



MICROMEGA

IA60

A true family

IA60 is an integrated amplifier, which is the first in a line of 3 models all sharing a certain number of functionalities. The range was designed to be ergonomically intuitive and the interface easy to use, thus enabling smooth transition when switching from one model to another.

The concept

Made entirely out of galvanized steel, the role of the amplifier's frame is to provide a stable and rigid base for the various electronic boards. It also protects all of the electronic circuits against external electromagnetic disturbances and high frequency exposure, which are very common in today's environment. The aluminum front panel adds a special touch to all of the models of this range, providing an impression of elegant soberness, where minimalism and user-friendliness combine harmoniously. A digital rotary encoder, driven by the unit's micro-controller, allows you to set the volume level or balance as well as other parameters such as headphone output level which can be set independently from the master volume level. Six tactile keys give access to the essential functions while intentionally preserving the simplest of ergonomics.

The blue 10 character dot matrix display, driven by MICROMEGA software, displays all necessary information in real time. All connectors are GOLD plated and the loudspeaker connectors are identical to those used by top of the range manufacturers. The loudspeaker connectors can take banana plugs as well as stripped cables of up to 10 mm² cross-section. Additionally, the unit is equipped with totally insulated cable inputs, eliminating the possibility of short-circuits between the loud speaker terminals. No other integrated amplifier in the same category offers this type of connector. A 175µ-thick, screen-printed polymer strip is placed on the rear panel of the unit to provide perfect insulation between the connectors and the steel frame. It's a very useful precaution and avoids the possibility of ground loops. Finally, the power pack allows the use of standard IEC mains power cables. Although an IEC power cable is provided with the unit, if desired, the user has the option of choosing another higher range power cable.

An optional system remote control handset is available. The aluminum anodized top cover, which comes in either black or silver, matches the front panel perfectly. The brushed effect of the front panel gives the product an unrivalled distinctive touch.

The power supply

If there is a type of audio equipment whose quality depends almost entirely on its power supply, it's the integrated amplifier. Indeed this type of equipment requires very detailed attention in this regard because several types of signals are treated at the same time and inside the same enclosure: small amplitude weak current signals and high amplitude strong to very strong current signals if the loudspeaker's impedance is low. This is all the more true in our case as all MICROMEGA's integrated amplifiers are equipped with a Phono input, making this issue more delicate still. The Phono input requires extremely optimized power supply filtering because in the Phono section, the signal has to be equalized according to the RIAA standard curve. This is done by pre-emphasizing the bass-end band by 20 dB and by de-emphasizing the high-frequency end by 20 dB, to obtain a linear frequency response between 20 Hz and 20 kHz when reading vinyl records. If de-emphasis doesn't pose any particular problem except that of respecting the phase, the pre-emphasizing of the low frequency register is more critical. The reason is that the peak point of this pre-emphasis is precisely situated at 50 Hz, which is the mains supply frequency in many countries.

Taking into account these requirements, we opted for two types of transformer: one R-Core for all pre-amplification stages and one toroidal, exclusively for the power section. The toroidal transformers are quiet and offer a very favorable power/dimensions ratio. In addition, their two-wire construction allows a perfect alignment between windings, which is a necessary condition for good common mode rejection. This transformer was specially designed for the IA60, which required a very high dynamic capability in order to guarantee vitality and transparency of the musical message. It should be remembered that in a high fidelity amplifier it's not continuous power which is most significant but the instantaneous power that the power supply is capable of delivering and consequently the amplifier's power stage. Equally, the speed with which the power supply can react is significant in terms of final quality obtained and therefore must be considered when a product is in the design stages. Today, modern transformers can adapt to any type of demand and depending on the choice of material and the type of winding, it's possible to produce a custom transformer for all applications. It goes without saying that amplifiers using standard off the shelf components are far from optimized and often have to switch to oversized transformers to get round this design flaw. For the IA60, MICROMEGA's development team, using powerful simulation CAD software, designed a custom transformer whose characteristics perfectly match this amplifier. The same applies to the other components of the power supply such as the rectifier diodes or the filtering capacitors. Drastic measurements eliminated all the models whose characteristics and ratings did not meet the designers' technical requirements. Bearing in mind the importance of guaranteeing a large dynamic restitution, the choice went to a bridge rectifier providing more than 25 A and more than 200 A peak intensity. The filtering capacitors were subjected to drastic selection tests, which eliminated the vast majority of them and kept only those whose internal impedance and intrinsic inductance were as low as possible.

The input board`

IA60 shares the same input card as the two other integrated amplifiers in this range. To fulfill current requirements, IA60 offers the following inputs: PHONO, AN1, AN2, AN3, AN4 and iPod/iDok. In addition there are other features, such as a monitoring loop, a PROCESSOR input, a SUB input and output to allow 2.1 functionality as well as separate control over the Sub out in both modes. Particular care went into designing the phono input and its stage which accepts moving magnet cartridges. Although CD invaded the planet, many audiophiles remain extremely attached to their vinyl record collection and it appeared essential to satisfy them too. In addition, modern music amateurs will appreciate the possibility of listening to music distributed by record labels specializing in music production exclusively for vinyl. The circuit used has its own regulated power supply to eliminate interference with the other active circuits as much as possible, thus offering the most faithful RIAA correction possible. 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. The volume control is ensured by a CS3310 circuit which has an absolutely perfect reputation for quality. Distortion is extremely low and doesn't taint the signal and create any opacity. The headphone output, situated on the front panel, uses a small stereo power amplifier capable of delivering enough current to avoid low impedance headphone problems and providing the 32 to 600 Ω headphones with superb dynamics. Very often the headphone output is only there because it has to be, but works with a poor quality amplifier. MICROMEGA, conscious of the fact that many music lovers like listening with headphones, decided to fully satisfy them and avoid the need to acquire an often extremely expensive separate headphone amplifier. The output stages are entrusted to very high quality operational amplifiers, delivered with a specific supply branch, ensuring perfect insulation between the various sections of the board, 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 IA60's power section. This relay was selected for its reliability and its capacity to switch high currents and transmit very low amplitude signals, which is a mark of quality.

Finally, a high-speed circuit which detects presence or absence of AC power supply sends the signal to the IA60 to emit DC bursts when switched on or in the event of sudden mains cut off, thus avoiding any risk of damaging loud speakers. All line level inputs can be recalled from a library list stored in the memory of the unit. A dedicated iDok station will soon be available to allow the user to control any iPod unit using the IA60's optional system remote control handset.

The power amplification

After many hours of listening to various type of music, MICROMEGA selected the NS LM3886T modules to serve as the IA60's power modules for the power section. Although this choice could be questionable at first glance, the listening results in this particular configuration are astonishing. As long as the speakers selected do not show very low impedance and very low sensitivity, IA60 is capable of reproducing all types of music, while truly respecting the spirit of the musical content. The specifically designed heat sink, using pressed fin technology, keeps the modules under a very reasonable temperature range in all circumstances. All audiophiles know all too well that high temperature is a serious enemy, especially for electrolytic capacitors that dry out after a while and fail. The output connectors use special lugs with AWG14 cable to ensure perfect transfer of current. The wiring between the input board and the power section is done with shielded cables to prevent any hum and noise from reaching the power modules. A standby mode is there to prevent excessive power consumption when idle and to allow fast recovery of ideal listening conditions.

A subtle balance

IA60 has all the assets of a great product, plus one quality very few audio products have: the ability to attract the listener into the world of transparent musical reproduction where the system disappears leaving the stage to the musical content.

TECHNICAL CHARACTERISTICS

Line level inputs	5
Line level input sensitivity	280 mV
Line level input impedance	47 k Ω
MM phono input	1
Phono input sensitivity	5 mV
Phono input impedance	47 k Ω
Processor input.	1
Processor input gain	26 dB
Sub Input	1
2.1 Mode	Yes
PRE Out	Yes
Tape out output impedance	600 Ω
Headphone output power	2 W
Minimum headphone impedance	32 Ω
Rated power (4 Ω)	2 x 60 W
Output impedance (1 kHz)	< 20 m Ω
Power bandwidth	10 Hz – 100 kHz
THD + noise (20Hz-20 kHz)	< 0.02%
Maximum power consumption	150 W
Dimensions: (W x D x H mm)	430 x 290 x 69 mm
Weight	6.0 kg

AUDIS SARL, 13-15 rue du 8 mai 1945 - 94470 Boissy Saint Léger - FRANCE

Tel: 01 43 82 88 60 Fax: 01 43 82 61 29 E-mail: info@micromega-hifi.com Internet: www.micromega-hifi.com

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