

## Merlot DAC

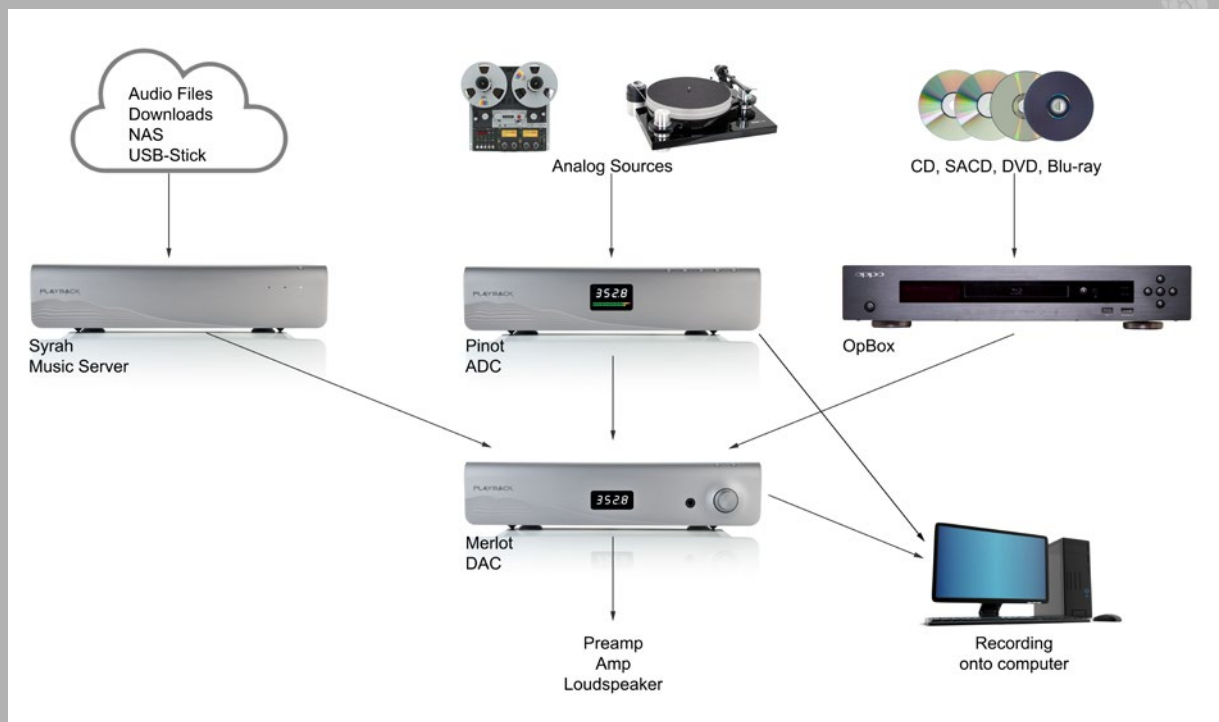
*Merlot – Playback Designs Sonoma Series D/A Converter*



### **CENTER PIECE FROM GROUND UP**

The Merlot is a new design from ground up and borrows elements from the existing 5- and 3-series product lines and combines them with new technologies in a novel and cost effective package. Like all Playback Designs products, the Merlot was designed from the inside out to maximize sonic performance which is competitive with many much higher priced converters and often even outperforms them.

With its many unique features it is the center piece of the entire Sonoma series. It ties all the various products together, the Syrah Music server, the OpBox disc player and the Pinot ADC. There is no audio format, no sample rate that cannot be played on the Sonoma series, even analog audio can be played. And then there is recording...a feature that is not commonly associated with playback. This system gives the Swiss Army Knife a new meaning.



## ***DAC***

The core converter uses a discrete FPGA-based architecture, for which all Playback Designs' DAC products are already well known, and its algorithms are based on the same ones already used in its bigger sibling, the MPS-5. But they have also been enhanced to support new formats such as quad DSD.

## ***FUTURE PROOF***

The algorithms for all Playback Designs products are constantly being researched and updated with performance enhancements and new features. These software updates are made available to all users free of charge and can be loaded into the Merlot by simply playing a specially encoded wave file into one of its digital inputs. This virtually guarantees that the Merlot can be kept up-to-date as new audio formats become available and Playback Designs finds new ways to improve the performance.

## ***CLOCK MANAGEMENT***

Playback Designs started using MEMS (micro-electro-mechanical system) based oscillators (instead of crystal based oscillators) already years ago, and with astonishing results. These are custom made devices with Playback Designs' specifications and offer a jitter performance beyond what is possible with crystal based oscillators. But that alone was not enough: Playback Designs developed a very unusual algorithm to control the frequency of the oscillator which was already used for the MPS-5 and enhanced several times through the years. This algorithm and the associated audio buffer provide maximum isolation from any digital source by rendering any associated jitter irrelevant.



## ***DIGITAL INPUTS***

In order to support quad DSD the USB and PLink input formats had to be expanded and redesigned. Both interfaces now support any PCM and DSD format up to 12.1MHz sample rate. PLink is Playback Designs' proprietary optical interface standard to connect its various products with a fully clock synchronous link and galvanic isolation. We found there is no other interface standard with the same sonic performance and flexibility in audio formats. Both the AES and Coax inputs support DSD via DoP.

## ***ANALOG SIGNAL PATH***

The analog signal is processed by impedance matched fully differential filters before passing through a low impedance very wide bandwidth gain stage. The fully differential line level output stage is a much improved version of the one already used in the 3-series products and is based on a discrete class A/B architecture similar to what has already been used for the MPS-5. The overall circuit is linear phase (bessel) with a constant group delay for all frequencies to beyond 200kHz. The ultra low distortion

level of the analog circuit makes it possible to reveal music ingredients never heard before.

### **HEADPHONE AMPLIFIER**

The Merlot includes a very high performance headphone output with a discrete power amplifier architecture with ultra precision control. The input to the amplifier is driven directly by the DAC and offers an analog discrete volume control via a knob on the front panel, separate from the fixed line level outputs. You will be amazed how good your headphones sound!

### **POWER SUPPLY**

The Merlot uses a newly developed linear power supply with a custom toroidal transformer with integrated high-tech magnetic and electric shielding. This classic architecture still works the best by avoiding any clock and any HF radiation.

### **FRONT PANEL DISPLAY**

All products from Playback Designs use a fully synchronous architecture. This means that there is only **one** single clock source in the chassis and all digital devices are driven from this same clock source. There are many switching power supplies and displays that have their own built-in clock source. For high quality digital audio products, however, these devices are not suitable, because their internal clock generators would be asynchronous to the audio sample clock and, therefore, cause sonic artifacts.

It has always been Playback Designs' design rule to strictly use components with no internal clock generator. They have to be able to be clocked externally by the audio sample clock generator. This is why the Merlot uses a LED based display. It is not to make the front panel look a certain way, but to make it sound as good as possible.

### **RECORDING - A FIRST FOR ANY DAC**

The USB interface on the Merlot was designed to be bi-directional. In other words, digital audio data passing through Merlot is sent to the computer via USB. A very easy-to-use and basic recording software is available from Playback Designs that allows the user to capture any digital audio from Merlot in any format and sample rate and create a sound file that can then be played back with the Syrah music server or any playback software.

