



MICROMEGA

IA180

## **A true family**

IA180 is the last integrated amplifier of a line of 3 units sharing with the two other units a certain number of functionalities which fall under a search for coherence of the products making their ergonomics intuitive and supporting the switch from one model to another without it being necessary to relearn how the new one functions come.

## **The concept**

The metallic frame, entirely made out of galvanized steel, has the role to bring a stable and rigid base to the various electronic boards and to protect electronic circuits against external electromagnetic and high frequency disturbances we today are largely surrounded with. The aluminium front give to this product like all those of the range, a class impressed of sobriety or minimalism and user-friendliness cohabit harmoniously. A rotary digital encoder, under control of the unit microcontroller, allows setting volume level or balance and some parameters like the headphone level output independently of the master volume level. Six tactile keys give access to the essential functions while preserving intentionally a minimalist ergonomics. The 10 characters blue dot matrix display, under control of a Micromega owner software, gives access to all the necessary information in real time. All the connectors are GOLD plated and the loudspeakers output connectors are identical to those used by top of the range products manufacturers. These connectors accept banana plugs as well as stripped cables whose section can reach 10mm<sup>2</sup>. Moreover they are designed with completely insulated cable inputs, making impossible the short-circuits between terminals. No other integrated amplifier of the same category offers this type of connectors. A stringcourse screen printed out of 175 µm thickness polycarbonate is affixed on the rear panel of the unit, which guarantees a perfect insulation between the connectors and the frame, quite useful precaution to avoid ground loops. Finally the power pack allows the use of standard IEC line connector cords. Although a IEC power cord is provided with the unit, the user thus keeps the possibility of choosing, if it wishes it, another top-of-the-range power cord. An optional system remote control handset is available.

The aluminium anodized top cover and whose colour Black or Silver and finish harmonizes themselves perfectly with the brushing of the front panel gives to the product an incomparable distinction.

## **The power supply**

If there is a type of audio equipment whose quality depends very largely of his power supply, it is the integrated amplifier. Indeed this type of equipment requires a very detailed attention on this level because various types of signals are treated at the same time, inside the same enclosure: small amplitude weak current signals and strong amplitude to very strong high currents signals particularly if the loudspeakers impedance is low. This is all the more true in our case, because all the Micromega integrated amplifiers provide a Phono input, making this spot more delicate still. The Phono input requires an absolutely optimum filtering of the power supply since, in the heart of the Phono section, we have to restore the equalized signal following RIAA standard curve by pre-emphasizing the bass end band of 20dB and by de-emphasizing the high frequency end of 20 dB to obtain a linear frequency response between 20Hz to 20kHz during playback of vinyl discs. If the de-emphasis does not bring any particular problem except for the respect of the phase, the pre-emphasis of the low frequency register is more critical, because the maxima of this pre-emphasis is precisely located at 50Hz, the power line frequency in many countries. Taking into account these requirements, the choice of the transformer went towards two different types: one R-Core for all preamplification stages and one toroidal one for the power section exclusively. The toroidal transformers are quiet and offer a very favourable power-dimensions ratio. In addition, their two-wire construction allows a perfect matching between windings, necessary for a good common mode rejection. This transformer, specifically studied for IA100, was designed with the concern of bringing to the unit a very significant dynamic capacity, pledge of vitality and transparency of the musical message. It is necessary to recall that in an high fidelity amplifier, it is not the continuous power which is most significant but the instantaneous power the power supply is able to deliver and consequently the power stage of the amplifier. In addition, the speed with which this supply will be able to react is a significant factor in final quality obtained and must thus fit with the design requirements. Modern transformers are today able to adapt to any type of request and according to the choice of material and the type of winding , it is possible to produce a custom transformer for each application.

## **The power supply (cont...)**

It goes without saying that amplifiers using standard off the shelf components in this field are far from being optimized and are often oversized to mitigate this design flaw. The Micromega development team, thanks to her powerful simulation CAD software, could get manufactured a specific transformer for IA180 whose characteristics are perfectly matched to this amplifier. The same criterions apply to the other components of the power supply such the rectifier diodes or the filtering capacitors. Drastic measurements eliminated all the models whose characteristics and ratings were not close to the technical expectations of the designers. Always with a large dynamic restitution in mind, the choice of the rectifier bridge of more than 25A and more than 200A peak intensity. The filtering capacitors were the subject of a drastic selection eliminating the great majority of them and keeping only those whose internal impedance and intrinsic inductance were as low as possible

## **The input board**

IA100 shares the same input card than the two other integrated amplifiers of this range. To fulfil the current requirements, IA100 offers the following inputs: PHONO, AN1, AN2, AN3, AN4 and iPod/iDok. A monitoring loop and a PROCESSOR input are added together with a SUB input and output to allow 2.1 functionality as well as separate control over the Sub out in both modes. The phono input and its stage accepting moving magnet cartridges were the subject of particular care. Although CD invaded the planet, many audiophiles remain very attached to their vinyl discs collection and it appeared essential to satisfy them. In addition, modern music amateurs will appreciate this possibility given to them to listen to under the best conditions the music of some specialized labels whose production only exists in vinyl discs. The circuit used has its own regulated power supply to avoid the least possible interferences with the other active circuits and to offer the most faithful possible RIAA correction. The line level signals are switched using high quality relays and buffered with Jfet opams to avoid loading the source. The monitoring loop is independent and the tape output is buffered to avoid the well-known phenomenon of distortion of tape recorders owners. The volume control is ensured by a CS3310 whose reputation is flawless. The distortion is extremely low and does not contribute to sully the signal with an unspecified opacity. The headphone output, placed on the front panel, called upon a small stereo power amplifier able to deliver enough current to avoid low impedance headphone problems and getting for the 32 to 600  $\Omega$  headphones a superb dynamics. Very often the headphone output is only there by need but works with a bad quality amplifier. Micromega, conscious owing to the fact that many amateurs like listening with headphone, wanted to fully give them satisfaction without having to acquire an often extremely expensive separate headphone amplifier. The output stages are entrusted to operational amplifiers of very high quality, supplied with a specific supply branch, ensuring a perfect insulation between the various sections of the board, and thus avoiding any crosstalk or intermodulation. A relay ensures switching between the board output and the PROCESSOR input, which makes it possible to directly tackle the power section of IA60. This relay was selected for its reliability and its capacity to switch high currents and transmit very low amplitude signals, a pledge of quality. Finally a high-speed detection circuit of presence or absence of ac power signal prevents A80 to transmit bursts of dc voltage during the powering on or in the event of power line defeat, avoiding any risk of damaging the speakers

All line level inputs can be named from a library list stored in the memory of the unit. A dedicated iPod station will be available to allow the user to control any iPod unit using the system remote control handset delivered as an option to IA60.

## **The power amplification**

After many hours of listening to various type of music, Micromega has selected two UCD180HG as power modules for the IA180 power section.

The listening tests of these modules in this particular configuration are breathtaking.

Even with speakers having low impedance and sensitivity, IA180 is capable of reproducing effortlessly all types of music with a true respect to the spirit of the musical content. Transparency and openness are true assets of this amplifier thanks to this technology and to the specific dual mono power supply. A minimal heatsink required for class D participate to the mechanical strength of the power section. The output connectors use special lugs with AWG14 cable to ensure a perfect current transfer. The wiring between the input board and the power section is made with shielded cables to prevent any hum and noise to reach the power modules.

A standby mode is there to prevent excessive power consumption when at idle and to allow fast recovery of ideal listening conditions

## A subtle balance

IA180 has: the ability to attract the listener into the world of transparent musical reproduction where the system disappears in front of the musical content with almost any type of speakers even the most demanding ones.

### TECHNICAL CHARACTERISTICS

Line level inputs .....	5
Line level input sensitivity .....	280mV
Line level input impedance .....	47k $\Omega$
MM phono input .....	1
Phono input sensitivity .....	5mV
Phono input impedance .....	47k $\Omega$
Processor input .....	1
Processor input gain .....	26dB
Sub Input .....	1
2.1 Mode .....	Yes
PRE Out .....	Yes
Tape out output impedance .....	600 $\Omega$
Headphone output power .....	2W
Minimum headphone impedance .....	32 $\Omega$
Rated power (4 $\Omega$ ) .....	2x 180W
Output impedance (1kHz) .....	< 20m $\Omega$
Power bandwidth .....	10Hz-50kHz
THD + noise (20Hz-20kHz) .....	< 0.02%
Maximum power consumption .....	400W
Dimensions .....	430x290x69mm
Weight .....	7.0kg

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