PRODUCT FOCUS

TRINNOV AUDIO ALTITUDE32

AV PREAMPLIFIER

WRITER Stephen Dawson

In the audiophile world, we perhaps too frequently attribute nearly mystical qualities to particular components. It just about goes without saying that a piece of high-end gear should have specially selected audiophile capacitors and resistors, not mere industrial ones. In the realm of digital audio, one surely wants the most highly developed, audio-orientated Digital Signal Processors, not some nondescript general-purpose processor

But do we? While it's a controversial issue, there's a strong argument that digital signals are merely digital. The problems arise in converting digital to analogue, and then delivering the analogue signal without degradation.

△ TRINNOV'S ULTIMATE AV PROCESSOR AND PREAMPLIFIER WILL HANDLE NOT ONLY DOLBY ATMOS BUT ALSO OTHER NEW OBJECT-BASED SURROUND FORMATS, INCLUDING AURO-3D AND DTS:X.

Trinnov Audio, it seems, agrees with this. It's hard to say that its Altitude32 AV Preamplifier is anything other than extremely high-end, but it has eschewed all those famous brand-name DSPs in favour of... an Intel multicore processor.

FLEXIBILITY

The particular processor is an i7 — we're not sure which particular model — which has been the mainstay of high-end personal computing in recent years. For many years a general processor was insufficiently powerful to do the complicated math involved in real-time signal processing, so special devices, optimised for the purpose, were developed. But these days that's no longer the case. An Intel i7 processor can run multiple independent processes with 64 bits of resolution at insane speeds. But rather than being limited to the inbuilt feature set of a DSP chip, it is totally programmable to do what the engineers want it to do. It is not bound by the limitations of a DSP.

> Trinnov Audio has been doing professional room optimisation for a decade, with its products in many professional studios around the world.

The fact is, numbers manipulated by an Intel CPU are no different to numbers manipulated by a purpose-designed DSP. The important things are whether enough manipulation can take place, and precisely what manipulation is being performed. Intel CPUs are clearly up to this task.

Of course, that makes it vital that the engineers know what they're doing. Fortunately Trinnov Audio, a France-based company, has been doing professional room optimisation for a decade, with its products in many professional studios around the world. In the Altitude32 it brings that experience to bear on home theatre.

With power and the ability of its creators to program a general-purpose processor, the Altitude32 offers quite astonishing flexibility.

There are four models of the Altitude32 available: 8-8, 8-16, 16-24 and 16-32. These number pairs refer to the number of output channels. The first number is how many balanced XLR analogue outputs the model has, while the second is the number of outputs supported by DB25 connections. DB25 is like the old parallel port used for printers connected to computers, but it lives on in the recording studio, offering a relatively compact yet reliable way of providing lots of connections. The 16-32 has four of those for analogue output. For simplicity, the full 16-32 model is the one we'll be talking about, so where function depends on the number of channels, the other models will be limited accordingly.

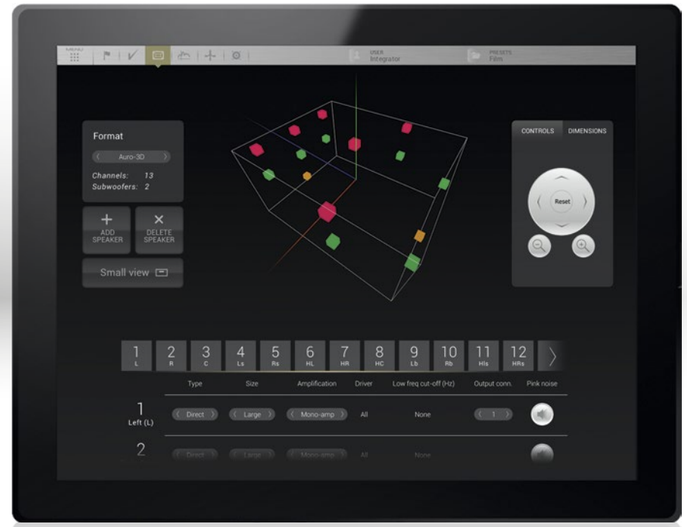
There are also several DB25 sockets for multichannel digital audio input and output using the professional AES standard. Plus optical and coaxial digital audio input and output, plus HDMI, plus balanced AES/EBU digital audio (the Pro version of S/PDIF).

There are lots of other connections, but let's focus on all those outputs, because that is one of the Trinnov's major points of departure from the AV preamp/receiver flock.

LOTS OF CHANNELS

Why on earth would one want 32 output channels? Actually, there are quite a few reasons. The flexibility of this unit is such that you can choose to use the channels for all kinds of different purposes.

One might want lots of speakers. Consider Dolby Atmos for example — and we should note



△ CHOOSE YOUR LAYOUT – THE TRINNOV'S 32 OUTPUT CHANNELS OFFER SPECTACULAR VERSATILITY FOR THE HIGHEST LEVEL OF HOME CINEMA INSTALLATIONS, INCLUDING HEIGHT AND CEILING CHANNELS.

here that the unit supports Dolby Atmos, plus Dolby Surround, plus Auro-3D, with DTS:X coming shortly.

So for the past year or so we've been noting that a 'full' home Dolby Atmos implementation requires seven main speakers, four height speakers and a subwoofer. That's 12 channels in total. But that's the *de facto* standard for the main manufacturers. It is not what Atmos is all about. In fact, Atmos is designed to be sort-of independent of your loudspeaker arrangement. It recalculates the surround field on the fly, to send the right signals to the various speakers that you actually have in your system. So while high-end home theatre receivers support 7.1.4 (seven normal surround channels, one subwoofer channel and four height), Atmos can go well beyond that.

Indeed, the home theatre version of Dolby Atmos supports up to 24.1.10 — that is, 24 channels surrounding the listener, a subwoofer, and 10 height channels. And the Trinnov Audio Altitude[32] 16-32 is the first home processor we've come across that supports anywhere near that, supporting 21.1.8. (And with diminishing returns and such, we'd be astonished if everyone could hear a difference between that and 24.1.10.)

But it's up to your equipment mix. What if you want to have seven satellites, seven subwoofers, one each located near a satellite, and four ceiling speakers? No worries — the Altitude[32] is capable of supporting 32 separate subwoofers. That arrangement comes to only 18 channels, with each optimised for purpose.

THE TRINNOV'S 3D CALIBRATION MICROPHONE. PATENTED TRINNOV 3D REMAPPING MEASURES THE LOUDSPEAKER POSITIONS QUICKLY AND ACCURATELY.

SPECIAL CHANNELS

In recent years most mid-to-high-level AV receivers have allowed the front left and right speakers to be bi-amped. That has meant that you can set two of the in-built amplifiers to the task of duplicating the powering of those speakers. You plug one set of amplifiers into the bass inputs of the loudspeaker, and the other into the treble section. (And make sure that the link between the high and low speaker input terminals is removed.)

Yawn. We remain unconvinced that keeping these signals separate offer significant sonic advantages. The problem with treble and bass in loudspeakers is the need for necessarily simple, analogue passive crossovers to separate the frequencies delivered at high powers.

But if you have your very own processor able to programmed however you want, and the ability to program it, you can implement an active crossover in the digital domain. Trinnov Audio has that processor and that talent, so the Altitude[32] is capable of splitting the signal into bass and treble components before passing it on to a connected power amplifier.

Did we say just bass and treble? Actually, it can manage a four-way crossover for up to eight loudspeakers, or some combination of two, three and four way for different speakers, so long as the total number of channels does not exceed 32.

(We should note at this point that active crossovers can only be used with special crossover-less loudspeakers designed for the purpose, or with loudspeakers with the crossovers removed from the circuit for this purpose.)

This feature offers the possibility of extraordinary performance improvements. Filtering in the digital domain can be performed with much steeper slopes, absent the phase shift considerations of analogue filters. The Altitude[32] offers a significant amount of automatic calibration even for this kind of operation.

CALIBRATION

Speaking of which... Traditionally an AV receiver needed to know how far away loudspeakers were away from the listener so that appropriate signal delays could be applied for the generation of an accurate surround field. But you will recall that these were based on the expectation that the speakers would be at a specific height and angle with respect to the main listening position.

TRINNOV AUDIO **ALTITUDE**[32] AV PREAMPLIFIER

WAVETRAIN ENGINEERED THIS AWARD-WINNING HOME CINEMA AS PART OF A FULL SMART HOME INSTALLATION BY CABLEMAN IN VICTORIA. WITH A 145-INCH SCREEN EXCELLENCE SCREEN AND TOP-NOTCH 7.1-CHANNEL AUDIO, THIS ROOM IS "AS GOOD AS IT GETS".

△ THIS WAVETRAIN DESIGN WITH NSW CUSTOM INSTALLER HOME CONTROL & AUDIO FOCUSED ON THE OWNER'S LOVE OF CONCERT MOVIES, DESIGNED TO MEET A HIGH SPL SPECIFICATION AND TO LINK WITH THE WHOLE HOME'S SMART-HOME AUTOMATION.

▽ THE CINEMA DESIGN BELOW WAS GIVEN A 'MATRIX' THEME, WITH AN ADJACENT BAR STYLED AFTER THE 'CUBE' SERIES OF SCI-FI THRILLERS. WAVETRAIN WORKED WITH INSTINCT ELECTRICAL ON THIS STATE-OF-THE-ART HOME CINEMA DESIGN. (IMAGE: WARREN MACRIS)

WAVETRAIN

The Australian distributor of the Trinnov is Wavetrain Distribution, the distribution arm of Wavetrain Cinemas. This is a design firm specialising in the acoustic and aesthetic design of home cinemas, reaping multiple awards for its cinema designs over the 10+ years that David Moseley and his team have been creating their reference designs.

The company is based in Taren Point, Sydney, but its services are available throughout Australia (and beyond), since it often partners with top custom installation companies as a specialist engineering service company to deliver a reference-quality cinema within a larger smart-home project. Wavetrain works on the actual space first, often redesigning air-conditioning and other potential noise sources before the architectural design is optimised for the best possible acoustics for the room itself, and for the selected equipment to deliver state-of-the-art imaging and audio throughout the listening positions in the final cinema. It also manufactures and imports specialist products not available elsewhere, including the Trinnov here, but also major speaker brand Triad, amp/processor company Cary Audio, and the Canadian D-Box Motion Seating Technology that can add an extra dimension of immersion by synchronised onscreen (and in-game) motion with physical actuators integrated into home cinema seating.

The combination of the world's most advanced home cinema equipment with the award-winning design skills of the Wavetrain team delivers some astounding results. Pictured here are a number of recent projects, including several winners of CEDIA Awards. For more information on these projects and Wavetrain's services, visit www.wavetrain.com.au

SPECIFICATIONS

TRINNOV AUDIO ALTITUDE[32]

INPUTS: 8 x HDMI, 3 x stereo analogue audio (RCA), 2 x pairs analogue (balanced XLR), 1 x 7.1 analogue audio (RCA), 4 x optical digital audio, 4 x coaxial digital audio, 2 x AES/EBU digital (XLR), 16 x AES3 digital audio channels (DB25), Gigabit Ethernet, Wi-Fi

OUTPUTS: 2 x HDMI, 1 x stereo analogue audio (RCA), 16 x analogue audio (balanced XLR), 32 x analogue audio (4 x DB25), 1 x optical digital audio, 1 x coaxial digital audio, 1 x AES/EBU digital (XLR), 16 x AES3 digital audio channels (DB25)

OTHER: 1 x 3D calibration microphone input, 12V trigger I/O, 1 x DVI, 2 x USB 2.0, 2 x USB 3.0, Parallel port, PS/2 mouse/keyboard, RS232C

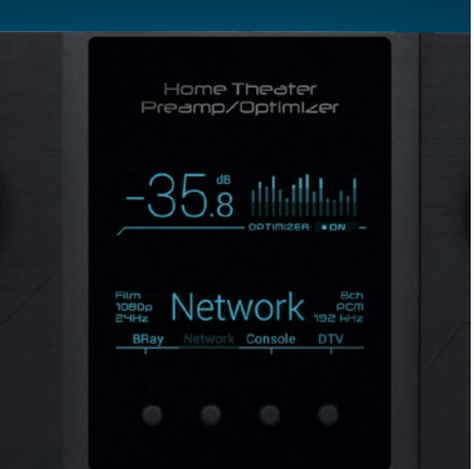
DIMENSIONS (WHD): 442 x 165 x 445mm

WEIGHT: 14.5kg

WARRANTY: Two years

PRICE: 8-in 8-out: $28,998
8-in 16-out: $34,498
16-in 24-out: $41,998
16-in 32-out: $46,998

CONTACT: Wavetrain Distribution on 02 9526 5497
www.wavetrain.com.au



Trinnov Audio styles the Altitude[32] as a 3D sound-capable processor, which is absolutely correct given the support for Dolby Atmos, Dolby Surround, DTS:X and Auro-3D (note: all of these are optional, but you'd be mad not to include them). And these 3D-style audio processes are far more flexible in relation to their loudspeaker placement. The expectation here is that the processor will tailor the sound of the actual location of each loudspeaker.

The reality is that the typical AV receiver will make certain assumptions about the speakers. For example, a recent famous-brand receiver we reviewed offered five possible options for the two 'height' channels it proved. At best their locations will approximate what it expects.

The Altitude[32] overcomes this by using a 3D calibration microphone (pictured on p88). As it says, it uses 'patented Trinnov 3D remapping', and to do this it "measure[s] the actual loudspeaker positions and achieve[s] accurate 3D localization". It knows not just how far away each loudspeaker is (or each driver in each loudspeaker if you're using it to provide active crossovers), but also in what direction each lies.

When it takes an Atmos-defined flying object, it knows precisely where each loudspeaker is, in order to render the object in its exact location, millisecond by millisecond.

THE SIGNAL

It appears that the Trinnov Audio Altitude[32] is very much a digital device. If we understand its operation correctly (and we think we do), even if you use the analogue audio inputs the signal will be converted to digital format for processing before returning to analogue format for delivery to the power amplifier. The unit performs the analogue-to-digital conversion at 96kHz sampling with 24 bits of resolution. Going the other way, it can manage digital signals at up to 192kHz and 24 bits. The A-weighted signal-to-noise ratios of the two conversions are, respectively, 119dB and 118dB, according to Trinnov Audio.

The unit with its network capabilities offers DLNA/uPnP rendering capabilities, supporting all the usual formats including FLAC, though not providing DSD, nor 384kHz PCM.

WEIGHING IT UP

We may have seemed at the start to be somewhat dissing traditional audiophile concerns. But Trinnov Audio hasn't. How do we know? A good proxy is weight. The Altitude[32] weighs 14.5 kilograms, which is more than the majority of AV receivers with all their power amplifiers built in — this is, remember, a processor, not an amplification unit.

In addition, the Trinnov has independent power supplies for the audio section and the digital processing, as you'd expect.

There are some slightly surprising aspects to the unit, For example, the section of the rear panel concerned with computer-style connectivity (Ethernet, USB, DVI) looks very much like the connections you'd see on the rear panel of a Windows computer. It even has the usual colour-coded audio ports, although these aren't used. We wouldn't be surprised to see a compact computer motherboard behind that panel.

Of course, you're going to need amplifiers for as many channels as you choose to use. Trinnov Audio, of course, has a suitable model. The Amplitude[8] has eight 225-watt channels (at eight ohms, and lots more power for four and two ohms) with input sensitivity perfectly matched to the Altitude[32]. So four of them would do the trick nicely.

CONCLUSION

Only logistics prevented us getting hands-on with this unit in time for this publication; our sister magazine *Sound+Image* plans a review in the early months of 2016, which this reviewer hopes to undertake, being seriously keen to get to grips with the Trinnov Audio Altitude[32] AV preamplifier. Its digital processing abilities must be close to being unprecedented in home theatre.

ALTITUDE 32

NEXT GENERATION 32-CHANNEL A/V PREAMP

IMMERSIVE SOUND

3D

ULTIMATE EXPERIENCE

THE NEW REFERENCE FOR LUXURY HOME THEATERS

UNIQUE PROCESSING TECHNOLOGIES

World-Acclaimed Loudspeaker/Room Optimization.
Patented 3D Loudspeaker remapping.

UNIQUE HARDWARE PLATFORM

Incredibly powerful & future-proof. Highly upgradable and scalable.

UNIQUE 3D CODECS IMPLEMENTATION

Up to 24 & 32 discrete channels. Truly evolutive to delivers new codecs faster.

Auro-3D® AUDIO

DOLBY ATMOS®

dts X®

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All our products are designed, manufactured and assembled in France.