

NOW AVAILABLE



New Unico 150

The Unico 150 is a hybrid integrated amplifier developed according to specific sonic and scientific criteria set by the design team at Unison Research. These criteria led to a product completely different from anything else Unison Research has ever released. That means it's also different from every other amplifier—valve or solid state—on the market.

Our research at Unison Research led to two circuit performance standards that are, to us, considered essential for excellent performance—a 3-stage circuit and a 2-stage circuit, both in counter-zero. The first type, used in the new Unico 150, is more suitable for integrated amplifiers with higher-than average power. The second type is a more effective application for lower-powered amplifiers.

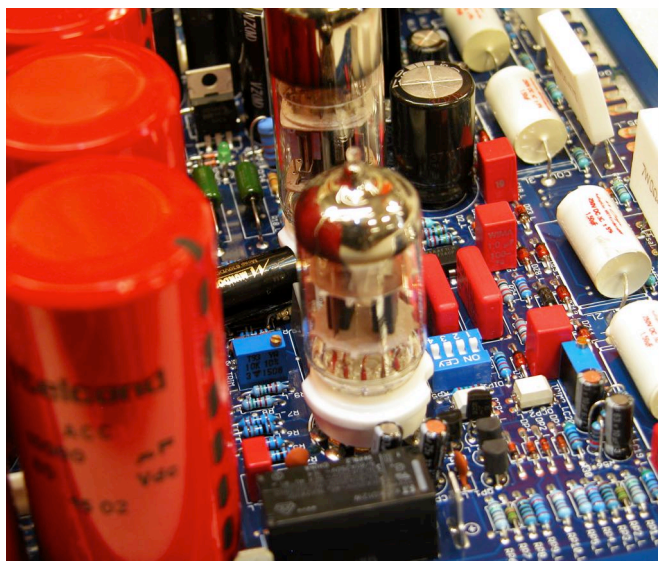
Both of these approaches allow Unison Research to reach a standard of linearity almost impossible with the usual technologies that are matched to single-ended driving capabilities. In fact, the linearity of these new designs are downright remarkable, and typical of the best solid-state amplification available.

Circuit

The heart of Unico 150 circuit is found in its hybrid structure. All of the gain, and subsequently the "character" of the amp, is determined by the first two tube stages. These stages are made with the triodes configured so that they present limited gain with the least output impedance possible. The choice of the triode was determined by multiple factors during the development process—although our testing and research made our ultimate choices rather obvious. These factors included the following:

- The linearity of coupled, i.e. the mutual and automatic compensation of the nonlinearity of each.
- The high linear excursion of the signal and the relevant current capacity of the triode output, necessary for driving the load constituted by the final stages and predominantly by the input capacitance of the complementary pairs of hexfet that are chosen.
- A gain stage triode that is equipped with its own ring of partial reaction, characterized by a factor of feedback very low (16 dB, which is between one-tenth and one ten-thousandth of the typical value adopted in similar circuit topologies) that serves mainly to obtain a very low output impedance (about 60 ohms, a very small value for a tube circuit), without the slightest damage to the parameter "consistency."

Transistors, bipolar or field effect that they are, distort valves--especially low order valves. But in terms of secondary waste, high order valves are unsurpassed and allow invariant residues across almost the entire range of frequencies audible to the human ear. Many audiophiles speak of valves having a soft sound, and this feature is immediately identifiable on an oscilloscope. In fact, you can see on display the waveform of residual distortion of a valve circuit as the signal never changes that quickly—especially compared to the norm of almost all transistor circuits. When those valve circuits are in parallel, however, the measurement of distortion within the frequency of the input signal trend nearly flat.



All capacitors "touched" by the signal are the types that exhibit very low loss and excellent behavior at high frequencies. The polypropylene used for these resistors, in particular, has been widely used for supporting the speed and acceleration of the signal path. Four Mundorf capacitors with very low stray inductance are used in each channel to provide a final energy reserve, small but nearly instantaneous—used in parallel they reduce the effect of parasitic inductance of the slopes connecting to the main large electrolytic tank. As usual for Unison Research, these electrolytic caps are constructed from very Italian Itecond and have a low stray inductance, and are doubled on each branch to lower the inductance further.



Power

When designing the Unison Research Unico 150, consistency was one of the primary goals and is maintained practically at almost every level of power delivery, with the partial exception of the eighth highest at maximum power (a condition that no actual audio signal may take). This is due to the linearity the first two stages of valves, and direct coupling between these and the mosfet output.

This innovative solution has allowed Unison Research to eliminate yet another stage present in virtually every other amplifier, thermal compensation, which in certain cases can be a direct or indirect source of distortion. The Unico 150 reaches nominal linearity in just a few tenths of a second, with optimal linearity optimal achieved in little more than 10 minutes.

Preamplifier

The preamp section of the Unico 150 also incorporates a number of innovative solutions. The preamp section is totally passive--doing otherwise, of course, would have increased the number of stages in the circuit. An ALPS potentiometer is armored in four sections, parallel in pairs, so as to reduce the already minimal noise in order to further improve the precision of the channel balance, especially in the region of high attenuation. The selected sources are connected one at

a time, lifting the mass from those not connected, in order to interrupt the ground loops associated to the connections not used. (These could otherwise act as an antenna and reveal the electromagnetic signals present in the environment, in addition to generating crosstalk between the channels.)

Switching is performed by purely mechanical miniature relays that are armored and placed behind the sockets. The terminals of the hot springs not used are deflected toward their ground--through resistors of suitable value to preserve integrity--in order to eliminate the risk of capacitive coupling through the movable contacts. The balanced inputs are not obtained by electrical means, which would be considered a "fall back" solution, given the impossibility of obtaining symmetry on the terminals of opposite polarities. Instead, we use transformers, which

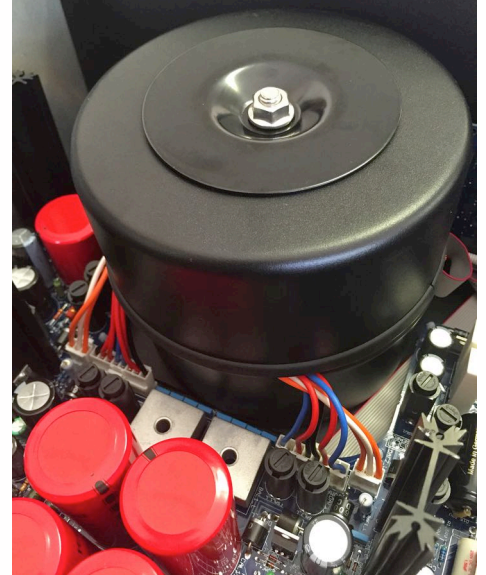
allows a truly balanced transmission of signals--differential impedance is minimal, and the ground reference is theoretically infinite—in addition to other types of galvanic isolation.

In addition, this approach creates powerful aid against the ability to break down interference coming from anywhere else. Although optimized for this function, the use of these transformers may offer slightly worse electrical performance at lower frequencies, particularly with sources where the output impedance is not low. All listening tests conducted in the course of development, however, have confirmed the effectiveness of this choice, which was therefore maintained despite the significant increase in cost.



Construction

The Unico 150 is a dual mono amplifier with power transformers capable of delivering 400 + 400 VA continuously. The power mosfet of each channel can handle power up to 1200 watts and stationary currents up to + -50 amperes. These circuits, of course, are protected and are weighted on 70% of their maximum specifications so to maintain an adequate margin of safety without affecting significant drive capabilities. The total transparency of the sound of these circuits is easily verifiable--protecting the final real-time is connected to the circuit of load shedding, and this would also be activated by the intervention of a single half-wave signal.



Conclusion

Unison Research has accounted for every detail, and thousands of simulations have been carried out in our research labs, to arrive at the Unico 150 integrated amplifier. We have built dozens of prototypes to test every conceivable variation until we have realized our goals through extensive listening tests.

The Unico 150 is an amplifier where the measurements are the electrical function of the desired sound--not the other way around.



Technical Specification

Output power:	150+150 W RMS at 8 Ω 220+220 W RMS at 4 Ω
Frequency response:	-1dB @ 12Hz & 45kHz, -3 dB @ 6Hz & 80 kHz
Input impedance:	24k Ω // 100pF
Input sensitivity:	860mV RMS
Input stage:	Pure A class, double triode totem pole ECC83
Driver stage:	Pure A class, double triode totem pole 6H30
Output stage:	Class AB thermostable, complementary Hexfet (4 pairs for channel)
Input:	6 line (3 unbalanced, 2 balanced, 1 "bypass" unbalanced)
Line Outputs:	1 tape, 1 sub (volume controlled)
Output connectors:	4 + 4 bi-wiring
Global Feedback factor:	0 dB
Local Feedback factor:	16 dB
THD:	< 0.15% @ 1kHz, 1 W < 0.25% @ 1kHz, 10 W < 0.35% @ 1kHz, 100 W < 0.9% da 20 a 20000 Hz, 150 W
Output resistance:	<0.4 Ω , resistive on all audio frequencies
Power Consumption:	550 W (at max power on 8 ohm)
Dimensions:	43.5 cm x 18 cm x 44 cm
Net weight:	25 kg