Merlot
# Music Playback D/A Converter

USER MANUAL

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IMPORTANT SAFETY INSTRUCTIONS

- Read and follow these instructions and keep this manual in a safe place.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings.
- Do not install near any heat sources such as radiators, heaters, or other apparatus (including pre-amplifiers and amplifiers) that produce heat.
- Do not install this apparatus in a confined space such as book cases or closed cabinets.
- Unplug this apparatus from the mains during lightning storms or when unused for long periods of time.

CAUTION

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN
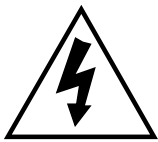
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing)instructions in the literature accompanying the appliance.

WARRANTY

Playback Designs warrants the Merlot product against defects in material and workmanship under normal use and service for a period of time specified by the product's serial number from the date of first delivery to the owner. The warranty time period is for 30 days. If within the first 30 days of ownership you register your Playback Designs Merlot product, by sending us a copy of your sales receipt, your name, address, city, state, zip code, phone number, email address and your dealer's store name, we will extend the warranty to 3 years. This warranty is limited to the original owner.

Playback Designs will pay for return shipping charges (domestically) back to the owner when the product is sent to Playback Designs within the first 30 days after purchase and the fault can be confirmed by Playback Designs. Otherwise, owner will be responsible for all shipping charges to and from Playback Designs. International customers must deal with their local dealer or distributor.

For all warranty claims, a copy of the original invoice must accompany the product.
Opening the product or modifying it in any way by the owner, including but not limited to cryogenic treatment, will void any warranty.

Please contact Playback Designs with a clear trouble report and for shipping instructions before shipping any product to Playback Designs.

Playback Designs products are sold worldwide through authorized dealers with restricted territories. If any Playback Designs product is purchased from non-authorized dealers or from a dealer selling outside his / her authorized territory all warranties will be void.

Alteration or modification carried out without appropriate approval may invalidate the user's right to operate the equipment.

BEFORE USING THE PRODUCT

- What is in the box: Merlot playback system
  Power cord (110V versions only)
  User manual
  Bottle of wine and wine glass by Playback Designs

- Registration   If you purchased this product from a dealer please take a moment and send us an email to info@playbackdesigns.com so we can register you for the warranty.

- Installation: The AC voltage supplied to the unit should match the voltage rating indicated on the rear panel.
  Do not place the Merlot on any other equipment that generates heat.

  As the Merlot may become warm during operation, always leave sufficient space around it for ventilation. Always allow adequate air circulation around the system.

FRONT PANEL FUNCTIONS

Buttons:	(((⋅)))	The first time this button is pressed the currently selected input is displayed. If then the button is pressed again within 5 seconds a new input is selected in the sequence: AES => SPDIF => PLINK => USB. If no button is pressed for 5 seconds the display will indicate the detected sample rate.
	f$_n$	The first time this button is pressed the software version is displayed. If the button is then pressed again within 5 seconds the last 3 digits of the serial number are displayed. If no button is pressed for 5 seconds the display will indicate the detected sample rate.
Knob:		This knob adjusts the volume of the headphone output.
		Warning: Listening to loud levels of music may damage your hearing. Make sure to turn the know fully counter-clockwise before putting your headphones on.

CONNECTIONS

Digital inputs: AES: XLR connector for AES/EBU formatted stereo linear PCM data, up to 24bits and up to 192kHz and 64FS DSD.

COAX: same as AES, but COAX formatted on RCA connector.

PLAYLINK: This optical proprietary link (PlayLink) is used to connect to other Playback Designs equipment, such as the Pinot A/D Converter or OpBox disc player. This connection supports multiple audio formats.

SERVER (USB):   USB connection to Playback Designs Syrah Server or other computer based audio systems.

AUX: For future expansion

Power: Before connecting the Merlot to the AC mains, please make sure that the rated voltage is set correctly as indicated on the rear panel. Operating the system at the wrong voltage will damage the unit. The voltage rating of the power supply cannot be changed by the user. A surge protector should be used to protect this product from harmful power surges.

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CONNECTING THE MERLOT TO THE SYRAH MUSIC SERVER

The Merlot is designed as a companion product for the Playback Designs music server "Syrah". Only a standard 2.0 compatible USB cable is required (supplied with Merlot) to connect the Syrah to the Merlot via its Server input connector. Select USB input on the Merlot. No other configuration is necessary.

CONNECTING THE MERLOT TO A WINDOWS BASED PC or APPLE MAC

Supported PCM audio resolutions: all sample rates up to 384kHz and word lengths up to 24 bits.

Supported DSD audio resolutions: 2.8224MHz (as on SA-CD), 5.6448MHz (double) and 11.2896MHz (quad).

Connection protocol and method: USB 2.0 / Audio class 2.0 compliant, asynchronous mode where Merlot generates high precision clock master and computer is clock slaved.

PC requirements: Windows 7 or later
ASIO compatible player software such as JRiver, Foobar, MediaMonkey etc.
Internet connection for downloading software from **www.playbackdesigns.com**.
In order for your computer to communicate with the Merlot and to exchange audio data a custom driver software needs to be installed before you can connect it to the Merlot.

Mac requirements: OS X (10.6.6 or later)
iTunes with or without plug-in to automate sample rate switching.
No driver software is required. OSX supports DSD playback only via the DoP protocol which only supports single and double DSD rates.

IMPORTANT NOTE FOR WINDOWS PC USERS:
The Windows operating system is by design not a real-time system. It is designed to allow certain processes to take time away from real-time processes such as playing audio. This can result in audible dropouts, sometimes very short, but sometimes also quite long. Some PCs are pre-configured with drivers and processes by the manufacturer that cause such dropouts, and others are user-installed with additional software that do not allow flawless real-time playback of audio. Fortunately, there is a free utility software that allows you to test your PC for real-time capability:
1. Go to http://www.resplendence.com/latencymon and download the utility program LatencyMon. There is also a good description of the program and some more technical background on the same website.
2. Run LatencyMon, leave it running for 10-15 minutes and the software will tell you if you PC is suitable for playing audio without dropouts.
If you are considering purchasing a new PC, this utility program is small enough and doesn't require any installation which allows you to load it onto a flash stick and test it on the PC you are thinking about buying. Most computer stores will allow this test.

Driver software installation and first time connection:
1. Do not connect the Merlot to the computer yet.

2. Turn on your computer.

3. Windows PC users only: Launch your favorite internet browser and navigate to the Support>Product Drivers page on our website **www.playbackdesigns.com**. Click on USB Windows Driver to download the latest driver:
   - akdesigndrv.zip for PC. Unzip it to the desktop.
   - No driver software is required for the Mac platform.

4. Windows PC users only: Double click on:


   akdesigndrv.exe (PC)

   and follow the instructions on your screen. This will install the driver necessary to communicate with the Playback Designs products via USB.

5. Once your computer is properly configured, power on the Merlot.

6. Select Server input via the front panel buttons.

7. Connect the included USB cable between Merlot (SERVER on rear panel) and your computer.

8. The computer will take a moment to enumerate the Merlot on its USB bus and notify you when it is installed successfully. Do not attempt to play anything before the computer tells you that the device is ready to use. You can check successful driver installation and connection:

- On the PC in the device manager (below), where the driver will show up as AKDesign USB Audio under the Sound, Video and Game Controllers tab. It will not be listed in the Sound Control panel

- on the Mac in the Sound Control panel (below), where the Merlot should be listed as an audio output device

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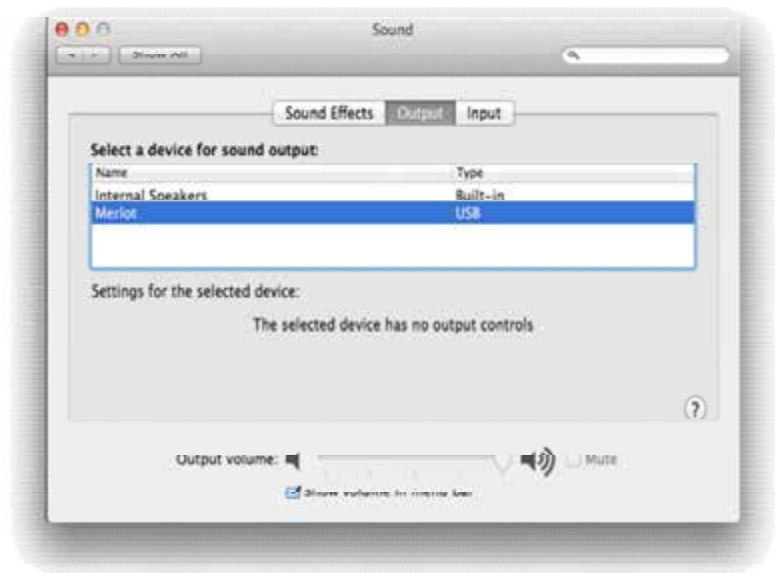
9. For PC users only: Configure your player software to send audio data to the ASIO interface. Depending on your player software this may be identified as "AKDesign USB ASIO" or simply as "ASIO". Some players may need a plug-in for ASIO compatible playback.

10. For Mac users only: launch iTunes.

11. For best performance and bit perfect reproduction make sure to set all volume controls in the computer playback software, Windows / OSX control panel to exactly 0db (wide open), turn off all operating systems sounds, effects or equalizer that might be running in your playback software or Windows / OSX. Control the volume only with your analog pre-amp.

12. Your system is now ready for high resolution playback.

**Re-connection after system has been previously configured:**
1. Power on both computer and Merlot. Select SERVER input.

2. Connect USB cable.

3. Enumeration should be quick. The front panel should indicate the detected sample rate.

4. For best performance and bit perfect reproduction make sure to set all volume controls in the computer playback software, Windows / OSX control panel to exactly 0db (wide open), turn off all operating systems sounds, effects or equalizer that might be running in your playback software or Windows / OSX. Control the volume only with your analog pre-amp.

5. Your system is now ready for high resolution playback.

During playback with PC
When changing songs from within your computer player software the USB protocol automatically communicates all necessary sample rate changes to the Merlot. The front panel of the Merlot always indicates the true sample rate during file playback. This system will never perform any sample rate conversion or any signal processing that could adversely affect the sonic performance, but rather use the exact bits from your file and convert them directly to analog.

During playback with Mac
The native OSX operating system and iTunes do not understand the needs of audiophile consumers and insist on sample rate conversion. When connecting the Merlot OSX will automatically select the highest possible sample rate (384kHz) and convert all your songs to this rate before playing them out through USB. This will result in degraded performance. You can manually select the sample rate in the Audio/MIDI Setup utility to correspond with the native sample rate of the song (as shown in picture), but this can be a tedious process if your library contains songs with more than 1 sample rate. Alternatively, 3rd party plug-ins for iTunes exist that automate this process and always select the correct sample rate for bit perfect playback.
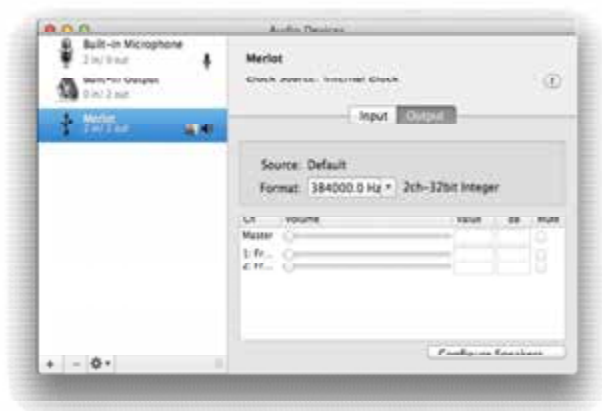
Playback of DSD files
The driver software and Merlot hardware are designed to support playback of DSD files at 3 sample rates: the standard 2.8224MHz as used on all SA-CDs, the double rate 5.6448MHz and the quad rate of 11.2896MHz

as supported by some professional recording equipment. You will need a playback software running on your computer that can read DSD files and play them to the USB driver. The Mac platform can support DSD file playback only via the DoP protocol at single and double rates. For this you will have to use a playback software or iTunes plug-in that supports the DoP standard for playing DSD files.

General notes
1. For best performance and bit perfect reproduction make sure to set all volume controls in the playback software, control panel to exactly 0db (wide open), turn off all operating system sounds, effects or equalizer that might be running in your playback software or Windows / OSX. Control the volume only with your analog pre-amp.

2. While the Merlot has no problem supporting playback via USB while it is switched to a different input (i.e. AES, Coax or analog inputs) it is a good idea to stop playback on your computer before selecting another input. The clock management in the Merlot may not provide the correct frequency to the USB port if it is not selected. The computer software may have a problem with that and may malfunction. So when not listening to the USB input, stop playback on your computer.

When things do not seem to work
The Merlot is a hardware device with very little software inside and if it doesn't show any signs of malfunctioning in other playback modes, it is relatively safe to assume that the problem is either with the USB link or the computer. Generally, you should look for any signs of trouble on your computer first, and don't assume that because your computer may work with someone else's USB DAC, but not with the Merlot, that the problem is with the Merlot. The Merlot uses different software inside your computer.
Here are a few suggestions for what to do:

1. Make sure that the driver is properly installed (PC only). See step 8 under driver installation above for instructions for how to check successful installation and connection.

2. Make sure you use the USB cable that was shipped with the Merlot. Other USB cables can be used, but they need to be USB2.0 compatible.

3. Disconnect the USB cable and restart your computer.

4. Connect the USB cable while the SERVER input is selected on the Merlot.

5. On Mac computers it can happen that after successful enumeration OSX selects the internal audio output instead of the Merlot. This can easily be corrected manually in the sound control panel in System Preferences as shown in this screen shot.

6. If at this point your PC computer still does not play through the Merlot and the driver or Merlot cannot be identified in the Device Manager (PC) then disconnect the USB cable and try re-installing the driver following exactly above instructions.

7. If you are a PC user and are able to play audio, but you hear occasional dropouts, please see IMPORTANT NOTE FOR PC USERS above. You should definitely run LatencyMon.
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EXTERNAL CLOCK

A unique feature of the Merlot is its elaborate and sophisticated clock generator which does not require to be locked to an external source. It completely shields any incoming digital audio stream from its sensitive internal clock circuitry through various stages of buffering with unique control algorithms. This removes any incoming jitter from external sources so well that no complicated setups with master – slave clocking configurations are needed, as is often the case with other equipment. In fact, the Merlot performs equally well with jittery sources as with higher quality ones. For this reason the Merlot does not require an external clock.

BREAKING IN THE MERLOT

Breaking in the Playback Designs Merlot is time consuming but well worth the effort. It would be a mistake to pre-judge the system based on what you might hear at first listen. This is what you can expect to hear at different intervals during break-in:

1. Out of the box: The system will have good clarity, but the highs can be recessed. Bass might appear to be a bit muddy and lacking punch. Soundstage might sound closed in.

2. 50 - 150 Hours: The sound will open up a little bit, but can still sound a bit brittle.

3. 150 - 350 Hours: Midrange will start smoothing out and clarity will increase, but highs might continue to remain recessed. At this point, there probably will not be much change in the bass. You will probably wonder how the Playback Designs system will ever sound like others have described, but we assure you that you will start to hear substantial changes within another week of play.

4. 350 - 500 Hours: The magic will be starting. Highs will be open and airy. Midrange will appear much more full bodied and natural. Soundstage will be huge and the image presentation will start appearing very holographic. Bass will be incredibly deep and tight with texture and detail galore.

5. Over 500 Hours: The system will continue to change subtly over the upcoming month of usage, but you should be recognizing a very life-like and natural sound.

SPECIFICATIONS

Power Supply
    Japan model.................. AC 100V, 50/60Hz
    North America model……… AC 120V, 60Hz
    Europe / Asia model………. AC 230V, 50Hz
    Consumption……………………..100W max.

Weight…………………………………….. 3.5kg / 8 lb

Ext. dimensions (W x H x D)   36 x 8 x 23 cm
    12 x 3.25 x 9 inches

Analog Audio Outputs:
    XLR: 3.4Vrms @ 1kHz full level, pin 2 Hot
    RCA: 1.7Vrms @ 1kHz full level

Operating Temperature………………+5°C to +30°C

Mains fuse: T1.6A / 250V slow blow, 20mm

CHANGING THE FUSE ON THE MERLOT

Inside the power connector on the rear panel of the Merlot is a fuse that protects the system from dangerous power surges. If the system fails to power up or no light on the front panel is lit then proceed as follows to change the fuse:

1. Locate fuse compartment on power connector on rear panel.

2. Use a small screw driver to pry open the fuse holder.

Fuse compartment

3. The fuse holder contains 2 fuses. The top one is a spare and can replace the blown one at the bottom.

4. Replace fuse holder into power connector by making sure that good fuse is at bottom. Replacement fuses should be rated:

T1.6A / 250V slow blow, 20mm

RECORDING WITH MERLOT

Merlot's built-in recording feature allows you to record any digital audio passed through its digital-to-analog converter to be recorded via its USB interface. For this purpose Playback Designs offers an easy to use software application that can be installed on any Windows PC. Download it from www.playbackdesigns.com and refer to its user manual for more details.

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UPGRADING THE FIRMWARE IN YOUR MERLOT

Playback Designs is constantly innovating new algorithms and methods for audio processing and from time to time may release new firmware for the Merlot that may further enhance the sonic performance or add new features. New releases will be distributed as audio wave files. They can be played into the Merlot just like any other audio file. The Merlot processor will automatically detect this file and update the firmware. No audio will be audible as the processor will automatically set the volume to 0.
The Merlot contains 2 processors and hence there may be 2 separate files available, one for each processor. It is possible to display the version of the currently installed software of the main processor. The version of the secondary processor cannot be dislayed (see chapter Front Panel Functions for more details).

Upgrade Procedure:

1. Power on Merlot.
2. Connect your computer with the included USB cable to the SERVER input on the rear panel.
3. Load the wave file with the update firmware into your player software on your computer.
4. Play the file.
5. The front panel will indicate FLASh. It is important that at this point you no longer touch the system, nor your PC, nor the remote, don't change the input, don't turn the power off. Go have a glass of Playback Designs wine, because it will take about 2 minutes for this to finish.
6. Once playback has finished the front panel will return to either normal display or it will say FAIL. A failure can happen when you didn't follow the instructions in the previous steps or your PC had a dropout during playback. If this failure happens, don't panic, but follow the next steps precisely:
   a. DO NOT POWER OFF the Merlot (doing so will render your Merlot inoperable).
   b. Disconnect your computer from the Merlot.
   c. Push the **fn** button on the front panel.
   d. Re-connect the USB cable.
   e. play a normal audio file to make sure everything is still working normally.
   f. Stop playback and go to step 3.
7. If playback of the update file has finished and the front panel does not display any error message, but indicates normal operation then stop playback and disconnect the USB cable.
8. power off the Merlot.
9. power on the Merlot and proceed to normal operation.

Now that you made it all the way to here it is time to take a deep breath and enjoy the high-rez immersion: