



XDS-PRO Series

**XDS-PRO1R, XDS-PRO4R & XDS-PRO1S, XDS-PRO4S
Receivers**

USER GUIDE

IMPORTANT NOTICES

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Patent Pending

ATX Networks, XDS-PRO DVB Satellite Receiver – Patents Pending

Document Revision History

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Although every effort has been taken to ensure the accuracy of this document it may be necessary, without notice, to make amendments or correct omissions. Specifications subject to change without notice.

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INTRODUCTION

1. Introduction

Welcome to the future of digital audio for the radio industry. This is your user guide to our line of XDS-PRO receivers. These receivers are equipped to deliver multiple audio services in high quality digital audio for your radio station. They have been designed to make use of all the digital communication features of today, and to be upgraded to take advantage of the technologies of tomorrow.

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

ATX Networks can upgrade its main control software and audio decoder algorithms over-the-air. This ensures that your receiver will always have the most up to date features and functionality.

1.3 Hardware Versatility

The PRO1R and PRO1S can deliver one channel of audio received via satellite on its single output port while the PRO1S and PRO4S can deliver up to four channels of audio on any one of its four balanced output ports. Additionally, content can be received and stored locally for later use. This content can originate from a real time satellite broadcast, from a high speed satellite IP distribution channel, or can be retrieved via the Internet over the Ethernet port(s).

1.4 Network Management System

The XDS-PRO satellite receivers have been specifically designed so that their output can be controlled via one central web application. This application is called the XDS Network Management System, or NMS. From the NMS, the receiver can be monitored and managed, and the user can set a schedule of live and delayed programs for each output port. The NMS can also coordinate file transfers to store sound, data, or hardware updates directly to the PRO receiver's internal storage device. Additionally, the NMS also comes equipped with an advanced event logging system ensuring that any technical problems will be accompanied by a full history so that causes of problems may be easily identified and eliminated. Every network may provide their own NMS interface for their users which in term interface with the XDS Network Management System to provide all the advanced features



Waste Electrical and Electronic Equipment (WEEE) Disposal: At end of useful life, this product should be deposited at an appropriate waste disposal facility for recycling and disposal. Do not dispose this equipment with household waste.

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GETTING STARTED

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 guide that comes packaged with the receiver, but please be sure to consult this section at your earliest convenience.

2.1 Unpacking the Receiver

Upon receiving your XDS-PRO receiver, ensure that all of the necessary parts have been included.

2.1.1 List of Contents

Below is a table that lists the contents that are packaged with any model of XDS-PRO receiver.

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

Table 1: XDS-PRO Package Contents

2.2 Safety Precautions



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

2.2.1 Excessive Temperature

The XDS-PRO receivers have been designed to operate safely and reliably in an ambient temperature of 0° to 50° C. The system is expected to operate without the 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. However, once the receiver is located in a closed or rack environment, the ambient temperature may be greater than room temperature. Please take this into consideration when installing the receiver, making sure that the ambient temperature around the receiver does not exceed the temperature range 0° to 50° C.

2.2.2 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 XDS-PRO receivers 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.

2.2.3 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. Also avoid locations of high humidity, dust, and vibration.

2.2.4 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.

2.2.5 Reliable Earthing

Proper mains earth grounding of the electronic rack system and rack mounted equipment should be maintained. To ensure proper and reliable grounding of the XDS-PRO Receiver, the electronic rack system shall employ either permanently wired mains connection or use pluggable equipment type B type wiring in a restricted access location with proper equipotential bonding applied. The XDS-PRO Receiver includes a rear panel grounding stud for connection to the electronic rack ground rails.

The XDS-PRO Receiver must be connected to an earthed mains socket-outlet.

Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan

Apparatet må tilkoples jordnet stikkontakt

Apparaten skall anslutas till jordat uttag



Warning! *Make sure all rack mounted equipment and the electronic rack system is properly grounded.*

2.2.6 Circuit Overloading

The XDS-PRO receiver can draw up to 1.5 Amps at 120 VAC 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.

2.2.7 Foreign Objects



Warning! *Inserting any 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 ATX technical support. Do not open the receiver, as doing so will void the receiver's warranty.

2.3 Physical Installation of the Receiver

The following section will guide you through the physical installation of the XDS-PRO receiver.

2.3.1 Rack Mounting the Receiver

The XDS-PRO receiver has been specifically designed for installation and operation in an EIA standard 19-inch equipment rack. When mounting it in the rack, use pan or round head screws and flat washers in all four front panel mounting locations.



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

2.3.2 Uneven Loading of Rack

When installing the XDS-PRO receiver in a free standing or unsecured 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.*

2.4 Connecting the Receiver to a Satellite Dish

This section contains information required for connecting your XDS-PRO receiver to a satellite downlink.

2.4.1 Outdoor Antenna Grounding

Before attempting to install the XDS-PRO receiver, make sure the antenna and cable system is properly grounded to provide some protection against voltage surges and built-up static charges.

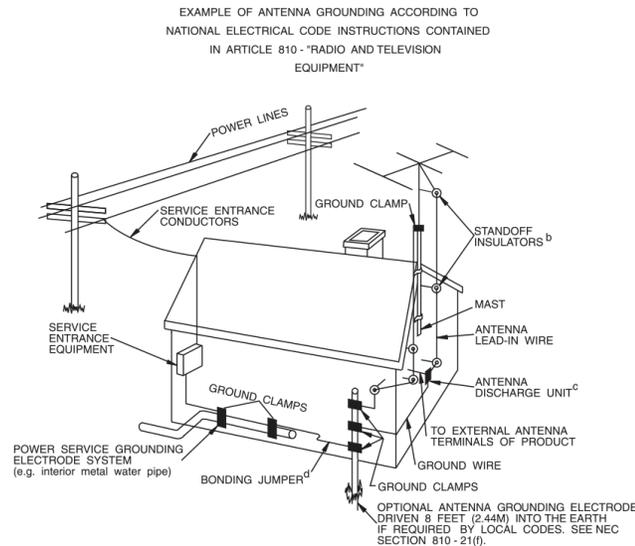
- a. Use No.10 AWG (5.3mm) copper, No.8 AWG (8.4mm) aluminum, No.7 AWG (10mm) copper-clad steel or bronze wire or larger, as ground wire.
- b. Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 feet (1.22m) to 6 feet (1.83m) apart.
- c. Mount antenna discharge unit as close as possible to where lead-in enters house.
- d. A driven rod may be used as the grounding electrode where other types of electrode systems do not exist. Refer to

the National Electrical Code, ANSI/NFPA 70-1984 for information.

- e. Use jumper wire not smaller than No.6 AWG (13.3mm) copper or equivalent, when a separate antenna grounding electrode is used.

NOTE TO THE CATV SYSTEM INSTALLER

THIS REMINDER IS PROVIDED TO CALL THE CATV SYSTEM INSTALLER'S ATTENTION TO ARTICLE 820-22 OF THE NEC THAT PROVIDES GUIDELINES FOR PROPER GROUNDING AND, IN PARTICULAR, SPECIFIES THAT THE CABLE GROUND SHALL BE CONNECTED TO THE GROUNDING SYSTEM OF THE BUILDING, AS CLOSE TO THE POINT OF CABLE ENTRY AS PRACTICAL



2.4.2 DC Voltage Requirement

You may need to have the receiver supply DC voltage to either an LNB or a block down-converter (used after an LNA). 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 Section 3.2 of this manual. The user can also change the receiver's LNB ON/OFF settings using the Receiver Web Interface, described in Section 4, or remote Monitor and Control Interface, described in Section 6.

In installations where another receiver receives the L-Band (950-2150MHz) signal directly from the satellite dish, then you may use a splitter with DC blocking circuitry to get the signal to the XDS-PRO receiver. In this case, set the LNB Voltage setting to OFF.

2.4.3 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 +18V 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.

2.5 Connecting to the Ethernet Network

The XDS-PRO receivers are 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 (see Section 2.5.8 for further details.) 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 also 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 assistance.

2.5.1 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 to the XDS-PRO 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 cannot 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.

2.5.2 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.

2.5.3 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 could be desired. To view and modify the IP address, refer to section 3.2.2.1.

2.5.4 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, XDS-PRO Receiver, etc.). To set this value for your purposes, refer to section 3.2.2.1.

2.5.5 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.

2.5.6 Proxy Server Configuration

A proxy server can be configured through the front panel as detailed in section 3.3.3.1 or through the command line interface. To modify the proxy server through the command line, refer to the E0/E1 PROXY commands in section 6.2.

2.5.7 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 6.2.

2.5.8 Setting Up “IP Only Mode”

If it is desired to run the XDS-PRO receiver in IP Only Mode (i.e. – no RF used), it can be enabled in two ways:

1. (for XDS-PRO receivers with a Front Panel) – Navigate to the IP Only Mode section on the Front Panel (see Figure 1), and select “Enabled”.
2. Using the TUNER command (see Section 6.2), DISABLE (all) tuners to automatically enable IP Only mode.



Note: *These are only how to get the receiver itself in IP Only Mode. It takes much more work to get the entire system running in that mode, and is beyond the scope of this manual.*

2.6 Connecting the Audio Ports

Your XDS-PRO receiver can output both analog and digital audio depending on its configuration. Networks will generally assign stations statically to an individual port or port configurations can be modified through the Affiliate Website.

2.6.1 Analog Audio Ports

The four ports on the back of the PRO4R and PRO4S receivers labeled Audio A, Audio B, Audio C, and Audio D output analog audio. For information on the pin-out of these ports, please see Section 8.1.4. For the PRO1R and PRO1S, the audio port labeled Audio A also outputs analog. For information on the pin-out of these ports, see Section 8.1.4.

2.6.2 Digital Audio Port

The PRO4R, PRO1R, PRO4S, and PRO1S each has a port on the back of the receiver labeled AES/EBU, which outputs digital versions of the audio output from analog audio ports Audio A-D. Refer to Section 8.1.7 for connector pin-out information. The

PRO1Q receiver does not provide digital audio output.

2.7 Connecting the Relay Ports

The PRO4R and PRO4S receivers are equipped with two RS-232 ports, labeled Relay A and Relay B, each of which are capable of receiving cue signals from the Network signal and firing relay closures. The PRO1R and PRO1S receivers are equipped with one RS-232 port, labeled Relay A, with the same capabilities.

2.7.1 Physical Ports

Each of the RS-232 ports on the back of the PRO4R and PRO4S receiver have 32 relay closures that can be mapped. The relay mappings can be modified, viewed and toggled through the Affiliate Website (Section 5), toggled only through the front panel (Section 3.3.4) or viewed through the receiver website (Section 4). For pin-out information on the RS-232 ports, see Section 8.1.2.

The RS-232 port on the back of the PRO1R and PRO1S have 16 relay closures that can be mapped. The relay mappings can be modified, viewed or toggled through the Affiliate Website (Section 5) or viewed through the receiver website (Section 4). For pin-out information on the RS-232 ports please see Section 8.1.2.

2.7.2 Cues

The XDS-PRO receivers are capable of firing multiple types of relays:

- Associated cues will fire when the associated program is playing. In addition, these cues will be recorded 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.

2.8 Connecting the Program Associated Data (PAD) Port

The XDS-PRO receivers are 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 3.3.4), or the M&C (Section 6.2). PAD data is output through the port labeled PAD on the back of the receiver. Please see Section 8.1.8 for information on the PAD port pin-out. The XDS-PRO receivers also have the capability to output the PAD data via IP UPD using the PAD IPROUT command through the console port.

2.8.1 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 be carrying ancillary data in a proprietary enhancement to the framing protocol (this enhancement will be compatible with all AAC decoders).

2.8.2 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.

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FRONT PANEL OPERATIONS

3. Front Panel Operations

All XDS-PRO receivers provide four status LEDs which indicate power, signal, update, and fault. These four status LEDs serve as a quick reference for the current state of the receiver.

The XDS_PRO is also equipped with: A 128x64 pixel LCD display; Eight buttons: **1**, **2**, **3**, left (◀), right (▶), up (▲), down (▼), and **SET**; A monitor speaker; A headphone port; And a USB connector. Using the buttons and LCD panel, a user may navigate through the hierarchical menu to view, modify, and save receiver settings.

3.1 Status LEDs

There are four status light emitting diodes, each indicating a specific property of the receiver. The following sections state their significance.

3.1.1 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 Signal LED

The SIGNAL LED is used to indicate when the receiver has locked onto a signal or not. If the signal LED is a solid green, the receiver is locked. Otherwise, the light will be off.

3.1.3 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 (3x per second), an upgrade has been successful and the receiver should be rebooted at a convenient time (when audio is off air). The update LED will also be blinking if you haven't activated your receiver unit with the NMS. See the Quick Start guide for activation instructions.

3.1.4 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.

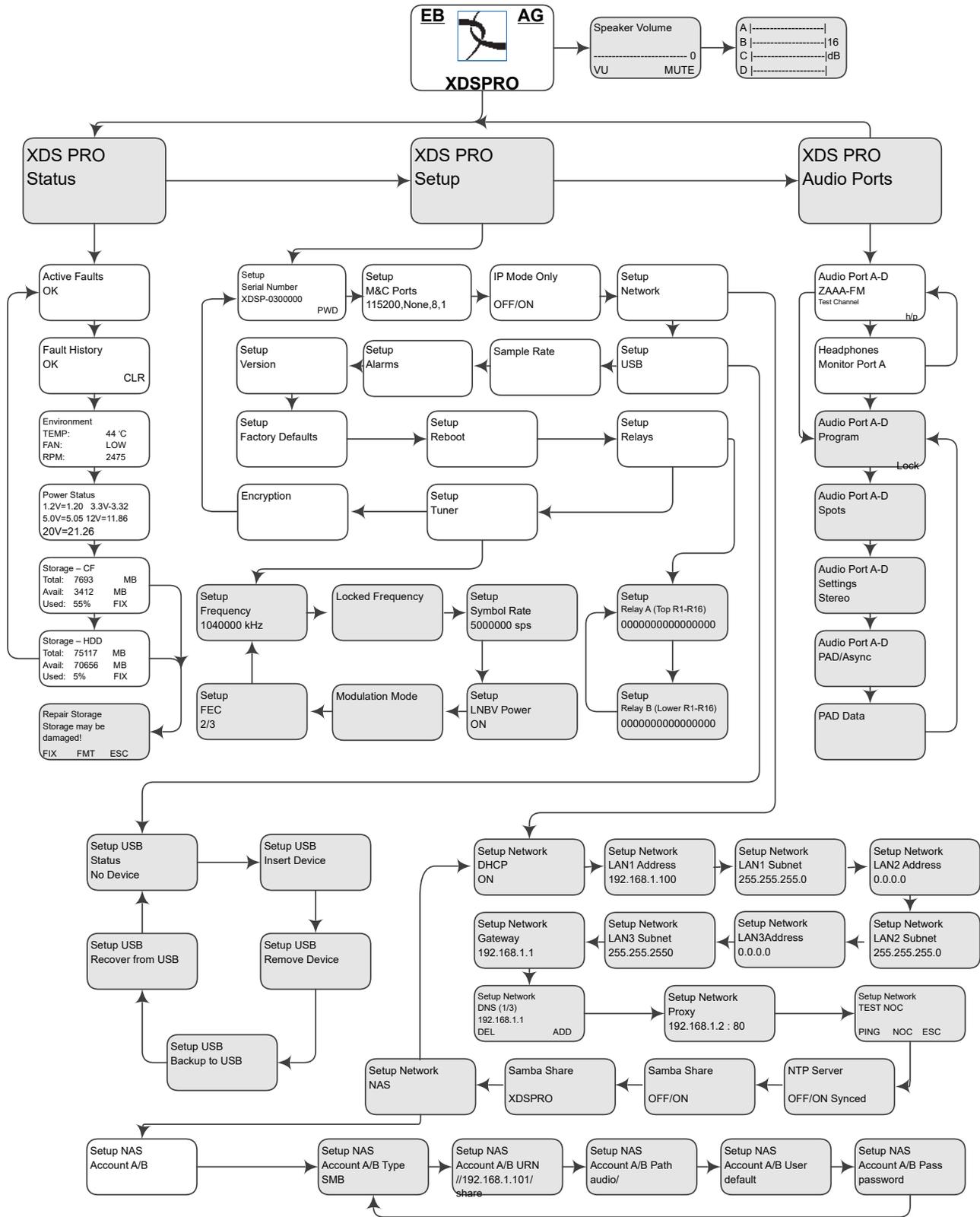
3.2 LCD Display and User Interface

The XDS-PRO receivers are equipped with a 128x64 pixel LCD on its front panel which allows the user to view, modify, and save receiver settings. To navigate:

- To cycle through the possible sub-menus, press the ◀ or ▶ buttons.
- To navigate into the currently selected sub-menu, press the ▼ 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.

3.3 Front Panel Flow

XDS PROS Master Menu Diagram



Rev A

XDS PRO Master Menu Diagram

10/23/19

Figure 1: PRO Receiver Front Panel Flow

3.3.1 Main Menu Options



Note: For all of the following subsections, please refer to the Front Panel Flow as shown in Figure 1 - PRO Receiver Front Panel Flow.

When the receiver's front panel is not being used, the idle screen featuring the company¹ logo will be displayed. 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 - 15. Levels above 15 will be displayed as ">15". The receiver will fade in and out below 5 dB E_p/N_0 , 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. These options are:

- STATUS
- SETUP
- AUDIO PORTS

Continually pressing ◀ (or ▶) will cycle through these three main menus. Pressing ▼ or **SET** will navigate into whichever one of these three options happen to be currently selected.

3.3.2 Status Sub-Menus

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

- **ACTIVE FAULTS:** Describes any active faults that may be affecting the receiver.
- **FAULT HISTORY:** Offers a list of past faults which may have occurred. Pushing **3** will clear the fault history.
- **ENVIRONMENT:** Indicates whether the internal fans are functioning inside the unit, and the internal temperature of the receiver unit.
- **POWER STATUS:** Readings on the various voltage levels inside the receiver.
- **STORAGE STATUS:** Gives an indication of the internal storage drive usage in the receiver. Also gives the option to "Fix" storage.

3.3.3 SETUP Sub-Menus

By navigating from the Main Menu to Setup, the user reaches the Setup sub-menus. The different sub-menus available under Setup are:

- **SERIAL NUMBER:** Displays the receiver's serial number. Pressing the **3** quick key underneath "PWD" will display your receiver's affiliate site password.
- **M&C PORTS:** Displays M&C port settings.
- **IP Only Mode:** Refer to Section 2.5.8 on setting up IP Only Mode.
- **NETWORK:** Pressing the ▼ will navigate into the Network sub-menus.
- **USB:** Pressing the ▼ will navigate into the USB sub-menus.
- **ALARMS:** Allows you to set the alarm mask as a hex value.
- **VERSION:** Pressing **SET** in this menu will display the receiver's firmware version.
- **FACTORY DEFAULTS:** Pressing **SET** will offer you the option of resetting the receiver's settings to factory defaults. Press **1** to confirm or **3** to cancel. Reboot is required.
- **REBOOT:** Pressing **SET** will offer you the option of rebooting the receiver or gracefully shutting down the receiver. Press **1** to reboot, **2** to shut down gracefully, **3** to cancel. (Hot tip: press **3** three times from the top idle screen to automatically go to this screen).
- **RELAYS:** Allows you to switch any of the individual relay signals on Relay A or B to on. Press ▼ to choose which Relay port to edit, then press **SET** to modify which pins on the relay are activated. A '0' is an un-activated relay and a '1' is an activated relay. The first position is the Relay 1, the second position is Relay 2, and so on.
- **Test Tones:** Supply test tones from the receiver.
- **TUNER 1 & TUNER 2:** Pressing the ▼ will navigate into the Tuner sub-menus.

¹The company logo may be replaced by your broadcaster's logo.

3.3.3.1 SETUP: NETWORK Sub-Menus

Starting from the Main Menu and navigating to Setup option and pressing ▼, and then navigating to Network option and pressing **SET**, a user will have access to the Network sub-menus. In these sub-menus, the receiver's network settings can be made. The network menu options include:

- DHCP (on or off): Allows the user to specify a dynamic or static IP (on or off respectively).
- 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 Mask: Allows the user to specify the LAN Subnet mask.
- LAN2 Address: Specify the LAN2 IP address. For XDS-PROS receivers this interface is used in case the network wants to make the receiver access available to a local private network, Fro XDS-PROR receivers this interface is used in case the network wants to output AoIP AES67 or Livewire audio into an exclusive local multicast IP audio network.
- LAN2 Subnet Mask: Specify the LAN2 subnet mask.
- LAN3 Address for XDS-PROS receivers only: Specify the LAN3 IP address. In case the network wants to output AoIP AES67 or Livewire audio into an exclusive local multicast IP audio network.
- LAN3 Subnet Mask: Specify the WAN subnet mask.
- GATEWAY: Allows the user to specify the default gateway to direct traffic to.
- DNS: Allows the user to specify DNS servers the receiver will use.
- PROXY: Allows the user to specify a proxy server the receiver will go through.
- TEST NOC: When SET is pressed, this menu offers the user two test options. Pressing 1 allows you to ping the internet to ensure the network connection is functioning, and pressing 2 tests the receiver's website to ensure it is functioning. Pressing 3 exits from the Test menu.
- NTP Server: To enable the receiver to become a local NTP server source. The receiver will be serving network synchronized time.
- SAMBA Share: To enable or disable the receiver SAMBA share capability to expose shared files and folders to other computers in the network can access.

To modify any of these numeric values: use ◀ or ▶ to select which part of the IP to change. Make a digit larger using ▲ and to make a digit smaller using ▼. Press **SET** whenever you are done editing and want to commit a setting.

3.3.4 AUDIO PORTS Sub-Menus

From the Audio Ports sub-menus, 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 Station sub-menu where call letters for a station may be selected. Pressing 2 will take you to Programs sub-menu where a specific program may be chosen from a list using ▲ and ▼. Pressing 3 will navigate to the Spots sub-menu where specific radio spots may be chosen from a list, again using ▲ and ▼.

3.3.4.1 AUDIO PORTS: SETUP Sub-Menus

Each of the five audio ports (Audio Port A-D, and Headphones) have their own identical setup sub menus. From these menus, users may modify the station call number, the current program played on the audio port, the current commercial spot played on the audio port, and a couple miscellaneous audio settings (stereo or mono). These settings may only be changed if a red-cross symbol is not visible on the port's menu screen. If this symbol does appear, it means that this audio port is controlled automatically by the broadcaster, and that the user is unable to change any of these settings.

When the Station menu is selected by pressing **SET**, the receiver navigates to a screen where call letters can be selected in order by using ▲ and ▼ to choose a letter for the selected spot, ◀ and ▶ to choose which position in the name is selected for editing, and **SET**, to commit the changes to the station's call letters. When Program or Spot menus are selected, the receiver will display a list of programs or spots respectively. Use ▲ and ▼ to scroll through these lists, and use **SET** to select something from one of these lists. 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.

RECEIVER WEB INTERFACE

4. Receiver Web Interface

The XDS-PRO receiver includes an on-board web interface. From this interface, you can view most of the receiver's internal settings, as well as the contents of the receiver's integrated hard drive. To access this site, open a web browser connected to your network and navigate to the desired receiver's assigned IP address. The receiver's IP address can be found through the front panel. When the page loads, you will see a login page. You may login using "tech" as user name and "radio" as the password. The receiver Web Interface uses secured SSL/HTTPS access.

Once you have logged in, you will see three tabs on the top, and a fourth tab if you have the optional XDS-AMR installed in the unit:

- General
- Programming
- Content
- XDS-AMR (optional)

After logging in, you will be viewing the information underneath the General button by default.

4.1 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
- Opto Inputs
- Logs
- Console

The Status tab is the tab displayed by default upon entering the General menu.

4.1.1 Status Tab

The Status Tab (see Figure 2, Figure 3, and Figure 4) displays basic attributes about the receiver's current output, its surroundings, errors, and current power levels. On this tab you will see:

- A brief overview of the unit's model, serial number, software version, Network Name and ID.
- Tuner IQ.
- Station Assignments.
- A description of the Headphones output including Program PID, and audio level.
- A list of current faults affecting the receiver, as well as a history of past faults.
- Internet streaming statistics.
- Onboard storage information.
- Environmentals information, such as unit temperature and fan speed (relative).
- Power supply voltage levels.
- Affiliate Credentials (i.e. – find out what today's credentials are).
- NOC Connection Test – Perform a connection test here.

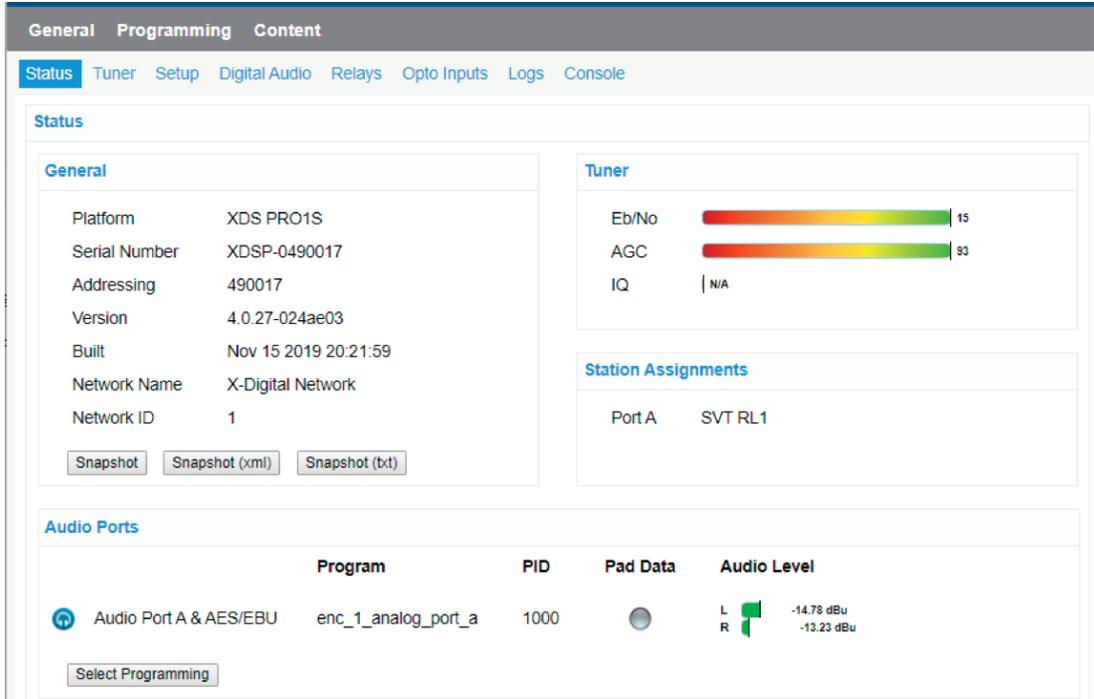


Figure 2: General Status Page - Part 1

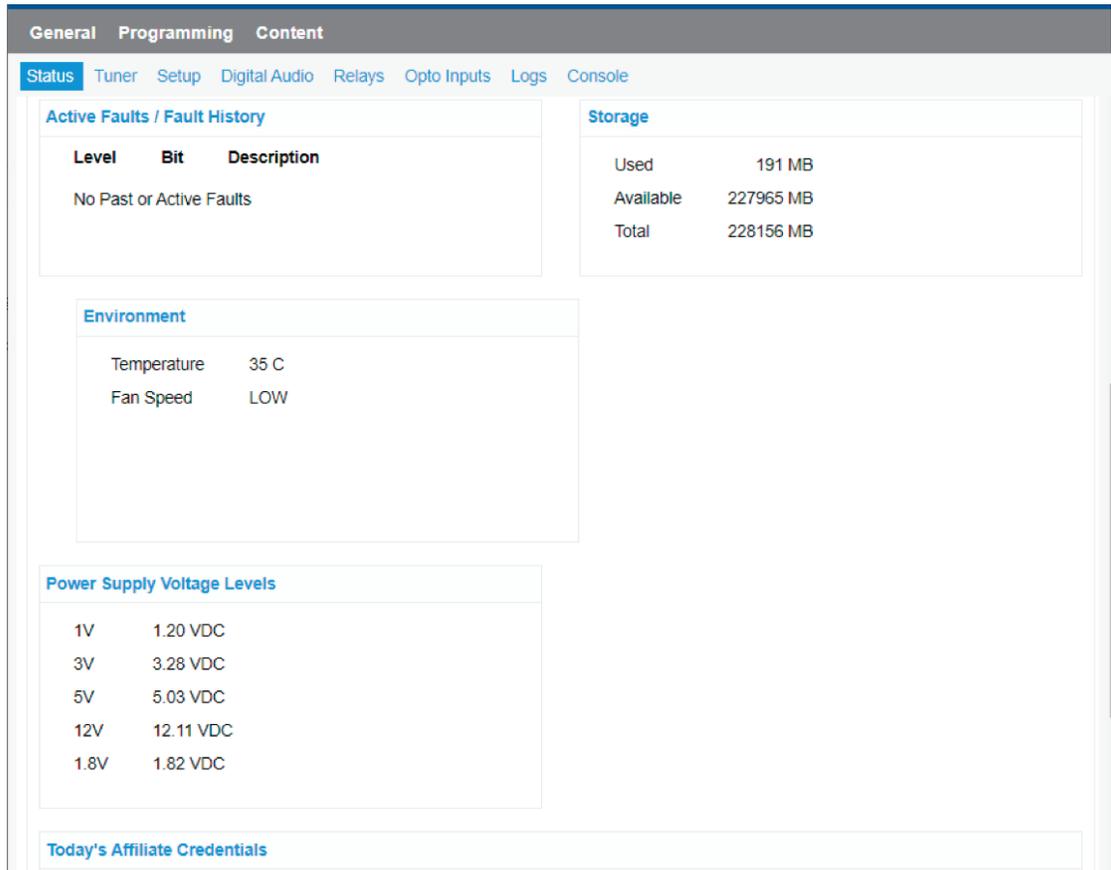


Figure 3: General Status Page - Part 2

4.1.2 Tuner Tab

The Tuner Tab presents the user with tuner related data (see Figure 4 - Tuner Settings), and includes:

- Currently active tuner.
- Enabled/disabled status.
- Tuned frequency.
- Tuner's symbol rate.
- FEC, Data rate, Framing mode, and Modulation mode.
- Low Eb Alarm Threshold
- Data Rate
- Framing Mode
- Modulation Mode
- Tuner Carrier Lock status
- Locked Tuner Frequency – Shows the actual locked frequency with offset
- The acquisition state of the tuner.
- Eb/No – The energy per bit to noise power spectral density ratio, it is a normalized signal-to-noise ratio measure, also known as “SNR per bit” (see Section 3.3).
- AGC – A closed-loop feedback regulation mechanism, helps to equalize the average volume of different signals due to varying signal strength.
- Fade count* of the tuner.
- Reed-Solomon error count*.
- Current LNB offset.
- On / off status of the LNB.

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

Tuner settings can be edited at any time by pressing the Edit Tuner Settings button.

Tuner	1 (active)	2
Status	Enabled	Disabled
Frequency	1250000 kHz	
Symbol Rate	3000000 sps	
FEC	3/4	
Low Eb Alarm Threshold	8.0 Eb	
Data Rate	4462419 bps	
Framing Mode	DVB	
Modulation Mode	DVB-S2-QPSK	
Carrier Lock	LOCKED	
Locked Frequency	1248125 kHz	
Acquisition State	N/A	
Eb/No	>15	
AGC	94	
Fade Count	0	
Reed-Solomon Errors	0	
LNB Offset	None (L-Band only)	
LNB Power	OFF	

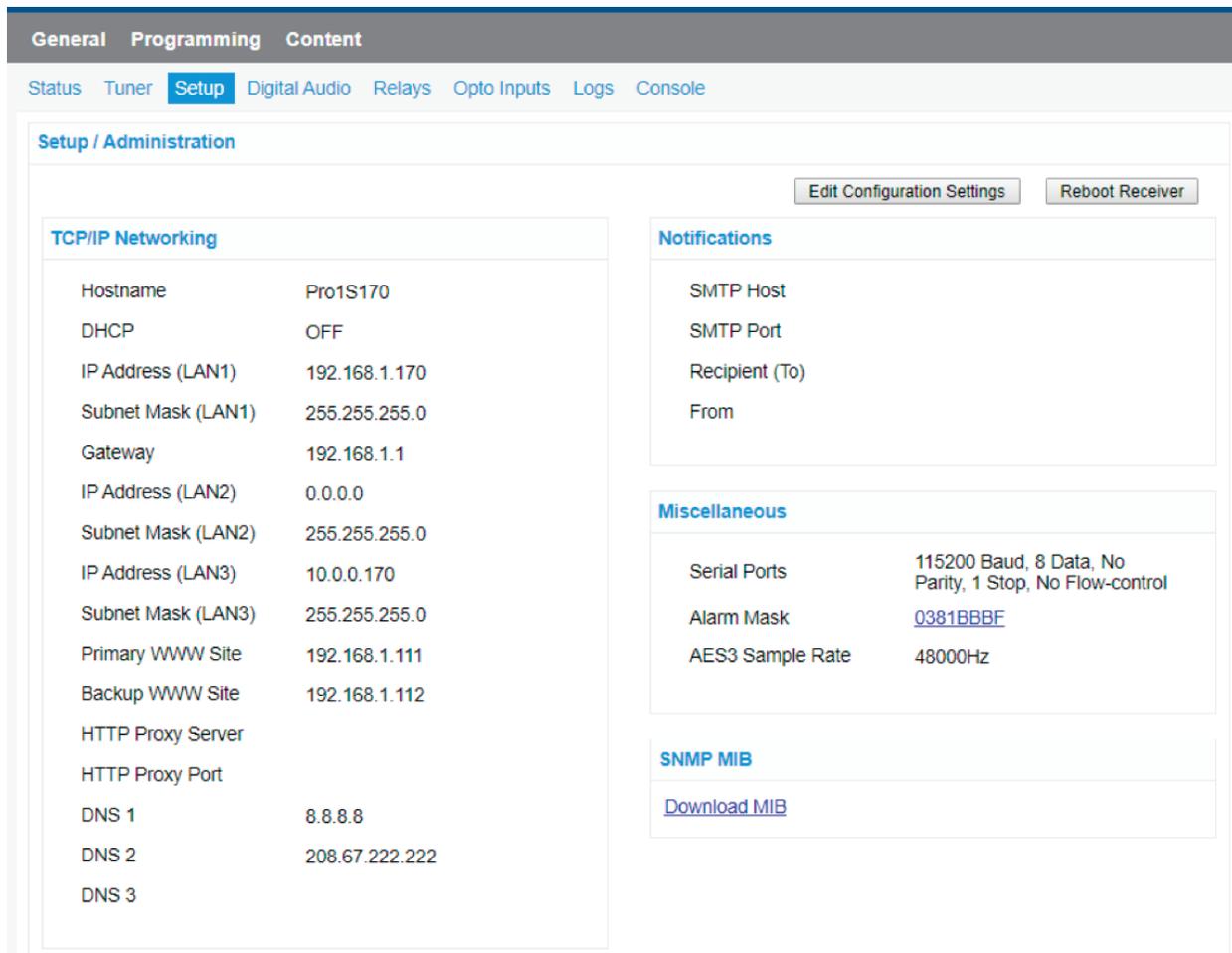
Buttons: Clear Statistics, Edit Tuner Settings

Figure 4: Tuner Settings

4.1.3 Setup Tab

The Setup Tab shows specific receiver settings, and allows the user to modify them:

- Networking values used by the receiver including: LAN IP Address, LAN Subnet Mask, Gateway, LAN2 IP Address, LAN2 Subnet Mask, LAN3 IP Address, LAN3 Subnet Mask, primary NMS website URL, and backup NMS website URL.
- Notification information.
- Miscellaneous information including data about the serial ports and their settings, the current hexadecimal alarm mask and the ASE3 Sample Rate selection. The station can select 44.1KHz or 48KHz digital AES3 audio output. The AES67 AoIP or Livewire output will be always 48KHz.
- SNMP MIB link to download the receiver SNMP MIB
- SAMBA Settings
- NTP Settings
- Network Attached storage information.
- Transport encryption mode
- Firmware update section.



General Programming Content

Status Tuner **Setup** Digital Audio Relays Opto Inputs Logs Console

Setup / Administration

Edit Configuration Settings Reboot Receiver

TCP/IP Networking

Hostname	Pro1S170
DHCP	OFF
IP Address (LAN1)	192.168.1.170
Subnet Mask (LAN1)	255.255.255.0
Gateway	192.168.1.1
IP Address (LAN2)	0.0.0.0
Subnet Mask (LAN2)	255.255.255.0
IP Address (LAN3)	10.0.0.170
Subnet Mask (LAN3)	255.255.255.0
Primary WWW Site	192.168.1.111
Backup WWW Site	192.168.1.112
HTTP Proxy Server	
HTTP Proxy Port	
DNS 1	8.8.8.8
DNS 2	208.67.222.222
DNS 3	

Notifications

SMTP Host

SMTP Port

Recipient (To)

From

Miscellaneous

Serial Ports 115200 Baud, 8 Data, No Parity, 1 Stop, No Flow-control

Alarm Mask [0381BBBBF](#)

AES3 Sample Rate 48000Hz

SNMP MIB

[Download MIB](#)

Figure 5: General Setup - Part 1

The screenshot displays the 'General Setup - Part 2' web interface. At the top, there are tabs for 'General', 'Programming', and 'Content'. Below these are sub-tabs: 'Status', 'Tuner', 'Setup' (which is active), 'Digital Audio', 'Relays', 'Opto Inputs', 'Logs', and 'Console'. The main content area is divided into several sections:

- SAMBA:** A table with three rows: 'SAMBA Share' (Enabled), 'Shared Folders' (XDSPRO), and 'SAMBA User' (xdssmb).
- NTP:** A table with three rows: 'NTP Server' (OFF), 'NTP Stratum' (4), and 'NTP Sync Status' (NA).
- Network Attached Storage 1:** A table with six rows: 'Type' (SMB), 'Host (URL)' (//192.168.1.102/nas), 'Path' (/import), 'User' (xdsadmin), 'Password' (*****), and 'Status' (OK).
- Network Attached Storage 2:** A table with six rows: 'Type', 'Host (URL)', 'Path', 'User', 'Password', and 'Status'.
- Encryption:** A table with three rows: 'Mode' (XDS), 'Even key', and 'Odd key'. Below this table is a note: 'NOTE: XDS-NMS might **overwrite** the encryption keys'.
- Firmware Update:** A section with a 'Choose File' button (showing 'No file chosen') and an 'Update' button.

Figure 6: General Setup - Part 2

4.1.4 Digital Audio Tab

The Digital Audio Tab presents the user with the capability to select Audio over IP (AoIP) options for AES67 or Livewire output. It also has destination options for HD-Radio E2X IP output that your network may send to directly feed an HD Radio exciter. In Livewire mode, the interface allows to enter Livewire GPIO configuration.

The screenshot displays the 'Digital Audio IP Output' web interface. At the top, there are tabs for 'General', 'Programming', and 'Content'. Below these are sub-tabs: 'Status', 'Tuner', 'Setup', 'Digital Audio' (which is active), 'Relays', 'Opto Inputs', 'Logs', and 'Console'. The main content area is divided into several sections:

- Digital Audio IP Output:** A section with a 'Save Configuration Settings' button.
- HD-Radio:** A section with a 'Destination' label and a text input field for 'Port A'.
- Livewire Status:** A section with a 'Livewire' label and two radio buttons: 'ON' (selected) and 'OFF'.
- AES67:** A section with two columns: 'Multicast IP:PORT' and 'Mode'. The 'Multicast IP:PORT' column has a text input field for 'Port A' containing '239.192.0.1:5004'. The 'Mode' column has a dropdown menu currently set to 'Disabled'.

At the bottom left of the interface, there is a copyright notice: '© 2019 ATX Networks™ All Rights Reserved.'

Figure 7: Digital Audio - Part 1

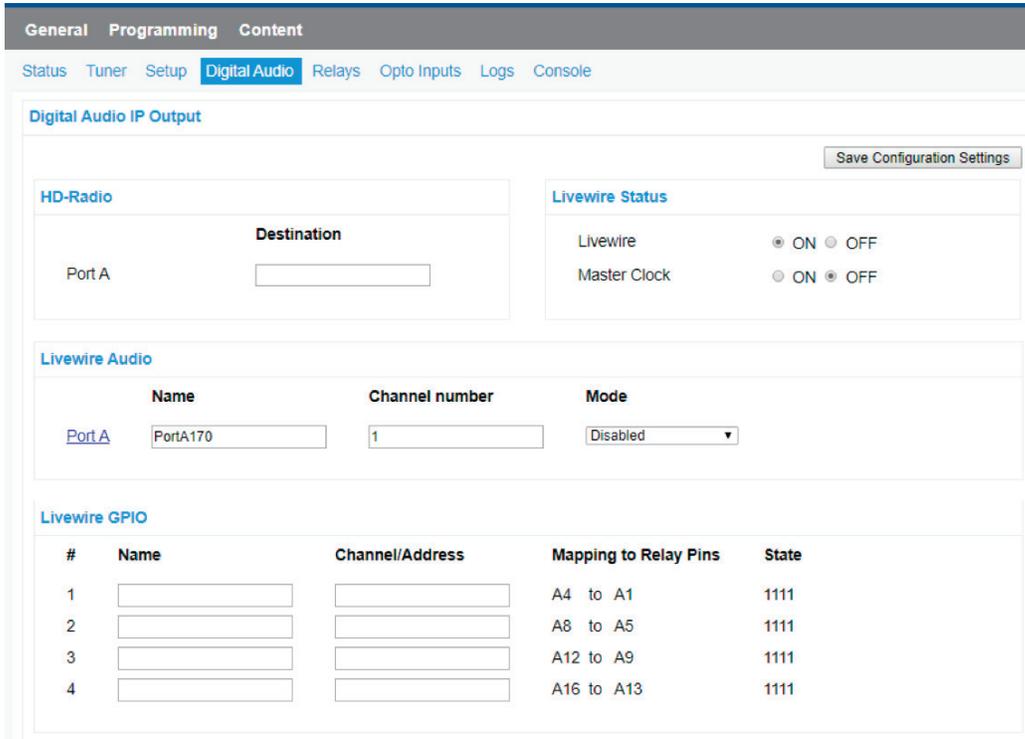


Figure 8: Digital Audio - Part 2

4.1.5 Relays Tab

The Relay Tab presents the user with cue to relay mappings that the receiver is assigned. Your network provides specific relay cue message that can be used to trigger a relay closure if the cue is mapped to a specific relay pin. These relay mappings are configured through the Affiliate Website.

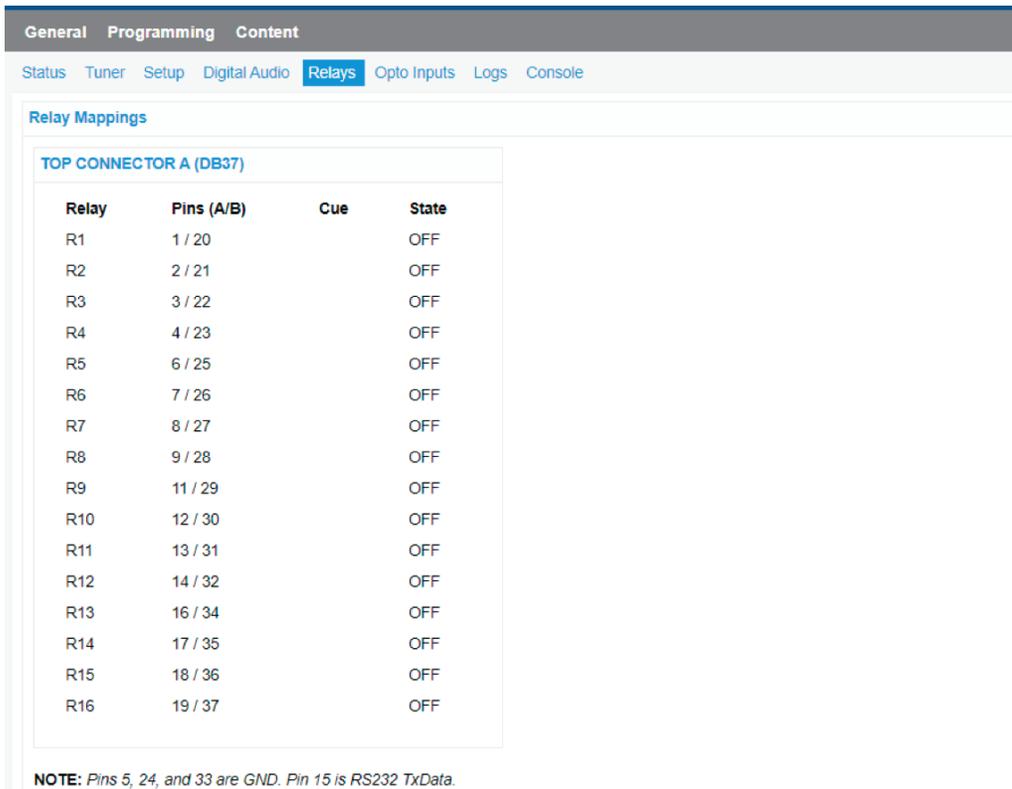


Figure 9: Relay

4.1.6 Opto Inputs Tab

The Opto Inputs Tab provides the user with the ability to setup the Opto input mode and to program the Opto Inputs to execute a command or a group of commands. The Opto input can be configured in two modes; Coded and Uncoded.

4.1.6.1 Coded Opto Input Mode

In this mode, the receiver is expecting that there will be a closure in multiple Opto pins at a time, and the combination of triggered pins can be programmed to a different function. There are 16 possible combinations that the 4 Opto inputs can be triggered (see Figure 10).

The screenshot shows the 'Opto Inputs' configuration page in Coded mode. The 'Mode' is set to 'Coded'. The table below lists 15 possible combinations of 4 opto inputs.

Opto In	Mask	Pins (GND 1,5)	Title	Armed?
1 (OPTO 1)	0001	PIN 6		Disabled
2 (OPTO 2)	0010	PIN 7		Disabled
3	0011	PIN 6+7		Disabled
4 (OPTO 3)	0100	PIN 8		Disabled
5	0101	PIN 6+8		Disabled
6	0110	PIN 7+8		Disabled
7	0111	PIN 6+7+8		Disabled
8 (OPTO 4)	1000	PIN 9		Disabled
9	1001	PIN 6+9		Disabled
10	1010	PIN 7+9		Disabled
11	1011	PIN 6+7+9		Disabled
12	1100	PIN 8+9		Disabled
13	1101	PIN 6+8+9		Disabled
14	1110	PIN 7+8+9		Disabled
15	1111	PIN 6+7+8+9		Disabled

Figure 10: Opto Inputs - Coded

4.1.6.2 Uncoded Opto Input Mode

In this mode, the receiver is expecting that there will be a closure in one of the Opto input pins at a time and each pin can be programmed to a different function (see Figure 11).

The screenshot shows the 'Opto Inputs' configuration page in Uncoded mode. The 'Mode' is set to 'Uncoded'. The table below lists 4 possible combinations of 4 opto inputs.

Opto In	Mask	Pins (GND 1,5)	Title	Armed?
1 (OPTO 1)	0001	PIN 6		Disabled
2 (OPTO 2)	0010	PIN 7		Disabled
4 (OPTO 3)	0100	PIN 8		Disabled
8 (OPTO 4)	1000	PIN 9		Disabled

Figure 11: Opto Inputs - Uncoded

4.1.6.3 Programming Opto Inputs

To program the Opto input triggers, press the EDIT button, enter a name that you would like to give the particular function you are trying to program, select the enable checkbox if you want this function to be enabled, enter one receiver command per line in the commands window, and press the SAVE button to save your Opto function. You can use any receiver console command included in Section 6.2).

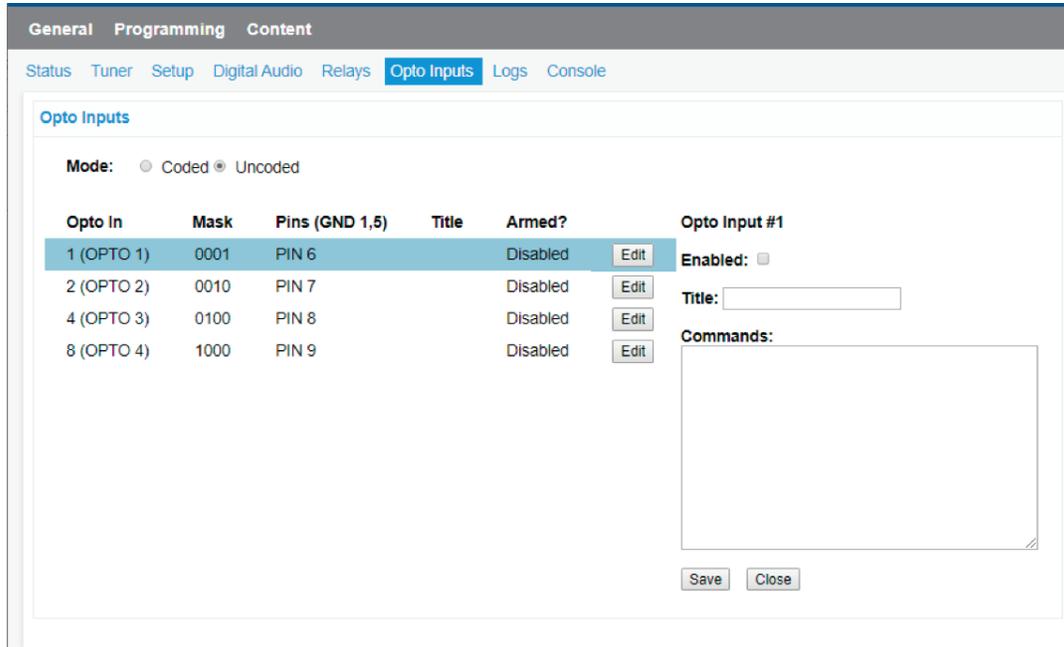


Figure 12: Edit Opto Inputs

4.1.7 Logs Tab

The Logs Tab presents the receiver activity logs. It shows all core transactions the receiver is performing.

- The user can select to display the logs in UTC or local time.
- The user can download and save the logs to a local computer in text format.
- The user can delete all the activity logs from the receiver.
- The user can press to down or up arrow in the Time Stamp column to sort the logs by timestamp.

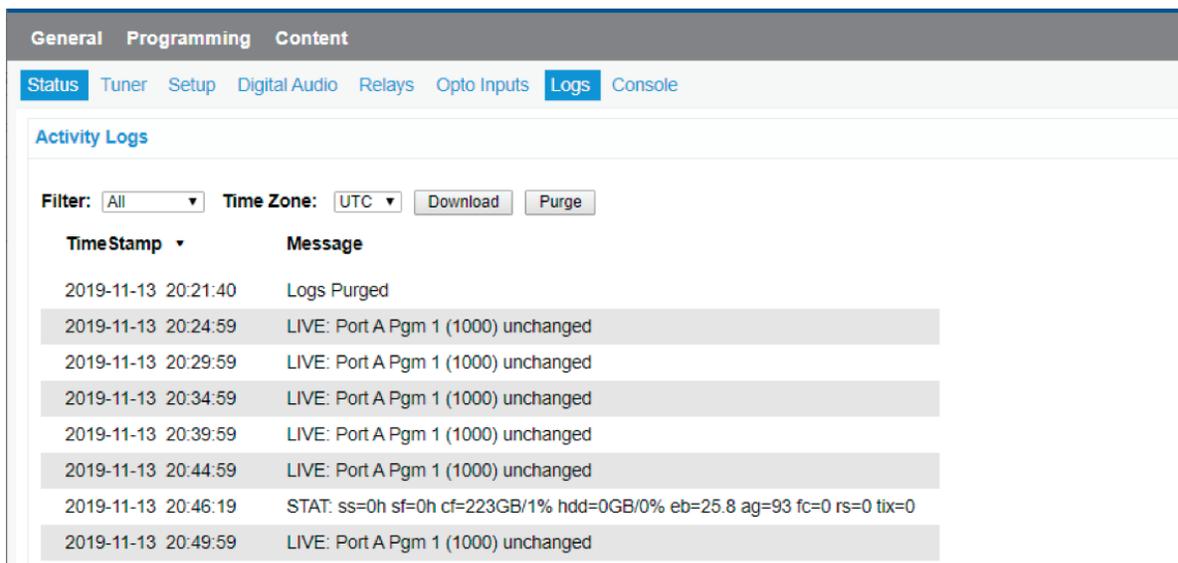


Figure 13: Logs

4.1.8 Console Tab

The Console Tab present a command interface by which the user can issue command as if they were connected to the RS-232 console port or TELNETed to the receiver. Any console command can be issued through this interface.

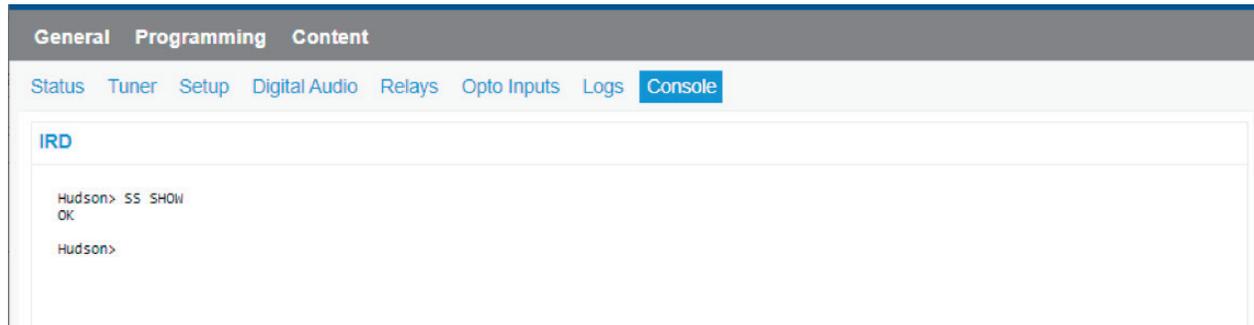


Figure 14: Console Tab

4.2 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 Programs Tab

Each receiver is identified by the Network Management System (NMS) as authorized to receive and broadcast particular radio programs. From the Programs 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, ID, Code, Mono/Stereo, Program ID (PID), Authorization status, and the Port the current program is configured for.

Program	ID	Code	Mono/Stereo	PID (hex)	Authorized	Ports
enc_1_analog_port_a	1	P1	Stereo	1000	FREE	A
enc_1_analog_port_b	2	P2	Stereo	1001	FREE	+
enc_1_analog_port_c	3	P3	Stereo	1002	FREE	+
enc_3_aes67_port_a	4	P4	Stereo	1003	FREE	+
enc_3_aes67_port_b	5	P5	Stereo	1004	FREE	+
enc_3_aes67_port_c	6	P6	Stereo	1005	FREE	+
enc_3_aes67_port_d	7	P7	Stereo	1006	FREE	+
enc_2_aes3_port_a	8	P8	Stereo	1007	FREE	+
enc_1_analog_port_d	9	P9	Stereo	1008	FREE	+
Prerecorded	10	P10	Mono	1009	FREE	+
LawPrerec	11	P11	Mono	100A	YES	+

Figure 15: Programs Tab

4.2.2 Recordings Tab

In the Recording Tab, every program which has been stored on the receiver's internal storage 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.

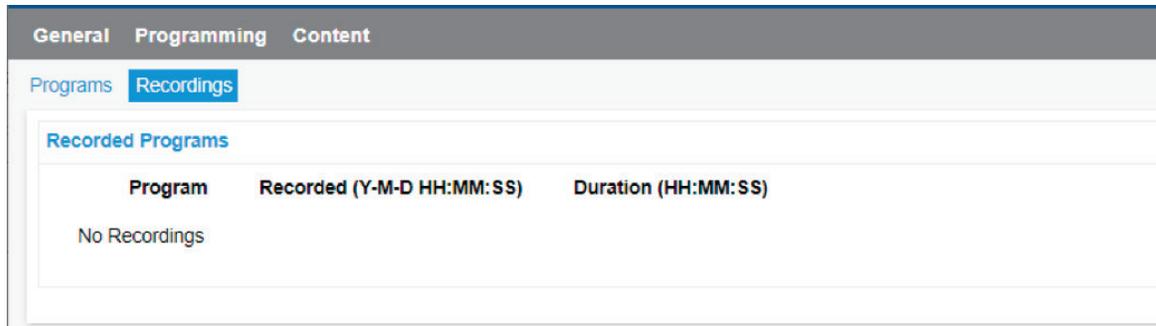


Figure 16: Recordings Tab

4.3 Content Menu

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

4.3.1 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, and received date are displayed. The audio, traffic and all tabs will all have the same layout.

4.3.2 All Tab

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

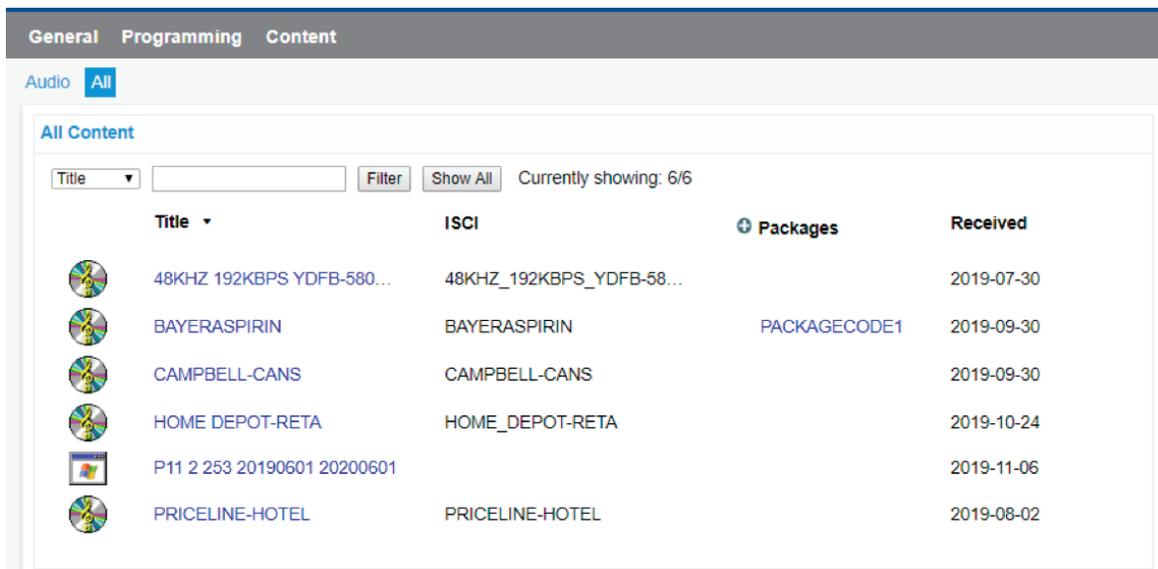


Figure 17: Audio Content

4.4 XDS-AMR Menu (Optional)

Pressing the XDS-AMR button will redirect you to the optional internally installed, locally hosted Audio Monitoring Receiver (AMR) website (see Figure 16). See the XDS-AMR user manual for more details.

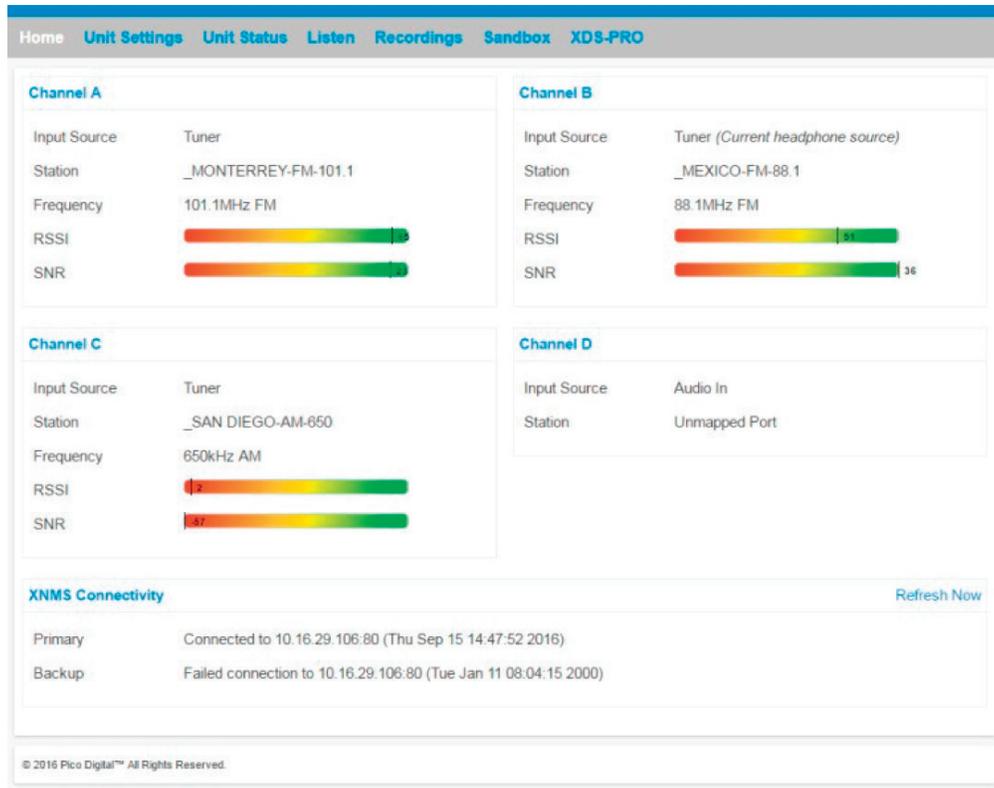


Figure 18: XDS-AMR Website

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AFFILIATE WEB INTERFACE

5. Affiliate Web Interface

Your XDS-PRO receivers must always be connected to the internet to allow configuration, activation, setup, monitoring of signal quality, program schedules, audio content and accountability.

The XDS-PRO receivers are capable of communicating with and being configured by an internet-accessible Network Management System (NMS). The NMS has an Affiliate Web Interface to allow radio station users to modify receiver settings such as time zone, relay mappings, receiver port program schedules and other features that help simplify the management of network programs. The following sections will instruct you on how to accomplish these tasks.



NOTE: Each network may or may not allow their affiliates to use the generic Affiliate Web Interface. Some networks may have a custom web interface. If that is the case, then the network needs to provide their custom instruction. The following section give instruction on the generic Affiliate Web Interface.

5.1 Accessing and Logging In

The website hosting your affiliate web page is provided by your broadcaster. Please refer to the packaged Quick Start Guide and Network Data Sheet for instructions on navigating to this site.

After the page has loaded, type the username, which is your receiver's serial number (available on the back panel of your receiver and via the front panel display for receivers equipped with control front panels) and password. Once your correct username and password are typed in, press login.

5.1.1 Obtaining Login Ppassword for Receivers that are Equipped with Front Panels

Navigate to the 'Serial' submenu in the receiver's front panel display (see section 3.2.2 for more details).

5.1.2 Obtaining Login Password for Receivers that are NOT Equipped with Front Panels

First time visitors must connect to the M&C port of the receiver and execute the PASS command to receive the Daily Password to login. It is highly recommended to set a Friendly Password as soon as possible to avoid having to log in using the temporary Daily Password. Return visitors can use the Friendly Password to log in once it is configured.

Programming and Scheduling Relay Mappings Health Configuration Help

Welcome to the Affiliate Website.

First-time visitors: Sign in using your receiver serial number and the daily password issued by your receiver.
Return visitors: Sign in using your receiver serial number and friendly password. If you lost or did not set a friendly password, sign in as a first-time visitor.

Sign In

Receiver S/N: XDSP-

Password:

Figure 19: Affiliate Website Login Page

5.2 Play Scheduling

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

- Log into the Affiliate Website (see section 5.1).
- When the ‘What would you like to do?’ window appears, select “View or Change my Schedules”.

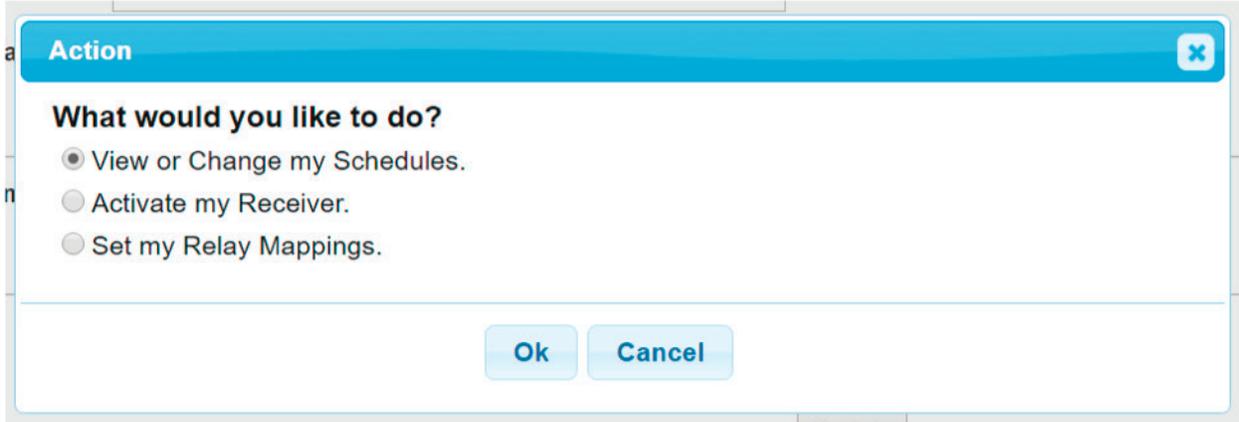


Figure 20: Login Screen Initial Pop-up

- 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.’

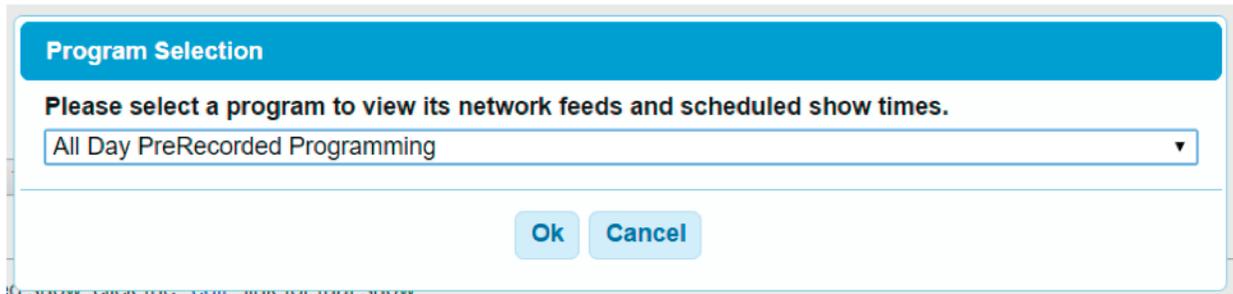


Figure 21: Station Schedule Selection

- 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.

Programming and Scheduling Relay Mappings Health Configuration Help

Calendar View Program List Special Events

Change Site

Programming Schedule for Site KXDS1 on Port A of Receiver XDSP-022222

Show Playback Schedules Only
 Week of 9/12/2016 to 9/18/2016
 Show Recording Schedules Only
 << < This Week > >>
 Show Special Events Only

Time*	Monday 9/12/2016	Tuesday 9/13/2016	Wednesday 9/14/2016	Thursday 9/15/2016	Friday 9/16/2016	Saturday 9/17/2016	Sunday 9/18/2016
00:00	LIVE Live 12:00 AM-1:00 AM						
01:00	LIVE Live 1:00 AM-2:00 AM						
02:00	LIVE Live 2:00 AM-3:00 AM						
03:00	LIVE Live 3:00 AM-4:00 AM						

Figure 22: Programming Schedule Calendar View

- 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.

Program Selection

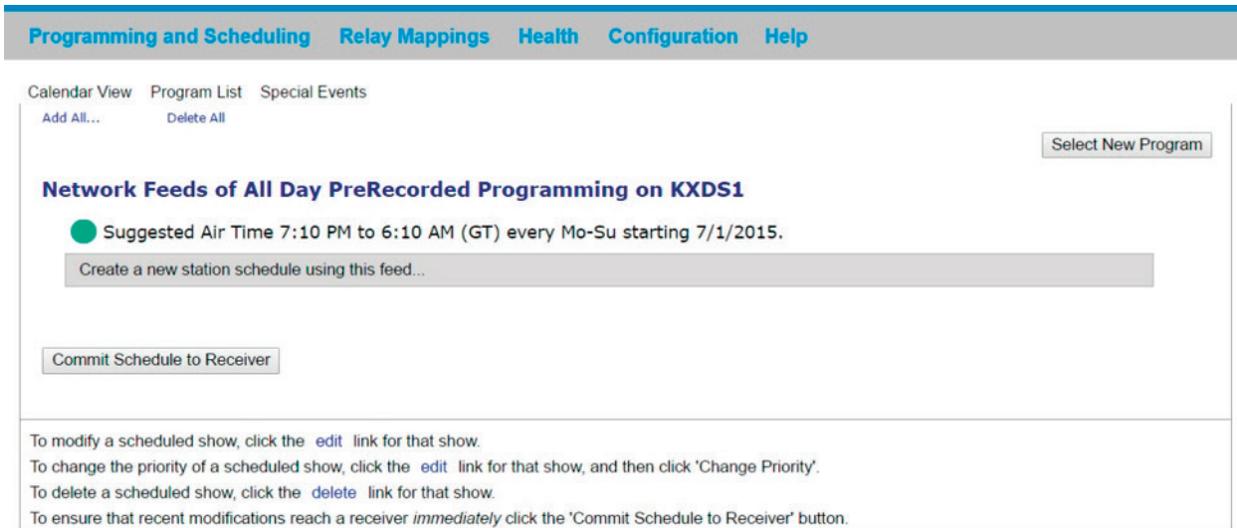
Please select a program to view its network feeds and scheduled show times.

All Day PreRecorded Programming ▼

Ok
Cancel

Figure 23: Program Selection Drop Down Menus

- 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.



Calendar View Program List Special Events

Add All... Delete All

Select New Program

Network Feeds of All Day PreRecorded Programming on KXDS1

Suggested Air Time 7:10 PM to 6:10 AM (GT) every Mo-Su starting 7/1/2015.

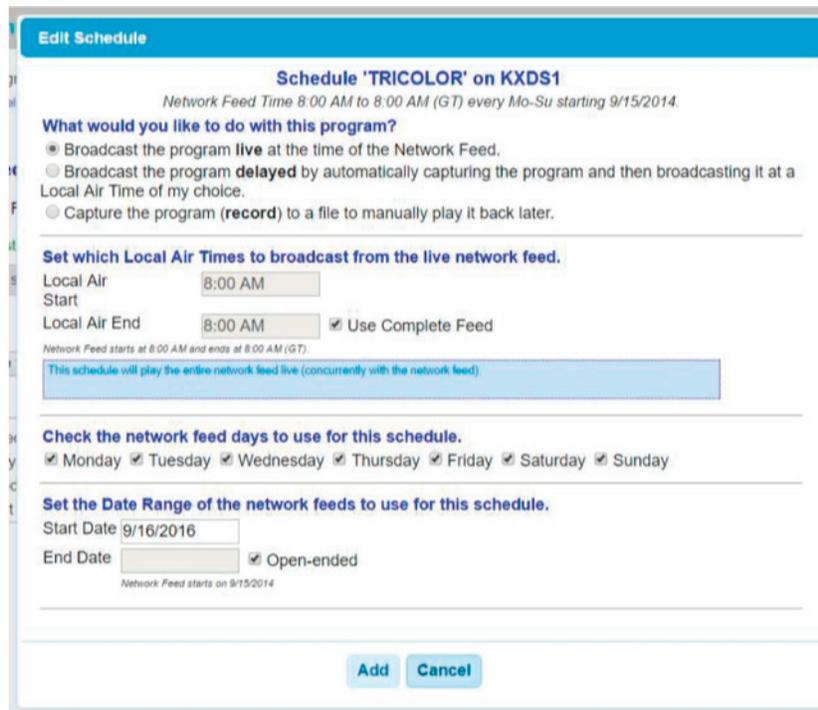
Create a new station schedule using this feed...

Commit Schedule to Receiver

To modify a scheduled show, click the [edit](#) link for that show.
 To change the priority of a scheduled show, click the [edit](#) link for that show, and then click 'Change Priority'.
 To delete a scheduled show, click the [delete](#) link for that show.
 To ensure that recent modifications reach a receiver *immediately* click the 'Commit Schedule to Receiver' button.

Figure 24: Network Feeds Page

- The XDS-PRO receivers have the ability to play a live broadcast, delay a live broadcast, play only a partial feed, record a program its storage device 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 'TRICOLOR' on KXDS1

Network Feed Time 8:00 AM to 8:00 AM (GT) every Mo-Su starting 9/15/2014.

What would you like to do with this program?

Broadcast the program **live** at the time of the Network Feed.
 Broadcast the program **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 to manually play it back later.

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 8:00 AM and ends at 8:00 AM (GT)

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 Open-ended

Network Feed starts on 9/15/2014

Add Cancel

Figure 25: Scheduling Options

- 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.
- 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 8:00 AM and ends at 8:00 AM (GT).

This schedule will play the entire network feed live (concurrently with the network feed).

Figure 26: Live Feed Time Settings

- 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.

Edit Schedule

Schedule 'TRICOLOR' on KXDS1

Network Feed Time 8:00 AM to 8:00 AM (GT) every Mo-Su starting 9/15/2014.

What would you like to do with this program?

Broadcast the program **live** at the time of the Network Feed.
 Broadcast the program **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 to manually play it back later.

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

Local Air Start

Local Air End Use Complete Feed

Network Feed starts at 8:00 AM and ends at 8:00 AM (GT).

This schedule will play the entire network feed delayed 24:00:00 (HH:MM:SS) from the network feed.

Figure 27: Delayed Feed Settings

- 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.

Edit Schedule

Schedule 'TRICOLOR' on KXDS1

Network Feed Time 8:00 AM to 8:00 AM (GT) every Mo-Su starting 9/15/2014.

What would you like to do with this program?

Broadcast the program **live** at the time of the Network Feed.
 Broadcast the program **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 to manually play it back later.

Set the Capture Times for the recording.

Capture Start

Capture End Use Complete Feed

Network Feed starts at 8:00 AM and ends at 8:00 AM (GT).

This schedule will record the entire network feed.

Figure 28: Record Feed Settings

- 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.

Figure 29: Date Range Settings

- 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.

Time*	Monday 9/12/2016	Tuesday 9/13/2016	Wednesday 9/14/2016	Thursday 9/15/2016	Friday 9/16/2016	Saturday 9/17/2016	Sunday 9/18/2016
00:00	LIVE Live 12:00 AM-1:00 AM						
01:00	LIVE Live 1:00 AM-2:00 AM						
02:00	LIVE Live 2:00 AM-3:00 AM						
03:00	LIVE Live 3:00 AM-4:00 AM						

Figure 30: Calendar View of Set Schedules

- 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'.
- Hovering over a feed in the calendar view will show Program, Network Feed Time, and Local Air Time (see Figure 31). Clicking on the hover will bring the feed into the Program List view.

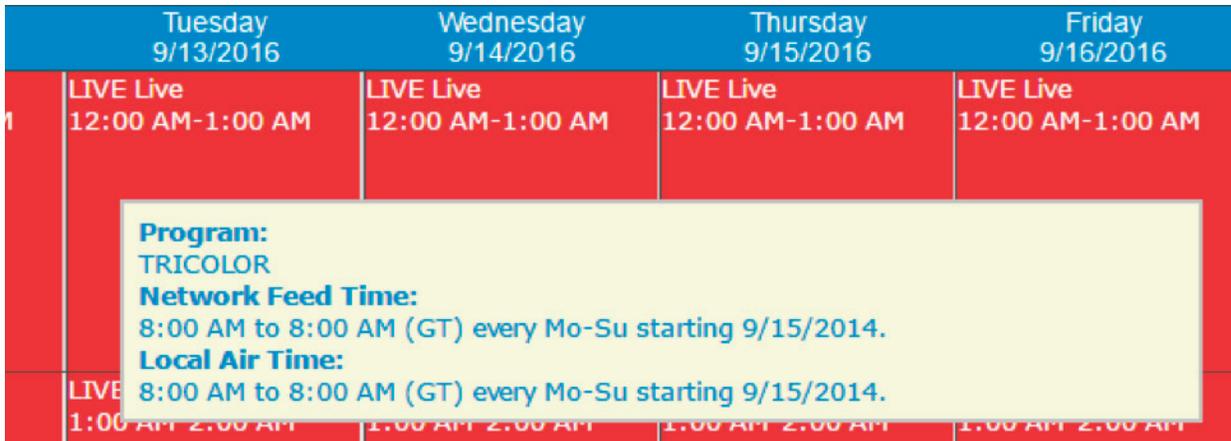


Figure 319: Calendar View, Hovering Over Scheduled Program

- 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.

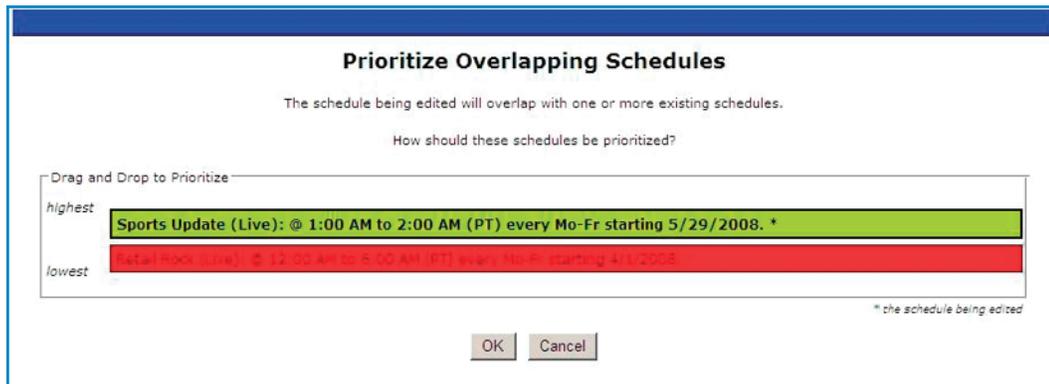


Figure 320: Prioritization Pop-Up

5.3 Changing the Relay Mappings

There are 32 different relays on the PRO4R and PRO4S receivers, and 16 relays on the PRO1R and PRO1S receivers. Each relay can correspond to a different net relay 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.

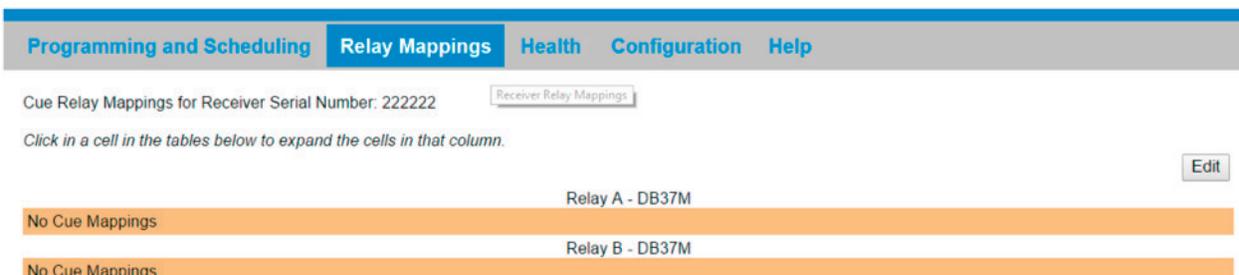


Figure 33: Relay Mappings Tab

- Click the "Edit" button in the top right.

Programming and Scheduling Relay Mappings Health Configuration Help

Cue Relay Mappings for Receiver Serial Number: 222222

Click in a cell in the tables below to expand the cells in that column.

Show Cue Assistant Save Cancel

Relay A - DB37M															
Rly 1	Rly 2	Rly 3	Rly 4	Rly 5	Rly 6	Rly 7	Rly 8	Rly 9	Rly 10	Rly 11	Rly 12	Rly 13	Rly 14	Rly 15	Rly 16

Relay B - DB37M															
Rly 1	Rly 2	Rly 3	Rly 4	Rly 5	Rly 6	Rly 7	Rly 8	Rly 9	Rly 10	Rly 11	Rly 12	Rly 13	Rly 14	Rly 15	Rly 16

Figure 34: Editing Relay Mappings

- Click inside the corresponding relay you wish to change. Clicking inside a cell will expand it automatically and allow you to edit its contents.
- When done changing relays, press “Save”.
- To cancel the changes you have made and to go back to the previous relay mapping, click “Cancel”.



Note: Net relays entered into the NMS’s relay-mappings text box must be upper-case alphanumeric, i.e. only upper-case letters, or numbers.

5.4 Checking Receiver Health

The Affiliate website is capable of displaying the receiver’s health status. To view this, navigate to the Health tab located on the top of the webpage. Clicking on this tab will display the health status, station mappings, receiver code version, uptime, Eb/Ag, and Last Report Date.

Programming and Scheduling Relay Mappings **Health** Configuration Help

Health

Current Health	Offline (Offline)
Status	Receiver has not checked in for more than 24 hours.
Serial Number	XDSP-0155544
Site	KXDS1
Version	2.4.2 (2.4.2/2.3.0/2.3.0)
Uptime	3:16:06:00
Eb/Ag	23.8/45
Last Report Date	5/26/2016 9:27:41 AM

Figure 35: Receiver Health Page

5.5 Documentation Repository

Navigating to the Help tab located on top of the website will give access to the Quick Start Guide, User's Guide, Command Table and Network Data Sheet.

The screenshot shows the top navigation bar with tabs for Programming and Scheduling, Relay Mappings, Health, Configuration, and Help. The Help tab is active, displaying a dropdown menu with links to Quick Start Guide, User's Guide, Command Table, and Network Data Sheet. Below the navigation bar, the Configuration Settings page is visible, showing the Serial Number XDSP-0222222, Friendly Password and Confirm Password input fields, and a note: "Passwords must be at least 8 alpha-numeric characters and are case sensitive."

Figure 36: XDS-PRO Documentation

5.6 Changing the Receiver's Time Zone

Using the Affiliate website, it is also possible to change the receiver's time zone settings. To do this, navigate to the Configuration tab located on the top of the webpage. There is a pulldown box that will configure the time zone of the receiver. If you would like to observe daylight savings time, indicate this using the check box provided. To commit changes, click the update button.

The screenshot shows the Configuration Settings page with the Configuration tab selected. The Serial Number is XDSP-0222222 and the Website version is 6.3.6. The page contains input fields for Friendly Password and Confirm Password, with a note: "Passwords must be at least 8 alpha-numeric characters and are case sensitive." Below these fields, there is a Time Zone dropdown menu set to Greenwich Mean Time (GMT-0:00). There are three checkboxes: "Observe Daylight Savings" (checked), "Use Global Streaming Delay (30 seconds)" (checked), and "Steer my audio ports to match my program schedule" (unchecked). An Update button is located at the bottom right of the configuration area.

Figure 37: Time Zone and Password Configuration

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MONITOR AND CONTROL INTERFACE

6. Monitor and Control Interface

The XDS-PRO receivers are equipped with multiple methods for viewing and changing receiver settings. The M&C Console Port on the back of the receiver can be used for this purpose.

6.1 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 a description representative of the receiver model you’re connecting to (e.g. – “XDS-PRO1S Receiver”, or “XDS-PRO4S” – something that will help you identify the connection) as the connection Name, and select a connection Logo. Press “OK”.
- In the Connect to dialog, select “COM1” (of, if the serial cable is connected to a different port, the name of the correct port) in the “Connect using” drop down list.
- 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 Hardware in the “Flow control” drop down list. (Some terminal emulators require the “no” setting for flow control.) Press “Apply” and then press “OK”.

You are now ready to communicate with the XDS-PRO receiver via the console you have created. There are a variety of typed commands that the receiver responds to. 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 the following account:

- **TECH:** The tech account has full access to every command the receiver has to offer. Only use the account when trouble-shooting the receiver or performing technical diagnostics.
 - Username: tech
 - Password: radio

To log into either of these use the LOGIN command, detailed below in Section 6.2.

6.2 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 all commands available along what command arguments are required and what the command does. Some commands are only available under the “tech” profile. Please refer to your quick start guide for directions on how to login with these accounts.

6.2.1 Tech Account Commands

This section will outline those commands that are available to the Tech account only.

BACKLIGHT Command: Allows the user to turn the LCD backlighting on and off. The syntax for this is **BACKLIGHT [ON/OFF]**.

E0 and E1 Commands: The **E0** and **E1** commands change various settings for the first and second Ethernet ports respectively. The syntax for these commands is shown in Table 2.

Option	Argument	Action
SHOW		Shows various technical data regarding the specified port.
MAC		Same as the SHOW option.
DHCP	[ON/OFF]	Sets DHCP to ON or OFF depending on the argument.
ADDR	[xxx.xxx.xxx.xxx.]	Sets the Ethernet port's address to argument.
MASK	[xxx.xxx.xxx.xxx.]	Sets the Ethernet port's subnet mask to the argument.
PROXY	[xxx.xxx.xxx.xxx.]:PORT	Sets the Ethernet port's proxy address and port.
DNS	[xxx.xxx.xxx.xxx.],...	Sets the Ethernet port's DNS servers. One to three DNS addresses can be specified in a coma delimited list.
GATEWAY	[xxx.xxx.xxx.xxx.]	Sets the Ethernet port's gateway to the argument.
WWW	[xxx.xxx.xxx.xxx.], [xxx.xxx.xxx.xxx.]	Sets the Ethernet's primary URL to the first argument, and sets the secondary URL to the second argument.
BOA	[port]	Set internal web server port (Default = 80)
ROUTE		
KEEPALIVE	[secs]	Keep-alive by ping of default gateway

Table 2: E0 or E1 Command Parameters

FAN Command: This command is used for checking the status of and setting receiver fan speeds.

Option	Argument	Action
SHOW		Basic fan status check
X	AUTO	Set fan x to AUTO (x=0)
X	VAL	Set fan x to val percent (x=0)
X	TACH	Get fan x tach value (x=0)

Table 3: FAN Command

FIRE Command: Fire cues locally on the receiver. Syntax is: **FIRE** [CUE] (e.g. – “C:T01”, or “2:PGM:CODE”)

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

LCD Command: The LCD command allows the user to display custom content on the front panel of the receiver. Syntax is: **LCD** “Line1” “Line2” “Line3” “Line4”.

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 default argument combination for the tech profile are:

For Tech Profile – **LOGIN** tech,radio

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.

NTP Command: Commands for the Network Time Protocol.

Option	Argument	Action
SHOW		
ADD	[host]	IP Address or URL
CLEAR		
PRIO	[NTP/TDT]	Prioritize NTP over TDT

Table 4: NTP Command

NTPSERVER Command: This command is used to enable the XDS-PRO receiver so act as an NTP server and server the

time that the network is providing via satellite or Internet. The following table outlines the NTPSERVER command arguments and actions.

Option	Argument	Action
SHOW		
ADD	ON/OFF	Turns NTP Server On or Off
STRATUM	(1 to 5) Value	Specify the stratum accuracy

Table 5: NTP Server Command

PORT Command: This command is used for displaying port information and specifying port settings. Table 5 outlines **PORT** command's arguments and their actions.

Option	Argument	Action
SHOW		Displays station mappings for all ports.
STATUS	[port]	Displays Station, Mode, PGM, PID mappings for all ports
STOP	[port]	Stop specified port from playing
LIVE	[port],[pgmid]	Change port to play live program based on program ID.
PID	[port],[pid]	Change port to play PID. PID specified in hex.
PLAY	[port],[recording],[[ofs]]	
AMODE	[port],[MONO/STEREO]	Set audio mode on specified port.
AUTOPLAY	[port],[pgmid],RECENT,[n]	
AUTOPLAY	[port],[pgmid],TIME,[HH:MM:SS],[[YYYY-MM-DD]]	
INSERT	[port],[isci]	
[UN]LOCK	[port] where [port] equals A,B,C,D or ALL	Lock or unlock specified port or all ports
SYNC		Sync audio ports to regular schedules
[PAUSE/RESUME/PREVIEW]	[port]	
TONE	[100/1000/10000/STOP]	Stops programming and puts tone on all ports
CRASH	[pgm],[LOCK/UNLOCK]	Change to the requested program and optionally lock the port
CRASH	0	Unlock the requested port and sync to regular schedule

Table 6: PORT Command

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, and is a required argument.

QUIT Command: See **LOGOUT** command.

SF Command: This command displays the receiver's fault history, and does so in two distinct ways: by fault code, or by text description (if the **SHOW** argument is added.) Syntax:

- **SF** will provide the fault history in fault codes (see Table 6 for descriptions)
- **SF SHOW** will provide the fault history in text form

SN Command: This command displays the receiver's serial number.

SMB Command: This command is used to enable the XDS-PRO receiver so it shares it's storage via SAMBA to network computers. The XDSPRO folder will be visible through the network. The following table describes parameters.

Option	Argument	Action
SHARE	ENABLE / DISABLE / SHOW	
LSDIR	[Pattern]	List directory structure
MKDIR	Directory Path	Creates all directories in the path
RMDIR	Directory Path	Removes all directories in the path

Table 7: SMB Command

SS SHOW Command: This command displays the current status of the receiver in the form of a list of current faults in a verbal description which are affecting the receiver.

SS Command: This command displays the current status of the receiver in the form of a list of current faults which are affecting the receiver and does so in two distinct ways: by fault code, or by text description (if the **SHOW** argument is added). Table 6 shows the error value (in binary) and their associated errors:

Error Value	Error Name	Error Value	Error Name
0x00000001	FPGA Load Error	0x00010000	Recorder Overflow
0x00000002	DSP Load Error	0x00020000	Temperature Warning
0x00000004	DSP Ethernet Down	0x00040000	Temperature Critical
0x00000008	Storage Device Error	0x00080000	<i>Reserved</i>
0x00000010	Tuner Not Locked	0x00100000	CF Needs Repair
0x00000020	<i>reserved</i>	0x00200000	<i>HDD Needs Repair</i>
0x00000040	<i>reserved</i>	0x00400000	<i>File Delivery Fault</i>
0x00000080	<i>reserved</i>	0x00800000	<i>LNB Over-current</i>
0x00000100	I2C Failure	0x01000000	CF Offline
0x00000200	PSI Idle	0x02000000	<i>reserved</i>
0x00000400	<i>reserved</i>	0x04000000	<i>SDL Ignored</i>
0x00000800	<i>reserved</i>	0x08000000	<i>URL Event Overflow</i>
0x00001000	NV Config. Bad	0x10000000	Internet Down
0x00002000	<i>reserved</i>	0x20000000	<i>Storage Full</i>
0x00004000	DSP Timeout	0x40000000	SW Download Ready
0x00008000	Fan Stopped	0x80000000	SW Download Error

Table 8: SS & SF Command Binary Interpretation

TEMP Command: Issue this command to display the receiver's internal temperature.

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

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

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). (*This feature is not available on the PRO1R unless fitted with optional control front panel*).

6.2.2 Tech Account Commands

The commands listed in this section requires the user to be logged into the Tech account.

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, 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.

ALIB Command: Used for file management and repairing receiver storage devices.

Option	Argument	Action
LIST	[FILES/ISCI/PROGRAMS]	<i>FILES: List files in the audio library directory</i> <i>ISCI: List ISCI insertion files</i> <i>PROGRAMS: List assigned programs</i>
DEL	[ISCI/FILE], [PATTERN]	Deletes specific files or files that matches a certain pattern combination.
INBOX	[OFF/ON/GET]	Controls the combination of terrestrial & satellite delivery of files from the NMS (headend).
[TEST/SCAN]		Check compact flash and hard drive health

FIX	[AUTO/FORCE],[CF/HDD/ALL]	Scan/repair compact flash drive
FORMAT	[CF/HDD]	Reformat compact flash or hard drive
HDD	[YES/NO]	Check or set intended HDD configuration

Table 9: ALIB Command

AMR Command: Shows the status of the (optional) installed XDS-AMR receiver.

Option	Argument	Action
PRESENT		<i>Displays "true" if AMR is present</i>
SHOW	[Status, SN, IP, VOLUME, HP SOURCE, FAULT]	Shows AMR settings, dependant on the argument used.
VOL	[0-100]	Get / Set the AMR volume
HP	[A-D]	Get / Set the AMR headphone source

Table 10: AMR Command

BAUD Command: Get and set Console (M&C) baud rate, parity setting, data bit, and stop bit settings.

FACTORY Command: Resets all of the receiver's 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 requires a receiver restart.

FIND Command: See **GREP** Command.

FPGA Command: FPGA diagnostics command. Syntax: **FPGA LOAD** [filename].

GREP Command: Unix command used to search log files. Prints output containing specific pattern. Syntax: **GREP** [pattern] [cmd]

I2C Command: I2C Peripheral diagnostics. Table 11 shows all **I2C** arguments.

Option	Argument	Action
DEV ADDR	[val]	
VLAN	[FLASH/ERASE]	

Table 11: I2C Command

ISTREAM Command: Display and configure Istream. Table 12 shows all **ISTREAM** arguments.

Option	Argument	Action
SHOW/STATS		
DELAY	[seconds]	0=default
HOST	[primary],[[backup CLEAR]]	
SAT	[0/1]	Satellite Backup 0=Disable, 1=Enable
START	[slot],[pid]	
STOP	[slot]	
PARALLEL	[0/1]	Turn on parallel fetch mode

Table 12: ISTREAM Command

LOAD Command: The LOAD command is used for upgrading the receiver with new code or displaying the current version code on the receiver.

Option	Argument	Action
SHOW		<i>Display code version</i>
FILE	[filename]	Start Ethernet download
HTTP	[filename]	Start internet download
SCRIPT	[filename]	Run shell script
SAT	[ON/OFF]	Ignore satellite upgrades
BOOT	[bootloader]	Install bootloader

Table 103: LOAD Command

LOGS Command: Show receiver's internal activity logs. Can also use the **LOG** command. Table 14 shows all **LOGS** arguments.

Option	Argument	Action
SHOW		Display receiver's log file
PLAYED		
PURGE		Purge receiver's log file
AUTO	[n]	Auto log status/stats every "n" minutes
[STATS/REG/SCRIPT]		Log statistics, other NOC functions
MSG	"message"	Places a message in the log file within the quotes.

Table 114: LOGS Command

MAIL Command: Display and configure XDS-PRO Receiver Email. Table 15 shows all **MAIL** arguments.

Option	Argument	Action
SHOW		Displays SMTP Host, SMTP Port, Mail Recipient, and Alerts
TEST		Send a test message to configured recipient
CLEAR		Clear mail recipient
HOST	Host[:port]	Local SMTP host, default port assumed if unspecified.
TO	[recipient]	Specify mail recipient (name@domain format, limit 256 characters, comma separate multiple addresses)
FROM	[originator]	Specify mail originator (name@domain format, limit 64 characters)
ALERT	[hex]	Enable alerts on given status bits

Table 15: MAIL Command

MAINT Command: Used to set and display the receiver's designated maintenance time window.

Option	Argument	Action
SHOW		Display maintenance window and occurrence
CLEAR		Clears maintenance window
SET	[HH:MM],[MIN],[days]	Set maintenance window and occurrence

Table 16: MAINT Command

MON Command: Headphone monitoring command. Table 17 shows all **MON** arguments.

Option	Argument	Action
[A-D/HP]	[A-D/MAIN/AIN]	Route the audio from second parameter(source) to first parameter(destination).

Table 17: MON Command

NAS Command: Network Attached Storage options. Table 18 shows all **NAS** arguments.

Option	Argument	Action
SHOW		Display NAS configuration
REMOUNT	[0-1]	
EXPORT		Remark all files for export
SET	[0-1],[NONE/NFS/SMB],[urn],[path],[user],[pwd]]	[urn] is the host and mount point.

Table 18: NAS Command

PAD Command: Get and set PAD port settings. Table 19 shows all **PAD** arguments.

Option	Argument	Action
	[port], "message"	[port] = A-D
BAUD	[port],[baud]	Set baud for specified port
PGM	[port],[ANC/pgm]	
ROUTE	[port],[NONE/CUE/ECUE/ALL]	Route netrly cues to pad port
TEST	[port],[START/STOP]	Start or stop a pad test on a specified port
PMSG	[pgm#],"message"	Program associated message

Table 19: PAD Command

PASS Command: Command to display the daily password for logging into the affiliate website.

PID Command: Get and set the headphone program (by PID)

PSI Command: The PSI command is used to displaying program specific information and PSI/PID monitoring.

Option	Argument	Action
	[AUTHS/BOUQUETS/GROUPS/	[port] = A-D
CUES/ NETWORK/ WINDOWS/NIT]		Set baud for specified port
SHOW		
SCHED	[pgmid]	
MONITOR	[ON/OFF/USBLOAD]	Enable PSI and PID monitoring
CLEAR		
WIN		
GROUPS		
NIT	[pid]	In hex, 0=auto (from PAT)
SET	[pgmid],[pid]	Manually add a program/PID pair to PSI
ACTIVATE	[YES/NO]	

Table 20: PSI Command

PLAY Command: Used to play a file. Syntax: **PLAY** [filename].

PWR Command: Used to display power settings.

REBOOT Command: The reboot command can take many different options.

Option	Argument	Action
	1	Restarts operating system
SDL		Reboot SDL when it is ready
SS	[mask]	Reboot if ss mask is set (mask in hex)
MAINT	[0/1/2]	Reboot during maintenance window (0=clear, 1=set, 2=now)

Table 21: REBOOT Command

RLY Command: Can also use **RELAY** command. Used to read and fire relays manually.

Option	Argument	Action
	[0-31]*,[ON/OFF/PULSE]	Fire, disable or pulse a relay on specified relay.
SHOW		Show all relay mappings on the receiver.
ALL	[xxxx]	Activate all relays.
IN	[1-15]	Activate individual relay.
TEST	[START/STOP]	Start or stop a relay test that will send a pulse to all relays.

MODE	[NONE/RLY/CUES/ALL]	Enable sources of relays: RLY=PrimaCue only, CUE=NetCues only, ALL=Both, PORT = mapped
-------------	---------------------	--

Table 22: RLY Command

* - [0-31] only valid for PRO4R and PRO4S. Must use [0-15] for PRO1R and PRO1S.

SHUTDOWN Command: Fully shuts down the receiver.

SLEEP Command: Delay or pause a command (used for M&C scripting). Syntax: **SLEEP** [msec].

STATIONS Command: Can also use **STATION**, this command is used for station management.

Option	Argument	Action
SHOW		Display stations that are currently mapped on the ports.
SCHED		Display station schedule
ROTATIONS	[stationed],[pgm#]	Display all scheduled spots (insertions)
ROTATIONS,ADD	[LT],[stationed], [pgm#], [cue-code], [[isci]..[isci]]	

Table 23: STATIONS Command

TRACE Command: Used for diagnostic checks of the serial ports. Table 24 shows all **TRACE** options.

Option	Argument	Action
SHOW		Display all trace options. *=live traces
ALL		Turn on all traces
NONE		Turn off all traces

Table 24: TRACE Command

TTY Command: Modem diagnostics command. See Table 25 for usage.

Option	Argument	Action
	[port],[0-2]	Open serial port (0=M&C, 1=NETCUE, 2=MODEM)
	[port],[2400/9600/19200]	Set baud rate for specified port (8 data, no parity, 1 stop bit)

Table 25: TTY Command

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 usage message. Type this command followed by one of these options/argument combinations to view or modify tuner settings:

Option	Argument	Action
	[ENABLE/DISABLE]	Set receiver terrestrial mode
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].
MODE	[DVB-S, DVB-S2-QPSK, DVB-S2-8PSK]	Set Modulation mode
FBC	[kHz], [sps], [mode], [uplink_id]	Set fallback carrier parameters
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.
SECOND	[0/1]	Second tuner disable/enable.
SPAN	[kHz]	How wide to allow tuner to search when looking

Table 26: TUNER Command

TUNER2 Command: Only valid for PRO receivers with 2 tuners. See **TUNER** command for usage.

SPECIFICATIONS

7. Specifications

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

7.1 Receiver Monitor & Control and Interface Specification

7.1.1 M&C Interface Features

The Monitor and Control Features are provided in Section 6. The LCD, Keypad, and Headphone Jack are options on the PRO1R and standard on the PRO4R, PRO1S, and PRO4S.

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

Table 27: Interface Features

7.1.2 M&C Interface Connector Pin-Outs

The Monitor and Control (M&C) port allows basic configuration of the XDS-PRO receiver via an asynchronous RS-232C electrical interface. It uses the following protocol settings: 115.2K bits per second, 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.

Connector	DB-9 Female
Asynchronous Port	115.2K bits per second, 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 28: M&C Port Specifications

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

Table 29: M&C Port Pin-Out

7.1.3 Relay Outputs

The receiver includes a connector port providing 16 normally open relay contact connections. There is a single connector provided on the PRO1R and PRO1S models and two connectors on the PRO4R and PRO4S receivers. The port specification is provided in Table 30, and the pin-outs for each in Table 31.

Connector	DB-37 Male
Contacts	16 SPST Normally Open
Format	Form A
Switching Voltage	200 Volts
Switching Current	0.5 Amps
Carry Current	1.0 Amps
Contact Rating	10 Watts

Table 30: Relay Outputs Specifications

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	TxDATA	34	RLY13B
16	RLY13A	35	RLY14B
17	RLY14A	36	RLY15B
18	RLY15A	37	RLY16B
19	RLY16A		

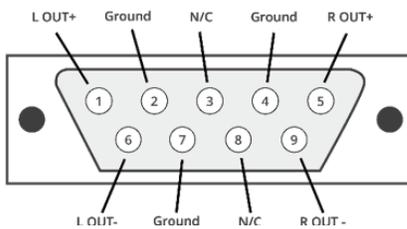
Table 31: Relay Port Pin-Out

7.1.4 Analog Audio Output

The PRO4R and PRO4S have 4 analog output channels, and the PRO1S and PRO1R have one analog output channel. The audio output port specifications are outlined in Table 32. Table 330 lists the pin-outs of the analog output connectors.

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

Table 32: Analog Audio Output Specifications

Analog Audio Outputs - 4 DB9M on chassis Port A-D

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

Table 33: Analog Audio Output Pin-Out

7.1.5 Analog Audio Input

The XDS-PRO receivers have one analog audio input port. The audio input port specifications are outlined in Table 34. Table 35 lists the pin-outs of the analog input port.

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

Table 34: Analog Audio Input Specifications

PIN	FUNCTION
1	L IN+
2	Ground
3	Not Connected
4	Ground
5	R IN+
6	L IN-
7	Ground
8	Not Connected
9	R IN-

Table 35: Analog Audio Input Pin-Out

7.1.6 Digital Audio Input

In addition to the analog audio input, the PRO4R and PRO4S receivers also have one digital audio input port that shares the same connector. Table 36 provides the specification for digital audio interface and Table 37 provides the complete connector pinout that is shared by analog and digital audio inputs to the PRO4R and PRO4S receivers. Note that neither the PRO1R, nor PRO1S support a digital audio input.

Connector	DB-9 Male
Format	Balanced AES/EBU

Table 36: Digital Audio Input Specifications

PIN	FUNCTION	
	PRO1R	PRO4S
1	L IN+	L IN+
2	Ground	Ground
3	Not Connected	AES_RX+
4	Ground	Ground
5	R IN+	R IN+
6	L IN-	L IN-
7	Ground	Ground
8	Not Connected	AES_RX-
9	R IN-	R IN-

Table 37: Digital Audio Input Pin-Out

7.1.7 Digital Audio Output

The PRO4R and PRO4S receivers have four digital audio output channels that provide AES/EBU versions of the four analog audio output ports A through D. The channels are mapped from analog Port A to the digital pair of CH0 signals, Port B to CH1, Port C to CH2, and Port D to CH3. Table 38 contains the interface specifications for the digital audio output, and Table 39 provides the pin-out of it. The PRO1R and PRO1S receivers provides a single digital audio output that matches the single analog audio output of the receiver.

Connector	DB-9 Male
Format	Balanced AES/EBU

Table 38: Digital Audio Output Specifications

PIN	FUNCTION	
	PRO1R / PRO1S	PRO4R / PRO4S
1	CH0_TX+	CH0_TX+
2	Not connected	CH1_TX+
3	Ground	Ground
4	Not connected	CH2_TX+
5	Not connected	CH3_TX+
6	CH0_TX-	CH0_TX-
7	Not connected	CH1_TX-
8	Not connected	CH2_TX-
9	Not connected	CH3_TX-

Table 39: Digital Audio Output Pin-Out

7.1.8 PAD/ASYNC/External Reset 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 cues to trigger events. Table 40 provides the PAD / ASYNC port specifications, and Table 41 contains the pin-out table for the PAD port. In addition, this connector has an optical input that can be used to cause a hard power reset to the receiver. The hardware reset feature is disabled by default and can be enabled in software. If enabled, connecting the optical input to ground will activate a hardware reset.

Connector	DB-9 Female
Asynchronous Port	Variable, up to 115.2K bits per second, 8 data bits, no parity, no hardware flow control
Hardware Reset Optical Input	1 Input Signal, connect to ground to activate hardware reset (when enabled)

Table 40: PAD / ASYNC Port Specifications

PIN	FUNCTION	
	PRO1R / PRO1S	PRO4R / PRO4S
1	P0_TX	P0_TX
2	Not Connected	P1_TX
3	Not Connected	P2_TX
4	Not Connected	P3_TX
5	External Reset (Active Low)	External Reset (Active Low)
6	Ground	Ground
7	Ground	Ground
8	Ground	Ground
9	Ground	Ground

Table 41: PAD / ASYNC / External Reset Port Pin-Out

7.2 Ethernet Port

Connector	RJ-45 Modular Jack
Connection Rate	10/100Base-TX (Auto)
Number of Ports	PRO1R & PRO4S – 2 PRO1S & PRO4S – 3
Max Output IP Rate	Up to 20 Mbps (combined for all ports)
VLAN	Each port is managed for VLAN use

Table 429: Ethernet Port

7.3 RF Input Parameters

A DVS-S modulated satellite signal will be received and demodulated by the XDS-PRO receiver. Input signal and connector specifications are provided in Table 43. By default TUNER 1 connector will be enabled, your network may have a protected carrier that may be available on TUNER2 connector.

Connectors (2)	75 ohm F-type Female
Frequency Input Range	950 to 2150 MHz
Input Level	-60 to -20 dBm
DVB-S Symbol rate	1 to 40 MSPS and 256,384,512,640,768,896 KSPS
DVB-S2 QPSK Symbol rate	1 to 40 MSPS
DVB-S2 8PSK Symbol rate	2 to 40 MSPS
Modulation Scheme	QPSK (DVB-S or DVB-S2), 8PSK (DVB-S2)
Forward Error Correction modes	Reed-Solomon and Viterbi (DVB-S / S2 / MX3)
LNB Power	20 VDC 500 mA MAX

Table 43: RF Input Parameters

7.4 LBR Module (Optional) RF Input Parameters

The PRO1R and PRO4S receivers support an optional LBR module that can be installed to provide support for low bit rate carriers. The LBR module can receive both DVB-S and DVB-S2 modulated satellite signals which will be received and demodulated by the XDS-PRO receiver. **The PRO4R and PRO1R receivers don't support the LBR module.** Input signal and connector specifications for the LBR module are provided in Table 44.

Connector	75 ohm F-type Female
Frequency Input Range	950 to 2150 MHz
Input Level	-60 to -20 dBm
DVB-S Symbol rate	100 KSPS to 40 MSPS
DVB-S2 QPSK Symbol rate	100 KSPS to 40 MSPS
DVB-S2 8PSK Symbol rate	1 to 40 MSPS
Modulation Scheme	QPSK (DVB-S or DVB-S2), 8PSK (DVB-S2)
Forward Error Correction modes	Reed-Solomon and Viterbi (DVB-S/MX3) LDPC and BCH normal frames (DVB-S2)
LNB Power	18 VDC 500 mA MAX

Table 44: LBR Module RF Input Parameters

7.5 Mechanical and Electrical

The XDS-PRO receiver chassis specifications are provided in Table 45.

Dimensions	3.5" High x 18" Wide x 12" Deep
Mounting	19", 2RU
Weight	8 lbs.
Input Voltage	100 – 240 VAC (50-60 Hz)
Power Consumption	150 W max.

Table 45: Mechanical and Electrical Specifications

7.6 Environmental

The XDS-PRO receiver environmental specifications are provided in Table 46.

Operating Temperature	0° to 50° C
Storage Temperature	-40° to 85° C
Maximum Operating Altitude	10,000 feet
Operating Relative Humidity	20% to 80% non-condensing

Table 46: Environmental Specifications

REGULATORY COMPLIANCE

8. Regulatory Compliance

North America Emissions

THIS DEVICE COMPLIES WITH PART 15 SUBPART B 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 UNDESIRE OPERATION.

North America Safety

UL 60950-1:2012/ R:2011-12

CAN/CSA C22.2 No. 60950-1:2012 + A1:2011

Europe Emissions

THE XDS-PRO WAS TESTED ACCORDING TO THE REQUIREMENTS OF THE EMC DIRECTIVE 89/336/EEC AND LOW VOLTAGE DIRECTIVE 73/23/EEC AND COMPLIES WITH ALL THE REQUIREMENTS FOR THE CE MARKING. THE XDS-PRO RECEIVER IS PRODUCTION MONITORED BY TUV SÜD AMERICA AND MAY BEAR THE TUV CUE MARK.

EMC

EN55032 (2012) Class B

EN55024 (2010)

EN61000-4-2 (2009)

EN61000-4-3 (2006) + A1 + A2

EN61000-4-4 (2012)

EN61000-4-5 (2014)

EN61000-4-6 (2014)

EN61000-4-11 (2004)

Europe Safety

EN 60950-1:2011 + A11:2009 + A1:2010 + A12:2011



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SERVICE & SUPPORT

9. Service & Support

9.1 Contact ATX Networks

Please contact ATX Technical Support for assistance with any ATX products. Please contact ATX to obtain a valid RMA number for any ATX products that require service and are in or out-of-warranty before returning a failed module to ATX.

TECHNICAL SUPPORT

Tel: 289.204.7800 – press 1
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only
Email: support@atx.com

SALES ASSISTANCE

Tel: 289.204.7800 – press 2
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only
Email: insidesales@atx.com

FOR HELP WITH AN EXISTING ORDER

Tel: 289.204.7800 – press 3
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only
Email: orders@atx.com
Web: www.atx.com



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