

# UNLEASHING

*the sound of tomorrow's*

# CINEMA



The company that brought high-performance audio to cinemas has now launched a processor for home enthusiasts. **Steve May** lifts the lid on Datasat Digital Entertainment

We all aspire to have cinematic sound in our homes. And there are plenty of ways to get it, from budget surround sound boxes to premium processors. Some are rubbish, many are excellent, but all have a lineage that's instantly recognisable as domestic.

But now there's a different option. A cinema sound processor ripped from the racks of your local multiplex and engineered with a philosophy hewn from years of widescreen experience. Introducing the imposing RS20i from Datasat Digital Entertainment.

Admittedly, Datasat may not be a moniker instantly associated with bigscreen soundtracks, but it has a heritage that literally stretches back to the prehistory of digital movie audio, specifically Steven Spielberg's *Jurassic Park*. AV aficionados will know that this movie ushered in DTS audio. It's also where the Datasat Digital Entertainment story begins...

#### Upstart audio

Back in 1993, with funding provided principally by Universal Studios, upstart cinema audio company Digital Theatre Systems (aka DTS), convinced wunderkind director Spielberg that its new multichannel digital sound format would be the perfect fit for his proto dino-epic *Jurassic Park*. With Universal's backing, DTS (then just a handful of people) shipped and installed B76 DTS playback systems into US cinemas in time for *JP*'s opening. The sound of cinema (and for that matter, the stomp of a T-Rex) changed forever.

*'Datasat's RS20i is uniquely future-proof. This is not a box that technology will leave behind'*

DTS went from strength to strength. Three years later, it reached into the home, bringing its 5.1 audio codec to DVD and other platforms. Soon the DTS empire sprawled across both consumer and professional cinema markets and the decision was taken to split it into two separate divisions. The theatrical outfit, DTS Digital Cinema, was then sold in 2008 to Datasat's entrepreneurial owner Phil Emmel.

Under new stewardship, but retaining many of the original engineers, Datasat Digital Entertainment (the DTS branding was dropped in 2011) has gone on to carve itself a unique space in the pro-cinema sphere. Inevitably, many will consider its move into the consumer arena something of a leap. However, sales manager Daniel Gray thinks it was inevitable: 'We've constantly had people asking why our flagship processor, the AP20, wasn't available to AV enthusiasts.'

Stephen Field is Senior VP of programs and products. 'We've got about 30,000 installs out there for cinema playback,' he told *HCC*, when we dropped into the brand's Twyford base to learn more. 'Over the years we've diversified into hard >

drive products and media playback. We also oversee subtitling, audio descriptions and non-English language dubs.' Field takes us to see a German version of *Rock of Ages* being checked. 'We've also produced many cinema processors in our time,' he adds, 'but the AP20 was our first high-end processor.'

The AP20 was a revolutionary creation. Designed with audiophile sensibility, it utilises six Sharc DSPs ('at the time the fastest we could get') and all its features and functionality are software-based. 'That way it's easy for us to upgrade.' Indeed, it's this versatility that made the AP20 an industry staple and a firm favourite of Hollywood's creative elite.

'I've done many film festivals,' recounts Field, 'sitting with directors doing EQ and alignment right up to the day of a premiere – a film is never finished mixing when it comes to the director. [James] Cameron will sit there asking for a centre channel to be up one dB at 1KHz, tweaking the left surround a bit louder, so that it sounds perfect in that particular theatre. Using an AP20, I can save his modifications as a Profile. When you want to run a regular movie, you just run the reference curve again on a separate preset. The system, with its ability to store 20 individual profiles and EQ settings, is very versatile.'

The new RS20i, a direct development from the AP20, shares much of this flexibility. What works in a commercial theatre also lends itself to home use. A multiplicity of profiles, designed to cope with different content in the cinema environment, translates to presets which can be assigned to different content sources and types (BD, Xbox, online, etc). Adding extra potency is built-in Dirac Live room-optimisation technology, which optimises both impulse and stationary frequency response. Not that the user needs to worry about this. An installer will turn up with a laptop and mic and make all the requisite measurements. Owners just have to press a button as and when. 'The RS20i is not overtly complicated, it's just feature rich,' we're told.

The processor has 31-band EQ and parametric EQ on all 16 channels, explains Field. 'And we can do any of them at the same time, all overlaid. These are not DSP



**Man with a plan:** Datasat's Senior VP of programs and products, Stephen Field



effects, like "Hall". You can make changes as you want and then save them. If you're an audiophile, you can really fine-tune the sound to exactly how you want it.'

**High-end components**

The RS20i is a good deal larger than the average audio separate and some 5cm deeper than its cinematic sibling, to accommodate a beefier power supply. There are other differences between the two units, too. 'We've changed the main system boards,' confides Field, 'along with the op amps and the capacitors. We've gone for higher-end components to make this product sound the best it can.'

The fascia is dominated by a large touchscreen, while power and USB input are hidden behind a Datasat logo badge. USB is used for loading and saving profiles. Typically, an installer will back everything up once the RS20i has been installed, to ensure that all setup data and profiles can be easily restored if required.

Unlike rivals high-end processors, the RS20i conforms to the full 16-channel DCP (Digital Cinema Package – the collection of files that go to make up a digital movie) specification mandated by the DCI (Digital Cinema Initiatives), and has four HDMI v1.4a inputs (video is passed through untouched), plus assorted digital and analogue inputs. The unit also uses a slot-in board architecture; there are three expansion bays for future product enhancements. While we were there, the company was finalising the Dolby board, which will add Dolby TrueHD decoding (and everything beneath) to the box.

**Fully-featured:**

The forthcoming RS20i features a full-colour front display, USB input for loading and saving profiles and digital and analogue audio inputs



While DTS and Dolby were famously once fierce rivals, solid bridges have been built between the brands. 'We were competitors when we did the old 35mm film sound formats, but those days are over. We're agnostic now.'

**Velvet glove**

In full flight, the RS20i sounds magnificent. Once a room has been optimised with Dirac, the audio fits like a velvet glove. A demo of *Transformers* proves scintillating. Even with the sound mix at its most frenetic, no clarity or image placement is lost – and LFE slams hard and fast. The RS20i offers extensive bass management, with the capacity to feed four subs. It's at this point you realise just what the RS20i's setup versatility can achieve. That £16,000 price tag doesn't seem that big of an ask anymore.

Of course, the RS20i's price bracket already includes high-end multichannel processors, including the QSC DCP100 and the ADA Cinema Rhapsody Mach IV, but only the RS20i is DCI-compliant from a channel point of view.

And if you're an RS20i user, Datasat is promising a First Class rather than Premium Economy experience. 'We have a software team in the States, and we're dynamic. If we receive a specific request for a new feature from a user, we can add it to our development timeline.'

Field recalls a cry for help from the National Media Museum in Bradford, which runs an AP20. 'They handle everything at the NMM – IMAX, 35mm, 70mm and every old format going. But they had the need for a particular channel configuration for an obscure vintage movie which wasn't supported out of the box. We received a request over the phone, sent it to our engineers in Los Angeles, and it was processed overnight and installed into the National Media Museum's AP20 in time for their screening. No other company can react like that!'

Intriguingly, the RS20i has spawned its own offshoot, the SR16. This model is tailored to the burgeoning nightclub scene. 'Dirac optimisation solves lots of problems in nightclubs,' says Datasat owner Phil Emmel. 'Nightclubs have multiple zones to accommodate – VIP areas, table areas, the club and bars, and they want to have different EQs per zone, different levels with control over different sources. At the moment, these clubs need various bits of kit to achieve that but, with Dirac 2 software, you accommodate different zones into one profile. These customers also want their own front panel, with their own logo on it. Having the manufacturing here and in the US makes it easy for more to customise the product.'

The RS20i's construction makes it uniquely future-proof. This is not a box that technology will leave behind. The Datasat Digital Entertainment group are already heavily involved in next-generation cinema sound formats, and are confident they will bring these experiences to the home before anyone else. With 16 channels of customisable sound, the RS20i looks to be the only consumer audio processor which has the potential to be upgraded to a next-generation movie sound format. Significant, as a war to decide this sonic future is already underway.

**New direction**

This Summer, Dolby launches Atmos, its new state-of-the-art cinema sound system, in the UK. This not only adds two height arrays and extended side-channels to the usual multichannel configuration, but introduces the concept of object-based sound design to moviemaking for the first time. Every element in a frame can become a separate sound object. The end result is 'an illusion of an infinite number of speakers.' The first feature to be mixed in Atmos is *Brave*, from Disney Pixar – the forward-thinking company that also launched the first 7.1 cinema mix for *Toy Story 3*.

Elsewhere Barco is promoting its own system, Auro 11.1. Both of these deeply immersive audio systems are an inevitable upgrade after the growing deployment of 4K digital cinema projectors, says Field, and they offer a quantum leap in aural performance.

Working closely with Barco, Datasat has developed the AP243D, a 24-channel audio processor for Auro 11.1. Also involved are THX, on hand to optimise Auro 11.1 systems as they roll-out into commercial theatres. The first film mixed for the format is George Lucas' World War Two action adventure *Red Tails*. Rick Dean, Senior vice president of THX, describes the Barco proposition as 'a groundbreaking, yet logical next step for THX.'

'With Auro 11.1 whatever is on a track, stays on that track. It doesn't vary. Nothing gets added or taken away from it,' explains Field. Datasat reveals it's also working with Barco to produce a slot-in Auro 11.1 card for the AP20, and there's no reason why a comparable board can't be developed for the RS20i, when domestic software becomes available. 'We're also talking to other 3D sound vendors. We've got a lot of horsepower in this box.'

At present, neither of these next-gen sound proponents are courting the home entertainment industry with their 3D audio technologies. They're being positioned as a theatrical only experience, one which cinema chains can use to lure punters from the comfort of their home theatres. But never say never, teases Field. The future of cinema sound begins here.



**Made in the UK**  
High Wycombe: the home of high-end home cinema sound...

Given the preponderance of Far Eastern manufacturing, it's perhaps surprising to learn that Datasat audio processors are being built in the UK, but as the company's owner Phil Emmel tells it: 'To expand our US manufacturing operation, we have opened an additional manufacturing plant in the UK and US. There's a recession on and everyone's got to do their bit about putting the great back into Great Britain, so I've brought manufacturing capability to the UK.' Emmel recently signed a contract to start production of both the AP20 and RS20i processors at a factory in Bourne End, outside of High Wycombe. 'By doing this it actually helps us greatly with things such as meeting increased customer demand and greater flexibility for bespoke items.'

**Immersive:** Disney Pixar's *Brave* has been mixed in Dolby Atmos – but cinemas need an overhaul to deliver it