



# Clock Wise

**Separate, standalone master clock units are popular with Japanese high end digital audiophiles, but few such products have made it to Europe. However, Grimm Audio's CCI looks set to change that, thinks Tony Bolton...**

**A** Compact Disc player's master clock is key to unlocking its performance potential. Responsible for ensuring accurate digital processing, although a good one doesn't guarantee it will sound great, a bad one means it can never even sound good. The trouble is that different machines come with different clocks, and some are not as good as others. To this end, companies such as Trichord and Audiocom have stepped in to offer aftermarket modifications to CD players, replacing their standard chips with altogether more highly specified designs, often with great success.

Recently, and especially at the high end, some CD (and SACD) players have come fitted with bespoke external clock sockets. Whilst they come with a decent clock as standard (of course), the option of fitting a better external digital clock is there to users should they so wish. This has become something of a custom of high end Japanese audiophiles who recognise how important clocking is, knowing that timing fluctuations (i.e. jitter) damage sonic performance, causing

an opaque and often hard sound.

The professional heritage of the CCI clock unit is clear to see, with its standard rack-mount size of 434x220x55mm, but you are not presented with an uncompromisingly industrial looking piece of equipment. The fascia is grained and polished wood, with small chrome plated buttons, discreetly placed beside each logo for source and sampling rate selector. At the back are 16 BNC sockets, divided into two groups. Dip switches control the behaviour of the relevant group altering impedance and mute options. BNCs 11 to 16 can also be adjusted through 180 degrees to correct phase anomalies. There are also two XLR sockets marked AES 3 in and out. These are intended for connection to studio master clocks. It's unlikely that any domestic user is going to need more than a couple of these sockets, since most digital equipment has no facility for connecting to an external clock, but players from Esoteric and dCS,

amongst others can make use of this, as well as some digital loudspeakers.

## SOUND QUALITY

I started my listening using the onboard clock on the Marantz SA-7 and was very impressed with the sound emanating from the Chario Ursa Major loudspeakers. It was detailed, well defined, and smoothly presented. Imaging was amongst the best I have encountered from a digital source, not quite achieving the holographic qualities that I would expect from an equivalently priced vinyl player, but very impressive all the same.

Engaging the Grimm Clock was easy. Just plug the BNC lead into an output from the Grimm and plug the other end into the player. In this case, selection of internal or external clock is controlled by a button on the front of the SA-7. After pressing it, there was a pause in the music while the Marantz locked onto the signal, then the music continued to flow.





The first difference that I noticed was the alteration on texture of sounds. Everything seemed deeper and more detailed. Playing Saint-Saens Organ Symphony on SACD with Ormandy conducting the Philadelphia Orchestra, and Michael Murray at the organ took me by surprise. This piece has fairly complex instrumentation, with pianos joining the organ and orchestra at certain points in the last movement. A lot of players can get a little lost in this, leaving the listener with a jangly, almost 'pub-piano' sound overlaid across the rest of the instruments. The SA-7 on its own gave a good rendition of this, but the addition of the Grimm Clock improved the focus and definition to the point that I was sure I was listening to a pair of good quality grand pianos, not the cheap upright alternative. Other major improvements to the sound were a greater sense of background ambience, and a superior feeling of the space in which the performance took place. Linked to this was a far greater sense of the scale of music.

Artur Pizarro's solo piano, playing Beethoven's 'Pathetique Sonata' displayed the different shades of tonality that this instrument is capable of. The decay of notes hung in the air, drifting to silence, whilst the hard struck chords had a resonance and impact that outstripped the already good performance of the SA-7 in this area. Using the right hand

button on the Grimm to multiply the base sampling rate by 1, 2 or 4 times produced further increases in resolution, stereo separation noticeably benefitting from this. I found that I was focusing more on the music than the equipment, something that rarely happens when I listen to digital. I felt that the whole spectrum of the sound improved with the CC1 connected. Timing was tighter, imaging more focused, and definition improved, making for a more musically coherent experience.

At £----.- this is not cheap, but there is an obvious improvement in reproduction when it is used. If your player is equipped with suitable connections to allow the connection of an external clock, then I would certainly recommend investigating the option. I doubt that

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The Grimm is designed to work with CD players that have a master clock input, such as this Marantz SA-7.

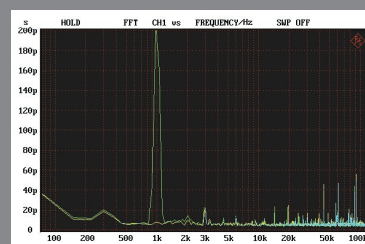
you will be disappointed with the result.

### MEASURED PERFORMANCE

The Grimm clock was fed heavily pre-jittered digital test signals from our Rohde & Schwarz digital generator, via its AES balanced input. It proved able to handle 5nS of broadband jitter - a grossly jittered signal - and eliminate jitter completely. Shown in our analysis is a more realistic 200pS of jitter at 1kHz fed into the Grimm clock (green trace). Output of the clock in the yellow trace shows the jitter element has been completely eliminated, showing that reclocking via AES is effective. It's random jitter output is as low as

possible too, so this unit does its job well. NK

### JITTER SPECTRUM



## HI-FI WORLD

### VERDICT

Excellent, if highly specialised, product for high end digiphiles that can return real performance gains.

**GRIMM AUDIO CC1**  
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**FOR**  
 - sound quality gains  
 - technical efficacy

**AGAINST**  
 - only some CD players can benefit from it