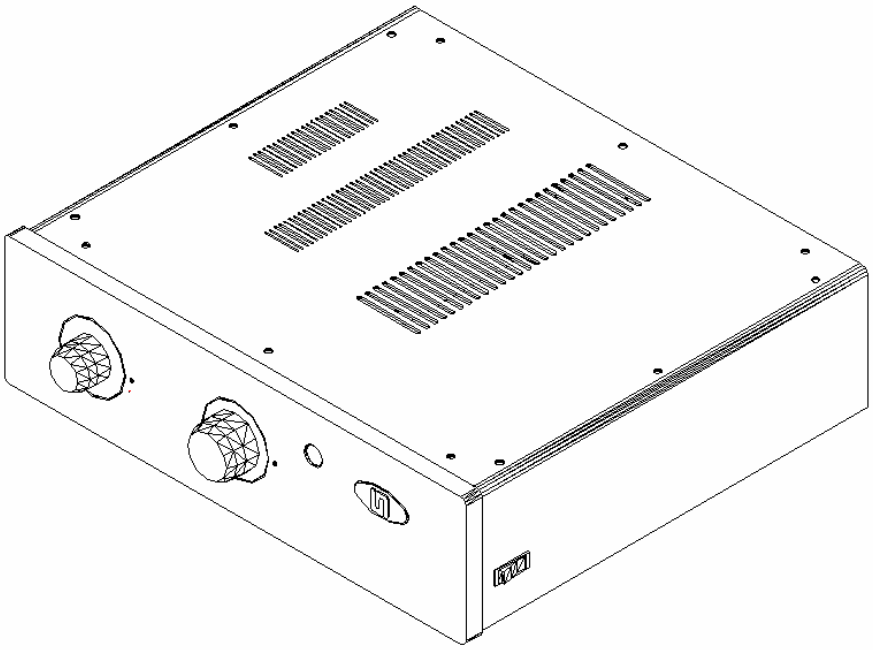
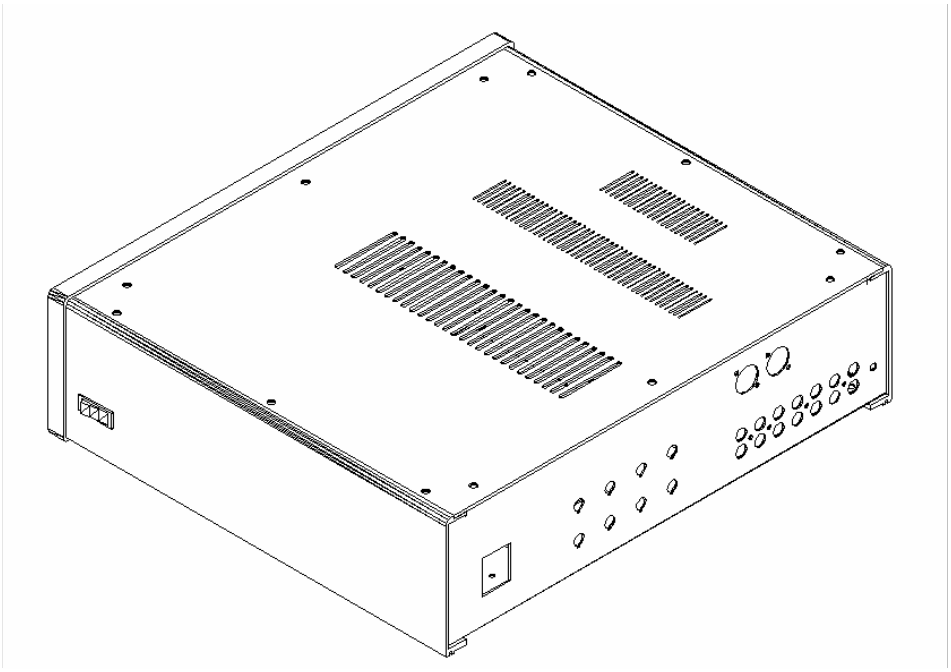


Unico Secondo



The newborn ***Unison Research*** amplifier is meant to be the successor of one of the most interesting and renowned amplifier in the high fidelity world, the ***Unico.***

The ***Unico*** has been considered for years an achievement and a reference to the production of audio amplifiers. Now, it has become the starting point for the development of the next generation of the Italian brand hybrid amplifiers.

Introducing the Unico Secondo

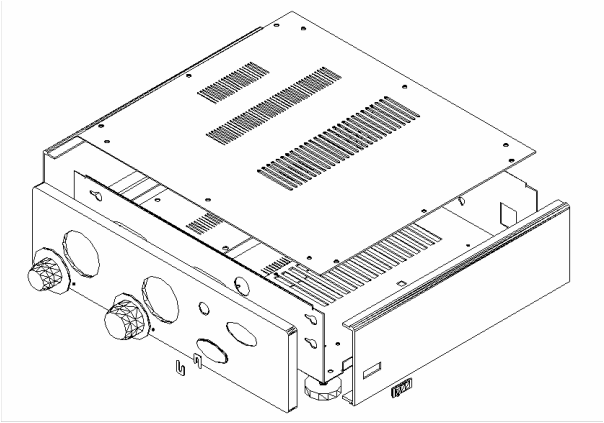
As a successor of such a prestigious model, the ***Unico Secondo*** benefits from the design and production experience gained over the years with the hybrid amplifiers of the ***Unico*** series.
The circuit has been completely renovated, keeping the successful solutions of the preceding model and improving some crucial elements.
The power supply circuits have been optimized: the efficiency of the system has been improved through the addition of a secondary winding in the power supply transformer, thus reducing the power dissipation and increasing the reliability.
The power stage current distribution_system, with an optimized design, combines a correct space allocation for all the critical parts with easiness of assembly and service.
The preamplifier and driver stage is derived from those of the renowned models ***Unico SE*** e ***Unico 200***, and it has been refined through an in depth analysis and several measurements executed in our laboratories (which recently have enriched their set up with leading test devices such as ***Audio Precision*** and last generation ***Tektronix*** oscilloscopes) and long listening sessions.
The ***Unico Secondo*** has undergone a careful restyling, but it hasn't lost the distinctive elements of the ***Unico*** series so appreciated all over the world. The front panel is higher, like that of the ***Unico SE,*** sides and top leave the black iron plates for a brushed anodized aluminium cover, which gives the amplifier a new winning look, closer to the current aesthetic trends.
Thanks to new dedicated features, the ***Unico Secondo*** can easily be integrated in a wide range of hi-fi quality systems: together with the usual line inputs (among them one can be turned into a phono input, simply adding a circuit board internally), the new amplifier has one XLR balanced input, a tape output and low impedance sub output whose signal level is directly controlled by the volume potentiometer, which is designed for the connection with an active subwoofer.

Details

As expected for an high end electronic project, besides the externally visible new features, the ***Unico secondo*** hides the most significant upgrades inside the chassis.
First of all it is worth mentioning the new power supply transformer, which in an audio amplifier is a far more critical element than it is usually thought of.
It is a toroidal transformer built according to our specifics, generously dimensioned to minimize the heat produced and to guarantee an adequate power supply capability even in the heaviest load conditions.
In particular, the toroidal core has been dimensioned for a power of 400VA, while the conductors section has been calculated considering comparatively low current densities and peak currents double than those expected in the normal operating conditions.
We would like anyway to point out how all the decisions taken during the design process are based on the decennial experience of our company and on our attempt to find for every part the correct balance between quality, reliability and costs, so to obtain the best performances and to avoid ineffective exaggerations.

Stabilized power supplies have been adopted in every circuit part where more sophisticated structures than the simple filtering could have guaranteed an improvement in the performances.
In the ***Unico secondo*** are implemented seven stabilized supplies which regulate voltages from 15V for the operational amplifiers to 165V required by the tube preamplifier stage. Special attention has been dedicated to the output stage power supply circuit design. Once considered the large value and the highly impulsive behaviour of the currents it has to source, advanced solutions have been adopted to get the best performances from this important element of the amplification chain: a high value, high quality capacitors bank has been placed the closest possible to the power MOSFETS in order to minimize the path for the impulsive currents adsorbed; Large space has been reserved to the power supply lines, and the ground paths have been designed with extreme care.

Of course these project choices have some drawbacks, especially in the difficulty they imply in the design of the whole circuit layout: the design of vertically mounted circuits boards, completely dedicated to the distribution of the high voltage and ground lines, has allowed a considerable reduction of the board occupation and a simplification of the assembly.
Consider that about the 25% of the whole PCB surface is occupied by the output stage power supply paths!



The same care has been devoted to the treatment of the audio signal. From the golden input connectors to the output ones, golden as well, robust, versatile and completely insulated according to the current regulations, the highest quality components has been used: the golden pins selectors, the motorized ALPS potentiometer, selected capacitors and low tolerance resistors, the best ceramic tube sockets.
The ***Unico secondo*** interfaces to the other elements of the hi-fi system is constituted by long term reliable golden RCA and Neutrk XLR connectors for the balanced inputs. These last are followed by a balanced to unbalanced conversion stage constituted by high precision integrated instrumentation amplifiers featuring excellent CMRR, bandwidth and low noise.
The source is selected through a golden pins Italian made switch and the volume is regulated by tha motorized ALPS potentiometer, faithfully to the ***Unison Research*** tradition.

One of the most interesting novelties in the ***Unico secondo*** is the use in the preamplifier stage of a ECC83 tube instead of the ECC82, present in all the previous models of the ***Unico*** series. This choice has been taken after a large number of listening tests: different configurations of the preamplifier stage have been implemented and compared, and finally the one giving the best sound quality has been chosen.

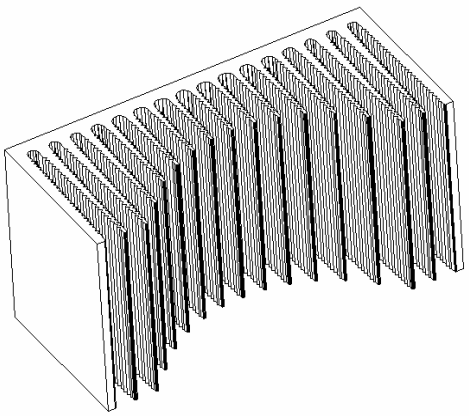
The long time the ***Unison Research*** technical staff spends in the development and the set up of every new device not only is a guarantee of the excellence of our products, but also contributes to widen and deepen our knowledge and the amount of data we have collected over the years, which is the real richness of a company always committed in the achievement of the highest quality standards.

In the project of the ***Unico secondo***, as for all the models of the series, all the control systems have been designed carefully to provide the best reliability, safety and comfort of operation.
Some of them are immediately evident, like the remote control interface, the volume regulation, the temporization of the valves warm-up. Some other are more subtle but nonetheless they play an important role, like the control of the output voltage offset, the power stage overcurrent protection, the amplifier block system which works in case a fuse breaks in the output stage power supply circuit, or when the MOSFETS power dissipation is too high or finally in case the mains voltage falls.

The output voltage offset correction is a non-trivial problem, especially in an amplifier where the valve pre stage is directly coupled with the solid state power stage and where a very low feedback factor is applied, so to get the best sound from an amplifier combining the output power of a solid state design with the musicality and the warmth of the tubes.
The solution conceived for the new ***Unico Secondo*** consists of a circuit with a special topology which ensures an effective regulation of the dc component of the output signal, without compromising the system performances even at very low frequencies.

In the previous ***Unico,*** all the temporizations were entrusted to a logic ports based circuit; in the ***Unico secondo*** they are controlled by a microprocessor. The possibility to develop the software in our laboratories, allows us to experiment with the control algorithms to find the most intuitive, stable and reliable.

Also in the power stage the ***Unico secondo*** goes beyond its well-known forerunner: the number of the



output devices has been doubled, and the maximum power goes from 80V to 100V.
The performances declared are far below the real limits of the system, but the most significant step ahead lies in the capability to supply twice the current of the ***Unico***, and this means the ***Unico secondo*** can drive critical and low impedance loads.

An adequate dissipation of the heat produced by the MOSFETS has required the design and the construction of a custom heatsink, fully conceived and

designed by the ***Unison Research*** technical staff. The project of this heatsink aims at optimizing the utilization of the available space (the curve profile of the fins follows the transformer shape) and the heat dissipation effectiveness. Such an extrusion implies severe difficulties that have required extra design constrains and parameter.
Moreover, to ensure the optimal heat transmission from the MOSFETS to the heatsink and at the same time an high electrical insulation, as in the past the ***Unico secondo*** uses top quality pads made of glass minifibers and a silicon gel.

Finally, it is worth remembering some of the elements which have made the ***Unico series*** so renowned and appreciated, and which are still distinctive characteristics of the new ***Unico secondo.***
The printed circuit boards are made of thik golden copper with a blu solder cover.
The chassis construction ensures solidity and stability, the aluminium covers don't follow commercial profiles, but have been completely designed by our technical staff.

For all our efforts, our will to satisfy even the most refined listeners, the decennial experience of ***Unison Research*** and the deep passion that draws we all together, we confide that the new ***Unico secondo*** will stand out as a protagonist in the High Fidelity world.

Technical characteristics

Output power:	100W RMS on 8Ω
	200W RMS su 4Ω
Frequency response:	flat @ 10Hz
	- 0.5dB @ 100kHz
Input impedance:	50kΩ // 47pF
Input sensitivity:	375mV
Input stage:	Pure A Class.
	Double tube stage
	ECC83/12AX7
Output stage:	Dynamic A Class
	double POWER MOSFET
	complementary pair
Inputs:	5 line unbalanced
	(1 phono optional)
	1 line balanced
Line Outputs:	1 tape, 1 sub (volume controlled)
Outputs connectors:	4 + 4 bi-wiring
Damping factor:	>50 on 8Ω
Feedback factor:	8dB
THD:	<0.5% @ 1kHz,
	100W su 8Ω
Power consumption:	400W max
Dimensions:	43.5cm x 13cm x 43cm
Peso netto:	15kg