

XDS-PRO Satellite Receivers



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XDS-PRO Satellite Receivers

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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

Pico Digital, Inc. 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 PRO1Q and PRO1R can deliver one channel of audio received via satellite on its single output port while the PRO4Q and PRO4R 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 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.

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!	<p>The following sections provide a list of general hazards to be avoided for safe, reliable use of the PRO receivers.</p> <p>For the complete French translation of this section, please refer to the Safety Precautions – French addendum.</p>
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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.

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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 jordet stikkontakt


Apparaten skall anslutas till jordat uttag

 <p>Warning!</p>	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 120VAC as indicated on the back of the receiver. When adding the receiver to an already existing rack setup, take care to ensure the maximum current rating of the circuit is not exceeded.

2.2.7 Foreign Objects

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

If a foreign object is inserted into the receiver, immediately power down the receiver and contact Pico Digital 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.

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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.

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

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.

 <p>Caution!</p>	<p>Uneven loading may cause the rack to be unstable and hazardous.</p>
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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

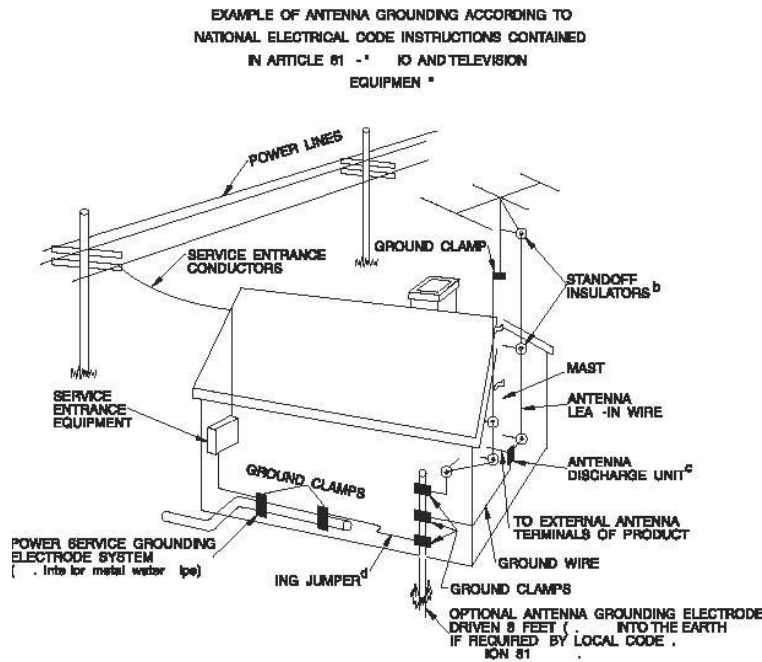
Before attempting to install the XDS-PRO receiver, make sure the antenna and cable system is properly grounded to provide some protection against voltage surges and built-up static charges.

- 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.
- 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.
- Mount antenna discharge unit as close as possible to where lead-in enters house.
- 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.
- 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

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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). For the PRO4Q, PRO1R, and PRO4R (or PRO1Q model equipped with an optional front control panel), 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. For the Model PRO1Q not equipped with optional control front panel, the user must 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

 <p>Caution!</p>	<p>If the LNB Voltage mode is enabled, be careful not to short the signal. The voltage on this line is approximately +18V DC.</p>
--	---

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.

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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 PRO4Q and PRO4R 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 PRO1Q and PRO1R, 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 PRO4Q, PRO1R, and PRO4R 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 PRO4Q and PRO4R 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 PRO1Q and PRO1R 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 PRO4Q and PRO4R 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 PRO1Q and PRO1R has 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.

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- 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.

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.

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 PRO4Q, PRO1R, and PRO4R receivers (and PRO1Q equipped with optional control front panel) are 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 PRO4Q, PRO1R, and PRO4R receivers (and PRO1Q equipped with an optional control front panel) 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

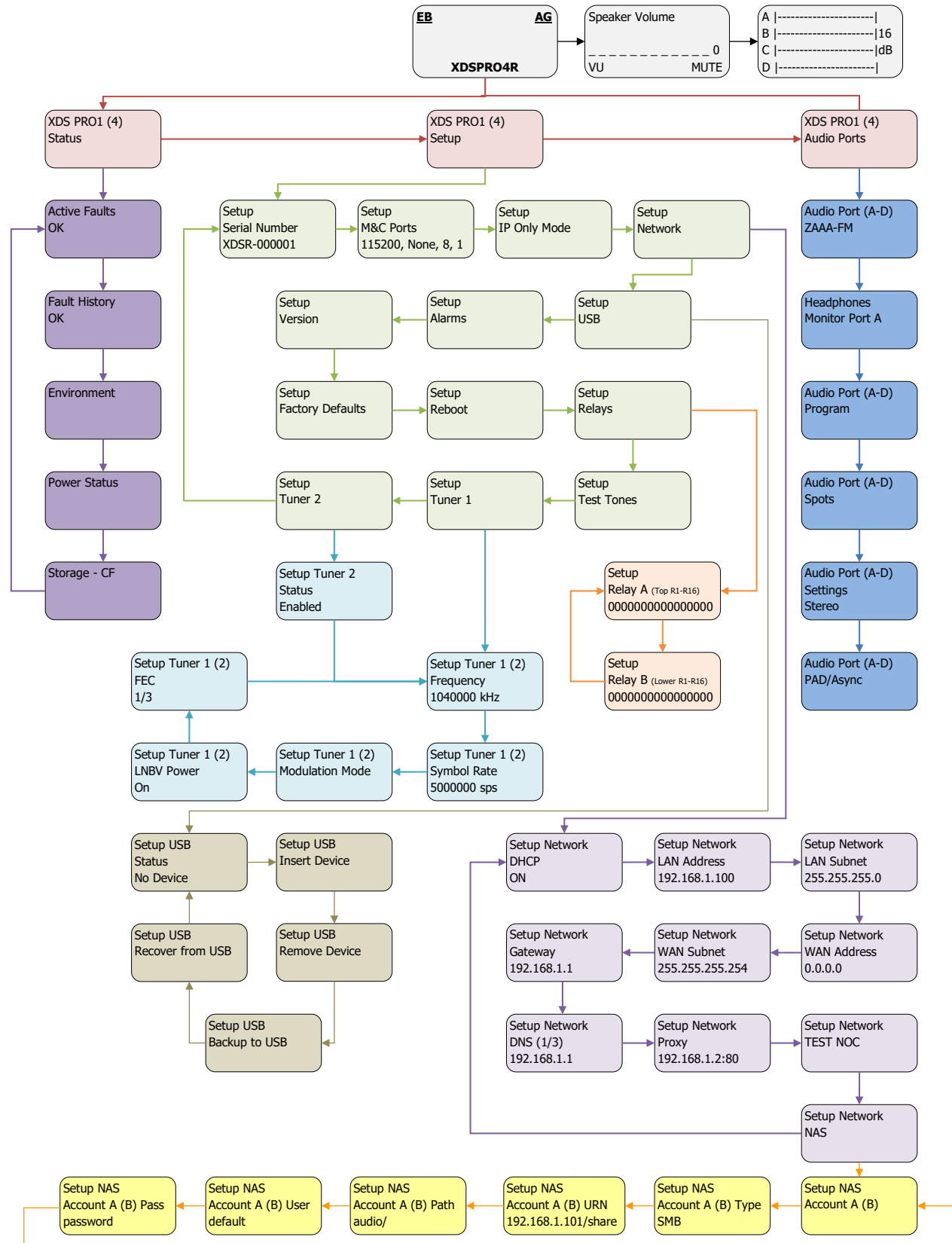


Figure 1 - PRO Receiver Front Panel Flow

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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 X-Digital Systems ¹ 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_b/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.

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

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- 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.

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.
- WAN Address: Specify the WAN IP address.
- WAN Subnet Mask: Specify the WAN subnet mask.
- GATEWAY: Allows the user to specify the default gateway to direct traffic 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.
- SETUP NETWORK NAS: Setup a NAS connected to the network.

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 (for PRO4Q or PRO1Q-FP models). 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 ▼.

XDS-PRO Satellite Receivers

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.

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 (*for PRO1R, PRO4R, PRO4Q and PRO1Q models equipped with optional control 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.

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 (only applicable for PRO1R and PRO4R):

- 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

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).

XDS-PRO Satellite Receivers

- NOC Connection Test – Perform a connection test here.

The screenshot displays the 'General Status' page for an XDS-PRO satellite receiver. The interface includes several sections:

- General:** Platform (XDS PRO1R v13), Serial Number (XDSP-0470003), Addressing (470003), Version (3.3.2), Built (Aug 30 2016 16:26:51), Network Name (EMF), and Network ID (10).
- Tuner:** IQ level is shown as 'Excellent' with a corresponding color bar.
- Station Assignments:** Port A is assigned to '_MONTERREY-FM-101.1'.
- Audio Ports:** A table showing 'Port A & AES/EBU' with Program '_K-LOVE' and PID '1051'. A 'Select Programming' button is present.
- Audio Level:** Port A shows levels for L (11.52 dBu) and R (12.20 dBu).
- Active Faults / Fault History:** A table listing two faults: 'Tuner 1 Not Locked' (Bit 5) and 'Tuner 2 Not Locked' (Bit 6). A 'Clear Faults' button is available.

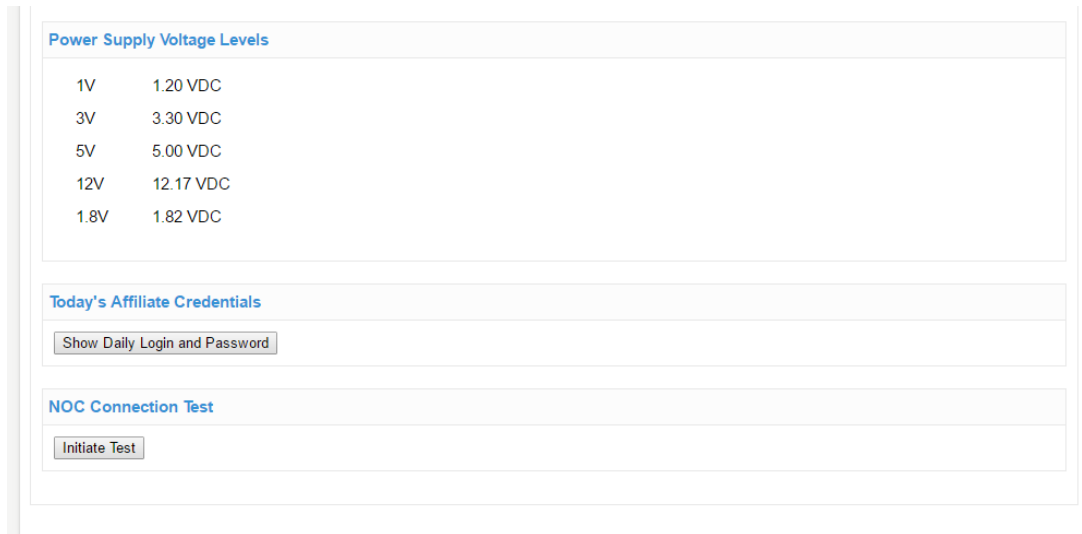
Figure 2 - General Status Page - Part 1

The screenshot displays the 'General Status' page for an XDS-PRO satellite receiver, focusing on the lower sections:

- Internet Streaming:** A table comparing 'Past Minute' and 'Past Hour' statistics for Timeouts, Errors, Total Bytes, and Avg Bitrate. The 'Updated' timestamp is 'Tue Sep 13 20:48:28 2016 UTC'.
- Storage:** A section for 'Compact Flash' showing 'Used' (659 MB), 'Available' (119529 MB), and 'Total' (120188 MB) space.
- Environment:** Shows 'Temperature' at 39 C and 'Fan Speed' at LOW.

Figure 3 - General Status Tab - Part 2

XDS-PRO Satellite Receivers



Power Supply Voltage Levels	
1V	1.20 VDC
3V	3.30 VDC
5V	5.00 VDC
12V	12.17 VDC
1.8V	1.82 VDC

Today's Affiliate Credentials
<input type="button" value="Show Daily Login and Password"/>

NOC Connection Test
<input type="button" value="Initiate Test"/>

Figure 4 - General Status Tab - Part 3

4.1.2 Tuner Tab

The Tuner Tab presents the user with tuner related data (see Figure 5 - Tuner Settings), and includes:

- Currently active tuner.
- Enabled/disabled status.
- Tuned frequency.
- Tuner's symbol rate.
- FEC, Data rate, Framing mode, and Modulation mode.
- Tuner locked or not locked status.
- The acquisition state of the tuner.
- E_b/N_0 – 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.

XDS-PRO Satellite Receivers

Tuner	1 (active)	2
Status	Enabled	Enabled
Frequency	1450000 kHz	950000 kHz
Symbol Rate	4000000 sps	4000000 sps
FEC	N/A	N/A
Data Rate	N/A	N/A
Framing Mode	DVB	DVB
Modulation Mode	DVB-S	DVB-S
Carrier Lock	NOT LOCKED	NOT LOCKED
Acquisition State	N/A	N/A
Eb/No	0.0	0.0
AGC	8	25
Fade Count	3	0
Reed-Solomon Errors	0	0
LNB Offset	11200000 kHz	None (L-Band only)
LNB Power	OFF	OFF

Clear Statistics Edit Tuner Settings

NOTE: LNB offset is not applied to *manually* set L-band frequencies

Figure 5 - 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, WAN IP Address, WAN Subnet Mask, primary NMS website URL, and backup NMS website URL.
- Notification information.
- Miscellaneous information including data about the serial ports and their settings, and the current hexadecimal alarm mask.
- Attached storage information.
- Firmware update section.

XDS-PRO Satellite Receivers

General **Programming** **Content** **XDS-AMR**

Status Tuner **Setup** Relays Opto Inputs Logs

Setup / Administration

TCP/IP Networking

DHCP	ON
IP Address (LAN1)	10.16.29.123
Subnet Mask (LAN1)	255.255.255.0
IP Address (LAN2)	0.0.0.0
Subnet Mask (LAN2)	255.255.255.0
Gateway	10.16.29.1
Primary WWW Site	10.16.29.106
Backup WWW Site	10.16.29.106
HTTP Proxy Server	
HTTP Proxy Server 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	0385BFFF

Network Attached Storage 1

Type	
Host (URL)	
Path	
User	
Password	

Network Attached Storage 2

Type	
Host (URL)	
Path	
User	
Password	

Figure 6- General Setup

Firmware Update

No file chosen

Figure 7- Firmware Update

XDS-PRO Satellite Receivers

4.1.4 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.

The screenshot shows the 'Relays' tab in the XDS-PRO interface. It features a navigation bar with 'General', 'Programming', 'Content', and 'XDS-AMR'. Below this is a sub-navigation bar with 'Status', 'Tuner', 'Setup', 'Relays', 'Opto Inputs', and 'Logs'. The main content area is titled 'Relay Mappings' and contains two tables: 'TOP CONNECTOR A (DB37)' and 'BOTTOM CONNECTOR B (DB37)'. Both tables list 16 relays (R1-R16) with their respective pin assignments (A/B), a cue (STA1), and a state (OFF). A note at the bottom states: 'NOTE: Pins 5, 24, and 33 are GND. Pin 15 is RS232 TxData.'

TOP CONNECTOR A (DB37)				BOTTOM CONNECTOR B (DB37)			
Relay	Pins (A/B)	Cue	State	Relay	Pins (A/B)	Cue	State
R1	1 / 20	STA1	OFF	R1	1 / 20		OFF
R2	2 / 21	STA1	OFF	R2	2 / 21		OFF
R3	3 / 22	STA1	OFF	R3	3 / 22		OFF
R4	4 / 23	STA1	OFF	R4	4 / 23		OFF
R5	6 / 25	STA1	OFF	R5	6 / 25		OFF
R6	7 / 26	STA1	OFF	R6	7 / 26		OFF
R7	8 / 27	STA1	OFF	R7	8 / 27		OFF
R8	9 / 28	STA1	OFF	R8	9 / 28		OFF
R9	11 / 29	STA1	OFF	R9	11 / 29		OFF
R10	12 / 30	STA1	OFF	R10	12 / 30		OFF
R11	13 / 31	STA1	OFF	R11	13 / 31		OFF
R12	14 / 32	STA1	OFF	R12	14 / 32		OFF
R13	16 / 34	STA1	OFF	R13	16 / 34		OFF
R14	17 / 35	STA1	OFF	R14	17 / 35		OFF
R15	18 / 36	STA1	OFF	R15	18 / 36		OFF
R16	19 / 37	STA1	OFF	R16	19 / 37		OFF

NOTE: Pins 5, 24, and 33 are GND. Pin 15 is RS232 TxData.

Figure 8- Relays

XDS-PRO Satellite Receivers

4.1.5 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.

4.1.5.1 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 9).

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

Figure 9 - Opto Inputs - Coded

XDS-PRO Satellite Receivers

4.1.5.2 *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 10).

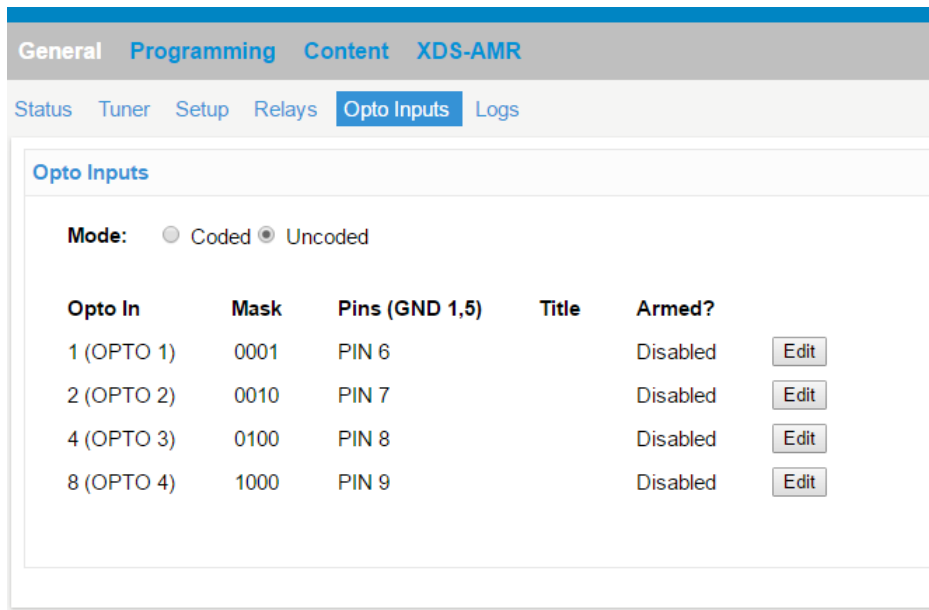


Figure 10 - Opto Inputs - Uncoded

4.1.5.3 *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).

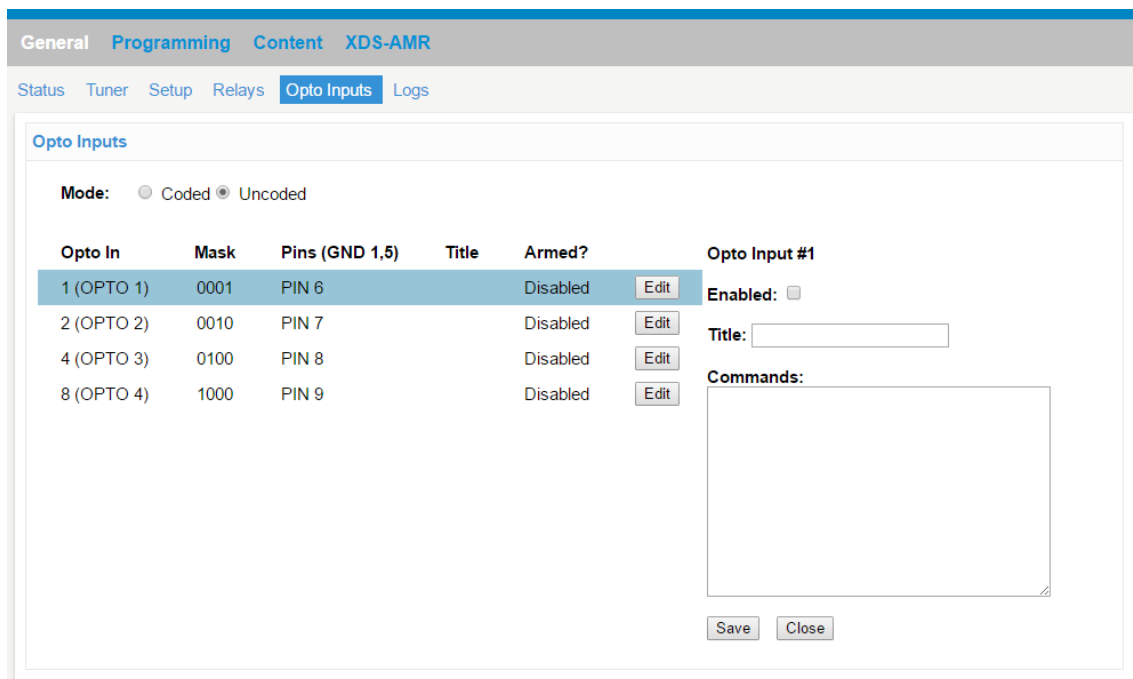


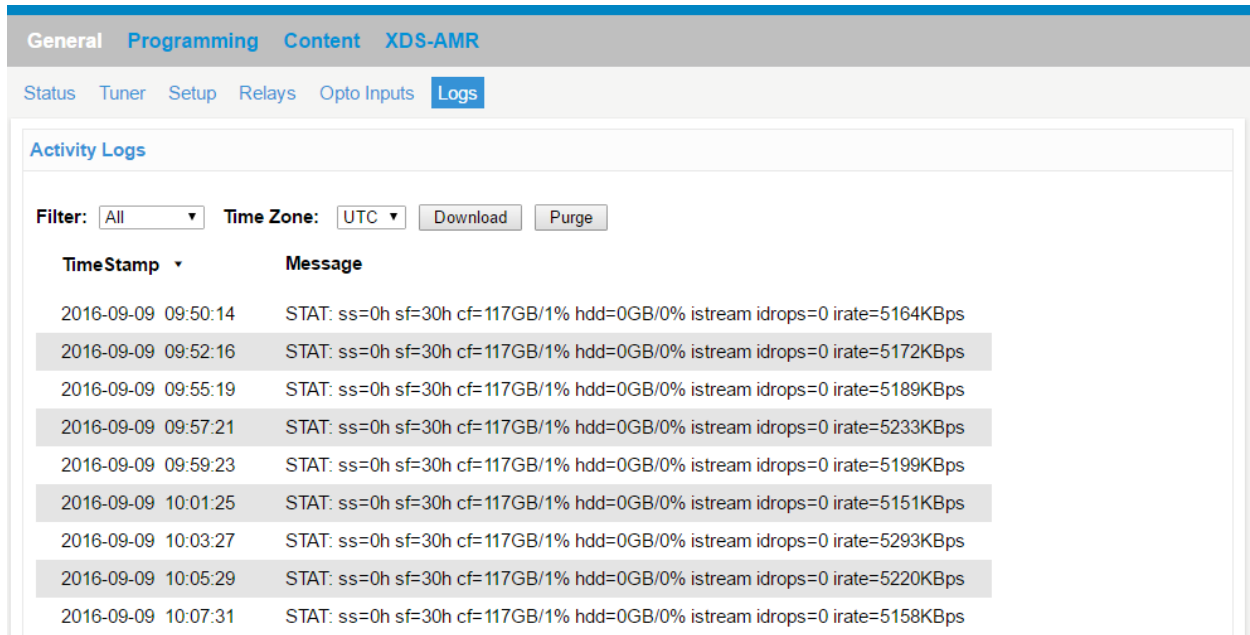
Figure 11 - Edit Opto Inputs

XDS-PRO Satellite Receivers

4.1.6 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.



General Programming Content XDS-AMR

Status Tuner Setup Relays Opto Inputs **Logs**

Activity Logs

Filter: All Time Zone: UTC Download Purge

TimeStamp	Message
2016-09-09 09:50:14	STAT: ss=0h sf=30h cf=117GB/1% hdd=0GB/0% istream idrops=0 irate=5164KBps
2016-09-09 09:52:16	STAT: ss=0h sf=30h cf=117GB/1% hdd=0GB/0% istream idrops=0 irate=5172KBps
2016-09-09 09:55:19	STAT: ss=0h sf=30h cf=117GB/1% hdd=0GB/0% istream idrops=0 irate=5189KBps
2016-09-09 09:57:21	STAT: ss=0h sf=30h cf=117GB/1% hdd=0GB/0% istream idrops=0 irate=5233KBps
2016-09-09 09:59:23	STAT: ss=0h sf=30h cf=117GB/1% hdd=0GB/0% istream idrops=0 irate=5199KBps
2016-09-09 10:01:25	STAT: ss=0h sf=30h cf=117GB/1% hdd=0GB/0% istream idrops=0 irate=5151KBps
2016-09-09 10:03:27	STAT: ss=0h sf=30h cf=117GB/1% hdd=0GB/0% istream idrops=0 irate=5293KBps
2016-09-09 10:05:29	STAT: ss=0h sf=30h cf=117GB/1% hdd=0GB/0% istream idrops=0 irate=5220KBps
2016-09-09 10:07:31	STAT: ss=0h sf=30h cf=117GB/1% hdd=0GB/0% istream idrops=0 irate=5158KBps

Figure 12 - Logs

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
TESTCHANNEL	1	P1	Stereo	1052	FREE	+
_K-LOVE	2	PGM1	Stereo	1051	FREE	A
_AIR1	25	P25	Stereo	1050	FREE	+

Programs: 3

Select Programming

Airing Networks

Airing Network	Authorized
No Networks	

Figure 13 - 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.

Program	Recorded (Y-M-D HH:MM:SS)	Duration (HH:MM:SS)
No Recordings		

Figure 14 - Recordings Tab

XDS-PRO Satellite Receivers

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 (see Figure 15).

4.3.2 All Tab

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

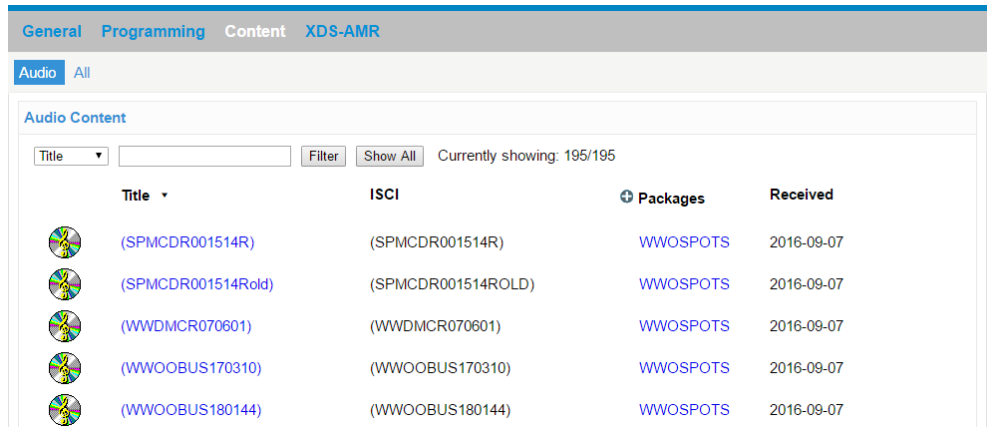


Figure 15 - Audio Content

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.

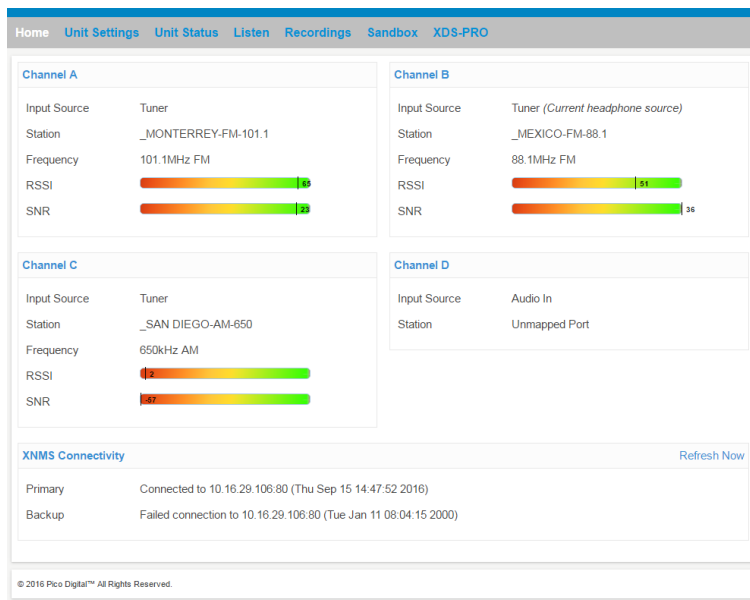


Figure 16 - XDS-AMR Website

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.

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 password 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 17 - 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".

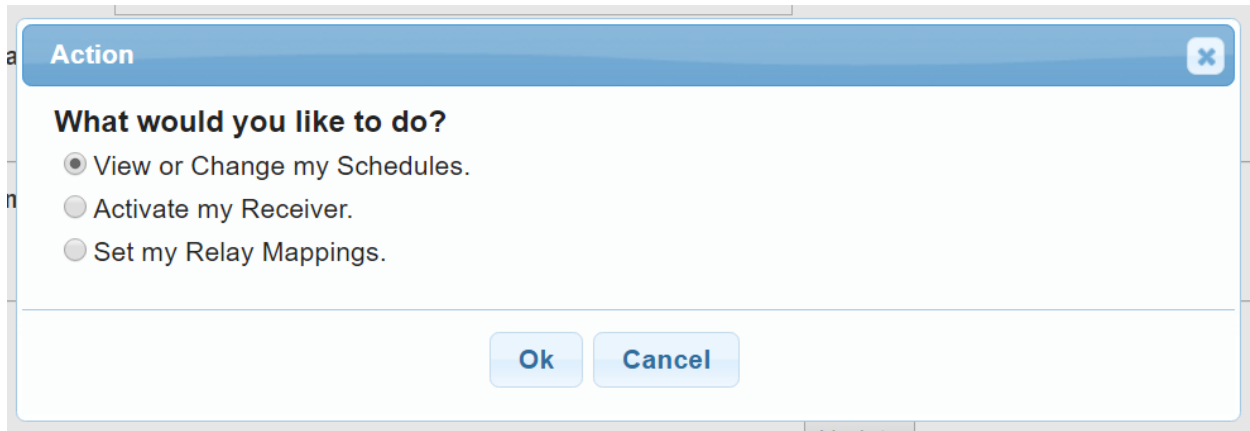


Figure 18 - Login Screen Initial Pop-up

- 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.'

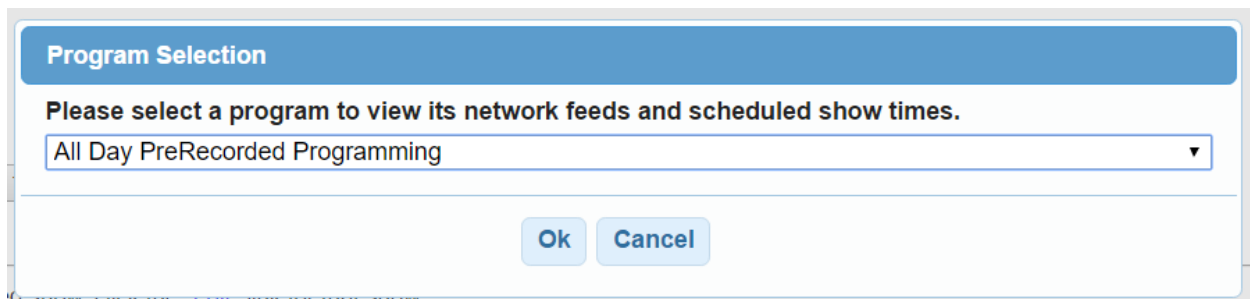


Figure 19 - Station Schedule Selection

- 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.

XDS-PRO Satellite Receivers

[Programming and Scheduling](#)
[Relay Mappings](#)
[Health](#)
[Configuration](#)
[Help](#)

[Calendar View](#)
[Program List](#)
[Special Events](#)

Programming Schedule for Site KXDS1 on Port A of Receiver XDSP-0222222

Show Playback Schedules Only
 Show Recording Schedules Only
 Show Special Events Only

Week of 9/12/2016 to 9/18/2016
 << < This Week > >>

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	LIVE Live 12:00 AM-1:00 AM	LIVE Live 12:00 AM-1:00 AM	LIVE Live 12:00 AM-1:00 AM	LIVE Live 12:00 AM-1:00 AM	LIVE Live 12:00 AM-1:00 AM	LIVE Live 12:00 AM-1:00 AM
01:00	LIVE Live 1:00 AM-2:00 AM	LIVE Live 1:00 AM-2:00 AM	LIVE Live 1:00 AM-2:00 AM	LIVE Live 1:00 AM-2:00 AM	LIVE Live 1:00 AM-2:00 AM	LIVE Live 1:00 AM-2:00 AM	LIVE Live 1:00 AM-2:00 AM
02:00	LIVE Live 2:00 AM-3:00 AM	LIVE Live 2:00 AM-3:00 AM	LIVE Live 2:00 AM-3:00 AM	LIVE Live 2:00 AM-3:00 AM	LIVE Live 2:00 AM-3:00 AM	LIVE Live 2:00 AM-3:00 AM	LIVE Live 2:00 AM-3:00 AM
03:00	LIVE Live 3:00 AM-4:00 AM	LIVE Live 3:00 AM-4:00 AM	LIVE Live 3:00 AM-4:00 AM	LIVE Live 3:00 AM-4:00 AM	LIVE Live 3:00 AM-4:00 AM	LIVE Live 3:00 AM-4:00 AM	LIVE Live 3:00 AM-4:00 AM

Figure 20 - 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 ▼

Figure 21 - 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.

XDS-PRO Satellite Receivers

Programming and Scheduling Relay Mappings Health Configuration Help

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 22 - 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).

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 23 - Scheduling Options

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- 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 24 - 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 25 - 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 26 - 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.

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

Figure 27 - 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.

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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	LIVE Live 12:00 AM-1:00 AM	LIVE Live 12:00 AM-1:00 AM	LIVE Live 12:00 AM-1:00 AM	LIVE Live 12:00 AM-1:00 AM	LIVE Live 12:00 AM-1:00 AM	LIVE Live 12:00 AM-1:00 AM
01:00	LIVE Live 1:00 AM-2:00 AM	LIVE Live 1:00 AM-2:00 AM	LIVE Live 1:00 AM-2:00 AM	LIVE Live 1:00 AM-2:00 AM	LIVE Live 1:00 AM-2:00 AM	LIVE Live 1:00 AM-2:00 AM	LIVE Live 1:00 AM-2:00 AM
02:00	LIVE Live 2:00 AM-3:00 AM	LIVE Live 2:00 AM-3:00 AM	LIVE Live 2:00 AM-3:00 AM	LIVE Live 2:00 AM-3:00 AM	LIVE Live 2:00 AM-3:00 AM	LIVE Live 2:00 AM-3:00 AM	LIVE Live 2:00 AM-3:00 AM
03:00	LIVE Live 3:00 AM-4:00 AM	LIVE Live 3:00 AM-4:00 AM	LIVE Live 3:00 AM-4:00 AM	LIVE Live 3:00 AM-4:00 AM	LIVE Live 3:00 AM-4:00 AM	LIVE Live 3:00 AM-4:00 AM	LIVE Live 3:00 AM-4:00 AM

Figure 28 - 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 29). Clicking on the hover will bring the feed into the Program List view.

	Tuesday 9/13/2016	Wednesday 9/14/2016	Thursday 9/15/2016	Friday 9/16/2016
1	LIVE Live 12:00 AM-1:00 AM	LIVE Live 12:00 AM-1:00 AM	LIVE Live 12:00 AM-1:00 AM	LIVE Live 12:00 AM-1:00 AM

Program:
TRICOLOR

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

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

Figure 29 - 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.

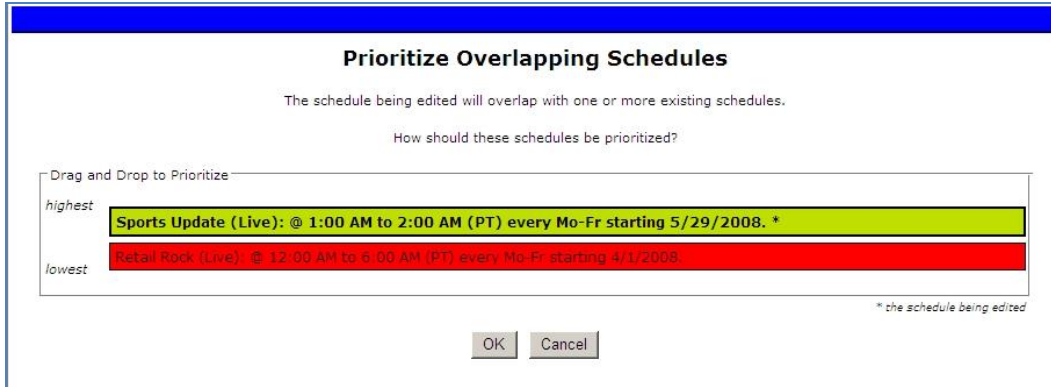


Figure 30 - Prioritization Pop-Up

5.3 Changing the Relay Mappings

There are 32 different relays on the PRO4Q and PRO4R receivers, and 16 relays on the PRO1Q and PRO1R 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.

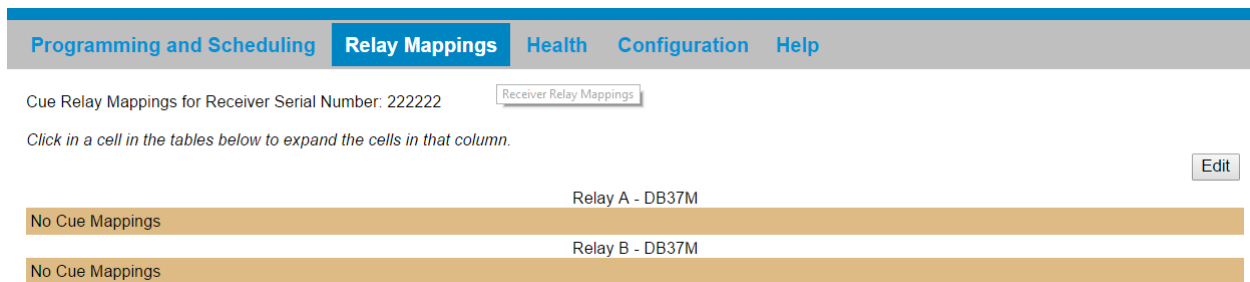


Figure 31 - Relay Mappings Tab

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

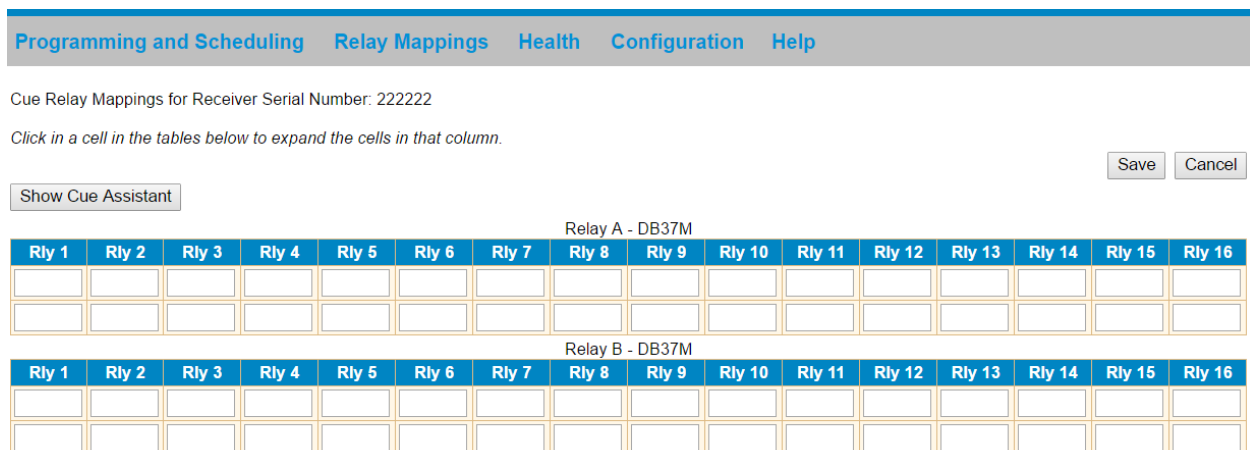



Figure 32 - Editing Relay Mappings

- 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".

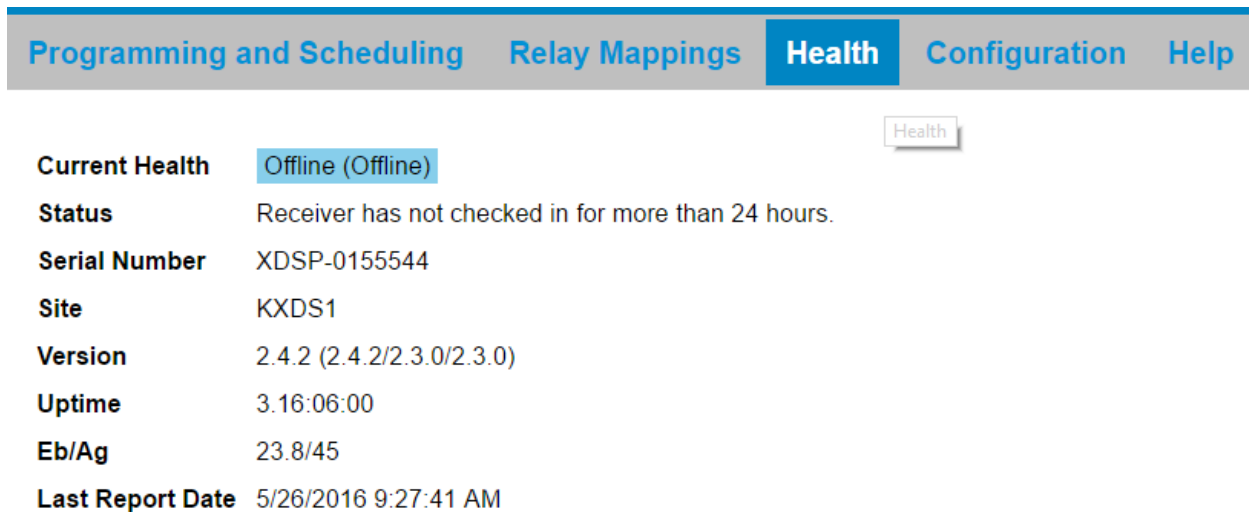
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- To cancel the changes you have made and to go back to the previous relay mapping, click "Cancel".

 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.

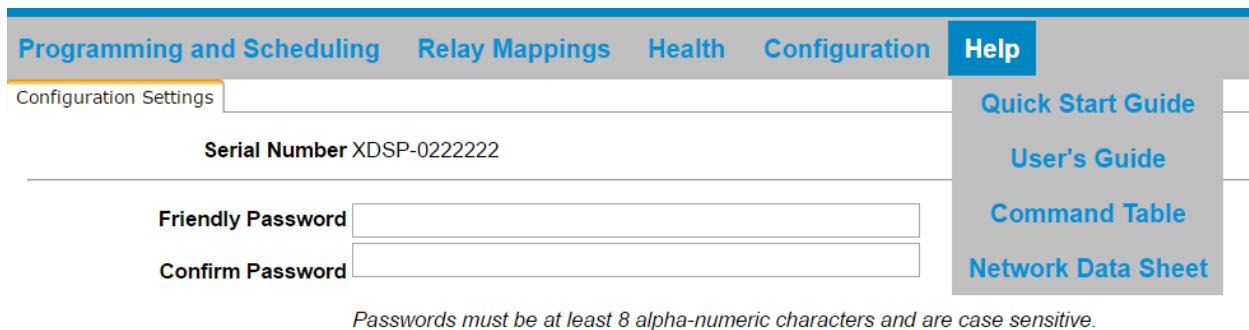


Current Health	Offline (Offline)
Status	Receiver has not checked in for more than 24 hours.
Serial Number	XDSP-0155544
Site	KXDS1
Version	2.4.2 (2.4.2/2.3.0/2.3.0)
Uptime	3:16:06:00
Eb/Ag	23.8/45
Last Report Date	5/26/2016 9:27:41 AM

Figure 33 - 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.



Configuration Settings

Serial Number XDSP-0222222

Friendly Password

Confirm Password

Quick Start Guide
User's Guide
Command Table
Network Data Sheet

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

Figure 34 - 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 a navigation bar at the top containing 'Programming and Scheduling', 'Relay Mappings', 'Health', 'Configuration', and 'Help'. The 'Configuration' tab is active. The page content includes:

- Serial Number: XDSP-0222222
- Website ver. 6.3.6
- Fields for 'Friendly Password' and 'Confirm Password'.
- A note: 'Passwords must be at least 8 alpha-numeric characters and are case sensitive.'
- 'Time Zone' dropdown menu set to 'Greenwich Mean Time (GMT-0:00)'. Below it is a checked checkbox for 'Observe Daylight Savings'.
- A checked checkbox for 'Use Global Streaming Delay (30 seconds)'.
- An unchecked checkbox for 'Steer my audio ports to match my program schedule'.
- An 'Update' button at the bottom right.

Figure 35 - Time Zone and Password Configuration

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-PRO1R Receiver", or "XDS-PRO4R" – 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]**.

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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.


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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

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.

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Option	Argument	Action
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 5 - 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)

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- **SF SHOW** will provide the fault history in text form

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

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	HDD Needs Repair
0x00000040	<i>reserved</i>	0x00400000	File Delivery Fault
0x00000080	<i>reserved</i>	0x00800000	LNB Over-current
0x00000100	I2C Failure	0x01000000	CF Offline
0x00000200	PSI Idle	0x02000000	<i>reserved</i>
0x00000400	<i>reserved</i>	0x04000000	SDL Ignored
0x00000800	<i>reserved</i>	0x08000000	URL Event Overflow
0x00001000	NV Config. Bad	0x10000000	Internet Down
0x00002000	<i>reserved</i>	0x20000000	Storage Full
0x00004000	DSP Timeout	0x40000000	SW Download Ready
0x00008000	Fan Stopped	0x80000000	SW Download Error

Table 6 – 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.

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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 PRO1Q 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:</i> List files in the audio library directory <i>ISCI:</i> List ISCI insertion files <i>PROGRAMS:</i> List assigned programs
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 7 - ALIB Command

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

Option	Argument	Action
PRESENT		Displays "true" if AMR is present

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Option	Argument	Action
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

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 8 shows all **I2C** arguments.

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

Table 8 - I2C Command

ISTREAM Command: Display and configure Istream. Table 9 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 9 - 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		Display code version
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 10 - LOAD Command

LOGS Command: Show receiver’s internal activity logs. Can also use the **LOG** command. Table 11 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 11 - LOGS Command

MAIL Command: Display and configure XDS-PRO Receiver Email. Table 12 shows all **MAIL** arguments.

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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 12 - 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 13 - MAINT Command

MON Command: Headphone monitoring command. Table 14 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 14 - MON Command

NAS Command: Network Attached Storage options. Table 15 shows all **NAS** arguments.

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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 15 - NAS Command

PAD Command: Get and set PAD port settings. Table 16 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 16 - 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/CUES/NETWORK/WINDOWS/NIT]	
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 17 - 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 18 - REBOOT Command

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

XDS-PRO Satellite Receivers

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 19 - RLY Command

* - [0-31] only valid for PRO4Q and PRO4R. Must use [0-15] for PRO1Q and PRO1R.

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 20 - STATIONS Command

TRACE Command: Used for diagnostic checks of the serial ports. Table 21 shows all **TRACE** options.

XDS-PRO Satellite Receivers

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

Table 21 - TRACE Command

TTY Command: Modem diagnostics command. See Table 22 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 22 - 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:

XDS-PRO Satellite Receivers

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 23 - TUNER Command

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

7 XDS DISCOVERY TOOL

7.1 About The XDS Discovery Tool

The XDS Discovery Tool is only to be used on XDS-PRO1Q units that do not have the optional front panel. It allows the user to view details about the receivers connected to the local network, including:

- The receiver's IP address
- The receiver's station name
- The type of receiver
- The code version the receiver is currently running
- The receiver's board revision
- The receiver's serial number
- The receiver's status
- The receiver's past faults

7.2 Using the XDS Discovery Tool

The Start button begins locating receivers connected to the network. Unless the Stop button is pressed, the search will run for 10 seconds. The amount of time to search can be changed by clicking on the Advanced Options link and changing the Time To Run parameter. The list of receivers found can be cleared using the Clear List button.

Features to note:

- Clicking on a receiver's IP will open up a web browser with that receiver's Web Interface.
- Hovering over the Status and Past Faults columns displays the warning messages associated with the status code.

7.3 Troubleshooting the XDS Discovery Tool

Here are a few important things to consider if you are having trouble running the XDS Discovery Tool:

- The Microsoft .NET framework must be installed for this application to function. The .NET framework can be downloaded from [here](#).
- For the application to run off of a local intranet the .NET framework must be version 3.5 or above.

8 SPECIFICATIONS

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

8.1 Receiver Monitor & Control and Interface Specification

8.1.1 M&C Interface Features

The Monitor and Control Features are provided in Section 6. The LCD, Keypad, and Headphone Jack are options on the PRO1Q and standard on the PRO4Q, PRO1R, and PRO4R.

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 24 - Interface Features

8.1.2 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 25 - M&C Port Specifications

XDS-PRO Satellite Receivers

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

Table 26 - M&C Port Pin-Out

8.1.3 Relay Outputs

The receiver includes a connector port providing 16 normally open relay contact connections. There is a single connector provided on the PRO1Q and PRO1R models and two connectors on the PRO4Q and PRO4R receivers. The port specification is provided in Table 27, and the pin-outs for each in Table 28.

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 27 - Relay Outputs Specifications

XDS-PRO Satellite Receivers

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 28 - Relay Port Pin-Out

XDS-PRO Satellite Receivers

8.1.4 Analog Audio Output

The PRO4Q and PRO4R have 4 analog output channels, and the PRO1Q and PRO1R have one analog output channel. The audio output port specifications are outlined in Table 29. Table 30 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 29 - Analog Audio Output Specifications

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 30 - Analog Audio Output Pin-Out

XDS-PRO Satellite Receivers

8.1.5 Analog Audio Input

The XDS-PRO receivers have one analog audio input port. The audio input port specifications are outlined in Table 9. Table 10 lists the pin-outs of the analog input port.

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

Table 31 - 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 32 - Analog Audio Input Pin-Out

XDS-PRO Satellite Receivers

8.1.6 Digital Audio Input

In addition to the analog audio input, the PRO4Q and PRO4R receivers also have one digital audio input port that shares the same connector. Table 33 provides the specification for digital audio interface and Table 34 provides the complete connector pinout that is shared by analog and digital audio inputs to the PRO4Q and PRO4R receivers. Note that neither the PRO1Q, nor PRO1R support a digital audio input.

Connector	DB-9 Male
Format	Balanced AES/EBU

Table 33 - Digital Audio Input Specifications

PIN	FUNCTION	
	PRO1R	PRO4R
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 34 - Digital Audio Input Pin-Out

XDS-PRO Satellite Receivers

8.1.7 Digital Audio Output

The PRO4Q and PRO4R 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 35 contains the interface specifications for the digital audio output, and Table 36 provides the pin-out of it. The PRO1Q and PRO1R 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 35 - Digital Audio Output Specifications

PIN	FUNCTION	
	PRO1Q / PRO1R	PRO4Q / PRO4R
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 36 - Digital Audio Output Pin-Out

XDS-PRO Satellite Receivers

8.1.8 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 37 provides the PAD / ASYNC port specifications, and Table 38 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 37 - PAD / ASYNC Port Specifications

PIN	FUNCTION	
	PRO1Q / PRO1R	PRO4Q / PRO4R
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 38 - PAD / ASYNC / External Reset Port Pin-Out

8.2 Ethernet Port

Connector	RJ-45 Modular Jack
Connection Rate	10/100Base-TX (Auto)
Number of Ports	PRO1Q & PRO1R – 2 PRO4Q – 3 PRO4R – 2
Max Output IP Rate	Up to 20 Mbps (combined for all ports)
VLAN	Each port is managed for VLAN use

Table 39 - Ethernet Port

8.3 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 40.

Connector	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 40 - RF Input Parameters

XDS-PRO Satellite Receivers

8.4 LBR Module (Optional) RF Input Parameters

The PRO1R and PRO4R receivers support an optional LBR module that can be installed to provide support for low bit rate carriers. The LBR module can receiver both DVB-S and DVB-S2 modulated satellite signals which will be received and demodulated by the XDS-PROR receiver. **The PRO4Q and PRO1Q receivers don't support the LBR module.** Input signal and connector specifications for the LBR module are provided in Table 41.

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 41 - LBR Module RF Input Parameters

8.5 Mechanical and Electrical

The XDS-PRO receiver chassis specifications are provided in Table 42.

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 42 - Mechanical and Electrical Specifications

XDS-PRO Satellite Receivers

8.6 Environmental

The XDS-PRO receiver environmental specifications are provided in Table 43.

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 43 - Environmental Specifications

XDS-PRO Satellite Receivers

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

