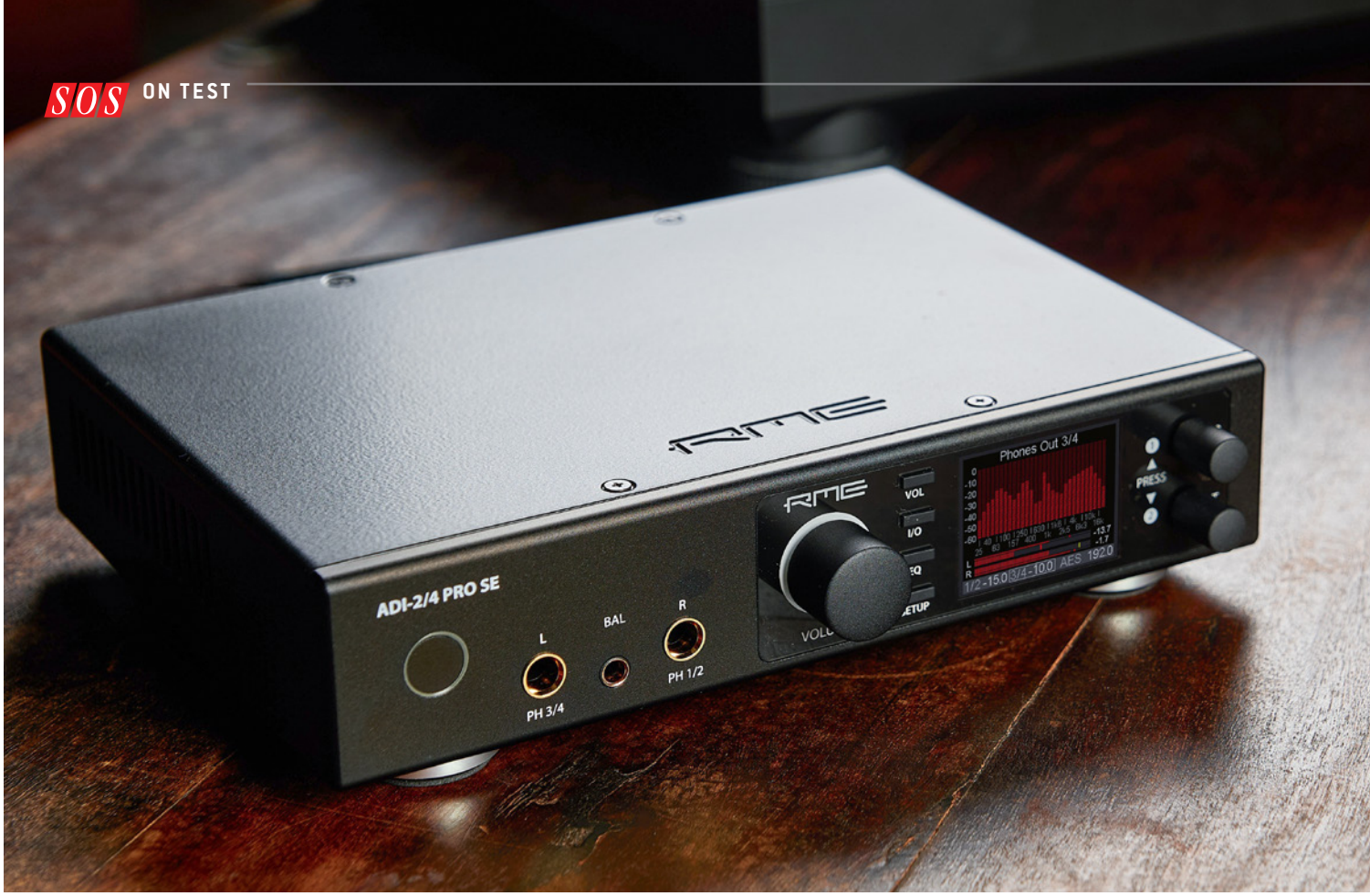


RME ADI-2/4 Pro SE

A-D/D-A Converter

Somehow RME have managed to make their world-class converter even better!

HUGH ROBJOHNS

RME's extensive range of audio interfaces sets a reference standard for audio professionals and keen amateurs alike providing, amongst other things, immaculate sound quality, pragmatic feature sets, and excellent low-latency drivers with legendary longevity.

In recent years, there's been a growing interest in RME's interfaces from the hi-fi fraternity too, and RME have responded by optimising some of their smaller products specifically for that market — adding things like handheld IR remote controls, RIAA correction, trigger outputs (for powering external devices on/off), 'balanced' headphone connections, and more.

However, don't let this hi-fi lustre mislead — the mildly refocused functionality doesn't preclude using these devices within a studio environment at all, and it could be argued that some of these features bring valuable benefits not otherwise available on the company's more conventional products.

The latest model in this 'enhanced' range is the ADI-2/4 Pro SE (Special Edition); essentially a development of the ADI-2 Pro I reviewed back in April 2017 (www.soundonsound.com/reviews/rme-adi-2-pro), which was itself revised as the ADI-2 Pro FS R. Needless to say, the ADI-2/4 Pro SE boasts further improved technical specs and a faster, more powerful DSP than its forebear, as well as extended connectivity and a few other new features.

Overview

Like its predecessor, the ADI-2/4 Pro SE can serve many functions. It is a mastering-quality stereo A-D/D-A converter with impeccable specifications, supporting all sample rates up to 768kHz as well as DSD, but it can also serve as the preamp in a hi-fi system. It includes two independent, high-powered stereo headphone amps (or one super-high-powered stereo 'balanced' headphone amp). It features a very versatile USB 2.0 interface configurable for 2x4 or 6x8 connectivity, supporting DSD record and playback formats as well as providing analogue, S/PDIF, AES3 and (stereo) ADAT interfacing. It is fully class-compliant with compatible platforms, and employs RME's well-established MADIface drivers on PC platforms for incredibly low latency and rock-solid stability. Naturally, RME's SteadyClock technology minimises jitter and its related harms, too.

Comprehensive internal DSP functionality includes stereo sample rate conversion, digital emphasis correction, Mid-Sides processing, mono summing and polarity inversion, headphone crossfeed, adjustable A-D/D-A converter filter parameters, loudness contouring, rumble filtering and parametric EQ, spectrum analyser metering — and much more besides. Uniquely for the ADI-2/4 Pro SE it even includes the ability to connect directly with a (moving magnet) turntable cartridge, to perform digital RIAA correction. And it comes with a neat infra-red remote control to access a lot of the unit's functionality directly, including via several user-programmable buttons.

Physically, the ADI-2/4 Pro SE is an attractive, half-rack-width unit, with most of the I/O on the rear panel, and

configuration and control functions accessed via menus on the small but crisp front-panel colour display. The unit's operation and configuration paradigms are the same as other ADI-2 series units, and as described in my review of the ADI-2 Pro, so I'll not labour that again here. Personally, I don't find the menu-diving entirely intuitive on a first outing, but it is logical enough once you're familiar with it.

The Ins & Outs

A supplied 40-Watt 'line-lump' power unit has an IEC mains inlet (100-240 V AC) and delivers 12V DC via a secure bayonet-locking coaxial plug (as used on several other RMS products). The negative side of the DC plug is tied to the IEC protective earth via a 1kΩ impedance — so although not directly grounded, neither is it entirely floating, which should avoid both ground-loop issues and static shocks!

A B-type USB 2.0 port allows connection to a computer (a USB cable is included) via a class-compliant (UAC2) mode, although ASIO/WDM drivers are also available for Windows platforms. The unit can be configured either as a simple two-in/four-out stereo interface, or in a multi-channel configuration catering for six inputs and eight outputs (see below).

Most of the physical I/O is the same as the ADI-2 Pro, with stereo digital connections made via a 9-pin D-type socket. A breakout cable is included providing (coaxial) S/PDIF and AES3 in and out. A pair of TOSLink optical ports duplicate the stereo S/PDIF output and allow an optical S/PDIF input to be selected instead of the coaxial connection, if preferred. Since unsynchronised digital sources are common in hi-fi applications, a stereo sample rate conversion (SRC) facility is also included and can be applied to either the S/PDIF or AES3 input.

Unusually, but potentially very usefully, this optical input port can also be configured to accept a two-channel input from an ADAT source (only channels 1+2) — and built-in SMUX protocols support sample rates up to 192kHz.

Two analogue line inputs connect via a pair of combi XLRs and may be configured for RME's usual selection of reference levels (0dBFS at +24, +19, +13, +7, or +1 dBu). A digital gain trim menu spans a 6dB range in 0.5dB increments to allow accurate gain matching where necessary.

Uniquely among USB interfaces, these same analogue inputs can also be configured to accept the (unbalanced) signals from a moving-magnet pickup cartridge, presenting a fixed loading of 45kΩ and 150pF (close enough to the IEC 61938 specification of 47kΩ in parallel with 220pF to be perfectly workable). Fine tuning of the HF response (compensating for the loading capacitance) can be achieved via a five-band parametric equaliser, and input level (compensating for the input resistance and cartridge sensitivity) is controlled by adjusting the input gain (14 to 38 dB). This range corresponds to cartridge sensitivities ranging from 1.25 to 20 mV.

This input gain adjustment feature also allows the headroom margin to be managed and, while the published specs assume a 15dB headroom margin, the superbly clear and informative user manual states that 6dB is perfectly sufficient in practice.

RIAA correction is performed digitally, of course, within the unit's DSP, to give extremely high accuracy of both the corrected frequency response and left/right channel matching — far beyond that of most analogue RIAA preamps. An elliptical filter (mono-summing the very deep bass) is available to reduce rumble and low-frequency surface noise, and the parametric equaliser mentioned earlier allows further tweaking of the bass response for personal preferences, if required.

On the output side of things, the ADI-2/4 Pro SE has gained some useful additional features compared with the ADI-2 Pro, the first being four independent (DC-coupled) analogue outputs. Like the older model the rear panel carries both XLR and TRS connectors, but instead of sharing only channels 1+2, the symmetrically-balanced XLRs output channels 1+2 while impedance-balanced TRS sockets output channels 3+4. And, as you'd expect, the »

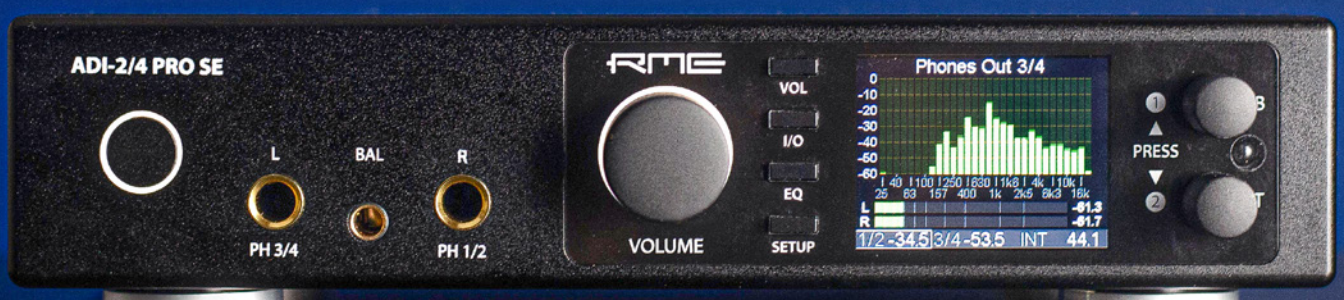
RME ADI-2/4 Pro SE
£2174

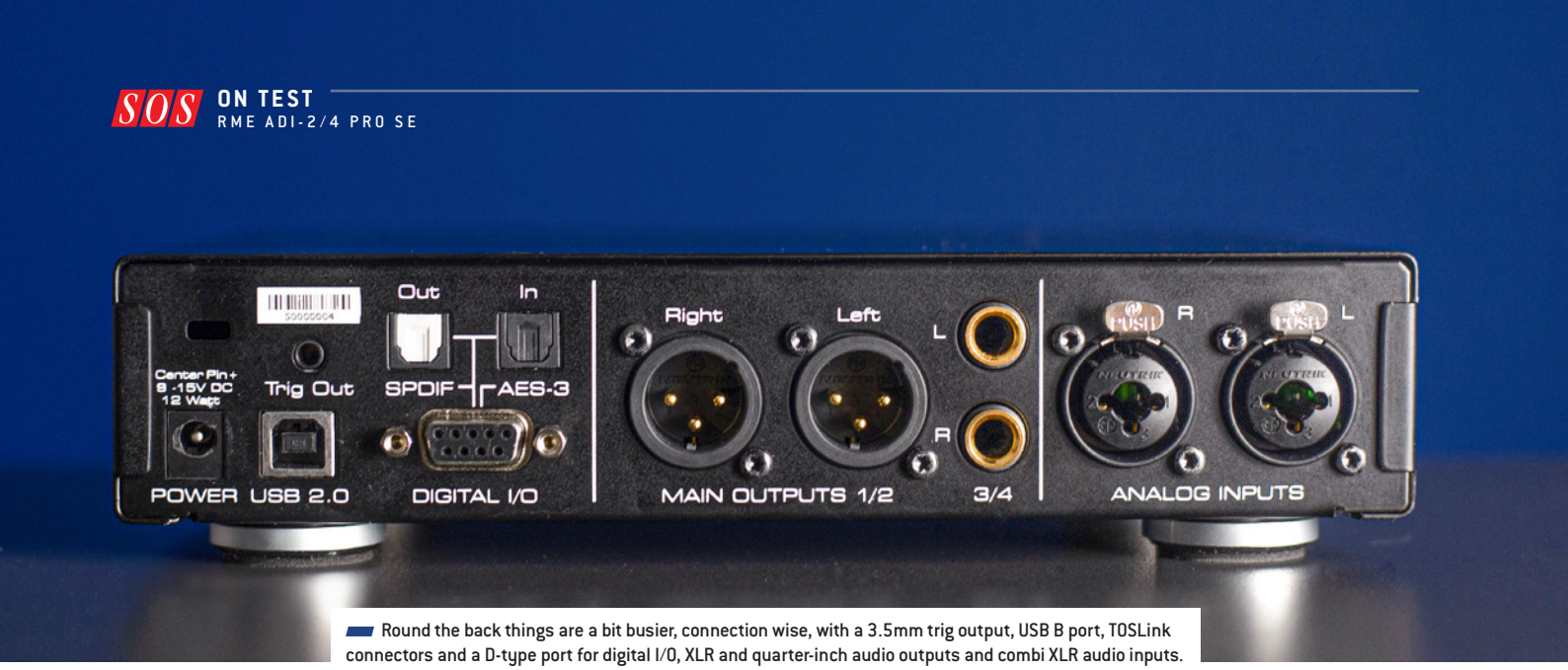
PROS
- Top-level technical performance.
- Versatile configurability with RIAA preamp capability.
- Stereo and multi-channel USB interfacing modes.
- Impressively capable DSP processing options.
- Balanced headphone mode with Pentaconn socket.
- Trigger out control facility and IR remote control.
- RME's best-performing interface to date.
- You get an awful lot of performance and capability for the money!

CONS
- None that I can think of.

SUMMARY
An impressively powerful and capable two-channel A-D/D-A converter/preamp with dual high-powered headphone amplifiers, leading-edge technical performance, reliable low-latency USB interfacing, and versatile DSP facilities.

The front panel is home to a pair of quarter-inch headphone outputs and a 4.4mm Pentaconn socket, something not often spotted in the pages of *SOS*.





Round the back things are a bit busier, connection wise, with a 3.5mm trig output, USB B port, TOSLink connectors and a D-type port for digital I/O, XLR and quarter-inch audio outputs and combi XLR audio inputs.

» output reference levels are configurable over the same range as the inputs.

One other handy addition for the hi-fi set is the inclusion of a 3.5mm socket which delivers a 12V trigger output signal. This would typically be connected to a suitable power amplifier, for example, switching it on/off automatically whenever the ADI-2/4 Pro SE is powered up/down.

Moving around to the front panel, the main display and controls follow the same format as previous ADI-2 models, with the only obvious addition being the inclusion of a 4.4mm Pentaconn headphone socket located between two standard quarter-inch headphone sockets. As with previous models the two quarter-inch headphone sockets deliver outputs 1+2 and 3+4, controlled independently and powered via RME's 'Extreme Power' headphone amps.

Alternatively, a 'balanced' headphone mode can be instigated whereby each stereo headphone amp is reconfigured into a bridged arrangement to drive just one channel of a 'balanced headphone' (via a suitable adaptor cable). In this mode (and slightly confusingly) the right-hand socket drives the left channel, and *vice versa*... but perhaps more conveniently, the 'balanced' headphone signals can be accessed directly via the 4.4mm Pentaconn socket.

RME's 'Extreme Power' headphone amps are well named as they have the potential to deliver up to +21.5dBu — the equivalent of over 2.6 Watts into 32Ω headphones! Very sensibly, configuration menus allow the output amplifiers to be tamed by one of three operating modes: high power mode (+19dBu); low power mode (+7dBu), or an IEM mode (+1dBu), reflecting typical headphone/in-ear sensitivities.

Naturally, since the balanced mode employs a bridged amplifier arrangement, the potential output power is even higher, reaching a whopping +25dBu in high-power mode, +13dBu in low power, and +7dBu in IEM mode. However, RME claim to have optimised this configuration to enhance fidelity rather than raw power. Phew!

Testing Testing

Technically, the ADI-2/4 Pro SE's performance improves upon that of the old ADI-2 Pro by a small but worthwhile margin, especially on the D-A side. I use the AES17 test standard to evaluate converter performance as I've found it maps reliably to my subjective impressions — and a high score requires very careful attention to detail across all aspects of a converter's design and construction.

"I described the original ADI-2 Pro as 'a beast of a converter' — which I stick by, making the ADI-2/4 pro SE something of a 'megabeast' given its improved technical performance and enhanced features and facilities!"

My AES17 bench tests delivered figures of 124.3dB (A-weighted) for the A-D performance and 123.4dB (A-weighted) for the D-A. (Both were measured with the analogue interface set to a +24dBu reference level for 0dBFS).

To put these figures in context, the A-D performance is the best I've ever measured, outperforming the previous leader (RME's ADI-2 Pro) by 0.3dB. The D-A performance also improves on the ADI-2 Pro by 2.4dB, placing it fifth in my personally-measured league table. (My current record holder is the Lynx Hilo 2 at 128.1dB A-weighted).

It's interesting to note that four of my top-10 measured D-A converters, and three of the top-10 A-D converters, are RME products! The ADI-2/4 Pro SE is currently RME's best-performing converter in my personally measured league table, sitting very comfortably on the top-table of true mastering-grade converters.

Impressions

I described the original ADI-2 Pro as "a beast of a converter" — which I stick by, making the ADI-2/4 Pro SE something of a 'megabeast' given its improved technical performance and enhanced features and facilities!

The 114-page manual is crammed full of detailed information explaining clearly and precisely all the impressive things the ADI-2/4 Pro SE can do and how it can be used in a wide variety of both professional and consumer applications. While the retail price has risen significantly over the last decade, this is still a very impressive and capable device for the money, and it is quite astonishing how large a feature set has been squeezed into such a compact package, and just how well it does what it does! I simply can't fault the ADI-2/4 Pro SE in any way: it's a superb piece of kit.

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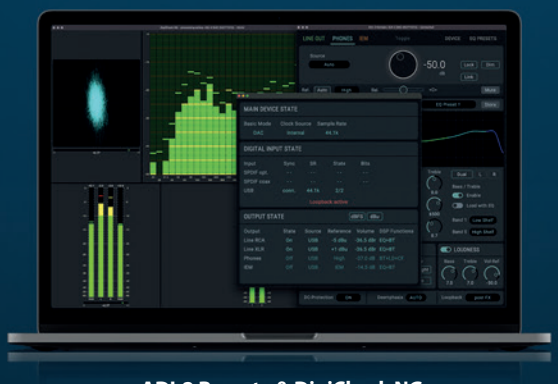

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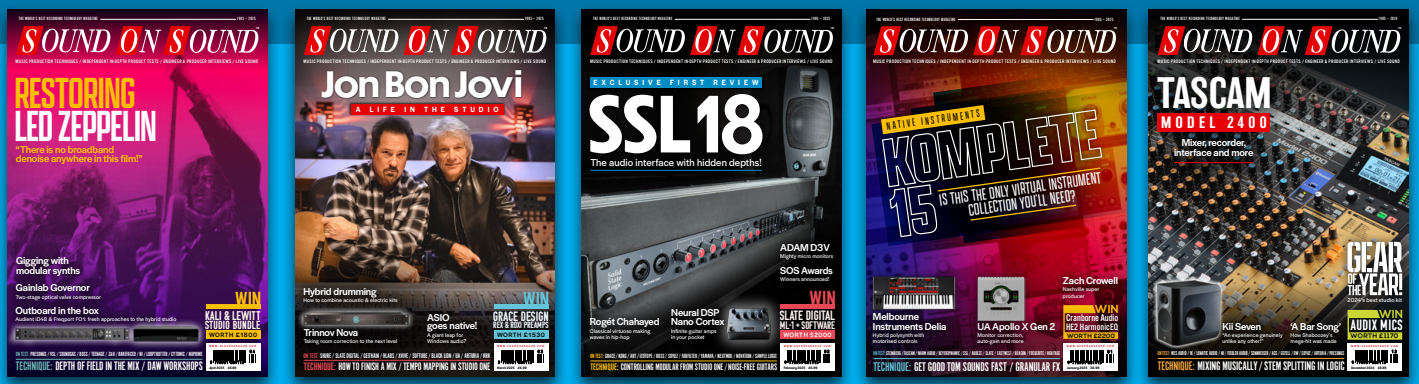

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