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# MPD-8AI

## Digital to Analog Converter with Analog Inputs

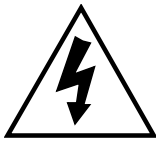
USER MANUAL



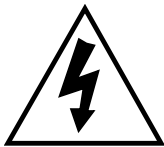


## IMPORTANT SAFETY INSTRUCTIONS

- Read and follow these instructions and keep this manual in a safe place.
- Do not use this apparatus near water.
- 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: 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.

## INFORMATION TO THE USER

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

## WARRANTY

Playback Designs warrants the MPD-8AI 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 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 for a RA (Return Authorization) number and shipping instructions before shipping any product to Playback Designs.

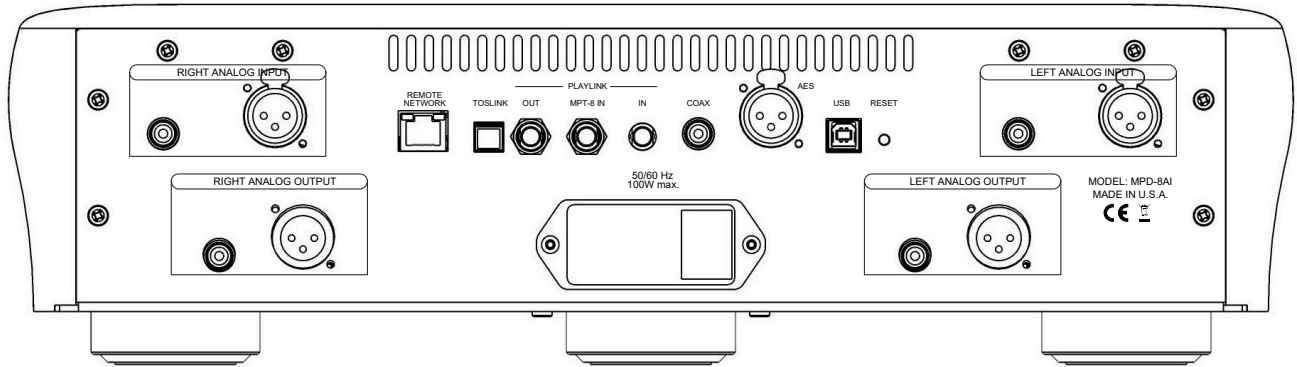
Playback Designs products are sold worldwide through authorized dealers with restricted territories. If any Playback Designs product is purchased from non-authorized dealers or from a dealer selling outside his / her authorized territory all warranties will be void.

If you purchased this product from a dealer please take a moment and send us an email to [info@playbackdesigns.com](mailto:info@playbackdesigns.com) so we can register you for the warranty. If this product has been shipped to you directly from Playback Designs you are automatically registered.

## BEFORE USING THE PRODUCT

- What is in the box: MPD-8AI playback system  
Remote control unit with mounted batteries  
USB cable  
Power cord (110V versions only)  
User manual
- Registration: If you purchased this product from a dealer please take a moment and send us an email to [info@playbackdesigns.com](mailto: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 player over an amplifier or any other equipment that generates heat.  
  
As this product may become warm during operation, always leave sufficient space around the player for ventilation. Always allow adequate air circulation around the product.

## CONNECTIONS

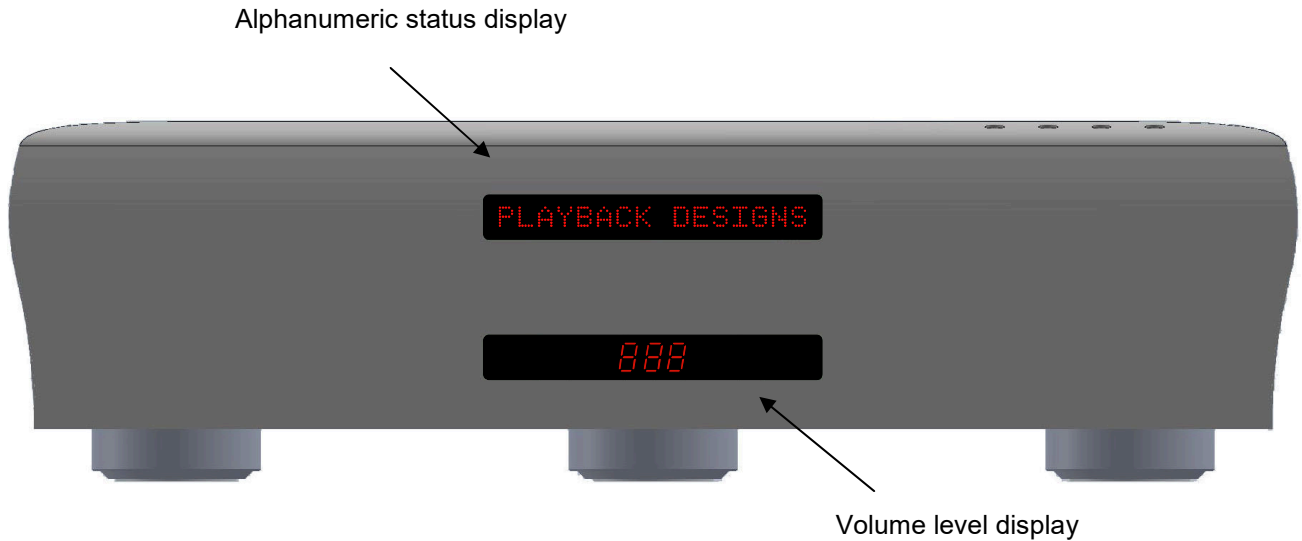





- Digital outputs:**      **PLAYLINK OUT:** Proprietary optical link to other Playback Designs equipment. This connection supports multiple audio formats natively for PCM and DSD.
- Digital inputs:**      **AES:** XLR connector for AES/EBU formatted stereo linear PCM data, up to 24bits / 192kHz, and single rate DSD encoded in DoP.
- COAX:** same as AES, but S/PDIF formatted on RCA connector.
- TOSLINK:** same as COAX, but on optical connector, limited to 96kHz max.
- MPT-8 IN:** Proprietary and high quality optical link from the Dream Transport MPT-8. This connection supports multiple audio formats natively for PCM and DSD.
- PLAYLINK IN:** Proprietary and high quality optical link to other Playback Designs equipment. This connection supports multiple audio formats natively for PCM and DSD.
- USB AUDIO:** Direct USB connection to computers and servers for PCM at sample rates up to 384kHz and DSD up to 11.2MHz.
- Analog outputs:**      **XLR:** Balanced, pin 2 hot, 4.1Vrms @ 1kHz full level sine wave and output level set to 0db fixed.
- RCA:** Unbalanced, 4.1Vrms @ 1kHz full level sine wave and output level set to 0db fixed.
- Analog inputs:**      **XLR:** Balanced, pin 2 hot, max. input level +22dBu (9.75Vrms), input impedance 45kΩ.
- RCA:** Unbalanced, max. input level +22dBu (9.75Vrms), input impedance 34kΩ.
- System Control:**      **RESET:** Used in connection with software update procedure. When pressed during normal operation it resets the DAC.
- REMOTE NETWORK:** Remote control via tablet app (future expansion).

**Power:** Before connecting the DAC to the AC mains, please make sure that the rated voltage for the MPD-8AI is set correctly as indicated on the rear panel. Operating the player at the wrong voltage will damage the unit. The voltage rating of the power supply cannot be changed by the user.

**NOTE:** you should always switch power to standby first before turning off the main power switch in the back.




## FRONT PANEL FUNCTIONS



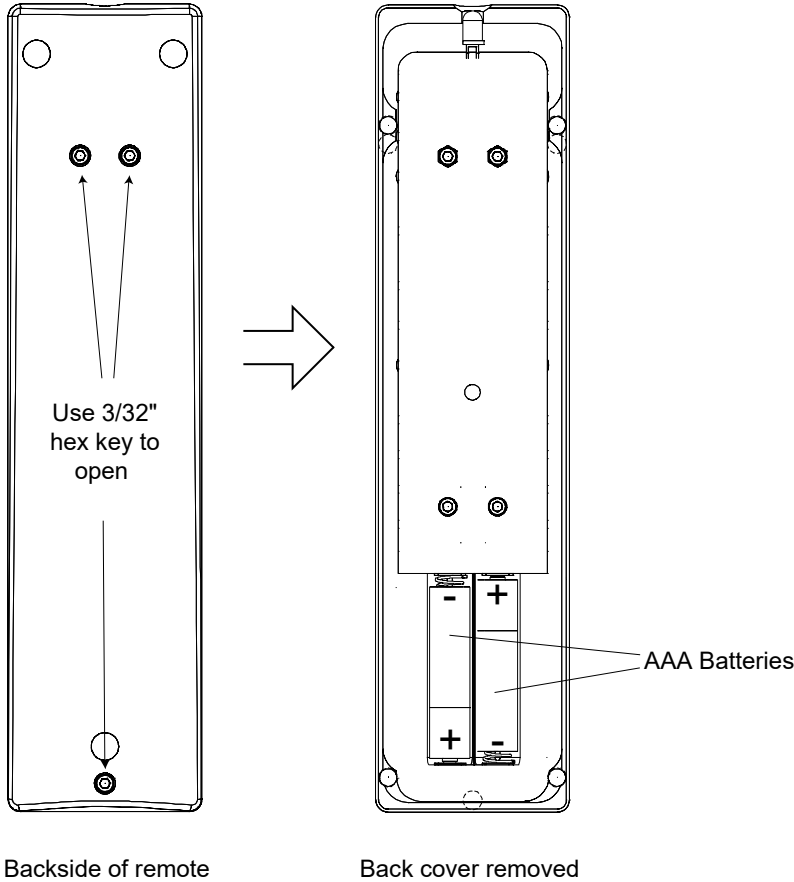
- Buttons:
-  Mute toggle on / off.
  -  Analog volume control when variable output level is activated.
  -  Standby power on / off.

## REMOTE CONTROL UNIT



- 
 Opens the settings menu on front panel. Press the DAC button first to select the MPD-8AI settings.
  
- 
 During normal operation these up and down arrows directly below the DAC button toggle through the active inputs of the MPD-8AI.
- 
 During settings display these buttons toggle through the settings menu.
  
- PHSE    Inverts the phase on digital input signals only.
  
- DIM     Dims display on front panel.
  
- MUTE    Mutes all analog outputs.
  
- VOL +/-    Analog output volume control. Need to enable variable output level (see settings menu).
  
- All others    No function on MPD-8AI.

## CHANGING BATTERIES ON REMOTE

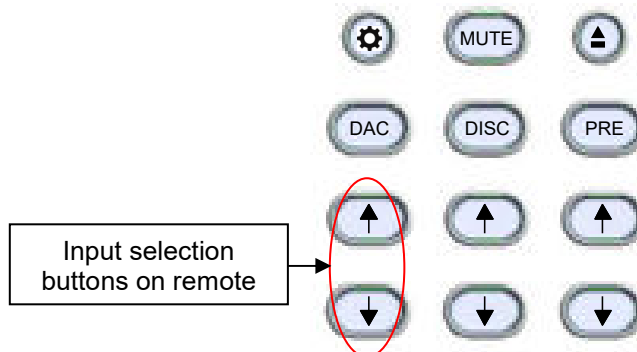


The remote operates with 2 AAA size batteries. In order to change them the back cover needs to be removed as shown in picture on the left. Make sure that replacement batteries are inserted with their polarities as indicated in the picture. The screws can be opened with a Philips screw driver.

## SETTING UP AND SELECTING ANALOG AND DIGITAL INPUTS

For selecting inputs the IR remote provides buttons with up and down arrows right below the DAC button. With these buttons you can select any of the six digital and two analog inputs on the MPD-8AI by toggling up and down through the list.

You can drastically shorten the list of selectable inputs by deactivating those that you don't use (see setup menu for further details). For instance, if you only use the USB and AES inputs you can deactivate all others and then use either the up or down arrow button below the DAC button on your remote to switch back and forth between USB and AES input.





## CONNECTING THE MPD-8AI TO A WINDOWS BASED PC or APPLE MAC

<b>Supported resolutions:</b>	PCM: all sample rates up to 384kHz and word lengths up to 24 bits. DSD: native up to 11.2MHz and DoP up to 5.6MHz
<b>Connection protocol and method:</b>	USB 2.0 / Audio class 2.0 compliant, asynchronous mode where MPD-8AI generates high precision clock master and computer is clock slaved.
<b>PC requirements:</b>	Windows 7 or later, ASIO compatible player software such as JRiver etc.
<b>Mac requirements:</b>	OS X (10.6.6 or later)

In order for your computer to communicate with the MPD-8AI and to exchange audio data a custom driver software needs to be installed before you can connect it to the MPD-8AI. If your computer is a Mac running OSX 10.6.6 or later you don't need any driver software as OSX already supports all PCM formats up to 384kHz sample rate. DSD file playback is supported via the DoP standard using PCM frames which is also supported by OSX without any additional driver. A driver has to be installed on all Windows based PCs for any kind of audio playback via the MPD-8AI.

### IMPORTANT NOTE FOR PC USERS:

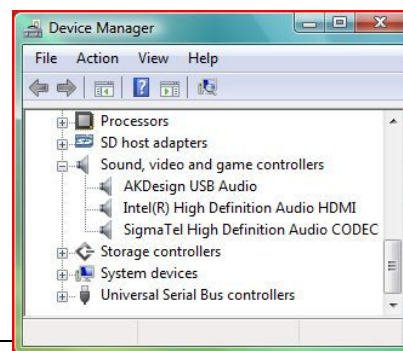
The Windows operating system is by design not a real-time system. It is designed to allow certain processes to take time away from real-time processes such as playing audio. This can result in audible dropouts, sometimes very short, but sometimes also quite long. Some PCs are pre-configured with drivers 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 your 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 on Windows based computers:

1. Download the latest USB driver from the support section on our website:  
[www.playbackdesigns.com](http://www.playbackdesigns.com)
2. Double click on the installer and follow instructions on your screen.
3. Power on the MPD-8AI and connect the included USB cable between the USB AUDIO connector on your MPD-8AI and your.
4. Select USB Input on your MPD-8AI.
5. The computer will take a moment to enumerate the MPD-8AI on its USB bus and notify you when it is installed successfully. You can check successful driver installation and connection in the device manager, 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.



6. 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.
7. For best performance and bit perfect reproduction make sure to set all volume controls in the computer playback software to exactly 0db (wide open), turn off all effects or equalizer that might be running in your playback software. Control the volume only with your analog pre-amp.

### **Connecting Apple computers:**

No driver needs to be installed. If you are planning to play DSD files make sure your playback software sends them via DoP to the MPD-8AI

### **During playback with PC**

When changing songs from within your player software running on your computer, the USB protocol automatically communicates all necessary sample rate changes to the MPD-8AI. The front panel of the MPD-8AI 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 MPD-8AI 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, but this can be a tedious process if your library contains songs with more than 1 sample rate. Alternatively, 3<sup>rd</sup> 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**

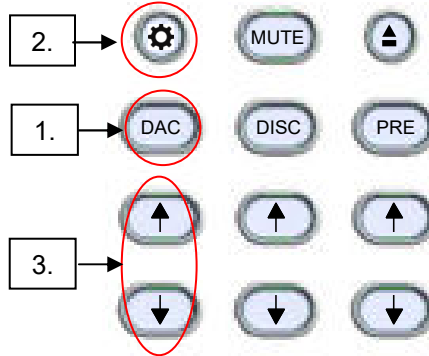
The driver software and MPD-8AI hardware are designed to support playback of DSD files at sample rates up to 11.2MHz. You will need a playback software running on your computer that can read DSD files and play them to the USB driver. On the Mac platform you will have to use a playback software that supports 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 MPD-8AI has no problem supporting playback via USB while it is switched to a different input (i.e. disc playback, AES or Coax input) it is a good idea to stop playback on your computer before selecting another input. The clock management in the MPD-8AI 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.

## SETUP MENU

The MPD-8AI has several options that can be displayed and set via remote control. By pressing the DAC button on the remote first and then the SETTINGS button within 5 seconds the top display starts to flash while displaying the first item in the setup menu. Use the arrow buttons to go to the next setting.



To change any settings in the menu the PLAY button can be pressed. Once you have programmed all settings you can exit the menu by pressing the SETTINGS button again.

The following options are available in sequence:

1. List of 6 individual digital and 2 analog inputs: each input can be turned off so it no longer is available in the selection during normal operation. For instance, if you only use two inputs you can turn off all others. You can then switch between your two inputs with the arrow buttons on the remote.
2. Serial number of your MPD-8AI. This option is not user programmable.
3. Firmware version. This option is not user programmable.
4. OUT LVL; the analog output level can be set as variable, therefore enabling volume control via remote control, or fixed in the following values: -6db, -3db, 0db, +3db, +6db. 0db yields about 4.1Vrms with a 1kHz full level sine wave.
5. PLINK OUT: if you want to connect your MPD-8AI to a classic Playback Designs DAC (such as MPS-5) you need to select the "Classic" format. All other products use the "Sonoma" format.
6. PLINK IN: if you want to connect a classic Playback Designs source (such as MPS-5) you need to select the "Classic" format. All other products use the "Sonoma" format.
7. IR LOCK: with IR control there is always a chance for conflicts where 2 different machines use the same codes. This feature allows you to disable the IR commands for the MPD-8AI.
8. HOURS: this indicates how many hours your MPD-8AI has been operating during its life.

## RECORDING WITH THE MPD-8AI

The built-in recording feature allows you to record any digital audio through its bidirectional USB Audio 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](http://www.playbackdesigns.com) and refer to its user manual for more details.

## EXTERNAL CLOCK

A unique feature of the MPD-8AI 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 setup with master – slave clocking configurations are needed, as is often the case with other equipment. In fact, the MPD-8AI performs equally well with jittery sources as with higher quality ones. For this reason the MPD-8AI does not require an external clock nor does it require to be set up as a clock master.

## BREAKING IN THE MPD-8AI

Breaking in the MPD-8AI is time consuming but well worth the effort. It would be a mistake to pre-judge the player 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 DAC 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 converter 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 DAC will continue to change subtly over the upcoming month of usage, but you should be recognizing a very life-like and natural sound.

During break-in when you do not listen to music it is best to feed an external digital audio signal into any of the digital inputs of the MPD-8AI.

## SPECIFICATIONS

### Power Supply

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

Max. analog input level..... +22dBu (9.75Vrms)  
 Analog input impedance XLR / RCA..... 45k / 34 kΩ

Ext. dimensions (W x H x D)        46 x 13 x 43 cm  
     18.1 x 5.1 x 16.9 inches

Batteries for remote control unit.....2x AAA

### Analog Audio Outputs XLR, RCA @1kHz full level:

Fixed settings: -6db: 2.1Vrms  
 -3db: 3.0Vrms  
 0db: 4.2Vrms  
 +3db: 6.0Vrms  
 +6db: 8.4Vrms

Variable setting: 13.5Vrms max.

Output impedance XLR / RCA..... 112 / 56 Ω

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

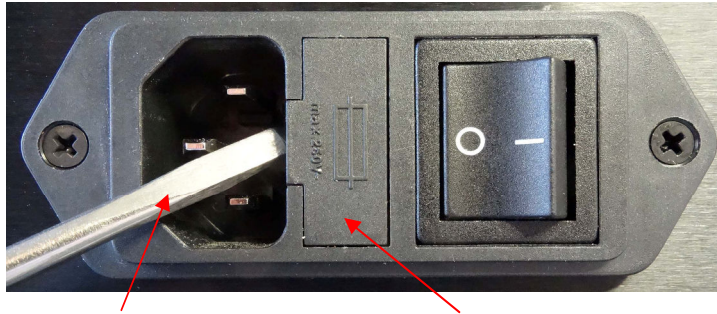
Weight..... 19kg / 42 lb

Mains fuse: 1.6A / 250V slow blow, 20mm

## CHANGING THE FUSE ON THE MPD-8AI

Inside the power connector on the rear panel of the MPD-8AI are two fuses that protect the machine from dangerous power surges. If the machine fails to power up or no light on the front panel is lit after pressing the standby power button on the front panel then proceed as follows to change the fuses:

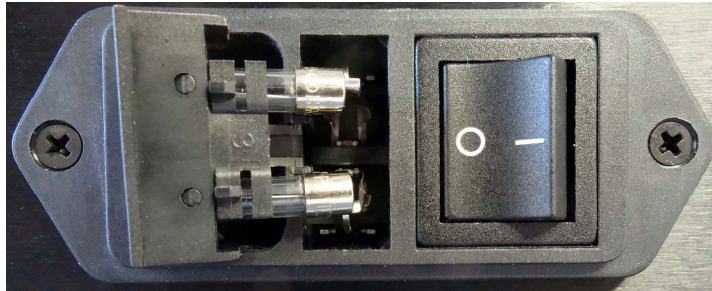
1. Locate fuse compartment on power connector on rear panel:



Prying open with small screw driver

Fuse compartment

2. Use a small flat screw driver to pry open the fuse compartment as shown in above picture.
3. Pull fuse compartment out and flip sideways as shown below:



4. Replace both fuses with 1.6A / 250V slow blow types. Length is 20mm

## CLEANING THE CHASSIS OF THE MPD-8AI

It is possible that the chassis can stain slightly from finger prints or you may discover subtle stains on the surface that can be caused by the packaging material during shipping. You can easily clean the chassis with either window cleaning solution and a clean and soft cloth. The best way is with a micro fiber cloth that you spray slightly with WD-40. Do not spray it directly on the chassis, but rather on the cloth. Then gently rub the entire chassis until it is dry again.

## UPGRADING THE FIRMWARE IN YOUR MPD-8AI

Playback Designs is constantly innovating new algorithms and methods for audio processing and from time to time may release new firmware for the MPD-8AI 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 MPD-8AI via its USB input just like any other audio file. The MPD-8AI 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 MPD-8AI 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 (see Setup Menu).

### Upgrade Procedure:

1. Power on MPD-8AI.
2. Connect your computer with the included USB cable to the USB AUDIO input on the rear panel.
3. Load the wave file with the update firmware into your player software on your computer. As iTunes on Mac computers is not a bit perfect player you cannot use iTunes for this procedure, but we have confirmed that Audirvana works perfectly on Mac computers. On the Windows platform we have verified Foobar and Roon, but JRiver won't play this file.
4. Play the file.
5. The front panel will indicate WRITING 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 WRITING FAILURE. 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 MPD-8AI.
  - b. Disconnect your computer from the MPD-8AI.
  - c. Push the RESET button on the back 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 MPD-8AI.
9. power on the MPD-8AI and check the software version in the setup menu to confirm everything worked okay.