

# A Few Taps More

**Chord Electronics release a unique product – M Scaler. It's a one-million tap digital filter that transforms CD, they say. Noel Keywood listens.**

**T**o celebrate producing a one million tap digital filter Chord Electronics have released M Scaler. M Scaler isn't a product you'll find elsewhere, even though upscaling is not a new idea. However, M Scaler doesn't just upscale, it also possesses a Watts Transient Aligned (WTA) filter in its most advanced ever state because of those milestone one million taps. That's what you pay £3495 for. And trust it will

produce better sound!

To clarify the purpose of this product, it is to get the very best from CD, by first scaling up sample rate from the low 44.1kHz – necessary in 1982 when Philips and Sony were developing CD – to 705.6kHz that will run on today's silicon. Then the stream is passed through the WTA filter and on to an array of outputs. There are standard S/PDIF digital outputs in the form of one electrical via a BNC socket, and

one optical via a TOSLINK socket, for connection to an external DAC. This can be any DAC, not just one from Chord Electronics – if with limitations I'll explain later. For Hugo TT2 and other Chord Electronics products there is also a Dual BNC (DBNC) output pair that outputs at the full 768kHz sample rate.

Input wise, there are two electrical BNC socket inputs, two TOSLINK opticals and one galvanically isolated USB for connection





**Under the cover – another cover! This one with non-removable screws to shield from prying eyes, as well as provide further RF screening. At front in a line are the acrylic spheres that act as illuminated switches.**

to a computer. Both a front panel spherical button (2nd from left) or the remote control can be used to step between inputs, the button changing colour to show selection. Output sample rate is set by an illuminated spherical button third-in from left. Lit red the unit is set to

"Like Hugo TT2, build and finish of M Scaler is impressive"

bypass, then with CD x2 upsample to 88.2kHz is green, x4 to 176.4kHz is blue and max upscale of x16 to 705.6kHz is white. Now on to practicalities.

M Scaler as a real world product must feed external commercial DACs and at present most DAC chips work up to but not higher than 768kHz; older designs 352.8kHz. So whatever goes into M Scaler must come out

at a sample rate that suits such DACs, meaning you can't input 24/96 hi-res and upscale x16 to a sizzling 1.5MHz 'cos there's no DAC out there able to take it – and cables become an issue too. Consequently, with a 96kHz input M Scaler upscales x8 to 768kHz max, but only through its DBNC output sockets to feed Chord Electronics products like Hugo TT2 with a matching DBNC input. The single BNC outlet for other DACs is limited to 384kHz under all conditions so as to suit both their DAC chips and commercial interconnect cables.

I mention cables because optical

TOSLINK cables barely work past 96kHz, not just because of internal losses and low bandwidth of the cheap plastic optical conductor, but also because of imprecise termination in TOSLINK sockets – wiggle 'em at high sample rates and see what happens! So the optical output of M Scaler is restricted to 192kHz for entirely practical reasons. The data still passes through the WTA filter

but Chord Electronics disarmingly indicate in a chart within M Scaler's handbook that there's no sound quality improvement, except when blue (x2) is selected (why white also at x2 gives no improvement I have no idea).

To summarise simply, M Scaler works best with CD and 48kHz sample rate files, with output taken from the DBNC socket-pair to a Chord Electronics DAC with DBNC input.

Queried about the special DBNC connection, Rob Watts told me it is an AES S/PDIF dual-mono mode with changes to the data bits to flag this status.

DBNC does not bypass all Hugo TT2's filters by the way; the first of three stages is bypassed, the second two stages remain active.

Like Hugo TT2, build and finish of M Scaler is impressive, its case being machined from solid alloy, making it wonderfully strong and with superb contours and detailing. Case dimension are 235mm wide, 236mm deep and 40.5mm high, with weight of 2.55kgs.

Power is supplied by the same Chinese external switch-mode power supply block used with Hugo TT2, delivering 15V at a high 4A through a cable 335cms (11ft) long in total.

There is a video mode that reduces filter time delay (0.6secs) so speech synchronises with the picture, achieving this by reducing the number of filter

taps.

The USB input did not accept DSD from my MacBook Pro laptop running Audirvana, that is packaged as DoP code. It may accept native DSD from a PC, but you can't get a Mac to do this. M Scaler is about improving PCM, not reproducing DSD.

## SOUND QUALITY

I used M Scaler mainly with CD delivered in optically from our Oppo BDP-205D Universal player acting as a CD transport. Unsurprisingly perhaps, it does not change the sound of Hugo TT2 so much as magnify it to a degree that was eye popping. With Nils Lofgren's Keith Don't Go the sound stage became even larger and more densely





*At left, two gold plated BNC digital inputs, two optical inputs and a USB for computer connection (centre). Then optical and BNC outputs, and right twin DBNC outputs for Chord Electronics products with matching DBNC inputs.*

powerful, as if images had gained physical weight. There was more internal detail too. The only slight alteration, rather than amplification, was a subtle smoothing of the sheen on strings, from Nigel Kennedy playing Massenet's Meditation.

"the sound stage became larger and more densely powerful, as if images had gained physical weight"

However, with Marianne Thorsen playing Mozart's Violin Concerto in G Major (24/96) her violin was still sheeny, but this recording has always been so. M Scaler, like Hugo TT2, does not euphonically process such recordings so much as expose their intrinsic character.

M Scaler's benefits become less apparent at higher sampling rates used in hi-res recordings (e.g. 24/96). With Marta Gomez singing Maria (24/96), images were densified and the sound stage hardened up, but by a smaller if still useful degree than the changes heard with CD.

The idea of putting M Scaler in front of a DAC other than the distinctive sounding Hugo TT2 could be very interesting I thought, or a damp squib. It was both. Our Audiolab M-DAC+ was a prime candidate and a qualified success; an Arcam CDS50 CD/SACD player a failure. See my column.

From CD through to hi-res M Scaler quite clearly removed

muddle from the sound of M-DAC+, separating images and events, retrieving more atmosphere from recordings and also broadening the sound stage with firmer and more strongly embodied images. Even better, the full bodied sound

of M-DAC+, with its on-board high current, low noise linear power supply was retained, even slightly enhanced by the smoothing effect of M Scaler – I fell in love with this combo! Korsakov's Dance of the Tumblers (24/96) became even larger, orchestral instruments more distinctly separated. Diana Krall singing Narrow Daylight (24/96) came into stronger focus, accompanied by a slightly smoother quality.

The one wrinkle here was M-DAC+ would only see 176.4kHz sample rate maximum, falling silent at 352.8kHz from M Scaler, so x4 was available, not x8. Changing cables made no difference.

With an Arcam CDS50 CD player interface difficulties became strange. The Arcam flagged up sample rate from M Scaler as 44.1kHz only where M-DAC+ had already shown it varied as stated. I tested the CDS50 on a digital generator and it correctly showed input sample rate, so no fault here. Worse, sound quality

was unspectacular, but a complicating factor was I had to use the Arcam's unbalanced outputs to feed the Creek's line input and volume control; neither Arcam or Creek have volume adjustment on their balanced lines. So perhaps some muddle crept in as a result. Whatever, whilst this combo worked at a functional level, it did not convey the sonic benefits of M Scaler.

The warning here then is M Scaler has problems interfacing with DACs other than Hugo TT2. Yet at the same time I thought its coupling with M-DAC+ was sublime and, for me at least, I would rate this pairing worth hearing. The extraordinary cleanliness, composure and timing of M Scaler, as well as its sound staging properties were all passed to M-DAC+ that in turn sent out a sound that was big bodied and easy going.

## CONCLUSION

Chord Electronics M Scaler embodies Rob Watts view of how to perfectly reproduce digital. I thought it was devastating. You get to clearly hear how CD can sound when all the rubbish is swept away, performers and instruments all being placed in solid form on a wide and clear sound stage. Add in almost-peculiar bass timing and resolution and you end up with a sound not available elsewhere.

It's expensive – as you must expect from a technological exercise dedicated to FPGA silicon to make it happen and commercially available. It works most assuredly with Chord Electronics DACs having a DBNC input and is for PCM, not DSD. Book a demo and have a listen. This is a unique and extraordinary product.

**CHORD  
 ELECTRONICS  
 HUGO M SCALER  
 £3,495**



**OUTSTANDING - amongst  
 the best**

### VERDICT

If you want the best from CD, M Scaler is a must-listen. Expensive but worryingly good.

### FOR

- sound quality
- small size
- build quality

### AGAINST

- inconsistent with ext. DACs
- no DSD

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