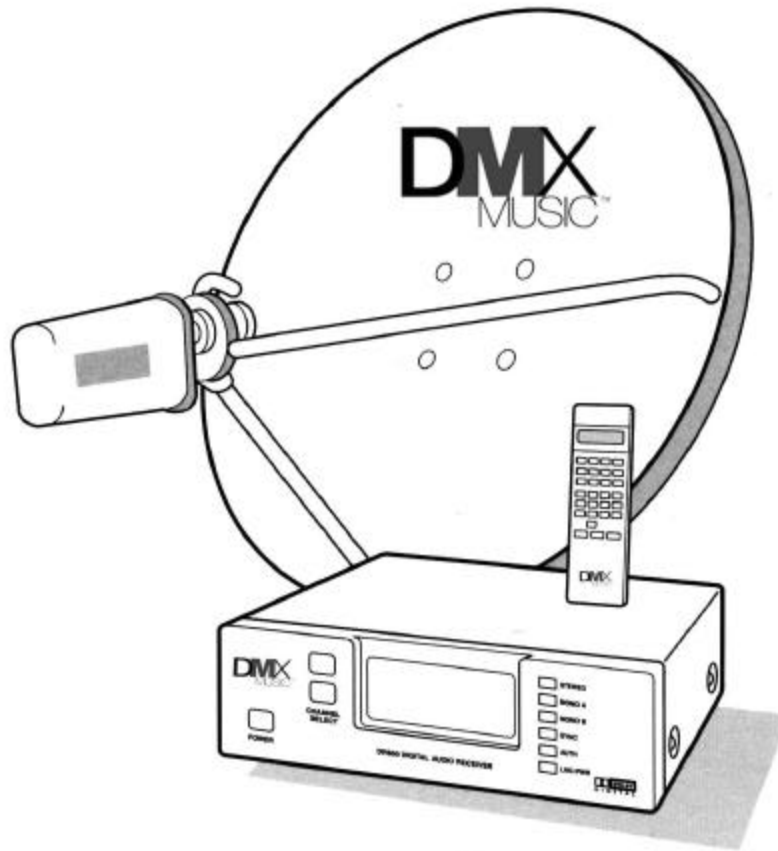




Digital Audio Satellite Receiver



DR500 User Guide



IMPORTANT SAFETY INSTRUCTIONS

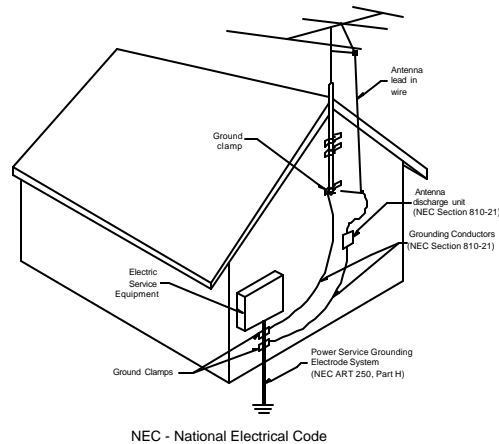
THIS IS AN ADDENDUM TO THE DR500 USERS GUIDE AS REQUIRED BY UNDERWRITERS LABORATORIES INC, PER UL 1492. Dated April 30, 1996

- ? Read Instructions – Read all Safety Instructions before operating equipment.
- ? Retain Instructions – Save these instructions for future reference.
- ? Heed Warnings – All warnings on the product and these instructions should be adhered to.
- ? Follow Instructions – All operating and use instructions should be followed.
- ? Cleaning – Unplugging this device from the power source or antenna may lose program data from the transmitting source. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- ? Attachments – Do not use attachments not recommended by the manufacturer as they may cause hazards.
- ? Water and Moisture – Do not use this product near water – for example near a bathtub, wash bowl, kitchen sink or a room where moisture is likely to occur.
- ? Accessories – Do not place on an unstable surface (cart table or tripod) where tipping is a possibility.
- ? Ventilation – Install unit in well ventilated area where self generated heat may escape. Book cases or cabinets should have proper venting to allow heat to escape.
- ? Power Sources – Use only with the wall mount transformer provided with the unit. If a replacement is necessary contact your dealer.
- ? Grounding and Polarization – The wall mount transformer is equipped with a polarized alternating line plug (one blade wider than the other. It will only fit the outlet one way, if it will not connect to the outlet turn it around and retry. If it still won't fit contact your electrician to replace your obsolete plug.
- ? Power Cord Protection – Route your power cords out of traffics way so as not to be walked on or traveled over by carts wheels. Do not place items on top of or against the cord so as to pinch the cord.
- ? Outdoor Antenna Grounding – The satellite dish and coaxial cable connecting to the unit must be properly grounded to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to a antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. (See figure 1)
- ? Power Lines – An outside antenna system should not be located in the vicinity of overhead power lines or electric light or power circuits., or where they can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
- ? Overloading – Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electrical shock.
- ? Object and Liquid Entry – Never push objects of any kind into this product through openings as they may short-out parts that could cause a fire. Never spill liquid of any kind on the product.



- ? Servicing – Do not attempt to service this product yourself, there are no customer serviceable parts inside. Refer all servicing to qualified service personnel.
- ? A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.
- ? Damage Requiring Service – Unplug this product from the wall outlet and refer servicing to a qualified service person under the following conditions:
 - a) When the power-supply cord or plug is damaged.
 - b) If liquid has been spilled, or objects have fallen into the product.
 - c) If product has been exposed to rain or water.
 - d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
 - e) If the product has been dropped or damaged in any, and
 - f) When the product exhibits a distinct change in performance – this indicates a need for service.
- ? Replacement Parts – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, shock, or other hazards.
- ? Safety Check – Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
- ? Heat – The product shall be situated away sources such as radiators, heat resistors, heat registers, stoves, or amplifier that produce heat.
- ? **“CAUTION: TO PREVENT ELECTRICAL SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT INSERT CAREFULLY.”**

Figure 1
Example of antenna grounding as per
National Electrical Code, ANSI/NPFA 70



NOTICE

This publication (PN 9000-2423-7006 Rev B) and its contents are proprietary to DMX and are intended solely for the contractual use of its customers for no other purpose than to operate the equipment described herein. This publication and its contents shall not be used or distributed for any other purpose and/or otherwise communicated, disclosed, or reproduced, in any way whatsoever, without the prior written consent of DMX.

For the proper operation of this equipment and/or all parts thereof, the instructions in this guide must be strictly and explicitly followed by experienced personnel. All of the contents of this guide must be fully read and understood prior to operating any of the equipment, or parts thereof. **FAILURE TO COMPLETELY READ AND FULLY UNDERSTAND AND FOLLOW ALL OF THE CONTENTS OF THIS GUIDE PRIOR TO OPERATING THIS EQUIPMENT, OR PARTS THEREOF, MAY RESULT IN DAMAGE TO THE EQUIPMENT, OR PARTS THEREOF, AND TO ANY PERSONS PERSONS INSTALLING AND/OR OPERATING THE SAME.**

DMX does not assume any liability arising out of the application or use of any products, component parts, circuits, software, or firmware described herein. DMX further does not convey any license under its patent, trademark, copy right, or common-law rights nor the similar rights of others. DMX further reserves the right to make any changes in any products, or parts thereof, describe herein without notice.

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance that interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antennae.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Any changes or modifications not expressly approved by DMX could void the user's authority to operate the equipment.

'Dolby' and the 'Dolby D' symbol are trademarks of Dolby Laboratories Licensing Corporation. AC-3 digital audition system manufactured under license from Dolby Laboratories Licensing Corporation.

WARNING

Shock Hazard!

**Do Not Open The DR500 Equipment!
Service Only By DMX!**

The DR500 contains no user-serviceable parts. Do not attempt to service this product yourself. Any attempt to do so will negate any and all warranties.

To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: To Reduce The Risk Of Electric Shock,
Do Not Remove Cover (Or Back).

No User-Serviceable Parts Inside.
Refer Servicing To Qualified Service Personnel.

Précautions: Pour éviter toute décharge électrique, ne pas enlever le couvercle,
Les pièces à l'intérieur ne sont pas réparables.
Faire appel uniquement à un personnel qualifié.



This symbol 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.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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Introduction

Welcome to the world of premier digital audio service provided by DMX MUSIC. This guide is your handbook for using the DR500 Digital Audio Satellite Receiver and the DMR and DMR-28 DMX MUSIC/DJ remote control units.

The sections in this guide provide step-by-step instructions for a variety of tasks and activities, including DR500 system connections, channel scanning and selection, setting forced tune times and dynamic ranges, and instantaneous viewing of programming information.

These exciting options, combined with up to 120 available channels delivering commercial-free, CD-quality music, provide you with:

- Variety to select music formats that meet your individual business image and needs
- Flexibility to create tailored music programs for multiple environments, which you can vary by the hour, day, week, or season
- Ability to maintain complete local control over your music

Important Information

- Throughout this guide you will find two symbols designed to help you identify important information. These symbols are:

The note identifies information for the proper operation of your equipment, including helpful hints, shortcuts, or important reminders.



The exclamation point identifies information that requires careful attention in order to prevent equipment damage and/or injury to the operator.

Getting Started

Before you begin using the DR500 Receiver, you need to:

- Install the DMX MUSIC/DBS receiver and equipment, which is generally done by your local DMX MUSIC affiliate or a professional installer.

If your DMX MUSIC/DBS receiver and equipment have not been installed, refer to *Section 2: Installation*.

- Read the appropriate sections of this User Guide as noted below.



Do not plug in the DR500 Receiver until you have connected the system and read *Section 3: Basic Operations*.

If you are new to satellite communications or are unfamiliar with either the DR500 or the remote control, you should read the following sections before unpacking or operating this product:

- Section 1 for an overview of the DMX MUSIC/DBS system and equipment
- Section 2 helps you get started and contains a full set of DR500 connection procedures
- Section 3 for DR500 start-up and basic operations
- Section 5 to review maintenance procedures or if you encounter difficulties and need troubleshooting information
- Other sections as needed

If you are an experienced user familiar with the DR500 and its remote control, you may wish to review the following sections before unpacking or operating this product:

- Section 1 for an overview of the DMX MUSIC/DBS system and equipment
- Section 3 for DR500 start-up and to review basic operations
- Section 4 for advanced operations
- Appendix E to use the *DR500 Reference Sheet*
- Other sections as needed

Section 1

System Overview and Component Descriptions

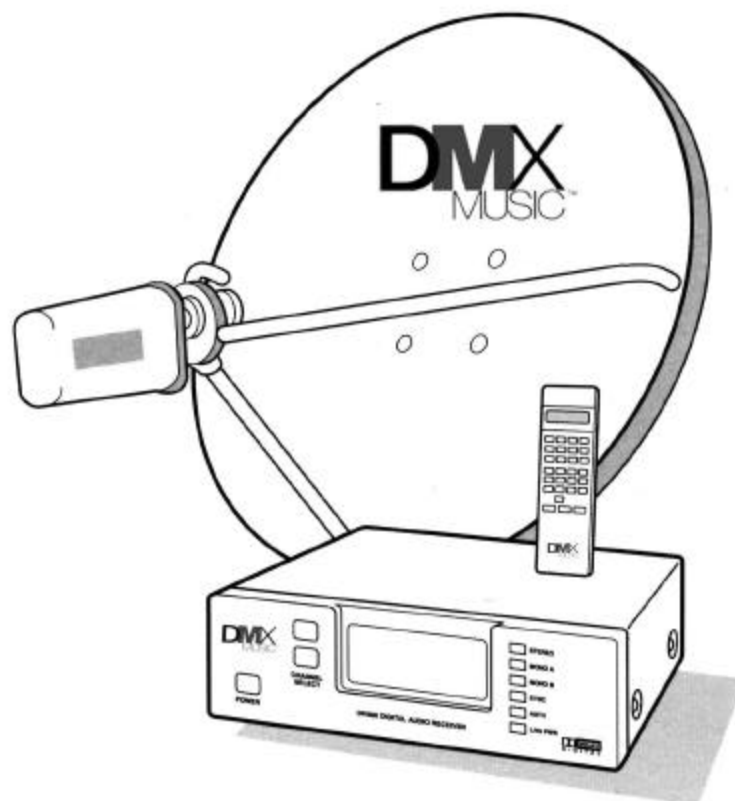
Thank you for subscribing to DMX MUSIC! This section describes the Direct Broadcast Satellite (DBS) receiver and equipment that are used to deliver the best in CDquality music. The equipment includes:

- Satellite dish receiving antenna, low noise block (LNB) amplifier, and connecting cable
- Digital

Audio Satellite
Receiver, Model
DR500

- Remote control
device, Model DMR-
22 or Model

DMR28 DMX
MUSIC/DJ



System Features

The DR500 DBS Satellite Receiver is a digital audio stereo decoder which easily integrates with most stereo or monaural amplifier systems.

Key system features include:

- Full CD quality 20 kHz stereo
- 120 stereo pairs available on one transponder
- Dolby Digital compression
- Storecasting and datacasting capabilities
- User and network programmable forced tune events (dayparting)
- Exclusive DMX MUSIC/DJ IR remote provides artist, album, and title information
- Multi-zone expansion capabilities
- Utilizes a small, one-meter satellite dish in most CONUS locations
- Digital audio output, Sony/Philips Digital Interface Format (SPDIF)

To fully appreciate the DMX MUSIC/DBS service, you must have a separate stereo system that can be connected to the DR500. (For information on connecting the system, refer to “Connecting the DR500 to the Audio System” found in *Section 2: Installation and Connections*.)

What is DMX MUSIC?



DMX Music is driving the future with comprehensive audio and communication services. The service features the industry's largest selection of music, over 100 styles, commercial free, 24/7. DMX Music designs and installs custom audio and video systems for the highest quality audio experience and offers a wide-range of communication services to help manage your business. All delivered by leading-edge technology and supported by a nationwide service network.

To provide you with this unparalleled digital sound service, DMX MUSIC uses the latest satellite technology to deliver DMX MUSIC/Direct Broadcast Satellite (DBS) music to your location.

DBS System Overview

Although the use of satellites, satellite dishes, and receivers may seem complex, the DMX MUSIC/DBS service uses a highly sophisticated system that makes channel selection and local music programming easier and simpler than using a VCR. It also allows DMX MUSIC to deliver music of unprecedented linearity, sonic precision, and exceptional fidelity.

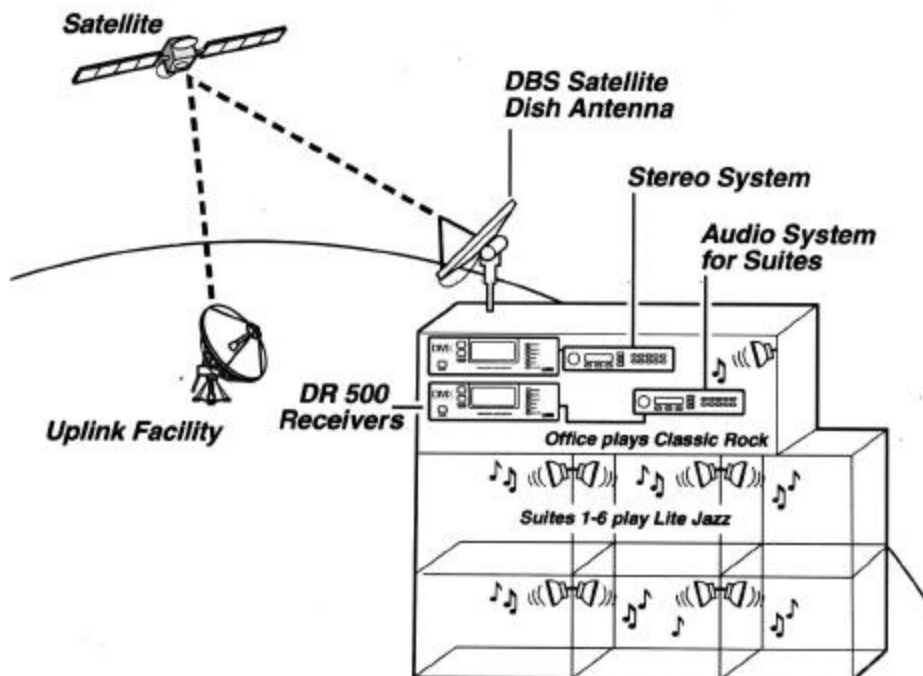
The DMX MUSIC/DBS premiere digital audio service uses the following satellite technology:



- Satellite Uplink Facility — transmits music programming to the satellite through satellite dishes.
- Satellite — relays the music programming signals to your satellite dish antenna.
- DBS Satellite Dish Antenna — receives the music programming transmitted from the satellite and relays it to the DR500 Receiver. Your satellite dish can be as small as one meter and may be installed in various places on or around your location. The only constraint is that the satellite dish must be properly pointed at the satellite with no obstacles blocking the satellite signal.



Once the DMX MUSIC music programming is received at your location, your DR500 Receiver and associated audio components take over.



- DR500 Digital Audio Satellite Receiver — receives and decodes the digital audio programming information and sends it to your stereo amplifier system

Additional DR500 receivers provide you with additional flexibility to create tailored music programs for multiple business environments that you can vary by the hour. Additional units can be integrated into your system at any time.

- Remote Control device — allows you to control and program the DR500 Receiver and DBS system

There are two available remote control devices: the DMR-22, which is a basic remote control device, and the DMR-28 DMX MUSIC/DJ, which provides additional programming information and functionality.

DR500 System Components

The DR500 Digital Audio Satellite Receiver is a digital audio stereo decoder that easily integrates with most stereo or monaural amplifier systems.

DR500 Digital Audio Satellite Receiver

The DR500 is the master receiver that connects to the satellite dish and your stereo or monaural amplifier system.

DR500 Front Panel

The front panel of the DR500 is used to turn the DR500 on and off and manually select music channels. The front panel consists of:

- Power selector — turns the DR500 on and off



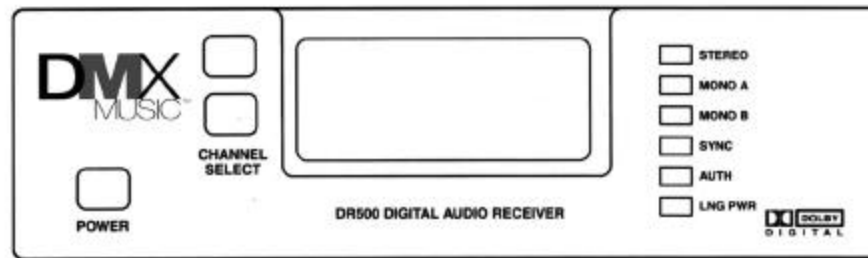
When the DR500 is Off, a decimal point illuminates on the front panel, indicating that the DR500 is able to receive any information from the DMX MUSIC/DBS National Authorization Control Center.

- Music channel selectors — allow you to tune to the next higher ? or lower ? channel.

If remote channel selection is preferred, use either the DMR-22 or DMR28 DMX MUSIC/DJ Remote Controls.

- Front panel display — shows the current channel selection as well as other DR500 information.

- Stereo/Mono A/Mono B indicators - illuminates green to indicate either a stereo channel, or one of two mono subchannels.
- Sync indicator æ illuminates green when the DR500 Receiver has locked onto the satellite.
- Authorized indicator — illuminates green when you are authorized to receive the current channel.
- LNB PWR — illuminates green to indicate LNB power is enabled. No illumination indicates LNB power is disabled. Blinking indicates a problem with the LNB power supply. (For more information, refer to *Section 5: Maintenance and Troubleshooting*).

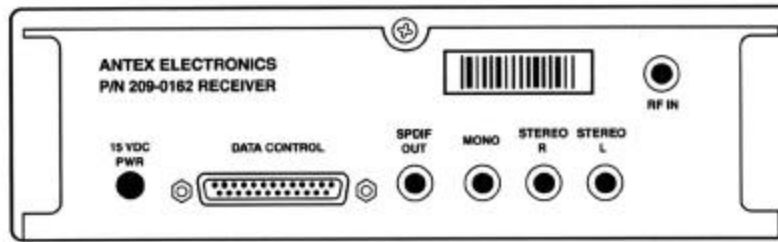


DR500 Back Panel

The back panel of the DR500 has a variety of connectors that are used to link the satellite dish to the DR500 and your audio system to the DR500. The back panel consists of:

- Power Input — attaches the DR500 to a 15 VDC wall mount supply.
- RF IN connector — attaches the DR500 Receiver to your local satellite dish.
- Mono Out connector — attaches the DR500 to a monaural receiver or amplifier.
- Stereo Out connectors — attaches the DR500 to a stereo receiver or amplifier. Left is coded white; right is coded red.
- Digital Out connector (standard Sony/Philips Digital Interface Format [SPDIF] coaxial output; coded black) — attaches the DR500 to a digital input of audio equipment that has a coaxial digital input.
- Data/Control connector — for PC control and diagnostics.

- Serial ID number/bar code label — lists the serial number for this unit.

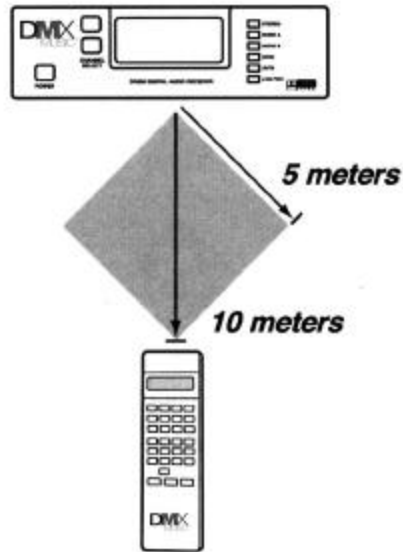


DMR Remote Control Units

To select music channels remotely, you can use either the DMR-22 or DMR28 DMX MUSIC/DJ remote control units. Both remote control models have the following features:]

- Individual channel selection keys that allow you to move through the authorized channels one channel at a time either up or down.
- Preset channel selection key that allows you to enter special music programming information.
- Scan key that allows you to step through each authorized channel, each playing for five seconds.
- Mute function that allows you to turn the audio on and off.
- Last channel recall function that allows you to return to the previously selected channel.

To use either remote control unit, point it toward your DR500 Receiver and press the appropriate keys. The remote control units can be used at distances of up to 10 meters (32 feet) while you are directly in front of and in a straight line to the DR500 Receiver.



Communication between the remote control and DR500 will be impaired if there are obstructions blocking the transmission or if the remote control is not directed straight at the DR500. If the remote control fails to operate, refer to *Section 5: Maintenance and Troubleshooting*.

DMR-22 Remote Control

The DMR-22 remote control unit is described below.

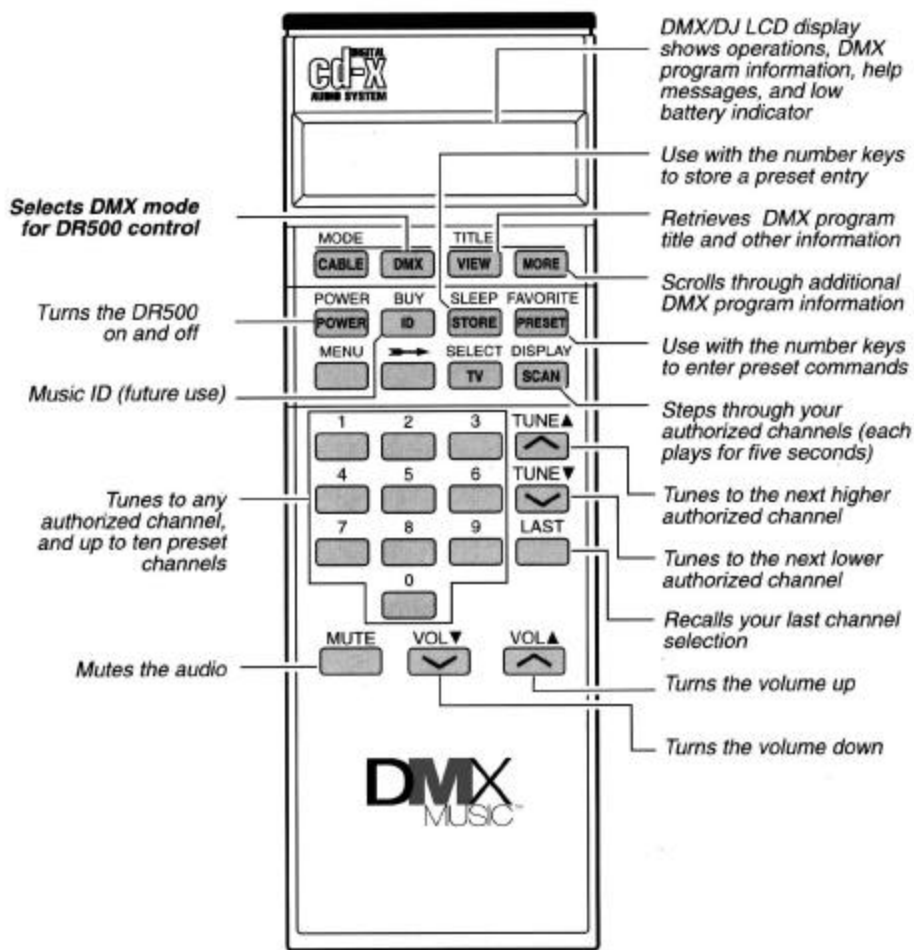
Only the keys indicated operate the DR500 Receiver. The other remote control keys have no DR500-associated functions.


DMR28 DMX MUSIC/DJ Remote Control

In addition to the basic features, the DMX MUSIC/DJ provides instant viewing of the following information for each music selection:


- Title
- Album
- Composer
- Artist
- Record label
- Album ID number

The DMX MUSIC/DJ also displays DR500 operation information, help messages, and low battery indication. The DMX MUSIC/DJ remote control is described below.




 The DMX MUSIC/DJ **must** be in DMX MUSIC mode (press the DMX key) to enter commands and operate the DR500 Receiver. When the DMX MUSIC/DJ is in DMX MUSIC mode, DMX appears in the remote's display.

The volume control keys on the remote control may be inactive of. To make these keys active, press **PRESET 975**.

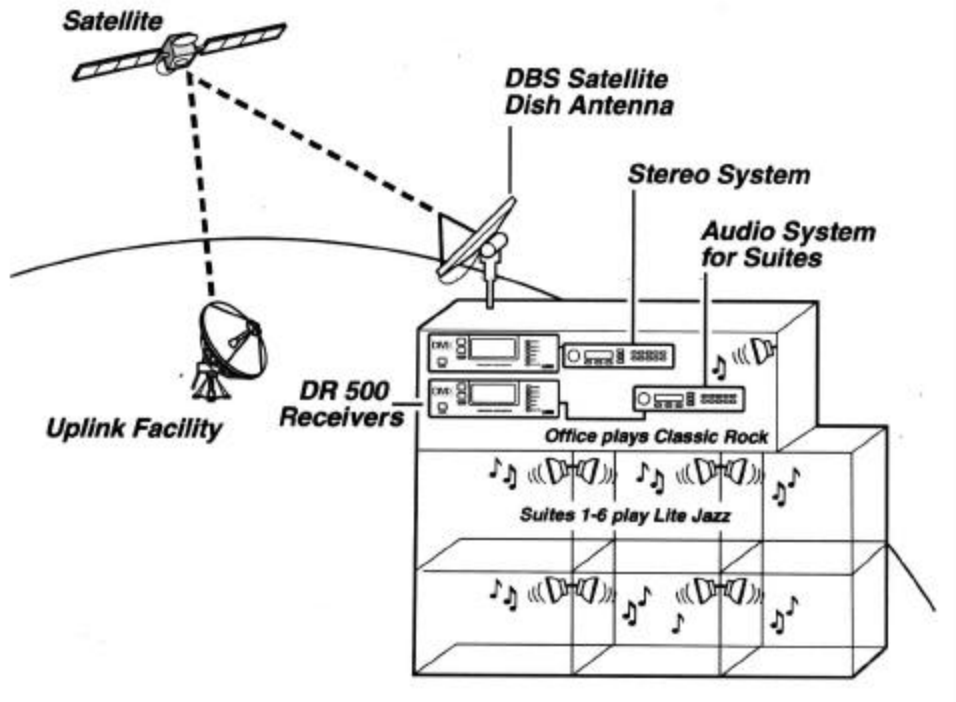

 Only keys indicated operate the DR500. Other keys have no DR500-associated functions.

Additional DR500 Receivers

Additional DR500 receivers can be added to your system at any time. Each receiver allows you to select and play one different DMX MUSIC music channel on a separate audio system. This provides additional stereo music channels to cover other locations or zones.



Two or more DR500 Receivers may be connected to one antenna provide different music channels via separate audio systems. For additional information regarding the connection of multiple receivers to one antenna, refer to Section 2.



Section 2

Installation and Connections

This section helps you set up and connect your DR500 system. It

provides:

- DR500 shipment checklist
- Tips on selecting the best location for your system
- Step-by-step instructions for connecting the DR500 Receiver to your audio system
- Antenna installations and alignment instructions

Before You Begin

Before you begin using your DR500, it is assumed that the DMX MUSIC/DBS receiving equipment has been professionally installed, which includes:

- Setting up the satellite dish and its LNB, correctly positioning the dish so that it is pointed at the satellite, and connecting it to the DR500 Receiver (Additional information in this chapter.)
- Placing batteries in the remote control unit to allow remote control operation



DR500 Shipment Checklist

The DR500 and its components are shipped in custom-designed, reinforced cardboard cartons. To ensure that the system is protected

during opening, use a cutting tool that extends less than 1/2 inch into the carton.

Keep the carton and original packaging to return a unit for repair, in the unlikely event of a failure.

After the carton is opened, carefully remove the DR500 and all system components and check the following items:

? Visually inspect the system to ensure that no physical damage has occurred during shipping.

Verify that all standard items were received. Standard items include:



- One DR500 Digital Audio Satellite Receiver



- One Wall Mount Power Supply

- DJ Infrared Remote Control



- This User Guide

Choosing a Good Location

There are a few items to consider when selecting a location for your DR500 Receiver. Observe the following Safety Precautions:



Safety Precautions

FOLLOW STARTUP PROCEDURES

Do not plug in the DR500 Receiver until you have connected the system and read *Section 3: Basic Operations*.

PROVIDE A SAFE LOCATION

Place the DR500 on a stable surface of sufficient size and strength, where it will not be jarred, hit, or pushed off its surface. Ensure that all cables and cords are out of the way and will not be tripped over, as this could cause personal injury or serious damage to the DR500.

AVOID WATER AND MOISTURE

Do not expose the DR500 to any liquids, which are often found in flower vases, coffee cups, rain from open windows, etc. If the DR500 is exposed to any liquid, contact your DMX MUSIC affiliate, as serious damage could occur to the DR500 or its components.

AVOID HUMIDITY, WIND, AND DUST

To avoid internal damage, the DR500 should be placed away from all heat sources, including radiators, heater ducts, etc., out of direct sunlight, and away from high humidity, excessive dust, or mechanical vibrations that can cause damage to internal parts.

PROVIDE ADEQUATE VENTILATION

To avoid overheating, place the DR500 on a smooth, hard surface that has 2" of clearance around the unit and adequate air circulation. If the DR500 is placed in a closed area, such as a bookcase or rack, ensure that proper ventilation is provided.

Never place the DR500 on a soft surface, such as a rug, sofa, or bed, that would obstruct the required air flow into the DR500 ventilation slots.

USE CORRECT POWER SOURCE

Operate the wall mount power supply for the DR500 from a 120 V, 60 Hz outlet only. Take care not to overload wall outlets or extension cords, as this increases the risk of fire or electrical shock.

ROUTE POWER CORDS SAFELY

Route power cords so they are not walked on or pinched. Pay particular attention to cords and connections at the plugs, receptacles (such as power strips), and the point where they exit from the DR500 and attach to other equipment. Do not place any items on or against power cords.

USED APPROVED ATTACHMENTS ONLY

Use only DMX MUSIC-approved attachments with the DR500 Receiver.

Connecting the DR500 to Your Audio System

If your DR500 system has not been professionally installed, if you have disconnected your DR500 Receiver, or if you are adding a component, refer to the following steps and diagrams to help you connect your system.

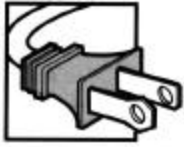
If you have questions or need assistance connecting any components to your DR500, please contact your DMX MUSIC affiliate.

To connect multiple DR500 Receivers to one antenna, refer to the appropriate section later in this chapter.

Connection Guidelines

It is important that you follow these guidelines when making any DR500 system connection:

- Do not plug the Receiver into an AC outlet until all connections have been made and you have read the Startup procedures in *Section 3: Getting Started and Basic Operations*.
- Turn the audio system amplifier OFF and the volume completely down.

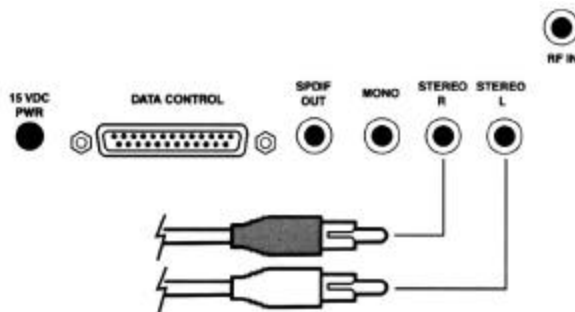


- Connections should be finger-tight only; never use pliers or a wrench.
- The DR500 Receiver wall mount power supply is polarized, and only one orientation on the wall or power strip is acceptable.
- The DR500 Receiver should not be plugged into an AC socket like those found on the rear of audio amplifiers.
- Once the DR500 is connected, turned on, and receiving the satellite signal, it should remain plugged in to an unswitched AC outlet so that it can receive any programming updates, authorization commands, and information from the DMX MUSIC/DBS National Authorization Control Center.

If the DR500 will not be used for extended periods of time, it should be turned off using the front panel power switch only. It should not be unplugged nor have its AC power turned off.

Connecting the DR500 to Your Stereo System

To connect the DR500 to a stereo system, refer to the figure below and the following instructions.



1. Make sure the stereo amplifier is OFF and the volume is turned completely down.
2. Connect the RCA stereo cables to the L(ef) and R(ight) STEREO jacks on the back of the DR500.
3. Connect the other end of the RCA cables to any high-level input on your stereo equipment EXCEPT the phonograph input.

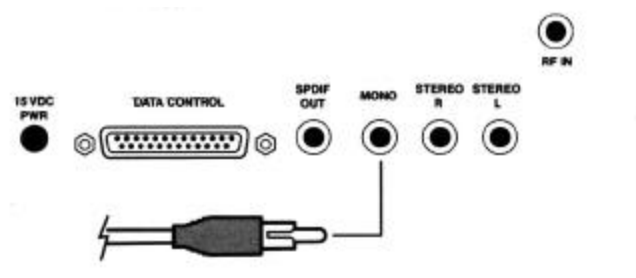
Remember to match left and right channels.

Do not connect the RCA cables from the DR500 to the PHONO input of audio equipment. Any line level input such as AUX, CD, DAT, TAPE, VIDEO, or VCR can be used for the DR500 output.

4. Plug the DR500 into an AC outlet.
5. Continue on to *Section 3: Getting Started and Basic Operations*.

Connecting the DR500 to Your Monaural System

To connect the DR500 to a monaural system, refer to the figure below and the following instructions.



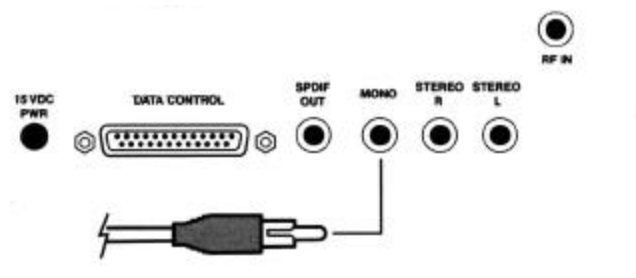
1. Make sure the monaural amplifier is OFF and the volume is turned completely down.
 2. Connect an RCA cable to the MONO jack on the back of the DR500.
- ✍ Connect the other end of the RCA cable to any available input on the monaural equipment EXCEPT the phonograph input.

Do not connect the RCA cables from the DR500 to the PHONO input of audio equipment. Any line level input such as AUX, CD, DAT, TAPE, VIDEO, or VCR can be used for the DR500 output.

4. Plug the DR500 into an AC outlet.
5. Continue on to *Section 3: Basic Operations*.

If the Audio Equipment Has a Direct Digital Coaxial Input

To connect the DR500 to audio equipment with direct digital input, refer to the figure below and the following instructions.



Connect a shielded RCA cable (not provided) from the DIGITAL OUT connector on the DR500 to the coaxial DIGITAL INPUT connector on the audio equipment. (See your stereo manual for specific requirements.) The default output format is uncompressed PCM; it may optionally be configured as Dolby Digital. Contact your DMX MUSIC Affiliate to reconfigure the S/PDIF output as Dolby Digital.

Antenna Installation and Alignment

It is recommended that the Satellite dish antenna be installed by your local DMX MUSIC Affiliate. It is imperative that the dish be securely and safely mounted, and pointed accurately at the Satellite. Brief instructions are presented here for completeness.

Satellite Dish Installer: Ground the RF input cable to the building grounding system as close as possible to the point of building entry. Refer to the National Electric Code (NEC) Article 820-40.

The following steps describe the process to properly set up, position, and connect the antenna using the DR500 Receiver:

1. Determine the proper block converter and feed horn polarity adjustment for your area.
2. Assemble the satellite dish antenna.
3. Locate the antenna in an area with an unobstructed line of sight to the satellite coordinates (azimuth and elevation) for your area.
For information relating to satellite location and coordinates, antenna alignment, and signal acquisition, contact your DMX MUSIC affiliate.

4. Pre-position the antenna to the correct azimuth and elevation coordinates by using a compass and inclinometer.
5. Pre-position the LNB to the indicated polarity setting.
6. Locate the DR500 Receiver within visual range of the antenna.
7. Connect a 75 ohm coaxial cable (RG-6, typical) from the output of the LNB to the Receiver RF IN connector.
8. Connect 120 VAC to 15VDC power adapter to the DR500 Receiver – do not turn it on. (Or suitable alternate power source)

Improvise a temporary sun shade over the DR500 front panel as the LED displays may be difficult to read in direct sunlight.

9. Place the receiver in signal strength mode by depressing channel up and channel down buttons simultaneously while the power is off. Alternatively, this may be done with the remote control using Preset 180. The display reads **nL**, signifying it is not locked.

- **AUTH** LED is Off unless the receiver is already authorized
- **SYNC** LED is Off and remains so until the satellite is acquired

The signal strength level numbers are preceded by a minus sign (-) to differentiate them from a music channel number. Signal Quality readings vary from -00 (the strongest level) to approximately -80 (weakest level) before losing the satellite lock **nL**.

Rock the dish slowly from side to side and up/down around the nominal position. When the Satellite has been located, the display will read out a negative number representing signal strength and the Sync light will illuminate. Carefully move the dish to maximize signal, at which time the readout will be the least negative (closest to zero). Tighten the bolts and check that signal strength has not been disturbed by tightening the bolts.

Connecting Multiple Receivers to One Antenna

Multiple DR500 Receivers can be connected to one antenna. However, to avoid damage to either the antenna LNB and DR500 Receiver, the following items must be used:

- Correct splitter(s)
- Proper line amplifiers

Line amplifiers may be required when using a signal splitter and/or when long coaxial cable runs are required from antenna to receiver. All splitters and line amplifiers should be rated for satellite IF processing with a minimum bandwidth of 950 MHz to 1750 MHz.

Since power is delivered to the LNB and line amplifier by the DR500 Receiver (18 VDC via RF IN connector), splitters should have one DC power passing port. All other ports must block DC or have equivalent circuitry that only permits one of the DR500 Receivers to power the LNB. **Never** connect via power passing splitters. Additionally, the receivers not delivering power to the LNB should have their LNB power output switched OFF using Preset 160. Failure to do so may result in severe damage to the antenna LNB and the DR500 Receivers.

The line amplifier should be inserted at the antenna LNB for cable runs in excess of 150 feet. For extra long cable runs over 500 feet it may be necessary to power the LNB with an amplifier/LNB supply within 100 feet of the LNB.

Recommended Equipment

The following equipment is recommended when multiple receivers are connected to one antenna:

- High frequency splitters
 - QINTAR HFS-2 and HFS-4. Two and four port splitters that pass power from one port.
 - QINTAR HFS-2WB and HFS-4WB. Two and four port 5 to 2050 MHz wide band splitters with a built in zener diode circuit to protect DC return back to the DR500 Receiver. These splitters can be used in installations requiring power passing to only one port.
- In-line satellite amplifier
 - QINTAR LA-2050. This line amplifier has a bandwidth of 10 to 2050 MHz. It is typically powered by the DR500 Receiver

18 VDC power.

- Coaxial Cable
 - Always use a high quality RG-6 or RG11 cable to minimize antenna signal loss and amplifier requirements.

Section 3

Getting Started and Basic Operations

The DR500 has many features that you can use to customize your DMX MUSIC program. These exciting and easy-to-use features, combined with up to 120 available channels delivering commercial-free, CD-quality music, allow you to design and implement a music program that meets your individual needs.

Section Topics

This section describes the basic functions and operation of the DR500 and remote control. Basic functions include:

- Starting up the DR500
- Turning the DR500 ON and OFF
- Basic operational information
- Correcting errors
- Checking the clock
- Setting and muting the volume
- Selecting, recalling, and scanning channels
- DMX MUSIC/DJ functions

Advanced functions are presented in Section 4 and include:

- Forced tune programming — a channel is automatically selected and played at a specific time
- Adding and deleting authorized channels
- Setting the dynamic range of a particular channel

Many of these features can be programmed and controlled by the DMX MUSIC/DBS National Authorization Control Center. When you turn on your DR500 and call for authorization, ask your DMX MUSIC affiliate about this service. For information on obtaining DMX MUSIC authorization, call 1 (800) 700-4412.

Starting up the DR500

After all DBS installation procedures have been performed and all connections have been made between the DR500, satellite dish, and the stereo unit, you are ready to begin the startup procedures.

1. Plug the DR500 into an active (on) AC power source. The power source light (a small green LED light) appears on the front display indicating the DR500 is receiving power and able to receive any programming updates, authorization commands, or information from the DMX MUSIC/DBS National Authorization Control Center.

2. Turn on the DR500. After a 10- to 15-second delay, the following occurs:

- DR500 tunes to a channel
- The authorized indicator is off (not lit), denoting that you are unauthorized to receive any channels
- The sync indicator is lit, denoting that the satellite dish antenna is correctly set up and receiving the satellite signal
- The channel flashes on the front panel display (indicating mute)
- There is no audio

3. Call the DMX MUSIC/DBS National Authorization Control Center at 1 (800) 700-4412 and inform them that you are ready to receive your service. They will send you all authorized channels.

4. Tune to an authorized channel. When the DR500 receives the satellite signal, the following occurs:

- The authorized indicator is lit green
- Music begins playing

Once the DR500 is connected, turned on, and receiving the satellite signal, it should remain plugged in to an unswitched (on) AC outlet so that it can receive any programming updates, authorization commands, or information from the DMX MUSIC/DBS National Authorization Control Center.

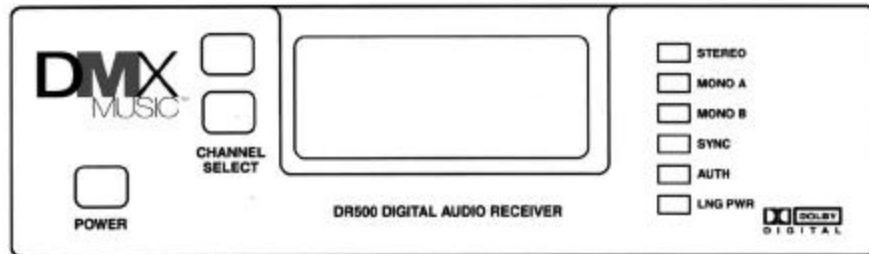
If the DR500 will not be used for extended periods of time, it should be turned off using the front panel power switch only. It should not be unplugged nor have its AC power turned OFF.

It is recommended that you do not plug the DR500 into a switched AC outlet found on an audio amplifier as the AC power will be terminated when the amplifier is turned off.

Turning the DR500 ON and OFF

To turn the DR500 ON, press the power selector once on either the DR500 front panel or remote control. The front panel displays the selected channel.

To turn the DR500 OFF, press the power selector once on either the DR500 front panel or remote control. A small green decimal point light will appear on the front panel indicating that the DR500 is off but is still plugged in to an unswitched (on) AC outlet and able to receive any programming updates, authorization commands, or information from the DMX MUSIC/DBS National Authorization Control Center.



Basic Operational Information

The DR500's normal mode is to display the currently tuned channel while waiting for input from the front panel or remote control.

Many of the DR500 advanced features are selected by pressing the **PRESET** key followed immediately by your numeric selection. For a listing of all preset commands, refer to the *DR500 Reference Sheet*.

Generally, DR500 functions have a 5- to 10-second wait time, or *time out*. If no keys are pressed during the time out, the DR500 returns to its normal mode of operation. For example, there is a 10-second wait time from pressing **PRESET** to entering your numeric selection. If no input is received within 10 seconds, the DR500 returns to its normal mode of operation with the current channel displayed on its front panel.

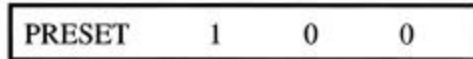
Most DR500 selections that are made using the remote control keys can also be made using the front panel **TUNE ?** and **TUNE ?** buttons. The front panel buttons cycle through each available option. For example, you can select a channel or input a dynamic range using either the remote control or the front panel **TUNE ?** and **TUNE ?** buttons.

Correcting Errors

Sometimes you may make an error when entering data. If this occurs, you can start over after waiting for the command to timeout as indicated by the display returning to channel indication. Alternatively, changing channel with the up/down keys will terminate any command immediately.

Checking the Clock

Once the DR500 clock has been initialized by the DMX MUSIC/DBS National Authorization Control Center and settings have been stored, the clock setting can be checked. Press:



PRESET 1 0 0

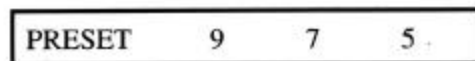
The front panel displays a flashing two-digit number that is the current hour in 24-hour mode. The time displays for approximately five seconds and then automatically displays the current channel.

If the DR500 clock has not been initialized by the Control Center, the front panel displays 99.

Setting the Volume

You control the volume of the DMX MUSIC music through your stereo system and the volume control keys located on the remote control.

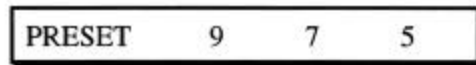
The volume control keys on the remote control may be off or deactivated. To turn these keys on, press:



PRESET 9 7 5

The DR500 front panel displays **On** indicating the volume control keys are ready for use. Then use the **VOL ?** key to turn the volume up and the **VOL ?** key to turn the volume down.

To turn the remote control volume keys off, press:

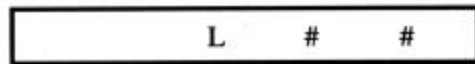


PRESET 9 7 5

The DR500 front panel displays **OFF** indicating the volume control keys are inactive.

If the remote control volume keys do not work, the unit may be in the volume **OFF** mode. Check the DR500 while pressing one of the volume control keys to see if the **OFF** message displays. If so, use the **PRESET 975** command to activate these keys.

The volume is adjusted in increments between 0 and 32, where 0 is mute and 32 is full volume. When the remote control volume keys are used, the front panel displays an **L** followed by a two-digit volume indicator.



L # #

The DR500 is shipped with the full volume (32) setting.

Muting the Volume

The DR500 offers a mute function that is controlled through the remote control.

1. To mute the audio press:



MUTE

The current channel will flash on the DR500 front panel while the audio is muted.

2. To return to normal volume, press **MUTE** again or press any other valid key.

The audio will be muted if the signal is not locked, the current channel is unauthorized, or the current channel has been deleted. If you are having audio problems, refer to *Section 5: Maintenance and Troubleshooting*.

Selecting a Channel

You can use either the front panel or remote control unit to select another channel.

Front Panel Channel Selection

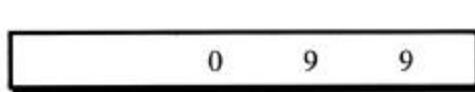
Use the following keys to select a channel from the DR500 front panel:

- **TUNE** ? button to move up to the next authorized channel
- **TUNE** ? button to move back to the preceding authorized channel

Remote Control Channel Selection

The remote control unit provides two ways of tuning to a desired channel:

- Select one channel at a time by using the:
 - **TUNE** ? key to move up to the next authorized channel
 - **TUNE** ? key to move back to the preceding authorized channel
- Select specific channels (1 to 120) using the **NUMERIC** keys (0 through 9) on the keypad. To do this, enter the channel, with or without leading zeros. For example, to tune to channel 99, enter either:



OR



When you enter a channel, leading zeros are displayed. However, once the channel is tuned, the leading zeros are eliminated.

If you enter a three-digit number, the DR500 tunes to that channel immediately. If you enter a one- or two-digit number, the DR500 waits for approximately three seconds, verifying there is no other input, and then tunes to that channel.

If you enter a channel that does not exist, for example channel 888, the DR500 remains on the current channel. If you enter an unauthorized

channel, the DR500 tunes to that channel, however, you will not have audio output, the front panel Authorized LED will be off, and the channel will flash.

Recalling a Channel

To recall your last channel selection, press:



The DR500 will tune to the previously selected channel and display the channel on the front panel.

Scanning Channels

The DR500 allows you to scan through all authorized channels.

To scan, press:



The DR500 begins scanning all authorized channels. Each channel is selected for five seconds.

To select the channel and cancel the scan, press any key on the remote control or front panel.

DMX MUSIC/DJ Functions

Viewing Current Audio Information

You can receive information about a currently playing audio track, such as its title, track, and artist.

 To view this information, press:



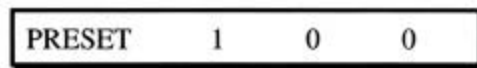
2. To move through the screens of information, press:

The DMX MUSIC/DJ removes the audio information and the display goes blank after approximately eight seconds.

Viewing the Time and Date

You can view the time and date using the DMX MUSIC/DJ to check that the DR500 clock is correctly set or to check that the remote control is functioning properly.

1. Press:



The front panel displays a flashing two-digit number that is the current hour in 24-hour mode.

2. Press:



The DMX MUSIC/DJ displays the current hour in 24-hour mode, HH:MM:SS and current date, DD:MMM:YYYY. If the DR500 clock has not been initialized by the Control Center, the DMX MUSIC/DJ displays 99:999:99.

Immediately after initial authorization, the date will indicate 99:999:99. This is normal and will update at local midnight and be subsequently correct.

Section 4

Advanced Operations

The DR500 advanced features give you the power and flexibility to create tailored musical programs. These advanced functions include:

- Forced tune programming as a channel is automatically selected and played at a specific time
- Adding and deleting authorized channels
- Setting the dynamic range of a particular channel or all channels useful when DMX MUSIC selections are playing in a noisy environment

Section Topics

This section describes the advanced functions and operation of the DR500 and remote control. Advanced functions include:

- Setting, checking, and clearing forced tune events
- Local channel management
- Setting and checking the Dynamic Range for individual channels and as a global default
- Setting and checking transponder frequency
- Setting and clearing the front panel lockout
- DMX MUSIC/DJ functions

Many of these features can be programmed and controlled by the DMX MUSIC DBS National Authorization Center. When you turn on your DR500 and call for authorization, talk to your DMX MUSIC affiliate about this service.

Forced Tune Events

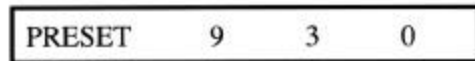
Forced Tune Events allow you to easily specify at what hour a particular channel will be played. Although forced tune events sound simple, they're actually a powerful function that provides you with a wide range of musical programming flexibility and creativity, along with local manageability.

Setting Forced Tune Events (Dayparting)

The DR500 allows you to program and store up to 32 forced tune events per day. These forced tune events can be programmed for one channel or spread across a maximum of 32 channels. You can program forced tuned events by the minute, hour and day. If you do not have a version 2.0 or higher DR500, you will only have the ability to schedule up to 6 forced tuned events. To check the software version, with your DJ Remote, press 150. View, then press More until it reads DR500 Ver 2.0.

To set a forced tune event:

1. Tune to the desired channel.
2. Press:

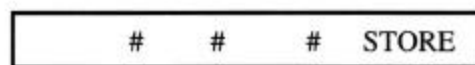


A rectangular display box with a black border. Inside, the text 'PRESET' is on the left, followed by three digits: '9', '3', and '0'. To the right of the box is a vertical line.

The front panel displays two flashing zeros, indicating that the DR500 is ready for you to enter the hour to tune in this channel.

You specify forced tune events for the hour, on the hour (10, 11, etc.). You cannot specify a portion of an hour, such as 10:15 a.m. If you need a forced tune event to play at a specific hour and minute, contact the DMX MUSIC/DBS National Authorization Control Center who will program the event for you.

3. Enter the hour in 24-hour format then press **STORE**.



A rectangular display box with a black border. Inside, three hash symbols '#' are spaced out, followed by the word 'STORE'. To the right of the box is a vertical line.

For example, 8:00 p.m. would be entered as 20.

If there are less than six forced tune events programmed, the new event will be stored in memory. At the designated time, the DR500 will automatically tune to the programmed channel.

If you exceed the 6 forced tune events maximum, the DR500 front panel displays **FUL** (full) indicating the memory is full. When **FUL** displays, the DR500 memory must be cleared before any forced tune events can be entered. Refer to *Clearing Forced Tune Events* for this procedure.

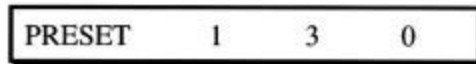
Pressing **PRESET** while entering a forced tune event exits the procedure and returns to the current channel.

If two forced tune events are inadvertently scheduled for the same time period, the event that was set first will play.

Checking Forced Tune Events

To check the forced tune event settings for a channel:

1. Tune to the desired channel.
2. Press:



If the current channel has no programmed forced tune events, the front panel displays three flashing dashes.

If the current channel has any programmed forced tune events, the time of the event (in 24-hour time) displays on the front panel as a flashing two-digit number. If more than one event is programmed for the channel, the front panel will scroll through all programmed events, displaying each for five seconds.

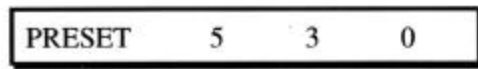
Once all the forced tune events have been displayed, the front panel returns to the current channel.

Clearing Forced Tune Events

The DR500 allows you to program and store up to six forced tune events. These forced tune events can be programmed for one channel or spread across a maximum of six channels.

If you have exceeded the six forced tune events maximum, the DR500 front panel displays **FUL** indicating the memory is full. When **FUL** displays, the DR500 memory must be completely cleared before new

forced tune events can be entered. To clear the DR500 memory press:



The front panel will momentarily display **CLr** (clear) as the DR500 clears *all* forced tune events from memory. When the DR500 has finished clearing all settings, the current channel displays.

Local Channel Management (Adding / Deleting Channels)

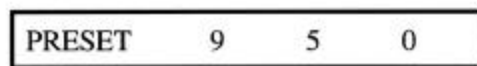
The DR500 allows you to locally manage the channels authorized to you through DMX MUSIC/DBS National Authorization Control Center. From your location, you can temporarily delete an authorized channel so that it cannot be played for a specific time in your location. Then, when you decide the timing is right, you can add the authorized channel into your format again.

Deleting Authorized Channels

The DR500 gives you local control to delete channels from your list of authorized channels. To locally delete an authorized channel:

1. Tune to the desired channel.

2. Press:



The front panel flashes **dEL** (delete) as the DR500 marks the channel as locally deleted. In addition:

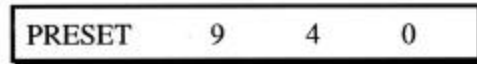
- Authorization LED remains ON as this is a locally deleted channel
- Audio is muted for that locally deleted channel
- **dEL** flashes on the DR500 display when this channel is selected

Adding Authorized Channels

Just as you can locally delete an authorized channel from your local channel listing, you can also add the channels back to the list. To do this:

1. Tune to the desired channel.

2. Press:



The front panel momentarily displays **Add** as the DR500 adds the authorized channel. In addition:

- Channel you added is displayed
- Authorization LED remains ON
- Audio is broadcast from that locally added channel

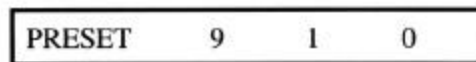
You locally manage only channels authorized by your DMX MUSIC affiliate. To add authorized channels to your local listing, contact your DMX MUSIC affiliate.

Setting the Dynamic Range

The DR500 Receiver is shipped with all 120 channels set at full CD-quality (90 dB dynamic range). To meet your individual music needs, you have the capability of setting a different dynamic range for up to 10 channels, or setting all channels to a global dynamic range default. Changing the dynamic range setting may provide a more uniform volume, or loudness, throughout your musical program. To set the dynamic range for a channel:

1 Tune to the desired channel.

2. Press:



The front panel flashes the current dynamic range code for this channel. There are 8 dynamic range settings as follows:

Front Panel Code	Dynamic Range Settings
0	Full CD-quality (90 dB)

1-8	Amplitude compression, 1 is minimum, 8 is maximum. Low amplitude signals are amplified and peaks compressed. Absolute signal level maintained.
-----	--

3. Enter the dynamic range code using the **TUNE ?** and **TUNE ??** buttons to make your selection. The dynamic range is changed on the fly to allow preview. Press **STORE** to save your selection.



If there are less than 10 Dynamic Range settings programmed, the new setting will be stored in memory. The DR500 will automatically implement the selected dynamic range when the specified channel is tuned.

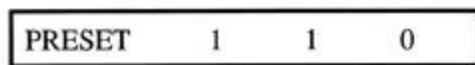
If you have exceeded the 10-channel maximum, the DR500 front panel displays **FUL** indicating the memory is full. When **FUL** displays, the DR500 memory must be completely cleared before additional Dynamic Range settings can be entered. Refer to *Clearing the Dynamic Range* for this procedure. Pressing **PRESET** while entering a Dynamic Range code exits the procedure and returns the display to the current channel.

Dynamic range settings specified for individual channels will override, or take precedence over, global dynamic range default settings.

Checking Dynamic Range Settings

To check the dynamic range for a specific channel:

1. Tune to the desired channel.
2. Press:



The front panel flashes the current dynamic range code (0-8) for this channel. If a specific dynamic range has not been set, the front panel displays a flashing three-digit number representing the global default for that channel.

Clearing the Dynamic Range

The DR500 allows you to program and store up to 10 channels with specific dynamic range settings. If you have exceeded the 10-channel maximum, the DR500 front panel displays **FUL** indicating the memory is full. When **FUL** displays, the DR500 memory must be cleared before additional dynamic range settings can be entered. To clear the DR500

memory, press:

PRESET 5 1 0

The front panel will momentarily display **CLr** as the DR500 clears *all* dynamic range settings from memory. When the DR500 has finished clearing all settings, the current channel displays.

Setting the Dynamic Range Global Default

To set one dynamic range for all authorized channels:

1. Press:

PRESET 9 6 0

2. Enter the dynamic range code using the **TUNE ?** and **TUNE ?** buttons to make your selection, then press **STORE**.

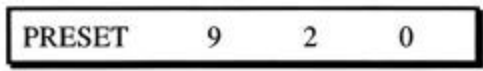
STORE

All channels are set to the specified dynamic range. To change or clear the global dynamic range default setting, repeat this procedure.

Setting the Transponder Frequency

The DR500 is shipped with the transponder frequency saved in memory. It is highly unlikely that this frequency will have to be changed and should only be done upon instructions from your DMX MUSIC affiliate. In the event that a new transponder frequency must be entered, follow these procedures:

1. Press:



The transponder frequency in MHz displays as a flashing three-digit code on the front panel. The transponder frequency codes and their corresponding frequencies are shown below.

Mhz Front Panel Codes	Transponder Frequency
950 to 999	950 Mhz to 999 Mhz
000 to 450	1000 Mhz to 1450 Mhz

2. Enter the transponder frequency using the DR500 front panel codes. (For example, you enter a frequency of 1422 MHz using the code 422.) Press the appropriate number, then press **STORE**.



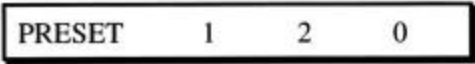
The new transponder frequency will be stored in memory.

Pressing **PRESET** while entering a Transponder Frequency code exits the procedure and returns to the current channel.

Be careful to enter the correct frequency. The DR500 will not operate if the Transponder Frequency is incorrect.

Checking the Transponder Frequency

To check the current transponder frequency, press:



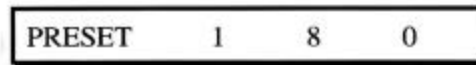
The front panel flashes the current Transponder Frequency MHz code.

Checking Signal Quality

The quality of the incoming signal can be checked using the following procedures:

1. Ensure that the DR500 has acquired the signal æ the sync indicator on the front panel will be lit.

2. Press:



- The front panel displays **SS** (signal strength) and then displays a dash followed by a two-digit number from 00 to 99 indicating the strength of the incoming signal.

The display is updated approximately twice per second. Your display may not change if the signal quality is constant.

- If the DR500 is not locked, **nL** displays on the front panel.

Unlike most other DR500 functions, the signal quality indicator does not automatically clear from the display. To clear the display, press any key on the remote control or the DR500 front panel.

The following table shows the DR500 codes and their corresponding Eb/No levels.

A code of -00, with a corresponding Eb/No level of 17 dB or greater, is the highest signal quality. A code of -68, with corresponding Eb/No level of 5 dB or lower, is a very weak signal strength.

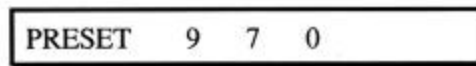
DR500 Display Code	Eb/No Signal Strength
-00 to -01	17+ dB
-02	16 dB
-04	15 dB
-06	14 dB
-09	13 dB
-14	12 dB
-20	11 dB
-27	10 dB
-35	09 dB
-44	08 dB
-52	07 dB
-61	06 dB
-68	05 dB
-75	04 dB

-80	03 dB
NL	Not locked

Front Panel Lockout

Setting the Front Panel Lockout

The DR500 allows you to inhibit, or lockout, any command entries. To do this press:



The front panel displays **LOC** indicating that the front panel has been locked. When the front panel has been locked, both the front panel and the remote control will be non-functional. The only command that will be accepted by the DR500 is the command to clear the front panel lockout.

Clearing the Front Panel Lockout

To clear the front panel lockout, press:

The front panel lockout command will be cleared and the DR500 will receive all commands through the front panel and be fully functional again.

DMX MUSIC/DJ Functions

Checking the DR500's ID Number

Every DR500 Receiver has a specific identification (ID) number which is located on the back of the DR500. To check the DR500's ID number using the DMX MUSIC/DJ, press:

PRESET 1 9 0 VIEW

The ten-digit ID number is 10 digits long and displays in the following format:

- ID NUMBER 0-123-456-789

The unit ID number is also displayed on the front numeric display 3 digits at a time, repeating twice for each 3 digit group. This display may alternatively be invoked by depressing the channel up and down buttons simultaneously while the power is on.

Checking the DR500's Status

You can periodically check the status of the DR500 using the DMX MUSIC/DJ.

1. To check the status, press:

PRESET 1 5 0 VIEW

The DMX MUSIC/DJ displays a variety of status messages.

2. To move through the screens of information, press **MORE** on the DMX MUSIC/DJ.

MORE

The DR500 status messages are presented in the following tables.

DMX Music/DJ General Status Messages	Status Message Description
SIG Strength: ##	Displays the Eb/No signal strength. For a listing of signal strength codes, refer to <i>Signal Quality</i> .
System: Locked/Unlocked	Displays locked or unlocked.
Forced TN: ##	Displays the number of programmed forced tune events.
Dyn Ring: ##	Displays the number of channels that have a dynamic range setting.
FREQ: ##kHz	Displays the RF frequency.
DR500 VER #.##	Displays the current DR500 software version.

Individual Messages

Front Panel Status Code	DMX/DJ Status Message	DR500 Status
000	System OK	DR500 is working properly
001	System PLL	Phased locked loop error
002	System LNB	Power to the low noise block (LNB) is shorted
004	System NV	Nonvolatile memory errors

Combined Error Messages

Front Panel Status Code	DMX/DJ Status Message	DR500 Status
003	System PLL System LNB	Phase lock loop error and power to the low noise block (LNB) is shorted
005	System PLL System NV	Phase lock loop error and nonvolatile memory errors
006	System LNB System NV	Power to the low noise block (LNB) is shorted and nonvolatile memory errors
007	System PLL System LNB System NV	All system errors are detected

For additional information about DR500 status messages, refer to
Section 5: Maintenance and Troubleshooting

Section 5

Maintenance and Troubleshooting

Maintenance

The DR500 Receiver and remote controls are designed to deliver years of maintenance-free, CD-quality music. The only maintenance you may need to perform is cleaning your DR500 Receiver and replacing batteries in your remote control.

Cleaning the DR500 Receiver

Before cleaning the DR500, unplug it from the wall outlet. Clean the cabinet, panel, and controls with a soft cloth lightly moistened with water.

Do not use any type of abrasive pads, scouring powders, liquid cleaners, aerosol cleaners, or solvents such as alcohol or benzene.

Troubleshooting Tips

The troubleshooting tips found on the following pages were designed to help you diagnose and correct minor problems in the unlikely event that you experience difficulties with your DBS DR500 system.

Possible problems, arranged alphabetically, are followed by solutions that should help you to troubleshoot any DBS DR500 difficulties.

If you try all the suggested solutions and nothing works, call your DMX MUSIC affiliate, as they are equipped to diagnose and correct your DBS system and DR500 Receiver problems.

Problem	Possible Causes	Solutions
Authorized indicator is NOT lit green	You are not authorized to receive the current channel.	Tune to an authorized channel. Contact your DMX MUSIC affiliate if you wish to receive the music channel.
DR500 Receiver does not work	DR500 is not plugged in. The AC outlet is off. The AC outlet is not working. The AC outlet is not providing the required power. (You may be experiencing a power brown out in your area.) The DBS system is not correctly installed, the satellite dish antenna is not pointed at the satellite.	Check that the DR500 is plugged into an AC power outlet. Turn the AC outlet on. Switch the DR500 power cord to another outlet. Have a professional electrician check the outlet. Operate the DR500 from a 120 V 60 Hz outlet only. Have a professional electrician check the outlet. Check the DBS system for proper operation and that the satellite dish is in the correct position (refer to Section 1).
DR500 Receiver shows a distinct change in operation or is not operating normally	The DR500 may need to be serviced.	Unplug the receiver from the wall outlet. Wait 30 seconds. Plug the DR500 back into the outlet. Check the DR500's performance. If the DR500 still performs poorly, contact your DMX MUSIC affiliate.
LNB PWR Indicator Flashing	The cable connecting the DR500 to the satellite dish is shorted.	Disconnect the cable from the unit and wait 30 seconds. If the LNB PWR light turns either off or on, replace the cable. If the light flashes, contact your DMX MUSIC affiliate.
Music stops briefly or is distorted.	There is a problem with the satellite dish LNB.	Contact your DMX MUSIC affiliate. Select another music channel or wait for the music to begin again.

	<p>The audio signal for the particular music channel was temporarily interrupted by a technical problem.</p> <p>Poor satellite signal quality sometimes due to sunspots or inclement weather.</p> <p>The DR500 was subjected to excessive vibration or movement.</p>	<p>Wait for the music to begin again. If this is a frequently re-occurring problem, contact your DMX MUSIC affiliate.</p> <p>Ensure that the DR500 is in an appropriate location away from vibration or movement that may cause the music to stop momentarily</p>
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Problem	Possible Causes	Solutions
No sound	<p>The stereo is turned off or the volume is turned down.</p> <p>The DR500 Receiver volume is turned down.</p> <p>The Mute function is selected.</p> <p>You are not authorized to receive the current channel.</p> <p>The DR500 and stereo connectors are not correctly attached.</p>	<p>Turn on the stereo and adjust the volume.</p> <p>Turn the volume up on the DR500 Receiver.</p> <p>To return to normal volume, press MUTE on your remote control.</p> <p>Tune to an authorized channel (refer to Section 3). Contact your DMX MUSIC affiliate if you wish to receive the music channel.</p> <p>Check all DR500 and stereo connections.</p>
No sound from one speaker	Balance is incorrectly set or your stereo/speaker connections are not correctly adjusted.	Adjust the balance controls on stereo and check all connectors.
Remote control does not operate the DR500.	<p>The remote control is not pointed at the DR500;</p> <p>The remote control is too far from the DR500;</p> <p>The path between the DR500 and remote control is obstructed.</p> <p>The DMX MUSIC/DJ mode is not set to the correct mode.</p> <p>Front panel lockout is set</p>	<p>Point the remote control directly at the DR500.</p> <p>Ensure that there are no obstacles between the DR500 and the remote control unit.</p> <p>Move to within 10 meters of the DR500.</p> <p>Remove the obstruction,</p>

	<p>The remote control batteries are run down.</p> <p>Remote control is broken</p>	<p>point the remote control control directly at the DR500.</p> <p>Ensure that the DMX MUSIC/DJ mode is set correctly. You will see DMX MUSIC appear on the DMX MUSIC/DJ display (refer to Section 1).</p> <p>Unlock the front panel (refer to Section 4).</p> <p>Replace all remote control batteries.</p>
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Problem	Possible Causes	Solutions
Remote control operates erratically	<p>The remote control is exposed to direct bright sunlight or florescent lighting. This exposure may interfere with the remote control signal and not allow the remote and DR500 to communicate.</p> <p>Remote control is broken.</p>	<p>Protect the remote control from the direct light exposure.</p> <p>Check that the remote control is functioning properly by performing the procedure for viewing the time on the DMX MUSIC/DJ.</p>
Sync indicator is not lit green.	<p>Poor satellite signal quality sometimes due to sunspots, rain, or other inclement weather.</p> <p>The DR500 Receiver has not locked onto the satellite.</p> <p>Power to the low noise block (LNB) amplifier is shorted or set to OFF.</p>	<p>Wait for the weather to clear.</p> <p>Check the alignment of the satellite dish (refer to Section 1). Unplug the receiver from the wall outlet. Wait 30 seconds. Plug the DR500 back into the outlet. Check the DR500's performance. If the DR500 stil performs poorly, contact your DMX MUSIC affiliate.</p>

	Power is disconnected to the low noise block (LNB) amplifier.	Check LNB PWR indicator. If it is not illuminated, power to the LNB is OFF. This may be normal for multiple receiver installations provided signal from a single LNB. Contact your DMX MUSIC affiliate before switching LNB to ON.
Volume control does not work	Volume control keys are off	Turn the volume control keys on, use PRESET 975.

Section 6

Specifications

Audio Specifications*

Compression: Dolby Digital

Sampling Rate: 44.1 kHz

Frequency Response: 20.0 Hz to 20.0 kHz ± 1.0 dB

Dynamic Range: >90 dB

Harmonic Distortion: < 0.015% typical, 0.05% maximum

Output Level 0-2 V rms (maximum)

Tuner Specifications*

Input Frequency: 950 to 1450 MHz

Input Dynamic Range: -20 dBm to -65 dBm

LNB Power: 250 milliamps max 18 VDC $\pm 10\%$

LNB Frequency Drift: ± 5 MHz

Audio Threshold: 5.1 dB Eb/No for 10⁻⁵ BER

General Specifications*

Power Supply: 100-130 VAC, 60 Hz source to 15VDC supply

Power Consumption: 21 Watts maximum

Operating Temperature: 0 to 40 C

Operating Humidity: 0 to 95% noncondensing

Regulatory Certifications: UL 1492; CSA-C22.2 No. 1-M90; FCC Part 15B, Class A

Dimensions: 8.25" Wide, 2.7" High, 8" Deep

Weight: 2.25 lbs

**Design and specifications are subject to change without notice.*

Appendix

Warranty and Repair Information

Warranty Statement

DMX MUSIC warrants that its products are free from defects in material and workmanship at the time of shipment and that they conform to applicable specifications. In no event will DMX MUSIC be liable for consequential misuse or damages.

The DMX MUSIC DR500 is warranted against any above-mentioned defects that appear within one year of shipping date.

Should it be necessary to make a claim against this warranty, the buyer shall first notify DMX MUSIC's Customer Service Department to define the nature of the problem. When returning products, please be aware of the following:

1. Products returned to DMX MUSIC, whether for

upgrade, warranted or out-of-warranty repair work, or maintenance, must comply with the DMX MUSIC Return Procedures (located on the next two pages).

2. Products shall be forwarded to DMX MUSIC, transportation prepaid.
3. Products returned to DMX MUSIC freight collect or with out a Return Material Authorization (RMA) number will NOT be accepted.
4. DMX MUSIC shall not accept any responsibility for returned products that are improperly packaged and/or damaged in shipment. If possible, please use original shipping and packaging materials.
5. Original product identification markings and labels must not have been removed, defaced, or altered. Further, to preserve the warranty, the product should not be subjected to abuse, improper installation or application,

alteration, accident, or negligence in use, storage, transportation, or handling.

6. Any returned product shall be completely evaluated in an attempt to duplicate the problem so that appropriate corrective action and repair may be completed. Following repair, the product shall be thoroughly tested for compliance with appropriate specifications. This process will be handled in an expedient and prompt manner but may be subject to available labor and material resources.

The DMX MUSIC warranty, as stated herein, is in lieu of all other warranties, expressed, implied, or statutory.

For further information, please contact
DMX MUSIC Customer Service at
(800) 700-4412

Return Procedures — DMX MUSIC Commercial Subscribers

If you are a commercial subscriber who has a contract with a DMX MUSIC affiliate for DMX MUSIC services, contact your local DMX MUSIC affiliate. Speak to a customer service representative about any

questions, issues, or problems. Quite often, equipment problems can be corrected over the phone, which keeps your equipment in service and avoids unnecessary and costly downtime.

Any returns or repair of the DR500 must be coordinated by the DMX MUSIC affiliate.

Return Procedures — DMX MUSIC Affiliates

Follow these return procedures if you are a DMX MUSIC affiliate who has purchased the DR500 receiver in question and determined that the problem is specifically DR500-equipment related.

If it is necessary to return a product for repair, the following procedures must be followed:

1. Contact DMX MUSIC Customer Service, located in the USA, via phone (800) 700-4412.

2. Speak to a DMX MUSIC customer service representative about any questions, issues, or problems. Quite often equipment problems can be corrected over the phone, which keeps your equipment in service and avoids unnecessary and costly downtime.

3. Should it be necessary to return a product to DMX MUSIC for any reason, the DMX MUSIC customer service representative will issue you a return material authorization (RMA) number. To issue an RMA number, the DMX MUSIC representative will need the product's serial number and model number.

You will need to include a complete description of the problem, the operating conditions which caused the problem, and any circumstances that may have led to the problem. This information is essential for DMX MUSIC repair technicians to reproduce, diagnose, and correct the problem. In addition, include your contact person's name and phone number in the event a DMX MUSIC representative needs to contact you.

4. Include a purchase order for any out-of-warranty repair work being performed. DMX MUSIC will begin repair work after a PO is received.

5. Reference the RMA number on all paperwork that accompanies the equipment, and write the RMA number clearly on the outside of the shipping container.
6. Ship your module and power supply only (no accessories such as remote controls) in the original shipping packaging or equivalent, prepaid, to the address provided by DMX MUSIC Customer Service.

All equipment upgrade and repair requests will be completely evaluated and the required work performed in an expedient and prompt manner. The equipment will then be thoroughly tested for compliance with appropriate specifications.

DR500 General Functions and Commands
Channel

- Recall Press **LAST**.
- Scan Press **SCAN**.
- Select Enter the channel number using
the NUMERIC keys.
—OR—
Use the **TUNE ?** and **TUNE ?** Keys.

Locally Managed Channels (Adding/Deleting Channels)?

- Add Tune to the desired channel.
Press **PRESET 940**.
- Delete Tune to the desired channel.
Press **PRESET 950**.

Clock

- Check Press **PRESET 100**.

Dynamic Range
press

- Check Tune to the desired channel.
Press **PRESET 110**.
- Clear clock.
range Press **PRESET 510**.

Clears all dynamic range
Settings from memory.
- Set Tune to the desired channel.
Press **PRESET 910**.
Enter the dynamic range code
And press **STORE**.

500.

Forced Tune Events (Dayparting)

Supply

- Check quality.
#. range
Clear Press **PRESET 530**.
Clears all forced tune event
Settings from memory.
- Set range for Tune to the desired channel.

Press **PRESET 930**.
Enter the hour and press **STORE**.

Volume

- Set Adjust the volume using
The controls on your
Stereo system.
- Mute Press **MUTE**.
To return to normal volume, press
MUTE again.

DMX MUSIC/DJ VIEW FUNCTIONS

- Audio Info. Press **VIEW**.
Press **MORE** to see
Additional information.
- DR500 Status Press **PRESET 150** and press
VIEW. Press **MORE** to see
Additional information.
- Time Press **PRESET 100** and press
VIEW.
- Unit ID Press PRESET 190 and**
VIEW.
- DR500 PRESET Commands and Functions
- PRESET 100 Check the DR500**
- PRESET 110 Check the dynamic**
- PRESET 120 For a selected channel.**
Check transponder
frequency.
- PRESET 130 Check the forced tune**
event for a selected
Channel.
- PRESET 150 Check status of DR**
- PRESET 160 Toggle LNB Power**
On/Off.
- PRESET 180 Check the signal**
- PRESET 190 Check DR500 Unit ID**
- PRESET 510 Clear all dynamic**
Settings from memory.
- PRESET 530 Clear all forced tune**
Event settings from
Memory.
- PRESET 910 Set the dynamic**
- PRESET 920 A selected channel.**
Set transponder
Frequency.

Signal Quality
channels.

Press PRESET 180.
Press any key to clear display.

PRESET 940

Add authorized

PRESET 950

Delete authorized
channels.

PRESET 960

Set global dynamic

range.

Transponder Frequency

Check

Press PRESET 120.

PRESET 970

Front panel lockout.

PRESET 975

Volume Control.

Set

Press PRESET 920.
Enter the transponder frequency
And press STORE.



800-700-4412

dmxmusic.com