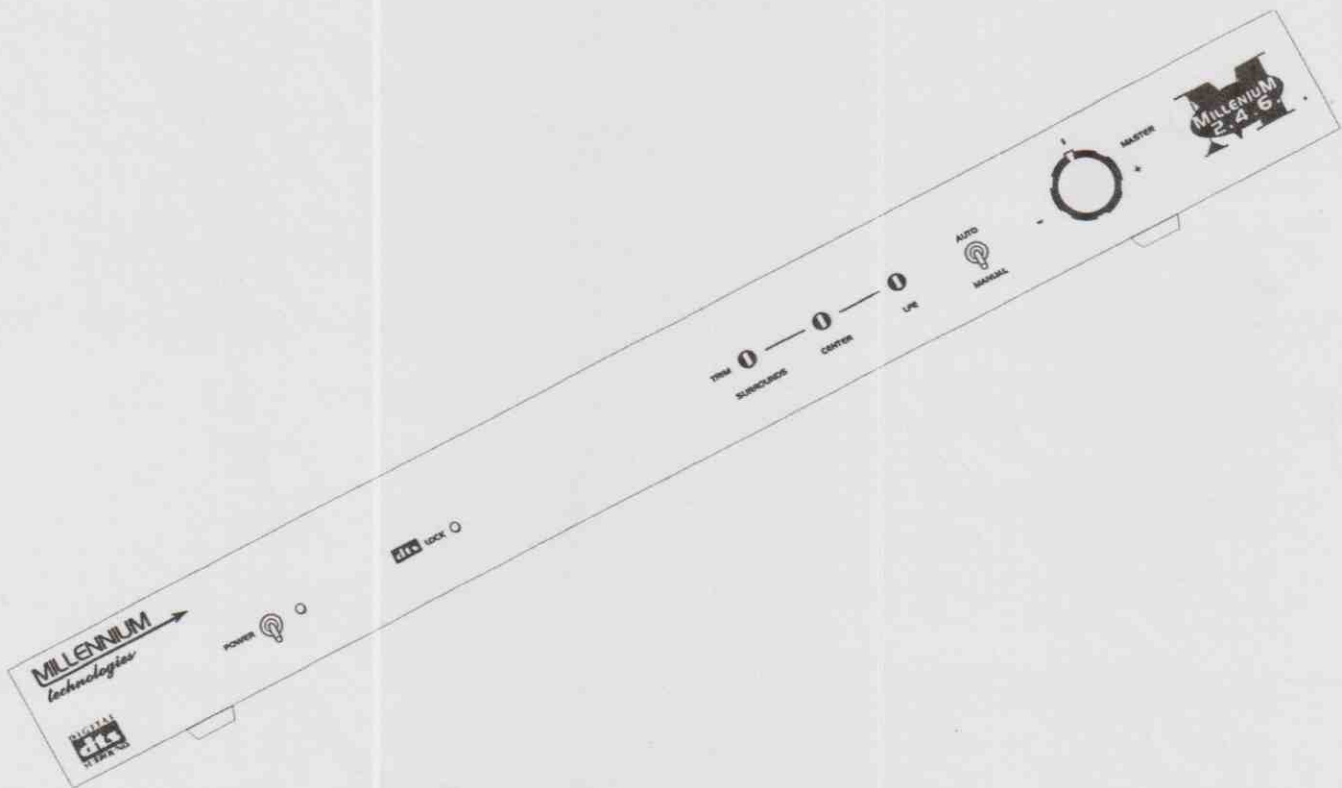


# Millennium 2.4.6 DTS Decoder/Preamp

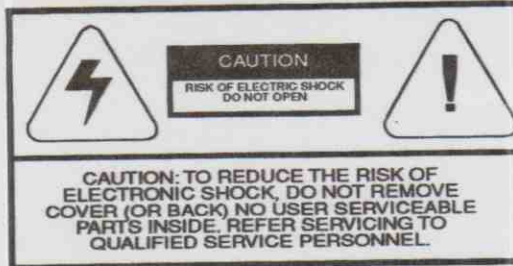
## *Operations Guide*



**Millennium Technologies**  
P.O. Box 8359  
Incline Village, NV 89452-8359

Phone: 760.771.5991

## SAFETY INSTRUCTIONS



TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. DO NOT OPERATE THIS UNIT WITH THE METAL CHASSIS COVER REMOVED.

1. To assure the finest performance, please read this manual carefully. Keep it in a safe place for future reference. It is important that you adhere to any warnings and follow all instructions as they pertain to the operation of this unit.
2. Install this unit in a cool, dry, clean place - away from windows, heat sources, sources of excessive vibration, dust, moisture and cold. Avoid sources of humming (transformers, motors). To prevent fire or electrical shock, do not expose the unit to rain and water.
3. This unit should be connected to a power supply only of the type described in the operating instructions or as marked on the unit. Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the unit.
4. It is recommended that the power cord of this unit be unplugged from the outlet when left unused for long periods of time.
5. Do not use force on switches, controls or connection wires. When moving the unit, first disconnect the power plug and the wires connected to other equipment. Never pull the wires themselves.
6. Care should be taken so that objects do not fall into and liquids are not spilled inside the unit.
7. This unit should be serviced by qualified service personnel when:
  - a. Objects have fallen, or liquid has been spilled into the unit; or
  - b. The unit has been exposed to rain; or
  - c. The unit does not appear to operate normally or exhibits a marked change in performance; or
  - d. The unit has been dropped, or the cabinet damaged.
8. The user should not attempt to service this unit beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.
9. Precautions should be taken so that the grounding or polarization is not defeated.
10. Do not attempt to clean the unit with chemical solvents; this might damage the finish. Use a clean, dry cloth.
11. Be sure to read the "TROUBLESHOOTING" section regarding common operating errors before concluding that the unit is faulty.

## TABLE OF CONTENTS

Introduction .....	4
What is DTS? .....	4
Loudspeakers, Location and Amplification .....	5
Features .....	6
Installation .....	6
Includes six hook-up diagrams	
Down Mix Configurations .....	13
Setting Levels .....	14
Manual Mode	
Auto Mode	
Playing DTS Encoded Source Material .....	16
Troubleshooting .....	17
Warranty .....	18
Block Diagram .....	19
Specifications .....	20



## INTRODUCTION

Thank you for your purchase of the Millennium 2.4.6, a sophisticated digital sound processor/preamp designed specifically for the reproduction of DTS encoded laserdiscs, compact discs and emerging DVDs.

The Millennium 2.4.6 DTS Decoder/Preamp is simple to use and easy to install in any type of existing home theater sound system. Balancing the individual channels only takes a few minutes. With the addition of the Millennium 2.4.6, you can enjoy the superior audio performance of DTS encoded 5.1 discrete digital 20 bit programs, a truly revolutionary new way to listen to movies and music. Employ the Millennium 2.4.6 as a system upgrade, or as a stand-alone DTS Decoder/Preamp- it's your choice.

**NOTE OF CAUTION:** When the Millennium 2.4.6 is inserted into a pre-existing system, rather than employed as a stand alone DTS Decoder/Preamp, you may notice an audible artifact prior to the moment that the Millennium detects and locks to the DTS data stream. This may manifest itself as a click or pop, but it is a brief instant of the raw DTS data stream that you actually hear. It is important for you to follow the instructions in the section "Setting Levels" and that you understand section "Playing DTS Encoded Material" thoroughly to insure proper performance and complete satisfaction of your Millennium 2.4.6.

## WHAT IS DTS?

DTS Digital Surround provides up to 6 discrete (separate) channels of high quality digital audio, resulting in exceptional clarity throughout a "true" 360° soundfield. DTS Digital Surround delivers up to 6-channels of transparent 20 bit audio at 44.1 kHz, resulting in a better than CD sound with high bit-rates and minimal digital compression. DTS represents the highest quality multi-channel audio possible within the compact disc, laserdisc and DVD audio standards.

Any laserdisc, compact disc or DVD player with a digital output connector, can interface with the Millennium 2.4.6 DTS preamp/decoder to deliver the 6 digitally encoded tracks to the appropriate amplifiers and loudspeakers.

In order to respect the "visions" of the artists/producers/engineers, the DTS format does not interfere with the creative process but fully embraces it by flawlessly reproducing the multi-channel masters as they were intended. Initially, the sensible approach for all artists will be to work within the 5.1 audio configurations already installed in millions of home environments.

Therefore, DTS envisions the following variations for pre-recorded software:

- 4.0 Music - Original 4-Channel Masters with unprecedented separation
- 4.1 Music - 4-Channel Masters with added Low Frequency Enhancement (L.F.E.)
- 5.0 Music- 5 full-range Channels, utilizing a center "fill"
- 5.1 Movies- Original 6-Channel motion-picture soundtracks
- 5.1 Music - New 5-Channel audio mixes with added L.F.E.

## LOUDSPEAKER, LOCATION & AMPLIFICATION

Since 5.1 channel discrete music surround programs are mixed with full frequency and dynamic range in all channels, including the surrounds (except, of course, the LFE .1 subwoofer channel), it is recommended that you employ a minimum of four matched loudspeakers (L & R Front; L & R Rear) in your listening environment. You might even consider the placement of these four primary loudspeakers as two identical sets of stereo loudspeakers, so that no matter which way you turn, 90° to the left or right, or 180° to the rear, you should be able to reproduce a satisfactory stereo soundstage between any pair of loudspeakers. Your center loudspeaker may be restricted in size due to space considerations, but it should at least match the timbre of your four mains. Further, you should consider recessing the center loudspeaker creating somewhat of an arc between the left and right front soundstage area. If the center loudspeaker is too dominant, either by volume or placement, your left-right frontal soundstage image will be negatively impacted.

For the serious listener, there is the optimum "sweet spot", which should mirror the vantage point of the recording/mix engineers position. It is equidistant from all five main loudspeakers, including the center. Other than this "preferred" vantage point, if the entire listening space is energized with a balanced mains loudspeaker system, than the phase and frequency coherence of the 5.1 channel surround program is maintained. You will be able to move around and never lose the sense of dimension or spatiality.

Placement for the subwoofer, may take some experimentation on your part. In many cases one sub will be satisfactory. However, space permitting, you might consider using two subwoofers in your system. Try using a pair of forward firing subs, placed equidistant between the L & R front loudspeaker. Or put one sub between the L & R front loudspeakers, and another sub, between the two rear loudspeakers. This is really a subjective call and the experts change their minds just about as often.

Amplification should be applied equally to all channels in order to complete the matching, balancing and positioning of your loudspeaker system. We do not recommend the use of dipole loudspeakers, as some suggest, to "diffuse" the surround image. The surround image is created by the mixing engineer, artist and /or producer when the program is recorded and mixed, not by loudspeaker design or placement.

By following these suggestions, you may be able to closely emulate the conditions present during the actual mix of the program. While motion picture soundtrack mixes may not conform exactly to the conditions we've noted here, music surround mixes that require a much higher degree of accuracy, phase and frequency coherence most certainly do.



## FEATURES

### *Stand alone DTS Decoder / Preamp*

Simply connect the Millennium's digital input to your disc player's digital output and you now have a stand alone DTS 20 bit 5.1 channel decoder with volume control.

### *In-line, 'pass-through' design*

The Millennium 2.4.6 can be inserted in-line between virtually any audio component where line-level analog audio is present. It may also stand alone as a DTS Decoder/ Preamp if DTS is the only 5.1 digital format you are decoding.

### *Automatic and Manual modes of operation*

When a volume controlled line-level source is used, the Millennium 2.4.6 has the ability to match its output volume to that of the analog source, and is controlled by the source.

### *Re-equalization*

The Millennium 2.4.6 contains a proprietary re-equalization curve which is optimized for clarity and smoothness from the 20-bit ultra-live and multi-dimensional DTS 5.1 channel digital audio format.

### *Down-mixing capability*

The Millennium 2.4.6 has the ability to down mix the surround, center, and/or sub audio into the main left and right channels, accommodating systems with two to six channels. However, it is recommended that to fully appreciate DTS 20 bit 5.1 channel digital surround programs, no down mixing options be engaged, by leaving switches 1-2-3 in their factory preset (up) position.

### *Automatic prioritized digital input selection*

If both coaxial and optical digital inputs on the Millennium 2.4.6 are simultaneously presented with digital data, at the user's option a configuration switch may favor one or the other automatically.

### *Individual trim adjustments*

There are three  $\pm 15$ dB trim adjustments ( center, sub and surrounds) for optimizing the balance of your loudspeakers relative to listening positions.

### *12V DC operation*

The Millennium 2.4.6 is supplied with a separate 12V DC power supply, to keep noisy AC lines away from the sensitive line-level signals. AC noise is kept near the wall outlet – where it belongs. 12V DC operation also readily allows use in an RV, vessel or automobile installation.

## INSTALLATION

Depending on the components currently in your sound system there are several possibilities for the proper installation of the Millennium 2.4.6. We've provided diagrams for the most common multi-channel system configurations on the following pages. If you encounter any problems with interfacing the Millennium 2.4.6 into your existing system please contact us at (888) 551- 6789.

# MANUAL MODE

## Stand Alone Installation with Two Sources

In this configuration the Millennium 2.4.6 is being used as both a DTS decoder and a preamp. This is particularly useful in dedicated DTS systems or where there are only two digital source devices. It does, however, require that one of those sources have an optical digital output and the other must have a coaxial digital output

