Classic 40

Icon Audio's Stereo 40 MkIV valve amplifier is their latest re-model of a classic valve amplifier. Noel Keywood listens.

Valve amplifiers for audio were an open subject back in their day, both Mullard and GEC publishing books of circuits – Mullard's Circuits For Audio Amplifiers (1959) being available today as a reprint (Amazon). Icon Audio refer to it in their notes on the new Stereo 40 MkIV amplifier I am reviewing here, making the point that this amplifier is a tried and tested classic.

But that was long ago historically – and technologically. Build a classic circuit today and modern technology intrudes: it only makes sense in terms of cost, safety, convenience and reliability. All of which sets the stage for the new MkIV. Oh! – I forgot to mention fashion: there's a headphone socket.

As you might guess the Stereo 40 MkIV delivers nominally 40 Watts. Push it hard and 50 Watts appear or flick a front panel lever switch to Triode mode and you're down to 30 Watts. All this is exactly as expected from KT88 Kinkless Tetrodes run in push-pull, using modern valves working with fixed bias, confusingly meaning you have to adjust it. Fixed bias gives more power than auto-bias (that you don't have to adjust).

Ours came with Genelex Gold Lion KT88s (around £40 each), made

in Russia by the New Sensor Corp. who are based in New Jersey, USA. The claim here is that this KT88 perfectly reproduces the structure and strengths of GEC's original, released in 1957 and universally admired for its sound, as well as durability. You can see the KT88s in a linear row of four at back, just in front of the big, black transformers. Alternatively it will accept Mullard EL34s.

I hope all that gets into perspective what Icon Audio's Stereo 40 MkIV is about at a basic level. Power output is plenty high enough to go extremely loud, and its output valves are classics that are durable yet inexpensive – important because after 3000hrs use they need replacing; with 10 hours a week use that means 5 years life.

Physically, the new Stereo 40 MkIV isn't outsized, measuring 390mm (15.4in) wide, 410mm (16.2in) deep and 230mm (9.1in) high. As amplifiers go, not so big. But at 22kgs it's a two-person lift – seriously heavy. Caused by the massive mains and output transformers it uses for quality reasons. A strong shelf or hi-fi rack is needed – and a rack needs around 254mm / 10in between shelves to allow heat to escape. Nearly all racks are 19in (480mms) wide so it will fit easily here – but it has to since side access to the mains switch is needed.

Modern technology means the Stereo 40 MkIV comes with remote control of volume. Inside there's an Alps Blue motorised volume control: you can turn it manually or use the heavy but small metal remote supplied. The power supply is solid-state, reducing weight, size and cost, and improving power output.

Where this amplifier differs from most is the amount of tweakability you get. The front panel has a small lever switch marked Ultralinear/Triode. Ultralinear is standard mode that gives highest power and best measured performance; Triode lowers power by a small amount to 30 Watts maximum but gives a slightly clearer and easier sound. Differences aren't great but it's possible to arrange Triode working without much kerfuffle so Icon make it available. Commonly, users settle on Triode mode I'm told, as I have with our Icon Audio Stereo 30SE in-house reference valve amplifier.

A bit more challenging is a small three-position lever switch on the rear panel labelled Sensitivity. This alters feedback, substantially affecting how the amplifier works – and its sound. The choices are Low sensitivity (L) which means high feedback (14dB), High sensitivity (H) which means low feedback (5dB) and a central zero position that eliminates feedback completely – radical.

High feedback (L) gives performance like a transistor amplifier, Low feedback (H) like a classic valve amplifier and zero feedback is there for those that may prefer the sound – as some do. I think the best compromise is H (low feedback) but the other settings have appeal. With this amplifier you get to choose, whereas with most others you get what you're given.

Feedback alters gain, distortion, frequency response and output impedance (damping factor) so when you use this switch a lot alters – and in a big way, which is why it is rarely seen. However, I chose to fit a feedback-off switch to our World Audio Design 300B amplifier in 1993 just to show what it offers sonically (a big, open spacious sound) and still use it at home today.

A busy front panel says much about this amplifier. At left is a five-position bias-adjust rotary switch. Four positions show bias level at each output valve on the meter, for monitoring and adjustment purposes. The fifth Off position shows output level to the loudspeakers, warning of potential overload if volume is wound too high. Once bias has been set, by turning the small top-panel potentiometers with a screwdriver, it should not need re-adjustment for many months.

To the right of this switch lies the old-style panel meter that lights up deep yellow at power on. It looks sturdy and industrial, something from an old power station perhaps – and of course it grabs attention. What modern amplifier enjoys such glitz? It makes them look drab. To its right lies the Ultralinear/Triode lever switch and in the middle sits the volume control, moved by a motor when the remote is used. Then comes a loudspeaker/headphone selector switch with accompanying headphone socket.

To the right of the headphone socket is a stand-by switch that is only seen in valve amps: it turns off HT to prolong valve life, whilst leaving the heaters up and running. And to its right is a Tape/Source switch for those running classic

A hard-wired internal assembly, with neat wiring looms. There are also printed circuit boards for remote control etc, two fuses (bottom left and right), plus a big choke (bottom right) to clean the power rail. It is a specialised and expensive component.

At left the input bias adjust selector for V1-V4 output valves, bias adjusted to put the needle into the black sector on the meter scale. Then a Triode / Ultralinear lever switch, volume control (centre) headphone socket, Standby switch, Tape switch and rotary input selector at far right.

three-head recorders.

Finally, at far right is a four-position rotary input selector for the four line inputs at rear purposed to match CD players and most modern sources. Low output sources like low-gain external phono stages match, since setting high sensitivity (H) on the rear panel switch makes the Stereo 40 MkIV more sensitive than most transistor amplifiers.

The rear panel carries solid gold plated phono sockets for the inputs and tape output. Loudspeaker terminals, 8 Ohm and 4 Ohm, are also gold plated and sturdy, accepting bare wire, 4mm banana plugs or spades. Nestling between these ins and outs lies the small Sensitivity switch. Power comes in from the mains via the usual IEC socket, the on/off rocker switch being mounted on the left panel side panel near the rear of the chassis, so space is needed at left to reach it. This makes turning on and off awkward in the lower shelves of a rack. Best to leave some space all around the amplifier – especially above – to allow air to circulate because its heaters consume 76 Watts in total.

Although the Stereo 40 MkIV uses a classic Ultralinear output stage, the rest of the circuit differs from past convention. Two low-mu 6SN7 double-triodes offer front end gain on each channel through cascode operation, whilst another two provide phase splitting (for push-pull). Icon say the use of four identical high quality triodes eases fault-finding and replacement issues, important for those living in remote areas – Northern Australia mining, Borneo logging etc. – where we found the market for valve amps was peculiarly strong.

SOUND QUALITY

With Ultralinear/Triode options and three feedback settings there are potentially six amplifiers to review here! It can get very confusing very quickly. But with our Martin Logan ESL-X hybrid electrostatic loudspeakers, connected with Chord Company Signature cables to the 4 Ohm tap and an Oppo BDP-205D Universal player to play CD, plus hi-resolution digital from an Astell&Kern AK120 player, basic differences were obvious enough to distill out.

An Isotek Evo3 Mosaic Genesis

The rear carries heavy duty, gold plated phono socket inputs (left) and equally solid, gold plated loud-speaker terminals for 4 Ohm or 8 Ohm loudspeakers. Above are large in-house designed and built output transformers at left and right, with mains transformer at centre.

regenerated mains power supply fed the electrostatic supplies and Oppo player, the Icon being connected to its high current filtered, un-regenerated output.

The Stereo 40 MkIV was both vividly dynamic and spacious in its sound, Icon Audio getting very clean bass from their output transformers. The sound was less easy, soft or warm – as classic valve amplifiers are imagined to be – more vivid and punchy. The combination of valve amplifier and electrostatic panel always was made in heaven, giving a sense of life and scale transistor amplifiers don't match. But I'll cover the sonic options first.

With Antonio Forcione's Tears of Joy (CD) there was softness and warmth in the sound with feedback Off (sensitivity 0). Wooden blocks lacked transient edge and guitar strings were mild rather than lacerative. However, with no feedback images seemingly jump out, having a dynamic about them that's almost puzzling – but that's because zero feedback is never encountered in hi-fi amplifiers. It's worth hearing.

Switching Sensitivity to H (low feedback) pulled the images back, both restraining and controlling them, but it also brought a solid edge to the blocks and some laceration to guitar strings; they seemingly moved from being fibrous to metallic.

Switching Sensitivity to L (high feedback) pulled the images back further, slightly flattening perspectives – but even set like this the Stereo 40 MkIV was more dynamically engaging than a commercial transistor amplifier. But since the latter use at least 30dB feedback – double that of the Icon – it's hardly surprising.

A bit more baffling and hard to explain is Triode mode. This unravelled musical strands, drawing Skin out of the fray when singing Hedonism (CD) for example. Triode just sounded better sorted and a tad less confused, also lifting Marianne Thorsen clear from the backing Trondheim Soloists (hi-res 24/96) when playing a Mozart violin concerto. But the massed violins of the soloists equally gained in dynamic presence. Although not better in measured terms Triode mode is subjectively best. And Thorsen's violin and playing were sublime, shimmering out into the room with a sunlit textural density that makes all else sound lifeless and bleached.

In the end I settled for Triode mode and H sensitivity – and with this the Stereo 40 MkIV thundered through tracks like Safri Duo's Samb Adagio, the opening bell strike ringing around our room, followed by a swelling synth and then a bass synth line that was far and away more violent than you'd hear from a transistor amplifier. The combination of big, modern power supply, whistle clean KT88s and Icon's massive output transformers come together here to deliver bass few amplifiers can match. Interestingly, switching to L Sensitivity (high feedback) pulls bass back a little, but this is interaction between amplifier electrical damping and loudspeaker acoustic damping, so no mystery.

Arcadi Volodos playing – sublimely – Schubert piano concertos (CD) was vivacious, dynamically strong yet controlled and with a lovely light across the sound stage – bright but honeyed. This Icon puts power into piano – the body was given scale – whilst each key had solid presence as Volodos carefully worked his way through this lovely piece. Valve amplifiers always deliver a big sound – dynamically and spacially – but the Stereo 40 MkIV has impact, precision and timing beyond most with music such as this.

CONCLUSION

Although a "tried and tested classic" in design essence, in real life the Stereo 40 MkIV is a different beast subjectively. What you get here is a modern, fast and punchy sound that simply overwhelms most else. With very strong bass, a huge sound stage and thunderous dynamics the Icon is a long way from valve amps of yore. It's a great blend of old and new, finding the best in both. Add in the almost unique ability to dial in feedback and select Triode mode and you've got an amplifier and a sound that's hard to beat at any price.

MEASURED PERFORMANCE

In Ultralinear mode distortion at quoted 40 Watts measured 0.26%. Using a 1% limit 55 Watts was delivered.

In Triode mode output measured 25 Watts using the same 0.26% distortion limit as Ultra-linear, but 34 Watts at 1% distortion, validating Icon Audio's figures.

Distortion levels (1kHz) were low all round, just 0.006% at 1 Watt and 0.15% just below (-1dB) full power, at maximum feedback (L). With low and zero feedback around 0.04%, and 0.3% just below full power. At high frequencies (10kHz) 0.05% was typical – a low value.

Bass distortion (40Hz) was also low at 0.06% (1 Watt) and 0.13% just below full power (L), deteriorating little to 0.2% and 0.3% at H and 0.3% and 0.8% at zero feedback – all low values for a valve amplifier.

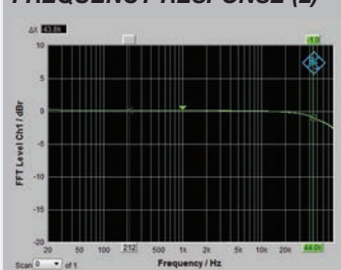
High feedback (L) gave very wide bandwidth of 2Hz-44kHz (-1dB). Low feedback (H) 7Hz-31kHz, usefully eliminating low bass to avoid possible core saturation from LP at high volume, whilst zero feedback (open loop) was a usable 20Hz-12kHz.

Damping factor measured 16 (L), 6 (H) and 2 (0) so there's choice to be had here too. Low sensitivity (max feedback) offers tightest bass, but lower feedback can give bigger bass with acoustically over damped loudspeakers.

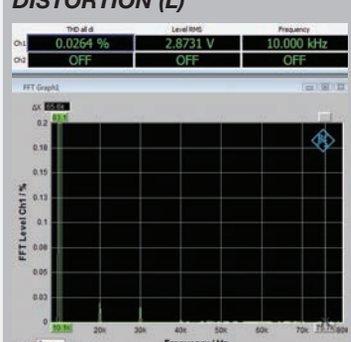
Noise levels were minimal: there was little hiss and hum was below 1mV.

The Stereo 40 MkIV measures well in high (L sensitivity) and low (H sensitivity) feedback modes, being acceptable even with no feedback (open loop). **NK**

FREQUENCY RESPONSE (L)



DISTORTION (L)



Power (UL / Triode)	**40 / 25W**
Frequency response (-1dB)	
L sensitivity	**2Hz-44kHz**
H sensitivity	**10Hz-31kHz**
no feedback	**20Hz-12kHz**
Distortion (10kHz, 1W, L)	**0.02%**
Separation (1kHz)	**86dB**
Noise (IEC A)	**-90dB**
Sensitivity (0-L)	**100-800mV**
Damping factor (L sensitivity)	**16**

ICON AUDIO STEREO 40 MKIV £2199.95

£

OUTSTANDING - amongst the best.

VALUE - keenly priced.

VERDICT
Sturdily built, cheap to run, vivid in sound. Add in tweakability and you have it all.

FOR
- powerful bass
- open and vivid
- remote control

AGAINST
- size and weight
- heat

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