
MPS-5 Music Playback System

USER MANUAL

PLAYBACK
DESIGNS

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

This product is a Class 1 laser product.

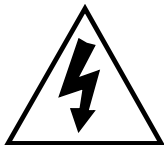


There is no hazardous invisible laser radiation during normal operation, because invisible laser radiation emitted inside this product is completely confined in the protective housings.

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. The use of optical instruments with this product will increase eye hazard.



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 MPS-5 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 1 year for the drive unit and 3 years for all other parts. 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 support@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: MPS-5 playback system
Remote control unit with mounted batteries
USB-X extension interface
Optical duplex and USB cable used with USB-X
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 support@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 on the amplifier or any other equipment that generates heat.

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

During operation, the disc rotates at high speed. Do not lift or move the player while the disc is spinning. Doing so may damage the disc or the player.

When moving the player, make sure to remove the disc and close the disc tray. Then turn off the power and disconnect the power cord.

- Types of discs:



CDDA:

- 12cm or 8cm discs
- 16bit / 44.1kHz PCM digital audio



SACD:

- Single layer, dual layer or Hybrid discs
- 12cm or 8cm discs
- DSD digital audio

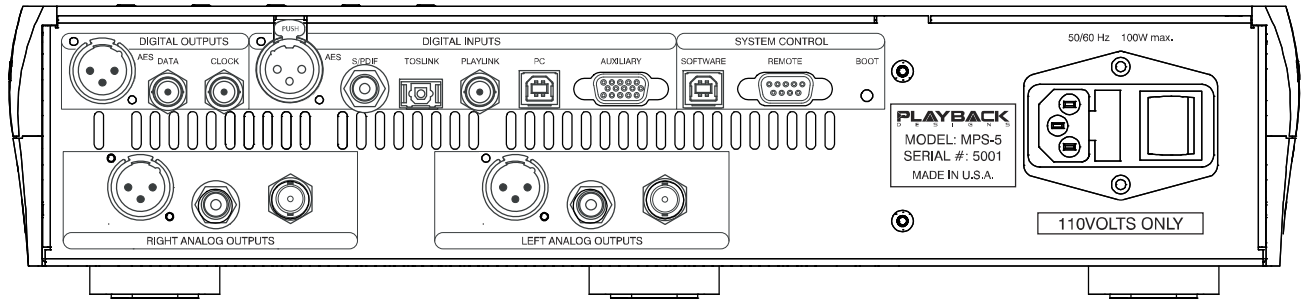
CD-R/RW discs recorded in Audio CD format and finalized correctly are playable. But depending on the quality of the disc and the recording, some CD-R/RW discs may not be playable. Discs that are not finalized cannot be played.

The following discs cannot be played: DVD, CD-G, Data part of CD-EXTRA, PHOTO CD, CD-ROM, DVD-ROM. Trying to play these discs may result in loud noises and may damage your speakers and your hearing.

Warning: copy protected discs, DualDiscs and other discs that do not conform to the CD or SACD standard may not play correctly in this player. If you use such discs in this player, Playback Designs cannot be held responsible for any consequences or guarantee the quality of reproduction.

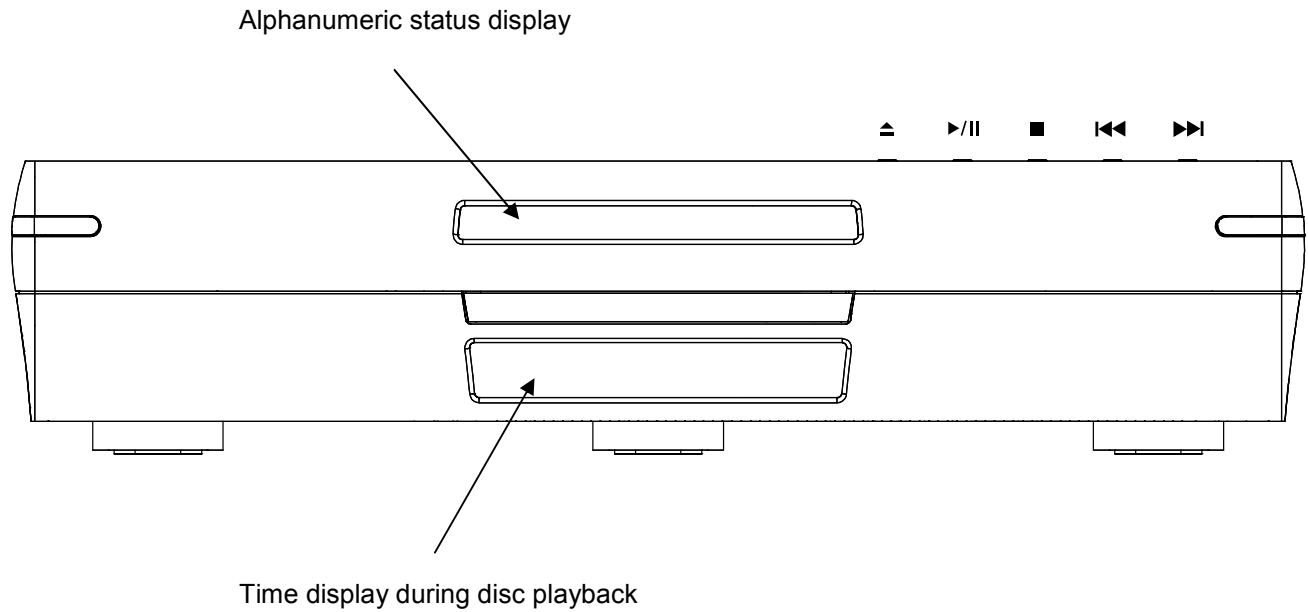
Warning: Never use a stabilizer on the discs as they will damage the mechanism and cause them to malfunction.

CONNECTIONS








- Analog outputs:** XLR: balanced, 4Vrms @ 1kHz full level, pin 2 Hot
 RCA: unbalanced, 2Vrms @ 1kHz full level
 BNC: unbalanced, 50Ω, 4Vrms @ 1kHz full level
- Digital outputs:** XLR: AES/EBU formatted for stereo linear PCM data. If playing from disc the data on this output will be 16bits / 44.1kHz. If playing from a digital input the data on this output will be up to 24bits and up to 192kHz. This output is muted while playing SACD discs.
 DATA / CLOCK: Proprietary optical link to other Playback Designs equipment such as the MPD-5 D/A converter or SACD recording and mastering equipment (Sonoma). This connection supports multiple audio formats and multi channel configurations. The DATA output can be configured for PlayLink format (**PLink**) or for Sonoma format.
- Digital inputs:** AES: XLR connector for AES/EBU formatted stereo linear PCM data, up to 24bits and up to 192kHz.
 S/PDIF: same as AES, but S/PDIF formatted on RCA connector.
 TOSLINK: same as S/PDIF, but on optical connector.
 PLAYLINK: Proprietary optical link (**PLink**) to other Playback Designs equipment such as the MPD-5 D/A converter or USB-X interface. This connection supports multiple audio formats and multi channel configurations.
 PC: Direct USB connection to Windows based computers for sample rates up to 48kHz. Before connecting to PC, make sure that PC input is selected on MPS-5 and the PC is turned on, so that the PC can enumerate the link. Subsequent changes of selected inputs on MPS-5 are then possible without disconnecting the USB cable. However, when powering down the PC the enumeration is lost and the link has to be set up again as described above.
 AUXILIARY: Used to connect legacy USB-X interface.
- System Control:** SOFTWARE: This USB connection to a Windows based PC is used to update the software of the MPS-5 player.
 REMOTE: RS-232 wired remote control (see appendix for further details).
 BOOT: Used in connection with software update procedure. When pressed during normal operation it resets the player.
- Power:** Before connecting the player to the AC mains, please make sure that the rated voltage for the MPS-5 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.

FRONT PANEL FUNCTIONS



Buttons:

-  Open / Close tray
-  Play / Pause toggle, can also be used to close the tray and immediately start playback.
-  Stop playback from disc.
Hold this button and press NEXT TRACK to change the default layer on SACD discs (multi channel / stereo) and to enable/disable multi channel playback from SACD. Factory default is set to stereo.
-  Previous track
-  Next track


REMOTE CONTROL UNIT



MUTE Mutes the analog outputs, but not the digital ones.



Input Selections:

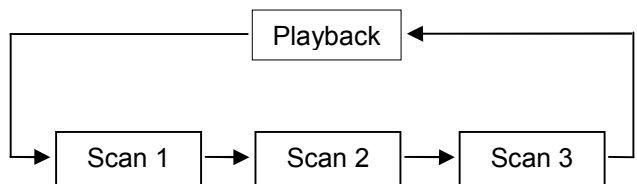
DISC Selects and activates the drive system.
AES Selects the AES input for conversion to analog.
COAX Selects the COAX input for conversion to analog.
TOS Selects the TosLink input for conversion to analog.
PLINK Selects the PlayLink input for connection to USB-X.
PC Selects the USB input from PC.
AUX Not used.
 During any input selection other than DISC, the drive system is powered off and requires a few seconds to boot when selected again.

 Open / close tray


PHSE The first time this buttons is pressed the alpha-numeric display indicates the absolute phase for the analog outputs. If it is pressed again within 5 seconds the absolute phase is toggled.


DIM Dims display on front panel.

  If these buttons are pressed for less than 1 second they allow you to jump tracks in sequential order. If during normal playback they are held for more than 1 second the player enters Scan Mode, in either forward or reverse direction. Subsequent button presses (short) will increase the Scan speed.



Scan Mode can be exited by repeatedly pressing this button until normal playback, or by pressing STOP or PLAY.

 Stops the transport.

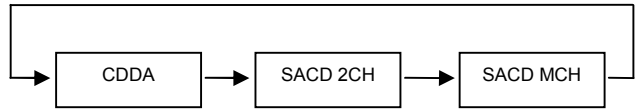
 Starts playback. Can also be used to close the tray and immediately start playback.

 Toggles pause function on and off.

REMOTE CONTROL UNIT (continued)



LAYR This toggles the layer selection for SACD discs. In order to change the layer the player must be stopped. This has no effect for CD's. In order to play audio through all channels from a SACD MCH the default playback needs to be set to multi channel (STOP + NEXT on front panel).



TIME This toggles the time display during playback between various states:

- Elapsed time
- Remaining time on active track
- Total time on disc
- Total remaining time on disc

The first time this button is pressed it will indicate the currently selected state without changing it. If during the next 5 seconds the button is pressed again it will toggle to the next state.



This toggles through 2 Repeat modes:

- Repeat currently playing track
- Repeat entire disc
- Normal playback

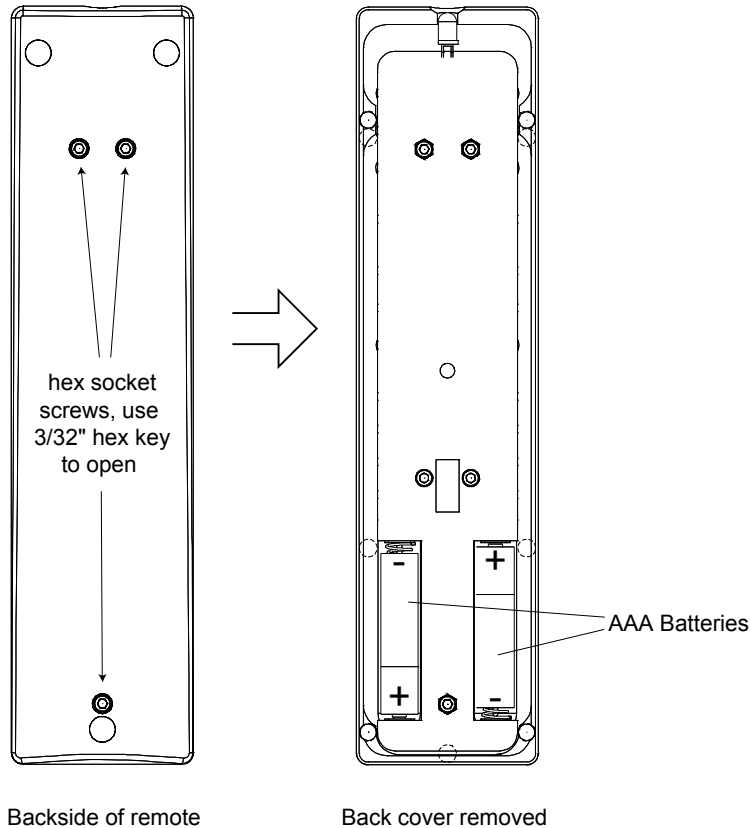
Numeric buttons:

Pressing any numeric button with a single digit will locate the transport to the beginning of the chosen track and start playback, unless the transport is in pause mode when it will stay in pause mode. The +10 button can be used to access tracks higher than 9. For instance, track 23 can be accessed by pressing:

- +10
- +10
- 3

CLR Press and hold this button to enter the setup menu and to display settings. See section "setup menu" later in this manual for more details.

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 3/32" hex or Allen key.

CONNECTING THE MPS-5 TO A WINDOWS BASED PC or APPLE MAC

The MPS-5 provides 2 different ways for you to connect to a computer:

1. Via its internal USB connector on the back panel. This connection is limited to 16bits and 44.1 / 48kHz.
2. Via the USB-X interface. This connection supports PCM resolutions of up to 24/384kHz and DSD up to 5.6448MHz.

1. CONNECTING THE MPS-5 TO A PC VIA ITS INTERNAL USB INTERFACE

Again, the MPS-5 is equipped with an internal USB port that only supports PCM in 16bits and 44.1/48kHz. In order to guarantee the best sonic performance of the MPS-5 when playing from other sources connected to other inputs or from its internal transport the USB port is disabled. This makes it necessary that when a PC is booted the USB (PC) input is selected on the MPS-5 BEFORE connecting the USB cable from the PC. This allows the operating system on the PC to identify the MPS-5 and configure its audio port. Once the connection has been established and the PC is not turned off the input selection on the MPS-5 can be changed freely without the need to disconnect and reconnect the USB cable. However, when the PC is power cycled the enumeration is lost and the above described procedure is necessary to gain it back.

The following operating systems are supported without any additional driver installation: Microsoft Windows XP or later (English and Japanese editions), Apple Mac X 10.0 or later (English and Japanese editions).

2. CONNECTING THE MPS-5 TO A PC VIA THE USB-X INTERFACE

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) and 5.6448MHz.

Connection protocol and method: USB 2.0 / Audio class 2.0 compliant, asynchronous mode where MPS-5 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.

Mac requirements: OS X (10.6.6 or later)
iTunes with or without plug-in to automate sample rate switching.
Internet connection for downloading software from www.playbackdesigns.com.

In order for your computer to communicate with the MPS-5 and to exchange audio data custom driver software needs to be installed before you can connect it to the MPS-5. 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 MPS-5.

IMPORTANT NOTE FOR PC USERS:

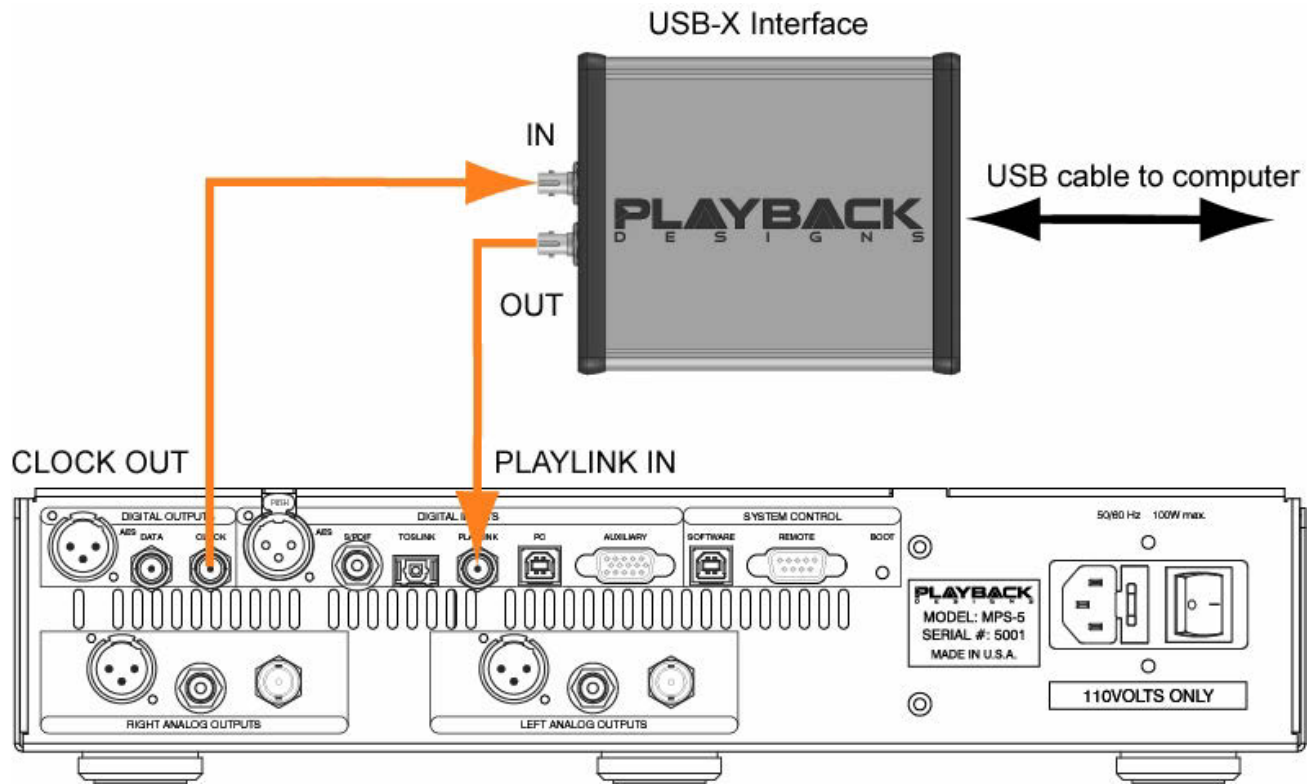
The Windows operating system is by design not a real-time system. It is designed to allow certain processes to take time away from real-time processes such as playing audio. This can result in audible dropouts, sometimes very short, but sometimes also quite long. Some PCs are pre-configured with drivers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

Preparing your MPS-5 for the connection with the USB-X interface

1. Before connecting the USB-X interface to anything check in the Setup Menu (explained elsewhere in this manual) that the option "PLINK INPUT" is set to USB-X. You should never attempt any changes in the menu with the USB-X interface connected.
2. Connect the optical cables as outlined in the drawing below. For this you have to remove the protective caps on all cable ends as well as on the connectors on the rear panel of the MPS-5. If the optical cables provided with the MPS-5 are not long enough you can easily replace them with much longer ones. The specifications are ST DUPLEX to ST DUPLEX 62.5/125 multimode fiber optical cable. They are usually available in computer stores.
3. Turn on power on the MPS-5 and select PLINK input from your remote. Do not connect the USB cable from the computer yet, until the driver software for your computer is properly installed, if required.



Driver software installation and first time connection:

1. Turn on your computer.
2. Windows PC users only: Launch your favorite internet browser and navigate to www.playbackdesigns.com. Use "USBAudio" for password to enter the software download section. Download the latest driver:
 - akdesigndrv.zip for PC. Unzip it to the desktop.
 - No driver software is required for the Mac platform.
3. 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.

4. Once your computer is properly configured, power on the MPS-5 and connect the USB cable that was included with the MPS-5 between USB-X and your computer. Since the USB-X interface is powered by your computer, but receives the clock signal from the MPS-5 you must always power the MPS-5 first before connecting the USB cable. As soon as the MPS-5 is powered off the USB connection loses its clock and you will have to unplug and re-plug the USB cable from your computer.
5. Select PLINK input from the remote control if not already done before.

6. The computer will take a moment to enumerate the MPS-5 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, 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, where the USB-X should be listed as an audio output device.



7. 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.
8. For Mac users only: launch iTunes.
9. 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.
10. Your system is now ready for high resolution playback.

Re-connection after system has been previously configured:

1. Before powering on the MPS-5 connect the USB-X interface as outlined with the drawing on the previous page.
2. Power on both computer and MPS-5. Select PLINK input on MPS-5.
3. Connect USB cable.
4. Enumeration should be quick on Windows and about 10 seconds with Mac and may not indicate anything except with failure. You may hear the relays clicking inside the MPS-5 as the computer sets the sample rate.

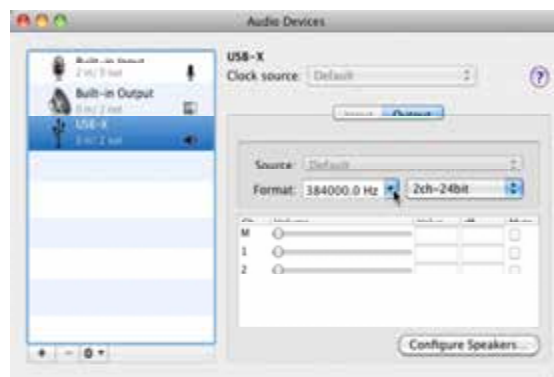
5. For best performance and bit perfect reproduction make sure to set all volume controls in the computer playback software, Windows / OSX control panel to exactly 0db (wide open), turn off all operating systems sounds, effects or equalizer that might be running in your playback software or Windows / OSX. Control the volume only with your analog pre-amp.
6. 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 MPS-5. The front panel of the MPS-5 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 MPS-5 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.



Check our website www.playbackdesigns.com for an updated list of supported plug-ins.

Playback of DSD files

The driver software and MPS-5 hardware are designed to support playback of DSD files at 2 sample rates: the standard 2.8224MHz as used on all SA-CDs and the double rate 5.6448MHz 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. On the Mac platform you will have to use a playback software or iTunes plug-in that supports the DoP standard for playing DSD files. Check our website www.playbackdesigns.com for an updated list of playback software available.

Testing your system for bit perfect reproduction

Windows / OSX and your player software offer multiple places for volume control, effects processing, dithering, equalization or sample rate conversion. Generally, these algorithms affect the sonic performance in a negative way, especially in low volume listening levels. It is therefore recommended that all volume controls on your computer are set to exactly 0db (wide open) and all operating system sounds, effects, equalizers and other algorithms are turned off. You should only control volume with your analog pre-amp. In order to test your system to make sure that no hidden control or algorithm on your computer may impact your sonic performance you can play a special test file:

1. Launch your favorite internet browser and navigate to www.playbackdesigns.com. Use "USBAudio" as password to enter the software download section. Download the test file "TestPat352.wav".
2. The test file contains non audible audio, but it is still a good idea to mute your pre-amp.
3. Launch your playback software and play the test file while the MPS-5 is connected via USB and its PLINK input is selected.
4. If all the controls on your computer are set correctly then the front panel on the MPS-5 will indicate this by displaying "BIT PERF" for 5 seconds at the end of the playback. If it doesn't show this then at least 1 control on your computer is impacting the performance of your system.

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 MPS-5 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 MPS-5 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 MPS-5 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 MPS-5, that the problem is with the MPS-5. The MPS-5 uses different software inside your computer.

Here are a few suggestions for what to do:

1. The USB-X interface is powered by the computer via the USB cable, but the clock signal is coming from the MPS-5. So every time you turn off the MPS-5 you will have to unplug the USB cable from the computer and plug it back in once the MPS-5 is powered up again.
2. Make sure that the driver is properly installed (PC only). See step 6 under driver installation above for instructions for how to check successful installation and connection.
3. Make sure the USB-X is properly connected to the MPS-5 with the included optical cable. Only use the cable that was shipped with the USB-X. If the front panel indicates "NO LOCK" when the PLINK input is selected then that points to a broken connection with the USB-X.
4. Make sure you use the USB cable that was shipped with the MPS-5. Other USB cables can be used, but they need to be USB2.0 compatible.
5. Disconnect the USB cable and restart your computer.
6. Connect the USB cable while the PLINK input is selected on the MPS-5. On Mac computers it can take up to 10 seconds to enumerate.
7. On Mac computers it can happen that after successful enumeration OSX selects the internal audio output instead of the MPS-5. This can easily be corrected manually in the sound control panel in System Preferences as shown in this screen shot.
8. If at this point your PC computer still does not play through the MPS-5 and the driver or USB-X cannot be identified in the Device Manager (PC) then disconnect the USB cable and try re-installing the driver following exactly above instructions.
9. 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.



SETUP MENU

The MPS-5 has several options that can be displayed and set via remote control. By pressing and holding the CLR button the setup menu is displayed on the front panel. After no further button has been pressed for 5 seconds the display goes automatically back to normal operation. After entering the setup menu the CLR button can be pressed shortly to advance to the next menu item. Each programmable menu item may be toggled between 2 settings by pressing the play button.

IMPORTANT: Do not attempt to change any settings while the MPS-5 is connected to any PLINK or USB-X devices. Always disconnect any optical cables.

The following options are available in sequence:

1. Serial number. This option is not user programmable.
2. Firmware version. This option is not user programmable.
3. Center Mix: Used for multi channel playback and only programmable for the MPS-5.
4. Optical Output Format: the optical data output supports PLINK or SONOMA formats. PLINK is a proprietary format used to link to other Playback Designs products for multi channel or multi room setups. SONOMA is used to connect to professional recording equipment. This function is only programmable for the MPS-5.
5. Optical All Channels: when using PLINK output format set this off for multi channel configuration or on for multi room configuration. In multi channel configuration only those channels are sent out via PLINK that are necessary for the next following DAC in the chain. In multi room configuration all channels are sent out via PLINK output, so that the same audio program can be heard in multiple rooms. This function is only programmable for the MPS-5.
6. PLINK Input format: The MPS-5 needs to know if the device you are connecting to its PLINK input is the optical USB-X interface (USB-XII) or any other device that supports the PLINK format.
7. IR Locked / Unlocked: this option is only programmable for the MPD-5 and allows disabling all remote control commands when the MPD-5 is part of a multi channel setup.

MULTI CHANNEL CONFIGURATIONS

The MPS-5 can be configured for various different applications in multi channel setups and SACD MCH playback. As the MPS-5 is equipped with 2 internal analog outputs it can be combined with the Playback Designs companion stereo D/A converter (MPD-5) for external analog processing of the additional channel data from SACD MCH discs. The possible configurations are:

1. **Stereo** only playback from SACD MCH: the player will only read the LF and RF channels from SACD MCH discs. This is the factory default configuration. The user can switch between stereo and multi channel layers on SACD's, but the player will only read 2 channels from the selected layer and only send out 2 channels via the PLink output.
2. **4-channel** playback from SACD: the player reads all available channels from SACD MCH discs, mixes the center channel into left and right front channels for output directly from its internal analog outputs. The left and right surround channels are sent out digitally via the optical PLink (DATA) for analog conversion by the Playback Designs companion product MPD-5. All stereo discs are played normally with analog outputs from the player and muted outputs via the PLink output.
3. **6-channel** playback: the player reads all available channels from SACD MCH discs. While only 2 channels are available from its analog outputs (LF and RF), it sends out digital audio data for the other 4 channels via the PLink output.

The various configurations and corresponding parameters can be set via a setup menu on the front panel:

1. In order to enable multi channel output the player needs to be set into multi channel mode (factory default setting is stereo) by first pressing and holding the STOP key and then pressing the NEXT key on the front panel. Each time this key combination is pressed the modes are toggled between stereo and multi channel. In stereo mode the player will automatically select the stereo program each time a SACD is put in. Likewise in multi channel mode the player will automatically select the multi channel program each time a SACD is put in, provided it contains a multi channel layer.
2. By pressing and holding the CLR button on the remote a setup menu is entered that allows the user to program several features. There are 3 menu items that pertain to the multi channel configuration. The programming can be toggled by pressing the PLAY button on the remote. After 5 seconds of the last button press from the user the setup menu is exited automatically and the player can be used normally again.

Displayed Feature	Options	Explanation
CNTR MIX	ON / OFF	When set to ON, configured for multi channel playback, the OPT ALL CH feature disabled and playing a SACD MCH disc, the center channel is digitally mixed into LF and RF channels (output via internal analog outputs) and left and right surround channels are sent out via the optical PLink output. This implements the 4-channel configuration described above.
OPT OUT	PLINK / SONOMA	The proprietary optical output can support 2 different formats: PlayLink (PLink) for direct connection to other Playback Designs equipment via a single optical cable (DATA output), or SONOMA for connection to the professional SACD recording and editing workstation via 2 optical cables (DATA and CLOCK).
OPT ALL CH	ON / OFF	When set to ON audio data from all channels (including L and R) is sent out via the optical PLink output and Center channel downmix is disabled (override). When set to off the PLink output contains data for channels 3-6 or 5-6 depending on the setting of the CNTR MIX feature.

EXTERNAL CLOCK

A unique feature of the MPS-5 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 MPS-5 performs equally well with jittery sources as with higher quality ones. For this reason the MPS-5 does not require an external clock nor does it require to be set up as a clock master.

BREAKING IN THE MPS-5

Breaking in the Playback Designs MPS-5 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 player 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 player 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 MPS-5, rather than loading a disc and setting the drive into REPEAT mode.

SPECIFICATIONS

Power Supply		Analog Audio Outputs:	
North America model.....	AC 120V, 60Hz	XLR: 4Vrms @ 1kHz full level, pin 2 Hot	
Europe model.....	AC 230V, 50Hz	RCA: 2Vrms @ 1kHz full level	
Consumption.....	100W	BNC: 50Ω, 2Vrms @ 1kHz full level	
Weight.....	13kg / 29 lb	Operating Temperature.....	+5°C to +30°C
Ext. dimensions (W x H x D)	43.5 x 9.8 x 42.3cm 17.1 x 3.5 x 16.7 inches	Operating Humidity.....	5% to 85%
Batteries for remote control unit.....	2x AAA	Mains fuse: 1.6A / 250V slow blow, 20mm	

CHANGING THE FUSE ON THE MPS-5

Inside the power connector on the rear panel of the MPS-5 is a fuse that protects the player from dangerous power surges. If the player 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.



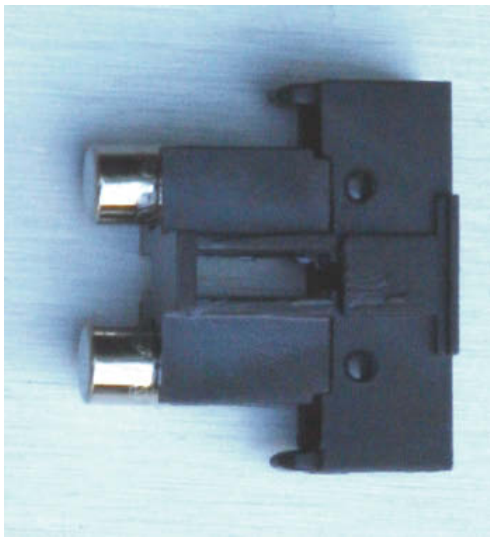
Fuse Compartment

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



Prying open with a small screw driver

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: 1.6A / 250V slow blow, 20mm.

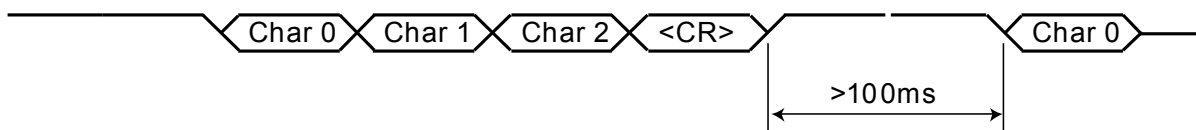
Appendix A: Serial Remote Control (RS-232)

The MPS-5 can be remote controlled via a 9-pin RS-232 link. When connecting to a PC the required cable should be non-crossed and the link parameters should be set to:

- 19,200 baud
- 8 bits
- 1 stop bit
- no flow control
- no parity bit

Commands to the MPS-5:

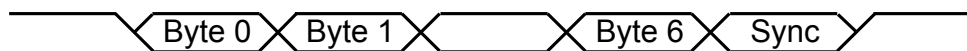
All commands sent to the MPS-5 consist of 3 ASCII characters followed by a <CR>. Repeating a <CR> will repeat the last command sent. Received commands are not stored in a stack and, therefore, need to be sent in intervals of at least 100ms to allow enough time for the MPS-5 to execute a command before receiving the next one.



ply	Start playback
pos	Pause playback
stp	Stop playback
opn	Open / close tray
prv	Go to beginning of track, or jump back 1 track
nxt	Go to next track
fsc	Toggles through forward scan modes
rsc	Toggles through reverse scan modes
lyr	Toggles between CD, SACD stereo and SACD multichannel layers of a SACD disc. The player needs to be in stop mode before the layers can be switched.
rpt	Toggles between no repeat – repeat track – repeat all
tme	Toggles through various time display modes
phs	Toggles phase inversion on and off
mte	Toggles mute on analog output on and off
don	Turns front panel display on
dof	Turns front panel display off (unit keeps operating)
drv	Selects internal transport for playback
aes	Selects AES input for playback
rca	Selects Coax S/PDIF input for playback
tos	Selects optical TosLink input for playback
plk	Selects optical PlayLink for playback (AES formatted)
usb	Selects USB (PC) input for playback
aux	Selects Aux input for playback
tn0 – tn9	Direct access to tracks 0 through 9 on disc
t10	Increments tens counter for track entry. For instance, to access track 23 send t10<CR> t10<CR> t03<CR>.

Status info from MPS-5

The MPS-5 continuously sends back 7 Bytes terminated with a unique Sync Byte (xFF).



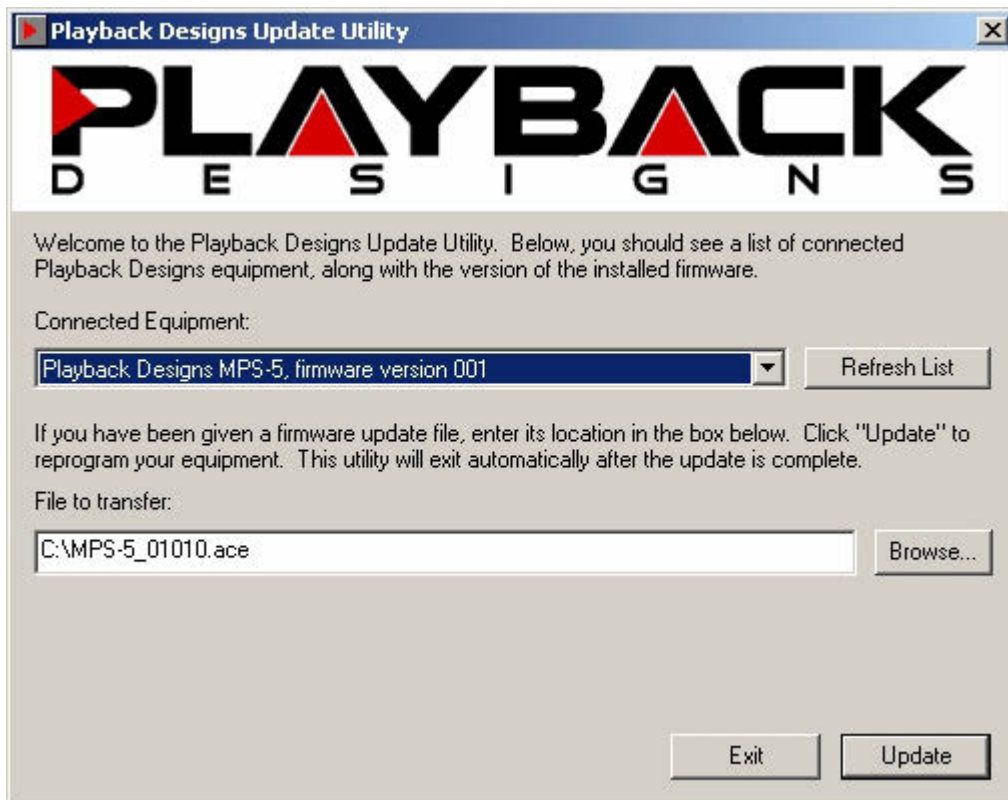
Byte 0	Bit1-0	0: CD
		1: SACD 2-channel
		2: SACD multichannel
		3: no disc
	bit 4-2	0: tray open
		1: tray closing
		2: transport stopped
		3: transport playing
		4: transport paused
		7: undefined state
	bit 7-5	0: scan mode off
		1: forward scan mode 1
		2: forward scan mode 2
		3: forward scan mode 3
		4: reverse scan mode 1
		5: reverse scan mode 2
		6: reverse scan mode 3
Byte 1	bit 1-0	0: repeat mode off
		1: repeat track mode
		2: repeat disc mode
	Bit 3-2	0: elapsed track time display
		1: remaining track time display
		2: total disc time display
		3: total remaining disc time display
Byte2		Track number in binary code
Byte 3		Hours in binary code
Byte 4		Minutes in binary code
Byte 5		Seconds in binary code
Byte 6	bit 2-0	0: transport selected for playback
		1: AES input selected
		2: RCA input selected
		3: TosLink input selected
		4: PlayLink input selected
		5: USB (PC) input selected
		6: Aux input selected
	bit 6-3	1: 44.1kHz detected on digital input
		2: 48kHz detected on digital input
		3: 88.2kHz detected on digital input
		4: 96kHz detected on digital input
		5: 176.4kHz detected on digital input
		6: 192kHz detected on digital input
		7: 352.8kHz detected on digital input
		8: 384kHz detected on digital input
		9: DSD detected on digital input
		10: DSD 2X detected on digital input
		15: no lock
	bit 7	1 when audio phase inverted on analog outputs
Byte 7		Sync Byte (xFF)

Appendix B: Upgrading the Software in your MPS-5

Playback Designs is constantly innovating new algorithms and methods for audio processing and from time to time may release new software for the MPS-5 that may further enhance the sonic performance or add new features. As new releases become available you will be able to download it to the MPS-5 from a PC via a dedicated USB connection on the back of the unit. It will be distributed along with a software application running on the PC that will guide you through the programming steps

First Time Installation and Upgrade Procedure:

1. Do not connect the MPS-5 yet to the PC.
2. Launch the supplied application "PDSetup.exe" on your PC and closely follow instructions on the screen. Connect your MPS-5 to the PC only when told so. But before then hitting the NEXT button, wait until Windows confirms that the driver is fully installed and operational. Only then hit NEXT.
3. When you reach the following screen, make sure to point the field "File to Transfer" to the file supplied by Playback Designs (use the Browse button to find the location of the file).
4. Hit Update and programming will start automatically. Be patient, because it can take several minutes to complete as the erase cycle and the file are quite long.
5. When completed, turn off power to the MPS-5 (switch on back panel), wait 15 seconds and power it back on again. **DO NOT POWER OFF BEFORE PROGRAMMING IS COMPLETE** (which can take several minutes).



Subsequent Upgrade Procedure:

After you have used the PDUupdate utility for the first time a shortcut PDUupdate is installed on the desktop of your PC as well as in the START>PROGRAMS>Playback Designs folder. There is no need to launch the "PDSetup.exe" application anymore.

1. Turn on power to the MPS-5.
2. Connect your MPS-5 to the PC via a USB cable.
3. Launch PDUupdate from the desktop of your PC and you should see the above screen directly.
4. Proceed from here as for the first time installation.

IMPORTANT NOTE:

THE ENTIRE UPDATE PROCEDURE CAN TAKE SEVERAL MINUTES. IT IS IMPORTANT THAT YOU DO NOT INTERRUPT POWER TO THE MPS-5, NOR DISCONNECT THE USB CABLE, NOR TURN OFF THE PC DURING PROGRAMMING, OR ELSE YOUR MPS-5 WILL NOT BE ABLE TO BOOT NORMALLY.

In case the programming has been interrupted accidentally, please follow the steps below:

1. Turn off power to the MPS-5 via its back panel switch.
2. Press and hold the Boot button on the back panel.
3. Turn power back on. Release the Boot button.
4. Proceed as described under "Subsequent Upgrade Procedure".