How high can you go? Whether you're talking soundfield height, or the heights of quality, this Trinnov combo has you covered.

SUMMARY

Trinnov Altitude[16]
Price: $23,999

Trinnov Amplitude[8m]
Price: $11,499

+ As powerful and versatile a system as seems possible
+ Very high-end performance
+ Enormous power from the Amplitude power amp

- No ARC support
- Limited to 96kHz music

Above and beyond

When Dolby Atmos appeared, one of its most interesting aspects was that it moved outside the 5.1 or 7.2 loudspeaker paradigm not only by adding height channels, but by allowing entirely different channel counts. Dolby Atmos is able to process the sound uniquely for each installation to make best use of the available speakers, regardless of configuration.

In practice, however, Atmos has appeared on equipment which generally conforms to the 5.1.2 or 7.2.4 paradigm for reasons both of backwards compatibility, and because those are the sizes in which AV receivers have been available.

Until now! For here we meet Trinnov, a French company based in the eastern suburbs of Paris, which not only builds high-level consumer products like these, but also units for the professional market, where they are used in real cinemas as well as such places as Fox Studios, the BBC, NHK and, *naturellement*, France Télévision. In describing its decoders, it explains that for Dolby Atmos it provides '16 discretely-rendered channels'. Up to 16, that is, according to how many speakers and amps you have plugged into the Trinnov Altitude[16] AV preamplifier. Want to have three subwoofers, four overhead speakers and nine main speakers? No worries with the Trinnov Altitude[16].

Equipment

Now, it's necessary to think of the Trinnov Altitude[16] rather differently to your typical AV receiver. Of course, there's the fact that it's an AV processor, not a receiver. But what I'm getting at here is that within this one box are two quite separate devices.

One is a fairly traditional digital preamplifier with DAC and ADC capabilities (developed by Trinnov for its pro gear) and rather more advanced than usual switching capabilities.

The other is a computer. A real computer, not just a conceptual one. One corner of the back panel is a face plate which looks like what's on the back of a typical Windows computer (not that it actually runs Windows). Why? Because Trinnov doesn't buy surround sound decoder chips from the standard suppliers. It uses its own custom software in a general purpose computer to do the surround decoding (and, it seems, the speaker and room optimisation).

Why? As it says: "*Rather than having to wait for chip companies to finish their implementations of new technologies like Dolby Atmos or DTS:X, we fully adapt the 'golden code' given to those chip companies directly into our powerful Linux-based platform. By so doing, we tend to be 18-24 months faster to market and we do not have to live with any limitations built into the chip designs in order to reach the mass-market cost requirements those companies depend on for their business*

model. When we develop new features or performance improvements, we can release them in the form of a simple software update."

That's a bold and potentially scary task to take on, and you'd have to think about how well it might be done with a new start-up, but Trinnov has been around for more than 15 years, developing and providing equipment for recording studios. As for the Altitude[16], consider this a streamlined, home version of the company's Altitude[32].

The latter provides up to twice as many channels, and is more likely to be installed by a well-equipped and experienced professional.

This somewhat dual nature of the device carries through to connectivity. It has both an on-screen display and no on-screen display. The computer section has HDMI and DVI outputs, so you can plug in a monitor, and a mouse and keyboard into the USB or PS/2 sockets, and then you can interact away with the extremely rich interface with its almost limitless settings options. Plus control the volume, choose the inputs and such.

But the AV processor part has seven HDMI inputs, two HDMI outputs, and no on-screen processing. That's just straight through (there isn't a volume control overlay, for example). Four HDMI inputs and one of the outputs support HDMI 2.0 and HDCP 2.2, the others being HDMI 1.4 to ensure compatibility, but cleverly a forthcoming update will allow you to choose any combination of 1.4 and 2.0.

As for audio, this is almost entirely a digital device. There are only two analogue audio inputs, one with RCA sockets, one with XLR sockets, and no analogue video connections at all. But for digital audio there are two optical and two coaxial digital audio inputs, and one of each as outputs, so you can use an external DAC.

And for the 16 channels of output? Balanced XLR is provided, and only balanced XLR, no RCA outputs. You will need power amplifiers equipped with XLR inputs.

Amplitude[8m]

Which brings us to the Trinnov Amplitude[8m], or as I like to call it, the beast! (It is pictured overleaf.) We were supplied with this to make sure we could get the best out of the Altitude[16]. It had the courier staggering down the driveway with its near 30kg of mass. It packs eight channels of power (XLR and TASCAM DB25 balanced inputs only, not RCA), with 200W each into eight ohms, 300W each into four ohms. Enough said.

Well, not quite enough said. It had become traditional to specify AV receiver outputs with just two channels running. Trinnov doesn't do that. The amp uses Hypex Class-D amplifier modules, so they are very efficient, and these are not merely Hypex UcD (Universal Class D) modules but the audiophile-level Ncore type which are becoming the darlings of those high-level stereo audiophiles from their performance in amps from the likes of Bel Canto and NAD.

Here the specifications say that the maximum 'fully loaded' power consumption of this amp is 2000 watts. So it can apparently deliver 200 watts

Inputs
The preamplifier has seven HDMI inputs and two outputs, plus six audio inputs (1 x RCA analogue, 1 XLR balanced analogue, 2 coaxial digital and 2 optical digital).

Outputs
Up to 16 channels of decoded audio can be sent to power amplifiers or active speakers from the 16 XLR balanced outputs, while HDMI output is provided on both 2.0 and 1.4 standards. Digital audio outputs are also available as coaxial or optical.

eight-channel amplifier so that you can have up to 16 channels configured. Trinnov has a recommended speaker layout using all 16 channels which provides speakers for Atmos, DTS:X and Auro3D. There is also provision to deploy some of the outputs to bi-, tri- or quadri-amp some of the speakers. There are active crossovers available for these functions. You can also map any input to any output — indeed, up to four outputs if you choose quadri-amp. Pink noise can be fired through any of the channels... just to make sure you haven't got the mapping wrong.

EQ. If you're super confident, and really like manual tweaks, you can add a parametric equaliser to each channel, specifying the centre frequency, the amount of gain or cut, and the width of the effect ('Q'). There are also shelf settings for both ends of the frequency band. You can set the order (steepness of the slope) for these. I didn't see any indication as to how many EQ points you could use, so I just kept clicking 'Add'. When I got to 34, I figured that would be far more than anyone could reasonably need. After playing around, I deleted everything because I planned to use the calibration microphone.

Incidentally, that eighth amplifier channel didn't go to waste, despite me using only seven main speakers. My regular subwoofer doesn't have balanced inputs, so I used one of the power amplifier channels to drive a passive sub.

Bass. The next step is bass management. You can have one crossover for the speakers you select, or you can have individual crossovers for each speaker in the system. For each crossover you set both the low-pass and high-pass filters and the filter slopes (12, 24, 36 or 48dB/octave), so there's a fair bit of clicking involved. I didn't mind. I often criticise receivers for insufficient control over bass management, and for estimating the capabilities of the speakers incorrectly. This is, after all, a one-off setting and it's worth getting right. There is even a separate section for adjusting the LFE channel's level separately from the level of the redirected bass. Indeed, you can adjust the level of the redirected bass individually for each channel. As I think I've implied, the available settings are exceedingly comprehensive!

Calibration. The next step is calibration. Here things can be tricky. You don't get the calibration microphone with the unit — which makes sense, since it's expensive, and Trinnov expects most people will have an installer do it. It's a very special microphone. Indeed, there are four microphone capsules arranged at the points of an imaginary tetrahedron, which allows it to make spatial determinations in addition to measuring the usual things.

You can calibrate for one position, or for multiple positions. If the latter then you can later choose to eliminate some positions and weight the remaining ones according to how much importance each has in the calibration. Finally, you can create a 'target curve' by dragging points on a frequency response graph so that the adjustments are applied to achieve the outcome you want (not necessarily a flat response). In the end you can inspect the 'before' and 'after' responses on a graph. In my system if the graphs are to be believed, the calibrated responses were within 1dB of flat from the bass crossovers to well above 10kHz, while the subwoofer was flat from 20Hz to 120Hz.

I must add at this point, I've only skimmed the high points here. There is way more that you can do in the settings. Way, way more.

Don't, as I did, leave a USB stick plugged in during this. It caused a few problems where the unit would fail to keep my settings, and then not reboot properly. It was plugged in because I'd gotten my mental wires crossed about how sound profiles were

from all eight channels at the same time, or something close.

The Altitude[16] unit supports network audio — FLAC, WAV, AIFF and OGG — up to 96kHz sampling. The system also fully supports the Roon music streaming system. The 'Audio Network' connections on the back of the unit are, I'm told, for future use. I used the Ethernet connection on the computer module for streaming music to the unit.

Set up
My understanding is that the computer inside the Trinnov Altitude[16] uses an Intel Core-i5 processor. One of the screens in the interface reported that there's something like 400MB of storage for settings. Another screen suggested that the calibration I created used about 7MB of data, so I guess there are quite a few settings you can store as presets.

As mentioned, you can fully set it up by plugging a computer monitor and mouse and keyboard into the computer connections at the back. Or you can set it up over the network by using a Windows or Mac computer, or iPad or Android tablet, and a Virtual Network Computing application. A VNC app essentially allows you to operate a remote computer — the Altitude[16] in

this case — and display its screen. I used Windows and it worked exceptionally well. It sounds like a scary tech-head thing, but the instructions are clear, including which app to install for each kind of computer.

The interface is a combination of graphics and text, clearly laid out and with plenty of explanation as for what to do. It will take you a while to work through, because there's a lot there, but proceed methodically and few will have difficulties.

Since I had only eight power amplifiers to play with, I went for a 5.1.2 configuration. If you're going beyond, as befits a system of this calibre, you can of course get a second

saved, the manual insisting that you had to Save the Preset periodically, but with no apparent button to do that. But the 166-page manual is very comprehensive (though with a few quirks and omissions, and it could do with revision by a native English speaker).

In use

The Trinnov Altitude[16] is a very stylish unit. Its remote is a flat device without many keys, but enough to do all the important things. The volume control on the remote changes the level in 1dB increments. The large volume control on the front panel changes them in 0.1dB increments. I found it a little slow to operate at first, but I soon got in the habit of giving it a firm spin and it would get things going. There's both a 'Mute' and a 'Dim' key. The former cuts the sound. The latter reduces it by an amount you can specify, with a default of -20dB.

The front-panel display was restrained but informative. Even though there's a computer to start up every time you switch on, it only took around 42 seconds. Initially I found it starting up without my settings, requiring me to change the preset manually. But digging around in the options I found you could choose a start-up preset.

If you are a bit of a skeptic with regard to the concept that electronics can make a major difference in sound quality, you may have to re-evaluate after listening extensively to this system — though here it is both the quality of the electronics and the precision and comprehensiveness of the calibration.

Everything was precisely where it ought to be in the mix. Dolby Atmos was fully engaging, and fully defined. And perhaps the most exciting experience was when I pulled out my DVD Audio disc of King Crimson's 'Islands'.

The 5.1-channel Steven Wilson remix was astonishing in tone, in power, in clarity. There were elements and instruments I'd never heard before, while the instruments and drum strokes were dancing around the room in a dizzyingly entrancing manner.

Conclusion

In a break from reviewing the Trinnov pair, I visited the Melbourne F1, and I found myself looking at Lewis Hamilton's car laid bare as the mechanics did their stuff. And it occurred to me that the Trinnov Altitude[16] is to other home theatre equipment as Hamilton's Mercedes is to, say, the Mercedes safety car. It is for those who want the very highest performance, and the very highest levels of adjustment to specific circumstances. Those after those things won't be disappointed here.
✛ *Stephen Dawson*

The Altitude[16] is really two devices — an AV processor, and a computer running Trinnov's custom software allowing updates to stay ahead of brands that wait for fresh silicon.

SPECS

Trinnov Altitude[16] $23,999

Tested with firmware: v.4.2.8.2, Mar 9 2018

Inputs: 7 x HDMI 2.0), 1 x stereo analogue audio (RCA), 1 x stero analogue audio (balanced XLR), 2 x optical digital audio, 2 x coaxial digital audio, 2 x AES/EBU digital (XLR), 2 x Ethernet

Outputs: 2 x HDMI (1 x HDMI 2.0, 1 x HDMI 1.4), 1 x optical digital audio, 1 x coaxial digital audio, 16 x analogue audio (balanced XLR)

Other: 1 x 3D calibration microphone input, 1 x trigger in, 4 x trigger out, RS-232C, computer module incuding Gigabit Ethernet, PS/2 keyboard mouse, 2 x USB 2.0, 2 x USB 3.0, 1 x HDMI, 1 x DVI

Dimensions (whd): 440 x 138 x 432mm

Weight: 11.35kg

Warranty: Three years

Trinnov Amplitude[8m] $11,499

Power: 8 x 200W (8 ohms, 20-20,000Hz, 0.05% THD); 8 x 300W (4 ohms, 20-20,000Hz, 0.05% THD)

Frequency response: 20-20,000Hz, +0, -0.5dB, load independent

Damping Factor: >800 "at any frequency up to and including 20kHz"

Inputs: 8 x analogue audio (balanced XLR), 1 x DB25 TASCAM connector for 8 channel balanced input (alternative to XLR)

Outputs: 8 x speaker binding posts

Other: 1 x trigger in, 1 x trigger out

Dimensions (whd): 483 x 127 x 432mm

Weight: 27.7kg

Warranty: Three years

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