THRU output. The balanced XLR output can connect to most any preamp or recording interface using a standard XLR mic cable, where your preamp's gain and input pad can be adjusted as needed to capture a clean, full DI signal. The Vintage Direct has a total of six attenuation settings for the best compatibility with a wide range of preamp inputs.



The Vintage Direct is passive, requiring no battery or wall-adapter power source.

1.3 **LEVEL SETTING**

Vintage Direct offers six different output level options, thanks to its 3-way control and -12 dB Pad switch.

Use these controls in conjunction to dial in the most suitable level for the device you've connected the Vintage Direct to for tracking.

An input level between -12 and -6 dB is perfectly acceptable.

Unlike other DI boxes, level tailoring in the Vintage Direct is built into the transformer taps of its output, which is far more tolerant of adjustment without affecting tone.

Vintage Direct uses three different secondary winding configurations in conjunction with a precision resistor T-pad output attenuator for six evenly-spaced output level settings.

This broad range of output levels assues that Vintage Direct can handle everything from the hottest analog synths to low-output piezo pickups.

1.4 **POLARITY**

The Polarity switch inverts the incoming waveform by 180°. This is useful when using Vintage Direct to capture both a mic'd speaker cabinet and Vintage Direct's output simultaneously.

If the material recorded from Vintage Direct's Output and your mic'd cabinet sound thin or phasey when played back in unison, you likely have a phase-cancellation issue that can be quickly resolved with a flip of the polarity switch.

Additionally, some vintage studio equipment uses a non-standard pin configuration in its XLR connections, which can result in poor, phase-canceled signal quality when connected to contemporary devices. Because the Polarity switch functions by toggling pins 2 and 3 of the XLR connection, engaging it can do a great deal to mitigate these phase issues.

You may also opt to adjust your mic positioning to help resolve phase issues.

1.5 **USING THE GROUND LIFT**

Unwanted hum and noise are commonly caused by ground loops, which occur when there is a difference in electrical potential between multiple grounding points.

The Ground switch removes ground-loop induced hum and noise by disconnecting (lifting) the ground between the Input and Output.

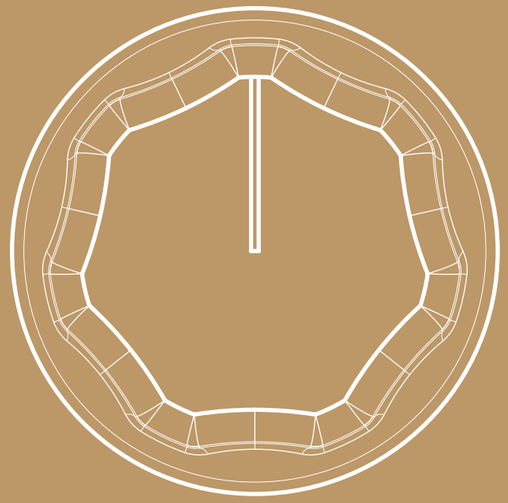
1.6 **GOING SDRAWKCAB**

Don't forget that your Vintage Direct is bi-directional. Not only does it convert your instrument-level signals into balanced signals suitable for use with audio interfaces and mixers... because of its passive architecture, it also works the other way around!

So if you've been wanting to experiment with running a condenser mic into a guitar amp, the Vintage Direct will let you do that. Have fun!

CHAPTER 2: ABOUT THE VINTAGE DIRECT

2.1 CHAD KELLY'S HISTORY OF DIRECT BOXES



As I'm sure is the case with many electronics hobbyists and enthusiasts, the direct box (along with my hand-made cables) was the first thing I ever summoned the courage to put together on my own, probably almost 30 years ago. I remember the first time I heard the comparison between the built in active DI that is included on so many preamps and interfaces and the sound of a dedicated passive DI made with a high quality transformer. The added weight, headroom, depth, warmth, and clarity really left an impression on me. A great passive DI, coming into the mic input of a pre, can have a much better self noise and it becomes so much easier to control gain structure and avoid the all-too-common problem of instruments clipping on input with the onboard DI. This is especially true with bass, but quite often with guitar as well; and with extremely hot analog synth, it's a downright requirement. The direct signal sounds bigger, punchier, and seems to live in its own sonic space.

I also keenly remember buying my first high end active, transformer-less direct box and finding to my dismay that it was not actually as transparent as the passive ones I had built, not only adding a certain pillowy character to the sound, but also introducing a good amount of radio interference that I struggled to fully eliminate. It was refreshing to read Bruce Swedien's first book, many years later, where he described the same problem and why he still relied on his trusty Bass Box passive DI built with a large, vintage transformer.

I have built hand-made direct boxes on occasion for the last 30 years, and many have found their way into major recording studios. Many of the early units were often in brightly-colored boxes, and made in mono or stereo versions.

Passive DIs often get a bad reputation as being the less transparent between active and passive, suffering from high frequency loss and compression of transients, etc.; but I feel this is not entirely true. Passive DI boxes can have those qualities; but they do not have to. I have made passive DIs that are absolutely neutral. I have also made some that have a good amount of deliberate color. Modern transformer design allows for parts that have exceedingly low loading loss and excellent high frequency response; many can even have a slight high frequency lift. To my way of thinking, the benefits of a transformer outweigh the negatives. The noise rejection, isolation, common mode rejection, and reliability are simply best with a well-made transformer design.

The Vintage Direct hanging out with a few keyboards.

L-R: Moog Prodigy, Wurlitzer 200a, Roland RE-201 Space Echo, 1979 Fender Rhodes Eighty Eight, Nord Electro 3, Siel OR400, Moog Little Phatty. The Vintage Direct is resting on a 1968 Fender Bassman 2x15 cabinet.

2.2 THE CUSTOM US-MADE 5078 TRANSFORMER

In the early days of direct boxes, there were no specially-made direct box transformers as we would know them today. Transformer makers had a much more limited catalog in those days, with most parts having a variety of applications and a sometimes wild number of taps available to configure in all sorts of ways, from unity gain to extreme step up to extreme step down... These early transformers were larger, more complex, and more expensive to build. Modern passive direct box transformers are usually very specialized parts made for a single application, and are usually much much smaller, often relying on outside semiconductors (pots, resistors, RC networks, filters, diodes, etc.) to pad and protect the transformer from clipping or from excessive levels and outside interference.

What we embarked to do with the Vintage Direct was to return to the beginning, with a part that was directly inspired by one of the vintage UTC parts manufactured in the 1960s that was used in some of the earliest direct boxes. We endeavored to maintain all of its original tap options as close to what was originally spec'd as possible, utilizing these additional taps to give us the output level range we desired. Because I am of the belief that having a lot of semiconductors (pads, pots, etc) in front of the transformer could contribute to some degree of parasitics (loss, and the dreaded tone suck', we were adamant from the beginning that the incoming signal must hit the transformer directly, with nothing in between.

The transformer simply had to be made to such a quality level, size, and have such exceptional shielding that simply nothing else would be necessary. The transformer is simply so large and robust that it would be very difficult to clip. It has no pad, per say, and all of its level control is merely output control. To us, this ensures the maximum preservation of your instrument's tone.

We spent years exploring many versions of this design, experimenting with different winding ratios and alloys; we ultimately settled on a high-nickel lamination and a winding ratio very close to the classics that inspired us. United's US-made 5078 is one of the largest transformers you'll find in a DI, delivering a pristine low-noise signal, wide frequency response, extraordinary headroom, and outstanding noise rejection.

2.3 SPLITTING THE DIFFERENCE BETWEEN COLOR & TRANSPARENCY

As anyone who knows me knows, the process of reamping is near and dear to my heart. To do reamping in a convincing way requires a direct box that faithfully retains the energy and sonics of the original captured performance. However, a vintage direct box is something that is known to have a certain character. We experimented with different core alloy materials and combinations, and different winding methods for years until finally coming to what we feel is the perfect compromise.

A transformer that measures almost perfectly linear in terms of frequency response; yet has an unmistakable hint of iron in the signal path that gives instruments just a slight heft and larger-than-life character. Tracked into a fairly neutral preamp, you will have a fairly clean and accurate reference DI track. Tracked into, say, a nice tube preamp and overdriven a bit, you can have a bigger, thicker sounding bass or keyboard or drum machine track.

Our Vintage Direct splits the difference about as closely as anything can, and allows the user to ultimately shape some aspects of tone via the preamp choice and gain structure.

CHAPTER 3: TECHNICAL SPECIFICATIONS

Input Impedance	80k Ω (unbalanced)
Output Impedance	50-250 Ω, depending on setting (balanced)
Frequency Response	20hZ-20KhZ, +/-0.5dB
Maximum Recommended Input Levels	+10dB or lower
Output Levels	-42, -38, -34, -30, -26, -22
Auxillary Controls	Phase Inverse, Ground Lift
Dimensions	Height (w feet): 52 mm / 2" Height (w/o feet): 46 mm / 1.8 Width: 149 mm / 5.86" Depth: 155 mm / 6.1"
Weight	.95 kg / 2.1 lbs

As a commitment to constant improvement, United reserves the right to change any specifications, at any time, without notification.

OUR STORY IS YOUR STORY.

Every musician and audio engineer has to start somewhere. We start with the entry-level gear we can afford, and work our way up to using the best of the best gear.

In today's age, we all have the luxury of simulating all of the best classic gear directly in a DAW — but is a simulation as good as the real thing? Sure, we think plenty of it is great, but it never settles our need for the original gear. With the rise of software-variants of classic gear, quite a few companies have taken to selling the "original" as a hardware recreation — but very sadly, many of us have seen we're not being sold the real thing by these companies. And to top it all off, the best classic gear is getting older, less reliable, and more expensive — even finding truly great technicians to work on them has gotten to be very difficult.

We at United are working hard to make sure everyone can finally access gear built like the original classics, with zero compromise. We have put everything we have into our products — from conception, custom parts, New Old Stock parts, and in many cases final assembly and testing that is done by hand in Baton Rouge, Louisiana.

United UT FET47 Prototype Phase 3 #1. This is where we started to take shape, and define our future.

CAVE DAUGHDRILL
Vice President / Co-Founder /
Pinball Fanatic

CHAD KELLY
President / Co-Founder /
Barista / Music Director

www.unitedstudiotech.com

Welcome to the United family!

Don’t forget to register your product
at **www.unitedstudiotech.com**