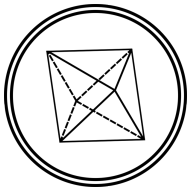


ELECTRONIC AUDIO EXPERIMENTS

Technical Manual

Surveyor

Manual Revision 3

March 27, 2024

John W Snyder

1 Introduction

Thank you for purchasing the Electronic Audio Experiments Surveyor. This manual is an in-depth guide for properly understanding and enjoying your pedal. Below is a bit of context which we hope you find helpful. If you want to skip ahead to the good stuff, head to the Detailed Operating Instructions section below.

The Surveyor began as half of our Dude Incredible pedal, a two-channel homage to the uniquely biting tones of guitarist and record engineer Steve Albini. One half is based on the infamous Interfax™Harmonic Percolator, the other based on the Intersound Instrument Voicing Preamplifier (IVP for short). The Percolator is a well-known fuzz that has taken on a life of its own through countless adaptations, and doesn't need further elaboration here. The IVP, a comparatively obscure device (and certainly the more unique design between the two), is a rackmount preamp capable of an enormous variety of tones due to its EQ configuration and unique "Tube Voice" overdrive circuit. The Surveyor does away with the Harmonic Percolator channel in favor of a more compact form factor that gets straight to the point.

The original IVP is a full-featured rackmount preamp with two input channels, an active Baxandall shelving EQ for high and low frequencies, a four-band parametric EQ for midrange frequencies, clean and "Tube Voice" channels, and multiple buffered patch points for external effects. The Surveyor distills the IVP down to just the input stage, Baxandall EQ, and Tube Voice drive circuit. In the IVP, the EQ is placed before the drive circuit, allowing for unique tone shaping. Rather than final shaping of the overdriven tone, the user can emphasize which frequencies become distorted. Boosting highs brings forth not just treble content, but midrange and presence as well. Boosting the lows can add warmth at lower settings or overwhelm the drive circuit in a musical fashion. The Tube Voice circuit itself uses discrete transistors and a small, low-bandwidth transformer to generate clipping. This combination responds in a smooth manner at lower gain settings but becomes fuzzy and aggressive at higher settings. Thanks to the transformer's limited bandwidth and natural rolloff in the high treble range, it never gets too harsh. You will find that the Surveyor does far more than noise rock clang—it is in fact capable of a huge variety of saturated tones and textures.

I am extremely proud of this pedal and hope you enjoy it. Thanks for reading.

-John Snyder, EAE

2 Power and I/O

To power your Surveyor, use a standard, reliable 9VDC 2x1mm x 5.5mm center-negative supply. The Surveyor has a current draw of 70mA when active, so you can use a typical low current output on a brick supply. The Surveyor will generally work great on a daisy chain, but an isolated power supply is preferred especially if you are also using digital pedals with a high current draw. Recommended power supply brands include Truetone™, Voodoo Lab™, Cioks™, etc. Please note that all Electronic Audio Experiments products do not use batteries.

As of Version 2 (starting in 2022), the Surveyor has a power supply protection circuit which shuts down the pedal in the event of reverse polarity or a DC voltage greater than 9V. The Surveyor does not accept battery power. (Note: previous versions do not have voltage protection.)

Use standard 1/4" patch cables to patch the Surveyor into a pedal chain, as normal. The input jack is on the top right and the output jack is on the top left. The Surveyor works anywhere in a signal chain, but when in doubt try it after all of your other drive/distortion/fuzz pedals and before your modulation and time-based effects. When in doubt, experiment.

The Surveyor has soft-touch relay switching with true bypass. In the event of power loss, the pedal will default to its bypassed state in order to mitigate total signal loss in a live performance scenario.

3 Controls

Level overall volume, with more than enough range for line level output or to overdrive the next thing in your signal path.

Gain amount of overdrive/saturation equally applied to all frequencies; highly interactive with the Bass and Treble settings

Bass pre-clipping low shelf boost/cut, +/-12dB @ 100Hz

Treble pre-clipping high shelf boost/cut, +/-12dB @ 3KHz

Hi/Lo Switch sets the range of the gain control, +0dB in the Lo position and +14dB in the Hi position

4 Detailed Operating Instructions

The key to understanding the Surveyor is understanding the signal flow between the controls. In particular, the active EQ is located before the Gain control. This is backwards from many pedals, but becomes an effective tool for tone sculpting. If you want to understand the overal voicing of the pedal, start with the EQ knobs at noon for a flat response.

From there, you can adjust the Gain control. This determines the overall level of the signal fed into the Tube Voice overdrive/clipping circuit. At low settings it is almost perfectly clean. Higher settings yield a ragged "edge of breakup" tone characteristic of a good 1970s solid-state amplifier. Max gain will verge on distortion or fuzz depending on the EQ settings and pickup type/position. The Hi/Lo control will adjust the effective range of the Gain control, which is especially helpful for matching to the output of a specific instrument.

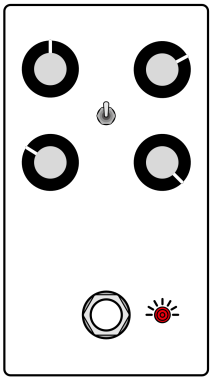
Once you are familiar with the Gain control, try exploring the EQ and its interactions. The Bass and Treble knobs are active, which means they can boost or cut a particular frequency. This makes them highly interactive with the gain control, and can greatly extend its effective range. Boosting a particular frequency band will increase the amount of drive/clipping at that particular range. Increasing Treble will add crunch and presence as these frequencies become more overdriven. However, the sound never becomes too piercing thanks to the natural bandwidth limiting of the transformer in the Tube Voice clipping circuit. Increasing Bass at max gain can push the Tube Voice circuit nearly into cutoff, producing a blown out sound with a sagging attack that resembles a fuzz pedal or an overdriven console.

What one might call "classic" IVP tones come from single coil equipped guitars with aluminum necks, but the Surveyor works amazingly well with any instrument. If you are using humbuckers or a low-tuned instrument and desire a more focused tone at higher Gain settings, try reducing the Bass control. Reducing Bass and Treble to 9:00 can also produce a smooth midrange emphasis that is well-suited to more traditional rock styles.

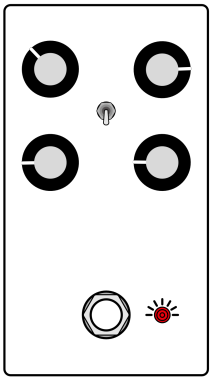
When stacking other pedals (probably a Harmonic Percolator as the obvious choice, though I also recommend trying a Fuzz Face derivative or octave fuzz), you will want to reduce the gain slightly and keep the output volume on the fuzz pedal on the lower side in order to retain note definition. Of course, you are welcome to disregard this advice for truly apocalyptic results: infinite sustain, squealing feedback, note attack that ducks the signal out entirely, and more.

Finally, the Surveyor may be used as a dedicated always-on preamplifier with a power amp or as a DI with a cab impulse. Or, skip cab filtering entirely and become one with the clang. The choice is yours.

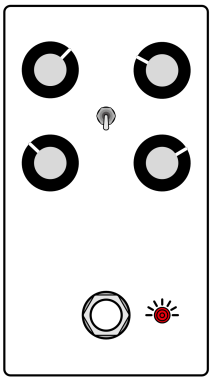
5 Suggested Settings



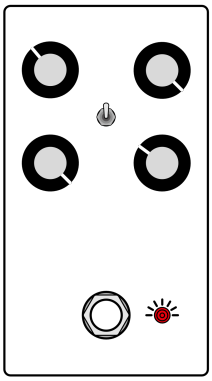
(a) **Here comes the Surveyor:** this one's obligatory. Clang away to your heart's content. If you like the flavor but can't handle the spice, try turning down the Treble slightly. Aluminum guitar not included.



(b) **Surprisingly normal:** With some restraint, you can get a warm, articulate, and dynamic tone. By cutting both Treble and Bass, you get a more conventional mid-forward EQ profile.



(c) **A dash of subtlety:** with the gain set low, the EQ can add sparkle. Great for waking up dull pickups. Try increasing the Volume to use the Surveyor as a boost, or turn up the Gain to get a jangly overdrive.



(d) **Console sludge:** By turning up the Bass to maximum, you can totally overwhelm the transformer overdrive circuit for a console-style fuzz that strains under its own weight.

6 Specifications

Size/Weight: 121mm x 66mm x 40mm, 0.4kg

Bypass: Relay switching w/ true bypass

Input Impedance at 1kHz: 1MΩ

Output Impedance at 1kHz: <1kΩ

Power Input: 9V DC, 2.1mm x 5.5mm center negative barrel connector

Current Draw: 70mA nominal current draw when active

7 Changelog

- V2.5 (Spring 2024)
  - Minor electrical changes to signal path
  - Simplified bypass circuit using CMOS flip-flop for relay control
  - Minor art/print adjustmetnts
- V2 - V2.4
  - New mechanical format
  - Added PSU over-voltage protection
  - Added Hi/Lo toggle
- V1
  - Original Release

Manual Revision History

Version	Changes
3	Updates for 2024 Surveyor V2 production, added suggested settings
2	Updates for Surveyor V2
1	Release for Surveyor V1