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PRO iDSD – THE EASYGOING PERSPECTIVE

THE ENCLOSURE AND FRONT PANEL

INTRODUCTION

Our latest and greatest DAC – the Pro iDSD – is just around the corner. We've already tackled several technical matters related to this device, and all these are to be found via links in the first post of this thread:

- https://www.head-fi.org/threads/ifi-audio-pro-idsd-the-official-thread.869144/

In short, we've explained in our regular fashion why this product is very unique. Since there's still some time left to the official launch of our upcoming flagship DAC, we thought we'd describe in a less techy and more easygoing, newbie-friendly way what our Pro iDSD is all about. First stop is the enclosure and the front.

THE PRO iDSD – WHAT IS IT EXACTLY?

This machine, in short, is a DAC, also known as a d/a converter and quite commonly as a source. This means that its main purpose is to receive a digital signal either via cable or wirelessly, convert it to its analogue form and then pass it on to devices such as a

preamplifier, a stereo power amplifier, a pair of mono amplifiers, a headphone amplifier or directly to various headphones. Yes, all these devices operate in the analogue domain, which leads us on to this statement:

- **The Pro iDSD won't pass digital signals to a different DAC and yes, this is on purpose**

The Pro iDSD was primarily built as a high quality digital to analog converter and this is how it should be used. It's already function packed as it is and - instead of making it operable as an S/PDIF converter - our goal was to use the space normally reserved for this in a more useful way. Basically, using the Pro iDSD to feed a similar device with a digital signal is a big waste of its potential.

THE ENCLOSURE

Now, we have all that out of the way, let's focus on the Pro iDSD's enclosure. This machine is the same size as the iFi audio Pro iCAN and both products look very similar. The enclosure is made out of aircraft grade aluminium and its main purpose is to dissipate heat from the devices inside as they will get hot when powered on. In order to further improve on this, the chassis has many venting holes on its sides and on top. These align in a pleasantly rounded shape with a magnifying glass with a pair of fabulous vintage JAN GE5670 valves underneath. (Quick note – these class act valves are now reserved ONLY for our Pro series products but that's another story). Anyway, we reckon that the Pro series chassis looks very cool.

THE FRONT PANEL – LED DIODE AND STANDBY/POWER SWITCH

Let's start with the upper left corner. There's the iFi Pro logo based on a LED diode. Once the Pro iDSD is powered on, this lights up with one of four different colours. Each indicates a different operational status:

- *Green: warming up*
- *White: solid-state mode*
- *Orange: tube mode*
- *Red: protection mode*

Moving on, there's a small, flat button in the lower left corner. This turns the product on or puts it in standby mode if you are not shutting it down completely.

THE FRONT PANEL – INPUT SELECTOR

Let's now go a bit to the right. A large and endlessly rotating aluminium knob is next in line. It handles several jobs with its main one being digital input selection. You can cycle through the following options:

- *Ethernet/WiFi/Hard Disk/Micro SDHC (Network Bridge/Streamer)*
- *Host USB*
- *Coaxial/Optical Digital Input*

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- *XLR Digital Input*
- *BNC Digital Input*

There are also two additional adjustment options available via the input selector:

- *Brightness (adjustable via a three second press)*
- *Polarity (adjustable via a long press)*

THE FRONT PANEL – DIGITAL FILTER SELECTOR

The smaller knob located a bit to the right from the input selector is the digital filter selector. It enable two things.

The first feature (available via pressing the digital filter selector) is our proprietary DSD remastering. You can choose whether you'd like to have your music:

- *Normal – where DSD signals are passed directly to the DAC. For PCM you may choose between a set of digital filters or bit-perfect, unprocessed PCM*
- *Upconverted to DSD512*
- *Upconverted to DSD1024*

The second feature allows you to cycle through these five different filters on the fly via the rotary action:

1. **'Bit-Perfect'** - No digital filtering is applied, one tap[1]
2. **'Bit-Perfect+'** - No digital filtering is applied, one tap, SINC roll-off @ HF is corrected[2]
3. **'Minimum Phase'** - Minimum filtering, no pre-ringing, minimum post ringing, 32 taps[3]
4. **'Apodising'** - Modest filtering, no pre-ringing, modest post ringing, 128 taps[4]
5. **'Transient Aligned'** - Max filtering, max pre-ringing, maximum post-ringing, 16,384 taps[5]

Please think of these filters as different flavours. Each trades off frequency response flatness, transient response and suppression of ultrasonic images in a different way. There is no "perfect" filter option, such a thing is not possible, so select the filter that offer the right set of compromises for you.

1) Bit-Perfect is equivalent to what has been called "non-oversampling", "zero-oversampling", "filterless" etc. This offers the best impulse response but loses high frequency extension. There is no pre- or post-ringing with an impulse and ultrasonic images are minimally suppressed. This filter produces a sound that is highly musical with precise but sometimes a little limited imaging and seems to slightly lack detail and air.
2) Bit-Perfect+ is AMR's take on "non-oversampling" and uses a tailored analogue filter to correct the system response so detail and air are restored. Until now this operation was exclusive to AMR products, the iDSD Pro is

the first iFi product to include it. There is no pre- or post-ringing with an impulse but a slight alteration of the impulse shape and ultrasonic images are minimally suppressed. It produces a sound that is natural, organic and with a precise, focused sound stage and the correct HF detail and air.

3) Minimum Phase – Over the years a number of researchers and brands (Ayre's Charles Hansen, the Luxman "Fluance" filter come to mind) have championed very minimalistic filters with minimal ringing. In many ways these filters are an excellent compromise between Bitperfect systems and those with more complex filters and have a very similar sound characteristic. There is no pre-ringing and post-ringing with an impulse is minimal, while higher order ultrasonic images are suppressed to a greater degree than Bitperfect. The sound produced is quite natural, organic and with a precise, focused sound stage and the correct HF detail and air.

4) Apodising – Apodising Filters are relatively new and based on the work of acoustic researcher Peter Craven published in 2004 and championed by Bob Stewart (of Meridian & MQA) and aim to correct some of impulse distortion during recording. This filter also avoids pre-ringing but introduces more impulse distortion in an attempt to "override" the impulse response of the recoding system and suppresses all but the first ultrasonic image strongly. The sound produced is fairly natural, with a slightly de-focused and enlarged sound stage and correct HF detail and air.

5) Transient Aligned – This filter is based on the theory that if an infinite number of taps filter was used the response of the system would conform to a theoretical, mathematical idea response and is championed among others by Chord's Rob Watts. This filter maximizes pre- and post-ringing on impulses – in fact the whole time domain response of this filter for CD-Audio takes a total of 0.37 seconds. Suppression of ultrasonic images is maximal. The sound produced is distinct, with an enlarged sound stage and very smooth high frequencies.

We've already covered in detail how our proprietary digital filtering works in the Pro iDSD. Please take a look here:

- https://www.head-fi.org/threads/ifi-audio-pro-idsd-discussion-thread.702376/page-127

What's important is that the Pro iDSD is equipped with a FPGA chip that runs on iFi audio's custom firmware and is responsible for all filters and remasters listed above. It's worth noting that in this DAC, these operations are **hardware based**.

THE FRONT PANEL – OUTPUT SECTION MODE

One of the most unique features of our Pro iCAN is its complex output stage based on both transistors AND valves. We've developed it to give you the ultimate headphone amplifier and an exceptionally flexible product, which will work with headphones of every sound characteristic there is. Our goal was to create a machine that would be 'liked' by every pair of headphones, IEMs and CIEMs out there. We strongly believe we've cracked it.

This tech was just too good to be locked away after we used it in the Pro iCAN so, we gave it another whirl in the Pro iDSD. The output stage of this DAC consists of three different circuitries which deliver different outcomes sound wise. You can cycle through these output stage modes:

1. **'Solid-State'** - a purely solid-state J-FETs based circuit of fully-discrete Class A topology.
2. **'Tube'** - the J-FET circuitry is switched to an all-valve Class A section based on 2x GE5670 tubes.

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3. **'Tube+'** - reduces available negative feedback to a minimum. As a result, a greater amount of the tubes natural harmonic distortion is produced (even order harmonics dominate).

Toggling between these three modes can be done without shutting the Pro iDSD off, but there's a short pause as the circuitry switches over.

THE FRONT PANEL – OLED DISPLAY

We believe that a product as packed with functionalities as the Pro iDSD deserves to have a brilliant looking, readable, nicely embedded display. OLED was the only answer. Such a display provides a true black colour and looks great. Its purpose is to provide you with all the key playback info you need when using the Pro iDSD.

- *Operation mode (PCM/DSD)*
- *Current sample rate (44kHz, 45MHz etc.)*
- *Bitperfect/filtering mode*
- *Base sample rate*
- *Currently used input*

THE FRONT PANEL – HEADPHONE OUTPUTS AND GAIN SECTION

Even though the Pro iDSD is a above all else a DAC , we wanted to make it as versatile as possible and, in order to do so, we built in a sophisticated headphone amplifier. This circuitry is understandably bested only by the Pro iCAN, our TOTL standalone headphone amplifier. And there's a very good reason why this is the case.

The circuitry for both the Pro iCAN and Pro IDSD is actually based on classic studio circuitry. It consists of tubes given the hybrid treatment with solid state parts to give them a higher output current. This topology makes for an excellent line or headphone driver. This circuit is actually VERY SIMPLE and minimizes the number of active stages and parts in the signal path. In short, a win-win scenario. The main differences between the Pro iCAN and the Pro iDSD in this regard is that the Pro iCAN has twice as many output devices, is biased deeply towards class A as it is optimised as a headphone amplifier for all headphones.

Meanwhile, the same circuitry in the Pro iDSD is optimized as a line driver, but has enough output current to drive headphones. Its output power is reduced in the process and the bias is much less towards class A. As a result, the Pro iDSD is not optimised as a headphone amplifier, yet it will still drive most headphones well.

In the Pro iDSD you have several headphone outputs to choose from. Single-ended 6.3mm out is mandatory in devices of this caliber. This socket is also complimented by one 3.5mm (both SE and S-Balanced, just like the same output in our nano iDSD Black Label) and one

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fully balanced 2.5mm TRRS output. These two are to be found right below the 6.3mm out. To complete the picture, an adjustable gain switch is there too. It allows you to boost the signal by 9 and 18dB or leave it in default mode (0dB gain).

THE FRONT PANEL – VOLUME CONTROL

The aluminium volume knob located near the right edge of Pro iDSD's front panel is large and very easy to use. Our Pro iCAN uses the very same one and it does the job nicely! Why fix something that's not broken? The Pro iDSD volume knob can be operated by hand or by a small remote control (included with the product). And lastly, in the bottom right corner of our flagship DAC, you'll see a small black screen with an infrared receiver. No guessing what that's for!

As per usual with iFi audio products, the volume control should be around the 12 o'clock position during normal listening levels. In order to have them higher, you can increase the gain via small nearby knob.