



## **PD1000 Series**

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### **High-Definition Dense Encoder Modulation System**

**INSTALLATION & OPERATION MANUAL**

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## IMPORTANT SAFETY INFORMATION

To ensure proper installation and operation, read this guide before proceeding with the installation. If you have any questions or comments, please contact your dealer.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating instructions accompanying the appliance.



The lightbulb symbol indicates that there is helpful related information available in this note or elsewhere in the guide.

### WARNING:

- TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
- DO NOT OPEN THE CABINET.
- REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

**Reliable Earthing:** The equipment reliable earthing is provided through the IEC 320 power cord ground. Ensure that the mains source power ground connection is maintained when connected to the equipment. Check with a qualified electrician as necessary to verify the ground connection.

**Heed Warnings:** All warnings on the appliance should be adhered to.

**Water and Moisture:** Do not expose this equipment to rain or moisture; equipment not for outdoor use.

### Installation Warnings:

- The equipment is intended for restricted access location only.
- The equipment is not for use in locations where children are likely to be present.
- The equipment is intended to be operated and serviced by qualified personnel only.

**Elevated Operating Ambient Temperature:** If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature of 50°C.

**Mechanical Loading:** This equipment is designed to be rack-mounted in a standard EIA 19-inch-width telecommunications rack. Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

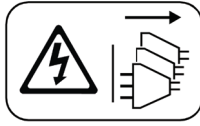
**Reduced Air Flow:** Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.



**CAUTION:** This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.



**ATTENTION:** Cette unité peut avoir plus d'une connexion d'alimentation. Pour supprimer toute tension et tout courant électrique de l'unité, toutes les connexions d'alimentation doivent être débranchées.



**CAUTION:** Shock Hazard.  
Disconnect all power sources.

**WARNING:**

The equipment must be connected to a grounded outlet.  
Apparatet må tilkoples jordet stikkontakt.

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



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# INTRODUCTION

## 1. Introduction

The PD1000 is a modular HD MPEG-2 and H.264 encoding platform featuring IP, QAM, and ISDB-T/ISDB-Tb output capabilities. It supports up to 1080p real time encoding, and up to 8 HD video channels (2 per encoder module) in MPEG-2 or H.264 formats. Audio is encoded via MPEG, AAC, or optionally Dolby® Digital Stereo Creator. The PD1000 chassis includes: the front panel; power supply; cooling module; and mechanical mountings for internal electronics. The PD1000 chassis fits up to any combination of four EM-2HD and EM-HD-SDI encoder modules, along with one OM4 or one/two OMI output module(s).

The **OM4** output module multiplexes encoded channels together and outputs MPTS over QAM. With the OM4-IP output option, the PD1000 can output data over IP simultaneously with QAM.

The **OMI** output module multiplexes encoded channels together and outputs MPTS over ISDB-T.

The **OMI-Tb** output module multiplexes encoded channels together and outputs MPTS over ISDB-Tb.

The **EM-2HD** encoder module encodes video/audio inputs accepting any two of HDMI, composite, or component video and encoding each input independently in either H.264 or MPEG-2.

The **EM-HD-SDI** encoder module encodes video/audio inputs accepting HD-SDI, encoding each input independently in either H.264 or MPEG-2. Audio is encoded in the EM-2HD and EM-HD-SDI either in MPEG, or optionally in Dolby Digital Stereo Creator.

The PD1000 also includes an integrated web management interface for local access from supported internet browsers (Chrome®, Firefox®, Internet Explorer® 8 or later). A simple graphical user interface that provides all the tools needed to configure the PD1000 settings. The chassis is 1 RU tall and fits within a standard 19 inch (width) rack, at a depth of 16 inches.

The **PD1000J** variant includes a front mounted power switch for easy unit shutdown, and also removes the ability to use an external DC power supply.



**NOTE:** The PD1000 supports ISDB-T and ISDB-Tb outputs but **NOT AT THE SAME TIME**. Only one or the other can be configured

### 1.1 Features

- Supports up to 1080p real time encoding and up to 8 HD video channels in MPEG-2 or H.264 formats in 1RU
- Audio Encoding MPEG, AAC audio, plus optional Dolby Digital Stereo Creator
- QAM and ISDB-T/ISDB-Tb outputs, with optional IP output
- Field upgradable with dual channel encoder modules (up to 4 per PD1000)
- Multiplexes up to 4 HD programs in 1 QAM channel (or 2 HD programs in 1 ISDB-T or ISDB-Tb channel) for bandwidth efficiency
- EM-2HD - Inputs per dual encoder module – 2x component, HDMI (clear) and composite/closed caption
- EM-HD-SDI – Inputs per dual encoder module – 2x SDI, HD-SDI or 3G
- Integrated support for Emergency Alert System (EAS)
- Network Time Protocol (NTP) support
- Easy management and configuration via web browser
- External DC backup power supply (PD1000 only)





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# SPECIFICATIONS

## 2. Specifications

AUDIO/VIDEO INPUTS (Per EM-2HD Encoder Module)	
HDMI	Dual Type A v1.4 (Clear)
COMPONENT	Dual YPrPb (YPrPB), (RCA)
AUDIO	Dual Stereo (RCA)
COMPOSITE/CLOSED CAPTION	Dual CVBS (RCA)
AUDIO/VIDEO INPUTS (Per EM-HD-SDI Encoder Module)	
SDI	Dual 3G/HD/SD (BNC)
VIDEO FORMATS	
IN/OUT LINE RATES	1080p <sup>(1)</sup> /1080i/720p/480p/576i/480i
FRAME RATES	25/29.97/30/50/59.94/60
VIDEO/AUDIO COMPRESSION	
VIDEO CODECS	HD & SD MPEG-2/H.264
AUDIO CODECS	MP1 Layer II, AAC, Dolby Digital Stereo Creator <sup>(2)</sup> (One Pair per Video)
QAM/RF OUTPUT	
FREQUENCY RANGE	50-1002 MHz
RF CHANNEL COUNT	4
MODULATION MODES	QAM 64/256
QAM TYPE	Annex A/B/C
MER	> 40 dB
RF LEVEL (Pre-combined)	> 60 dBmV
RF LEVEL ADJUSTMENT RANGE (Combined)	38 dBmV to 53 dBmV
SPURIOUS	> 60 dBc
I/Q AMPLITUDE IMBALANCE	< 1 %
I/Q PHASE ERROR	< 1 %
FREQUENCY ACCURACY	± 100 Hz
PHASE NOISE	100 dBc @ 10-kHz Offset
AMPLITUDE FLATNESS	± 0.25 dB (over 24 MHz Bandwidth)
OUTPUT CONNECTOR	F-female, 75 Ω
ISDB-T & ISDB-Tb/RF OUTPUT	
FREQUENCY RANGE	<b>ISDB-T</b> 470-770 MHz <b>ISDB-Tb</b> 473-803 MHz
BANDWIDTH	6 MHz
RF CHANNEL COUNT	2
MODULATION SCHEME (ISDB-T)	BST-OFDM 64 QAM
OUTPUT CONNECTOR	F-female, 75 Ω

IP OUTPUT (Optional)	
CONNECTION	RJ45, GbE, Full Duplex, Auto-neg
ADDRESSING	Unicast, Multicast
TRANSPORT PROTOCOL	RTP/UDP/IP
MESSAGE & CONTROL PROTOCOL	RTSP
TRANSPORT FORMAT	SPTS, MPTS
MANAGEMENT	
CONNECTION	RJ-45, GbE, Full Duplex, Auto-neg
PROTOCOLS	HTTP
USER INTERFACE	Web Browser
BROWSER SUPPORT	IE7 or Later, Firefox & Chrome
EAS INPUTS	
VIDEO	CVBS (RCA)
AUDIO	Stereo (RCA)
TRIGGER	Terminals
INTERNAL AC POWER SUPPLY	
LINE VOLTAGE	100-240 VAC, 50-60 Hz
CURRENT	1.8A Max
EXTERNAL DC POWER BACKUP	
VOLTAGE	+12 VDC
CURRENT	10A Max
GENERAL	
OPERATING TEMPERATURE	0°C to +50°C (+32°F to +122°F)
DIMENSIONS	1.75"H x 19.0"W x 16.0"D (4.45H x 48.26W x 40.6D cm)
CERTIFICATIONS	
    Dolby® Digital Stereo Creator	

NOTE:

(1) MPEG-2 supports 25/29.97/30.

(2) Dolby audio available standard on EM-HD-SDI. Dolby audio available as an option for EM-2HD

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# INSTALLATION

## 3. Installation

### 3.1 Quick Start Installation



**Note:**

- The equipment is intended for restricted access location only.
- The equipment is not for use in locations where children are likely to be present.
- The equipment is intended to be operated and serviced by qualified personnel only.

**Rack Installation:**

1. Remove the chassis from the shipping boxes. Save the boxes and packing material for future use.
2. The PD1000 is designed to be installed and operated in a 19-inch rack. All connections are on the rear panel. The path of the air flow is through the left and right sides of the unit.
3. **CAUTION:** For rack mount installations, note the following precautions and instructions.
  - The chassis requires at least 2 inches of clearance on each side of the chassis to ensure adequate airflow. DO NOT block the left or right side of the chassis.
  - Ambient air temperature must be kept between 0° and 50°C (32°–122°F) to provide adequate cooling for the system.
4. **WARNING:**
  - PD1000 reliable earthing is provided through the IEC-320 power cord ground. Ensure that the mains source power ground connection is maintained when connected to the PD1000. Check with a qualified electrician as necessary to verify the ground connection.
  - A ground terminal on the rear of the chassis is provided for connection to the rack system grounding, e.g. ground bus bar if provided.
5. Refer to Appendix A of this manual for more detailed rack mounting instructions.

**Connections Overview:**

1. Connect video/audio inputs to encoder boards (EM-2HDs/EM-HD-SDIs)
2. Connect RF or IP (Ethernet port B) on QAM (OM4), ISDB-T (OMI), or ISDB-Tb (OMI-Tb) board for output
3. Connect Ethernet port A on OM4 or OMI (in Slot 0) for web management
4. Power on
5. Retrieve IP address (DHCP) from front panel, or configure IP address (static IP) using the front panel
6. Enter IP address into internet browser window to access and configure PD1000/PD1000J from web interface



**WARNING:** DO NOT ADD/REMOVE MODULES FROM PD1000 WITH POWER ON

**Connections Detail:**

- To use component and/or composite sources, attach the included white cable to the DB15 connector on the EM-2HD.
- For component: connect red, green, and blue connectors to video source. Connect white and red connectors labeled Left and Right to the audio source.
- For composite: connect the yellow connector labeled CVBS to video source. Connect the white and red connectors labeled Left and Right to the audio source.
- For HDMI or SDI, connect to labeled port on EM-2HDs or EM-HD-SDI as applicable.
- For RF out, connect to labeled port on OM4 or OMI.
- For IP out, connect to Ethernet Port B on OM4 or OMI in Slot 0.

If you wish to use the front panel for setup and operation, please refer to “Front Panel Control” Chapter for the information on navigating through the menu. After configuring the PD1000 to fit your application, connect the QAM, ISDB-T, or ISDB-Tb output to your system’s RF combiners and/or launch amplifier.

If you wish to use the Ethernet based remote control using your PC browser, please refer to “PD1000 Web Control” Chapter. To get started, the PD1000 will need an IP Address. If your network (LAN) uses automatic address leasing, connect a CAT5/6

cable from your LAN connection (switch) to the PD1000 management port.

- There is one Ethernet port on the OM4 and OMI modules of the PD1000 (port A) for network management. The management port is auto MDIX enabled and straight-through or cross-over cables may be used to connect the PD1000. Connect the PD1000 to your LAN to allow your PC and browser to communicate with the PD1000 over the LAN or directly to the PC.
- There is one content GigE Ethernet ports on the OM4 and OMI modules (port B) of the PD1000. It is MDIX enabled and straight-through or cross-over cables may be used.
- When powered and connected, the PD1000 will ask your LAN's DHCP server for an address through the management port. The unit is shipped from the factory with DHCP enabled which will automatically set after 5~60 seconds from the end of PD1000 startup if Ethernet is connected on the management port.
- Use a web browser to configure the unit using the control interface's IP address as the website for the browser. The IP Address of the PD1000's control interface can be obtained from the front panel menu. Enter the control interface's IP address in the browser's address line (where you normally enter addresses like [www.example.com](http://www.example.com)) and press enter on the PC. An example of the format: "http://192.168.8.234"

**Web Management Connection:**

To access the web based interface to configure the PD1000, Ethernet port A on the OM4 or OMI module must be connected to the same network as the desired management PC. To obtain the management control IP address, press the Down from the top menu on the front panel of the PD1000 to display Network Setup. Enter this IP address into a web browser on the management PC and login using username "**username**" and password "**password**". For more detailed management controls and system navigation, see "Operating the PD1000" Chapter.

**For rack mounting, alarm monitoring, environmental operation considerations, external powering, and applying power please see Appendix A.**

FAQ

4. FAQ

4.1 How Do I Output QAM to a TV?



**NOTE:** This section addresses QAM output, but a similar approach can be used for ISDB-T & ISDB-Tb output when equipped with an OMI or OMI-Tb output card.

Follow the Quick Start Installation guide to properly connect the PD1000 to your TV.

After physical connections are complete, the QAM starting channel should be configured. This can be done two ways: either through the web interface or through the Front Panel interface. To change the starting channel through the web interface, login to the Unit Management Home Page and click on the **Configure** tab.

In the “QAM 0 Starting Channel” input box, enter your desired starting channel and click the “Save Changes” button.

For OMI, this will say “ISDB-T # Starting Channel” where “#” is the slot the OMI is inserted.

For OMI-Tb, this will say “ISDB-Tb # Starting Channel” where “#” is the slot the OMI is inserted.

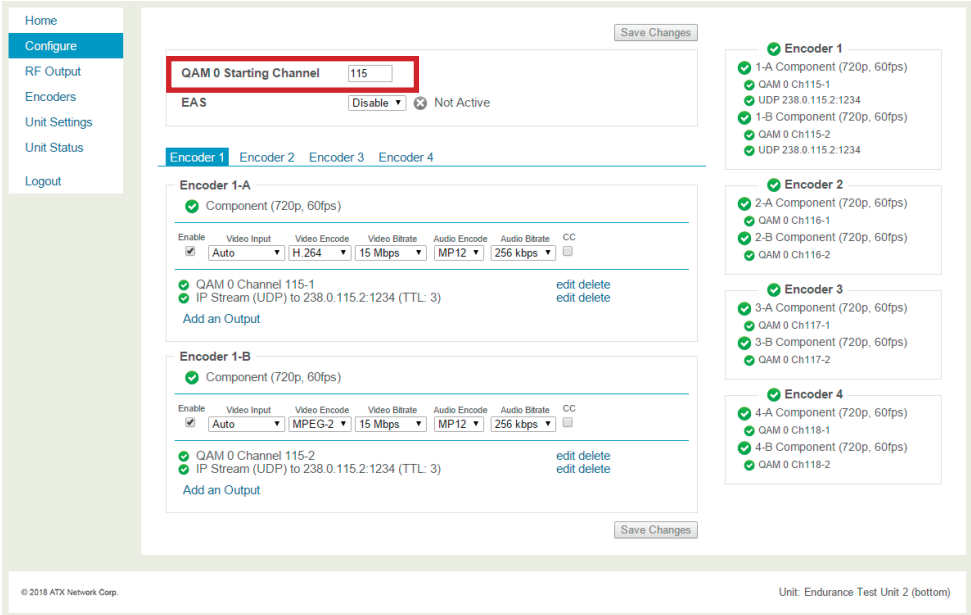


Figure 1: Configure Page (EM-2HD Encoder Shown)

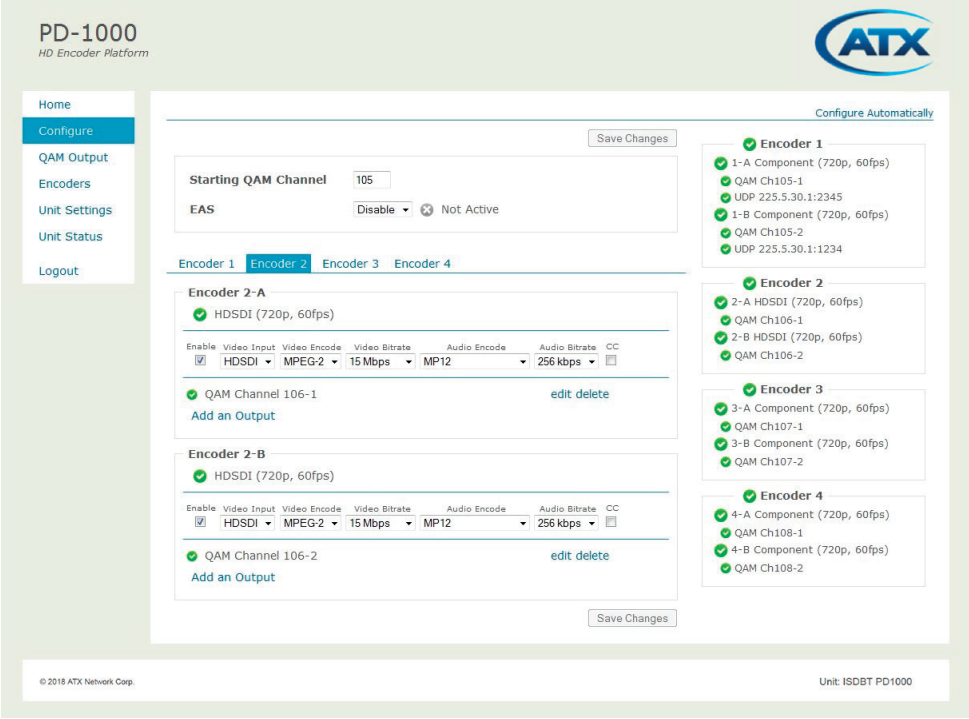


Figure 2: Configure Page (EM-HD-SDI Encoder Shown)

To change the starting channel through the front panel, see Chapter 7 Section 7.3.

The output power of the OM4, OMI and OMI-Tb is designed to provide QAM, ISDB-T, and ISDB-Tb video output to multiple receiving devices. When connecting the PD1000 to a single TV the power level of the output must be attenuated.

Check the “Output Level” parameter in the “RF Output” section of the web interface (shown below) to determine if the power is appropriate for your TV.

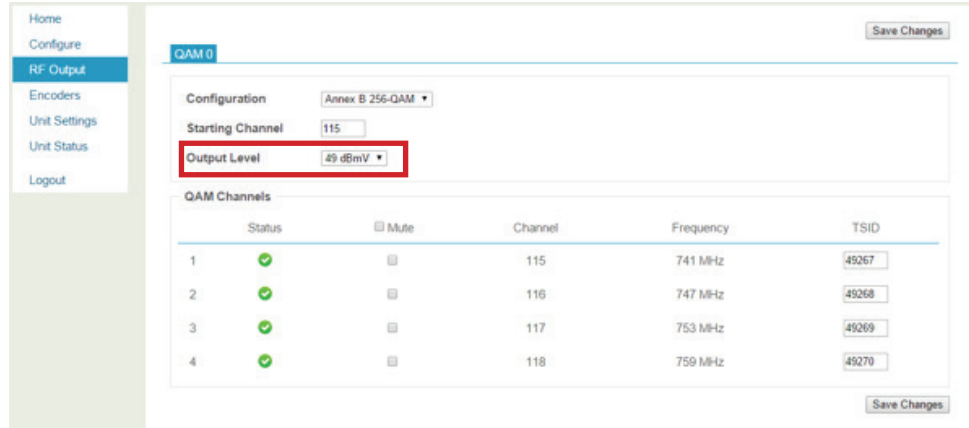


Figure 3: RF Output Level Power Setting

## 4.2 How Do I Update the PD1000 Firmware?

Step 1: Follow the Quick Start Installation guide to properly connect the PD1000

Step 2: Navigate to the unit's management webpage via your chosen web browser.

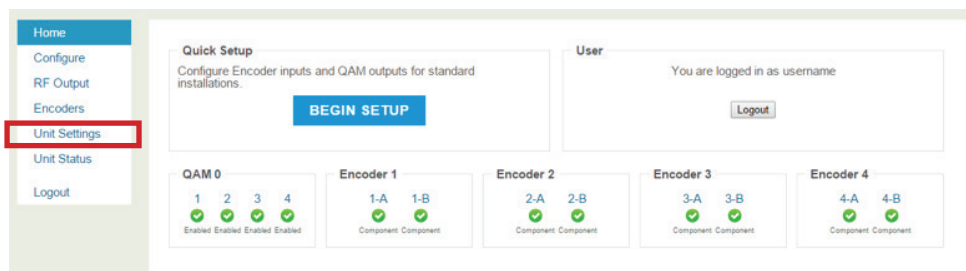


Figure 4: Web Interface Home Page

Step 3: Log into the management page. Username: username, Password: password

Step 4: Navigate to the “Unit Settings” tab (highlighted red in figure above)

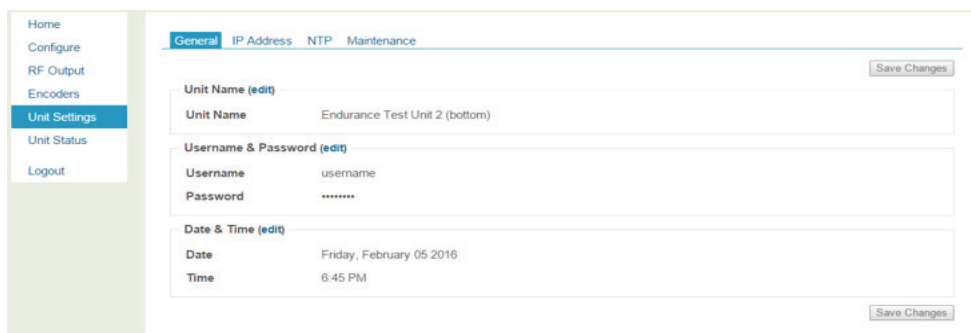


Figure 5: Unit Settings Page

Step 5: Click the “Maintenance” tab

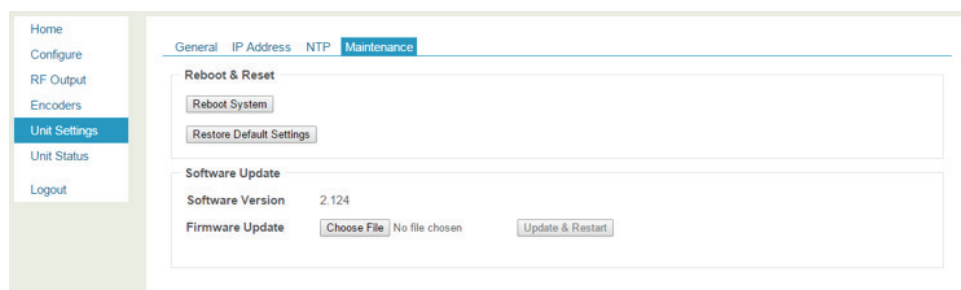


Figure 6: Maintenance Tab

Step 6: Click the “Choose File” button

Browse your PC or network for the provided “.pkg” file to upload

Step 7: Click the Update & Restart button to update the firmware

Step 8: Final check - Log back into the management home page, and navigate to the “Unit Status” page and check to see the Software Version was successfully updated.

### 4.3 How Do I Connect IP GigE Data Output Port?

Make sure the Ethernet port B is connected to the PD1000 and your receiving device. There is no provision to use DHCP on the DATA port, so the IP address will have to be static and entered manually.

Step 1: Navigate to the unit's management webpage via your chosen web browser.

Step 2: Login with Username: username, Password: password

Step 3: Navigate to the "Unit Settings" page

Step 4: Click on the "IP Address" tab

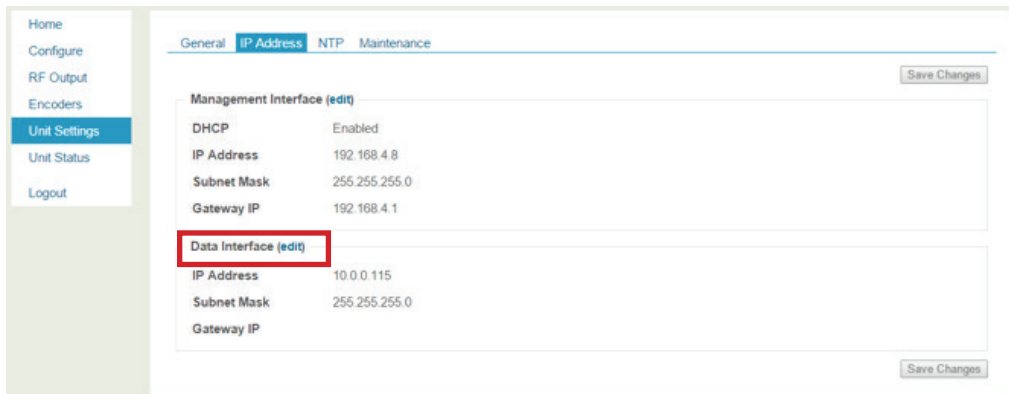


Figure 7: Unit Settings Page, IP Address Tab

Step 5: Click "edit" next to Data Interface (outlined in red in Figure 7)

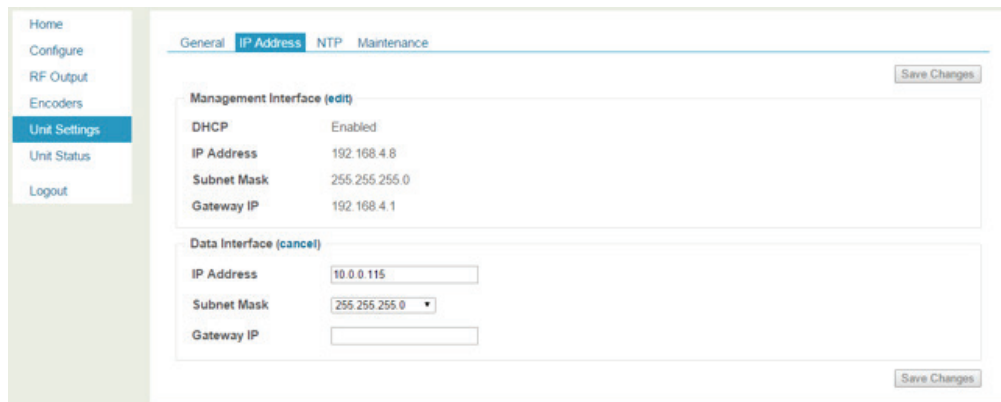


Figure 8: Edit Mode for Data Interface

Step 6: Enter the desired static IP address and choose the desired Subnet Mask from the dropdown menu

Step 7: Click the "Save Changes" button

### 4.4 How Do I Configure for EAS Operation?



**NOTE:** Not applicable for use with OMI or OMI-Tb.

Step 1: Follow the Quick Start Installation guide to properly connect the PD1000



**NOTE:** Only EM-2HD must be in slot 1 for this operation.

Step 2: Connect the audio/video for EAS using an adapter as pictured below (BN39-01154H or equivalent part #) to the audio/video source and to the OM4 module in the EAS Video connector.





**Figure 9: RCA Composite Video Adapter**

Step 3: Connect the trigger from the EAS to the connector on the OM4 module labeled EAS Relay.

Step 4: Navigate to the unit's management webpage via your chosen web browser.

Step 5: Log into the management page:

**Username: username**

**Password: password**

Step 6: Navigate to the "Configure" tab as shown in Figure 10.

**Figure 10: Configure Page (EM-2HD Encoder Shown)**

Step 7: Select Enable from the EAS Dropdown Box (shown in red in Figure 10)

Step 8: Enable the EAS by using the trigger mechanism

Step 9: See EAS become active in red box and see video on TV on all channels from this PD1000

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## OPERATING THE PD1000

### 5. Operating the PD1000

#### 5.1 Theory of Operation

An overview of the processing and dataflow is presented below that depicts the QAM (OM4) output. The ISDB-T (OMI) and ISDB-Tb (OMI-Tb) output is similar with the QAM block being replaced by ISDB-T and ISDB-Tb.

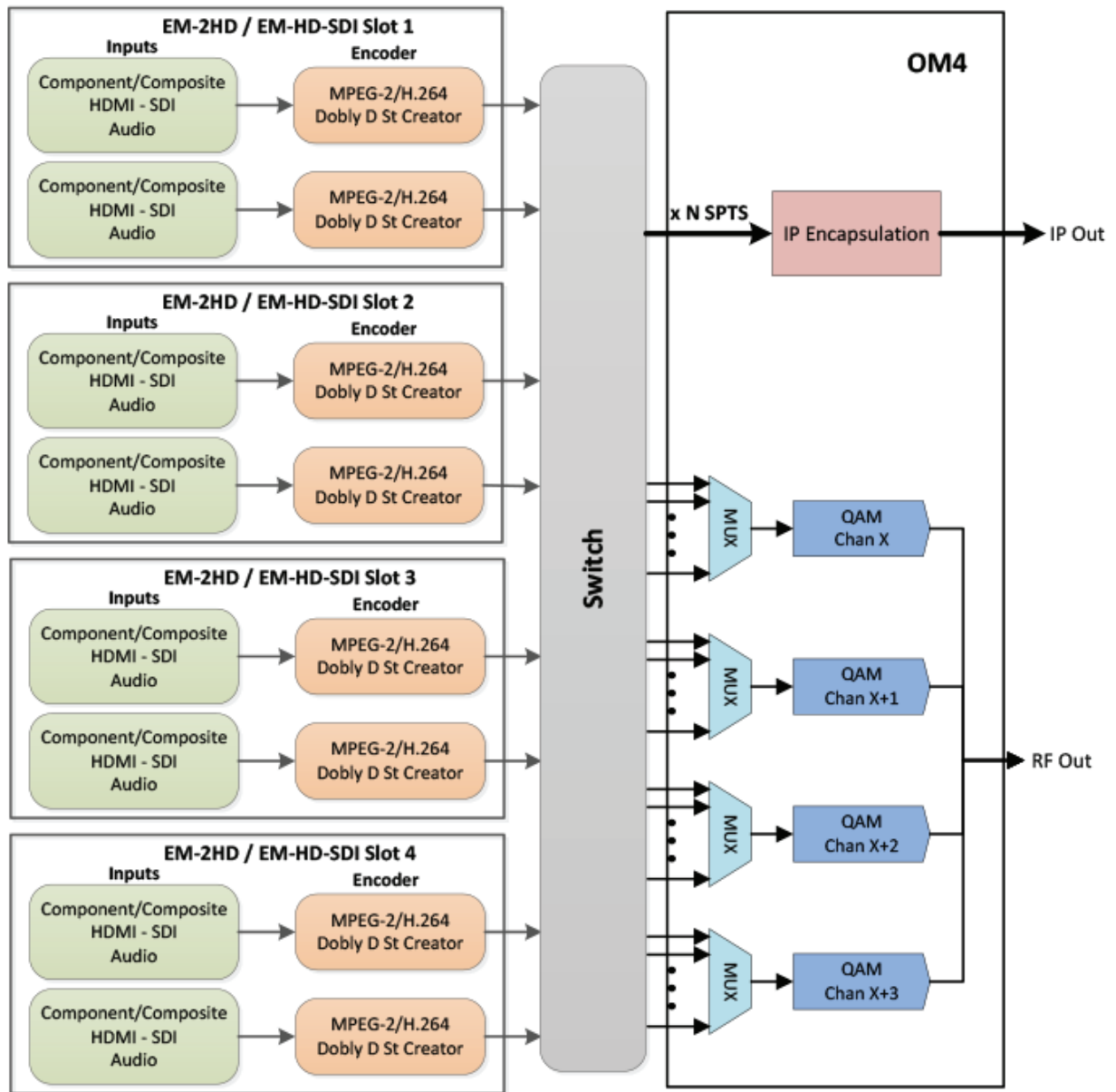


Figure 11: PD1000 Operational Block Diagram

#### EM-2HD

For EM-2HD encoders, baseband (uncompressed) video and audio is presented at EM-2HD inputs as analog (component/ composite for video, stereo for audio) and digital HDMI (includes both video and audio). Closed captioning data is accepted on

the composite input since this is not available on a component analog signal. The input section converts the source video and audio to a standard interface format which is presented to the encoding (compression) section. The encoder uses MPEG-2 or H.264 for video compression and MPEG-1 Layer 2, Dolby Digital Stereo Creator, or AAC for the audio. The closed caption data is inserted into the compressed video stream

#### **EM-HD-SDI**

For EM-HD-SDI encoders, baseband (uncompressed) video and audio is presented at EM-HD-SDI inputs as digital SDI (includes both video and audio). Closed captioning data is accepted on the SDI input. The input section converts the source video and audio to a standard interface format which is presented to the encoding (compression) section. The encoder uses MPEG-2 or H.264 for video compression and MPEG1 Layer 2, Dolby Digital Stereo Creator or AAC for the audio. The closed caption data is inserted into the compressed video stream.

Each encoder can output to any output multiplexer, allowing any combination of any inputs on any output multiplexer. Furthermore, the encoders can output any combination of H.264 and MPEG-2 for each channel. The OM4 includes the multiplexers, QAM modulators, and IP I/O. The OM4 can output SPTS over IP and one QAM channel simultaneously. The OM4 supports configurations Annex A (64 or 256 QAM) and Annex B (64 or 256 QAM).

#### **EAS (OM4 only)**

The PD1000 can support Emergency Alert System (EAS) messaging when used with EAS receivers that include the optional GPIO triggers (to connect to the PD1000 Mute/Broadcast contacts) and a composite video that is input into the OM4 module. The PD1000 will replace the content on the RF Outputs with the provided EAS video when the contacts are closed. When the contact is opened, the PD1000 will provide the original video on the RF Output from the EM-2HD modules as configured. The EM-2HD module must be inserted in Slot 1 for proper operation. In addition, encoding should be set to MPEG-2 for proper EAS operation. EAS operation does NOT affect the IP output.

#### **HDMI**

The HDMI source device uses channel communication protocols to read data from the destination device to determine what audio/video formats it supports. The PD1000 supports a broad range of video formats (specified in Chapter 2: Specifications), some of which may not be supported by the end receiving device (e.g. TV). Consequentially, the HDMI source device may need to be manually configured to output a format that both the PD1000 and the end receiving device support.

#### **IP Output**

The PD1000 can output single program transport streams (SPTS) via IP using the following two methods:

- MPEG-2 transport packets in UDP/IP
- MPEG-2 transport packets in RTP/UDP/IP

This is selectable on the user interface. Both these methods can utilize either multicast or unicast addresses as entered by the user, and if multicast the user can select the time-to-live (TTL) value. The user also selects the port to use. Each encoded stream in the PD1000 can be output both on QAM and IP simultaneously. In addition, the IP output for each stream can be set to RTSP allowing an external RTSP client to communicate with the PD1000 to control the IP output for that encoded channel. The control from the RTSP client will include start/stop and which unicast IP address and port to output the RTP/UDP/IP stream on. Therefore in RTSP mode, the user does not enter the destination IP address and port. RTSP only supports RTP output.

#### **ISDB-T Output**

The OMI module outputs in the ISDB-T format that is used in Japan. The available channel ranges are 13 to 62 with 61 being the highest channel number that can be set as the Starting Channel. Two ISDB-T channels can be configured per OMI module. Since the channel bitrate of an ISDB-T channel is 20 Mbps, only one HD service is recommended per output module. A maximum of two OMI output modules and three encoders can be installed on a PD1000 giving the user a maximum of four HD services or six SD services. The output includes the necessary Japanese ARIB tables embedded into the output data stream.

#### **ISDB-Tb Output**

The OMI-Tb module outputs in the ISDB-Tb format which is commonly used in Latin and South America. The available channel ranges are 14 to 69 with 68 being the highest channel number that can be set as the Starting Channel. Two ISDB-Tb channels can be configured per module. Since the channel bitrate of an ISDB-Tb channel is 20 Mbps, one HD service is recommended per output module but two could be used with video bit rates of less than 10 Mbps per service. A maximum of two OMI-Tb output cards and three encoders can be installed on a PD1000 giving the user a maximum of six services.

### QAM Output

QAM output is available on the OM4 output module. The available channel ranges are 2 to 158 with 155 being the highest channel number that can be set as the Starting Channel. The OM4 output module can be configured with up to 4 QAM channels and supports virtual channel numbers and channel names.

## 5.2 Front Panel

The PD1000 Series Unit's front panel includes:

- A two-line LCD display with 16 characters per line
- A power indicator (green) that indicates power is applied to the unit
- A status indicator (green) that is used to indicate that the unit is operating correctly without errors (solid green) or blinking green to indicate a past problem occurred that is now corrected (and is shown in the log).
- A fault alarm (red) that indicates that there is at least one fault currently occurring within the unit or slowly blinking red that indicates a warning.
- Navigational controls: Six buttons on the front panel are used to navigate the front panel menus. These buttons are Up, Down, Left, Right, Enter, and Back.

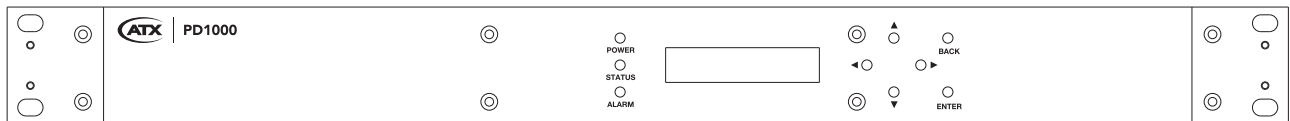


Figure 12: PD1000 Front Panel

The PD1000J front panel also includes an on/off power toggle switch.

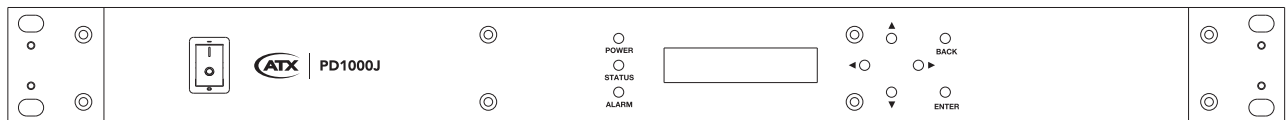


Figure 13: PD1000J Front Panel

## 5.3 Rear Panel

The PD1000 rear panel and associated modules include:

### EM-2HD

Each EM-2HD encoder module includes 2 HDMI inputs, 2 composite inputs, 2 component inputs, and 2 stereo audio inputs. The PD1000 supports any combination of up to 4 EM-2HD/EM-HD-SDI modules

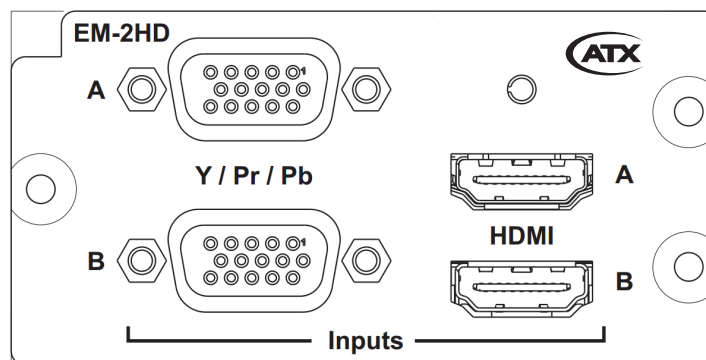


Figure 14: EM-2HD Encoder Module

**EM-HD-SDI**

Each EM-HD-SDI encoder module includes 2 SDI inputs. The PD1000 supports any combination of up to 4 EM-2HD/EM-HD-SDI modules

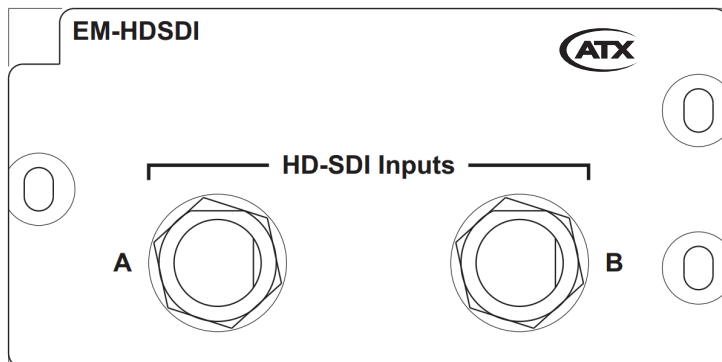


Figure 15: EM-HD-SDI Encoder Module

**OM4**

The OM4 module supports QAM output, IP output, and EAS input.

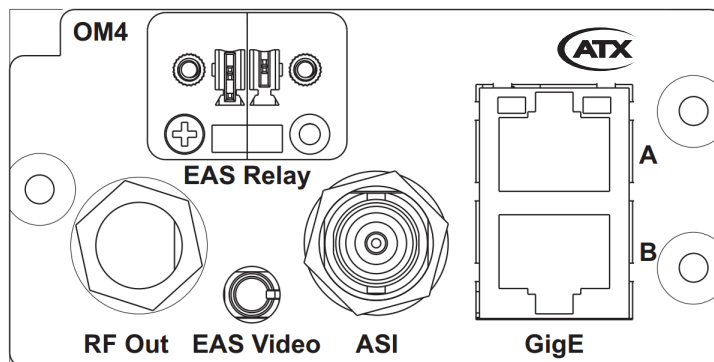


Figure 16: OM4 Output Module

**OMI**

The OMI module supports ISDB-T and IP output.

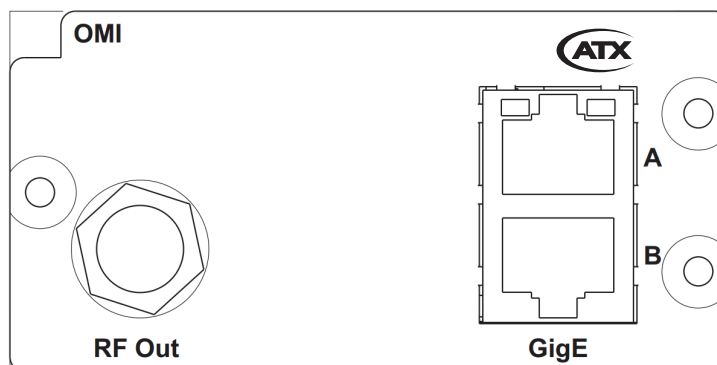


Figure 17: OMI Output Module

**OMI-Tb**

The OMI module supports ISDB-Tb output and IP output.

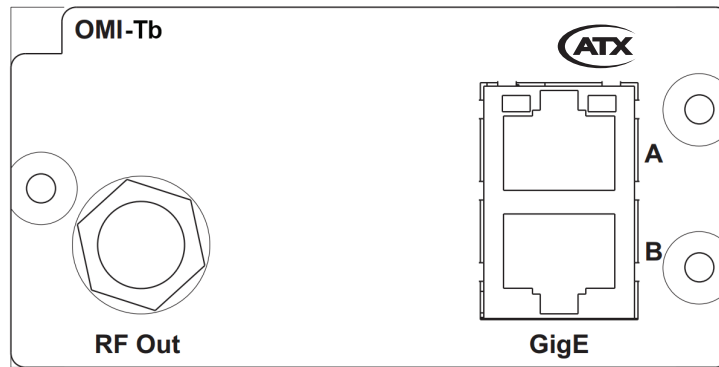


Figure 18: OMI-Tb Output Module

**Chassis**

The chassis includes the power supply, front panel interface, cooling, and backplane systems. The backplane provides power to all the modules as well as routing of data between modules

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## PD1000 WEB CONTROL

### 6. PD1000 Web Control

#### 6.1 Overview

The PD1000 series Web Control allows the user to control the unit via a local area network by using a Web Browser.

To view or control the unit, you need to know the IP Address of the unit's network management port (found on the front panel) and you must be on the same network. Launch the Web browser, type in `http://IP Address` on the address bar of the browser. The IP Address is in the form of `XXX.XXX.XXX.XXX`. This is the number representing the IP Address of the unit. If needed, refer to "Section 7.1.2 – IP Address" for information on how to view the IP Address locally.

When you browse your unit on the Web for the first time, the Home Page window will be displayed. In order to access the other PD1000 pages please enter the user name and the password stored within the unit. The default name and password are:

**Username:** username

**Password:** password

If you forget your username and password, go to the unit and navigate to the Unit Settings front panel menu, then to the Password Reset menu (see chapter 7 [7.2.2] for front panel operation). The default names noted above will replace your prior contents when you reset username and password in this menu.

The login will remain in place until you close the PC browser, even if you power down the PD1000 and power it up again.

Basic navigation is similar to web pages.

- A columned list on the left of every page allows users to click on a link to go to the selected pages, such as the "Home" page.



**IMPORTANT:** To apply the setting you may have changed by selecting a list item or by entering numbers directly, you **MUST** click on the "SAVE" or "APPLY" button. The PC will send the data from the changed page to the PD1000's web server and the PD1000 will return a fresh page showing the changes. Any changes not shown on the refreshed page were not accepted and will be accompanied by an error warning to explain the condition.

If you have no response from the PD1000 while a PC browsing session is active, try clicking on the links on the left column to determine if the PD1000 server is communicating. If not, possible causes may include:

- Older browsers not compatible with current web methods. Use of Safari®, Internet Explorer 7, or earlier versions will result in indeterminate results including wrong page presentation (text and graphics in wrong location) or failure to present the pages at all. Internet Explorer 8 or later, Firefox, Chrome, and other common browsers have been tested and are supported by the PD1000.
- The PD1000 has been commanded to reset to factory defaults or to reboot or has rebooted itself (rarely) as a result of an internal fault. These actions may take as much as 30 seconds, and so you should retry in a short time.
- The wired link is lost due to an unplugged Ethernet jumper, or due to switches, routers etc. failing or being powered off. Users familiar with networking might "ping" the PD1000 address to confirm connectivity. In Windows®:
  - Click START.
  - Click RUN.
  - Type CMD and press Enter.
  - At command line prompt, type "ping XXX.XXX.XXX.XXX", where XXX.XXX.XXX.XXX is the IP Address of PD1000 unit.
- Using Static IP Address on a network with DHCP enabled is likely to create a conflict between your PD1000 or PC and another device that was given the same address.
- DHCP lease of IP Address has been lost in the local network. Check the front panel for an address matching the one used in the browser address bar.

## 6.2 Home Page (Overall Status)

The Home Page displays the overall status of each of the different encoders and QAM ports of the PD1000, as well as the overall environmental health of the unit. The other pages of the website are available once logged in using the login window on the upper right of the Home Page. The initial factory default user name is “username” (case sensitive) and the default password is “password” (also case sensitive). These may be changed once logged in on the Unit Settings page. After logging in, choosing “Begin Setup” under quick setup displays the Configure Page.

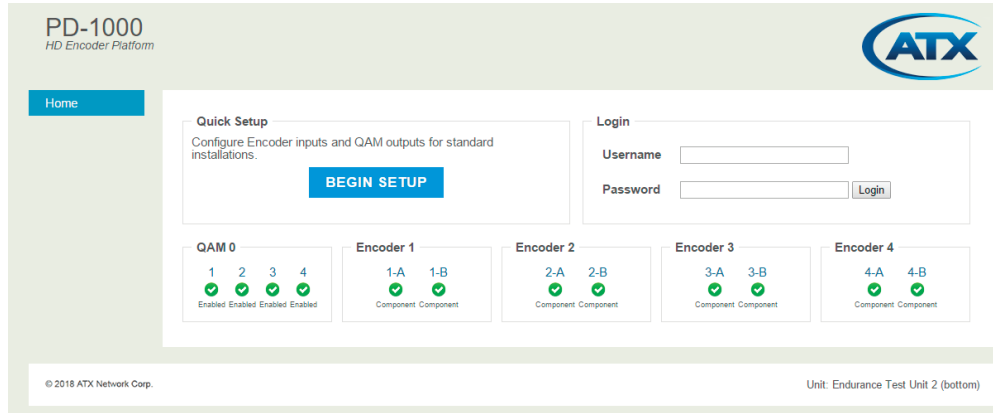


Figure 19: Home Page for The PD1000 (Not Logged In)



**NOTE:** Anyone who has the IP address can view the status on the home page to determine if icons show green or red, but login is required to make changes or view details.

## 6.3 Configure Page

The Configure page as shown in the following figure allows users to quickly configure the PD1000 for a typical installation. This page can be accessed by selecting the Configure button. This page allows the user to configure the inputs and outputs and to see the summary status of each encoder. The starting QAM channel can also be configured here along with enable/disable of the EAS feature. Along the right side of the page are the statuses of the encoder boards as well as QAM channel statuses.

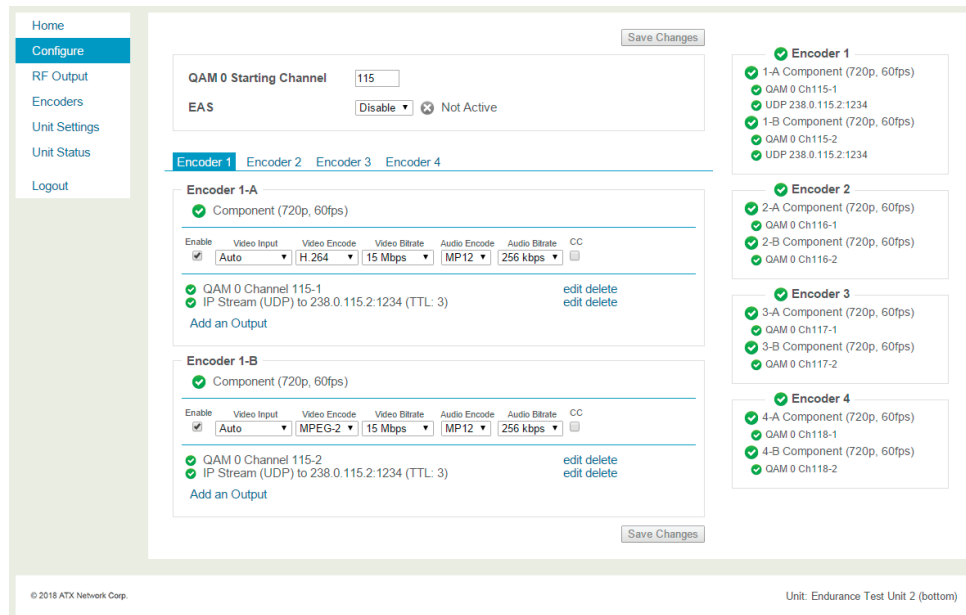


Figure 20: OM4 Configure Page (EM-2HD Encoders Shown)

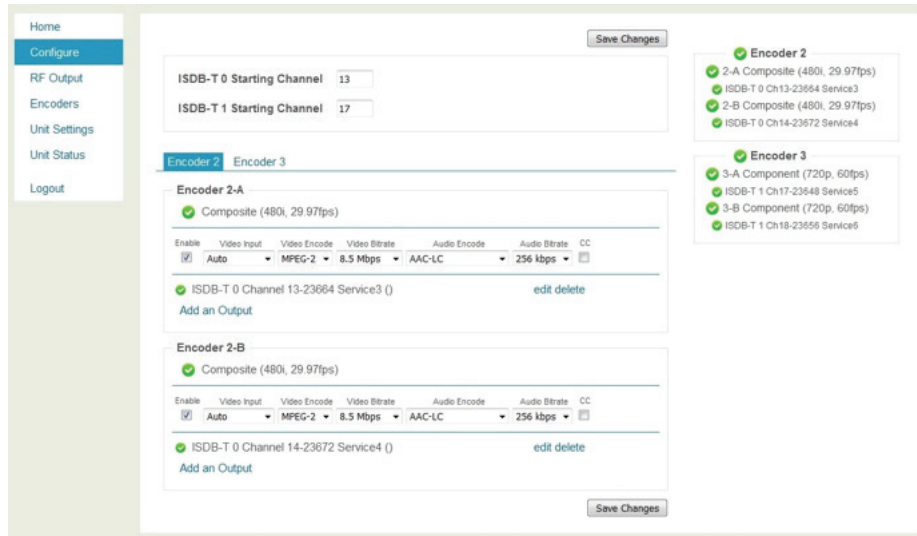


Figure 21: OMI Configure Page (EM-2HD Encoders Shown)

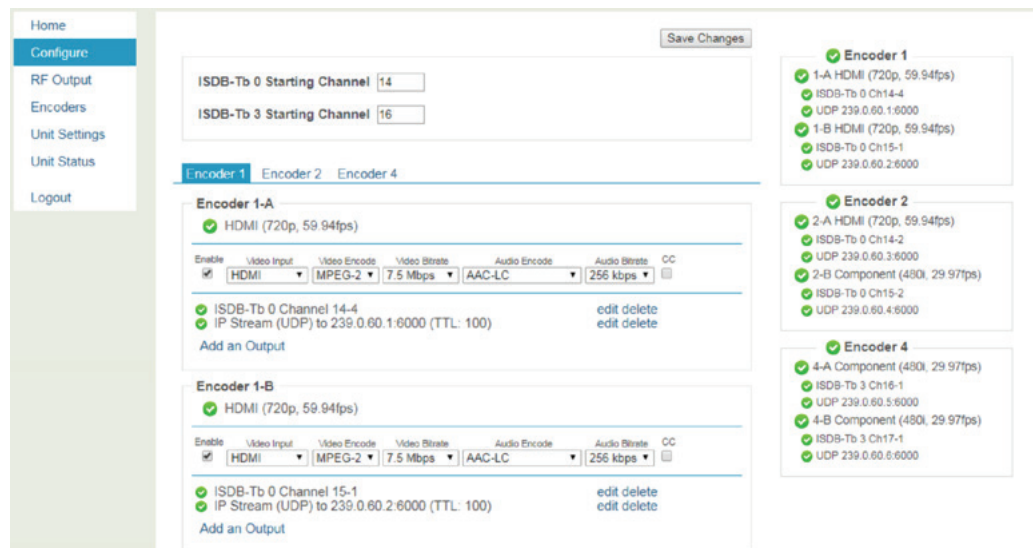


Figure 22: OMI-Tb Configure Page (EM-2HD Encoders Shown)

The Configure Page displays a list of encoder statuses and video encoding settings. This page also allows the user to configure the input sources for each port.

The QAM 0 Starting Channel provides the first of four RF channels that are used to output on the QAM output. There are two instead of four channels for ISDB-T and ISDB-Tb (per OMI/OMI-Tb).

The EAS feature can be either Disable/Enable and if enabled, the icon and text will indicate whether it is currently active as set by the contacts on the OM4 module.

Encoding options are:

#### Video Input

- a. EM-2HD:
  - i. Auto – encoder automatically synchronizes to any of the three video inputs: Component, HDMI or Composite
  - ii. Component – use the component input and analog audio
  - iii. Composite – use the composite input and analog audio
  - iv. HDMI – use the HDMI input which also includes audio
- b. EM-HD-SDI:
  - i. HD-SDI – use the HD-SDI input which also includes audio

**Video Bitrate** – selects the maximum bitrate for the video compression. SD video formats are limited to 15 Mbps

**Video Encode**

- a. H.264 – use H.264 compression for the video encoding
- b. MPEG-2 – use MPEG-2 compression for the video encoding

**Audio Encode**

- a. Dolby D St Creator – use Dolby Digital Stereo Creator for the audio compression. This option is available in the EM-2HD/D and EM-HD-SDI modules.
- b. MP12 – use MPEG-1 Layer 2 for the audio compression.
- c. AAC-LC – use MPEG-2 low complexity audio compression (good for low bitrate applications).
- d. AAC-HE – High Efficiency audio profile that uses spectral band replication (SBR) for better compression efficiency.
- e. AAC-HE v2 – Combines SBR with Parametric Stereo (PS) for better compression efficiency for stereo sources.

**Audio Bitrate** – available bitrate options are in the pulldown menu.



**NOTE:** You must click on save changes at the bottom of the page to make these selections active. If you move to another page and return without clicking “apply”, the entered values will be forgotten and the display will revert to the prior values.

### 6.3.1 Adding an Output

To add an Output click on the “Add an Output” button, a menu below the encoder will appear as shown in the following two figures. Up to one QAM and IP output can be added for each Encoder channel. For ISDB-T and ISDB-Tb units with multiple OMI/OMI-Tb cards, select the appropriate module in the Output Module dropdown option.

Encoder 1 **Encoder 2** Encoder 3 Encoder 4

**Encoder 2-A**

✓ Component (720p, 60fps)

Enable ☒ Video Input Auto Video Encode MPEG-2 Video Bitrate 15 Mbps Audio Encode Dolby D St Creator Audio Bitrate 256 kbps CC ☐

✓ QAM 0 Channel 116-1 [edit](#) [delete](#)

Output Type QAM

Output Module QAM 0

Channel 116 - 1

Enable Virtual Channel ☐

Virtual Channel Name

Virtual Channel Number 0 optional

[Save](#) or [Cancel](#)

Figure 23: OM4 - Adding a QAM Output

Encoder 2 Encoder 3

**Encoder 2-A**

✓ Composite (480i, 29.97fps)

Enable	Video Input	Video Encode	Video Bitrate	Audio Encode	Audio Bitrate	CC
<input checked="" type="checkbox"/>	Auto	MPEG-2	8.5 Mbps	AAC-LC	256 kbps	<input type="checkbox"/>

Output Type: ISDB-T

Output Module: ISDB-T 0

Channel: 13 - 23664

Service Number: 1

Service Name: Service3

Service Provider:

Save or Cancel

Figure 24: OMI – Adding an ISDB-T Output

Encoder 1 Encoder 2 Encoder 4

**Encoder 1-A**

✓ HDMI (720p, 59.94fps)

Enable	Video Input	Video Encode	Video Bitrate	Audio Encode	Audio Bitrate	CC
<input checked="" type="checkbox"/>	HDMI	MPEG-2	7.5 Mbps	AAC-LC	256 kbps	<input type="checkbox"/>

Output Type: ISDB-Tb

Output Module: ISDB-Tb 0

Channel: 14 - 4

Save or Cancel

Figure 25: OMI-Tb - Adding an ISDB-Tb Output

The user can select which encoding channel is mapped to the RF output channel by using the pulldown. The four valid options are provided based upon the starting QAM channel configured above. The virtual channel feature (enabled by the checkbox) provides to the user the ability to remap an encoded service from one its physical channel to one that the TV will use for this channel. This also includes the ability to set a channel name. The virtual channel can either be a single channel number (e.g. 48) or a multi-value number (e.g. 48-2).



**NOTE:** Virtual Channel feature only works on the OM4

Encoder 1 Encoder 2 Encoder 3 Encoder 4

**Encoder 2-A**

✓ Component (720p, 60fps)

Enable	Video Input	Video Encode	Video Bitrate	Audio Encode	Audio Bitrate	CC
<input checked="" type="checkbox"/>	Auto	MPEG-2	15 Mbps	Dolby D St Creator	256 kbps	<input type="checkbox"/>

✓ QAM 0 Channel 116-1 [edit](#) [delete](#)

Output Type: IP Stream

IP Mode: UDP

Destination IP:

Destination Port:

TTL (Multicast only):

Save or Cancel

Figure 26: Adding an IP Output

The IP output mode is configured for RTP/UDP, UDP, or TRSP (uses RTP). See section 5.1 for more details on the IP output mode.

For IP output, the destination IP (either unicast or multicast) and port number must be entered. For multicast output (IP range 224.0.0.0 to 239.255.255.255), the TTL value also needs to be entered. Valid port values for unicast or multicast are typically in the 1025 to 65535 range, but ports need to be selected that do not clash with other ports in use by the receiving devices.

When configuring the IP Output, some considerations must be taken into account:

- RTSP/RTP/UDP: A valid IP address must be present under the Unit Settings page (see Figure 7)
  - RTSP: The “Destination IP”, “Destination Port”, and “TTL” boxes are blanked out if this option is selected (see Figure 27), since these are configured via RTSP.
1. For RTSP, the remote connection command on the client will be:
    - [rtsp://”PD1000\_IP\_ADDR”/PD1000/EncoderSlot-EncoderIndex]
      - PD1000\_IP\_ADDR is data IP address of the PD1000 unit (e.g 10.0.1.100) and can optionally include the port (554): 10.0.1.100:554
      - EncoderSlot - slot of encoder (1-4)
      - EncoderIndex - index of encoder on board (A or B)
      - **Full example: rtsp://10.0.1.100:554/PD1000/3/B**
    - Commands without the PD1000 or without valid Encoderslot and Encoderindex shall be rejected and the requestor notified that there is an error. Encoderslot is valid for the range 1-4 and also is checked against currently installed and working/valid encoder boards.
  2. **Only one RTSP session shall be allowed per encoder.** If a current RTSP connection is active for an encoder, then any other requests shall be “rejected”. Bandwidth/resources are limited and so need to limit to one connection. Needs to recover/ detect from client going away. This will be done with RTCP receive messages from the client.
  3. Only support RTSP on data IP address and so use data IP Ethernet port (B)
  4. Only support unicast on RTSP since multicast is not really meant for RTSP (see RFC for RTSP) and current clients (VLC, openRTSP) do not support multicast. OpenRTSP says it does but does not supply a multicast address. Note that RTP multicast is still supported via 2.2 above which is sufficient.

The screenshot shows the 'Encoder 2-A' configuration page. At the top, there are tabs for Encoder 1, Encoder 2 (selected), Encoder 3, and Encoder 4. Below the tabs, the 'Encoder 2-A' section is active. It includes a green checkmark and the text 'Component (720p, 60fps)'. Below this is a row of settings: 'Enable' (checked), 'Video Input' (Auto), 'Video Encode' (MPEG-2), 'Video Bitrate' (15 Mbps), 'Audio Encode' (Dolby D St Creator), 'Audio Bitrate' (256 kbps), and 'CC' (unchecked). Below this is another green checkmark and the text 'QAM 0 Channel 116-1' with 'edit delete' links. The 'Output Type' is set to 'IP Stream' and 'IP Mode' is set to 'RTSP'. Below these are three empty text boxes for 'Destination IP', 'Destination Port', and 'TTL (Multicast only)'. At the bottom are 'Save' and 'Cancel' buttons.

Figure 27: RTSP IP Output Configuration Setting

## 6.4 RF Output Page

### QAM

The RF Output Page displays the QAM channel statuses, starting channel, QAM configuration, output level, and QAM TSID (MPEG-2 transport stream ID). The QAM channels may be muted either individually by checking the “Mute” box next to the desired channel. A drop down menu with appropriate selections will be populated when selecting Configuration and Output Level. The section “QAM Channels” displays individual QAM channel status, mute status, channel, and frequency. To change the starting channel, enter the desired channel number into the “Starting Channel” text box and choose “Save Changes”. The



TSID can be set between 0 and 65535 and should be different for each RF channel. Default values are listed and should be sufficient for most applications. Setting the TSID is an advanced feature.

Home  
Configure  
**RF Output**  
Encoders  
Unit Settings  
Unit Status  
Logout

QAM 0 Save Changes

Configuration: Annex B 256-QAM ▼

Starting Channel: 115

Output Level: 49 dBmV ▼

QAM Channels

	Status	<input type="checkbox"/> Mute	Channel	Frequency	TSID
1	✓	<input type="checkbox"/>	115	741 MHz	49267
2	✓	<input type="checkbox"/>	116	747 MHz	49268
3	✓	<input type="checkbox"/>	117	753 MHz	49269
4	✓	<input type="checkbox"/>	118	759 MHz	49270

Save Changes

Figure 28: The QAM Output Page

### ISDB-T

When using an OMI card instead of an OM4, this page will show additional parameters specific to ISDB-T output. Like QAM, you will see the Status, Channel, and Frequency settings with the ability to set the starting channel, output level, TSID and mute the channels. These parameters are configured just as the QAM options. In addition to the QAM features, ISDB-T adds specific Japanese variables such as the Remote Control ID, Region ID, Broadcaster ID, Network ID, Network Name, TS Name, and Area Code. The Remote Control ID, Region ID, and Broadcaster ID can be selected using the drop down menu button for each parameter. Both the Network ID and the TSID must be set between 0 and 65535 while the Area Code must be set within 1 and 4093. If you have a second OMI card in the chassis, you can set the parameters for that card by clicking on the appropriate tab above the Starting Channel parameter. Default values are listed and should be sufficient for most applications. Setting the TSID is an advanced feature. These parameters conform to the Japanese ARIB tables specifications.

Home  
Configure  
**RF Output**  
Encoders  
Unit Settings  
Unit Status  
Logout

ISDB-T 0 ISDB-T 3 Save Changes

Starting Channel: 13

Output Level: 98 dBuV ▼

ISDB-T Channels

	Status	<input type="checkbox"/> Mute	Chan	Freq	Remote Control ID	Region ID	Broadcaster ID	Network ID	TSID	Network Name	TS Name	Area Code
1	✓	<input type="checkbox"/>	13	473 MHz	11 ▼	Tokyo ▼	0 ▼	7E8E	7E8E	Network1	TS1	2732
2	✓	<input type="checkbox"/>	14	479 MHz	12 ▼	Tokyo ▼	P ▼	7E8F	7E8F	Network2	TS2	2732

Save Changes

Figure 29 - The ISDB-T Output Page

### ISDB-Tb

The RF Output page displays the ISDB-Tb channel statuses, starting channel, ISDB-Tb configuration, output level and ISDB-Tb TSID (MPEG-2 transport stream ID). The ISDB-Tb channels may be muted either individually by checking the "Mute" box next to the desired channel. A drop down menu with appropriate selections will be populated when selecting Configuration and Output Level. The section "ISDB-Tb Channels" displays individual ISDB-Tb channel status, mute status, channel, and Frequency. To change the starting channel, enter the desired channel number into the "Starting Channel" text box and choose "Save Changes". The TSID can be set between 0 and 65535 and should be different for each RF channel. Default values are listed and should be sufficient for most applications. Setting the TSID is an advanced feature. If you have a second OMI-Tb card in the chassis, you can set the parameters for that card by clicking on the appropriate tab above the Starting Channel parameter.

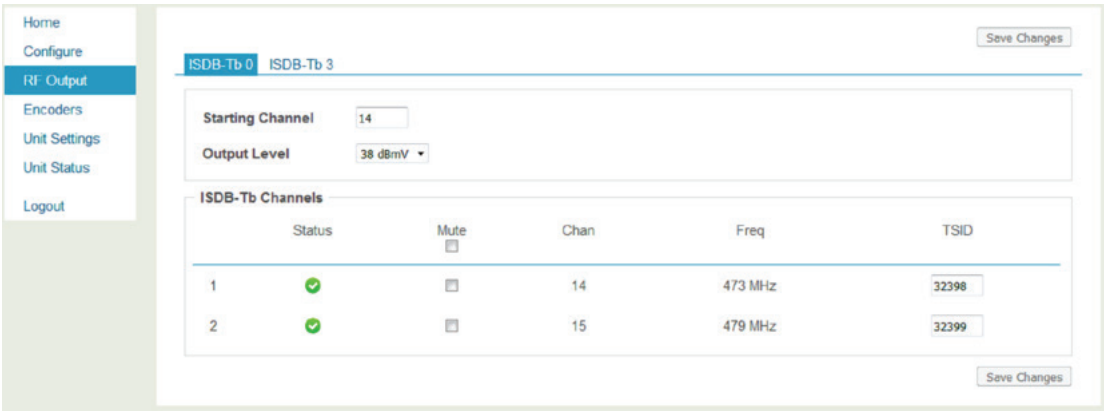


Figure 30: The ISDB-Tb Output Page

6.5 Unit Settings Page

The Unit Settings Page supports the viewing and, as appropriate, the editing of the logistics settings for the PD1000 unit. This Page consists of three web pages: General information, IP Address information, and Unit Maintenance. These pages may be selected using the tabs at the top of this page.

6.5.1 General Tab

The General tab allows you to view the unit’s serial number, view (or set) the unit’s name, view the date and time, and edit the login username and password.

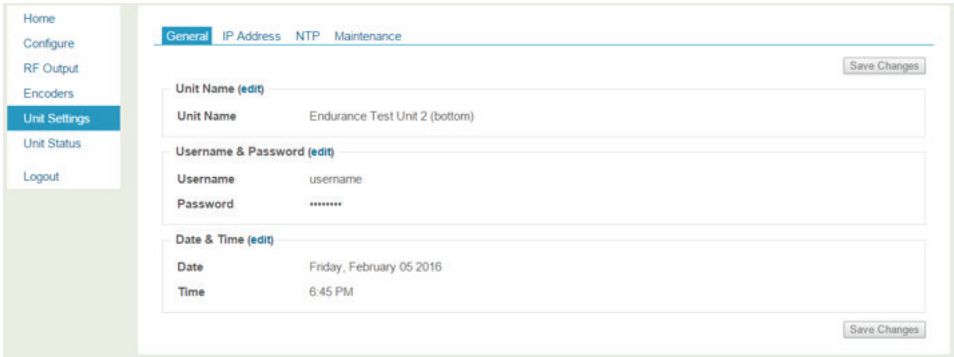


Figure 31: Unit Settings Page with The General Tab Open

The Username and password are restricted to alphanumeric characters and may not be more than 16 characters in length. Please record your new password & username and store them in a safe place. You may reset the username and password from the front panel if you forget them. Refer to Chapter 6, Section 1: Overview.

6.5.2 IP Address Tab

The IP Address tab allows you to view the unit’s Management Interface and Data Interface settings including each interface’s DHCP mode (Management Interface only), IP Address, Subnet Mask, and Gateway IP. The following figure shows a sample IP Address tab display. To change either the management interface or data interface click the edit button, enter desired settings, and click the “Save Changes” button.



**NOTE:** DHCP mode must be disabled to set a static IP address.



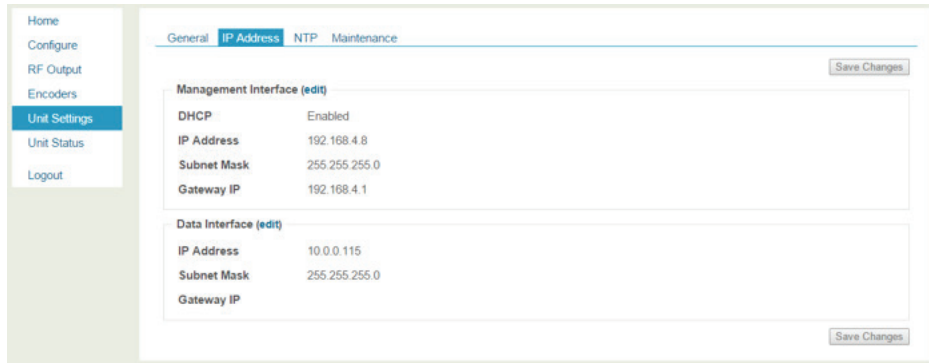


Figure 32: Unit Settings Page with the IP Address Tab Open

### 6.5.3 NTP Timer Server

The NTP TAB supports an NTP Time Server which allows the user to configure an external time clock for synchronizing the system. To make changes to the Primary and Secondary Addresses, select the 'edit' text, followed by the Save Changes button to complete the process.

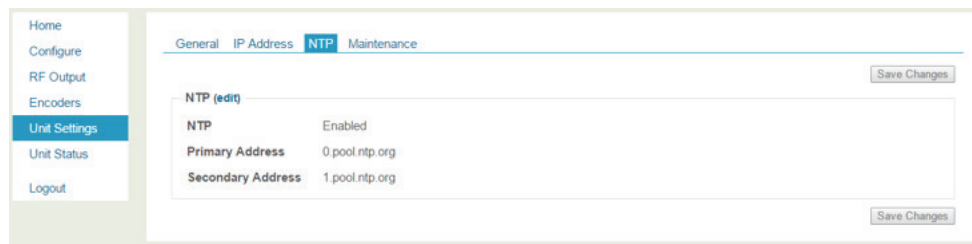


Figure 33: NTP Status Page

### 6.5.4 Maintenance Tab

The Maintenance tab allows the user to view the current software version, and to reboot the unit, restore factory default settings, and upgrade the internal firmware. Note that using the “Reboot System”, the “Restore Default Settings” or “Update & Restart” buttons will result in a red highlighted warning that indicates these actions will interrupt the unit’s operation and the RF Output. In addition, resetting the factory defaults will most likely change the unit’s current configuration.

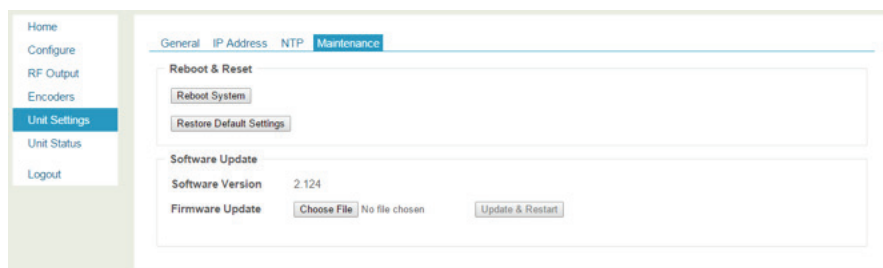


Figure 34: Unit Settings Page with the Maintenance Tab Open

If you click on Restore Default Settings, all previous settings will be lost and the unit will be restored to its factory default configuration except for:

- Username and password
- Network configuration
- Unit name

If updated firmware is available, you may copy that firmware file into a convenient folder on your PC, browse to that folder from this page, highlight the file name, and then click the Update & Restart button. The output of the PD1000 will be muted for

approximately 30-45 seconds during the restart portion of this process. If upgrading from any version below 2.205, the output may be out for as long as 10 minutes while the unit finishes the update process.

6.6 Unit Status Page

The Unit Status Page shows each output module's serial number & version, as well as each encoder's current status, RF output status, serial number, and software version.

Details of the current environmental conditions (temperatures and fan tachometers) are also displayed. A yellow icon will be shown if a certain environmental parameter's warning limits are exceeded, while faults will show a red icon.

The Download System Snapshot can be used to provide ATX a current snapshot of the PD1000 that can be used to troubleshoot and diagnose any issues. The Download System Snapshot will take about one minute to complete and will cause some browsers to time out. The browser will eventually recover and provide the downloaded file that should be sent to ATX.

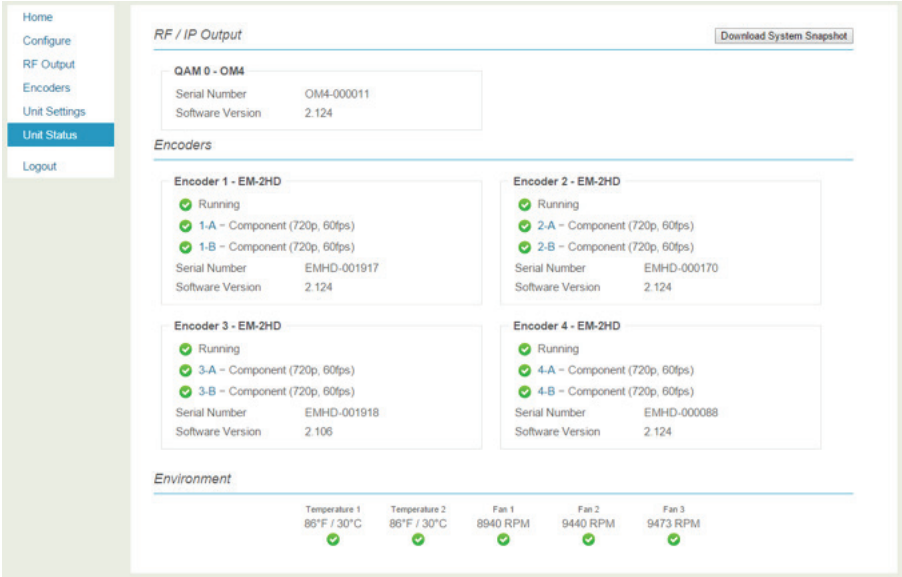


Figure 35: Unit Status Page

## PD1000 FRONT PANEL CONTROL

### 7. PD1000 Front Panel Control

The front panel can be used to monitor or configure the unit as well as the web pages approach in the prior chapter. The restrictions on the number of characters in the front panel display require each parameter to have its own menu to select or view the current status of the parameters. Users must navigate down a “tree” or menus under the major topics to find the menu(s) or interest. The menu tree is organized from a top “home” menu where the unit returns after a period of no user input to the lowest menu that selects or displays a parameter.

```

ATX NETWORKS
PD1000
  
```

*Home Menu (top of menu tree)*

The menu tree has been divided into the following major areas: Network Setup, System Control, Status, and Start Channel. There are menu map foldouts later in the manual.

From the Home Menu, press down (or up) to see the Main Menus, and then press the Right or Left button to move among the Main Menus.

```

Network Setup
192.168.5.124
  
```

*First Main Menu group (after pressing the Down arrow button in Home menu)*

The following sections describe the items that can be viewed or configured within these front panel menus.

#### 7.1 Network Setup

The Network Setup Menu displays the available networking options. The settings under this menu include: DHCP, IP Address, and Subnet Mask.

##### 7.1.1 DHCP

The main screen for the DHCP Menu will appear as follows:

```

DHCP
Enabled
  
```

To change this value, press the Enter button. The DHCP mode can be configured using the Left-Right buttons to select either Enabled or Disabled. Press the Enter button to accept and save the entry.



**NOTE:** Ensure your PD1000 and PC are not on a network with a DHCP server to avoid conflicts.

##### 7.1.2 IP Address

The current IP Address can be viewed using the Left/Right Arrow Buttons in the DHCP Menu. The LCD screen will display an output similar to the following:

```

IP Address
192.168.0.176
  
```

To edit this value, the DHCP mode has to be disabled. If DHCP is disabled, the Enter button may be pressed to enter the EDIT mode. The IP Address bytes can be selected using the Left and Right Buttons and the individual byte values can be set using the Up and Down buttons to cycle through the byte values from 0 to 255. NOTE: Use an IP address close to (on same subnet) as the PC with which you will communicate with the PD1000.

```

IP Address
192.168.0.176
  
```

Pressing the Right button results in the following display:

```
IP Address
192.168.0.176
```

Pressing the Up button results in the following display:

```
IP Address
192.169.0.176
```

Once the desired IP address is displayed, press the Enter button to accept the current setting.

To abort, press the Back button.

### 7.1.3 Subnet Mask

The current Subnet Mask can be viewed as the next submenu item in the DHCP Menu.

The LCD screen will display an output similar to the following:

```
Subnet Mask
255.255.255.0
```

In order to edit this value, the DHCP mode has to be disabled. If DHCP is disabled, the Enter button should be pressed to enter the EDIT mode. In general, LIST-EDIT mode is used to cycle through all of the valid Subnet Mask values. The list of these values is shown below.

0.0.0.0	128.0.0.0	192.0.0.0	224.0.0.0
240.0.0.0	248.0.0.0	252.0.0.0	254.0.0.0
255.0.0.0	255.128.0.0	255.192.0.0	255.224.0.0
255.240.0.0	255.248.0.0	255.252.0.0	255.254.0.0
255.255.0.0	255.255.128.0	255.255.192.0	255.255.224.0
255.255.240.0	255.255.248.0	255.255.252.0	255.255.254.0
255.255.255.0	255.255.255.128	255.255.255.192	255.255.255.224
255.255.255.240	255.255.255.248	255.255.255.252	255.255.255.254
255.255.255.255			

## 7.2 System Control

The System Control menu allows the unit's basic identification parameters to be viewed, the global unit settings to be viewed or configured, and the unit's basic maintenance functions to be performed.

### 7.2.1 Reboot System

The next submenu item in the Unit Settings Menu allows the user to reboot the unit. During troubleshooting, the reboot is a quick method to ensure that no abnormal operating conditions exist. It is similar to a power cycle but quicker. No password or other configuration is changed. The LCD screen will display the following output:

```
Reboot System
```

In order to reboot the unit, the Enter button should be pressed. A verification message will be displayed:

```
Reboot System
ARE YOU SURE?
```

Pressing the Back button will abort the edit process while pressing the Enter button will cause the unit to restart. The following message is displayed:

```
Resetting Unit
Please Wait...
```

### 7.2.2 Reset Username & Password

The next submenu item in the Unit Settings Menu allows the user to reset the login username and password to its default value (The default values are “username” and “password” all lower case). The LCD screen will display the following:

```
Reset Username
& Password
```

In order to reset the password, the Enter button should be pressed. A verification message will be displayed:

```
Reset Password
ARE YOU SURE?
```

Pressing the Enter button will reset the password while hitting the Back button will abort the edit process.

### 7.2.3 Factory Reset

The next submenu item allows the user to restore the unit's settings to their factory defaults. The LCD screen will display the following:

```
Factory Reset
```

In order to restore the factory defaults, the Enter button should be pressed. A confirmation message will be displayed:

```
Factory Defaults
ARE YOU SURE?
```

Pressing the Back button will abort the edit process while pressing the Enter button will restore the factory defaults and cause the unit to restart. The following message is displayed:

```
Resetting Unit
Please Wait...
```

All previous settings will be lost and the unit will be restored to its factory default configuration. Username and password are not changed during this procedure, but IP addresses are returned to default values of 0.0.0.0. If DHCP is enabled, the management port will receive a new address, but it may be changed from the prior address. You must either find the new IP address on the Network Setup menu or disable DHCP and enter a new static IP configuration for the management port.

### 7.2.4 Serial Number

The OM4's or OMI's serial number can be viewed as the next submenu item under the Unit Settings Menu. The LCD screen will display an output similar to the following:

```
Serial Number
1095-000007
```

This value cannot be edited.

It is possible to have a second OMI or OMI-Tb module installed. The serial number is located in the 'Slot 1 to 4' menu after selecting the down arrow (or Enter button).

#### Second OMI Installed

```
Slot 1
OMI-000011
```

### 7.2.5 Encoder Cards

The unit's encoder cards are listed in this menu, and can be viewed by pressing Left/Right arrow buttons after selecting the down arrow (or Enter button). The LCD screen will display an output similar to the following:

**EM-2HD**

Slot 1 to 4

**EM-2HD**

Slot 1  
EMHD-000104

**EM-HD-SDI**

Slot 1  
EMSDI-000104

**7.2.6 Version**

The current software version can be viewed as the next submenu item under the Unit Settings Menu. The LCD screen will display an output similar to the following:

Software Version  
2.161

The value on the LCD screen is the current firmware version and cannot be edited.

**7.2.7 LCD Contrast**

The current unit's LCD contrast level can be viewed as the next submenu item in the Unit Settings Menu. The LCD screen will display an output similar to the following:

LCD Contrast  
200

This value can be edited by pressing the Enter button and pressing Up/Down buttons. Valid values are from 40 to 200, and as the value is changed the LCD contrast will reflect the changed value. The new value will not be saved into non-volatile memory until the Enter button is pressed. Pressing the Back button will abort any changes. Note that the net effect is to change the angle (up/down) from which the best contrast is viewed, so adjust this after setting the unit in a rack for your ease of reading in use.

**7.3 Start Channel**

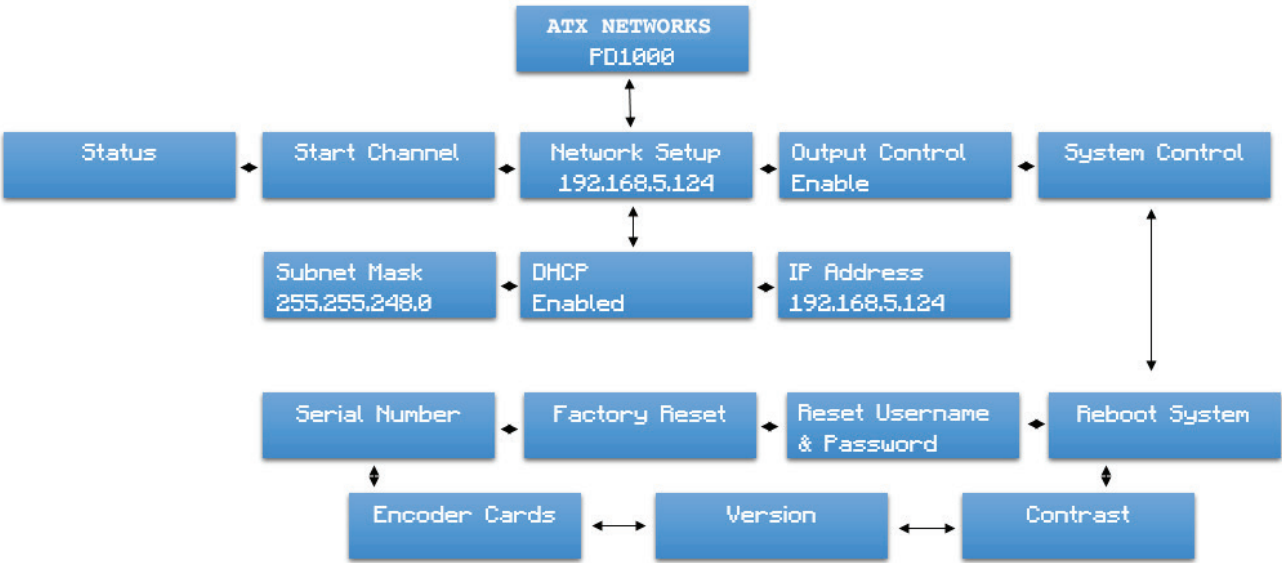
The Start Channel menu allows the user to determine the starting channel of the RF output.

Start Channel  
10

To edit the start channel, press Enter to enter edit mode and use the Left/Right arrow buttons to change the value.

**7.4 Front Panel Menu Tree**

The following section provides drawings of the PD1000 menu tree.



Front Panel Menu Tree Diagram

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## APPENDIX A. INSTALL CONSIDERATIONS

### 8. Appendix A. Install Considerations

#### 8.1 Rack Mounting

The unit is designed for installation in an EIA standard 19-inch (480 mm) equipment rack. When mounting in the rack, use pan or round head screws and soft washers in all four front panel mounting locations. This ensures a secure mount for the relatively deep size of the unit. You must supply screws matching your rack.

To prolong service life, pay special attention that the environment in which the unit is being used is as free of dust and other airborne particles as possible.

Make sure the unit is operated in a moderate temperature environment. Fans in the PD1000 are speed controlled and will last longest when spinning slower. Never place a unit near a heat source. Do not install a unit in areas of extremely high humidity or where there is any danger of water or condensate dripping into or on the unit.

Allow a 1.75-inch (1RU) air gap above and below receivers for cooling purposes. However, you may install the PD1000 units with no air gap between them and have reliable operation. All air flow is from right side panel (intake) to left side panel (exhaust). The left and right side panels must remain unobstructed with at least 2 inches of clearance on either side. Never install multiple PD1000's or any other equipment units in such a way that the air intake from one unit directly aligns with the outlet of another.

The PD1000 unit includes a temperature sensor that can trigger alarms if it is over temp. This is intended to allow you to observe a fan failure, if it occurs, but is not a suggested "limit" for temperature operation. Long-term reliability is best obtained with consistently cool environments.

#### 8.2 EAS Contact Closure (OM4 Only)

The rear panel on the OM4 provides a contact closures that may be used to trigger the PD1000 to enable an EAS video to be output on the QAM RF channels instead of the currently input audio/video on the EM-2HD/EM-HD-SDI modules. The user may select the mode of operation on the web pages so that the PD1000, when these contacts are shorted together (one signal and one ground connection), will a) take no action, or b) cause a user pre-selected input to be substituted for all program on all QAM ports

#### 8.3 Applying Power

The PD1000 may be operated with none of the typical audio/video connections hooked up to start, or in any configuration up to all of the connections, without harm to the unit.

Make all input and control connections, but not the QAM or ISDB-T/ISDB-Tb output connections to your output device, and then power the unit. This is recommended due to possible errors that may have occurred during setup that may interfere with existing programming, even though the factory default is "muted" on all outputs on all streams.

Using the supplied cord, connect from the PD1000 rear panel power to an AC mains with power within the specified limits. Using a circuit with grounding prongs intact and properly grounded is recommended. Under no circumstances should the grounding prong be removed in order to be used in a non-grounding prong outlet. This can lead to unit failure, possible electrocution, and a void in warranty.

#### 8.4 External Powering (PD1000 Only)

An external +12VDC 10A rated power supply will support the basic PD1000 function if the internal power supply fails. The power source shall be a safety approved power supply. Assuming your external source is sized to support the PD1000, the unit can operate indefinitely from external powering with no detriment, until you find a suitable time to make repairs. If you construct your own cable to use another power source, ensure the voltage limits are observed and use Molex 19-09-1029 receptacle and (qty=2) Molex 02-09-2101 terminals 20AWG.

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## REGULATORY COMPLIANCE

### 9. Regulatory Compliance

North America Emissions

- FCC Part 15 Subpart B Class B

European Emissions and EMC - Electromagnetic Compatibility Compliance

- EN55022 (2006) +A1 Class B
- EN55024 (1998) +A1 +A2
- EN61000-3-2 (2006) +A1 +A2
- EN61000-3-3 (2008)

North America Safety Compliance - Certified from NEMKO with NRTL Marking

- UL 62368-1 3rd ed.
- CAN/CSA-C22.2 NO. 62368-1-19 (3rd ed.)

European Safety Compliance - Certified from NEMKO with N Marking

- IEC 62368-1:2018

Japan Safety Compliance

- PSE Certified



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## SERVICE & SUPPORT

### 10. Service & Support

#### 10.1 Contact ATX Networks

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

##### TECHNICAL SUPPORT

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

##### SALES ASSISTANCE

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

##### FOR HELP WITH AN EXISTING ORDER

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

#### 10.2 Warranty

##### 3 Year Gold Warranty

Three Year Gold Warranty means a unit is repaired or replaced free of charge the first year and repaired for a fee during the next two years. Please contact customer service for service rates.

**NOTE:** All units shipped back to the customer will be shipped at our expense via Federal Express 3 day.

##### Warranty Limitations

This warranty excludes coverage of damage or inoperability resulting from (1) use or installation other than in strict accordance with ATX's written instructions, (2) disassembly or repair by someone other than ATX or an ATX authorized repair center, (3) misuse, misapplication or abuse, (4) alteration, (5) lack of reasonable care or (6) wind, ice, snow, rain, lightning, power surges, excessive heat, or any other weather conditions or acts of God. ATX's warranty with respect to third-party proprietary sub-assembly modules and/or private-label products are limited to the duration and terms of third-party vendors' warranty. ATX shall in no event and under no circumstances be liable or responsible for any consequential, indirect, incidental, punitive, direct or special damages based upon breach of warranty, breach of contract, negligence, strict tort liability or otherwise or any other legal theory, arising directly or indirectly from the sale, use, installation or failure of any product acquired by buyer from ATX Networks. This limited warranty extends to the original purchaser and cannot be assigned or transferred to any other party without the prior express written permission of ATX, which permission ATX may withhold for any reason or for no reason at all. ATX reserves the right to modify or discontinue this warranty at ATX's sole discretion without notification. No other warranties are expressed or implied.

##### Damage or Shortage Claims

Our shipping staff carefully packs and ships your orders in compliance with common carriers' requirements. Please make note of any obvious damage or shortage on the freight bill or carrier's receipt next to your signature. The carrier's agent must also sign acknowledging the loss. Failure to do so may result in the carrier's refusal to honor the claim. Please open your order immediately upon receipt to check for concealed damage and compare the packing list to the items shipped. If damaged, keep the original shipping cartons for possible inspection by the carrier. You must report claims for loss or damage within 3 days of delivery, while claims for erroneous charges or price corrections must be presented within 30 days of invoice date.

### **Returning Shipped Items**

To return any shipped items, including those shipped for warranty repairs or credit, call our Customer Service desk to request a Return Merchandise Authorization (RMA) number. Please reference the original invoice number and purchase date, and product serial number (if any). Be certain to mark the RMA number on the package boldly and legibly. Unless we specify a different carrier, please ship your returned items to us via UPS freight prepaid and fully insured. If returned for credit, we will promptly process your request upon receipt of your return order.

### **Our Return Policy: Your Satisfaction Guaranteed**

Our goal is your complete satisfaction. If for any reason, our products were not what you anticipated, simply call your Sales Representative or ATX customer service and we will be happy to assist you in replacing or returning the order. You may return items for full credit, as long as they are returned within 30 days from the original invoice date and are unopened, undamaged and in their original boxes/packaging. Items returned within the 30 day period, but require repackaging, repair or recertification will be subject to fees of not less than 20% and not more than 50% of the original purchase price. These fees will be determined by the condition of the returned product and what is required in labor and materials to return them to original condition. After the 30 day period returns will not be accepted for credit.

Please note that all special order items are non-returnable.

Please contact your Sales Rep or call ATX's Customer Service for more information.

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