



Information & Operation Manual



Wadia 521 Decoding Computer



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Preliminaries

Thank You

All of us at Wadia would like to offer thanks and congratulations to you for purchasing the Wadia 521 Decoding Computer. We sincerely believe that your Wadia 521 Decoding Computer will bring you many years of musical pleasure and satisfaction.

While every new owner is anxious to begin listening, we encourage you to take a few minutes to read this manual and familiarize yourself with the full capabilities of the Wadia 521 Decoding Computer.

If you are in a hurry to begin listening, please read the sections of this manual where the symbol at right is shown.



Wadia Digital – A Brief History

Wadia Digital, founded in 1988, is one of the original companies dedicated to high performance digital audio reproduction. Wadia was formed by a team of engineers from the Minneapolis based 3M Corporation (Minnesota Mining and Manufacturing) who shared many years of experience in advanced digital telecommunications research and development. In the early 1980's, these engineers became intrigued by the emerging compact disc technology. Disappointed with the sound quality of early CD players, they examined the workings and designs of these early components and found them to be unsophisticated when compared with the technology available in other areas of digital design. In response, they founded Wadia Digital – a company based on the philosophy of applying advanced technology to improve the performance of digital audio components. Wadia's first product, the Wadia 2000 Decoding Computer, was an absolute breakthrough in digital audio. For many discerning listeners, it proved that Digital Audio was a musically responsive, evolving, and engaging format.

Building on a tradition of excellence, Wadia continues to develop innovative technology; refining, listening, engineering, and improving along the way. Since the Wadia 2000, new generations of industry-leading designs have been introduced and embraced by listeners around the world. Each step of the way, Wadia has consistently raised the standard for performance of Digital Audio playback.

Here is a brief list of the technological innovations the Wadia engineers have pioneered over the past 20 years:

- DigiMaster™ patented algorithm (filter optimized for reproducing music)
- ClockLink™ proprietary jitter reduction technology
- SwiftCurrent™ current to voltage conversion technology
- First outboard Digital-to-Analog converter
- First to apply glass fiber-optics to home audio
- First to recognize jitter as a source of audible distortion
- First to perfect digital volume control
- First high-end CD player competitive with expensive separates
- First company to provide bit perfect digital audio output from the iPod

Although Wadia's digital expertise and track record exceed those of any audio company, technology alone does not guarantee musical performance. Wadia designs are born of a delicate balance of technology shaped by a passion for music.

Wadia is proud to introduce the Wadia 521 Decoding Computer, a breakthrough in sonic performance and value, and a strong statement of our years of dedication to music.



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Installation and Set-up

Unpacking

Use care in unpacking your Wadia 521 Decoding Computer. Inspect it for any shipping damage and call your dealer immediately if any is found.



Do not plug your Wadia 521 Decoding Computer into an AC outlet if you find shipping damage.

We advise saving all packing materials so that the unit can be easily and safely shipped if the need arises.

Accessories

Provided with the Wadia 521 Decoding Computer are the following accessories:

- AC power cord
- Four tip-toes with threaded studs
- Four steel coasters
- RCA/BNC adapter
- Remote Control
- Two type AAA batteries
- 10 ft GFO Cable



Do not tip the unit onto the back panel. This can damage input and/or output connectors.

Installing the Tip-Toes

With the unit still positioned on its side, screw one of the tip-toes into the bottom of each corner post.

Position the Wadia 521 Decoding Computer where you would like it to reside in your system. We recommend choosing a solid, non-resonant, level surface for best performance. If this surface is susceptible to damage, place one of the steel coasters under each tip-toe.

Connecting to Your System



Check to make sure your Wadia 521 Decoding Computer has been manufactured for operation at your AC line Voltage. Attempting to use the player at any voltage other than the specified on the rear of the unit may damage the unit. Damage caused by improper operation is not covered by warranty. If the voltage specified is different from your AC voltage, contact your Wadia dealer.



Connecting to AC Power

The best performance is obtained when the Wadia 521 Decoding Computer is plugged directly into the wall with the power cord provided. The Wadia has power conditioning, surge suppression and an extremely sophisticated overall protection scheme. It should not be necessary to use surge protectors power conditioners or aftermarket power cords, some of which may degrade the sonic performance. If you wish to experiment with any of these devices, work closely with your local dealer – and most of all, *trust your own ears*.

Connecting Directly to a Power Amplifier

Avoid allowing static shocks to be applied to the inputs or outputs. To prevent static shocks, touch any grounded surface, such as the Wadia 521 Decoding Computer chassis, before connecting or removing a cable. It is unlikely that a static shock will damage the unit, but it may cause the Wadia 521 Decoding Computer circuitry to “lock-up” (see **TroubleShooting: Lock-up** – page 13).

Inputs and outputs can be safely connected to the Wadia 521 Decoding Computer

- 1 Before the unit is powered up
- 2 When the unit is in Relay-Mute mode

We strongly recommend that you use your Wadia 521 Decoding Computer connected directly to your power amplifier. Even if you purchased your Wadia 521 Decoding Computer with the intention of connecting it to your preamplifier, we suggest that you try direct connection to your amplifier. Many listeners are surprised by the improvement in performance over even the most expensive preamplifiers.

To connect your Wadia 521 Decoding Computer to a power amplifier, ensure that your power amplifier is turned off then connect your analog interconnects from the Wadia 521 Decoding Computer analog outputs to the amplifier’s inputs.

Using with a Preamplifier

While the Wadia 521 Decoding Computer was designed to be used without a preamplifier, no compromises were made in its design that will prevent excellent operation in a conventional system with a preamplifier.

When using a preamplifier, set the Wadia 521 Decoding Computer volume control to its maximum level.



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Optimizing the Output Level

Best performance is obtained when operating the Wadia Volume Control near the top of its range. If needed, the maximum output level of your Wadia 521 Decoding Computer can be adjusted to match the overall sensitivity of your system so that the critical listening will take place with the volume control operating in near the top of its range.

The maximum output level of the Wadia 521 Decoding Computer is adjustable by means of a set of internal switches. The Wadia 521 Decoding Computer is factory set to accommodate the most common range of system sensitivity. If you find that your typical volume level during critical listening is below 65 on the volume display, it will be advantageous to use a different setting. To change the output level, consult your dealer.

Connecting to a Transport or Other Digital Source

*Avoid allowing static shocks to be applied to the inputs or outputs. To prevent static shocks, touch any grounded surface, such as the Wadia 521 Decoding Computer chassis, before connecting or removing a cable. It is unlikely that a static shock will damage the unit, but it may cause the Wadia 521 Decoding Computer circuitry to “lock-up” (see **TroubleShooting: Lock-up** – page 13).*

Inputs and outputs can be safely connected to the Wadia 521 Decoding Computer either:

- Before the unit is powered up
- When the unit is in Relay-Mute mode (see **Mute Modes** – page 12)

The Wadia 521 Decoding Computer has six digital inputs:

- Input 1: Glass fiber optical
- Input 2: Glass fiber optical
- Input 3: Coaxial with BNC connector
- Input 4: Coaxial with BNC connector
- Input 5: AES/EBU with XLR type connector
- Input 6: Plastic optical TOSLINK

To connect a digital source, install a digital cable between the digital output of that source and a digital input of the Wadia 521 Decoding Computer.

The Wadia 521 Decoding Computer will automatically adjust to the sampling rate of any standard 32, 44.1, 48, or 96kHz digital audio format.

Choosing a Digital Cable

While the Wadia 521 Decoding Computer supports all currently accepted transmission formats for digital audio, we recommend using a high quality glass-fiber cable such as the one available from Wadia. Wadia Digital was the first company to use glass fiber-optic data transmission in digital audio. We have continually improved this format and believe that it offers the best, most consistent performance of all the available options.

Based on our experience, here is a list of digital interface methods in descending order of performance:

- 1 Glass optical (*as implemented by Wadia*)**
- 2 AES/EBU using XLR connector**
- 3 Coaxial cable using BNC connector**
- 4 Coaxial cable using RCA connector**
- 5 TOSLINK plastic-optical cable**

The quality of any of these transmission methods depends on the quality of the cable and the sophistication of the transmitter and receiver. For example, a high quality coaxial cable can outperform a low quality AES/EBU cable. A high quality AES/EBU cable will outperform a poorly implemented glass optical system.

If you are using a coaxial cable we recommend that you have the cable terminated with a BNC connector. This will provide higher performance than an RCA connector. Your Wadia 521 Decoding Computer comes with an RCA/BNC adapter that can be used for experimentation between different types of coaxial cable.

Again, we highly recommend that you take advantage of your dealer's experience and, most importantly, *trust your ears*.

All XLR-type inputs and outputs on the Wadia 521 Decoding Computer, both digital and analog, use the standard audio pin configuration:

- Pin 1 - Ground**
- Pin 2 - Positive signal**
- Pin 3 - Negative signal**



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Frequently Asked Questions

Should I use a Balanced or Unbalanced connection?

If your amplifier has a true balanced input, we recommend you use the balanced analog output from your Wadia 521 Decoding Computer. All things being equal, properly implemented balanced (also called differential) circuitry sounds better than unbalanced circuitry. The Wadia 521 is a true balanced design. It generates the inverted signal in the digital domain and all subsequent processing is done in balanced mode. Your Wadia 521 Decoding Computer is designed to maintain many of the advantages of true balanced design when using the unbalanced outputs. In addition, the Wadia 521 Decoding Computer output stage is capable of driving both types of outputs simultaneously.

Why should I bypass the Preamplifier?

A preamplifier is unnecessary when using your Wadia 521 Decoding Computer. The Wadia 521 Decoding Computer provides all the necessary control functions of a preamp while the signal is still in the digital domain. This avoids the sonic degradation caused by analog circuitry, switches, and wire. The Wadia 521 Decoding Computer output stage can drive any power amplifier and any interconnects, even at very long lengths.

Does the Wadia Volume Control compromise resolution?

The Wadia 521 Decoding Computer uses the latest generation of Wadia's proprietary digital volume control. The volume level can be varied in the digital domain by means of mathematical manipulation of the signal, eliminating the distortion and noise that are inevitable with even the best analog volume controls. While conventional thinking indicates that reducing the volume digitally can sacrifice low level resolution, Wadia has created an innovative solution. Wadia's patented digital filtering algorithm produces a 24 bit output rather than the 16 bits stored on the CD. This high-resolution signal is then used in the computations which in turn reduce the volume level. This new signal is fed directly to the DAC chips. Through this innovative method, the Wadia 521 Decoding Computer maintains high resolution even at the lowest volume control settings.

Can I bypass the Wadia Volume Control?

Because the Digital Volume control does not include any analog circuitry, there is none to be bypassed. Even the mathematical program step that performs the Digital Volume Control calculation is an integral part of the Wadia DigiMaster filter algorithm and therefore cannot be bypassed. If you do not need the Wadia Volume Control, set it to its maximum level of 100 on the display.

What about Analog Sources?

In order to fully realize the potential of this type of system, Wadia has a range of Analog-to-Digital converters. Now it is possible to use analog sources, such as a tuner, tape deck, or even a turntable (in conjunction with a suitable phono stage) in your system without using a conventional analog preamplifier. Consult your dealer for more information on the Wadia Analog-to-Digital products.

Should I leave the Wadia 521 Decoding Computer with the power on?

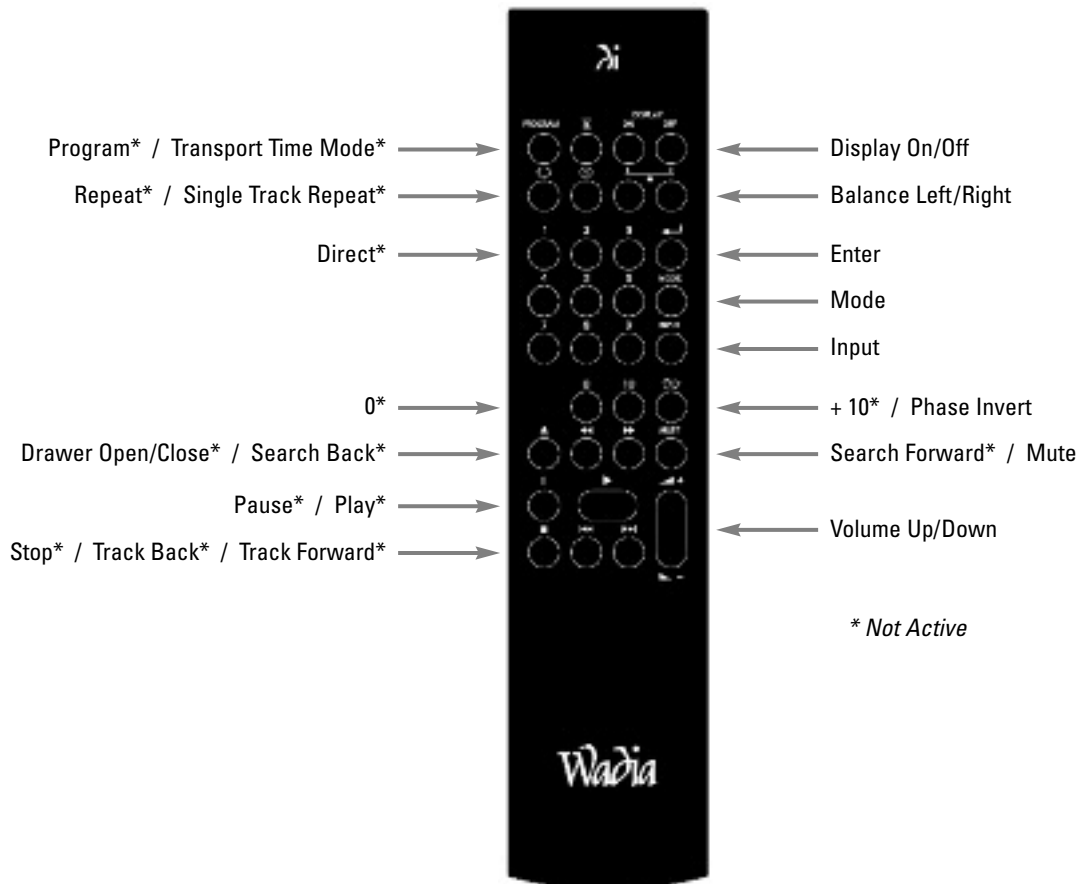
The Wadia 521 Decoding Computer is designed to be left with the power on with no harm or wear to the unit. If desired, the front display can be turned off (see **Turning Display On/Off** – page 11). Leaving the power on allows the circuitry to remain in thermally stable, which provides better performance and longer life. Careful listeners will notice that the sound of the Wadia 521 Decoding Computer will improve steadily after the unit is powered-up. A new unit will undergo more dramatic changes when power is applied for the first time. If you turn off your Wadia 521 Decoding Computer for more than an hour, you will find that the unit will undergo similar, but less dramatic improvement once power is reapplied.



General Operation

Remote Control

The Wadia 521 Decoding Computer remote control requires two type-AAA batteries, which you will find in the accessories kit. To install the batteries, remove the battery cover on the back of the remote by removing the phillips head screws. Insert the batteries as indicated on the battery holders.





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Turn-on Screen

When power is turned on, the Wadia 521 Decoding Computer will show the display screen, as shown below, for five seconds.



Selecting an Input

Any of the six inputs on the Wadia 521 Decoding Computer can be selected by pressing the Input Select key on the remote control. Each time the Input key is pressed, the next input is selected. For example, if Input 1 is currently selected, pressing the Input key on the remote control will advance to Input 2 and so on. After Input 6, the list will begin again with Input 1. When selecting an input.

When the Input key is pressed, the display will change to the Input Screen, as shown below. The Input Screen displays information about the input currently selected, including the input name and sampling frequency. If no signal is detected on the selected input, the display will indicate this by showing “No Data”.



Adjusting the Volume

Whenever the Volume Up or Volume Down keys on the remote control are pressed, the volume on both channels will be increased or decreased by an increment of 1 on the display screen. The range of the volume display is from 0 to 100, with each step representing 0.5 dB change in volume. During normal operation, the Volume Screen, as shown below, is the default screen.



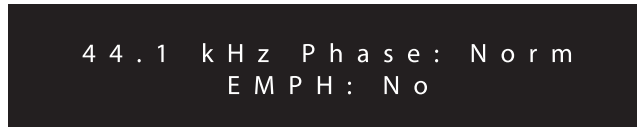
Adjusting the Balance

Relative volume of each channel can be adjusted via the balance control keys on the remote. Each time one of the balance keys is pressed, the volume on that channel is increased relative to the other by an increment of 0.2 on the display. As the balance is adjusted, one channel or the other is decreased alternately. This corresponds to a 0.1 dB change as the overall volume level (the sum of the two channels) remains constant within 0.1 dB. During balance adjustment, the display will change to the Balance Screen, as shown below, indicating the volume to 0.1 dB precision.



Inverting the Phase

The Wadia 521 Decoding Computer has the ability to invert absolute phase in the digital domain. Pressing the Phase Invert key on the remote control will cause the Wadia 521 Decoding Computer to invert phase; pressing it again will switch the phase back to normal. Whenever the Phase Invert key on the remote control is pressed, the display will change to the Status Screen, as shown below. The Status Screen indicates whether the current signal uses pre-emphasis and whether the phase is normal or inverted.



Changing Between Display Screens

During normal operation, the Wadia 521 Decoding Computer display will switch between the display screens to show information about which functions are being accessed. For example, the Balance Screen will be displayed if the balance keys on the remote control are pressed.

Pressing the Enter key will advance through the display screens in the following order:

- 1 Volume Screen
- 2 Brightly-illuminated Volume Screen
- 3 Balance Screen
- 4 Status Screen
- 5 Back to the Volume Screen

Turning Display On/Off

By pressing the Display On or Off key, the Wadia 521 Decoding Computer display can be turned off completely. Several of Wadia's transports will respond to the same key, allowing you to control both displays at the same time.

If the display is turned off, it will reappear for five seconds whenever a Wadia 521 Decoding Computer function key on the remote control is pressed.



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Mute Modes

The Wadia 521 Decoding Computer has two Mute Modes that are automatically engaged under different circumstances.

DSP-Software Mute

When the Mute key is pressed on the remote control, the Wadia 521 Decoding Computer's DSP engine transmits a stream of zero signal level samples to the DAC section, which results in zero output.

Output-Relay Mute

The Wadia 521 Decoding Computer has mute relay connected between the positive and negative outputs. When this relay is engaged, it connects the positive output to the negative output, reducing the output to zero. This relay, which produces an audible click when it engages or disengages, is not in the music signal path. The mute relay is engaged:

- When the Wadia 521 Decoding Computer detects AC input level below its minimum operating range
- Each time the Wadia 521 Decoding Computer is powered-up
- When the volume control is set to zero AND the Mute key on the remote control is pressed

When the Wadia 521 Decoding Computer is in either Mute Mode, the Volume Screen will indicate this by displaying the word, "MUTE."

Appendices

TroubleShooting: *Lock-up*

If the Wadia 521 Decoding Computer experiences a powerful static shock or sudden AC surge, it is possible to “lock-up” the computer circuitry. A locked-up computer may result in erratic display, no output, and no response to remote commands.

If your Wadia 521 Decoding Computer should lock-up, unplug the AC cord. Wait at least 30 seconds before re-plugging in the unit. If the unit still does not operate normally, contact your dealer.

Software License Agreement

IMPORTANT! THIS AGREEMENT SETS FORTH TERMS AND CONDITIONS FOR THE DigiMaster SOFTWARE.

The DigiMaster software is copyrighted and patented. It is the property of Wadia Digital.

Title to Licensed Software is not transferred to the customer. The customer is granted a nonexclusive license to use the Licensed Software only on this Wadia 521 Decoding Computer.

At Wadia’s sole discretion, Wadia may provide customer with updates of the Licensed Software. Wadia retains the right to provide the Licensed Software updates for a fee. The customer may refuse to accept such Licensed Software updates.

Environmental Care

Wadia makes every effort to be an environmentally conservative company. We appreciate it if our customers join our efforts. Please dispose of batteries in a manner that is environmentally responsible.



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Technical Specifications

Decoding Software	DigiMaster v2.5
Digital Processing Capability	1 - 24 Bits
Digital Resolution	21 Bits
Analog Outputs	One pair of Balanced (XLR); One pair of Unbalanced (RCA). Both can be used simultaneously
Digital Inputs	2 - Glass Fiber-Optic (ST), 1 - AES/EBU (XLR), 1 - SP/DIF (BNC), 1 - Plastic Optical (Toslink)
Output Impedance	51 ohms
Power Consumption	25 watts
Weight	25 lb. (55.1kg) Unit itself; 32 lb. (70.5kg) Shipping Weight
Dimensions	17" Wide, 16" Deep, 2.125" High (including spiked feet)

Safety Precautions

! IMPORTANT SAFETY PRECAUTIONS !



To get the best performance from your Wadia 521 Decoding Computer, and for your own safety, please read and follow these important safety instructions.

- 1 Before operating the Wadia 521 Decoding Computer please read all operating and safety instructions.
- 2 Never place the Wadia 521 Decoding Computer near heat sources such as radiators, fireplaces, stove, or other appliances that produce heat. Avoid placing the Wadia 521 Decoding Computer where it will be subject to direct sunlight or low temperatures.
- 3 This product is equipped with a three prong AC power cord which includes an earth ground connection. To prevent shock hazard, all three connectors must always be used. If your electrical outlets will not accept this type of plug, an adapter may be purchased. If an adapter is necessary, be sure it is an approved type and that it is used properly, supplying an earth ground. If you are not sure of the integrity of your home's electrical system, contact a licensed electrician for assistance.
- 4 AC extension cords are not recommended for use with this product. If an extension cord must be used, be sure it is an approved type and has sufficient current carrying capacity to power this product.
- 5 Before cleaning the Wadia 521 Decoding Computer, always disconnect the power supply cord. Use a soft cloth and, if necessary, dampen with plain water. Never apply water, or any other cleaner, directly to the chassis.
- 6 If you smell smoke, or an abnormal smell, immediately unplug the Wadia 521 Decoding Computer from the power supply and contact your Wadia dealer.
- 7 Unplug unit if it becomes wet.
- 8 Replace fuse only with the exact type originally included.
100 volt: (1) 1 amp Slo-Blo
120 volt: (1) 1 amp Slo-Blo
220 volt: (2) 1/2 amp Slo-Blo
240 volt: (2) 1/2 amp Slo-Blo
- 9 THERE ARE NO USER SERVICEABLE PARTS INSIDE THE WADIA 521 Decoding Computer!
 - Do not attempt to repair or modify your Wadia 521 Decoding Computer
 - All service should be performed by qualified service personnel
 - Do not open the unit while it is attached to the AC outlet

Wadia

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