



Over the Rainbow



Micromega M-150
integrated amplifier

Any colour you like, as Floyd said, then you can stick it flat on your wall and enjoy Micromega's unique vision for on modern amplifier design...

SUMMARY

Micromega M-150

Price: from \$9800

- + Many ways to play
- + Choice of control methods
- + Chromecast, AirPlay and Bluetooth streaming
- Only one analogue input

Gotta love the French. As a nation they celebrate their *joie de vivre*, and in hi-fi there is certainly a *souçon* of *vive la difference* to their creations, a penchant for that *je ne sais quoi* which lifts their products above the crowd. French loudspeaker companies famously favour the sphere as an acoustic enclosure, and more recently French audio electronics companies have delivered wild levels of innovation, notably Devialet's sleek Expert amplifiers and rather less sleek (some might say bonkers) Phantom active speakers.

From a first glance at the new M-One amplifiers, you might think that Micromega has been watching this development closely — is there a certain *déjà vu* in the company's choice of a wide flat amplifier chassis? *Mais au contraire, monsieur* — the M-One diverges from Devialet's offerings on almost every level, from the choice of amplification genre to its delivery of aesthetic finish.

Besides, Micromega needs no new urge to diverge into the *avante garde* — this is a company which has long walked paths less travelled. We remember it releasing the first ever two-box CD player in the late 1980s, and later the Trio three-box CD system, which provided particular *cachet* for a clique of connoisseurs. These new Micromegas may share the general wide flat form and dual-position wall-mountability of the Devialet Expert amps, they deliver plenty of *differentiation* all their own.

Black, silver, or...

The M-150 — the higher powered of the two present M-One models — arrives in a wide box, its outer cardboard carton looking rather like a flatpack table, except for its proud announcement that it is not merely designed in France but made there as well. The internal packaging is stylish but not extravagant, a foam insert lifting to reveal the 430 x 345mm footprint of the amplifier inside, wrapped in transparent plastic. Our review sample came in silver — not shiny chrome like Devialet's amps, but rather the luxurious matte silver of anodised aluminium, with horizontal ridges dividing it into three sections, the centre of which is etched with the distinctive Micromega logo.

The M-Ones are indeed made from a single block of this aluminium, and very sleek it looks in its natural silver. But one of Micromega's selling points here — for that legendary spousal acceptance factor as well as to discerning audiophiles with a sense of style — is a perhaps unprecedented level of external customisation in 'MCF' (Micromega Custom Finish). Standard finishes are anodised silver or black, but through a tie-in with French loudspeaker company Focal your M-One can perfectly match the paint options offered on Focal models (Black Lacquer, Carrara White, Imperial Red, Electric Orange and Bleu Nogaro) adding \$1700 to the price, and you can go further, selecting any colour from the central European RAL colour chart (\$2100 over the standard price, and a pause while your bespoke M-One is created). Given that we've heard tell of *uber*-high-end



speakers being purchased merely through the clincher that they can be delivered in purple, this is smart marketing — here you have several different purples and pinks to choose from, and a rainbow of other options, if that's what it takes to get your spouse to accept the Micromega in your home. There was even early talk that textures such as 'carbon' and leather finishes might be added to the M-One range, but such surfaces haven't (yet) surfaced.

Further potential décor-friendliness comes from the neat optional wall-mounting system. To this end there are twin displays, one at the top, with four clicky press-stud buttons, and a second on the low front edge, both operating simultaneously. This would be useful if the Micromega is positioned below eye level in a rack, and particularly it allows vertical wall-mounting without any loss of visual functionality.

One of the remote control's buttons toggles the display's lettering size, with smaller lettering adding additional information depending on the input, such as the current sampling rate when using the USB input.

Connections

At first glance the connections list seems limited — a single pair of analogue line RCA sockets, for example, plus

a turntable phono input switchable between moving magnet and moving coil, and a balanced analogue input on XLRs. So that's three analogue inputs in total. Then the digital inputs — one coaxial, one optical, one AES/EBU on XLR. And USB-B, to plug in your computer. The M-150 networks via Ethernet, and (via the Micromega app) plays internet radio and networked files via UPnP/DLNA.

Both the coaxial and AES/EBU digital inputs claim to be good to 32-bit/768kHz data rates (we tested only to 384kHz) with the M-150 accepting PCM DSD and DSD over PCM (up to 11.2MHz DSD); the optical input is good to 24-bit/192kHz. Twin USB-A slots were marked as being for firmware updating only (which we did), but then why two? Sure enough we were informed these will soon get a firmware update for file replay from sticks and drives, with the same file compatibility as above.

Two sockets which look like HDMI are reserved for future use with I2S data streams (as are already used internally prior to the DAC), and as a final digital bonus the M-Ones offer Bluetooth streaming, with the aptX codec available for "near-CD" quality lossy compression if your sending device also supports aptX.

The USB computer connection offered itself immediately to our Mac Mini (Windows may need a driver for USB 2.0), offering up to 24-bit/384kHz under the control of its own clocks (45.1584MHz and 49.1520MHz, true multiples for 44.1 and 48kHz respectively). And usefully the Micromega USB driver remained available to our computer even when we had switched the amp away from USB to another input. We've seen many designs where the USB driver deactivates at that point, sometimes requiring manual reselection when restored. Micromega's is the

correct choice to prevent confusing the computer (and potentially other software running, such as Amarra, ProTools or Tidal desktop), even at the expense of leaving digital circuits active during analogue listening.

But then as with increasing numbers of systems where DSP is an essential element of preamp operation, the analogue inputs are digitally sampled here anyway (at what level Micromega didn't choose to divulge when confirming the conversion), allowing them to be subject to the room EQ described later in this article.

It was making the USB connection that delivered our first moments of listening to the M-150, as we directed a newly released version of Queen's *We Will Rock You* (an alternate, from the 40th anniversary box set, 16/44.1) to the M-150 and on to our JBL Studio Monitors. From the pre-take speech to the stomping backing track, it sounded gigantically scaled against an utterly inaudible noise-floor, startlingly real in clarity and accuracy — it was multiple levels above how we had first heard this song the previous week through a \$3500 CD/streaming amplifier.

This speaks to the DACs as well as the amplification. The M-One range uses AKM's 'Velvet Sound' 120dB AK4490EQ DAC, with an Analog Devices SHARC processor controlling volume at 32-bit accuracy as well as other functions, including binaural headphone processing. From the DAC the whole analogue distribution is carried out in fully balanced



mode, with the conversion to unbalanced immediately prior to the amplification.

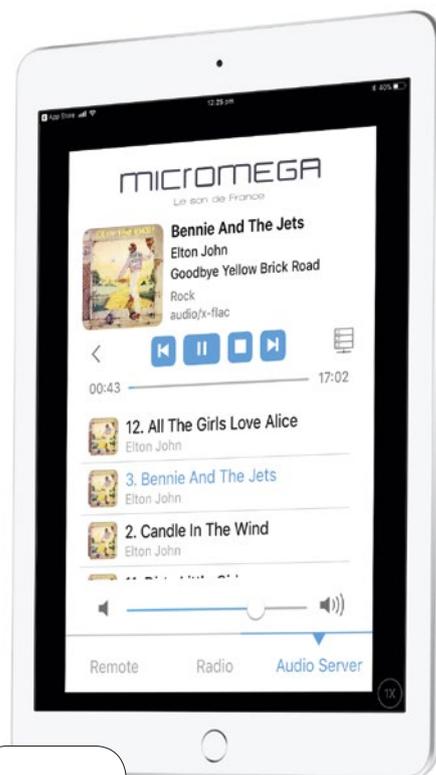
We also noticed the M-150 appeared on our Apple devices as an AirPlay target, though AirPlay is nowhere mentioned in literature other than one mention of the M-Ones being “AirDream (wireless) compatible”. This seems to be AirPlay without the licence fee. (Micromega also makes a small standalone AirDream receiver.) However we couldn’t get this to work. The M-One could be selected from afar and apparently accepted the stream, but the Micromega did not autoswitch to it (as is normal for AirPlay receivers), and no labelled input was available to select it on either the physical or app remote control (we gather it should operate when you select LAN, but despite trying three iOS devices and a Mac Mini, it didn’t). A further bonus, though, if it works for you.

You also get balanced XLR pre-outputs, a subwoofer output, and a pair of control triggers. On the front is a minijack headphone socket, which on the tested M-150 offers three levels of binaural delivery. This — like the room EQ — proved both high quality and impressive non-destructive, slightly softening edges and bringing widely-panned elements in towards the centre. Oddly the medium setting made things pretty much mono, the light and strong settings

less so. As with the room EQ, comparing or switching off binaural modes requires interacting physically with the unit’s own buttons, these options not being available yet through Micromega’s app, which is a neat iPhone-size control app which found the M-150 immediately and offered easy access to a number of other settings — including balance, individual input sensitivity for balancing of levels across sources, and easy renaming of all inputs. For music it accesses internet radio, which includes a good search option and accesses podcasts as well as live stations, and you can go to ‘Audio Server’ to play from UPnP and DLNA shares on the network. All worked fine, including high-res playback, with the interesting

side note that you could have the radio playing or DLNA music streaming even when listening to a different input — it only emerges when you select ‘LAN’ as the input. Similarly it seems to continue streaming after you go to a different input — so there’s the possible danger of sucking down internet radio data if you forget to stop it. In other ways it’s a bonus — we hate apps that get disconnected all the time, whereas the Micromega app never lost connection unless the unit was powered down.

As an often more convenient alternative to the app you have the tablet-shaped physical remote control. Here Micromega’s quirkiness comes to the fore, in a tablet-shaped remote which requires two-handed operation and yet is infra-red, not RF. Pointing a two-handed remote is an unnatural experience, not assisted here by an unprioritised layout of 17 more of the company’s preferred clicky press-studs, each marked with a fairly small four-letter legend. Realising that digital inputs are to the left and analogue to the right helps, as does familiarisation, of course. But we don’t like buttons that audibly click during volume control, nor the need for two-handed operation unless you can position it on a table with a direct line of sight to the amplifier.



Micromega’s M-One app is phone-sized, blown up for tablet display, keeping things clear and and shown here streaming 24/96 Elton John from a networked share.

The speaker output binding posts are rock-solid terminal blocks compatible with bare cable, banana plugs or spade connectors.

A better class of amplifier

We imagined that such a slim design would necessitate the use of low-heat Class D amplification, or at least some hybrid form of it, as Devialet implements in its own slim amplifiers with a shift from Class A low-level operation to bring in Class D when higher power is required. Class D has come along way since its early brittle-sounding implementations, and is becoming accepted even by notoriously audio-centric companies, with Hypex’s nCore modules being particularly highly regarded and increasingly widely used.

But to be honest, this reviewer still awaits the arrival of a Class D amplifier which properly thrills the soul as well as pumping the watts, so it



Analogue inputs

Top left is the input for the EQ microphone, then phono and line-level inputs, an XLR balanced stereo pair, and trigger sockets to the right.

Digital inputs

One each of coaxial, optical, AES-EBU, and USB-B. The USB-A slots below the Ethernet socket weren’t yet enabled for file replay.

Outputs

Most users will be using the solid binding posts to drive their loudspeakers, but the Micromega also offers a subwoofer output and balanced XLR line-level outputs.

test

integrated amplifier

was a delight to find that Micromega uses tried-and-tested Class-AB. Indeed Micromega clearly considers Class D to be something of a cul-de-sac of amplifier development.

“For Micromega, at equivalent power, a good class AB amplifier offers the best characteristics and better sound restitution than a class D amplifier, at the detriment of efficacy”, confirms its white paper on the M-One range. “With a Class D amplifier the rejection of power is very low. So it is almost inevitable that HF switching residues will be recovered and these create intermodulation because IMD (Intermodulation Distortion) is less effective on a class D amp than a well constructed class AB amp. With a class D amp you have to use an output filter to smooth (integrate) the output signals and this filter is never completely adapted to the different loads of the speakers. If it is optimised for 8Ω, then it is of no use for 4Ω because a compromise will have to be reached. What is more, the speakers are a complex load and not pure resistance. The bandwidth of a class D amplifier is less stretched and consequently, the phase turns faster on the useful audio band, which gives a less effective impulse response. Finally, we cannot totally eliminate odd order (harmonics 3 and 5, Total Harmonic Distortion) that is inherent in down time and obligatorily introduced between phases of switching between power devices, which always gives a harder sound.”

The corollary of sticking with Class-AB is the heat issue, and the need for effective thermal dissipation. The M-Ones use forced convection through vents in the sides to a “cooling tunnel” coupled thermally to the aluminium casing, and using an ultra-quiet fan (not entirely silent, mind) which uses magnetic levitation of the fan axis rather than ball bearings.

Of course there’s still the issue of how to fit your transformers and capacitor banks into such a slim casing — there’s simply no room for a couple of toroidal transformers here. Micromega’s solution is to use twin LLC resonance power supplies, their high frequency conversion (between 90kHz and 120kHz) allowing rectifier components to work up or beyond 200kHz, minimising the chance of interference within the audio band. Plus, says Micromega, this circuit is able to quickly recharge the filtration capacitors with a residual ripple of the power supply, which is almost nothing. With the capacitors recharging 2000 times faster than normal, a better transient response can be delivered without



ABOVE: The main circuit board with the ‘cooling tunnel’ clearly visible through the centre. The M-150 differs from the M-100 with the addition of a Power Correction Function and the doubling up of audio amplifier components.

the normal large energy storage capacity, thereby considerably decreasing the space required for capacitors. Micromega estimates the power supply’s efficiency at a remarkable 95% when fully charged.

A further twist to the Class-AB implementation is a diode at the heart of the power transistors which ‘copies’ temperature-induced voltage variations and thereby cancels the usual polarisation drift in the power stage, again resulting in lower distortion.

The M-150 differs from the M-100 with the addition of a Power Correction Function (PCF) and the doubling of audio amplifier components to improve the power delivery, which is quoted at 150W per channel into 8 ohms (300W into 4 ohms).

Fix your sound

Having already had a fine hi-fi experience with the M-150’s USB mode, we weren’t entirely sure we needed to invoke the EQ system, which is called ‘m.a.r.s.’ — Micromega Acoustic Room System. We’ve never liked room EQ as other than a final tweak, it being no substitute for a good room. And one particular point of cynicism has always been the quality of microphone in such systems. While software can correct for microphone characteristics, we often wonder why we’d want the pristine sound of high-end audio put through a complex filter based on the results from one of those tiny disc or lapel-type mikes that are commonly supplied on the end of a long stringy cable with such systems.

Great kudos, then, to Micromega when we unboxed the m.a.r.s. hardware supplied with the M-150 — included is a nice mini-tripod, a proper

screw-thread microphone holder, a long high-quality cable terminated in a decent female XLR socket, and a 19cm-long Dayton Audio EMM-6 precision electret condenser microphone, my goodness. These things cost a good few hundred dollars, they are notoriously flat and are in any case individually hand-calibrated against a laboratory-standard Brüel & Kjær microphone, and if you head to Dayton’s US website (you can find the page via avhub.com.au/dayton) you can enter the test number wrapped around the mike and download that microphone’s individual calibration file.

Such a high quality front-end gave significantly increased confidence in the quality of room correction which might follow on. So we let the M-150 whoop away for each of three positions (20cm either side of our listening position) and rather upsettingly, given we consider our room fairly well adjusted, there was a significant difference between the Auto result and the non-EQd sound (though the ‘flat’ option not so much — from the explanation, we’d expected the other way around). The EQ seemed to add a tiny volume gain, and some presence, which could fool you into a short-term preference, but in fact we left it in circuit through most of our further listening, despite our philosophy, because, darn, it worked. You can switch it in or out using the menus (though it would be handier to have this available in the app).



PARIS MATCH: Whatever colour your Focal speakers, Micromega has the perfect hue to match them precisely.

We played several days' worth of vinyl through the phono input, loving the performance despite its subsequent digitisation, its tonal accuracy and speed rendering a divine delivery of the 10-minute *The Long Road* (from the 'Dead Man Walking' LP boxset), the tabla tight and tappy over Ry Cooder's bottleneck (his son's deep dumbuck marks the bars), while the soaring vocals from both Nusrat and nephew Rahat lift the spirit skyward between Eddie Vedder's more grounded verses.

We were hard-pressed to pick a preference between the line-level unbalanced output of a \$5000 Marantz CD player and Micromega's own DAC and preamp fed from the USB feed on our Mac Mini via USB; this is computer sound *par excellence* and also *sans accentuation*, so that overly edgy recordings (Dion's *Rolling Stone* for one) emerged true to their attacking nature, while fine recordings sounded simply thrilling, supported by the speed, detail and slam-in-reserve of the M-150. Chick Corea's *Australia* piano concerto (DG, 2011) was a delight, from its impeccable piano tone and metallic cymbal taps to the impact of the dynamic ensemble entries. The absence

of toroidals was missed not one jot, even with the most dynamically demanding test tracks.

Any downsides? The digital sampling of analogue inputs may deter some purists, though we'd suggest they take a listen before they criticise. Heat and fan noise might be an issue on hot Australian days — despite that clever cooling tunnel, the M-150 most definitely ran very warm, across its entire body, and hotter still underneath, perhaps not the ideal longterm environment for the electronics within, and at times that ultra-quiet fan could be heard running from both side vents (bearing in mind our review set-up leaves us only 1.5 metres from the unit under review, so from a more distant seating position the noise would be proportionately reduced).

Conclusions

Otherwise there are no audible compromises in performance terms from Micromega's remarkable reinvention of the Class-AB amplifier, and that's confirmation of their assertion that the decisions made in creating a fit for a slim design pay off in both aesthetics and in sound quality. With a price either side of \$10k depending on your choice of finish, clearly you could go higher to reach the *crème de la crème* of amplification audiophilia, but at this level the French company has managed to deliver an *objet d'art* which is also, in performance terms, a real *tour de force*. We are delighted to have made its acquaintance. — Jez Ford



SPECS

Micromega M-150

\$9800

Power output: 2 × 150W into 8 ohms, 2 × 300W into 4 ohms

THD under 8-ohm load: <0.001% @ 63Hz, <0.005% THD at 1kHz, <0.05% @ 10kHz

Inputs: 1 × RCA analogue, 1 × MM/MC phono, 1 × XLR balanced, 1 × room EQ mic input, 1 × USB-B, 1 × coaxial digital, 1 × optical digital, 1 × AES-EBU digital, 2 × I²S, Ethernet, Bluetooth with aptX, 2 × USB (not yet active on sample), 1 × 12V trigger

Outputs: loudspeakers, 1 × sub out, 1 × XLR pre-out, 1 × 12V

Dimensions (whd): 430 × 56 × 350mm

Weight: 9.3kg

Price for different finishes: \$9800 black/silver, \$11,500 in 'Focal' colours, \$11,900 in RAL colours

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