

Overview

The DTV-TX03-US Digital TV Transmitter (**FG1410-03**) is one component of an AMX TDS Television Delivery System. The AMX TDS system delivers digital TV and video signals across a privately provided IP network infrastructure. The DTV-TX03-US receives incoming ClearQAM or ATSC digital TV signals, and sends the digital TV content to the DTV Receiver located at the display (FIG. 1).

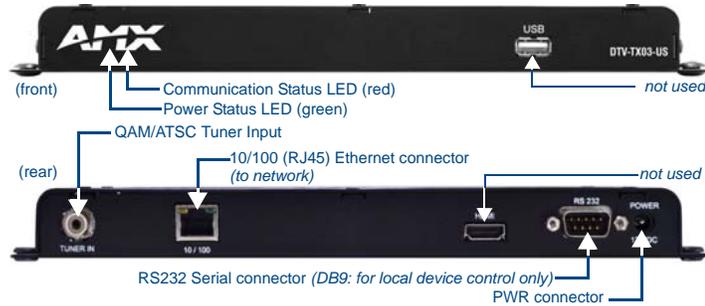


FIG. 1 DTV-TX03-US Transmitter

Product Specifications

DTV-TX03-US Transmitter	
Dimensions (HWD):	1" x 10.5" x 4.25" (2.54 cm x 26.67 cm x 10.76 cm)
Weight:	1 lb (0.45 kg)
Power:	<ul style="list-style-type: none"> Input Voltage 12VDC Power Dissipation 6-10 Watts
Tuners:	1 internal QAM/ATSC tuner
RF Input Level:	<ul style="list-style-type: none"> 950 - 2150 MHz -35 - -55 dBm
Front Panel Components:	
Status LEDs	<ul style="list-style-type: none"> Power Status LED (green): Communication Status LED (red):
USB Connector:	Reserved for future implementation.
Rear Panel Connectors:	
TUNER IN (RCA):	Accepts incoming QAM/ATSC signals. Note: Use the included Coax-to-RCA adapter on this connector.
10/100 (RJ45):	Standard 10/100 Network (RJ45) connector (see <i>Network Switch Requirements</i>).
HDMI:	Reserved for future implementation.
RS232 (DB9):	Serial connector for local command line interface (RS232 only).
POWER:	Barrel plug accepts 12VDC power from the included power supply. Note: This connector is intended to be used only with the provided power supply.
Operating Environment:	<ul style="list-style-type: none"> Temperature: 32°F - 122°F (0°C to 50°C) Humidity: 85% (Max relative humidity, non-condensing)
Certifications:	<ul style="list-style-type: none"> CE FCC part 15 Class A
Included Accessories:	<ul style="list-style-type: none"> 12V Power Supply Coax-to-RCA connector adapter
Other AMX Equipment:	<ul style="list-style-type: none"> DTV-MA01 TDS Management Appliance (FG1412-01) DTV-RX02-HD Receiver (FG1411-02) CC-232 Serial Communication Cable (FG10-752-04) DTV-RK-TX03 Rack-Mounting Kit (FG1410-61)

AMX TDS System Description

The AMX TDS system can be deployed in any installation where digital A/V broadcast over IP is desired, and delivers Digital TV and other encoded A/V signals to a number of TV sets, or desktop PCs.

System Components

The AMX TDS system consists of several components, including a DTV-MA01 TDS Management Appliance, Receiver (and IR Remote Controller), and Transmitter modules. See the *AMX TDS Operation/Reference Guide* for details.

Network Considerations

Because of the high bandwidth associated with A/V distribution, the TDS system is typically managed via a separate IT infrastructure. However, content may be streamed over the main network if desired. Consult your IT representative to determine the proper network configuration for the TDS system.

The AMX TDS system transmits audio/video using IP multicast. In order for this to work satisfactorily, it is vital that the network switches are multicast-enabled in order to prevent unwanted flooding of traffic on the network.

- Within the context of AMX TDS documentation, the term "Multicast-enabled" means that all network switches carry out IGMP snooping, and one switch must function as the IGMP querier.
- AMX Digital TV supports version 2 of IGMP.

Front Panel Components

Note: The USB Port on the front panel is not used at this time.

Status LEDs

The two status LEDs are located on the front panel, directly beneath the AMX logo

Status LEDs	
Power (green):	Lights to indicate that the unit is receiving power and is functional. If the LED fails to light, check your 12VDC Power connection.
Communication (red):	Lights to indicate that the Transmitter is connected to the network.

Rear Panel Components

TUNER IN

The TUNER IN (RCA) connector accepts incoming QAM/ATSC TV signals via coax cable (FIG. 2).



FIG. 2 TUNER IN

In order to use the TUNER IN (RCA) connector with coax cable, you must first install the included Coax-to-RCA adapter (see FIG. 5).

10/100 Port

The 10/100 (RJ45) port on the rear panel provides 10/100 BaseT network connectivity.

Network Port Pinouts and Signals

The following table lists the pinouts, signals, and pairing for the NETWORK port.

RJ45 Network Port Pinouts and Signals				
Pin	Signals	Connections	Pairing	Color
1	TX +	1 ----- 1	1 ----- 2	Orange-White
2	TX -	2 ----- 2		Orange
3	RX +	3 ----- 3	3 ----- 6	Green-White
4	no connection	4 ----- 4		Blue
5	no connection	5 ----- 5		Blue-White
6	RX -	6 ----- 6		Green
7	no connection	7 ----- 7		Brown-White
8	no connection	8 ----- 8		Brown

Consult the Network Administrator for correct cabling from the DTV-TX Transmitter onto the network.

- For remote connectivity, the Firewall may have to be configured to open port **2008** for remote connectivity over UDP.
- Ports **5000** and **5001** are required for the Transmitters as well as any ports used for the TDS Multicast stream.
- Ports **5002** and **5003** are fixed as the multicast stream output ports.

Ethernet LEDs

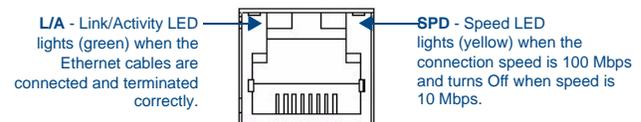


FIG. 3 Ethernet LEDs

Default IP Address

By default, DTV Transmitters are set to **DHCP**.

Network Switch Requirements

DTV-TX03-US Transmitters require a Layer 3 Gigabit Switch with multicast support, IGMP Querier/Snooping and PIM.

RS-232 Port

The RS-232 Port on the rear panel provides a serial interface that provides basic diagnostics and the ability to change the IP address, via a standard DB9 connector.

- Use a standard DB9 programming cable such as the CC-232 (FG10-752-04, not included) to connect to a PC for Terminal control.
- Supported terminal commands are listed in the *AMX TDS Operation/Reference Guide*.

Applying Power to the Transmitters

Each DTV-TX-03-US Transmitter receives 12 VDC power via the 12VDC POWER connector on the rear panel (FIG. 4).



FIG. 4 Applying Power to the Transmitters

Note: This connector is intended to be used only with the provided power supply.

Connecting TV Sources to the Transmitter

DTV-TX03-US Transmitters receive QAM/ATSC digital TV broadcasts, and connect to a cable outlet via the TUNER IN (RCA) connector. In order to use the TUNER IN connector with coax cable, you must first install the included RCA-to-Coax adapter (FIG. 5):

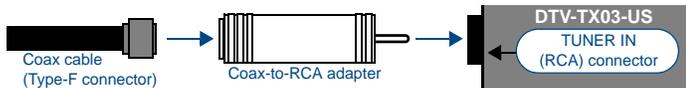


FIG. 5 Installing the Coax-to-RCA Connector Adapter on the TUNER IN (RCA) port

Connecting a Digital Cable TV Source to DTV-TX03-US Transmitters

To connect from cable to the DTV-TX03-US, use coax cable with an F-type connector (FIG. 6):



FIG. 6 Connecting a ATSC/QAM Digital TV signal to DTV-TX03-US Transmitters

Recommended Signal Levels

AMX TDS Transmitters require good quality input signals. The recommended signal levels are specified below.

ATSC:

- Signal level: > 45 dB μ V and < 70 dB μ V
- Signal to noise ratio (SNR): > 26dB
- Bit Error Rate (BER): < 2E-04

QAM:

- Signal to noise ratio (SNR): > 7 - 9 dB
- Bit error rate (BER): < 2E-04

Connecting the Transmitters to the Network

Use the ETHERNET 10/100 Port on the front panel of the DTV-TX-03-US Transmitter to connect each Transmitter to the network, via Cat5/5e/6 UTP network cable (FIG. 7).



FIG. 7 Connecting the Transmitters to the Network

- DTV-TX03-US Transmitters require a Layer 3 Gigabit Switch with multicast support, IGMP Querier/Snooping and PIM.
- Network Configuration for the Transmitters is done via the TDS Configuration Manager (see the *Transmitter Setup - Network Settings* section of the *AMX TDS Television Delivery System (ClearQAM / ATSC) Operation Reference Guide* for information).
- By default, DTV-TX03-US Transmitters are set to DHCP.

Setting the Transmitter's IP Address via the RS232 Port

In most cases, all setup and configuration for both Transmitters and Receivers is done via the Digital TV Configuration Manager. However, the Transmitter's IP Address can also be specified via serial command, via the RS232 port on the rear panel (see FIG. 1).

Note: The default baud rate is 115200.

1. Place the Transmitter in command mode: press "Enter" while the unit is booting up.

Note: To reboot, re-cycle power by disconnecting and re-connecting the 12VDC POWER connector on the rear panel.

2. At the command prompt, type "setip lan". This invokes a set of LAN network options:

```
Enter DHCP option (0/1) >
Enter ipAddr:
Enter subnet:
Enter Gateway:
Enter priDNS:
Enter secDNS:
Enter DomainName:
```

Note: If DHCP is set, all other options to enter IP address setting will be skipped. If entry is not valid, it will be prompted again. If second entry is still not valid, the configuration will exit without saving.

3. Follow the prompts to enter the necessary network information.
4. Once the appropriate network option(s) have been selected, type "boot" at the command prompt to reboot the unit. The new network settings take effect immediately after boot up.
5. When the message "kernel loading..." is displayed, disconnect the serial terminal and allow the Transmitter 3-5 minutes to complete the boot-up process.

Note: All DTV Transmitters and Receivers must have an assigned IP Address, Network Mask, and Gateway Address in order for the DTV system to work correctly. This applies to units that utilize DHCP and to units that have been assigned Static IP addresses. If you are using DHCP, verify that these address assignments are provided by the DHCP Server.

Configuring DTV-TX03-US Transmitters

DTV Transmitters are configured via the Digital TV Configuration Manager (see below).

Digital TV Configuration Manager

The DTV-MA01 TDS Management Appliance features a built-in web console called the Digital TV Configuration Manager. The Digital TV Configuration Manager allows you to configure the Receiver and all Transmitters in the TDS solution via a web browser on any PC that has access to the DTV-MA01 in the TDS system.

These instructions assume that the TDS System has been installed, and that the DTV-MA01 and a PC is connected to the LAN.

Accessing the Digital TV Configuration Manager

1. On any PC that has access to the LAN to which the DTV-MA01 is connected, open a web browser and enter the following default URL to access the TDS Configuration Pages (on the DTV-MA01):
<http://<IP Address assigned to the DTV-MA01>:8080/TDS/web/TxNetworkPage.xml>
2. Press enter to be prompted for the default User Name and Password for the DTV-MA01:
 - Default User Name: "amxdtv" (case-sensitive, no quotes)
 - Default Password: "Admin" (case-sensitive, no quotes)

Note: The User Name and Password can be changed via options in the System Setup page (in the Digital TV Configuration Manager). See the *AMX TDS Operation Reference Guide* for details.
3. Press OK to proceed to the Digital TV Configuration Manager. The initial view is of the Transmitter Setup page (FIG. 8).

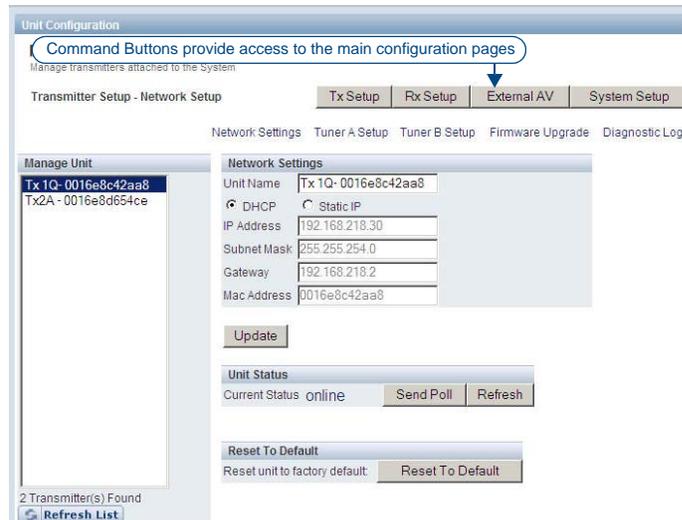


FIG. 8 Digital TV Configuration Manager

The command buttons along the top of the page provide access to the main areas of the Digital TV Configuration Manager:

- **Tx Setup** - Click to configure DTV Transmitters
- **Rx Setup** - Click to configure DTV Receivers
- **External AV** - Click to add and configure external AV devices to be included in the TDS system
- **System Setup** - Click to configure the TDS System

The links directly below the three command buttons (*Network Settings*, *Channel Setup*, *IR Settings*, *Firmware Upgrade* & *Diagnostics Logs*) provide access to configuration options specific to the current area of the Configuration Manager.

Additional Documentation

Refer to the *AMX TDS Operation/Reference Guide* (available online at www.amx.com) for additional product information, details on connecting the AMX TDS system, using the Digital TV Configuration Manager, upgrading firmware and descriptions of all supported NetLinx commands.

