

XDS PRO4-P Satellite Receiver



User's Guide

Copyright © 2006 X-Digital Systems, Inc.

All rights reserved. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including but not limited to photocopying, recording, or by any information storage and retrieval system without the prior written permission from X-Digital Systems, Inc.

Warning and Disclaimer

This document is intended to provide information about installing and operating the “XDS-PRO4P DVB Satellite Receiver”. Every effort has been made to make this document as complete and accurate as possible, but no warranty or fitness is implied. The information is provided on an “as is” basis and X-Digital Systems shall have neither liability nor responsibility to any person or entity with respect to any loss or damages arising from the information contained in this document.

Acknowledgment of Trademarks


Any product or corporate names used herein may be trademarks or registered trademarks, and are only used for identification and explanation, without intent to infringe. Any terms mentioned or used that are known trademarks or service marks have been appropriately capitalized and italicized. X-Digital Systems, Inc. cannot attest to the accuracy of this information. Use of a term in this manual should not be regarded as affecting the validity of any trademark or service mark.

Printed in the United States of America

X-Digital Systems, Inc.
9727 Pacific Heights Blvd.
Suite 200
San Diego, CA 92121

Patent Pending

X-Digital Systems, Inc., DVB Satellite Receiver – Patents Pending

 Warning!	Approved external telecom power cross protection must be incorporated into the final installation in accordance with Annex NAC of UL/CSA standard 60950-1. Failure to comply may result in a fire or electric shock hazard and will void regulatory compliance certification.
--------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION OF THIS DEVICE IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRABLE OPERATION.

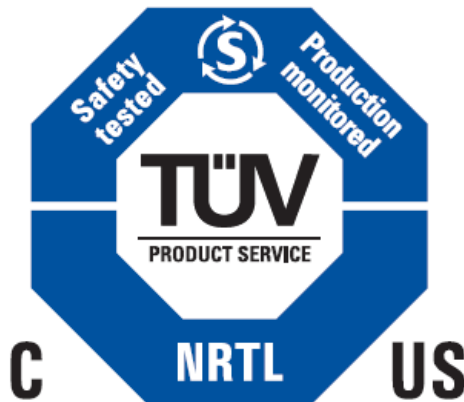


TABLE OF CONTENTS

1	INTRODUCTION	6
1.1	Important Information.....	6
1.2	Hardware Upgradeability.....	6
1.3	Hardware Versatility.....	6
1.4	Network Management System.....	7
2	GETTING STARTED	8
2.1	General Guidelines.....	8
2.2	Unpacking the Receiver.....	8
2.2.1	List of Contents.....	9
2.3	Safety Precautions.....	9
2.3.1	Excessive Temperature	9
2.3.2	Proper Ventilation.....	9
2.3.3	Heat, Humidity, and Dust	9
2.3.4	Power Cord Cabling.....	10
2.3.5	Proper Grounding.....	10
2.3.6	Circuit Overloading	10
2.3.7	Foreign Objects	10
2.4	Physical Installation of the Receiver.....	11
2.4.1	Rack Mounting the Receiver	11
2.4.2	Uneven Loading of Rack	11
2.5	Connecting to the Satellite Dish	11
2.5.1	DC Voltage Requirement.....	11
2.5.2	Warnings About Shorting DC.....	12
2.6	Connecting to the Ethernet Network.....	12
2.6.1	Connecting the Cables	12
2.6.2	Using DHCP or Static IP Addresses	12
2.6.3	Assigning a TCP/IP Address	13
2.6.4	Assigning a Subnet Mask.....	13
2.6.5	Assigning a Default Gateway	13
2.6.6	Proxy Server Configuration	13
2.6.7	DNS Server Configuration.....	13
2.7	Connecting the Audio Ports	13
2.7.1	Analog Audio Ports.....	14
2.7.2	Digital Audio Port.....	14
2.8	Connecting the Relay Ports.....	14
2.8.1	Physical Ports.....	14
2.8.2	Cues.....	14
2.9	Connecting the Program Associated Data (PAD) Port	14
2.9.1	In-Band Ancillary Data.....	15
2.9.2	Out-of-Band Ancillary Data	15
2.10	Connecting the Modem.....	15
3	FRONT PANEL OPERATIONS.....	15
3.1	Status LEDs	15
3.1.1	The Power LED	15
3.1.2	The Signal LED	16

3.1.3	The Update LED	16
3.1.4	The Fault LED	16
3.2	The LCD Display and User Interface	16
	The Main Menu Options	17
3.2.1	The Status Submenus	17
3.2.2	The SETUP Submenus	18
3.2.2.1	The Setup:Network Submenus	20
3.2.2.2	The Setup:USB Submenus.....	22
3.2.2.3	The Setup:Relays Submenu	23
3.2.2.4	The SETUP:TUNER Submenus	24
3.2.3	The AUDIO PORTS Submenus	25
3.2.3.1	The AUDIO PORTS:SETUP Submenus	26
3.2.4	Receiver Master Menu Tree.....	27
3.2.5	MONITOR AND CONTROL INTERFACE	28
3.3	Setting up a Console Connection	28
3.4	Console Commands	30
3.4.1	The ALARM Command	30
3.4.2	The E0 and E1 Commands	30
3.4.3	The Factory Command	31
3.4.4	The FAN Command.....	31
3.4.5	The HELP Command.....	31
3.4.6	The LOGS Command	31
3.4.7	The Login Command	32
3.4.8	The Logout Command	32
3.4.9	The MON Command	32
3.4.10	The PID command	32
3.4.11	The PORT Command	32
3.4.12	The PING Command	33
3.4.13	The QUIT Command	33
3.4.14	The SF Command	33
3.4.15	The SN Command.....	33
3.4.16	The SS Command	33
3.4.17	The TIME Command.....	34
3.4.18	The TUNER Command	34
3.4.19	The VER Command.....	34
3.4.20	The VOL Command	35
4	RECEIVER WEB INTERFACE	36
4.1	The General Menu	36
4.1.1	The Status Tab	36
4.1.2	The Tuner Tab.....	37
4.1.3	The Setup Tab	38
4.1.4	The Relays Tab	39
4.1.5	The Logs Tab	40
4.2	The Programming Menu	41
4.2.1	The Programs Tab.....	41
4.2.2	The Recordings Tab	41

4.3	The Content Menu	42
4.3.1	The Audio Tab	42
4.3.2	The Traffic Tab	42
4.3.3	The All Tab	42
5	AFFILIATE WEB INTERFACE	44
5.1	Accessing and Logging In	44
5.2	Play Scheduling	45
5.3	Changing the Relay Mappings.....	51
5.4	Port Schedules.....	51
5.5	Configuration	52
6	SPECIFICATIONS	54
6.1	Receiver Interface Specification	54
6.2	Mechanical/Electrical Specification	54
6.3	Environmental Specifications	54
6.4	M&C Interface Connector	55
6.5	Relay Outputs.....	56
6.6	Analog Audio Output.....	57
6.7	Analog and Digital Audio Input	58
6.8	Digital Audio Output	59
6.9	PAD/ASYNC Output Port	60
6.10	Ethernet Port	60
6.11	Modem (POTS) Port	60
6.12	RF Input Parameters	61




1 INTRODUCTION

Welcome to the future of digital audio for the radio industry. This User's Guide is your handbook for the X-Digital PRO4-P digital audio receiver. This receiver is equipped to deliver multiple audio services in high quality digital audio for your radio station. It has been designed to make use of all the digital communication features available today, and to be upgraded to take advantage of the technologies of tomorrow.

The purpose of this guide is to provide an in depth technical guide to the PRO4-P receiver. Please review the Quick Start Guide and Network Data sheet included with your receiver for step by step instructions on setting up your receiver.

1.1 Important Information

Throughout this guide, you will find icons designed to help you quickly spot important information:

 Note!	The note icon identifies information for the proper operation of your equipment, including helpful hints, shortcuts, or important reminders
 Caution!	The caution icon identifies information that requires careful attention in order to prevent equipment damage.
 Warning!	The warning icon identifies a procedure or practice that could result in personal injury if not performed correctly.

1.2 Hardware Upgradeability

X-Digital Systems, Inc. can upgrade its main control software and audio decoder algorithms remotely. This ensures that your receiver will always have the most up to the minute features and functionality.

1.3 Hardware Versatility

The XDS PRO4-P can deliver audio received via satellite over any one of its four balanced output ports. Additionally, content can be received and stored locally for later

playback or insertion. This content can originate from a real time satellite broadcast, a high speed satellite IP distribution channel, or can be retrieved via the Internet through the Ethernet port, depending on how the receiver is configured.

1.4 Network Management System

The PRO4-P satellite receiver has been specifically designed so that its output can be controlled via one central web application. This application is called the Network Management System, hereafter referred to as the NMS. From the NMS, network managers will be able to create play schedules consisting of radio programs and any combination of network, regional, or off-time commercial spots. The NMS will also coordinate file transfers to store sound, data, or hardware updates directly to the PRO4-P's internal storage devices. The NMS will also come equipped with an advanced event logging system ensuring that any technical problems will be accompanied by a full history, allowing problems to be easily identified and eliminated.

2 GETTING STARTED

Please take a few minutes to read through the User's Guide prior to setting up and using the unit. If you are in a hurry, there is a Quick Start section below, but please be sure to consult this section at your earliest convenience.

2.1 General Guidelines

Review this guide in its entirety before installing your XDS receiver. Please follow these instructions before calling for support.

- Make all satellite RF, data (LAN/WAN) and audio connections prior to applying AC power to the XDS receiver.
- It is strongly recommended to use a Phase Locked Loop (PLL) LNB for your new XDS receiver. The Local Oscillator (LO) stability of your LNB should not be above (worse than) 25kHz.
- If this XDS receiver is designated to supply DC power to the LNB at your dish, be sure to turn on the LNB voltage on the front panel menu AFTER the LNB is connected (See Section 2.5).
- Your new XDS receiver might be delivered with an optional parts kit that includes two 6-foot RG-6 cables and an L-band splitter that allows DC power to pass through one port.
- Please be aware that surge suppressors alone do not provide sufficient protection. X-Digital Systems urges stations to use an Uninterruptible Power Supply (UPS) for the XDS receiver in order to provide protection from power spikes and brownouts. You may also consider lightning protection if you are located in an area subject to frequent lightning storms.
- Your receiver needs to be activated before it is ready for use. This should happen automatically when you configure the Ethernet settings properly. See section 3.2.2.1 and the Quick Start Guide for information on how to configure the Ethernet.

2.2 Unpacking the Receiver

Upon receiving your PRO4-P Receiver, ensure that all of the necessary parts have been included.


2.2.1 List of Contents

Table 1 lists the items included in the PRO4 shipping box.

Item	Quantity
Receiver	1
Power Cord	1
Quick Start Guide	1
Installation Kit (Optional)	1
Network Data Sheet	1

Table 1. Packaging List

2.3 Safety Precautions

 Caution!	The following sections provide a list of general hazards to be avoided for safe, reliable use of the PRO4 receiver.
------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------

2.3.1 Excessive Temperature

The PRO4-P receiver has been designed to operate safely and reliably in an ambient temperature of 0°C to 50°C. We expect the system to operate without the need for a fan in air conditioned locations. The fan will be electronically controlled via a temperature sensor which will allow the unit to operate under less than optimal conditions. It is important to keep in mind that once the receiver is located in a closed or rack environment, the ambient temperature may be greater than the room temperature. Please take this into consideration when installing the receiver and make sure that the ambient temperature around the receiver does not exceed 50°C.

2.3.2 Proper Ventilation

Air vents on the side and rear of the receiver are provided to ensure proper air flow through the receiver unit. In order to ensure proper operation the PRO4-P receiver should be located such that its ventilation is not impeded. In a rack environment, at least two inches on the sides and at least 5 inches in the rear should be provided. Proper ventilation will help ensure the receiver performs both safely and efficiently.

2.3.3 Heat, Humidity, and Dust


In order to avoid unnecessary internal damage, avoid placing the receiver next to external heat sources such as heaters, direct sunlight, heating ducts, etc. Additionally, locations of high humidity, dust, and vibration will be detrimental to the receiver's performance and longevity.

2.3.4 Power Cord Cabling

Avoid running the power cord across places of high traffic where it can be crimped or tripped over. Make sure the cords are securely fastened to both the wall outlet or power strip, and the back of the receiver. Do not place objects on or leaning against power cords.

2.3.5 Proper Grounding


When the receiver is installed, make sure that the antenna and coaxial cable are properly grounded to avoid static build up and voltage spikes which may occur due to lightning strikes or other types of power surges. Proper earth grounding of the rack system should be maintained at all times with special attention paid to any connections which go through power strips.

 Warning!	Make sure all power strips are properly grounded.
--------------------------------------------------------------------------------------------------------	---------------------------------------------------

2.3.6 Circuit Overloading

The PRO4-P receiver can draw up to 0.5 Amps at 120VAC as indicated on the back of the receiver. When adding the receiver to an already existing rack setup, take care to ensure the maximum current rating of the circuit is not exceeded.

2.3.7 Foreign Objects

 Warning!	Inserting <i>any</i> type of foreign object into the ventilation holes of the receiver can result in shock or serious injury of the operator.
--------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------


If a foreign object is inserted into the receiver, immediately power down the receiver and contact X-Digital Systems technical support. Do not open the receiver, as doing so will void the receiver's warranty.

2.4 Physical Installation of the Receiver

The following section will guide you through the physical installation of the PRO4-P receiver.


2.4.1 Rack Mounting the Receiver

The PRO4-P receiver has been specifically designed to fit into a 19-inch rack. There are four screw holes provided on the front panel to directly mount the receiver in the rack. All four screws must be in place after installing the receiver.

 Caution!	Do not paint mounting ears as it hinders the grounding path from the receiver to the rack.
------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------

2.4.2 Uneven Loading of Rack

When installing the PRO4-P receiver into a rack, make sure to place heavier pieces of equipment on the bottom and lighter pieces on the top.

 Caution!	Uneven loading may cause the rack to be unstable and hazardous.
--------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------

2.5 Connecting to the Satellite Dish


This section contains information required for connecting your PRO4-P receiver to a satellite downlink.

2.5.1 DC Voltage Requirement

You may need to have the PRO4-P receiver supply DC voltage to either an LNB or a block down-converter (used after an LNA). If this is the case, the user must change the receiver's LNB ON/OFF settings using the front panel display. For directions on how to use the front panel display, see Chapter 4 of this manual. If, however, you have another

receiver that receives the L-Band version of the satellite signal (9500-14500MHz) then you may use a splitter with DC blocking circuitry to get the signal to the PRO4-P receiver. In this case, the LNB Voltage setting should be OFF.

2.5.2 Warnings About Shorting DC

 Caution!	If the LNB Voltage mode is enabled, be careful not to short the signal. The voltage on this line is approximately +24V DC.
------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------

If the DC Voltage is shorted during installation, transient voltage may damage the Demodulator. In the case of a short, over-current protection circuitry will shut down the LNB supply. When this occurs, it is important to disconnect the receiver as soon as possible. If there is a “dead” short in the cable connecting the receiver to the satellite dish, the unit will not function properly. Remove the power cord from the rear of the unit and then check the cable connecting the receiver to the satellite dish to make sure it has not been damaged and is installed correctly. Finally, reinstall the power cord and proceed with unit setup.

2.6 Connecting to the Ethernet Network

The XDS PRO4-P Satellite Receiver is specifically designed to receive audio broadcasts via satellite transmissions. It is also equipped with an “internet” only mode in which it can receive audio data and receiver updates via its Ethernet port. For this feature to be functional, the receiver must be connected to a network router or directly connected to an internet connection. This portion of the User’s Guide will provide instructions on setting up your receiver to connect to the internet. If you are unsure about any of the values required below, please contact your local network administrator for.

2.6.1 Connecting the Cables

The Ethernet port on the back of the receiver accepts non-crossover RJ-45 cables. Depending on your station’s internet connection, you will either connect a RJ-45 cable directly from a Cable or DSL modem box to the PRO4-P receiver, or you will connect the cable from a network router to the receiver. In either case, ensure that the cable is properly aligned and that it clicks in when you connect it, so that it can not be removed without pressing the plastic release button on the end of the cable. Ensure that your internet connection is functioning before proceeding to the next steps.

2.6.2 Using DHCP or Static IP Addresses

Dynamic Host Configuration Protocol, or DHCP, allows the network administrator to control the assignment of device IP address assignment. If DHCP is on, the receiver will be assigned an IP address automatically by the network. The implications of this are that

the IP of the receiver may change each time the receiver is rebooted. Turning DHCP off will ensure that a static, or non-changing, IP is assigned to the receiver as opposed to a dynamic one determined at each startup of the receiver. For direction on turning DHCP on or off, refer to section 3.2.2.1.

2.6.3 Assigning a TCP/IP Address

The TCP/IP address of the receiver serves as its identification number on the local network. Once the receiver is set up properly on a network, it will host a website which can be loaded by typing its IP address into any standard web browser. Therefore the ability to specify a static IP address for the receiver may be useful. To view and modify the IP address, refer to section 3.2.2.1.

2.6.4 Assigning a Subnet Mask

The subnet mask is used to determine where the network number in an IP address ends and the node number in an IP address begins. A node is any device on a network that needs a unique IP address to communicate (computer, server, router, PRO4-P Receiver, etc.). To set this value for your purposes, refer to section 3.2.2.1.

2.6.5 Assigning a Default Gateway

A *gateway* refers to a router or host which grants access to the internet. If you have not enabled DHCP, you must specify the TCP/IP address of this default gateway. To set this value, refer to section 3.2.2.1.

2.6.6 Proxy Server Configuration

A proxy server can be configured through the front panel as detailed in section 3.2.2.1 or through the command line interface. To modify the proxy server through the command line, refer to the E0/E1 PROXY commands in section 4.2.2.

2.6.7 DNS Server Configuration

The DNS Server settings must be configured using the front panel as shown in section 3.2.2.1 or through the command line interface. A receiver may specify up to four DNS addresses using the E0/E1 DNS commands described in section 4.2.2.

2.7 Connecting the Audio Ports

Live audio channels will physically connect to one of the four audio ports of the PRO4-P through the R/F downlink. Your PRO4-P receiver is capable of outputting

both analog and digital audio depending on how the receiver is set up. Networks will generally assign stations statically to an individual port or port configurations can be modified through the Affiliate Website.

2.7.1 Analog Audio Ports

The four ports on the back of the receiver labeled Audio A, Audio B, Audio C, and Audio D output analog audio. For information on the pin-out of the ports, please see section 7.6.

2.7.2 Digital Audio Port

The port on the back of the receiver labeled AES/EBU outputs digital versions of the audio output from ports Audio A-D. Please see section 7.8 pin-out information.

2.8 Connecting the Relay Ports

The PRO4-P is equipped with two RS-232 ports labeled Relay A and Relay B that are capable of receiving cue signals from the Network signal and firing relay closures

2.8.1 Physical Ports

Each of the RS-232 ports on the back of the receiver has 32 relay closures that can be mapped. The relay mappings can be modified, viewed and toggled through the Affiliate Website (Section 6.3), toggled only through the front panel (Section 3.2.2.3) or viewed only through the Receiver website (Section 5.1.4). For pin-out information on the RS-232 ports please see Section 7.5.

2.8.2 Cues

The PRO4-P is capable of firing multiple types of relays:

- Associated cues will fire when the associated program is playing. In addition these cues will be recoded if the for delayed playback.
- Non-associated cues will fire if they are mapped to a relay regardless of what program is playing.
- All cues will be outputted through an RS-232 Tx pin on the receiver's relay port to be used by downstream systems.

2.9 Connecting the Program Associated Data (PAD) Port

The PRO4-P is capable of receiving and displaying PAD in two different ways. Your Network will provide baud rate settings for the PAD. PAD settings for the receiver can

be configured through the front panel (Section 3.2.3.1) or the M&C (Section 4.2). PAD data is output through the port labeled PAD on the back of the receiver. Please see section 7.9 for information on the PAD port pin-out.

2.9.1 In-Band Ancillary Data

In-band ancillary data is raw asynchronous data embedded within the streaming audio on the same program PID as the audio. It is fed into the RS232 port of the encoder port and thereby associated with a single audio stream. MP2 natively supports ancillary data. AAC will carry ancillary data in a proprietary enhancement to the framing protocol (this enhancement will be compatible with all AAC decoders).

2.9.2 Out-of-Band Ancillary Data

Out-of-band ancillary data is raw asynchronous data associated with a single audio stream but carried outside of the MP2 or AAC data frame. It is fed into the RS232 port of the encoder port and thereby associated with a single audio stream. This data may be embedded within the MPEG2 transport framing structure (TSP) of a single audio stream.

2.10 Connecting the Modem

If you do not have access to an always-on internet connection in your station, the PRO4-P is equipped with a dial-up modem. Please see section 3.2.2.1 for information on configuring Dial-Up through the front panel.

3 FRONT PANEL OPERATIONS

The front panel of the PRO4-P Receiver is equipped with an interface that allows users to navigate through the hierarchical menu to view, modify and save receiver settings. The Four status LEDs are indicative of the power, signal, update and fault states of the receiver. Users interact with the receiver by using the eight buttons: **1**, **2**, **3**, left(◀), right(▶), up(▲), down(▼), and **SET**, along with the 128x64 pixel LCD display.

3.1 Status LEDs

Each of the four status light-emitting diodes indicates a specific state of the receiver. The following sections provide details on reading the status of the receiver based on the LEDs.

3.1.1 The Power LED

The POWER LED is on when the unit is plugged in and there is no problem with the internal circuitry.

3.1.2 The Signal LED

The SIGNAL LED is used to indicate whether or not the receiver has locked onto a signal. The Signal LED will either be solid green if the receiver is locked or off if the receiver is not receiving a signal.

3.1.3 The Update LED

The UPDATE led indicates a software download/upgrade is in progress. When it is blinking slowly (once per second), the download is in process. When it blinks fast (three times per second), an upgrade has been successfully installed and the receiver is ready to be rebooted as soon as it is convenient.

The update LED will also be blinking if you haven't activated your receiver unit with the NMS. If the Ethernet is properly configured on your receiver, it should auto-activate. Use the Test NOC function (Section 3.2.2.1) to verify your Ethernet settings are properly configured.

3.1.4 The Fault LED

The FAULT LED has three possible states. A red Fault LED indicates that there is an active fault condition affecting the receiver; a green Fault LED indicates that there is no active fault, but that there is either an active warning or a past fault in the fault history; a Fault LED that is off indicates that there are no current or past faults. The STATUS menu (described below) will give you details as to which faults are active.

3.2 The LCD Display and User Interface

The PRO4-P Receiver comes equipped with a 128x64 pixel LCD on its front panel which allows the user to view, modify, and save receiver settings. The navigation of the PRO4-P receiver's menu hierarchy is simple:

- To cycle through the possible submenus, press the ◀ or ▶ buttons.
- To navigate into the currently selected submenu, press the ▼ or **SET** button.
- To navigate back up into a higher level of the menu hierarchy, press the ▲ button.
- Once you have navigated to a menu which allows you to edit settings, use the ▲ and ▼ buttons to highlight options, and the **SET** button, to select an option.

The Main Menu Options

When the receiver's front panel is not being used, the idle screen featuring the X-Digital Systems logo will be displayed¹. There are two important statistics displayed on this front logo screen: EB, *energy per bit relative to noise floor*, which is a quantitative measure of signal quality; and AG, *automatic gain*, which is an indicator of the signal level. Both of these quantities serve to describe the quality of the satellite signal and should be used as a guide when positioning the satellite dish. Better signals have better separation between the data and noise floor, and thus a higher EB. EB range is 0 - 18. The receiver will fade in and out below 5 dB Eb / No, and lose lock completely at around 3.5 dB. A powerful signal will have a high AG (indicating little amplification is required) while a weak signal will have a low AG (indicating unit is amplifying signal).

Once the ▼ button is pressed, the receiver will navigate into its main menu options: STATUS, SETUP, and AUDIO PORTS. Continually pressing ◀ (or ▶) will cycle through these three main menus. Pressing ▼ or SET will navigate into whichever one of the three options is currently selected.

From the Main Menu, pressing ◀ or ▶ will access the Speaker Volume screen and allow the volume to be increased or decreased. From the Speaker Volume screen, pressing 3 will mute the volume completely and pressing 1 will access the software VU Meter screen.

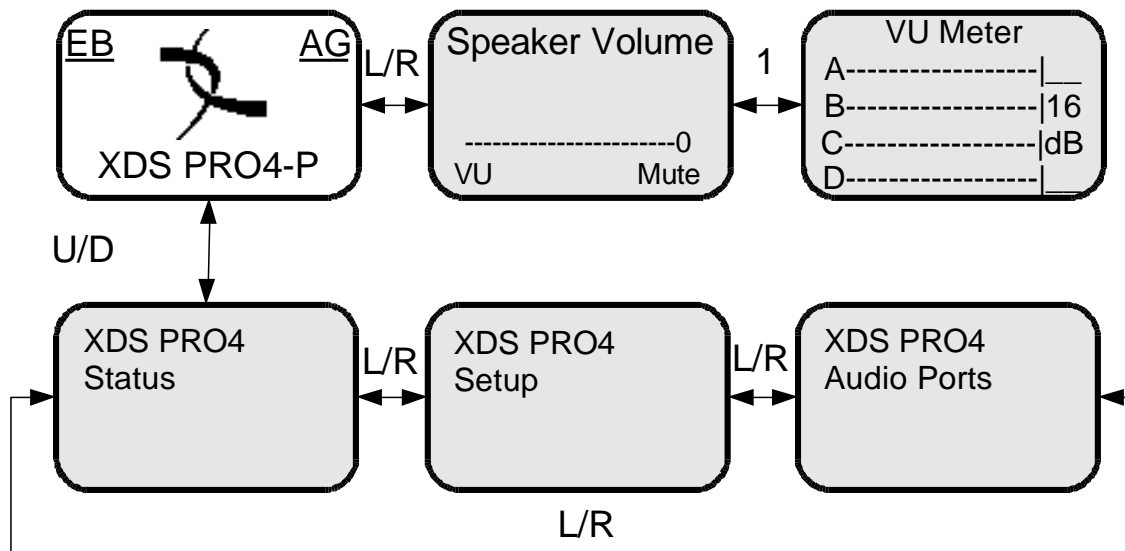


Figure 1 Main Menu

3.2.1 The Status Submenus

¹ The X-Digital logo may be replaced by your broadcaster's logo.

From the Status menu, the user can navigate through five submenus; each of them offers a variety of status-related information. From any of these submenus pressing the ▲ button will bring you back to the main menu options. The different submenus available in Status are:

- **Active Faults:** describes any active faults that may be affecting the receiver. If there are faults, this screen will indicate 'OK.'
- **Fault History:** offers a list of past faults which may have occurred. Pushing **3** will clear the fault history. If there are no past faults, this screen will indicate 'OK.'
- **Environment:** indicates the internal temperature of the receiver as well as the speed of the fan.
- **Power Status:** readings on the various voltage levels inside the receiver.
- **Storage - CF:** gives an indication of the compact flash usage in the receiver. If the compact flash is in need of repair as indicated in the Active Faults, the repair process can be started by pressing the '**3**' key labeled as 'Fix.' If the hard drive is not in need of repair the 'Fix' option will not be shown.
- **Storage - HDD:** gives an indication of the internal hard drive usage in the receiver. If the hard drive is in need of repair as indicated in the Active Faults, the repair process can be started by pressing the '**3**' key under 'Fix.' If the hard drive is not in need of repair the 'Fix' option will not be shown.

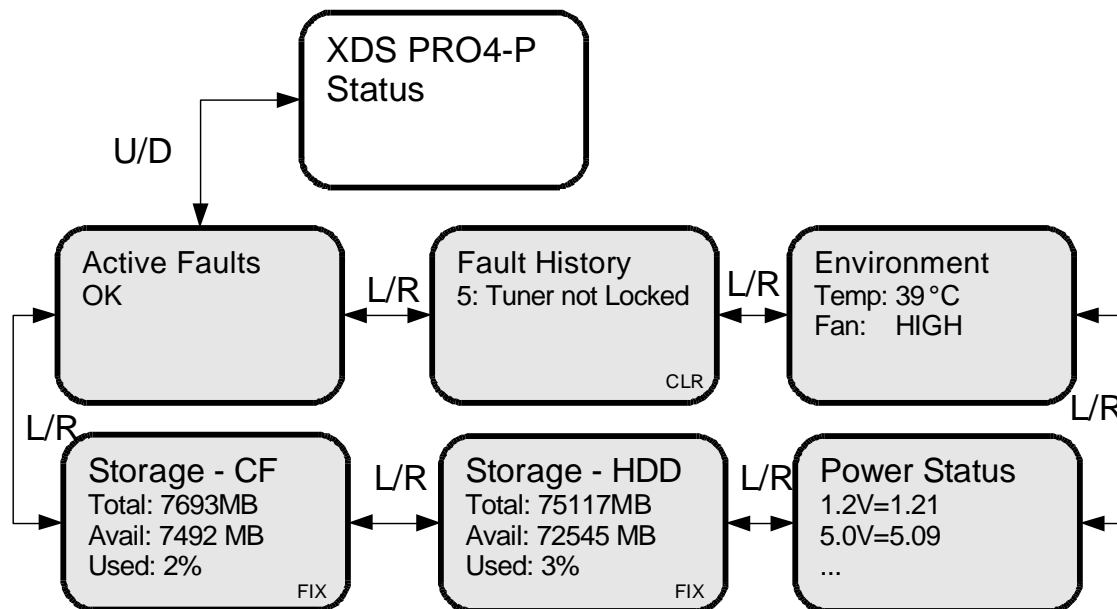


Figure 2 Status Submenus

3.2.2 The SETUP Submenus

By navigating from the Main Menu to Setup, the user reaches the Setup submenu. The different submenus available under Setup are:

- Serial Number: displays the receiver's serial number. Pressing the **3** button underneath "PWD" will display your receiver's affiliate site daily password.
- Monitor and Control (M&C) Ports: displays M&C terminal settings needed to connect to the receiver.
- Network: pressing the **SET** will navigate into the Network submenus. See section 3.2.2.1 for instructions on configuring the network settings.
- USB: allows user to manage USB devices and backup or restore receiver identity. See section 3.2.2.2 for detailed instructions.
- Alarms: allows you to set the alarm mask as a hex value. Pressing **SET** will allow modify the mask. Use to ▲ or ▼ change a digit and ◀ or ▶ to move between digits. The PRO4-P receiver has an alarm relay closure that can be set up to fire on pin 4 of the M&C port if the receiver enters a fault status. Error values can be found in Table 3 on page 47. An example would be to set the alarm mask to 00000010 (error value for 'Tuner Not Locked') if you wanted the relay to fire if the tuner lost lock with the downlink. Please refer to section 7.4 for pin out details of the M&C port.
- Version: pressing **SET** in this menu will display the receiver's firmware version as well as the date it was built.
- Factory Defaults: pressing **SET** will offer you the option of resetting the receiver to factory defaults. Press **1** to confirm or **3** to cancel. After confirming the reset, the receiver will need to be rebooted for the changes to take effect.
- Reboot: pressing **SET** will allow you to gracefully reboot or unplug the receiver. Press the **1** key to soft reboot the receiver or the **2** key to put the receiver in a ready state to be unplugged. It is always recommended to use these reboot options over simply unplugging the receiver because non-graceful shutdown can damage the internal storage device file systems.
- Relays: allows you to toggle any of the individual relay signals on Relay A or B. See section 3.2.2.3 for detailed instructions.
- Tuner: pressing **SET** or ▼ will navigate into the Tuner submenu. See section 3.2.2.4 for details on the Tuner submenu

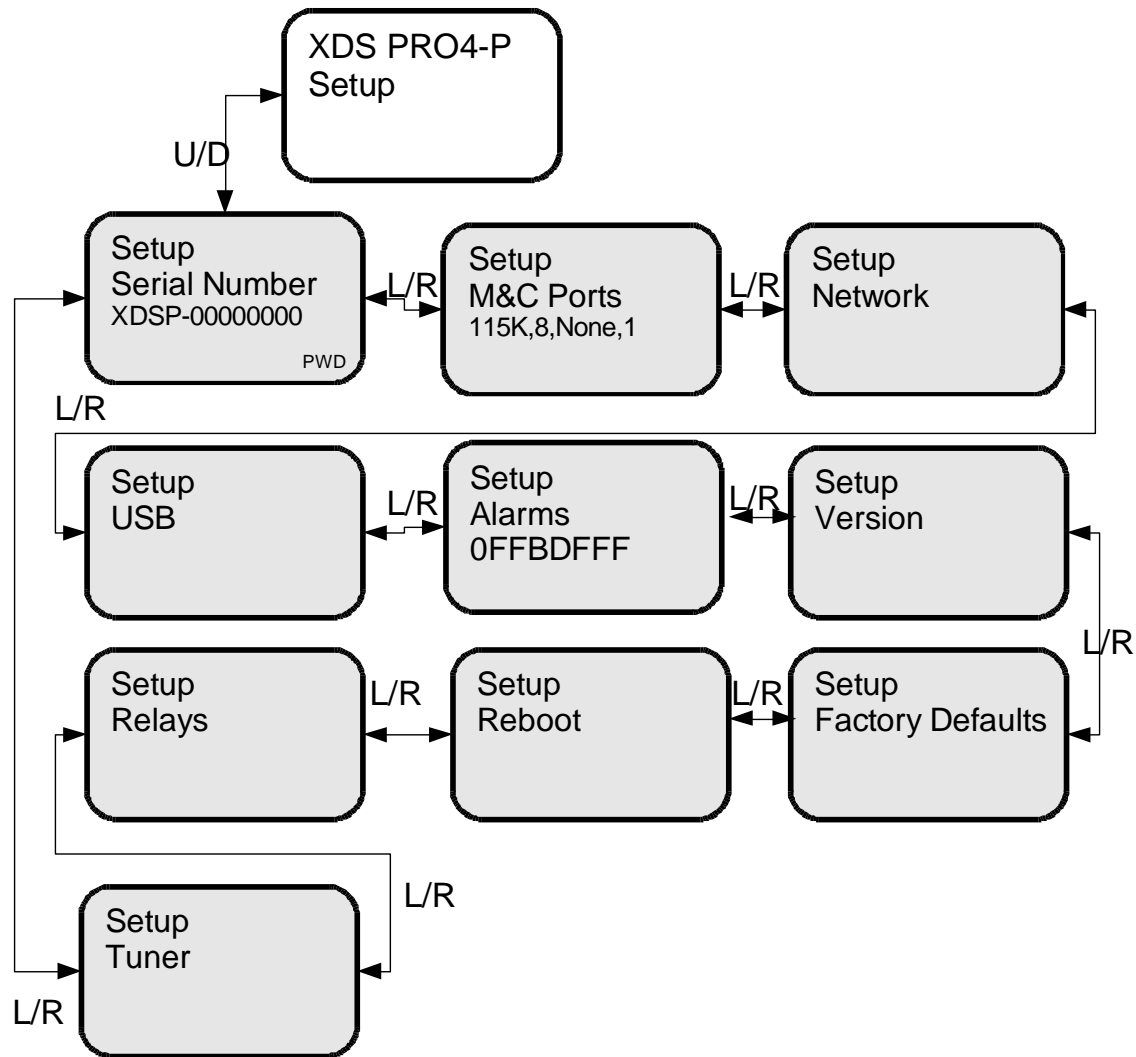


Figure 3 Setup Submenus

3.2.2.1 The Setup:Network Submenus

Starting from the Main Menu and navigating to the Setup option and pressing ▼, and then navigating to the Network option and pressing **SET**, a user will have access to the Network submenus. In these submenus, the network settings for the receiver can be modified. To modify any of these alphanumeric values press **SET** and then use ◀ or ▶ to select which byte/digit/letter to change. Make a value larger with ▲ or smaller with ▼. When configuring the Dial-Up accounts use DEL (2) to delete a letter or digit. Press **SET** after the desired value is reached to commit or use ESC (3) to cancel. The network menu options include:

- **DHCP (ON or OFF):** allows the user to specify a dynamic or static IP (on or off respectively). To change the setting press **SET** and then use ◀ or ▶ to move between ON and OFF. Press **SET** again to confirm the change or ESC (3) to cancel.

- LAN IP Address: in the case of a static IP, this allows the user to specify the LAN IP address of the receiver.
- LAN Subnet: allows the user to specify the LAN Subnet mask.
- WAN Address: specify the WAN IP address.
- WAN Subnet Mask: specify the WAN subnet mask.
- Gateway: allows the user to specify the default gateway to direct traffic.
- DNS: Use ADD (3) to add a DNS server to the network settings. You can specify up to four DNS servers to the receiver. If you need to change a DNS server use DEL (3) to remove the incorrect server and then add the new one.
- Proxy: specify the address for a proxy server. Once an IP address is entered, the options ADDR (1) and PORT (3) will appear allowing the IP address or port of the proxy server to be modified. Port 80 will be used by default.
- Test NOC: when SET is pressed, this menu offers the user two test options:
 - Pressing PING (1) allows you to ping the gateway to ensure the network connection is functioning. Output will be either 'PING OK' or 'PING FAILED!' for success or failure respectively.
 - Pressing NOC (2) tests that the receiver is able to communicate with the NMS. Output will be either 'CANNOT CONNECT TO NOC (bad reply)' or 'SUCCESSFULLY CONNECTED TO NOC' for success or failure respectively.
 - Pressing ESC (3) exits from the Test NOC menu.
- Dial-Up: allows the user to enable and configure the dial-up connection. Follow the steps below to configure a dial-up connection.
 - Use SET to enter the Dial-Up submenu and then SET again to edit the ON/OFF status of the connection. ◀ or ▶ changes the value, SET confirms and ESC (3) cancels.
 - After enabling dial-up, navigate to the Account Settings screen with ◀ or ▶ and press SET.
 - Choose to modify either the Primary or Backup Account with ◀ or ▶ and then use SET to enter the submenu.
 - Use ◀ or ▶ choose between Primary Phone, Primary User, and Primary Password and then SET to modify the value. The same can be done for the Backup Account in case of a failure on the main account.
- NAS: configure up to two NAS devices via the supported NFS or SMB protocols. If a NAS device is configured, the PRO4-P can automatically export file deliveries it receives to the remote file system on your network. Follow the steps below to configure a NAS device:
 - Account: Scroll between Account A or Account B with ◀ or ▶ and use SET to configure the account.
 - Type: Select between NONE, SMB and NFS for the account type.
 - URN: Set the URN of the share you are connecting to. For example if you were sharing the folder 'share' on the server 'filesrv' via smb you would enter *//filesrv/share* for the URN
 - Path: Optionally set the path to export files to a specific folder within your share. If you had a folder named 'spots' within the example file system

from above, you would enter */spots* for the path. If no path is specified, it will default to */* which is the root of the connected share.

- User: If you are using SMB and have restricted access to only specific users, enter the authorized username here. If using NFS or SMB with anonymous access, leave the field blank.
- Pass: If you are using SMB and have restricted access to only specific users, enter the authorized username's password here. If using NFS or SMB with anonymous access, leave the field blank.

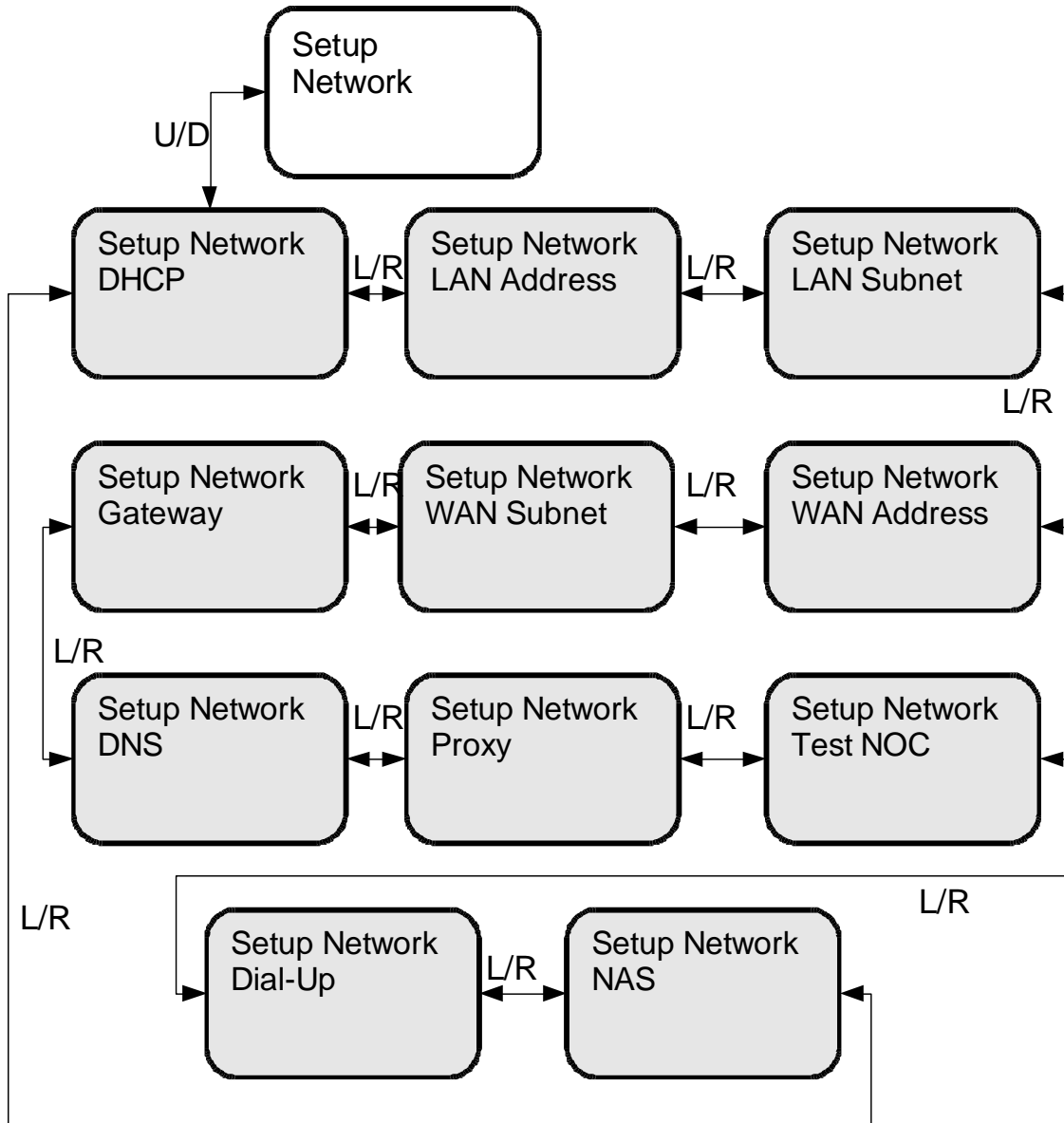


Figure 4 Network Submenus

3.2.2.2 The Setup:USB Submenus

Starting from the Main Menu and navigating to the Setup option and pressing ▼, and then navigating to the USB option and pressing **SET**, a user will have access to the USB submenu. In the USB submenu, a user will be able to monitor and manage USB devices connected to the receiver. The following menus are available:

- **Status:** This menu shows the status of the connected USB device. If nothing is connected the Status will display ‘No device detected.’ If a device is connected the hardware name will be displayed under Status.
- **Insert Device:** Once a USB device is connected to the front panel, navigate to this menu and press **SET** to mount the device. If mounting is successful the menu will display ‘Device Ready.’ If no device is inserted into the port or the receiver is unable to mount the device, the menu will display ‘Device Not Found.’
- **Remove Device:** When you would like to remove the USB from the receiver, navigate to this menu and press **SET** to dismount the device. Once the device has been successfully dismounted, the menu will display ‘Device Removed.’ If no device is present to be removed, the menu will display ‘No Device.’
- **Backup to USB:** In this menu use the GO (1) option to backup the identity of the receiver to a USB device for hastened recovery in case of a failure.
- **Restore from USB:** In this menu use the GO (1) option to restore a receiver’s identity from a USB device.

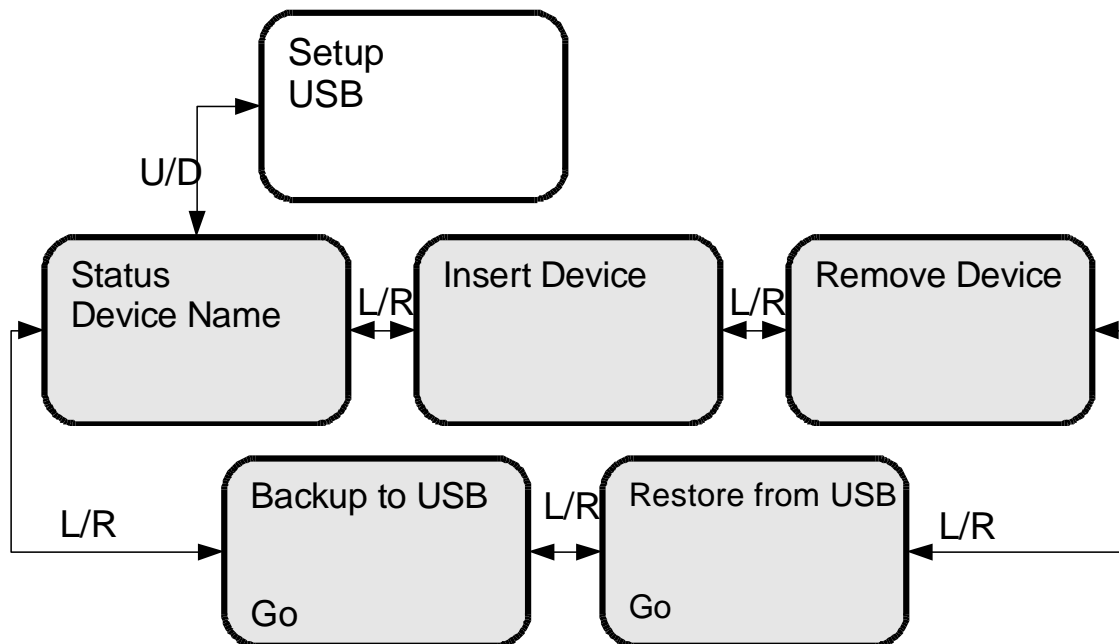


Figure 5 USB Submenus

3.2.2.3 The Setup:Relays Submenu

Starting from the Main Menu and navigating to the Setup option and pressing ▼, and then navigating to the Relays option and pressing **SET**, a user will have access to the Relays submenu. In the front panel, the relays are represented as a series of 0s and 1s with 0 indicating that the relay is off and 1 indicating that it is on. Press ◀ or ▶ to

choose which Relay port to edit, then press **SET** to modify which signals on the relay are activated. When modifying the relay signals, the 0s will change to a series of dashes (--). Use ◀ and ▶ to navigate between the dashes or 1s which represent the individual signals and use ▲ and ▼ to toggle between on (1) and off (-). Once relays have been selected, press **SET** to confirm or ESC (1) to cancel. Relays A and B each have 16 relay signals that can be used. For information on the pin out of the relay ports, refer to section 9.5.

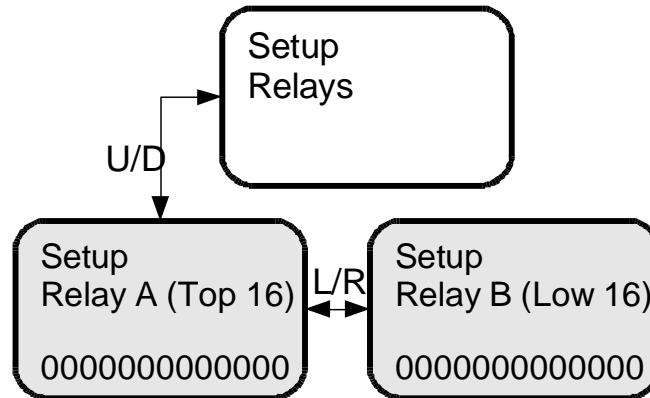


Figure 6 Relays Submenus

3.2.2.4 The SETUP:TUNER Submenus

Starting from the Main Menu and navigating to the Setup option and pressing ▼, and then navigating to the Tuner option and pressing **SET**, a user will have access to the Tuner submenus. From this level the user can change various attributes of the receiver's tuner such as frequency, symbol rate, LNB frequency, LNB Power (on or off), and view the FEC setting. To change these options, the user navigates to the appropriate menu and presses **SET**, then uses ◀ or ▶ to navigate between values and ▲ or ▼ to make changes. Press **SET** to confirm the changes or ESC (3) to cancel.

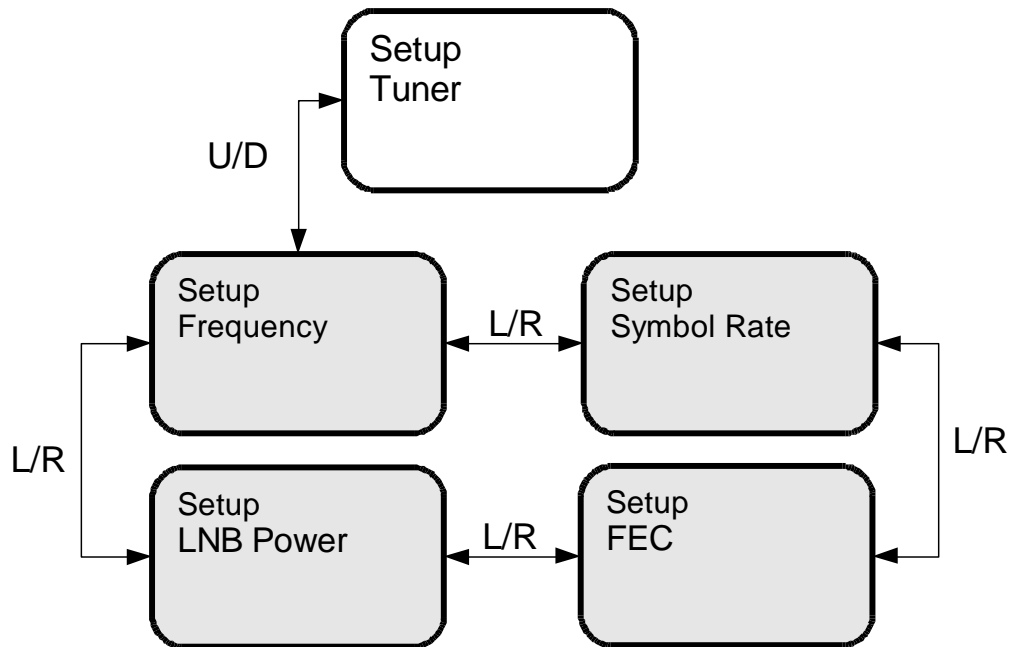


Figure 7 Tuner Submenus

3.2.3 The AUDIO PORTS Submenus

From the Audio Ports submenu, users can change the settings for each of the four ports as well as headphones port. To choose which of these five ports to modify scroll between them using ◀ or ▶ until the desired port is selected. Once the desired port is selected, pressing 1 will take you to the port submenu where programs, spots, audio settings and PAD/Async data can be selected..

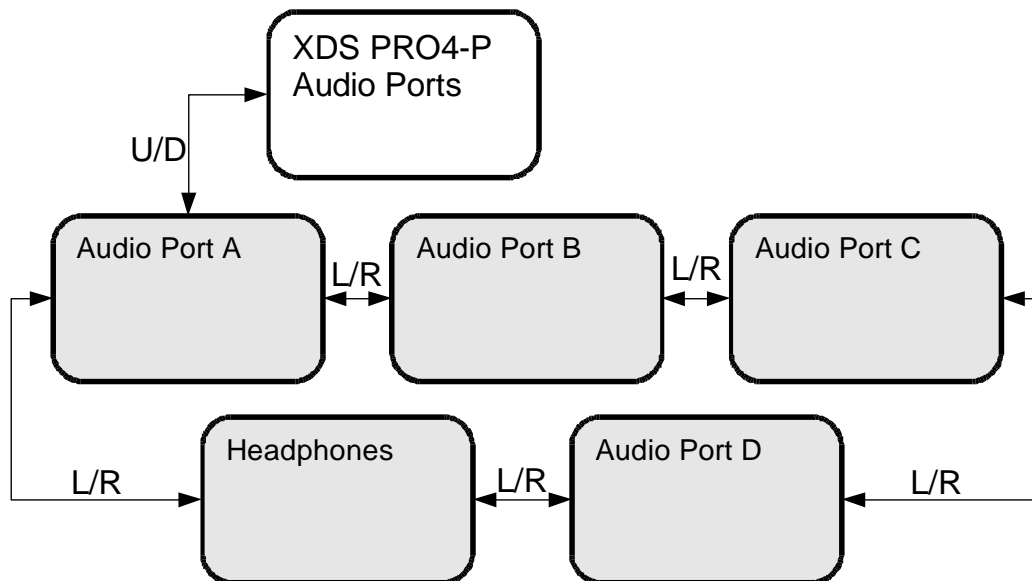






Figure 8 Audio Ports Submenu

3.2.3.1 The AUDIO PORTS:SETUP Submenus

Each of the four audio ports (Audio Port A-D) has its own identical setup sub menus. From these menus, users may modify the current program played on the audio port, the current commercial spot played on the audio port, whether the port plays in stereo or mono, and the PAD/Async data broadcast. These settings may be changed by scrolling to the desired port and pressing **SET**.

When selecting a program manually for an individual port, live broadcasts as well as recorded programs saved on the receiver will be available from the list. Live feeds will simply show up as the program name whereas recordings will show up with an  icon followed by the name of the recorded program and a time stamp of when the recording was made. The following is an example:  Eighties Jams (Fri, 05/23, 06:45AM)

When Program, Spot or PAD/Async menus are selected, the receiver will display a list of programs, spots or PAD/Async data respectively. Use , and  to scroll through these lists, and use **SET** to select one for playback or display from one of these lists. As well as selecting what PAD/Async data to display, a user will need to select a baud rate as well. Available rates are 300, 1200, 2400, 4800, 9600, 19200, 38400, and 57600. When the Settings menu is selected, the user can change the audio ports output mode from mono to stereo or vice versa. Again use the arrow keys and **SET** to accomplish this.

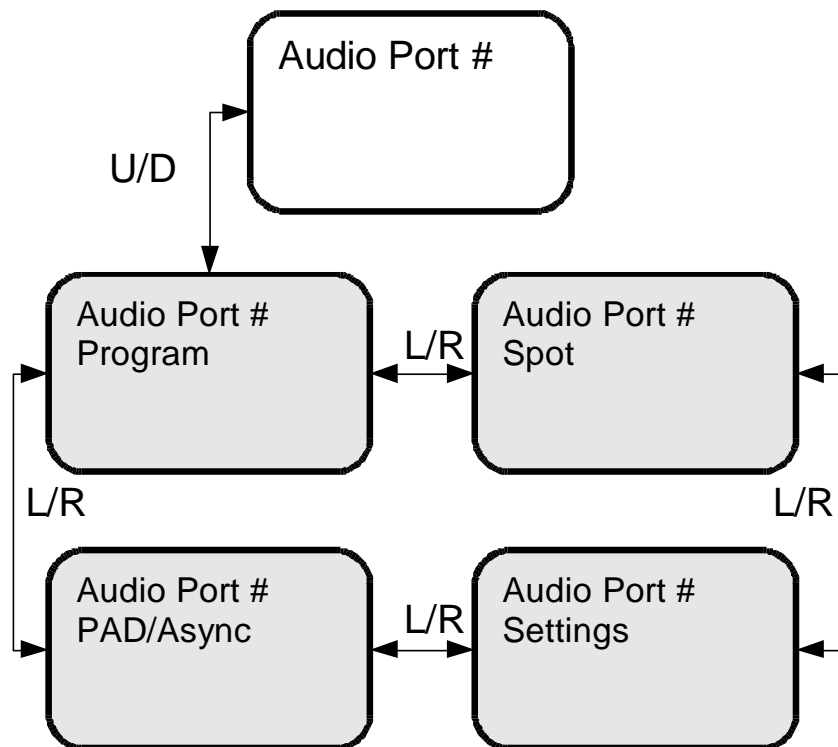


Figure 9 Individual Audio Port Submenu

3.2.4 Receiver Master Menu Tree

Below is a diagram showing all of the receiver menu screens and how they connect with each other.

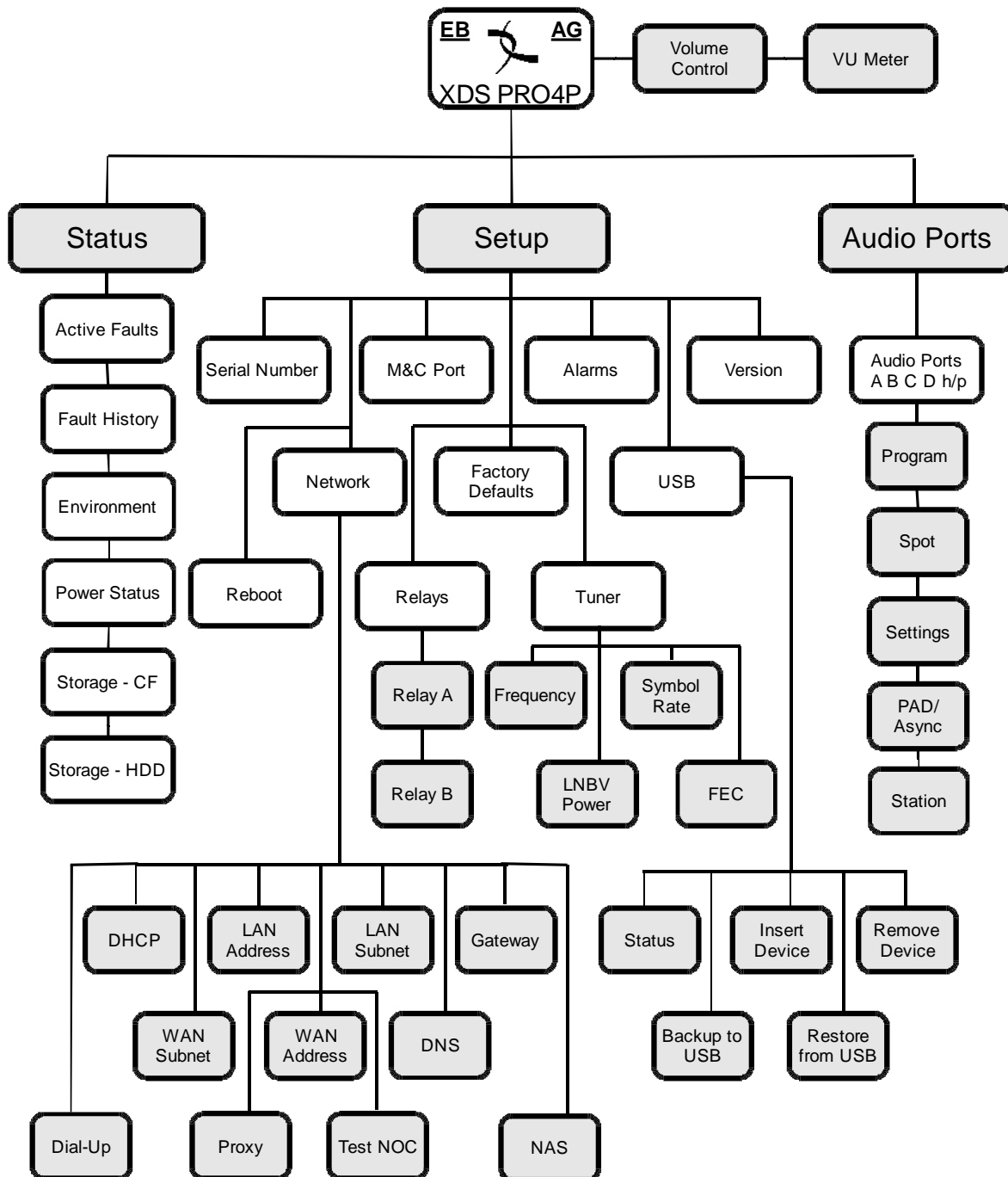


Figure 10 Master Menu Tree

3.2.5 MONITOR AND CONTROL INTERFACE

In addition to the front panel and the Affiliate Website, the PRO4-P Receiver is equipped with an M&C console port on the back of the receiver. This port can be used to access the command line interface of the receiver. In addition to the M&C port on the back of the receiver, the console can be reached via a telnet terminal on port 2000. All console commands are the same through the rear port or through a telnet terminal.

3.3 Setting up a Console Connection

To set up a console interface from your computer to the receiver:

- Connect a standard serial cable from the serial port on your computer to the port labeled “Console” on the back of the receiver.
- Open HyperTerminal from the Start Menu: Start > All Programs > Accessories > Communication > HyperTerminal.
- In the Connection Description dialog, enter “XDS PRO4-P Console” as the connection Name, and select a connection Logo. Press “OK”.



Figure 11 Connection Description

- In the ‘Connect To’ dialog, select “COM1” in the Connect using drop down list.



Figure 12 Connect To



Note!

If you have connected the serial cable to a different port rather than COM1, select that port instead.

- In the COM1 Properties dialog, select 115200 in the “Bits per second” drop-down list, 8 in the “Data bits” drop-down list, “None” in the “Parity” drop down list, 1 in the “Stop bits” drop-down list, and None in the “Flow control” drop down list. Press “Apply” and then press “OK”.

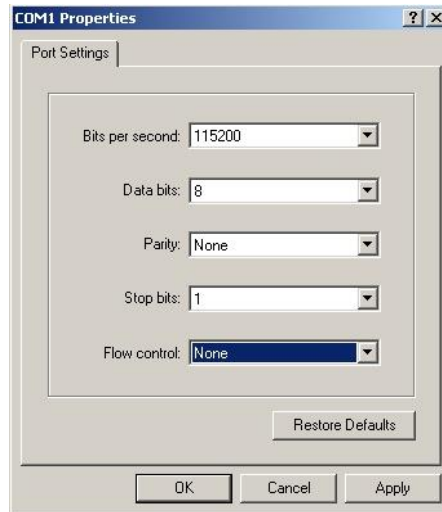


Figure 13 COM1 Properties

You are now ready to communicate with the PRO4-P Receiver via the console you have created. When you first connect to the receiver, the screen will be blank. Press enter to and you should see the prompt “Hudson>” confirming you are connected and that the receiver is ready to accept commands.

There are a variety of typed commands to which the receiver will respond. By default the console is not logged into the receiver, and as such the console will have a very limited set of commands to use. Without logging in, the user can only use status commands and may not change any receiver settings. To log in, use one of these two accounts:

- user/guest: the user account has a permission to change standard receiver settings like program ID, monitoring settings, and volume settings.
- tech/radio: the tech account has full access to every command the receiver has to offer. Only use this account when trouble-shooting the receiver or performing technical diagnostics.

To log into either of these use the LOGIN command, detailed below in section 4.2.7.

3.4 Console Commands

Tasks are performed through the console via commands. The syntax for any command is the name of the command, followed by a comma separated list of one or more option command arguments. Below is a list of available commands along with the arguments for each command and the action of the command.

3.4.1 The ALARM Command

The ALARM command tells you, and allows you to change, the current ALARM mask the receiver is using. To see the current ALARM mask without modifying it, simply type ALARM without an argument following it. To change the alarm mask, type: ALARM <MASK>, where <MASK> is a hexadecimal digit in the range [0-FFFFFFFF]. Anything larger than FFFFFFFF will be interpreted as the largest mask, FFFFFFFF.

The ALARM command is only available to the tech profile.

3.4.2 The E0 and E1 Commands

The E0 and E1 commands change various settings for the first and second Ethernet ports respectively. The command followed by any of the below options will display that parameter if there is no argument given, or change that parameter to the argument if an argument is given.

Option	Argument	Action
SHOW		Shows various technical data regarding the specified interface
MAC		Same as the SHOW option.
DHCP	[ON/OFF]	Sets DHCP to ON or OFF depending on the argument.
ADDR	[a.b.c.d]	Sets the Ethernet port's address to argument. Run without an IP address argument will display the current address.
MASK	[a.b.c.d]	Sets the Ethernet port's subnet mask to the argument. Run without a subnet mask argument will display the current subnet mask
GATEWAY	[a.b.c.d]	Sets the Ethernet port's gateway to the argument. Run without a gateway address argument will display the current gateway.
DNS	[a.b.c.d],[e.f.g.h],...	Sets the Ethernet port's DNS servers. One to four DNS servers can be specified in a coma delimited list. Run without a DNS server argument will display the current DNS servers

ROUTE	Shows the IP routing table for the interface
WWW [a.b.c.d],[w,x,y,z]	Sets the Ethernet's primary URL to the first argument, and sets the secondary URL to the second argument. Run without an IP address argument will display the current web servers
PROXY [a.b.c.d]:PORT	Sets the Ethernet port's proxy address and port. Run without a proxy server IP address will display the current proxy status.

Table 2. E0 or E1 Command Parameters

The E0/E1 commands are available to all profiles.

3.4.3 The Factory Command

This command will reset all of the receiver settings to factory defaults. The syntax is **FACTORY DEFAULTS**, **[USER/FULL]** where **USER** will reset basic settings to factory defaults and **FULL** will additionally reset Ethernet and Tuner parameters. Using this command will require a receiver restart. Typing **FACTORY NETWORK** will display the network ID for the receiver.

The **FACTORY** command is only available to the tech profile.

3.4.4 The FAN Command

The **FAN** command is used to view or set the speed of the internal cooling fan. The following settings are available

- **FAN SHOW** will display the current speed setting (**LOW**, **MEDIUM**, or **HIGH**) of the fan as well as the exact RPM
- **FAN X AUTO** will set fan X to be automatically managed
- **FAN X val** will set the speed of fan X to be val percent of maximum speed
- **FAN X TACH** will display the current RPM for fan X

The **FAN** command is available to all profiles.

3.4.5 The HELP Command

This command prints all of the commands available to the current profile. There are no options for this command.

The **HELP** command is available to all profiles.

3.4.6 The LOGS Command

This command deals with the receiver's internal logs. There are three possible options to be used with this command:

- **SHOW**: This option will display the receivers log file to the console screen.
- **PURGE**: This option will purge the receivers log and start over with a clean slate.
- **AUTO, [n]**: This option will automatically log the status of the receiver every n minutes

- **MSG, "message":** This option will place a message in the log file with whatever text is enclosed in the quotes of the argument of this command. The argument is required.

The LOGS command is only available to the tech profile.

3.4.7 The Login Command

This command will log the console into a user profile specified by the parameters. The syntax is: LOGIN [username],[password]. The username and password must match for the login to be successful. The two default argument combinations for the user and tech profiles are "user,guest" and "tech,radio" respectively. This command is available to all profiles.

3.4.8 The Logout Command

This command will log the console out of whichever user profile is currently logged in. Remember to LOGOUT each time you are done using the console to change receiver settings.



Note!

Logins from previous console sessions stay active until another LOGIN command over-rides the past one or the LOGOUT command is used. For security, LOGOUT when you are done with the console.

3.4.9 The MON Command

The MON command can be used to monitor audio through the headphones or another audio port. To monitor an audio port with the headphones, the syntax would be: MON HP A. This would monitor port A through the headphones. To monitor an audio port with another audio port, the syntax would be: MON A B. This would monitor the audio from port B on port A.

3.4.10 The PID command

The PID command is used to display or set the PID of the program playing through the headphones. To show the PID, simply type the PID command without any arguments. To change the program, Type PID xxxx, where xxxx is the PID of the desired program.

3.4.11 The PORT Command

The PORT command is used to view the status of the receiver audio ports as well as modify the audio. Below is a table of the options and arguments available to the PORT command:

Option	Argument	Action
SHOW	n/a	Displays the current station assigned to each port
STATUS	[port]	Displays status for all ports with no argument or all ports with [port] argument

STOP	[port]	Stops playback of recorded file on [port]
LIVE	[port],[pgmid]	Plays live the program specified by [pgmid] on [port]
PID	[port],[pid]	Sets the PID or [port] to [pid]
PLAY	[port],[recording]	Plays the recorded file [recording] on [port]
INSERT	[port],[isci]	Inserts a recording with ISCI [isci] into the live audio on [port]
TONE	[100/1000/10000/S TOP]	Stops programming and puts test tone on all ports. Use the STOP argument to stop tone.

The PORT command is available to all profiles.

3.4.12 The PING Command

This command will attempt to ping the IP address specified by the argument. The syntax is: PING [a.b.c.d] where [a.b.c.d] is the IP to ping. The IP is a required argument. This command is a good way to test if your network connection is set up correctly.

The PING command is available to all profiles.

3.4.13 The QUIT Command

This command does the exact same thing as LOGOUT. There are no options for this command.

The QUIT command is available to all profiles.

3.4.14 The SF Command

This command displays the fault history. See the SS command for a table of what the fault codes mean.

The SF command is available to all profiles.

3.4.15 The SN Command

This command displays the receiver's serial number. It takes no options.

The SN command is available to all profiles.

3.4.16 The SS Command

This command displays the current status of the receiver in the form a list of current faults which are affecting the receiver. There are no options for this command. Below is a table which will help to interpret the binary code given by the receiver:

Error Value	Error Name
0x00000001	FPGA Load Error
0x00000002	DSP Load Error
0x00000004	Ethernet Failure
0x00000008	No Storage Device

Error Value	Error Name
0x00010000	Recorder Overflow
0x00020000	Temp Warning
0x00040000	Temp Critical
0x00080000	<i>reserved</i>

0x00000010	Tuner Not Locked
0x00000020	<i>reserved</i>
0x00000040	<i>reserved</i>
0x00000080	<i>reserved</i>
0x00000100	<i>reserved</i>
0x00000200	<i>reserved</i>
0x00000400	<i>reserved</i>
0x00000800	<i>reserved</i>
0x00001000	NV Config. Bad
0x00002000	<i>reserved</i>
0x00004000	DSP Timeout
0x00008000	Fan Stopped

0x00100000	<i>reserved</i>
0x00200000	<i>reserved</i>
0x00400000	<i>reserved</i>
0x00800000	LNB Over-current
0x01000000	<i>reserved</i>
0x02000000	<i>reserved</i>
0x04000000	<i>reserved</i>
0x08000000	URL Event Overflow
0x10000000	Internet Down
0x20000000	Storage Full
0x40000000	SW Download Rdy
0x80000000	SW Download Err.

Table 3. SS and SF Error Code Values

The SS command is available to all profiles.

3.4.17 The TIME Command

This command deals with displaying and setting the internal clock of the receiver. Simply typing TIME without any option will display the time according to the receiver. Time is synchronized automatically with the satellite. Your timezone may be set from the Affiliate webpage.

The TIME command is available to all profiles.

3.4.18 The TUNER Command

This command is used to view and modify all of the receiver's tuner settings. Typing this command without any options will display a useful usage message. Type this command followed by one of these options/argument combinations to view or modify tuner settings:

Option	Argument	Action
SHOW		Shows various technical data regarding the specified port.
SET	,[kHz],[sps]	Sets the tuners radio frequency to [kHz] and the tuner's symbol rate to [sps].
LNB	,[kHz]	Sets the tuner's LNB offset to [kHz].
SR	,[sps]	Sets the tuner's symbol rate to [sps].
LNBV	[ON/OFF]	Sets LNBV to ON or OFF depending on argument.
CLEAR		Clears all tuner statistics.

Table 4. Tuner Command Parameters

The TUNER command is available to all profiles.

3.4.19 The VER Command

This command, which takes no options, simply displays the receiver's firmware version to the console.

The VER command is available to all profiles.

3.4.20 The VOL Command

This command sets the volume of the receiver's headphone output. The syntax is: VOL [v] where [v] is a value greater than or equal to 0 (mute) and less than or equal to 63 (full volume).

The VOL command is available to all profiles.

4 RECEIVER WEB INTERFACE

The XDS PRO4-P receiver includes an on-board web interface that will publish itself on your local area network once you have followed the steps in Chapter 5. From this web interface you can view most of the receiver's internal settings as well as the contents of the receiver's hard drive. To access this site, simply open a web browser connected to your network and navigate to the address assigned to the receiver. If DHCP is being used, it may be necessary to check the front panel for the IP address. When the page loads, you will see a login page. Once you have logged in, you will see three buttons on the left labeled: *General*, *Programming*, and *Content*. After logging in, you are viewing the information underneath the *General* button by default. Each of these buttons offers a different set of options which are represented as tabs at the top of the screen.

4.1 The General Menu

The General menu lists most of the basic receiver attributes and settings. After logging in, you start in the General menu by default. The tabs listed across the top for the General menu are: *Status*, *Tuner*, *Setup*, *Relays* and *Logs*. The Status tab is the tab displayed by default upon entering the General menu. To navigate to another tab within a menu, simply click the tab label at the top of the page.

4.1.1 The Status Tab

The Status Tab displays basic attributes about its current output, its surroundings, errors, and current power levels. On this tab you will see:

- A description of the Headphones and Audio Ports output including Program, PID, and the volume.
- A list of current faults affecting the receiver, as well as a history of past faults and a 'Clear Faults' button to clear this history.
- A run-down of environmental factors including the receiver's internal temperature and fan speed, which is a measure of how hard the receiver is working to cool itself.
- A diagnostic of the power supply's voltage levels. Ideally, the actual voltage matches each of the named levels in each row.

Figure 10 below is an image of the Status Tab in the General menu. Your broadcaster's logo may appear in the top left corner. The tabs along the top navigate to different areas of the General menu (Status tab is currently selected). The buttons on the side of the page navigate between the different menus when clicked.

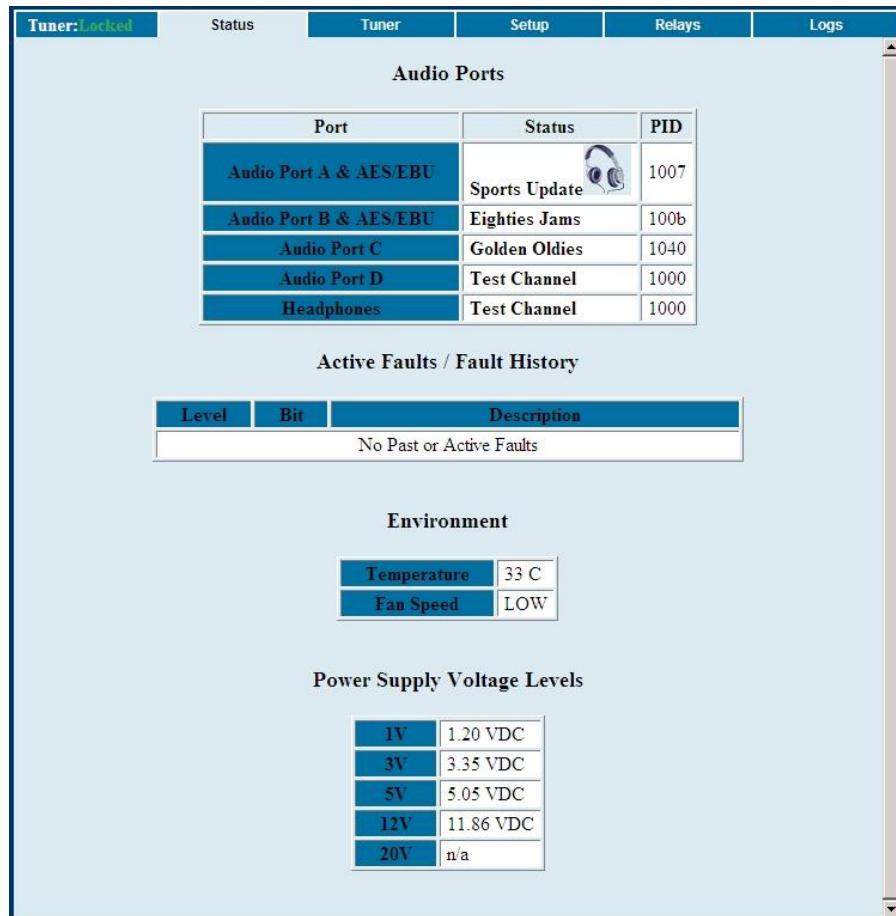


Figure 14 Status Tab

4.1.2 The Tuner Tab

The Tuner Tab presents the user with tuner related data. This data includes:

- The broadcast network of the receiver
- The frequency the tuner is tuned to.
- The tuner's symbol rate.
- The FEC of the tuner
- The data rate for the signal
- The framing status
- The locked or unlocked status of the tuner.
- The acquisition state of the tuner: acquiring, tracking, or fade.
- Eb/No, or *energy per bit relative to noise floor* (see section 3.2).
- AGC, or *automatic gain control* (see section 3.2).
- Fade count of the tuner.
- The number of Reed-Solomon errors that the tuner has experienced.
- The LNB offset the tuner is currently using.
- The on or off status off the LNB.

The fade count and Reed-Solomon errors can be reset by pressing the ‘Clear Statistics’ button.

Tuner: Locked	Status	Tuner	Setup	Relays	Logs
Tuner Settings					
Network	X-Digital System, Inc.				
Frequency	1040000 kHz				
Symbol Rate	5000000 sps				
FEC	2/3				
Data Rate	6144000 bps				
Locked?	LOCKED				
Acquisition State	TRACKING				
Eb/No	17.2				
AGC	58				
Fade Count	0				
Reed-Solomon Errors	0				
					Clear Statistics
LNB Offset	5150000 kHz				
LNB Power	OFF				
NOTE: LNB offset is not applied to <i>manual</i> set L-band frequencies					

Figure 15 Tuner Tab

4.1.3 The Setup Tab

The Setup Tab shows even more detailed and specific receiver facts:

- The model of the receiver
- The serial number of the receiver.
- The addressing value of the receiver.
- The firmware version of the receiver.
- The date that the current firmware version was designed.
- Station assignments for each of the four audio ports (i.e. station call numbers).
- Networking values used by the receiver including: LAN IP Address, LAN Subnet Mask, Gateway, WAN IP Address, WAN Subnet Mask, primary NMS website URL, backup NMS website URL, and HTTP proxy settings.
- Miscellaneous information including data about the serial port and the connection settings, and the current hexadecimal alarm mask.

Tuner: Locked	Status	Tuner	Setup	Relays	Logs
Setup / Administration					
Platform		XDS PRO4P v1			
Serial Number		XDSP-0300004			
Addressing		300004			
Version		0.2.6			
Built		May 23 2008 20:22:40			
Station Assignments					
Port A		ZAAA-FM			
Port B		ZBBB-FM			
Port C		ZCCC-FM			
Port D		ZDDD-FM			
		XDS1-AM			
		XDS2-AM			
		XDS3-AM			
		XDS4-AM			
TCP/IP Networking					
IP Address (LAN)		192.168.0.143			
Subnet Mask (LAN)		255.255.248.0			
Gateway		192.168.1.1			
IP Address (WAN)		0.0.0.0			
Subnet Mask (WAN)					
Primary WWW Site		192.168.1.25			
Backup WWW Site		192.168.1.25			
HTTP Proxy Server		192.168.1.25:80			
Miscellaneous					
Serial Ports		115200 Baud, 8 Data, No Parity, 1 Stop, No Flow-control			
Alarm Mask		1FFDBFFD			

Figure 16 Setup Tab

4.1.4 The Relays Tab

The Relays Tab lists all the 16 relay mappings complete with their NETRELAYS and on/off status for each of the two relay ports. Thus there are 32 total relays listed, 16 for each the top and bottom relay ports.

Tuner: Locked	Status	Tuner	Setup	Relays	Logs			
Relay Mappings								
TOP CONNECTOR A (DB37)					BOTTOM CONNECTOR B (DB37)			
Relay	Pins (A/B)	Cue	State		Relay	Pins (A/B)	Cue	State
R1	1 / 20		OFF		R1	1 / 20		OFF
R2	2 / 21		OFF		R2	2 / 21		OFF
R3	3 / 22		OFF		R3	3 / 22		OFF
R4	4 / 23		OFF		R4	4 / 23		OFF
R5	6 / 25		OFF		R5	6 / 25		OFF
R6	7 / 26		OFF		R6	7 / 26		OFF
R7	8 / 27		OFF		R7	8 / 27		OFF
R8	9 / 28		OFF		R8	9 / 28		OFF
R9	11 / 29		OFF		R9	11 / 29		OFF
R10	12 / 30		OFF		R10	12 / 30		OFF
R11	13 / 31		OFF		R11	13 / 31		OFF
R12	14 / 32		OFF		R12	14 / 32		OFF
R13	16 / 34		OFF		R13	16 / 34		OFF
R14	17 / 35		OFF		R14	17 / 35		OFF
R15	18 / 36		OFF		R15	18 / 36		OFF
R16	19 / 37		OFF		R16	19 / 37		OFF
NOTE: Pins 5, 24, and 33 are GND. Pin 15 is RS232 TxData.								

Figure 17 Relays Tab

4.1.5 The Logs Tab

The Logs tab will show a chronological list of all events logged on the receiver since the last time the logs were purged. Information here includes when programs were started, when recordings began and finished and operational information, among other things. At the bottom of the logs, there are buttons to download the current log to a text file and purge the log file.

Tuner:Locked

Status

Tuner

Setup

Relays

Logs

Activity Logs

Time Zone: UTC

Download

Purge

TimeStamp ▼	Message
2008-05-29 20:57:50	Logs Purged
2008-05-29 20:59:29	DEL: recording 'LS_MON_20080519_130600.ts' expired on HDD
2008-05-29 20:59:59	LIVE: Port A Pgm 36 (1006)
2008-05-29 20:59:59	LIVE: Port D Pgm 30 (1000)
2008-05-29 20:59:59	REC: Start[2] Pgm 42: GLDOLD_THU_20080529_140000.ts
2008-05-29 21:00:02	REC: Stop[0] Pgm 42: GLDOLD_THU_20080529_135700.ts (0 err / 47521 pkt)
2008-05-29 21:00:02	REC: Stop[1] Pgm 36: HRFNWS_THU_20080529_133000.ts (0 err / 309 pkt)

Logs: 7

Figure 18 Logs Tab

4.2 The Programming Menu

From the Programming Menu, the user is able to view all of the programs and recordings the receiver is equipped to receive and re-broadcast.

4.2.1 The Programs Tab

Each receiver is identified by the Network Management System as authorized to receive and broadcast particular radio programs and as being part of certain airing networks. From this tab, you can see which programs the receiver is set-up to receive and use. In the Programs grid, you are given the Program Name, Code, Mono/Stereo Setting, Program ID (PID), and Authorization status for each Program on the receiver. In the Airing Networks grid you see each Network the receiver may belong to and whether it is currently authorized for this particular network.



Program	ID	Code	Mono/Stereo	PID (hex)	Authorized
Test Channel	30	TST	Stereo	1000	YES
Morning Drive	31	MRNDRV	Stereo	1001	YES
Noon Talk	32	NOONTK	Stereo	1002	YES
Afternoon News	33	AFNWS	Stereo	1003	YES
Evening Drive	34	EVEDRV	Stereo	1004	YES
Late Night Music	35	LNTMSC	Stereo	1005	YES
Hourly Financial News	36	HRFNWS	Stereo	1006	YES
Sports Update	37	SPRTUP	Stereo	1007	YES
Retail Rock	38		Stereo	1008	YES
Elevator Music	39	ELVMSC	Stereo	1009	YES
Dave's Program	40		Stereo	100A	YES
Eighties Jams	41	80JAMS	Stereo	100B	YES
Golden Oldies	42	GLDOLD	Stereo	1040	YES
SDSU Basketball	43	SDSU	Stereo	1041	YES

Programs: 14

Airing Network	Authorized
No Networks	

Figure 19 Programs Tab

4.2.2 The Recordings Tab

In the Recording Tab, every program which has been stored on the receiver's internal hard drive is listed. For each recording, you are given a link to download the recording to your computer's local hard drive, the date that it was recorded, and the length of the recording.


Tuner:Locked		Programs	Recordings
Recorded Programs			
	Program ▼	Recorded	Duration (h:m)
	TestRecording.ts	2008-05-12 12:17:30	n/a
Recordings: 1			

Figure 20 Recordings Tab

4.3 The Content Menu

The Content Menu lists all of the files which the receiver's internal storage currently holds.

4.3.1 The Audio Tab

The Audio Tab displays all audio type files which have been stored for later use by the receiver. The file name (along with download link), ISCI code, package code, received date, and file size/duration.

The audio, traffic and all tabs will all have the same layout. To see an example of what these tabs will look like, view section 5.3.3, *The All Tab*.

4.3.2 The Traffic Tab

The Traffic Tab shows all traffic related text or document files. These files will most likely include instruction from network managers, spot related information, or other read-me files. You may also find test file containing ForFileDeliveryTest in the name which are generated by the NMS to verify the ability of an affiliate receiver to receive files.

4.3.3 The All Tab

The All Tab simply displays all files which the receiver is currently storing.

Here is what the Content tabs look like:

Tuner: Locked		Audio	Traffic	All
All Content				
<input type="text" value="Title"/> <input type="text"/> <input type="button" value="Filter"/> <input type="button" value="Show All"/>		CURRENTLY SHOWING: 91/91		
	Title ▾	ISCI	+ Packages	Received
	3RG-4068-D	3RG-4068-D	+ 2008_05_26_UY0008	2008-05-27
	3RG-4070-A	3RG-4070-A	+ 2008_05_12_UY0015	2008-05-15
	3RG-4071-A	3RG-4071-A	+ 2008_05_26_UY0008	2008-05-27
	ADC-FP-60-1	ADC-FP-60-1	+ 2008_04_29_LAURB0014	2008-04-29
	AHAU-2852	AHAU-2852	+ 2008_05_26_UY0008	2008-05-27
	AHAU-3413	AHAU-3413	+ 2008_05_26_UY0008	2008-05-27
	AMBVI-PARTY	AMBVI-PARTY	+ 2008_05_21_LAURB0000A	2008-05-19
	AMBVI-VOTE	AMBVI-VOTE	+ 2008_05_19_LAURB0000	2008-05-19
	BASKIN ROBBINS BROR 0608	BASKIN_ROBBINS_BROR_0608	+ 0123	2008-04-11
	CAMPBELL-CANS	CAMPBELL-CANS		2008-05-28

Figure 21 Content Tabs

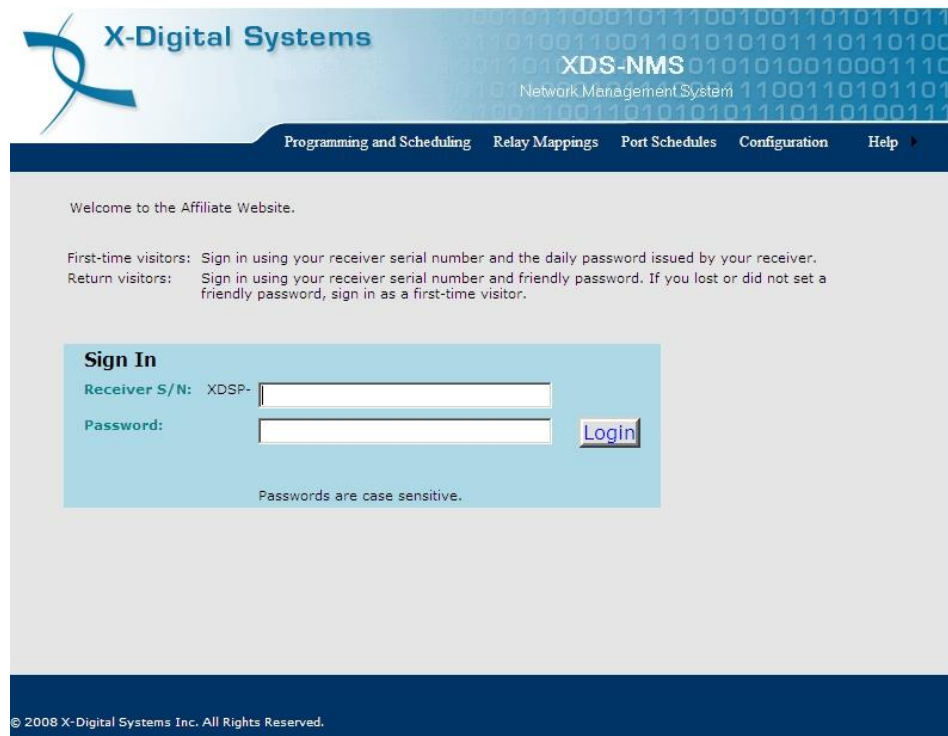
5 AFFILIATE WEB INTERFACE

The XDS PRO4-P Satellite Receiver is capable of communicating with and being controlled by an external web application called the Network Management System (NMS). The NMS is capable of many features which greatly simplify the management of radio programming. Network managers can now automate much of the work that previously had to be done manually on a station by station basis. Creation of a station schedule must be done through the NMS. Additionally, a radio station user of the NMS may modify the relay mappings on the receiver to specify which relays corresponds to which netrelay. The following sections will instruct you on how to accomplish these tasks.

5.1 Accessing and Logging In

The website hosting your affiliate web page is provided by your broadcaster. Please refer to the [Quick Start Guide](#) for instructions on navigating to this site.

After the page has loaded, type in the serial number of your receiver (available on the back panel of your receiver and via the front panel display) and password, which is given by navigating to the 'XDS PRO4-P: Setup: Your Account' submenu in the receiver's front panel display and pressing PWD (3) (see section 3.2.2 for more details). Once serial number and password are entered, click login.



The screenshot shows the XDS-NMS (Network Management System) login page. At the top, there is a header with the X-Digital Systems logo and the text 'XDS-NMS Network Management System'. Below the header is a navigation bar with links: 'Programming and Scheduling', 'Relay Mappings', 'Port Schedules', 'Configuration', and 'Help'. The main content area has a welcome message: 'Welcome to the Affiliate Website.' followed by instructions for first-time and return visitors. A 'Sign In' section contains two input fields: 'Receiver S/N: XDSP-' and 'Password:'. A 'Login' button is positioned to the right of the password field. A note below the fields states 'Passwords are case sensitive.' The footer of the page reads '© 2008 X-Digital Systems Inc. All Rights Reserved.'

Figure 22 Login Page

5.2 Play Scheduling

The NMS is a powerful tool for managing your radio programming. From the NMS, it is possible to create a play schedule for your receiver. To create a station schedule follow these steps:

- Log into the NMS (see section 6.1).
- When the ‘What would you like to do?’ window appears, select

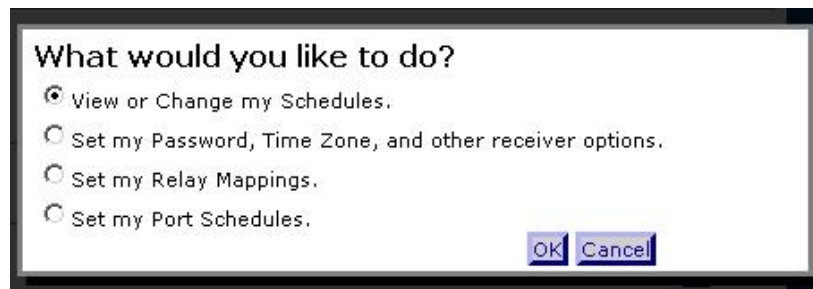


Figure 23 Task Selection

- Once the page loads, you will be presented with a window asking which station schedule you would like to view or modify. If the receiver is set up with more than one station, the drop down menu can be used to navigate between them. Once the desired station is shown in the window, click ‘OK.’

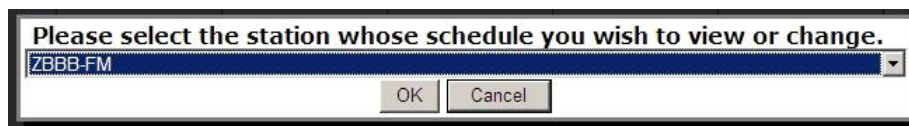


Figure 24 Station Selection

- Once a station has been selected, a grid of the current week’s schedule will be shown. The week is listed in the upper right above the schedule grid and can be changed by using the arrow links to navigate forward or backward in time. Clicking ‘This Week’ will bring the scheduler back to the current week. The Scheduler shows a 24 hour grid broken into one hour sections.

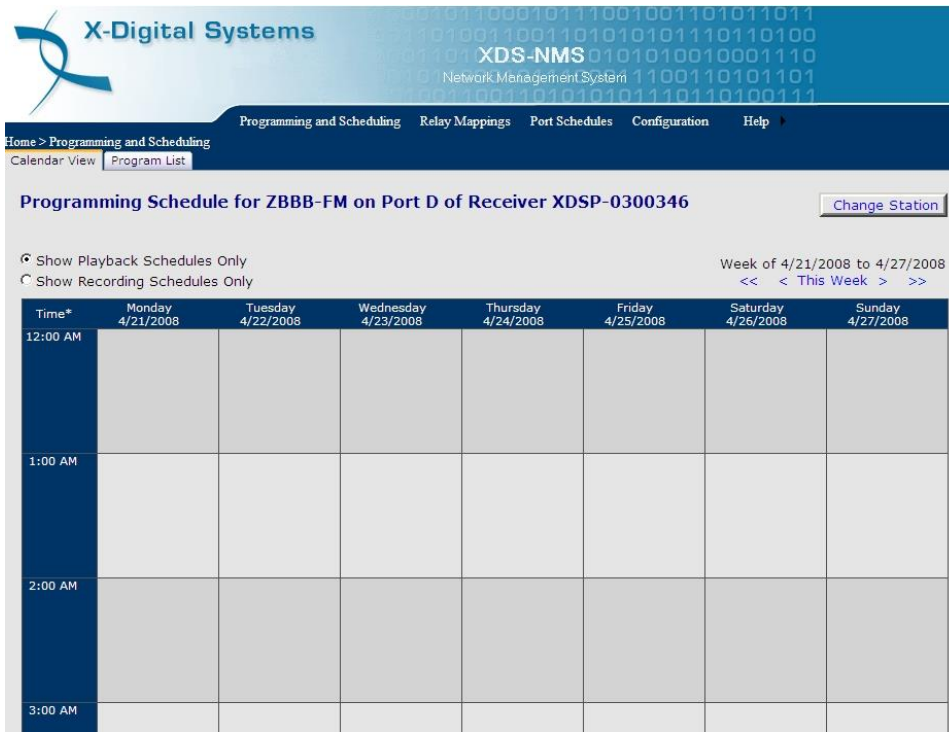


Figure 25 Week Grid

- In order to add a program to the scheduler, click on the 'Program List' tab at the top of the screen. A window will appear asking which program to view. The drop down menu will contain all of the programs for which the current station is authorized. Once a program is selected, press 'OK' to view its network feeds.



Figure 26 Program Selection

- The next page will show the available network feeds for the selected program. From here you can edit or delete a feed that is already scheduled by clicking on the corresponding buttons or create a new schedule by clicking 'Create a new station schedule using this feed...' link.

X-Digital Systems
XDS-NMS
Network Management System

Home > Programming and Scheduling
Calendar View Program List

Programming and Scheduling Relay Mappings Port Schedules Configuration Help

Network Feeds of Sports Update on ZAAA-FM [Select New Program](#)

Network Feed Time 1:00 AM to 2:00 AM (PT) every Mo-Fr starting 4/11/2008.
Live Broadcast: Local Air Time 1:00 AM to 2:00 AM (PT) every Mo-Fr starting 5/29/2008. [edit](#) [delete](#)
[Create a new station schedule using this feed...](#)

Network Feed Time 3:00 AM to 4:00 AM (PT) every Mo-Fr starting 4/11/2008.
[Create a new station schedule using this feed...](#)

Network Feed Time 5:00 AM to 6:00 AM (PT) every Mo-Fr starting 4/11/2008.
[Create a new station schedule using this feed...](#)

Network Feed Time 7:00 AM to 8:00 AM (PT) every Mo-Fr starting 4/11/2008.
[Create a new station schedule using this feed...](#)

Network Feed Time 9:00 AM to 10:00 AM (PT) every Mo-Fr starting 4/11/2008.
Live Broadcast: Local Air Time 9:00 AM to 10:00 AM (PT) every Mo-Fr starting 4/15/2008. [edit](#) [delete](#)
[Create a new station schedule using this feed...](#)

Figure 27 Program Network Feeds

- The PRO4-P receiver has the ability to play a live broadcast, delay a live broadcast, play only a partial feed, record a program to the hard drive for later playback or any combination of the above. To reach these options click on the 'Edit' button or 'Create a new...' link.

Edit Schedule

Schedule 'Sports Update' on ZAAA-FM
Network Feed Time 3:00 AM to 4:00 AM (PT) every Mo-Fr starting 4/11/2008.

What would you like to do with this program?

☒ Broadcast the program (or part of it) **live** at the time of the Network Feed.
☐ Broadcast the program (or part of it) **delayed** by automatically capturing the program and then broadcasting it at a Local Air Time of my choice.
☐ Capture the program (**record**) to a file and allow it to be Downloaded from the receiver's web page to another computer.

Set which Local Air Times to broadcast from the live network feed.
 Local Air Start:
 Local Air End: ☒ Use Complete Feed
 Network Feed starts at 3:00 AM and ends at 4:00 AM (PT).
 This schedule will play the entire network feed live (concurrently with the network feed).

Check the network feed days to use for this schedule.
☒ Monday ☒ Tuesday ☒ Wednesday ☒ Thursday ☒ Friday ☐ Saturday ☐ Sunday

Set the Date Range of the network feeds to use for this schedule.
 Start Date:
 End Date:
 Network Feed starts on 5/29/2008

[Add](#) [Cancel](#)

Figure 28 Add Schedule

- If you are creating a new schedule and would like to play the network feed in its entirety, leave the “**live**” option selected, use the check boxes to select which days to play the feed, specify a start and end date if desired and click the ‘Add’ button at the bottom of the window.

Edit Schedule

Schedule 'Morning Drive' on ZAAA-FM

Network Feed Time 6:00 AM to 10:00 AM (PT) every Mo-Fr starting 4/1/2008.

What would you like to do with this program?

☒ Broadcast the program (or part of it) **live** at the time of the Network Feed.

☐ Broadcast the program (or part of it) **delayed** by automatically capturing the program and then broadcasting it at a Local Air Time of my choice.

☐ Capture the program (**record**) to a file and allow it to be Downloaded from the receiver's web page to another computer.

Set which Local Air Times to broadcast from the live network feed.

Local Air Start

Local Air End ☐ Use Complete Feed

Network Feed starts at 6:00 AM and ends at 10:00 AM (PT).

This schedule will play 2:00:00 (HH:MM:SS) of the network feed live (concurrently with the network feed) and will start at the beginning of the network feed.

Check the network feed days to use for this schedule.

☒ Monday ☒ Tuesday ☒ Wednesday ☒ Thursday ☒ Friday ☐ Saturday ☐ Sunday

Set the Date Range of the network feeds to use for this schedule.

Start Date

End Date

Network Feed starts on 4/1/2008

Figure 29 Edit Schedule

- To play only part of a live feed, leave the top section on the “**live**” option and then uncheck the box labeled ‘Use Complete Feed.’ Once the box is unchecked, the Local Air Start and End time will become editable. Keep in mind that the start and End times must fall within the original feed times

Set which Local Air Times to broadcast from the live network feed.

Local Air Start

Local Air End ☐ Use Complete Feed

Network Feed starts at 6:00 AM and ends at 10:00 AM (PT).

This schedule will play 2:30:00 (HH:MM:SS) of the network feed live (concurrently with the network feed) and will start at the beginning of the network feed.

Figure 30 Partial Feed

- To delay a feed, select the “**delayed**” option from the top section. A drop down box will become available in the second section allowing you to choose how many days (up to seven) after the original feed to schedule the playback. In addition to how many days to delay the feed, you may also specify a custom start time and play only a partial feed as in the previous step except that you must start at the beginning of the delayed feed.

What would you like to do with this program?

- ☐ Broadcast the program (or part of it) **live** at the time of the Network Feed.
- ☒ Broadcast the program (or part of it) **delayed** by automatically capturing the program and then broadcasting it at a Local Air Time of my choice.
- ☐ Capture the program (**record**) to a file and allow it to be Downloaded from the receiver's web page to another computer.

Set which Local Air Times to broadcast for the delayed program.

Local Air Start

Local Air End ☐ Use Complete Feed

Network Feed starts at 6:00 AM and ends at 10:00 AM (PT).

This schedule will play 3:00:00 (HH:MM:SS) of the network feed; it will be delayed 25:00:00 (HH:MM:SS) from the network feed; and it will start at the beginning of the network feed.

Figure 31 Delayed Feed

- To capture a network feed for later playback, select the “**record**” option from the top section. As in the partial feed option, you can specify whether to capture the entire program or specify custom start and end times to record only part of the feed.

What would you like to do with this program?

- ☐ Broadcast the program (or part of it) **live** at the time of the Network Feed.
- ☐ Broadcast the program (or part of it) **delayed** by automatically capturing the program and then broadcasting it at a Local Air Time of my choice.
- ☒ Capture the program (**record**) to a file and allow it to be Downloaded from the receiver's web page to another computer.

Set the Capture Times for the recording.

Capture Start

Capture End ☐ Use Complete Feed

Network Feed starts at 6:00 AM and ends at 10:00 AM (PT).

This schedule will record 2:00:00 (HH:MM:SS) of the network feed and will start recording 1:00:00 (HH:MM:SS) into the program's network feed.

Figure 32 Recording a Feed

- With all of the above options, users have the option to specify what days of the week the schedule is for, as well as specify a date range for the schedule. If the ‘End Date’ field is left blank, the schedule will be indefinite.

Check the days of the week for this schedule.

☒ Monday ☐ Tuesday ☒ Wednesday ☐ Thursday ☒ Friday ☐ Saturday ☐ Sunday

Set the Date Range for this schedule.

Start Date

End Date

Network Feed starts on 4/21/2008

Figure 33 Days and Date Range

- Once all of the options have been configured, click 'OK' at the bottom of the window to finish editing the schedule. Click the 'Commit Schedule to Receiver' button once you are back in the Network Feeds window to commit the changes to the Scheduler. A pop up window will appear informing you 'the station schedule will be updated as soon as possible'. You can then click on "Calendar View" to confirm the addition / changes you've made to the schedule.

6:00 AM			MRNDRV Live 6:00 AM-7:00 AM	MRNDRV Live 6:00 AM-7:00 AM	MRNDRV Live 6:00 AM-7:00 AM	MRNDRV Live 6:00 AM-7:00 AM	
7:00 AM			MRNDRV Live 7:00 AM-8:00 AM	MRNDRV Live 7:00 AM-8:00 AM	MRNDRV Live 7:00 AM-8:00 AM	MRNDRV Live 7:00 AM-8:00 AM	
8:00 AM			MRNDRV Live 8:00 AM-9:00 AM	MRNDRV Live 8:00 AM-9:00 AM	MRNDRV Live 8:00 AM-9:00 AM	MRNDRV Live 8:00 AM-9:00 AM	
9:00 AM			MRNDRV Live 9:00 AM-10:00 AM	MRNDRV Live 9:00 AM-10:00 AM	MRNDRV Live 9:00 AM-10:00 AM	MRNDRV Live 9:00 AM-10:00 AM	
10:00 AM							

Figure 34 Scheduled Program

- To delete or modify an existing program in the schedule, click on the text within the Calendar View tab to quickly link to the Network Feed page. Modifications can be made by clicking the 'Edit' button; the changes will not be committed until 'Modified' is clicked. The program can be deleted by clicking on "Delete". A pop up window will appear to confirm your request. The Network Feed screen will update and you must then Commit the schedule to the receiver. To view and confirm the changes you must then click on 'View Schedule'.

- When a new schedule is created or modified, the scheduler will check to see if there are any conflicting schedules with the new schedule. If a conflict is found, a new window will appear where prioritization can be set for playback conflicts.

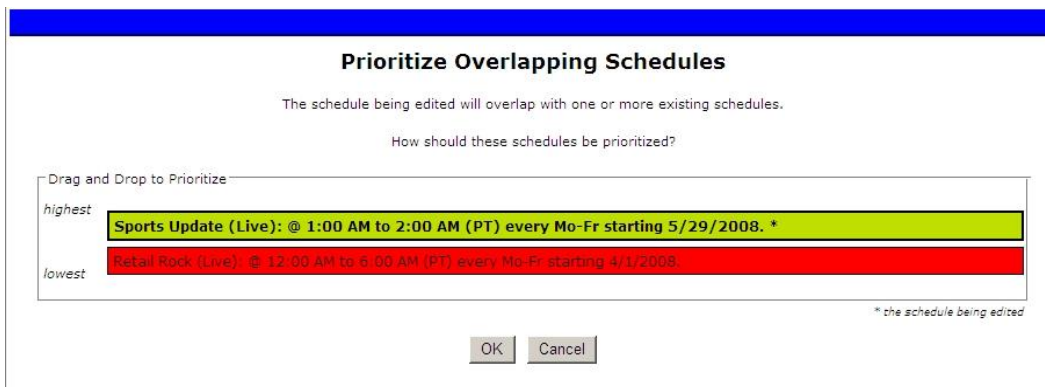


Figure 35 Prioritize Overlapping Schedules

5.3 Changing the Relay Mappings

There are 32 different relays on the PRO4-P receiver, and each of these relays can correspond to a different netrelay for a radio broadcast. You can use the NMS to specify the relay mapping for the receiver. To do this

- Click Relay Mappings at the top of the page beneath the X-Digital Systems logo.
- Click the “Edit” button in the top right.
- Edit the text for the corresponding relay you wish to change. To edit a cell, simply click in it and it will expand automatically.
- When done changing relays, press “Save”.
- To cancel the changes you have made and to go back to the previous relay mapping, click “Cancel”.

	<p>Netrelays entered into the NMS's relay-mappings text box must be upper-case alphanumeric, i.e. only upper-case letters, or numbers.</p>
<p>Note!</p>	

5.4 Port Schedules

The PRO4-P is capable of managing up to eight different radio stations on the four audio ports. In order to allow different stations to play on the same port, the receiver uses a port scheduler. Click the ‘Port Schedules’ from the top of the site or ‘Set my port schedules’ when first logging into the Affiliate site to access the port schedules:

- To add a station to the scheduler, click anywhere in the columns labeled 'Port A, Port B, etc...' a window will pop up allowing you to select what station, port and time to add to the schedule.
- The scheduler will do its best to approximate where it detects a click and set the information in the window automatically but it may be necessary to make adjustments.
- To remove a station from the scheduler, click the 'X' to the right of its label on the scheduler.
- When all desired stations have been added to the scheduler, click 'Save' to commit the changes or 'Cancel' to return to the previous schedule.
- To remove all stations from the scheduler and start with a blank slate, click the 'Clear' button.

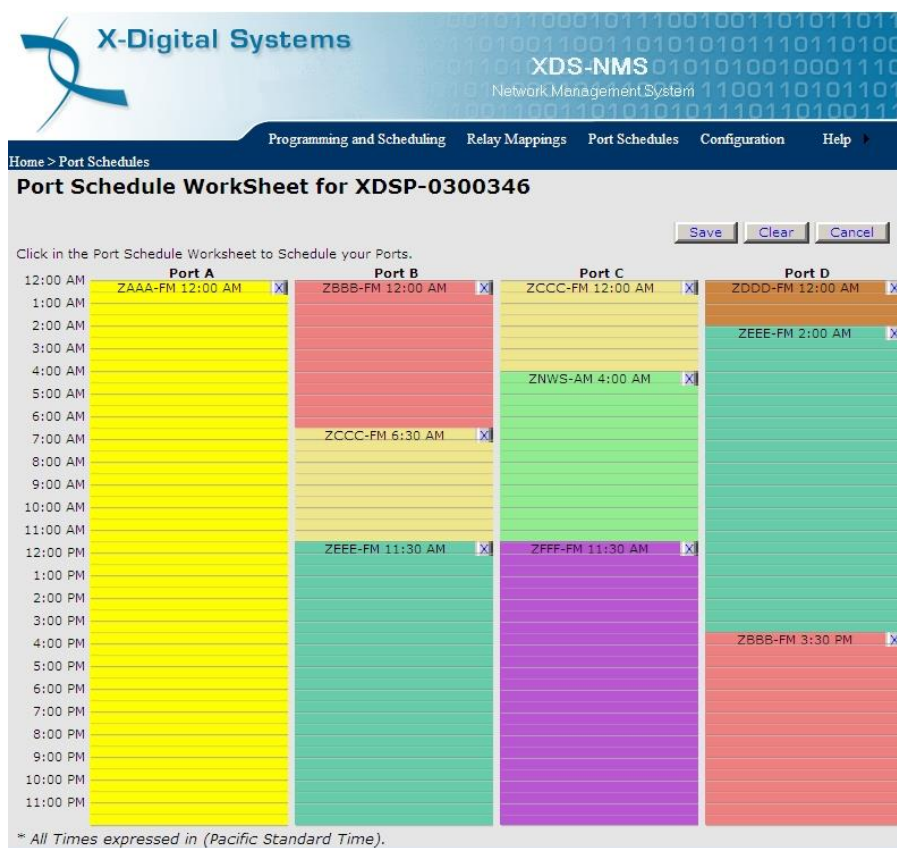


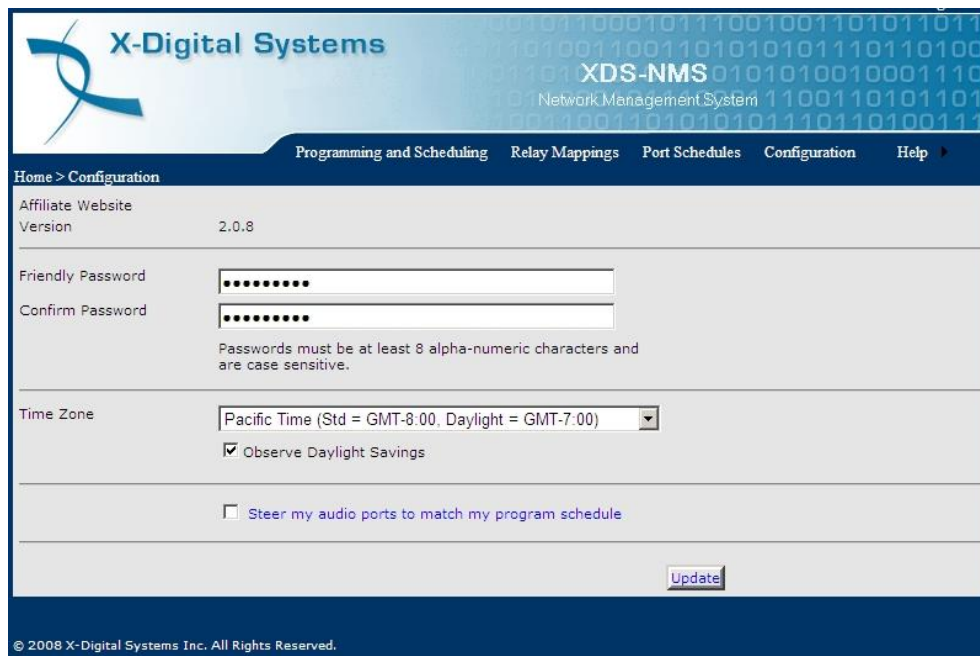
Figure 36 Port Schedules

5.5 Configuration

Click on the configuration link at the top of the page to access the receiver settings that are configurable from the Affiliate Website:

- The Affiliate Website version can be seen at the top of the Configuration page.
- A Friendly Password can be set which can be used instead of the daily password found through the front panel of the receiver to login to the Affiliate Website. Click 'Update' to set the password

- The time zone for the receiver can be changed using the drop down menu in the configuration page. A check box is provided to toggle daylight savings as well. Click update to commit the changes
- If the you have made changes to the port scheduler and wish to immediately change the ports to match the new schedule or if you have manually changed the port settings, check the box labeled 'Steer my audio ports to match my program schedule' and click 'Update' to return to your schedule.



X-Digital Systems
XDS-NMS
Network Management System

Programming and Scheduling Relay Mappings Port Schedules **Configuration** Help

Home > Configuration

Affiliate Website
Version 2.0.8

Friendly Password
Confirm Password

Passwords must be at least 8 alpha-numeric characters and are case sensitive.

Time Zone
Pacific Time (Std = GMT-8:00, Daylight = GMT-7:00)

☒ Observe Daylight Savings

☐ Steer my audio ports to match my program schedule

Update

© 2008 X-Digital Systems Inc. All Rights Reserved.

Figure 37 Affiliate Configuration Page

6 SPECIFICATIONS

The following specifications are divided into sections corresponding to the various functional blocks within the receiver.

6.1 Receiver Interface Specification

LCD	image display capability, backlighting
Keypad	full 8 key-pad, menu buttons, arrow keys, enter key
Status LEDs	power, signal, update, and fault indications
USB Interface	USB 2.0 port for attaching mass storage devices
Speaker	monitor audio output for any of the four ports
Monitor and Control Interface	RS-232C compatible, DB-9 female
Web Interface	automatically broadcast via LAN and WAN

Table 5. Interface Specifications

6.2 Mechanical/Electrical Specification

Dimensions	3.5" x 18" x 12"
Mounting	19", 2RU
Weight	8 lbs
Input Voltage	90 – 240 VAC (50/60 Hz)
Power Consumption	65 W maximum

Table 6. Mechanical and Electrical Specifications

6.3 Environmental Specifications

The power supply will be a 65W universal input switching power supply that is UL safety rated. We expect the system to operate without a need for a fan in air conditioned locations. The fan will be electronically controlled via temperature sensor. This will allow the unit to operate under less than optimal conditions.

6.4 M&C Interface Connector

The Monitor and Control (M&C) port allows basic configuration of the XDS receiver via an asynchronous RS232C electrical interface. It uses the following protocol settings: 115.2K baud, 8 data bits, No Parity, 1 stop bits, and no hardware flow control. In addition to the asynchronous interface, the M&C connector provides a status relay output and four optical inputs. The four optical inputs are activated grounding the input signal. The following table provides the pin-out for the M&C port.

PIN	FUNCTION
1	ALARM -
2	TX
3	RX
4	ALARM +
5	Ground
6	OPTO1
7	OPTO2
8	OPTO3
9	OPTO4

Table 7. M&C Port Pin-Out

Connection	DB-9F
Asynchronous Port	115.2K baud, 8 data bits, no parity, no hardware flow control
Relay Format	1 Form A
Optical Inputs	4 Input Signals, Connect to ground to activate

Table 8. M&C Port

6.5 Relay Outputs

There are two DB-37 connectors on the rear panel which together contain a total of 32 mappable relay (or contact) closures. The following tables provide the pin-outs for the two relay connectors.

PIN	FUNCTION	PIN	FUNCTION
1	RLY1A	20	RLY1B
2	RLY2A	21	RLY2B
3	RLY3A	22	RLY3B
4	RLY4A	23	RLY4B
5	Ground	24	Ground
6	RLY5A	25	RLY5B
7	RLY6A	26	RLY6B
8	RLY7A	27	RLY7B
9	RLY8A	28	RLY8B
10	Ground	29	RLY9B
11	RLY9A	30	RLY10B
12	RLY10A	31	RLY11B
13	RLY11A	32	RLY12B
14	RLY12A	33	Ground
15	NQ TxData	34	RLY13B
16	RLY13A	35	RLY14B
17	RLY14A	36	RLY15B
18	RLY15A	37	RLY16B
19	RLY16A		

Table 9. Relay Port A Pin-Out

PIN	FUNCTION	PIN	FUNCTION
1	RLY1A	20	RLY1B
2	RLY2A	21	RLY2B
3	RLY3A	22	RLY3B
4	RLY4A	23	RLY4B
5	Ground	24	Ground
6	RLY5A	25	RLY5B
7	RLY6A	26	RLY6B
8	RLY7A	27	RLY7B
9	RLY8A	28	RLY8B
10	Ground	29	RLY9B
11	RLY9A	30	RLY10B
12	RLY10A	31	RLY11B
13	RLY11A	32	RLY12B
14	RLY12A	33	Ground
15	Ground	34	RLY13B
16	RLY13A	35	RLY14B
17	RLY14A	36	RLY15B
18	RLY15A	37	RLY16B
19	RLY16A		

Table 10. Relay Port B Pin-Out

Connection	DB-37M
Contacts	16 Relays
Format	Form A

Table 11. Relay Outputs

6.6 Analog Audio Output

The receiver has four analog audio output ports. The following table has the pin-outs of the analog output ports.

PIN	FUNCTION
1	L OUT+
2	Ground
3	LOUT+
4	Ground
5	R OUT+
6	L OUT-
7	Ground
8	LOUT-
9	R OUT-

Table 12. Analog Audio Output Pin-out

Connection	DB-9M
Format	Balanced Pair L, R
Range	-10 to +4dBu nominal (+22 max)
Performance	0.1% THD 85dB dynamic range

Table 13. Analog Audio Output

6.7 Analog and Digital Audio Input

The receiver has one audio input port capable of receiving a digital or analog signal. The following table has the pin-out of the input port.

PIN	FUNCTION
1	L IN+
2	Ground
3	AES_RX+
4	Ground
5	R IN+
6	L IN-
7	Ground
8	AES_RX-
9	R IN-

Table 14. Analog Audio Input Pin-out

Connection	DB-9M
Format	Balanced Pair L, R
Range	+4dBu nominal (+22max)

Table 15. Analog Audio Input

6.8 Digital Audio Output

The receiver has a single digital audio output port that provides AES/EBU versions of the analog audio ports. The Port A audio is located on the pair of CH0 signals, Port B audio is located on the pair of CH1 signals, etc. The following table contains the pin-out of the digital audio port.

PIN	FUNCTION
1	CH0_TX+
2	CH1_TX+
3	Ground
4	CH2_TX+
5	CH3_TX+
6	CH0_TX-
7	CH1_TX-
8	CH2_TX-
9	CH3_TX-

Table 16. Digital Audio Output Pin-out

Connection	DB-9M
Format	Balanced AES/EBU

Table 17. Digital Audio Output

6.9 PAD/ASYNC Output Port

The PAD port (Program Associated Data) relays information which is carried along with the audio data received. I.e. song and artist information, or relay queues to trigger events. Below is a pin-out table for the PAD port.

PIN	FUNCTION
1	P0_TX
2	P1_TX
3	P2_TX
4	P3_TX
5	Not Connected
6	Ground
7	Ground
8	Ground
9	Ground

Table 18. PAD/ASYNC Output Port Pin-out

Connection	DB-9F
Asynchronous Port	variable up to 115.2K baud, 8 data bits, no parity, no hardware flow control

Table 19. PAD/ASYNC Port

6.10 Ethernet Port

Connection	RJ-45
Connection Rate	10/100Base-TX (Auto)
Number of Ports	3 external, 1 internal
Max Output IP Rate	Up to 20 Mbps (combined for all ports)
VLAN	Each port is managed for VLAN use

6.11 Modem (POTS) Port

Connection	RJ-11
Connection Rate	14.4L, 28.8L, 56k
Format	8Bits, No parity, One Stop

6.12 RF Input Parameters

Data will be demodulated and then de-multiplexed by PID (Program ID). On demand, the de-multiplexed data will be transmitted via the Ethernet switch to any of the devices requesting such data.

Connection	75 ohm F-type connector
Frequency Input Range	950 to 2150 MHz
Input Level	-65dBm to -25dBm
Symbol rate	2 to 40 Msps
Modulation Scheme	QPSK
Forward Error Correction modes	Reed-Solomon and Viterbi (DVB-S)
LNB Power	20VDC 500mA MAX