

Pro-Ject X2 B/Phono Box S3 B

Moving-coil pick-ups are inherently 'balanced' and Pro-Ject is determined to reveal them at their best with this balanced-wired version of the X2 deck and phono preamp
 Review: **Ken Kessler Lab: Paul Miller**

One burning question is begged by the arrival of Pro-Ject's X2 B turntable and Phono Box S3 B phono stage: why did it take so long for the industry to simplify a balanced vinyl-playing front-end? It's not like balanced operation wasn't adopted by high-end listeners decades ago as superior to single-ended for both line-level sources – DACs and top-flight CD players – and pre-power amp connections. MC cartridges are inherently balanced. So why the wait?

Pro-Ject, ever eager to solve such problems at sane prices, has managed to create a pairing which achieves balanced LP playback for £1599 for the X2 B record deck and £399 for the S3 B phono stage. It gets better, as the X2 B arrives with Ortofon's superb Quintet Red moving-coil cartridge, worth £250-£270 (depending on your choice of retailer).

The X2 B adds to the RCA phono sockets beneath the back of the plinth a single mini-XLR socket which handles both left and right channels in balanced mode. Otherwise, it's the familiar X2 [HFN Nov '19] with a choice of finishes, including gloss black, satin black or white, or the

handsome wooden base of the review sample. Dimensions are 460x150x340mm (whd) and the weight is 10kg, clearly the next range up from the much-loved Debut line. It provides three electronically controlled speeds (yes, including 78rpm with a dedicated belt); a 9in carbon/aluminium tonearm fully adjustable for VTA and azimuth; a chunky 30mm-thick, 2kg acrylic platter; and felt mat.

S FOR SATISFYING

For the Phono Box S3 B, there's the full complement of adjustments for MM and MC cartridges, including loadings of 10, 50, 100, 1k and 47kohm, and four for capacitance. Gain can be selected across +40dB, +45dB, +60dB or +65dB [see PM's Lab Report, p79], and it was interesting to learn that the Ortofon Quintet Red had enough output to satisfy those enthusiasts who believe that MCs sound better with 47kohm loading, with the S3 B set at +60dB gain. There is also a subsonic filter, while a pushbutton selects the RCA single-ended or mini-XLR balanced inputs around

the back. There are also full-size XLRs and RCAs for the output here.

My only grumble is the choice of a mini 5-pin XLR, as the turntable clearly has enough space to fit a pair of the more commonly used full-sized connections. I also have no doubt the back of the Phono Box S3 B could be made to accommodate them as well. This would have made life easier for cable devotees.

'Do I understand what happened? Absolutely not. Do I care? No'

Still, what Pro-Ject gives you is the means to perform swift A/B comparisons, provided the preamp or integrated amp has both single-ended and balanced inputs. It worked out

perfectly for me, despite the lack of remote switching between the Phono Box S3 B's XLR and RCA inputs. I was able to feed the S3 B into an Audio Research REF 6SE preamp [HFN Jan '21] and flip between the former's single-ended and balanced outputs from the hot seat.

In every case, the phono amp sounded better from its balanced outputs: quieter, with a more solid lower register. Before



LEFT: Seen here in its black finish, the Phono Box S3 B offers easily accessible control over input loading, gain and its optional subsonic filter. The single-ended (RCA) and balanced (XLR) inputs [see p79] are also selected here

setting it up with the X2 B and the Ortofon Quintet Red, I fed the S3 B with the output from a Koetsu Urushi [HFN Nov '19], as well as from a Pro-Ject Debut Pro [HFN Sep '21] with an MM Ortofon cartridge, and there was no doubt that balanced was superior in every way possible. It just went on and on: background noise reduction, openness, a wider and deeper soundstage.

There are concrete reasons why. The most visible demonstration of MM cartridges not being balanced is the old three-pin connection on Decca cartridges. Those MM cartridges have separate wiring for the left and right hot channels, but the ground channels are shared on a single pin. In theory, then, MM cartridges all along, from time immemorial, could have gotten by with three-pin connections. But four pins became the standard with the right channel ground also connected to the MM generator shield, while the left is not.

Moving-coils, on the other hand, separate the ground/return channels into left and right, but the debate over balanced-vs-single-ended connections

and circuitry will rumble on. Balanced offers the potential of reduced common-mode noise and distortion, but at the expense of transformer-coupling and/or more complex circuitry. Nevertheless, Pro-Ject demonstrates here that balanced connections offer users of high-resolution systems lower noise at the very least.

ELEVATED LISTENING

As both the deck and the phono amp are familiar in unbalanced form, I first listened to the Phono Box S3 B's single-ended and balanced outputs with both MC and MM cartridges. I used identical cables from the Phono Box S3 B to the preamp, one XLR-to-XLR, the other phono-to-phono, and matched the levels. What I heard in balanced mode, even with the record deck delivering a single-ended output, elevates this £399 purchase to four-figure levels.

Immediately apparent, for disarming sceptics, were bottom octave solidity and a greater sense of space. *The J. Geils Band* [Speakers Corner SD8275] sounded so audibly superior that it struck me as nearly as huge a leap as moving from the Ortofon Quintet Red to the Koetsu Urushi.

Heresy? Hyperbole? Perhaps. But my ears were telling me this was happening all because of an affordable phono stage. Even before connecting the turntable's mini-XLR output for fully balanced operation throughout, the change from the RCA phono output to the XLRs on the phono stage lowered noise, opened the sound, increased slam, and made a host of other gains. The real magic occurs, though, when you go fully balanced all the way from stylus to preamp.

Why am I so stunned by the X2 B turntable and Phono Box S3 B combo? Because I have been wedded to balanced operation wherever possible – and especially when it comes to preamp-to-power amp connection – for decades. Perhaps I have simply grown complacent, or merely too familiar with the benefits, and react instinctively when I have a choice between the two types of sockets!

TRUSTY DUSTY

What proved the showstopper, because of both familiarity and sonic excellence, was Dusty Springfield's 'Son Of A Preacher Man' from the 2020 re-issue of *Dusty In Memphis* [Rhino/Run Out Groove ROGV089]. I will leave it to fetishists to discuss which is the best-ever version but, suffice it to say, this one's superb.

Having attributed the main gains of balanced-vs-single-ended MC playback to the aforementioned bass-and-space

RIGHT: With the 2kg acrylic platter removed, the X2 B's sub-platter, belt and AC motor (with TPE suspension) are all revealed beneath
BELOW: The Phono Box S3 B's RIAA network uses discrete transistors [left/right] but JRC2068 and NE5534 op-amps are employed in the bal. and single-ended input stages [centre left/right]



PRO-JECT X2 B

Pro-Ject's X2 B turntable/arm/MC combination is based on the X2 deck [HFN Nov '19] but with the (Ortofon) Pick it 2M Silver MM cartridge replaced here by an Ortofon Quintet Red MC and internal tonearm wiring terminated in both RCAs as well as a mini-XLR for true balanced connection. The X2 B also shares the same PSU, AC motor and bearing as its more affordable X1 cousin [HFN Aug '19], but the 2kg acrylic platter, arm and plinth have all been updated. The deck is supplied with round-section and flat rubber belts – the former for use at 78rpm, the latter for 33.3/45rpm. Measured directly through the stainless steel/brass/Teflon bearing, rumble amounts to –66.1dB (re. 1kHz/5cm/sec, DIN-B wtd) improving to –67.5dB (through groove) and –68.0dB with the felt mat in place. Absolute speed is good to +0.04% and peak wow is very low at 0.02% even though ±83Hz sidebands contribute to a higher 0.07% flutter. The 9in X2 alloy/carbon tonearm traces its roots back to Pro-Ject's 'The Classic' deck [HFN Aug '16] and is better suited to low-ish compliance MCs than 'softer' MMs. Our resonance test revealed a diffuse main tube mode at 145Hz, with other 'sharper' modes at 280Hz, 510Hz and 645-860Hz, all of which are swiftly damped. **PM**



TURNTABLE/PHONO PREAMP



ABOVE: The Phono Box S3 B has single-ended RCA inputs and line outputs, plus balanced line outputs and a mini-XLR balanced input
INSET: The X2 B turntable now has a corresponding mini-XLR output

improvements, this track contained a zinger – it was the vocal which exhibited the most spectacular upgrade, if that’s the word. Dusty’s voice was known for its smoky, breathy qualities, a bit like Peggy Lee’s, but I was not anticipating an even greater sense of intimacy or authenticity. What balanced operation did was give the voice greater prominence both in terms of its separation from the backing musicians and in three-dimensional terms, moving it slightly forward.

What this also did was reinforce my confidence in appreciating the results, having just undertaken some cable tests for an open-reel tape recorder, which yielded a similar effect in spatial terms. Do I understand what happened? Absolutely not. Do I care? No. What matters is that this sub-£2k package came within a whisker of a revered £40k analogue front-end.

LEFTHAND DRIVE

It was time to try something from leftfield, a mono reissue of Bob Dylan’s *Highway 61 Revisited* [Sundazed LP5-71]. This would minimise one of the main benefits of balanced LP playback, the openness, as soundstage is not a factor with mono. What remained were precisely the gains in the lower registers, as well as the emphasis on the midband, primarily the vocals. The sheer majesty of ‘Like A Rolling Stone’, with the keyboard work of Al Kooper and Mike Bloomfield’s guitar playing, sounded just that bit more vivid, more real. And as for Dylan’s voice? Right in the room.

Equally, the rewards of all-balanced cartridge-to-phono stage output differ from balanced preamp-to-power amp, or DAC-

to-preamp. Go figure. As for the burning question – which is more beneficial? Balanced from cartridge-to-phono stage or phono stage-to-preamp? – I would argue the former, although they differ slightly. Crucially, the latter would be easier for the industry to adopt, applying them to extant phono stages when upgrading to Mk II status. But the whole balanced package is clearly the most desirable solution.

LEADING THE WAY

Many of you will remember the hysteria which accompanied assorted trends, some which turned out to be keepers with technical validity, others less so: bi-wiring, active speakers, polarity inversion, magic bricks, green pens on CDs, *ad nauseam*. This falls firmly into the first category and, just as most speaker brands now provide the option of bi-wiring or bi-amping, I hope it forces every manufacturer of tonearms, turntables and phono stages to emulate Pro-Ject. ☺

HI-FI NEWS VERDICT

This may end up haunting me, but the X2 B/S3 B pairing is truly revolutionary. I hope the rest of the industry copies it as there are no excuses for *not* facilitating a simple balanced output from an MC cartridge if Pro-Ject can deliver it for under £2000. To paraphrase Jon Landau when he first saw Bruce Springsteen: ‘I have heard the future of vinyl playback’. You simply won’t believe this combination.

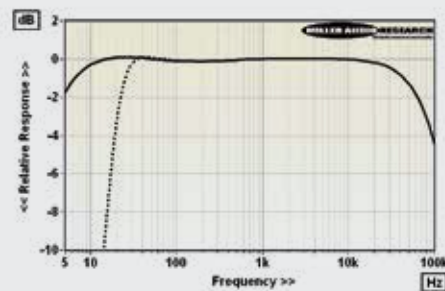
Sound Quality: 89%



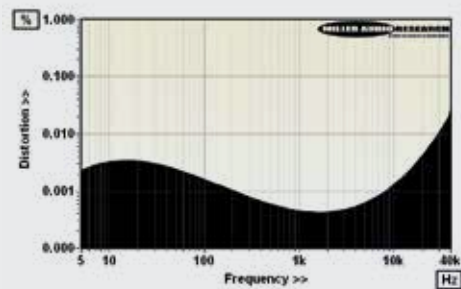
PRO-JECT PHONO BOX S3 B

Pro-Ject’s part-passive/part-active RIAA preamp offers a useful range of input sensitivities, an extended response and good input headroom but is arguably better performing with MMs and high-output MCs than mid/low-output MCs. Here’s the detail... The Phono Box S3 B’s +40dB, +45dB, +60dB and +65dB gain options are realised as +46.0dB, +50.7dB, +65.9dB and +70.5dB via the balanced XLR outputs (6dB less via the RCAs) with input headroom(s) of 106mV, 63mV, 10.9mV and 6.4mV, respectively. Assuming the +40dB/+45dB settings are for MMs and the +60dB/+65dB options are for MCs, then this infers a headroom of ~26dB for the former and ~22dB for the latter, both of which are very generous and more than able to cope with peaks from 5mV- and 500µV-rated pick-ups navigating the highest amplitude grooves.

High headroom also usually translates into a high output for the phono stage, and the Phono Box S3 B follows suit with a maximum 20.5V balanced output from a 195ohm source impedance. However, noise – a white noise or hiss rather than hum – is somewhat higher via the MC settings than MM, achieving A-wtd S/N ratios of 68.3dB and 84.5dB, respectively. Better to use the lowest gain setting that’s practical for your choice of cartridge. Otherwise, distortion [see Graph 2, below] is very low at just 0.0004-0.004% (20Hz-20kHz @ 0dBV output) – several orders of magnitude lower than the THD from a typical pick-up, in fact. The equalised frequency response [see Graph 1] is flat to within ±0.2dB from 12Hz-20kHz (-4.5dB/100kHz) while the optional subsonic filter kicks in below 30Hz to reach -3dB/20Hz and offer >30dB suppression of warp frequencies below 7Hz. If you are partnering the X2 B/S3 B with big, reflex-loaded loudspeakers then the subsonic filter is for you! PM



ABOVE: Frequency response (MM +40dB gain setting) and with subsonic filter (dashed trace)



ABOVE: Distortion versus frequency re. 0dBV from 20Hz-20kHz (MM +40dB gain setting)

HI-FI NEWS SPECIFICATIONS

Input loading (MM and MC)	10, 50, 100ohm, 1kohm and 47kohm
Input sensitivity (re. 0dBV)	4.73mV / 2.91mV / 509µV / 297µV
Input overload (re. 1% THD)	106mV, 63mV, 10.9mV and 6.4mV
Max. output (re. 1% THD) / Imp.	20.5V / 185-200ohm (balanced)
A-wtd S/N ratio (re. 0dBV)	84.5dB / 68.3dB (MM/MC)
Freq. resp. (20Hz-20kHz/100kHz)	+0.05dB to -0.2dB / -4.5dB
Distortion (20Hz-20kHz, re. 0dBV)	0.0004-0.004% (MM, +40dB gain)
Power consumption	5W
Dimensions (WHD) / Weight	206x55x153mm / 0.93kg