

RME Hammerfall HDSP 9632

RME lands another hefty blow with the latest Hammerfall interface. Brad Watts thinks he's found a new flatmate...

As you'd imagine, writing for AudioTechnology, I get to use quite a number of different audio cards and interfaces. It comes in handy when I'm doing tech work for clients' audio systems. It's also useful for making a decision as to which native audio card would be my next purchase. You see, my audio system could be seen as a bit of a hybrid. The core of the system is an ageing Digidesign TDM setup. It offers rock solid reliability for tracking without bothersome latency and provides enough DSP to run 32 tracks with EQ and dynamics plus a couple of tasty DSP-based plug-ins for reverb and whatnot. It's fine for tracking and mastering duties but doesn't give me



access to the huge number of native plug-ins and instruments available today. So to get around this I run two audio cards at the same time – a bonus feature only possible in Logic Audio... no other program does this. It's a simple matter of running a digital signal from one card to the other and, hey presto, the best of both worlds – DSP-assisted tracking and effects combined with the madcap world of native processing. It may not be everyone's cup of tea but it works for me.

So until recently my native audio card was a 16-bit device – not the kind of thing you want to use in this

day and age. Consequently I've been on the hunt for something 24-bit. I need something reliable with a professional feature set and some better D/A converters than the ageing ProTools interfaces. Plus I wanted a card that would deal with 96k sample rates and above. I'm now pleased to report I think I've found a suitable contender, the Hammerfall DSP 9632.

Hammer & Tong

RME has garnered a first-rate reputation for developing superb-sounding, professionally-specified audio cards. Initially RME cards were only suitable for PCs but in recent years they've managed to expand their support to the Mac OS as well. The original Hammerfall cards were seen as the near-perfect audio card, so much so that even Steinberg saw fit to re-badge the 9652 as the Nuendo 9652 – a very smart move on their part. Both the HDSP 9632 and 9652 supercede the previous Hammerfall range, improving on what was already a very acceptable PCI audio option.

The HDSP 9632 on its lonesome provides analogue stereo input and output, a headphone output and a 16-channel MIDI interface. All three of these ports present themselves via a supplied breakout cable. Breakout cables are certainly not my favourite means of travelling to and from an audio card but if it keeps the costs down I'm all for it. The supplied breakout cable offers RCA analogue in and out whereas an optional breakout offers the same analogue I/O as balanced XLR connectors. Coaxial S/PDIF I/O comes via a second breakout cable that can be swapped out for another optional cable to provide AES/EBU digital I/O. Optical in and out are the only ports not accessed via breakout cables, these are situated directly on the PCI faceplate of the card. This can be configured as an Adat I/O or as a stereo optical S/PDIF, or both for that matter. Optical in can run as S/PDIF while the output operates in Adat mode. For actual Adat-style sync, a further breakout cable is available that includes the Adat nine-pin sync connection. It all sounds a little complicated with the various cables and options but much of the concept behind the HDSP9632 is its versatility. A setup can be configured to suit a huge number of situations. Additional breakout cables fortunately don't cost the earth.

Adding to the modularity of the 9632 system is a variety of add-on expansion modules. These expansions or 'daughterboards' all connect directly to the main PCI card via ribbon cable and are then bolted into spare PCI bracket. They don't use a PCI slot as such, just the PC or Mac tower's rear PCI panels. Now this system is all well

and dandy for a system with no PCI cards except the main HDSP card. It's a bit more complicated if your PCI bays are already full, as was the case with my machine. I simply let the RME wordclock card I used hang out the backside of the tower – not the most elegant solution but it works. Daughterboard options include an A/D four-input card, a D/A four-output card. Similar cards are available offering eight analogue inputs or eight analogue outputs. A TDIF card is also available and conforms to the TDIF 'double line' mode for four channels at 88.2/96k. Adat is built in, of course. The wordclock module, judiciously labelled as the WCM, offers quarter-, half-, double- and quad-speed frequencies to keep the system in sync with all your other digital hardware.

Clock Sauce

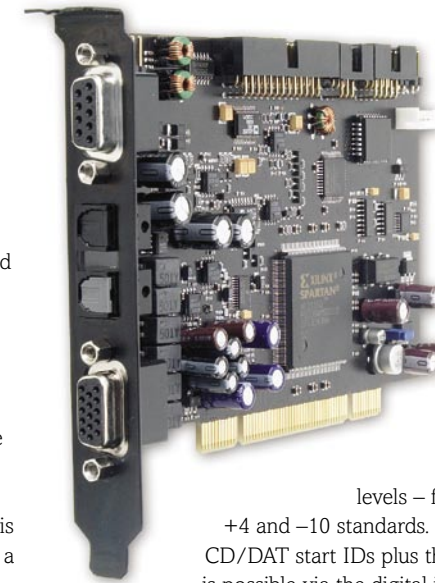
RME's further claim to sonic integrity is its extremely low jitter performance. Jitter is the term used to describe time-base errors between components in a digital system. The less jitter in a system the better. Large amounts can result in a 'grainy', less focussed signal along with a reduction in the size of the soundstage. It can be a rather obvious effect when you know what you're listening for, bringing to mind adjectives such as 'smeary' or 'glazed'. As a point of reference, with a unit designed to give extremely stable wordclock and low jitter, the Rosendahl Nanosync, offers <10 picoseconds of clock jitter at sampling frequencies up to 102k. This is an incredibly low level of fluctuation from a unit that cost around six grand (Aussie). The HDSP9632 offers PLL-corrected clock down to around three nanoseconds. If you add a wordclock module to the system you can bring that figure down to around 800ps. Bear in mind that most manufacturers won't even quote their clock stability. They'll simply state that their clocking is a 'low-jitter' design or that their jitter is 'below measurable levels' – a claim I find difficult to believe. Just to put you deeper into the picture, you'd expect 40-50 nanoseconds from a late model Adat or 888|24. RME refer to its methodology as SteadyClock and compared to many of the clocks in other interfaces it is indeed a very steady clock. Oh, and by the way, a picosecond is one trillionth of a second and a nanosecond is one billionth of a second – little numbers that make a big difference.

Actual dynamic range using the balanced analogue input and output (enter the optional XLR breakout cable) is greater than 110dB (A-weighted). This is very respectable figure that compares and exceeds the spec of many upmarket (and far more expensive) systems, and is even more impressive considering the card is sitting within a CPU tower. Dynamic range for the analogue input and outputs cards runs at 107dB. All analogue I/O is 192k-capable. These converters combined with the SteadyClock technology provide clear and reliable audio reproduction. For better dynamic range performance you

really should consider a visit to your bank manager.

Another powerful aspect of the HDSP cards is the onboard mixing facilities. Driven via RME's Totalmix software and the onboard DSP hardware (which are actually field-programmable gate arrays) the user can set up any input or output to be routed and mixed to any available output. It's basically a digital console capable of processing 1,456 channels in real-time. This allows monitor and submix setups that incur no latency – vital should you be using ASIO direct monitoring. Due to the DSP-like hardware any mixing you might do uses no CPU power – a signal can be monitored directly from the HDSP without having to pass through the CPU.

When running the card via third party software the buffering or latency timing can be as low as 1.5ms. Latency levels can be also adjusted without having to quit your host software, allowing a quick change between tracking mode and bumping up to high latency mixing modes – many cards do not allow this. Equally adjustable on-the-fly are input and output levels – from high gain to the usual +4 and -10 standards. Track Marker Support and CD/DAT start IDs plus the read out of CD subcode is possible via the digital interfaces.



Rock Solid

Overall, the HDSP 9632 is a card to be reckoned with. With its built-in wealth of professional features it's surprising to see such a card available for the price. PC users also gain the use of the extremely comprehensive audio analysis software. I'm slightly miffed that RME hasn't seen fit to port this software over to the Mac – hopefully this will happen soon. My only other niggle is the expansion module situation. Should you not have the spare PCI bays to place any modules, you end up with a very messy situation behind your CPU. Having said that I'm happy to put up with a module or two dagging out the back of my already messy computer rear end. What I am more than happy with is the sound quality, low jitter and rock-solid performance.

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