

Pro-Ject CD Box RS2 T / Pre Box RS2 Digital

Far from being just cute and compact, Pro-Ject's Box Design range is now all grown up – as this high quality CD/DAC/preamp combination so vividly demonstrates
 Review: **Andrew Everard** Lab: **Paul Miller**

Considering where Pro-Ject's Box Design range started, it's come a very long way. It all began with a compact and very affordable phono stage, the original Phono Box, launched as an interface between the company's wildly successful lineup of turntables – which arguably spearheaded the entire 'vinyl revival' – and the amplifiers of the time, many of which had long since dispensed with inbuilt phono equalisation.

At the last count, sales of the Phono Box were well into the hundreds of thousands, so it's hardly surprising that the company capitalised on that success with a rapidly growing, and increasingly ambitious, range of compact components. These culminate in the duo we have here, the £2150 CD Box RS2 T CD transport and £1750 Pre Box RS2 Digital DAC/headphone amp/preamp, available in either black or silver.

TRANSPORT OF DELIGHT

The arrival of these new components shows just how diversified the Box Design range has become. For each kind of component, from phono stages to CD players and DACs, there's a series of models at different levels. It can make for a somewhat confusing read when you have the entire catalogue before you, and while of course you can mix and match across the various series, the devil is in the detail when identifying at which level a product sits.

At the moment the RS2 models are at the pinnacle of the offering, but the Box Design catalogue contains no fewer than six CD-playing devices, including two transport-only models – the CD Box DS2 T in addition to the RS2 T we have here. Pro-Ject says that the RS2 T is 'the next

generation of ultimate CD transports', and of course it's based around a dedicated CD mechanism. That's not always a given even in high-end CD playing hardware, but is a good sign.

Actually, it's a very good sign, for the top-loading CD mechanism here isn't even one of the (very few) off-the-shelf options available, but a custom design, the result of co-operation between Pro-Ject and Michael Jirousek, formerly of the Philips CD development team which was based in Pro-Ject's home city, Vienna.

The CD Box RS2 T is built around StreamUnlimited's CD-Pro mechanism and the Blue Tiger CD-84 servo system, the latter integrated into the solid aluminium body of the transport assembly itself, and further stabilised by being mounted in a carbon fibre chassis with vibration dampers. The drive is finished off with a new alloy clamp, balanced to ensure the disc sits perfectly on the motor spindle.

Pro-Ject says this is its 'best CD transport ever and the perfect partner for so many

'This is an exceptional CD player... with benefits'



RIGHT: XAMOS-based USB solution [top left] and Ehong Bluetooth receiver [centre] feed a dual-mono ESS9038 DAC stage [underneath] with balanced solid-state and 6922EH tube outputs [right] including motorised volume [lower right]



LEFT: These two backlit displays carry a wealth of information from full track, time and CD text for the transport [top unit] to the selected input, PCM/DSD source data, bit depth, incoming/upsampling rate(s), choice of digital and analogue filter for the partnering Pre Box RS2 Digital DAC [bottom unit]. The configuration menu is also navigated via the DAC's display

currently existing premium quality DACs'. By way of flexibility, the CD Box RS2 T has a choice of digital outputs on the rear, including optical and coaxial S/PDIF, and AES/EBU on an XLR socket.

AROUND THE CLOCK

But the weapon of choice when using the CD Box RS2 T in tandem with the Pre Box RS2 Digital will be its HDMI output, which carries the digital signal in I²S format along with a separate Masterclock feed. In theory, at least, this synchronising clock feed should eliminate many of the

problems inherent in conventional digital connections [see PM's Lab Report, p55].

Unsurprisingly, the Pre Box RS2 Digital has a matching HDMI I²S input, designed to slave the transport to the preamp/DAC/headphone amp's master clock. Obviously, in considering the two Pro-Ject boxes as a CD-playing system, this was the connection used, but to ensure its compatibility with as wide a range of digital sources, the Pre Box RS2 Digital also has one coaxial, two optical and one AES/EBU digital

inputs, as well as built-in Bluetooth and USB-Type B 'computer audio' connections, the last capable of handling PCM-based files at up to 768kHz/32-bit and DSD5 12.

DUAL MONO DACS

Under the bonnet, Pro-Ject has levered-in a pair of ESS Sabre ESS9038 DACs in dual mono configuration, alongside seven selectable digital filters [see PM's boxout, below left], MQA decoding plus the option

of two analogue filters, operating above 25kHz or 120kHz. The DAC offers switchable upsampling to 384/352.8kHz: you can leave it off, only upsample MQA files or upsample everything, and also turn reclocking on or off, which may be advantageous with files

at higher sampling rates. Finally you can switch between the company's bespoke solid-state and triode valve output stages.

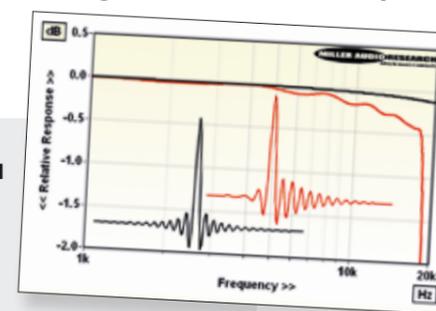
Both of these are fully balanced in operation and are kept permanently powered up, and selecting between them merely diverts the signal. Variable-level outputs are provided on both RCAs and XLRs – unusually there's also a single set of RCA/XLR analogue inputs – and the headphone output is on a 6.35mm socket.

Slender aluminium-clad remote handsets are provided for both the units

PRO-JECT'S PULSES

Not only does Pro-Ject offer solid-state and 6922EH-based tube output options but it also includes seven different digital filter 'recipes'. Based on the algorithms we saw in the Pre Box S2 Digital [HFN Aug '17] – but minus its 'Optimal Transient' mode – the 'Linear Phase Fast' [black traces, inset Graph], 'Brickwall' and 'Apodising' options are all steep roll-off types, their impulse responses showing pre- and post-ringing (echoes) but achieving a superior rejection of alias images (120dB, 103dB and 89dB, respectively) and offering the flattest responses.

The 'Minimum Phase' filters eliminate pre-echoes but have greater post-ringing, the 'Fast' version yielding a 94dB stopband rejection and -0.1dB/20kHz response while the 'Slow' filter, with just three post-ripples, offers 21dB and -5.1dB/20kHz, respectively. The 'Linear Phase Slow' option has just two pre/post ripples, delivering a mere 16dB suppression of aliasing images and a -3.6dB/20kHz response. Hybrid digital filters, combining linear and minimum phase characteristics, are becoming commonplace and Pro-Ject's 'Corrected Phase Fast' is quite typical [red traces, above]. This offers a superior 97dB alias rejection but a response (-12dB/20kHz with CD and -24dB/45kHz with 96kHz media) that shows obvious in-band rippling. PM



RIGHT: Lifting the lid reveals Pro-Ject's choice of CD-Pro 8 mechanism from StreamUnlimited. It features an alloy/carbon-fibre chassis mounted on a proprietary suspension



[see p55], along with offboard power supplies. Inevitably the Box Design range also includes uprated power supplies, should you wish to try them later.

SEDUCTIVE SWING

The rubric of this review was to test the two boxes together as a CD-playing solution, though I was curious to find out what the Pre Box RS2 Digital could do when fed from either a computer or a Melco music library with higher-resolution content. But most of my listening was carried out with the two boxes in HDMI/I²S harness, the digital filter set to its flattest position, upsampling on (as this gave a little more sparkle to the sound) and using the solid-state option for the output stage.

I did experiment with all the various options on offer – and there are so many that the harmless fun will stretch out for days, not hours, I suspect – without reaching any solid conclusions as to which configuration would be the best all-round choice. However, I eventually came back to the settings above for most of my listening. In fact, if you're hoping to read the old saw about switching in the valve stage transforming the sound into something richer, more mellifluous and organic, you're going to be disappointed. To these ears it just seemed a bit softer, and I was happy to go back to the crisp, clean detail of solid-state.

That's really what this new Pro-Ject RS2 duo is all about – well, that and the almost jewel-like appeal of miniature hi-fi separates with a reassuring feel of solidity and quality. You could even add on one of the company's similarly compact power amplifiers, such as the 2x110W-rated Amp Box RS (£799), complete with a tube buffer stage, or the similarly-equipped Amp Box

RS Mono, a 125W monoblock selling for £699. The latter is quite a monster by Box Design standards, with the usual 22x20cm footprint but standing a lofty 7.2cm tall!

So, at the better part of £4k, the Pro-Ject two-box digital front-end is quite a chunk of change if you view it just as a CD player – which of course you shouldn't – but the performance conforms to that old Hollywood idea of all the money being up there on the screen. This isn't just a very good CD player: it's an exceptional CD player, with benefits. That's clear whatever music you choose to play from old favourites to recent releases. For example, spinning the latest Rickie Lee Jones album, *Kicks* [OSOD OSOD02], the Pro-Ject duo gives fabulous insight into the slightly laconic Southern-tinged covers, and a seductive swing to the backing musicians while still maintaining that clarity. And with the oh-so-tight harmonies of 'Nagasaki' its detail rendition is overshadowed only by the fun you'll be having.

BORN TO BOOGIE

Slip back in time to the multilayered synths of Tomita's *Snowflakes Are Dancing* [RCA Red Seal RD 84587] where the sonic depths of the recording, and the soundstaging, come up afresh in both the bass weight on offer here and the sense of swirling midband and treble.

This is most notable in 'The Engulfed Cathedral', where the effect is almost three dimensional, not only in its solidity, but ⇨

'The harmless fun will stretch out for days, not hours, I suspect'

HEINZ LICHTENEGER

The founder of Pro-Ject, Heinz Lichtenegger is as dedicated to his mission in life as he was when he started making the company's first turntables almost 30 years ago. Ask him where his company is going, and he says 'We are fighting for hi-fi stereo as we fought for analogue turntables in the '90s. What we won't be making is some integrated one-box streaming speaker which only gives a mono sound!'

But he acknowledges that the development of modern digital systems involves a degree of co-operation, as is the case with the CD Box RS2 T: 'The CD drive involved an investment of millions of Euros, which we alone can't support, but you will see many brands, even those making way more expensive players, using this mechanism.'

'This also happened with the [StreamUnlimited] S700 streaming board, where we and Naim were the lead customers, and others including Musical Fidelity and Krell followed. There's no other way to make this high technology affordable to the consumer.'

Unlike some recent Pro-Ject designs, the Pre Box RS2 was an entirely in-house project. Discussing the small form-factor of the Box Design series, he says 'You realise very fast that the highest costs are in the cabinet and the mechanical parts, not the electronics – the only way to reach a sensible price is to reduce the size of the box, also improving its feel and rigidity. We believe that the modern customer wants smaller products, and not big boxes that are mainly empty'.

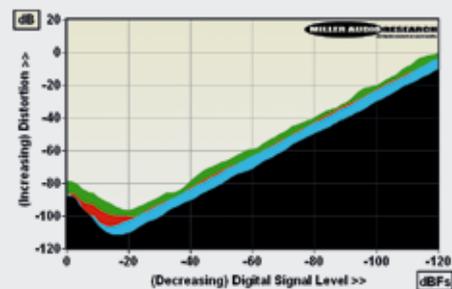


LAB REPORT

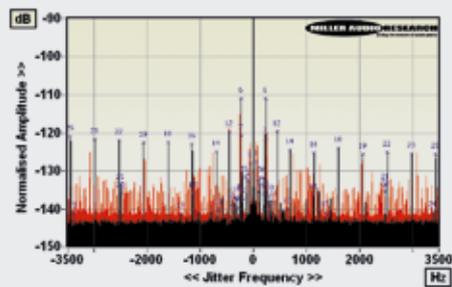
PRO-JECT CD/PRE BOX RS2 T/DIG.

For a pair of ostensibly simple-looking small boxes, this Pro-Ject duo packs-in a couple of days' worth of lab test features! The two pairs of 6922EH triodes that form the tube output option, for example, are an *addition* to the solid-stage output. Distortion and noise are slightly increased [see Graph 1, below], though this is an increase in 2nd-order harmonic from 0.0055% to 0.008% only (1kHz/0dBfs) while the A-wtd S/N falls slightly from a very respectable 113dB to a still very fine 110dB in tube mode. The maximum 4.1V balanced output is unaffected by choice of solid-state/tube stage but the output impedance does increase from 173ohm to 320ohm (the latter increasing still further to 1.74kohm at 20Hz), respectively.

There is no impact on the Pre Box RS2's digital performance, of course, which is influenced to a greater degree by your choice of digital filter [see boxout, p51]. Using the default 'Linear Phase Fast' filter, the response reaches out to -0.1dB/20kHz, -0.9dB/45kHz and -2.1dB/90kHz with CD/48kHz, 96kHz and 192kHz media, respectively, with -0.14dB/20kHz, -0.6dB/45kHz and -1.8dB/90kHz achieved via the 'Minimum Phase Fast' filter. Distortion falls to as low as 0.00015% over the top 30dB of its dynamic range through bass/midrange frequencies and 0.0006% at 20kHz. There are synchronous clocks for 44.1kHz and 48kHz-based digital sources, offering an accuracy of ±20ppm, while jitter, via the clock-linked HDMI/I²S interface falls to 220psec [see black spectrum, Graph 2]. There is more low-level spurious present via the S/PDIF and USB inputs with 24-bit data [red spectrum, Graph 2] but correlated jitter is lower at 160psec. Low-level linearity is good to ±0.1dB over a 100dB range. PM



ABOVE: Distortion versus digital signal level over a 120dB dynamic range – solid-state (1kHz, black; 20kHz, cyan) and tube o/p (1kHz, red; 20kHz, green)



ABOVE: High resolution jitter spectra (48kHz/24-bit LPCM, red; and via CD over HDMI, black with mkrs)



ABOVE: Digital outs from the CD transport [top] include Toslink, coax, AES/EBU and PS on HDMI. The DAC [bottom] includes Bluetooth, USB-B, HDMI, coax, AES/EBU and two Toslink inputs, plus single-ended (RCA) and balanced (XLR) analogue in/outputs

also in its ability to wrap the listener in sound. Not bad for a recording that won't see 35 again!

Talking of old recordings, ZZ Top are marking their half-century with *Goin' 50* – a 3CD package containing remasters of 50 songs. Played on the Pro-Ject RS2 duo, the taster 18-track single disc version [Rhino 0604497851621], released in advance, has all the swagger you could want from these remasters, from the unstoppable charge of 'Sharp Dressed Man' to that gloriously textured guitar solo on 'Cheap Sunglasses'. The two-box CD player certainly digs deep, and these recordings provide the paydirt.

Without a doubt this RS2 transport and DAC can boogie when

required, but – as hinted at with the Tomita recording – the combo can also sound ravishing with layered, ethereal recordings, and you don't get more so than Cambridge's St John's College Choir, recorded in their own chapel, on the *Locus Iste* set [Signum SIGCD567].

REAL IMPACT

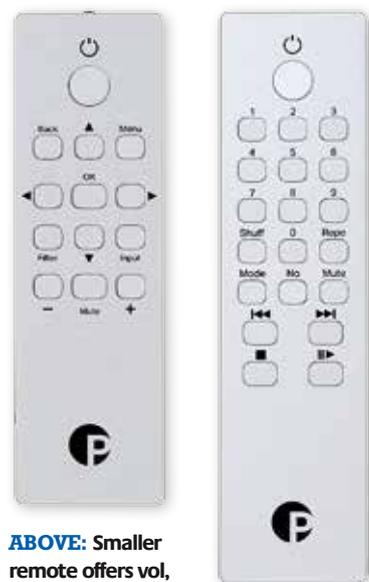
The sheer precision of the performances is jaw-dropping, as is the way the engineers have captured them in the reverberant chapel acoustic, in which voices just hang with wonderful focus.

Even familiar works, such as John Tavener's 'The Lamb' and the Bruckner piece that gives the album its title, have a freshness and real impact here, and in that the ability of the Pro-Ject RS2 duet plays a very significant part. Without a doubt, the CD Box RS2 T/Pre Box RS2 Digital combo is Pro-Ject's most impressive 'digital' offering to date. ☺

HI-FI NEWS VERDICT

If Pro-Ject is attempting to lead a CD revival, as it did with LPs in the company's earliest days, then it has a pretty serious dog in the fight in the form of this two-box combination. Not only does all the engineering effort pay dividends in a sound combining solidity with vibrant detail, but the DAC/pre/headphone amp also has the ability to inject new life into everything up to and including top-rate DSD files.

Sound Quality: 88%



ABOVE: Smaller remote offers vol, input select, filter choice and menu navigation for the Pre Box RS2 while the larger handset adds direct track access to the CD Box RS2 T

HI-FI NEWS SPECIFICATIONS

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|---------------------------------------|------------------------------|
| Maximum output level / Impedance | 4.12Vrms / 174ohm (XLR out) |
| A-wtd S/N ratio (CD / USB / Tube) | 113.0dB / 112.9dB / 109.5dB |
| Distortion (1kHz, 0dBfs/-30dBfs) | 0.0055% / 0.00015% |
| Dist. & Noise (20kHz, 0dBfs/-30dBfs) | 0.0045% / 0.00061% |
| Freq. resp. (20Hz-20kHz/45kHz/90kHz) | +0.0 to -0.1dB/-0.9dB/-2.1dB |
| Digital jitter (CD / USB) | 220psec / 160psec |
| Resolution @ -100dB (CD / USB) | ±0.2dB / ±0.1dB |
| Power consumption (RS2 T/RS2 Digital) | 4W/23W |
| Dimensions (WHD) / Weight | 206x78x200mm / 3kg |