Infinity FET Preamplifier™

The Ultimate Preamplifier

The music-loving ex-aerospace scientists and engineers who founded Infinity Systems began working years ago toward an achievement comparable to the DSP Switching Amplifier™ we were developing.

Our goal: the ultimate preamp.

At that time no FET preamps or other highly advanced preamps existed.

Now there are a few. The four or five best new preamplifiers represent great strides beyond any available before about 1974.

As we were determined it would be, the Infinity Preamplifier is the most accurate-sounding and the most musical of that group. (As well as the easiest to operate.)

And when the dynamic and tonal details of recorded music were at last revealed by this new Infinity advance, something else was revealed as well:

On existing recordings, the instruments were separated not only by the individuality of their timbres and overtones, and by stereo's left-and-right definition, but also by a lifelike re-creation of depth.

Until you have heard your components teamed with our FET Preamplifier, you haven't heard all the three-dimensional depth-presence your speakers can convey.

To upgrade the sound of any high-quality sound system, the world's finest preamp is the Infinity High-Resolution FET Preamplifier.

In purity of sound.

A preamplifier is a voltage amplifier and a control center. Paramount among its characteristics is its sound.

We had listened to the finest triode vacuum-tube preamps and enjoyed their warmth and musicality.

But we knew their problems, too: A blurred, unfocused sound, especially in the bass, because of inadequate transient response. And the degrading of sound caused by heat, right from the initial turn-on.

We heard bipolar-transistor preamps and admired their clearer articulation.

But they revealed a harshness, an edginess—more the sound of machines than of instruments.

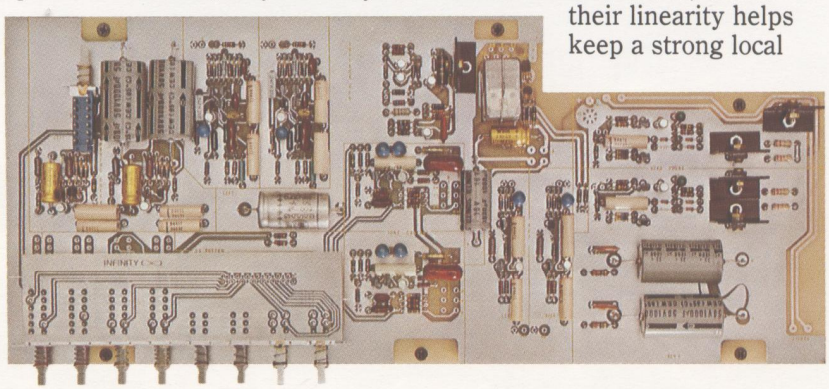
We set out to combine the best of tube and transistor preamps. Without the limitations of either.

The new device that made that goal even theoretically achievable is the junction field-effect transistor (FET).

Note that the "valves" used in some recently developed power amplifiers are power FETs (the most-publicized term is V-FET, for vertical FET).

But a preamplifier is, as we have said, not a power device. It is a voltage device. And the voltage valves in the Infinity preamp are a different kind of FET—the one kind of FET that matches the requirements we weighed with the aid of computer optimization.

The FETs in our preamplifier do have this in common with V-FETs: Unlike conventional (bipolar) transistors, they are very



linear in operation and very low in distortion.

In the heart of the preamp—the gain stage—the voltage gain from millivolts to volts is accomplished virtually without distortion, through the action of the FETs arranged in a sophisticated configuration we had to invent. We translated our ideal performance parameters into formulae and asked the computer to evaluate and balance them by using an esoteric mathematical process known as the Calculus of Variations.

We took the computer's answers and built on them. And listened to the results. And made engineering modifications. And listened even more critically. And ended up a year later giving our approval and the Infinity name only after countless improvements over the "perfect" computer-generated experimental gain-stage design.

Our unique employment of FETs has at last brought virtually to the zero point the harmonic distortion, transient intermodulation distortion, and other degradation that flawed the performance of all previous preamps.

Total harmonic distortion (THD) is measured from a continuous "pure" tone. Whatever the preamp adds is expressed as a percentage of the level of the test tone.

But transient intermodulation distortion (TID) is, if anything, harder to measure and even harder to eliminate. Fleeting moments of music excite TID when a preamp or amplifier takes too many milliseconds to respond to sudden transients.

The response of the FETs in the Infinity Preamplifier prevents such lags and resultant distortion.

The value of low distortion FETs had previously been recognized by designers who use them in the front end of FM tuners, where their linearity helps keep a strong local signal from intermodulating with a weaker one you may be seeking.

It took the combination of Infinity scientific capability and Infinity obstinacy to pursue the use of FETs to the ultimate gain-stage design of the Infinity preamplifier. The result is clearer reproduction of recordings, clearly closer to the sound of the original performance.

And that, we suggest again, is what Infinity's FETs and gain cells—and Ulrick-Henderson DSP Hybrid chips—are all about. Music.

In circuitry.

Voltage regulation is one of the factors with the greatest effect on sound-reproduction. And the voltage of the Infinity FET Preamplifier is regulated with exceptional precision, well within the nominal (and phenomenal) 1% limits listed, always to specification, regardless of variations in local voltage from place to

place and in line voltage from time to time.

A time-delay relay is connected to the On-Off switch. When the preamplifier is turned on, a delay of ten seconds allows all the circuits in the system to stabilize before the output of the preamp is connected to amplifier input. This precaution, plus the separation of the On-Off switch from the volume potentiometer, permits the user to turn the system on with the volume control still set at the previous listening level. No annoying pops or clicks will greet the listener, and no sudden highly amplified surge will damage the speakers.

In features and flexibility.

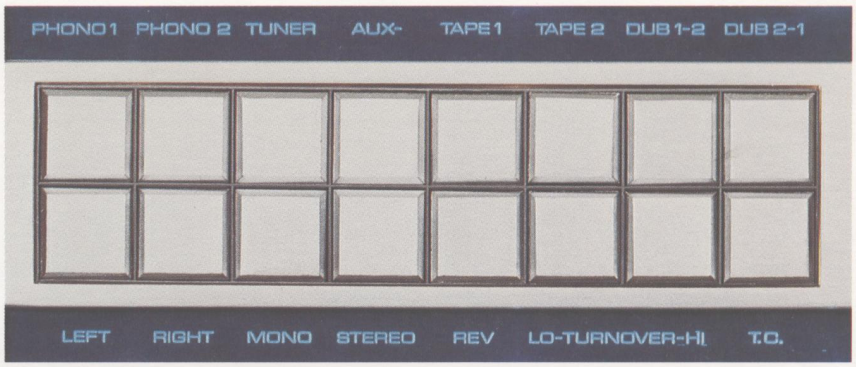
The designers of the Infinity FET Preamplifier would like to thank the designers of other quality preamps for offering a variety of essential, worthwhile, and marginal features, and thus offering *us* an opportunity to weigh the value of each. As a result we have incorporated in the Infinity instrument those features that offer real convenience rather than only gadgetry.

(Then we added a few touches of our own, of course. This is, after all, not a me-too but an Infinity original, easier to use and more flexible than any other preamp.)

Front panel:

The outlet labeled "Phones" connects low- or high-impedance headphones to a built-in headphone amplifier in the preamplifier. Its output of 8 watts per stereo channel is sufficient to drive a pair of modest auxiliary speakers when necessary. When headphones are plugged in, a built-in power switch automatically stops any output to the power amplifier.

The "Tone Control" switch engages contour circuits that govern equalization of the frequencies from midbass through midhighs—100 Hz through 5kHz. Disengaged, it completely disconnects the tone control circuits from the preamp.



When there is a need to bolster the more extreme lows and highs in program material, the turnover controls extend the respective turnover frequencies further—like this:

Engaging the "Lo Turnover" control with a touch extends bass corner frequency from 100 Hz down to 50 Hz, producing a subtle swell in low bass response without affecting mid bass information.

Similarly, engaging the "Hi Turnover" switch adds up to 10 dB of high-end boost but only from 10 kHz up.

The tone control switch may be used with either, neither, or both of the turnover controls.

Why the turnover? Many speaker manufacturers, including ourselves, are now producing relatively flat extended response systems. The turnover allows only the very top or bottom to be augmented.

Back panel:

The Infinity FET Preamplifier provides all the connections needed for listening to, and recording with, a diverse array of program components.

Connectors simultaneously accommodate two tape decks (or tape recorders with their own electronics), two phonographs, a tuner, and any auxiliary input (cassette deck, second tuner, or even the audio from a television set, limited though the broadcast frequency range may be).

Switching from any function or combination to another is as simple as a touch of a front-panel control; no changes in the "patch" (wiring and plug-ins) are involved.

A moving-coil phono cartridge can be used with the "Phono 2" connection. Simply press in the button on the back panel, plug in the turntable—and a built-in FET *pre*-preamp eliminates the need for the awkward external preamp or the distorting transformer ordinarily required with moving-coil cartridges.

Either of two tape decks can record from the other, or—unlike some other preamps—both can record at the same time from a third source, with a mere touch of front-panel controls. Meanwhile the user may monitor the master tape or the dub.

Five mode switches are provided, interlocked so that only one may be engaged at any time. "Left" routes left-channel input to both left and right outputs; "Right" puts material from the right input channel into both outputs; "Mono" combines both left and right inputs; "Stereo," of course, sends left-channel input to the left output channel and right input to right output; "Rev" reverses the stereo channels.

And styling, too.

The clean, simple arrangement of elements on the front panel of the Infinity FET Preamplifier is a bold and helpful departure from both the metal "hardware look" of many preamps and the glass or plastic face of most others—which are subject to being scratched or even broken.

The beauty is more than skin-deep.

Feather-touch mode and component switches are grouped conveniently in two rows on the left side of the panel. Legends identifying them are unobstrusively edge-lit for easy reading even in a darkened room.

On the right half of the panel, the bass, treble, balance, and volume controls are spaced with plenty of finger-room between them. Each is an oversize knob that gives the user a well-merited feeling of control.


TREBLE
BALANCE
VOLUME
PHONES
HIGH RESOLUTION FET PREAMPLIFIER
POWER

The FET Preamplifier

The Infinity FET Preamplifier is a fitting companion to the superb instrument that represents the first consumer application of Class D amplification: the Infinity DSP Switching Amplifier.

But in fact this ultimate preamp will improve the sound of *any* quality amplifier.

And any good speakers.

Your Infinity dealer invites you to demonstrate the FET Preamplifier to your own satisfaction (or, rather, your delight).

Whether you have the ears of a trained and discriminating audiophile or of a sincere but unsophisticated music-lover, you'll hear from even your most familiar favorite recordings a precise new articulation of musical elements—a clean and clear new differentiation between instruments and between voices.

And more. You'll experience the front-to-rear staging of those instruments or voices. When every element of phasing is totally right in a pair of speakers, an amplifier, or an advanced preamplifier—then the ambience, the depth-presence, captured in good stereo recordings can reveal itself. Infinity makes it happen.

Delightful musicality, total accuracy of transient response, warmth and liquidity of tone, and a sense of three-dimensional reality —those may be qualities you have never associated with a preamplifier.

You'll find them in this one. Along with a noticeable edge in features and the utmost ease of operation. Rather nice combination.

Specifications of the Infinity High-Resolution FET Preamplifier

Maximum Output: 7V into 10 K

Minumum Load Impedance: Greater than 10 K

Power Supply: +40 V at 500 MA 1% regulated

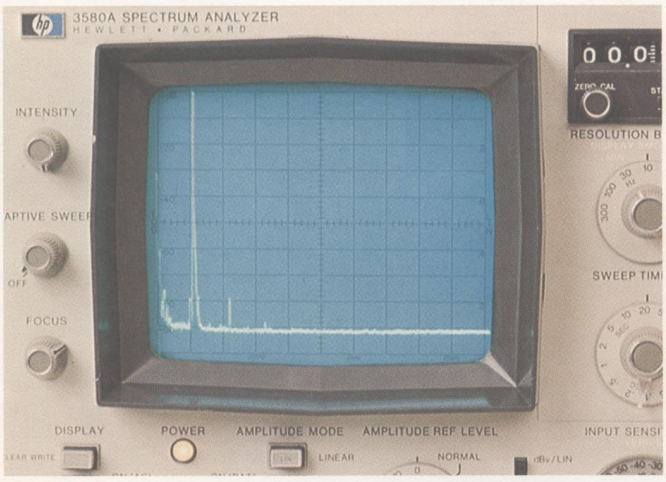
Power Requirements: 30 Watts at 120 volts 60 Hz to 400 Hz AC

Dimensions: 18½" wide x 4½" x 15"

Weight: 26 pounds

Warranty: Transferable. Three years on parts and labor. (See complete warranty statement.)

	Frequency Response	*Intermodulation Distortion at 2 volts out*	*Harmonic Distortion at 2 volts out and filt*	*Signal to Noise*	*Input Impedance*
Phono	±.02 dB of RIAA Equalization curve	.05%	.05%	−82 dbv	47 K
Phono with Moving Coil engaged	−3 dB at 3 Hz and 50 kHz	.07%	.07%	−70 dbv 300 to 20 kHz (Gain set at 60 dB and input shorted.)	
Line Section	±1 dB 20 Hz to 100 kHz. −3 dB at 1 Hz and 230 kHz	.05%	.05%	−90 dbv	50 K



ACTUAL PHOTOGRAPH of harmonic distortion measurement, as measured by a Hewlett-Packard 3580A Spectrum Analyzer, through the phono and aux sections of an Infinity FET Preamplifier chosen at random from the shipping dock.

Horizontal scale of grid is Frequency, starting at 0 Hz on the left and going to 10 kHz on the right. Vertical scale on grid is decibels, starting at 0 dB at the top and descending in 10 dB increments. (The base line is the analyzer residual noise taken at 10 Hz bandwidth.

Test signal is 1 v at 1 kHz, seen as the tall vertical line. (This would equate to the fundamental tone.) The second harmonic is seen as a −80 dB peak at 2 kHz, or .01% distortion. Third harmonic is seen as −88 dB at 3 kHz— or less than .004% distortion in the third harmonic.

Infinity

We get you back to what it's all about. Music.