

PTX-PRO

Transmitter



User and Technical

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General Safety Information The following safety requirements, as well as local site requirements and regulations, must be observed by personnel operating and maintaining the equipment covered by this manual to ensure awareness of potential hazards. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

About this Manual This manual is intended for use by qualified operators, installers, and service personnel. Users of this manual should already be familiar with basic concepts of radio, video, and audio. For information about terms in this manual, see *Glossary of Terms and Abbreviations* (Part No. 400576-1). Pay special attention to Notes, Cautions, and Warnings.

Read **Notes** for important information to assist you in using and maintaining the equipment.

Follow **CAUTIONS** to prevent damage to the equipment.

Follow **WARNINGS** to prevent personal injury or death.

Symbols The following symbols may be on the equipment or in this manual:



WARNING: General Warning.
Risk of Danger.



WARNING: Risk of Electric Shock.



CAUTION: Electrostatic Discharge.
Possible Damage to Equipment.



Protective Earth Ground: Identifies any terminal intended for connection to an external conductor for protection against electric shock in case of a fault, or the terminal on a protective earth electrode.



Frame or Chassis Ground: Identifies the frame or chassis terminal.



Earth Ground: Identifies the earth ground terminal.



Fuse (either icon):
Identifies fuses or their location.



Waste Electrical and Electronic Equipment (WEEE): The product must not be disposed of with other waste. You must dispose of the waste equipment by handing it over to a designated collection point for recycling.

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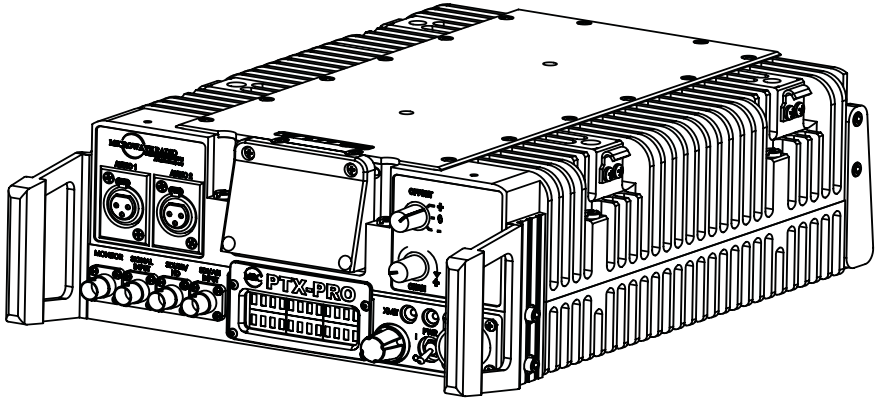
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1 About the *PTX-PRO*

The PTX-PRO (see figure) is a versatile portable transmitter supporting many options and configurations. The transmitter supports digital, or digital and analog modulation accepting a wide range of inputs, such as composite video/audio, HD/SD SDI, ASI or external 70 MHz IF signal. The PTX-PRO is available for single band operation at 2, 7, or 13 GHz, or for dual band operation at 2 and 7 GHz.

The PTX-PRO provides for video microwave communications and is a highly reliable, flexible, and compact portable microwave transmitter for either tripod or mobile applications.

The PTX-PRO is ideal for portable Electronic News Gathering (ENG), Digital Video Broadcasting (DVB), mobile communications, wireless airborne networks, and Outside Broadcast (OB) systems.



The RF frequency synthesizer circuit included in the IF/RF module, in conjunction with the command and control power supply module, creates RF video and audio signal channels in the various standard FCC band plans. You can use standard U.S. FCC band plans or create custom channel plans using the *MRC Radio Configurator* software on a PC.

The PTX-PRO includes MPEG/CODFM modules that can serve as a stand-alone digital video and audio encoder. Additionally, both NTSC or PAL analog video are available.

The PTX-PRO is fully compatible with the MRC family of transmit antennas, including the following:

- MRC MegaHorn Compact Horn antennas
- MRC 2, 3, and 4 ft. parabolic antennas

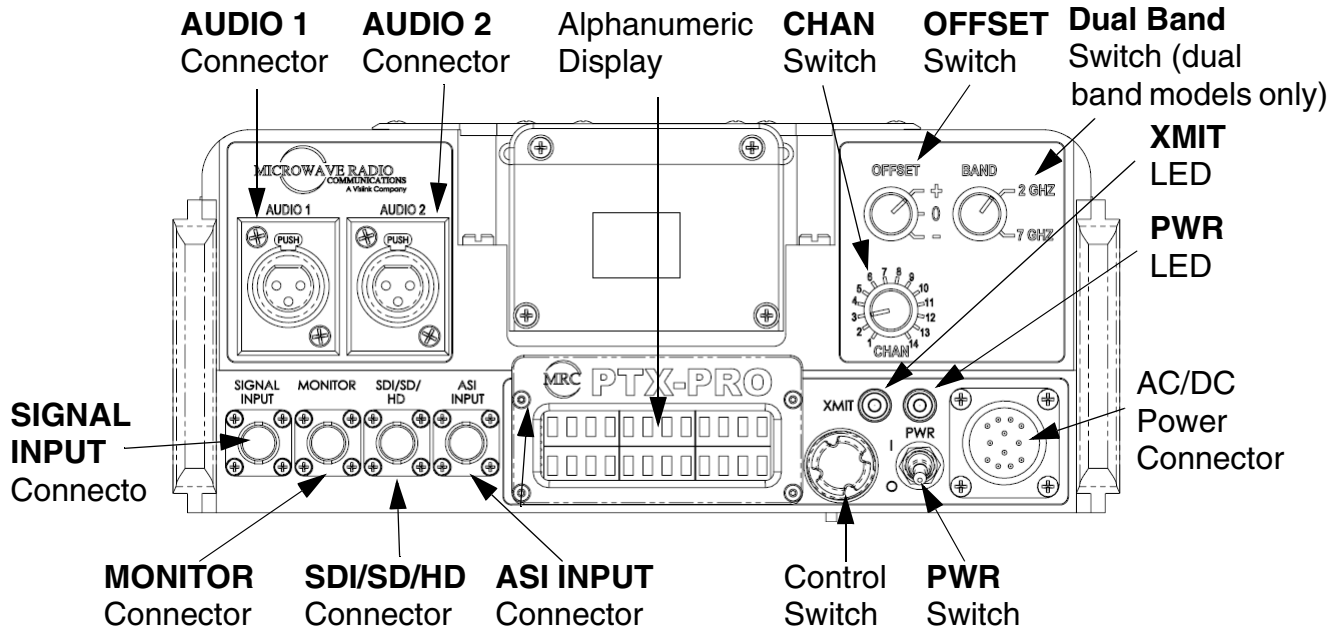
The PTX-PRO contains a universal AC/DC power supply and can operate on either external AC or DC power sources. The PTX-PRO has the following power requirements, depending upon the power option utilized.

Supply Voltage: +11.0—+36.0 Volts DC
 90—264 VAC, 50/60 Hz

Power Consumption: 50 watts nominal

1.1 Front Panel Controls, Indicators, and Connectors

Each of these controls, indicators, and connectors are described in more detail in the following paragraphs. Controls, indicators, and connectors contained on the PTX-PRO front panel are shown in the following figure. A dual band switch is added to the indicated position if you order the 2 and 7 GHz dual band option.



AUDIO 1 and AUDIO 2 XLR Connectors Provides balanced audio inputs for audio subcarriers 1 and 2 or MPEG L1/R1.

Alphanumeric Screen Displays 2 lines of 12 alphanumeric characters in conjunction with the control switch to monitor system status and to control system settings.

CHAN Switch Lets you choose the operating channel: 2 GHz (1—10), 7 GHz (1—14) and 13 GHz (1—22). The selected channel displays on the Main screen. See [Section 1.4, Channel Plans \(2, 7, and 13\)](#) on page 1-5 for information about channel plans.

OFFSET Switch Lets you set the channel offset (+, 0, or -) channel offset. **Note:** For the 13 GHz plan, you cannot select offset - (minus) for Channel 1 and you cannot select offset + (plus) for Channel 22.

Dual Band Switch On PRX-PRO dual band models only: lets you set the channel to 2 GHz or 7 GHz.

XMIT LED Displays Status as follows when the control switch is pushed:

- Blue**—Transmit mode.
- None**—Standby mode.

PWR LED Displays status as follows:

- None**—No power to the unit.
- Green**—Operational and no errors.
- Amber**—Abnormal condition that might impair performance.
- Red**—Failure or error that prevents normal operation.

WARNING A **Major Alarm** (red **PWR LED**) may also indicate a potential safety hazard.



Shut down the PTX-PRO transmitter and disconnect power.

AC/DC Power Connector Provides external AC or DC power sources.

PWR Switch Controls application of AC or DC power to the PTX-PRO.

Control Switch Turns clockwise to access status monitoring; see [Section 3.3, Monitoring PTX-PRO Operations](#) on page 3-2. Turns counterclockwise to set device parameters; see [Section 3.4, Configuring the PTX-PRO Manually](#) on page 3-3. Press the control switch to set a parameter or lock a display (while it continues to update); press it again to unlock it.

ASI INPUT 75 Ohm BNC Female Connector Provides ASI inputs to the unit.

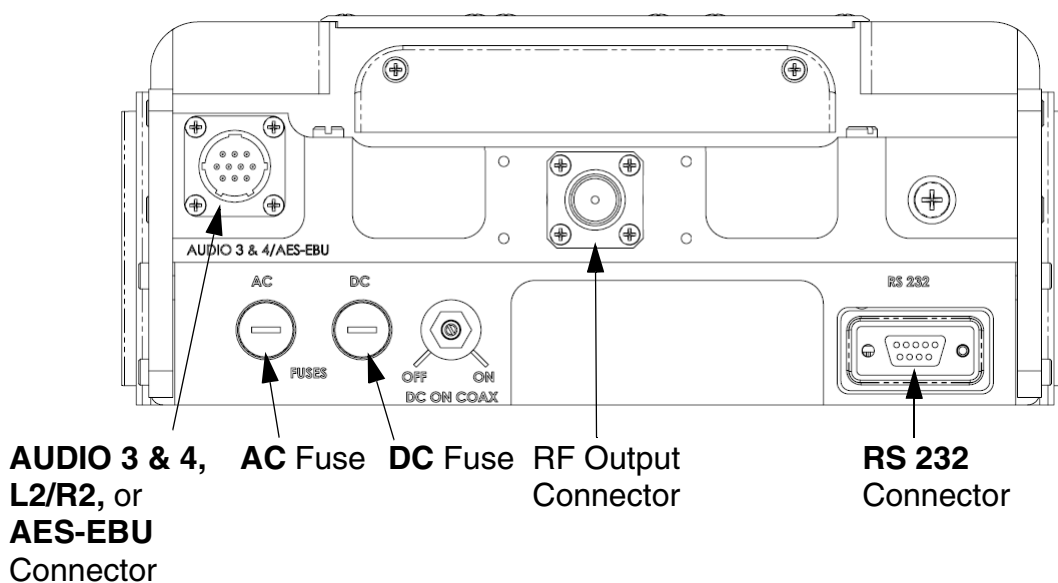
SDI/HD/SD 75 Ohm BNC Female Connector Provides the HD/SD/SDI data stream input to the unit.

MONITOR 75 Ohm BNC Female Connector Provides 70 MHz output for external signal monitoring.

SIGNAL INPUT 75 Ohm BNC Female Connector Provides the input connection for 70 MHz IF, composite video (CV) (PAL or NTSC).

1.2 Rear Panel Connectors and Fuses

Controls, fuses, and connectors contained on the PTX-PRO rear panel are shown in the following figure.



AUDIO 3 & 4, L2/R2, or AES-EBU 10-Pin Female Connector Receives balanced audio inputs for audio subcarriers 3 and 4 or MPEG L2/R2.

RF Output Type “N” 50 Ohm Female Connector Provides the RF output to the transmitting antenna. The universal type “N” connector lets you use PTX-PRO for emergency restoration of a Studio-Transmitter Link (STL) or Inter-City Relay (ICR) link.

AC Fuse Provides AC input power protection for units used with AC power sources.

DC Fuse Provides DC input power protection for units used with DC power sources.

Operating Voltage	Fuse Rating
90 to 264 VAC, 50/60 Hz	2.0A, 250V AGC, Slow Blow
+11.0 to +36.0 VDC	15.0A, 250V, Slow Blow

CAUTION *Avoid possible equipment damage. If you are using a DC power source for your PTX-PRO, do not exceed 36 volts DC input power.*

RS-232 DB-9 Connector Provides a connection to a Windows-based PC when using the Configurator software or connection for Wayside data.

1.3 Related Documents

- Glossary of Terms and Abbreviations (Part No. 400576-1)
- Channels and Frequencies Technical Information (Part No. 400580-1)
- Link Quality Technical Information (Part No. 400585-1)

1.4 Channel Plans (2, 7, and 13)

1.4.1 The 2 GHz Channel Plan

The following table shows the 2 GHz BAS channel plan.

BAS Channel	(-) Offset (MHz)	(0) Offset (MHz)	(+) Offset (MHz)
1	2028.500	2031.500	2034.500
2	2040.500	2043.500	2046.500
3	2052.500	2055.500	2058.500
4	2064.500	2067.500	2070.500
5	2076.500	2079.500	2082.500
6	2088.500	2091.500	2094.500
7	2100.500	2103.500	2106.500
8	2454.250	2458.500	2462.750
9	2471.000	2475.250	2479.500
10	2487.500	2491.750	2496.000

1.4.2 The 7 GHz Channel Plan

The following table shows the channel plan for 6.4 to 7.2 GHz.

Channel	(-) Offset (MHz)	(0) Center (MHz)	(+) Offset (MHz)
1	6881.250	6887.500	6893.750
2	6906.250	6912.500	6918.750
3	6931.250	6937.500	6943.750
4	6956.250	6962.500	6968.750
5	6981.250	6987.500	6993.750
6	7006.250	7012.500	7018.750
7	7031.250	7037.500	7043.750
8	7056.250	7062.500	7068.750
9	7081.250	7087.500	7093.750
10	7106.750	7112.500	7118.750
11	6431.250	6437.500	6443.750
12	6456.250	6462.500	6468.750
13	6481.250	6487.500	6493.750
14	6506.250	6512.500	6518.750

1.4.3 The 13 GHz Channel Plan

The following table shows the channel plan for 12.7 to 13.25 GHz.

Channel	(-) Offset (MHz)	(0) Center (MHz)	(+) Offset (MHz)
1	N/A	12712.500	12718.750
2	12731.250	12737.500	12743.750
3	12756.250	12762.500	12768.750
4	12781.250	12787.500	12793.750
5	12806.250	12812.500	12818.750
6	12831.250	12837.500	12843.750
7	12856.250	12862.500	12868.750
8	12881.250	12887.500	12893.750
9	12906.250	12912.500	12918.750
10	12931.250	12937.500	12943.750
11	12956.250	12962.500	12968.750
12	12981.250	12987.500	12993.750
13	13006.250	13012.500	13018.750
14	13031.250	13037.500	13043.750
15	13056.250	13062.500	13068.750
16	13081.250	13087.500	13093.750
17	13106.250	13112.500	13118.750
18	13131.250	13137.500	13143.750
19	13156.250	13162.500	13168.750
20	13181.250	13187.500	13193.750
21	13206.250	13212.500	13218.750
22	13231.250	13237.500	N/A

2 Installing the PTX-PRO

This chapter describes how to install *Transmitter* (PTX-PRO).

CAUTION *If you modify the product without authorization from Vislink, you will void the warranty.*

2.1 Unpacking the PTX-PRO

Carefully unpack your new equipment to avoid damage.

- Locate all parts and accessories and verify that they are listed on the packing list.

Note DO NOT discard the container or packing material until you have inspected the equipment and are sure there is no shipping damage. The container and packing must be available in case you need to file a damage claim with the shipping carrier.

- Inspect the equipment for damage and that it is clean and dry.
- Inspect the cables, connectors, switches, and displays to ensure that they are not broken, damaged, or loose.

If you discover damage after unpacking the system, report the damage as follows:

- Immediately file a claim with the shipping carrier.
- Forward a copy of the damage report to Vislink Customer Service.
- Contact Vislink Customer Service to determine the disposition of the equipment. See [Section 4.1, *Getting Support for Your PTX-PRO*](#) on page 4-1.

2.2 Preparing to Install the PTX-PRO

The following sections describe the things you should consider before installing the DXL8000.

2.2.1 Operating in Safety

CAUTION *Ensure that the power being supplied matches the power required by the equipment. You can find power ratings for equipment on a rating plate, usually on the rear panel. Ensure that the electrical supply is protected by over-current protection devices as required by the applicable electrical codes. If necessary, consult a licensed electrician.*

WARNING - RF Power Hazard

WARNING *The unit has high levels of RF power. Exposure to RF or microwave power can cause burns and may be harmful to health.*

- Remove power from the unit before disconnecting any RF cables and before inspecting damaged cables and/or antennas.
- Avoid standing in front of high gain antennas (such as a dish antenna) and never look into the open end of a waveguide or cable where RF power may be present.

The following guidelines for safe operation were derived from OET bulletin 65, August 1997, as recommended by the Federal Communications Commission (FCC).

The PTX-PRO was designed to provide services to broadcast ENG users under CFR 74 subpart F and 74.601 TV pickup stations. This unit, operated without an antenna, will not create RF energy exceeding 1.0 mW/cm², the FCC limit for exposure. Once connected to an antenna, the potential for harmful exposure will be greatly enhanced.

In this situation, a certain distance from the radiator is to be maintained. Calculations need to be performed to understand what that safe margin for exposure is. This is known as the Maximum Permissible Exposure (MPE) limit.

Calculations provided are for common antennas often utilized in the ENG environment. The following formula used is that suggested by OET 65.

Calculating MPE

$$\text{EIRP} = P * (10 ^ (G / 10)) = (\text{antilog of } G/10) * P$$

P = RF power delivered to the antenna in mW

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna in centimeters

S = MPE in mW/cm² (milliwatts per square centimeters)

Conversions

dBi to numeric gain = Antilog (dBi/10)

Feet to centimeters = Feet * 30.48

Centimeters to Feet = cm * .0328

4 π = 12.57

User Input

RF power delivered to the antenna = Watts

Antenna gain (referenced to isotropic antenna) = dBi

Distance from the center of radiation = Feet

Calculation steps:

1. [P] RF power input. Watts to milliwatts = Watts * 1000
2. [G] Antenna gain dBi. Numeric gain = Antilog (dBi/10)
3. [EIRP] Multiply P * G
4. [R] Centimeters to feet = Centimeters * .0328
5. Square R
6. Multiply $R^2 * 4\pi$
7. [S] Divide ($R^2 * 4\pi$) into EIRP
S = Power Density in milliwatts per square centimeters.

Note At frequencies above 1500 MHz, S must not be greater than 1.

Reference

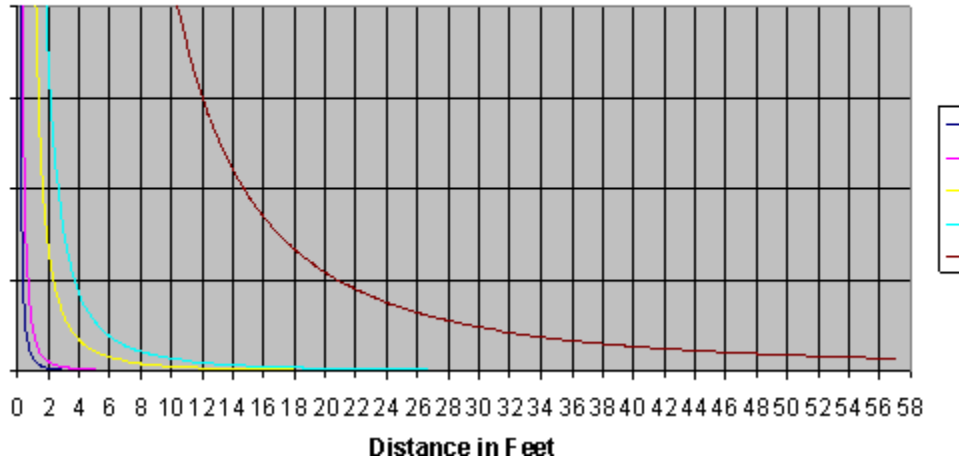
FCC OET Bulletin 65, August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields

The following graph and associated table show the permissible exposure distance for various antennas. Graphs and data will vary, based on the actual transmitter, output power, frequency, and antenna utilized. One plot provides the permissible output of the transmitter for digital modulation, and the other plot for analog modulation.

This information is provided, in accordance with the requirements set forth by the FCC, as a guide for you assuming that users of this equipment are licensed and qualified to operate the equipment per the guidelines and recommendations contained within the product user guides and in accordance with any FCC rules that may apply.

Maximum Permissible Exposure

@ .8 Watts RF Power, 13GHz Digital



Antenna Gain (dBi)	Minimum Safe Distance from Antenna (cm)	Minimum Safe Distance from Antenna (inch)
0	20	7.9
5	32	12.6
16	113	44.5
20	178	70.1
35	1001	394.1

2.2.2 Powering and Grounding the PTX-PRO

For safe operation, all equipment must be properly grounded.

- Connect the unit to a common (vehicle or aircraft) ground.
- Make the ground wire as short and straight as possible.

CAUTION

Be sure the equipment grounding follows applicable electrical codes. Never modify a grounded power plug to connect to an ungrounded receptacle.

Ensure that the power being supplied matches the power required by the equipment. You can find power ratings for equipment on a rating plate, usually on the rear panel. Ensure that the electrical supply is protected by over-current protection devices as required by the applicable electrical codes. If necessary, consult a licensed electrician.

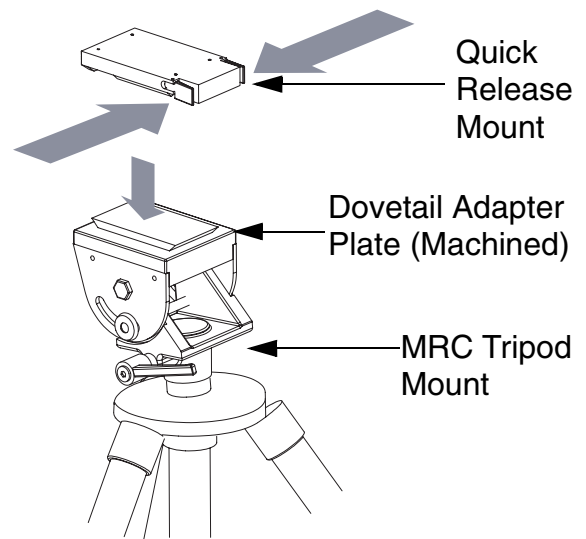
2.3 Mounting on an MRC Tripod

For portable applications, the PTX-PRO is moved from place to place. The power, antenna, and audio/video connections are set up and removed each time.

You can attach the PTX-PRO to a Quick Release Mount for easy mounting on an MRC tripod (see figure). The Quick Release Mount is attached to the bottom of the PTX-PRO using four 1/2-inch long, #6-32, flat head screws.

You can keep the Quick Release Mount attached to the PTX-PRO. The Quick Release Mount and PTX-PRO are then attached to the Dovetail Adapter Plate machined into the MRC tripod mount.

The versatility of the Quick Release Mount and a mating Dovetail Adapter Plate let you attach the Dovetail Adapter Plate to the bottom of the PTX-PRO and the Quick Release Mount to a non-MRC tripod, or vice versa.

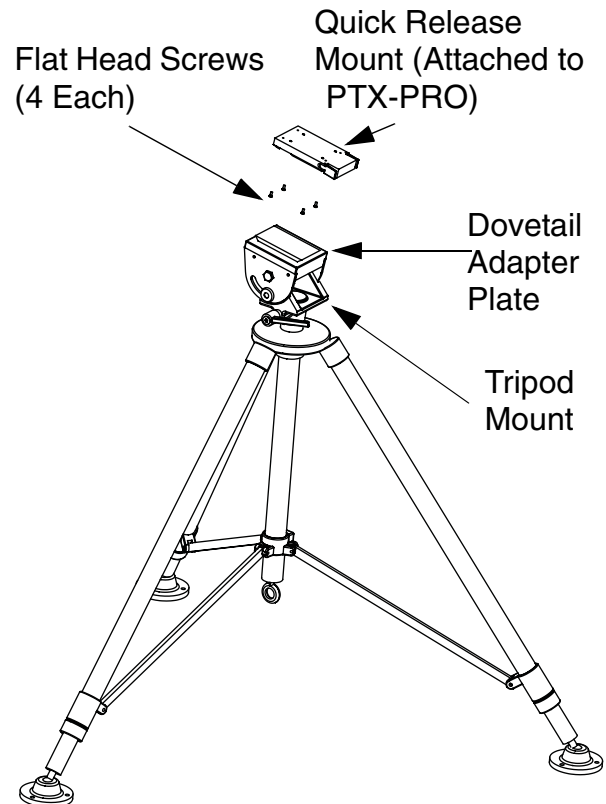


2.4 Mounting on a Non-MRC Tripod

Option 1

To mount a PTX-PRO on a non-MRC tripod, attach the Quick Release Mount to the bottom of the PTX-PRO using four 1/2-inch long, #6-32, flat head screws.

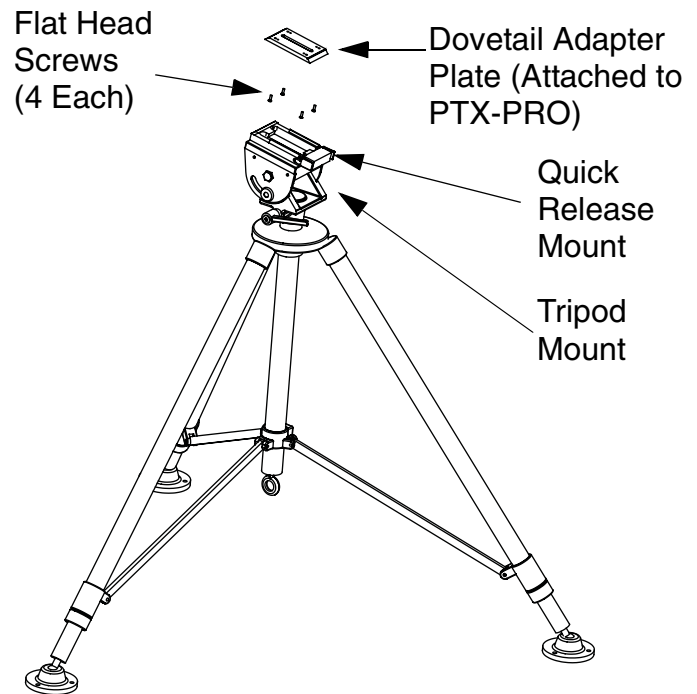
The Dovetail Adapter Plate is then attached to the non-MRC tripod and the Quick Release Mount and PTX-PRO assembly is attached to the Dovetail Adapter Plate on the tripod mount.



Option 2

To mount a PTX-PRO on a non-MRC tripod, another option is to attach the Dovetail Adapter Plate to the bottom of the PTX-PRO using four 1/2-inch long, #6-32, flat head screws.

The Quick Release Mount is then attached to the non-MRC tripod and the Dovetail Adapter Plate and PTX-PRO assembly is attached to the Quick Release Mount on the tripod mount.

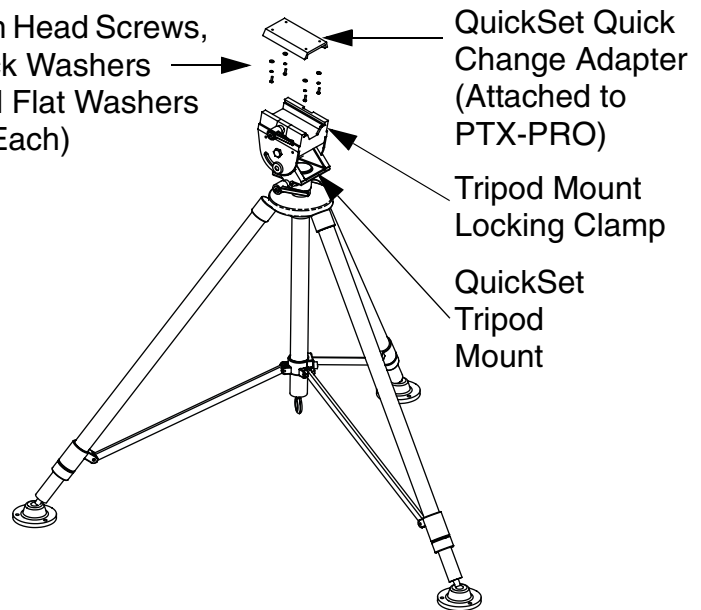


Option 3

A third option is available to mount a PTX-PRO to a non-MRC tripod that contains a QuickSet tripod mount. This option requires the use of a QuickSet Quick Change Adapter.

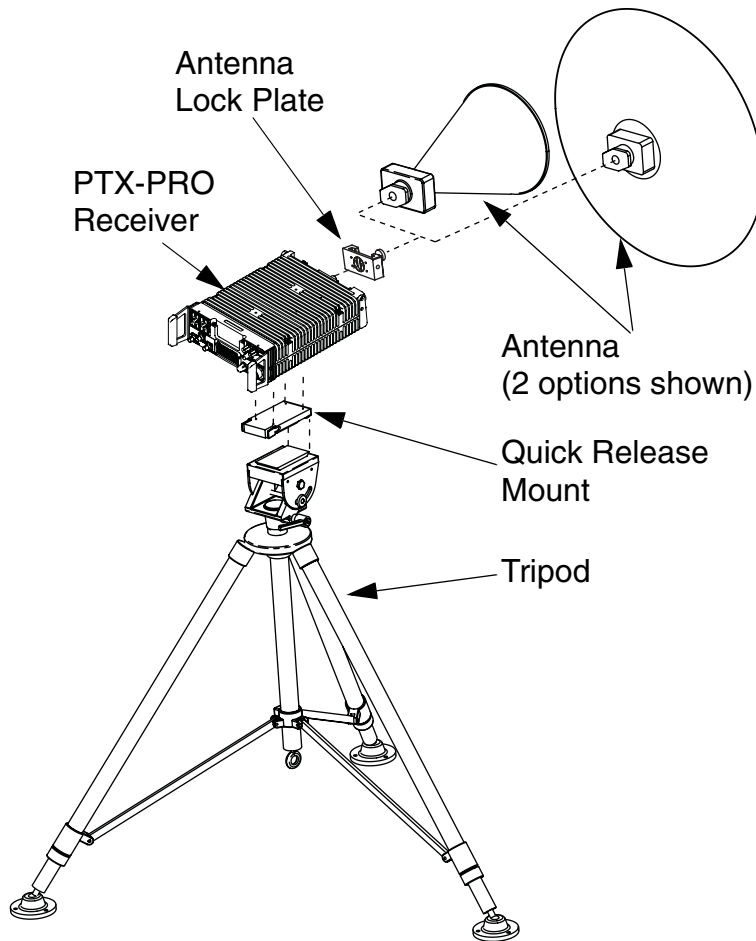
The Quick Change Adapter is attached to the bottom of the PTX-PRO using four 1/2-inch long, #6-32, pan head screws, lock washers, and flat washers.

The Quick Change Adapter and PTX-PRO assembly is then attached to the QuickSet tripod mount and is secured with the tripod mount locking clamp.

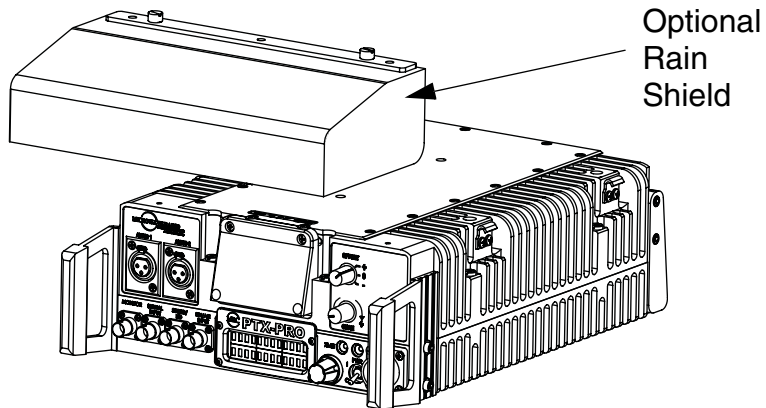


Final Mounting

When you mount the PTX-PRO on the tripod, the antenna typically is attached to the Antenna Lock Plate mounted on the PTX-PRO as shown in the following figure.



An optional Rain Shield is also available for portable applications in inclement weather.



2.5 Installing Configurator Software

You can configure the PTX-PRO with a PC by installing the *MRC Radio Configurator*. Your PC must meet the following minimum requirements.

- 400 MHz
- 96 RAM
- 800x600 Screen resolution
- Microsoft Windows XP Operating System with SP2
- 500 MB of free hard disk space
- CD-ROM drive
- Internet Explorer 4.01 SP1 or later
- One RS-232 I/O port configured as COM 1 thru COM 9.

To install the Configurator, insert the product CD and follow the instructions on the Setup Wizard. Upon successful installation, the *MRC Radio Configurator* icon displays on your desktop.



Note If you already have a version of the *MRC Radio Configurator* installed, you **must** uninstall it using the *Add/Remove Programs* feature in the Microsoft Windows Control Panel before attempting to install a new version.

3 Operating the PTX-PRO

This chapter describes how to use the PTX-PRO *Transmitter* (PTX-PRO).

3.1 Powering Up

Before powering up the PTX-PRO, make sure to connect the cables to the correct connectors and fully mate and lock the connections.

CAUTION *Make sure the power supplied matches the power required by the unit.*

When you set the **PWR** switch to **I** (on), the following sequence occurs:

1. The **PWR** LED above the **PWR** switch illuminates and changes colors from red, to green, to amber, and finally to green and should remain green.
2. The alphanumeric display lights up and displays a self-test screen, then the version of the firmware, and finally the default screen. The PTX-PRO uses the last settings in use when power was turned off.

Test the performance of your PTX-PRO by setting up a link and transmitting and receiving video and audio. If the PTX-PRO does not power up normally, see [Chapter 4, Troubleshooting](#).

3.2 Using the Display Screen

The screen on the PTX-PRO transmitter displays the values of the selected preset and the output power. For example:

```
Preset #1  
0.00W   C 1
```

The Control switch lets you monitor status and set functions, displayed on the PTX-PRO screen. The Control Switch cycles through information when you turn it clockwise (for Monitoring information; see [Section 3.3](#)) or counterclockwise (for Setting parameters; see [Section 3.4](#)).

If you do not turn or press the control switch within 7 seconds, the screen reverts to the default display. You can lock the display by pressing the Control switch; the display continues to update the information. To unlock the display, press the Control switch again; the default screen displays.

Use the **CHAN** and **OFFSET** Switches to select which channel to use. Verify the channel by turning the Control switch clockwise to view the Channel Monitor screen, as shown in the following example:

```
12712.500MHz  
0.00W   C 1
```

3.3 Monitoring PTX-PRO Operations

Review Monitor screens by turning the Control switch clockwise. The sequence of screens depends on the mode.

- Analog IF mode routes a 70 MHz IF signal through the transmitter to the Signal input connector.
- ASI In mode supplies an ASI stream to the RF output monitor connectors.
- COFDM mode supplies a 70 MHz COFDM IF to the RF output and monitor connectors.
- Ext. IF mode supplies a 70 MHz IF input signal to the Signal Input connector of the transmitter.
- LMS-T mode uses a single carrier modulator and supplies a configurable LMV-S signal to the RF output and monitor connectors.

The following table shows the Monitor screen sequences of each mode.

Monitor Menu Sequence (Clockwise)				
Analog IF	ASI In	COFDM Mode	EXT IF Mode	LMS-T Mode
12712.500MHz 0.00W C 1	12712.500MHz 0.00W C 1	12712.500MHz 0.00W C 1	12712.500MHz 0.00W C 1	12712.500MHz 0.00W C 1
TX Attn 0.0db	TX Attn 0.0db	TX Attn 0.0db	TX Attn 0.0db	TX Attn 0.0db
Band 13 GHz	Band 13 GHz	Band 13 GHz	Band 13 GHz	Band 13 GHz
Mode Analog - IF	Mode ASI/SDI In	Mode COFDM	Mode EXT IF Input	Mode LMS-T
Audio #1 ON Pre 4.83MHz	QPSK 8MHz ASI 18.096Mb FE1/2 GI1/32	64QAM 8MHz ASI 18.096Mb FE1/2 GI1/32	No Errors	QPSK 10MHz ASI 18.096Mb FE1/2 GI1/32
Audio #2 ON Pre 5.20MHz	IF CW OFF	NTSC NoPdst1 Vid In 4:2:0		NTSC NoPdst1 Vid In 4:2:0
Audio #3 ON Pre 5.80MHz	No Errors	Video Delay Normal		Video Delay Normal
Audio #4 ON Pre 6.20MHz		MPEG AudioA AESEBU Streo		MPEG AudioA AESEBU Streo
VID Dev 4MHz PAL/No Video		MPEG AudioB AESEBU Streo		MPEG AudioB AESEBU Streo
IF CW OFF		No Errors		No Errors
No Errors				

3.4 Configuring the PTX-PRO Manually

This section describes how to configure your PTX-PRO with different settings using the front panel switches. You can set presets, video input mode, color bar, and RF attenuation levels, and set the channel and offset with associated switches.

To configure your PTX-PRO with a PC, see [Section 3.5, Configuring the PTX-PRO With a PC](#) on page 3-4. The following table shows the sequence of screens displayed.

Setting Parameters Sequence (Counterclockwise)		
Function	Display Example	Setting Procedure
Change Preset	Chng Preset Preset #1	<ol style="list-style-type: none"> 1. Press the Control switch; the preset line flashes. 2. Turn the Control switch to display the desired preset. 3. Press the Control switch to set the desired preset.
Change video input mode	Chng VI Mode SD	<ol style="list-style-type: none"> 1. Press the Control Switch; the value flashes. 2. Turn the Control Switch to select SD or HD. 3. Press the Control switch to set the desired mode.
Change SD video input - OR -	Chng SD VI NTSC	<ol style="list-style-type: none"> 1. Press the Control Switch; the value flashes. 2. Turn the Control Switch to select NTSC, or NTSC NoPdst1, or 525 Line SDI. 3. Press the Control switch to set the desired SD video input.
Change HD video input	Chng HD VI 720p60	<ol style="list-style-type: none"> 1. Press the Control Switch; the value flashes. 2. Turn the Control Switch to select 720p50, 720p59, 720p60, or 1080i25, 1080i29, or 1080i30. 3. Press the Control switch to set the desired HD video input.
Set Color Bar	Chng CLR Bar ON	<ol style="list-style-type: none"> 1. Press the Control Switch; the value flashes. 2. Turn the Control Switch to select ON, or OFF, Auto Gen, or Auto Standby. 3. Press the Control switch to set the desired option.
Set Transmitter Attenuation	Set TX Attn Attn: 0db	<ol style="list-style-type: none"> 1. Press the Control Switch; the value flashes. 2. Turn the Control Switch to select 0 to -31 dB. 3. Press the Control switch to set the desired decibel value.

3.5 Configuring the PTX-PRO With a PC

When you connect your PTX-PRO to a PC, you can create channel plans, and up-to-9 custom presets. If you need more than 9 presets, create as many preset configurations as you want and save them to a file, then load the configuration file when you need the saved presets.

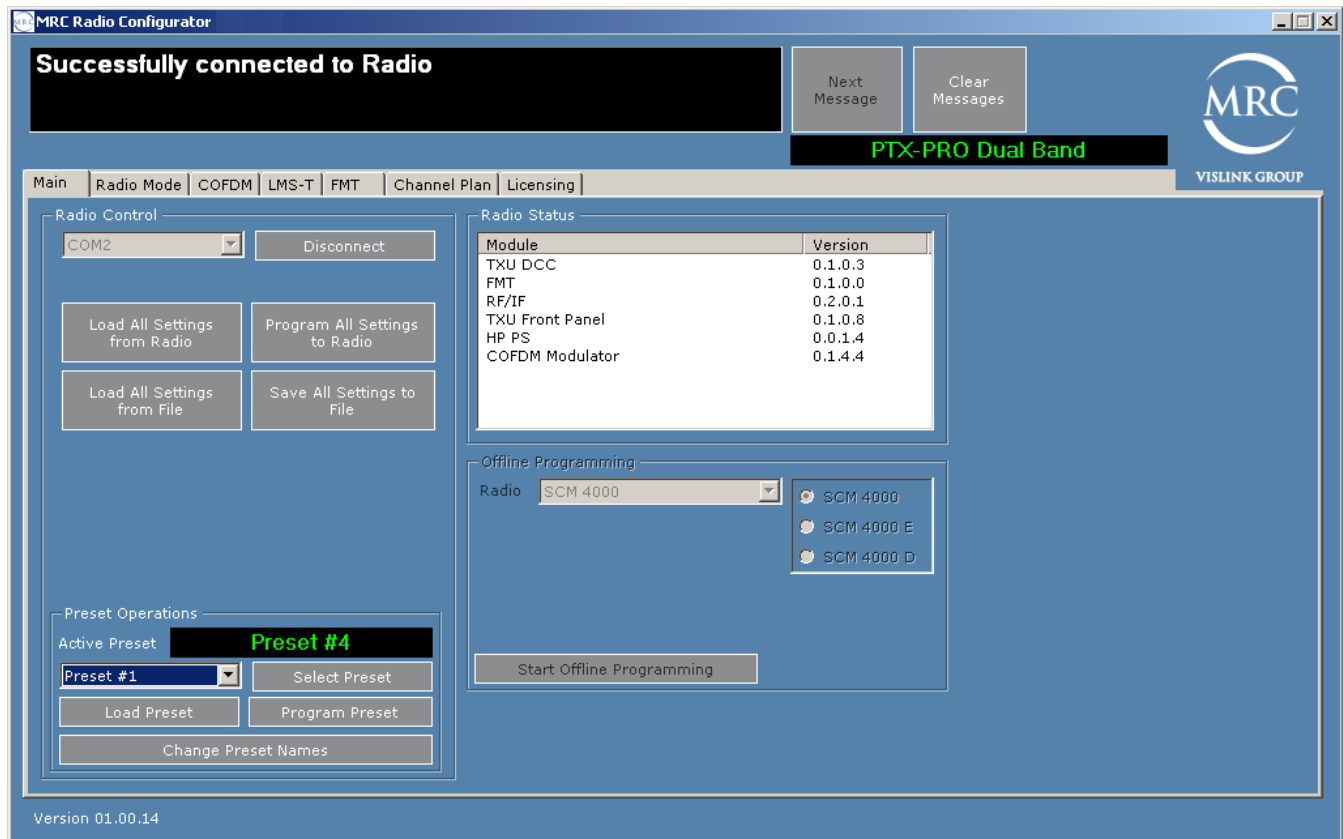
CAUTION Do not make configuration changes to your PTX-PRO while it is connected to a radio system that is actively transmitting because it will interrupt broadcast operations. Do not place the PTX-PRO in transmit mode when using the MRC Radio Configurator. Also, the PTX-PRO must be powered up before you run the MRC Radio Configurator.

For information about installing the *MRC Radio Configurator*, see [Section 2.5, Installing Configurator Software](#) on page 2-8.

3.5.1 Connecting the PTX-PRO to the MRC Radio Configurator

On the Main tab of the *MRC Radio Configurator*, choose the COM port to which the PTX-PRO is connected, and click **Connect**. The following figure shows that the *MRC Radio Configurator* has connected to the PTX-PRO.

Tip Before you program the PTX-PRO with the *MRC Radio Configurator*, click **Load All Settings** to populate the parameters as a template.



The *MRC Radio Configurator* automatically detects your PTX-PRO, your hardware configuration, and the licensed options contained in your PTX-PRO and loads a number of tabs where you can set parameters for your PTX-PRO. Licensed options that are not contained in your radio are not displayed in the *MRC Radio Configurator* tabs. For example, if you do not have the LMS-T licensed option in your radio, the LMS-T tab does not appear or is inactive.

3.5.2 Loading Parameters from the Radio or a File

You can load parameters from the radio or a file before you modify it to suit your needs.

- To load parameter settings that are stored in the PTX-PRO into the *MRC Radio Configurator*, click the **Load All Settings from Radio** box.
- To load parameter settings from a previously saved file, click the **Load All Settings from File** box.

3.5.3 Saving Parameters to the Radio or a File

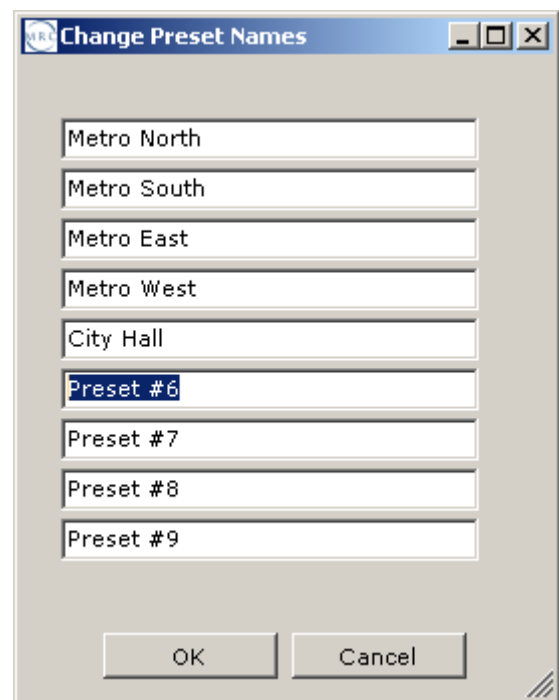
You can save the parameter settings to the radio or a file, as follows.

- To save parameter settings from the *MRC Radio Configurator* to the PTX-PRO, click the **Save All Settings to Radio** box.
- To save parameter settings to a file, click the **Save All Settings from File** box.

3.5.4 Changing the Name of a Preset

On the Main tab, choose **Change Preset Names** in the Preset Operations section. The Change Preset Names dialog box appears. The example figure shows the dialog box with most of the 9 presets renamed to indicate remote locations.

Click **OK** to set the preset names. The new names will display on the PTX-PRO status screen and the *MRC Radio Configurator* screens.

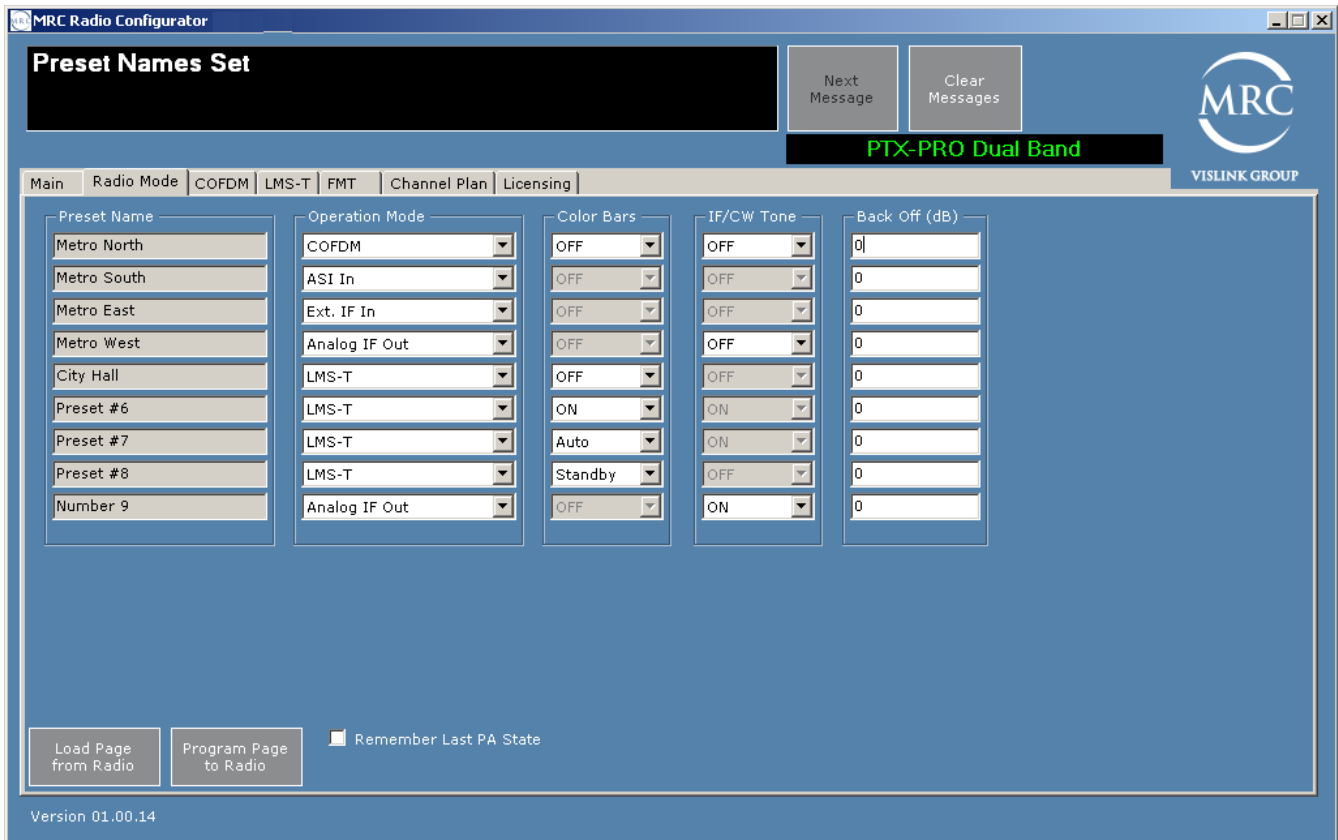


3.5.5 Modifying Preset Parameters

To modify a preset, select a preset from the drop down box in the Preset Operations area on the Main tab of the *MRC Radio Configurator* and click **Load Preset**. The PTX-PRO loads the current values of that preset. Click on the tabs to modify various categories of parameters. Each tab is described in the following sections.

Radio Mode Tab

You can set the radio mode parameters for each preset.



Field	Options
<i>Preset Name</i>	Displays the name of the preset.
<i>Operation Mode</i>	Select COFDM , ASI IN , Ext. IF In , Analog IF out , or LMS-T .
<i>Color Bars</i>	Where applicable, select ON or OFF . LMS-T also has Auto and Standby options.
<i>IF/CW Tone</i>	Where applicable, select ON or OFF .
<i>Remember Last PA State</i>	Check this box to load these values the next time you use the configurator.

Load Page from Radio—To load parameters for this page from the PTX-PRO, click on this button.

Program Page to Radio—To apply parameter modifications to the PTX-PRO, click on this button.

MPEG Tab

The MPEG tab lets you specify the following parameters.

The screenshot shows the MRC Radio Configurator software interface. The 'MPEG' tab is selected in the 'Main' menu. The 'Preset Names Set' section is visible at the top left. The 'Metro North' preset is selected. The 'General Info' section contains the following fields: Service (Service 06), Network (Net 1), Input (NTSC No Pedestal), Chroma (4:2:0), Delay (Standard), ASI Rate (5.520 Mb/s), Program ID (1), VBI In Picture (unchecked), Aspect Ratio (4:3), HD/SD (SD), and HD Format (720p50). The 'Audio A' section has Type (Dolby E), Mode (Stereo), and Input (Test Tone). The 'Audio B' section has Type (OFF), Mode (Stereo), and Input (Test Tone). The 'Wayside' section has State (OFF) and Baud (9600). The 'Encryption' section has Type (OFF), 1 Key (*****), and E Key (*****). The 'PID Info' section has PCR (8190), AUD-A (200), DAT (100), AUD-B (201), VID (300), and Default PID (checked). The 'Spectrum Polarity' is set to Normal. The version number is 01.00.14.

Field	Option
<i>Presets</i>	Click on a preset name to load its parameters into the fields.
<i>Radio Type</i>	Choose NTSC or PAL .
General Info	
<i>Service</i>	Specify the name of the service for this preset.
<i>Network</i>	Specify the name of the network for this preset.
<i>Input</i>	<ul style="list-style-type: none"> When <i>Radio Type</i> is NTSC and <i>HD/SD</i> is SD, you can choose SDI 525 In, NTSC In, NTSC Pedestal. This field is inactive for HD. When <i>Radio Type</i> is PAL and <i>HD/SD</i> is SD, you can choose SDI 625 In, PAL In, PAL M, or PAL N. This field is inactive for HD.
<i>Chroma</i>	Choose 4:2:0 or 4:2:2 .
<i>Delay</i>	When <i>HD/SD</i> is SD, you can choose Standard or Low . This field is inactive for HD.
<i>ASI Rate</i>	Specify a value from 1 . 5 to 15 . 0.
<i>Program ID</i>	Specify a value from 1 to 65535.
<i>VBI In Picture</i>	You can check this when <i>Chroma</i> is set to 4:2:2 and <i>HD/SD</i> is set to SD .

Field	Option
<i>Aspect Ratio</i>	When <i>HD/SD</i> is SD , you can choose 4:3 or 16:9 . This field is inactive for HD.
<i>HD/SD</i>	Choose HD or SD .
<i>HD Format</i>	When <i>HD/SD</i> is HD , you can choose 720p50 , 720p59 , 720p60 , 1080i25 , 1080i29 , or 1080i30 .
<i>Wayside State</i>	Choose OFF , IRD Compatible , or Strata Compatible .
<i>Wayside Baud</i>	When <i>Wayside State</i> is not OFF , choose 1200 , 2400 , 9600 , 19200 , or 38400 .
Audio A and Audio B	
<i>Type</i>	Choose OFF , MPEG or Dolby E . <div style="border: 1px solid red; padding: 5px; text-align: center;"> <p>CAUTION <i>If you choose MPEG or Dolby E, ensure that Input is not set to Test Tone (unless you mean to save a preset to use for testing the audio or antenna alignment).</i></p> </div>
<i>Mode</i>	When <i>Type</i> is not OFF , choose Stereo or Dual Mono .
<i>Input</i>	When <i>Type</i> is not OFF , choose Test Tone , Analog , SDI EMB , or AES EBU . (Note: Test Tone is used <i>only</i> for audio testing and antenna alignment testing.)
<i>Auto-align Dolby E</i>	When <i>Type</i> is Dolby E , you can check this box.
Encryption	
<i>Type</i>	Requires a license. Select OFF , BISS - 1 , or BISS - E .
<i>1 Key</i>	If you selected BISS - 1 , then also specify the BISS-1 key value.
<i>E Key</i>	If you selected BISS - E , then also specify the BISS-E key value.
<i>E ID</i>	If you selected BISS - E , then also specify the BISS-E identifier.
PID Info	
<i>PCR</i>	Specify a value (32 to 8190) for the Program Clock Reference (PCR).
<i>AUD-A</i>	Specify the Audio A value (32 to 8190).
<i>DAT</i>	Specify the Data value (32 to 8190).
<i>AUD-B</i>	Specify the Audio B value (32 to 8190).
<i>VID</i>	Specify the video identifier value (32 to 8190).
<i>Default PID</i>	Check this box to set the default values.
<i>Spectrum Polarity</i>	Select Normal or Reversed .

COFDM Tab

The COFDM (Coded Orthogonal Frequency Division Multiplexing) tab lets you specify the following parameters.

The screenshot shows the MRC Radio Configurator software. The title bar reads 'MRC Radio Configurator'. The main window has a dark blue header with 'Preset Names Set' on the left and 'Next Message' and 'Clear Messages' buttons on the right. Below the header is a green bar that says 'PTX-PRO Dual Band'. A navigation bar contains tabs for 'Main', 'Radio Mode', 'COFDM', 'LMS-T', 'FMT', 'Channel Plan', and 'Licensing'. The 'COFDM' tab is selected. The main area contains five columns of dropdown menus: 'Preset Name' (listing Metro North, Metro South, Metro East, Metro West, City Hall, Preset #6, Preset #7, Preset #8, and Number 9), 'Modulation Type' (QPSK, 64 QAM, QPSK, QPSK, QPSK, QPSK, QPSK, QPSK, QPSK), 'Bandwidth' (6 MHz, 8 MHz, 8 MHz, 8 MHz, 8 MHz, 8 MHz, 8 MHz, 8 MHz, 8 MHz), 'FEC' (2/3, 5/6, 1/2, 1/2, 1/2, 1/2, 1/2, 1/2, 1/2), and 'Guard' (1/16, 1/8, 1/8, 1/8, 1/8, 1/8, 1/8, 1/8, 1/8). At the bottom left are 'Load Page from Radio' and 'Program Page to Radio' buttons. The version number 'Version 01.00.14' is at the bottom left corner. The MRC logo and 'VISLINK GROUP' are in the top right corner.

Note Fields on the COFDM tab are active only for *COFDM* and *ASI In* operation modes.

Field	Option
<i>Preset Name</i>	Displays the name of the preset.
<i>Modulation Type</i>	Select QPSK , 16 QAM , or 64 QAM .
<i>Bandwidth</i>	Select 6 MHz , 7 MHz , or 8 MHz .
<i>FEC</i>	Select 1/2 , 2/3 , 3/4 , 5/6 , or 7/8 .
<i>Guard</i>	Select 1/32 , 1/16 , 1/8 , or 1/4 .

Load Page from Radio—To load parameters for this page from the PTX-PRO, click on this button.

Program Page to Radio—To apply parameter modifications to the PTX-PRO, click on this button.

LMS-T Tab

The LMS-T (Link Modulation System - Terrestrial) tab is a proprietary algorithm system for modulation. If you have this license, you can set the following parameters.

The screenshot shows the MRC Radio Configurator software interface. At the top, there is a 'Preset Names Set' section with a 'Next Message' and 'Clear Messages' button. Below this is a navigation bar with tabs for 'Main', 'Radio Mode', 'COFDM', 'LMS-T', 'FMT', 'Channel Plan', and 'Licensing'. The 'LMS-T' tab is selected. The main configuration area is divided into five columns: 'Preset Name', 'Modulation Type', 'Bandwidth', 'FEC', and 'Guard'. Each column contains a list of preset names and their corresponding parameters. The 'City Hall' preset is highlighted in blue. At the bottom left, there are two buttons: 'Load Page from Radio' and 'Program Page to Radio'. The version number 'Version 01.00.14' is displayed at the bottom left.

Preset Name	Modulation Type	Bandwidth	FEC	Guard
Metro North	QPSK	10 MHz	2/3	1/8
Metro South	QPSK	10 MHz	2/3	1/8
Metro East	QPSK	10 MHz	2/3	1/8
Metro West	QPSK	10 MHz	2/3	1/8
City Hall	16 QAM	10 MHz	2/3	1/8
Preset #6	QPSK	10 MHz	2/3	1/8
Preset #7	16 QAM	10 MHz	2/3	1/16
Preset #8	QPSK	20 MHz	2/3	1/16
Number 9	QPSK	10 MHz	2/3	1/8

Note Fields on the LMS-T tab are active only for *LMS-T* operation mode.

Field	Option
<i>Preset Name</i>	Displays the name of the preset.
<i>Modulation Type</i>	Select QPSK , or 16 QAM .
<i>Bandwidth</i>	Select 10 MHz , or 20 MHz .
<i>FEC</i>	Select 2/3 .
<i>Guard</i>	Select 1/16 , or 1/8 .

Load Page from Radio—To load parameters for this page from the PTX-PRO, click on this button.

Program Page to Radio—To apply parameter modifications to the PTX-PRO, click on this button.

FMT Tab

The frequency modulation transmitter (FMT) tab lets you set the FMT parameters.

Field	Options
<i>Presets</i>	Click on the preset to display the parameter values of that preset.
<i>Video Deviation</i>	Choose 3 or 4 MHz.
<i>Enable Channel 1 (2, 3, 4)</i>	Enable to access additional channel specifications.
<i>Frequency</i>	When the channel is enabled, Choose one of the following frequencies: 4830, 5200, 5800, 6200, 6800, 7020, 7500, 8065, 8300, 8590.
<i>Preemphasis</i>	Check to enable; leave blank to disable.

Load Page from Radio—To load parameters for this page from the PTX-PRO, click on this button.

Program Page to Radio—To apply parameter modifications to the PTX-PRO, click on this button.

Channel Plan Tab

You can set up to a maximum of 22 channels for the PTX-PRO using channel plans with high and low offsets at 13 GHz, and fewer channels based upon the frequency band radio deployed (using the scroll bar).

Field	Option
<i>Offset –</i>	Specify the MHz values from your channel plan, or accept the default values.
<i>Center</i>	Specify the MHz values from your channel plan, or accept the default values.
<i>Offset +</i>	Specify the MHz values from your channel plan, or accept the default values.
<i>Currently Selected Band</i>	If you have more than one band, select the one that you want to be current.

Load Current Band From Radio—Apply the currently selected band to the Channel Plan screen.

Program Current Band to Radio—Apply the currently selected band parameters to the PTX-PRO.

Load All Bands from Radio—Apply the parameter settings from the PTX-PRO to the Channel Plan screen.

Program All Bands to Radio—Apply the parameter settings to the PTX-PRO.

Read Bands from File—Click to select a previously saved file to load your channel plan.

Save Bands to File—Save the settings to a file that you can load on this or other PTX-PRO radios.

Load Default Values—Click to load the default channel plan values.

Clear Values—Click to clear all channel plan values.

Licensing Tab

The Licensing Tab screen displays a list of features that your PTX-PRO has. If an item indicates that a feature is not licensed, you can purchase and obtain it by contacting Vislink Customer Support. Vislink supplies a license key that you enter to enable the licensed feature.



Field	Option
<i>Serial Number</i>	Displays the serial number of your PTX-PRO.
<i>Firmware Number</i>	Displays the firmware number of your PTX-PRO.
<i>License Key</i>	Enter the license key obtained from Vislink Customer Service then click the Set Key button.
<i>Set Key button</i>	Submits the licence key value; if valid, the corresponding license is enabled.
<i>Licensed Features box</i>	Displays the features you can use with your PTX-PRO. To obtain additional features, contact Vislink Customer Service (see Section 4.1, Getting Support for Your PTX-PRO on page 4-1).
<i>Refresh Button</i>	Click this button to refresh the license list.

4 Troubleshooting

This chapter describes how to troubleshoot your *Transmitter* (PTX-PRO).

4.1 Getting Support for Your PTX-PRO

You can contact the Vislink Technical Support staff as follows:

24-hour Worldwide Customer Support

E-mail: support@mrcbroadcast.com

Telephone: +1 978-671-5929 or
888-777-9221

Customer Service

E-mail: customerservice@mrcbroadcast.com

Telephone: +1 978-671-5700 Press 3
Monday-Friday, 8AM-5PM EST USA

When you contact Technical Support, include the following information:

- Model number and serial number (located on a label on the bottom of each unit).
- Approximate purchase date.

4.1.1 Replacement Parts

The external cables and connectors for the PTX-PRO are listed in the following table. If you need something that is not listed, ask your Sales Representative or consult the factory.

Part	Description
AC Power Cable (120 VAC)	Connects AC power to the PTX-PRO. Connectors on both ends.
AC Power Cable (240 VAC)	Connects AC power to the PTX-PRO. Connectors on one end only.
DC Power Cable (+11.0 to +36.0 VDC)	Connects DC power to the PTX-PRO. Connector on one end only.
Audio Input Cable	Provides input to PTX-PRO AUDIO 1 and 2 connectors from 2 XLR connectors. See Section A.3, Audio Connections on page A-3.
Null Modem Cable	Connects PTX-PRO RS-232 connector to PC RS-232 connector. For programming and monitoring data only. Section A.5, Data Connections on page A-5.
Audio Input Connector	Connects to PTX-PRO AUDIO 3 & 4 connector for Audio 3 and 4 inputs. Section A.5, Data Connections on page A-5.
Multipurpose Data Cable	Connects to PTX-PRO RS 232 connector to monitor Wayside and Radio data.
RF Coaxial Cable	Connects PTX-PRO RF output connector to antenna.
Power Input Connector	Connector only - Mates with PTX-PRO PWR connector.
Audio Input XLR Connector	Connector only - Mates with PTX-PRO AUDIO 1 or 2 connectors.

The mounting hardware for the PTX-PRO is listed in the following table.

Part	Description
Antenna Lock Plate	Attaches an MRC antenna directly to PTX-PRO RF output connector.
Quick Release	Provides quick release mounting of the PTX-PRO on an MRC tripod

4.1.2 Supported Repairs

There are no supported field repairs to the PTX-PRO. Return the unit for factory repair.

CAUTION *If you attempt field repair, you risk damaging your equipment. If your equipment is under warranty, you may also affect your warranty coverage. The PTX-PRO requires specialized test equipment and software to calibrate operating characteristics after repair.*

4.2 Addressing General Problems

Problem	Possible Cause	Action
PWR LED on PTX-PRO is off when PWR switch is set to on (I).	Missing input power.	<ul style="list-style-type: none"> • Make sure power cable is connected properly. • Make sure power source on. • Check input power voltage. • Check both AC and DC power fuses.
PWR LED on PTX-PRO is amber.	PTX-PRO is indicating a Minor Alarm .	<ul style="list-style-type: none"> • Check all Monitor Screens on PTX-PRO display. See Section 4.3, Addressing Display Error Messages on page 4-3. • Check Error Code Screen on PTX-PRO display. See Section 4.4, Addressing Video Problems on page 4-3.
PWR LED on PTX-PRO is red.	PTX-PRO is indicating a Major Alarm .	<ul style="list-style-type: none"> • TURN OFF POWER and call for service.
Test Tone is on and cannot be turned off from the radio.	Audio must be set from the Configurator (and cannot be set from the radio). Configurator setup is incorrect.	<ul style="list-style-type: none"> • Before programming the radio from the configurator, click Load all Settings, which will set the audio automatically from the radio. See Section 3.5, Configuring the PTX-PRO With a PC on page 3-4 • Set <i>Audio Input</i> to Analog, SDI EMB, or AES EBU, or set <i>Audio Type</i> to OFF. See MPEG Tab on page 3-7.

4.3 Addressing Display Error Messages

Messages on the PTX-PRO screen alert you to problems. The following table suggests what to do if they appear.

Message	Meaning	Action
Not On Chnl	Channel frequencies defined in the Channel Plan for that band are not being recognized.	<ul style="list-style-type: none"> • Change the channel. • Use Configurator software to check that the Channel Plan is correct. • Verify Channel Plan matches the transmitter settings. • If message persists even when operating on a frequency that matches the channel plan, unit may have suffered internal failure.
No Video	The PTX-PRO is unable to lock onto video signal.	<ul style="list-style-type: none"> • Check for correct operation mode. • Check cable connections to SIGNAL INPUT and SDI/ASI INPUT connectors. • Use Configurator software to check settings. • If message persists, unit may have suffered internal failure.

4.4 Addressing Video Problems

Problem	Possible Cause	Action
No video.	Problem with video source or cabling	<ul style="list-style-type: none"> • Check video source and cabling.
	Transmitter and Receiver compatibility problems	<ul style="list-style-type: none"> • Verify Transmitter and Receiver are both operating in the same digital mode. • Verify Transmitter and Receiver are both operating on the same frequency. If frequency offsets are used, verify offsets are identical between Transmitter and Receiver.
	Video source configuration problem	<ul style="list-style-type: none"> • Verify PTX-PRO front panel settings match video source inputs.

4.5 Addressing Error Codes

The following table describes the error codes and what to do if they appear.

Error Code	Meaning	Action
E000	Error Summary	<ul style="list-style-type: none"> Provides error summary.
E001	Message ID	<ul style="list-style-type: none"> Displayed when a status message times out.
E020	IF Fault	<ul style="list-style-type: none"> Verify condition of cable connections.
E021	RF Fault	<ul style="list-style-type: none"> Verify condition of cable connections.
E080	Communication Failure with the COFDM/MPEG Module	<ul style="list-style-type: none"> Verify condition of cable connections.
<p>Parameter Errors <i>(Some internal parameter is outside of allowable limits.)</i> Note: An additional number on the status indicates that the value is too low (4) or too high (8).</p>		
E030	2.048 Volt Reference Error	<ul style="list-style-type: none"> Check for Error Codes related to power - E03A thru E03E. Verify cable connectors are fully mated and verify cable and connectors are undamaged. Make sure power cable is connected properly.
E031	5.5 Volt Reference Error	
E032	7 Volt Line Error	
E033	11 Volt Line Error	
E034	Temperature Error	<ul style="list-style-type: none"> Check PTX-PRO to be sure it is not too close to sources of heat. Relocate PTX-PRO, if possible. Verify PTX-PRO has room around it for air circulation. Move objects preventing air flow.
E038	50 Ohm Coax Current Error	<ul style="list-style-type: none"> Contact technical staff.
E039	50 Ohm Coax Voltage Error	
E03A	50 Ohm Coax Power Error	
E03B	Circular Connector Current Error	<ul style="list-style-type: none"> Verify all power cables are properly connected and are not damaged. Verify correct input power is being applied to the PTX-PRO.
E03C	Circular Connector Voltage Error	
E03D	Circular Connector Power Error	
E03E	DC Bus Error	<ul style="list-style-type: none"> Contact technical staff.
E03F	Fan Fault	<ul style="list-style-type: none"> Contact technical staff.

4.6 Addressing Configurator Problems

The following table describes the *MRC Radio Configurator* errors and what to do if they appear.

Error	Possible Cause	Suggested Action
Connection failed on [COM port name]	PTX-PRO system power is off.	Turn PTX-PRO system power on.
	RS-232 cable is disconnected.	Connect cable. Ensure connectors are fully seated on both ends.
	RS-232 cable is defective.	Replace cable.
	Installed PTX-PRO hardware is defective.	Contact Technical Support.
Querying [Setting] failed...	Problem with RS-232 communication.	Try again. If error still appears, turn off PTX-PRO system power, close the Configurator, then turn on PTX-PRO power and restart Configurator.
	RS-232 cable is disconnected.	Connect cable. Be sure connectors on both ends are fully seated.
	RS-232 cable is defective.	Replace cable.
	Installed PTX-PRO hardware is defective.	Contact Technical Support.
Configuration File Corrupt OR Unable to Open Configuration File	Unable to read data stored in file chosen.	Select a different configuration file.
	File damaged.	Re-create configuration and save it with a different file name.
	Problem with PC or its disk drive.	Contact your PC service provider.
Configurator won't install on PC.	Previous version of <i>MRC Radio Configurator</i> already installed.	Uninstall previous version using the "Add/Remove Programs" function in Microsoft Windows Control Panel.
	PC does not meet System Requirements.	See Section 2.5, Installing Configurator Software on page 2-8.
	CD damaged.	Contact Technical Support.
	Problem with PC or its disk drive.	Contact your PC service provider.
Configurator crashes when trying to run. AND / OR Get "Runtime Error" message.	Program files damaged.	Use the "Add/Remove Programs" function in Microsoft Windows Control Panel to uninstall the Configurator, then reinstall it.
	Problem with PC or its disk drive.	Contact your PC service provider.

A *PTX-PRO Specifications*

This appendix contains specifications for your *PTX-PRO Transmitter* (PTX-PRO).

A.1 PTX-PRO Physical Specifications

Dimensions: 9.3" x 4.0" x 12.0"
 Weight: 19.85 lbs (9.0 Kg).
 Operating temperature: -20°C to +50°C

A.2 Power Connections

Check the electrical supply to be sure it can provide all the power needed at the site without overloading. Power ratings for equipment can be found on a rating plate, usually on the rear panel. If necessary, consult a licensed electrician.

A.2.1 Power Supply and Distribution

The PTX-PRO **PWR** (power) connector is located on the front panel. The mating connector that plugs into this panel connector is as follows.

Manufacturer: ITT Cannon
 Part Number: KPT06F14-12SX

Manufacturer: Amphenol
 Part Number: PT06E14-12SX

The following table shows the pin-outs on the front panel 12-pin **PWR** connector.

Connector Information	Pin-Out	Signal Description
	A	90 to 264 VAC
	B	N/C
	C	Neutral
	D	N/C
	E	N/C
	F	N/C
	G	N/C
	H	N/C
	J	DC (+)
	K	DC (-)
	L	AC Ground / DC (-)
	M	DC (+)

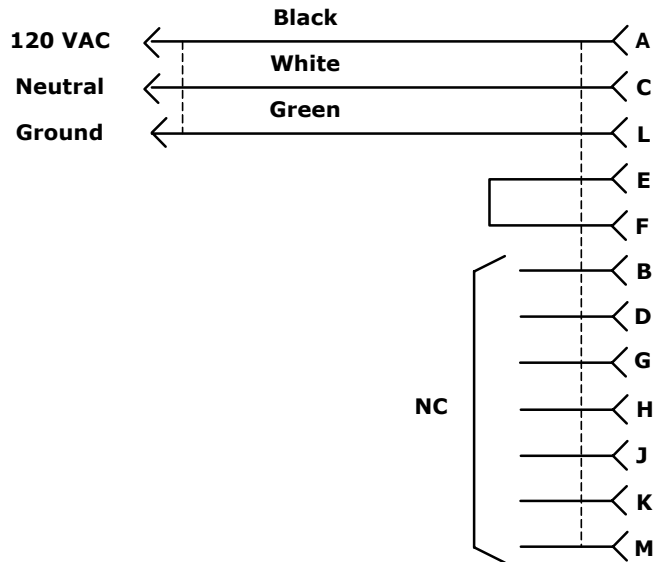
The PTX-PRO universal AC/DC power supply can operate on either external AC or DC power sources. Power cable assemblies are available from MRC for the PTX-PRO based on the power to be used.

Note If it is necessary to fabricate your own AC or DC power cable assembly, 20 AWG stranded wire is recommended for lengths up to 10 feet (3 M). Use one wire per connector contact. Consult the factory if you need longer cabling.

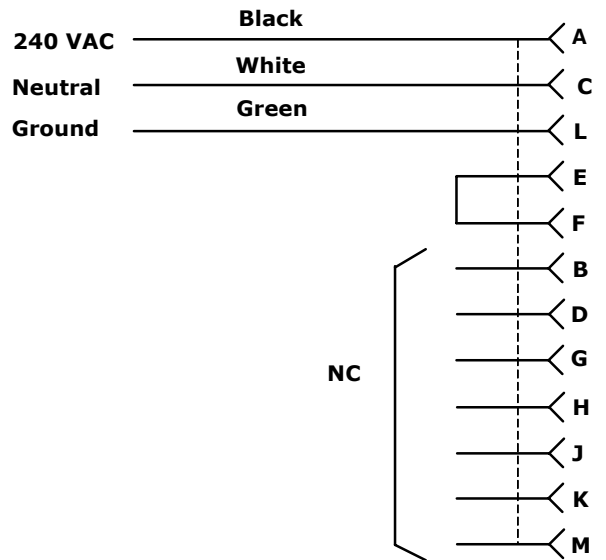
AC Power Cable Assemblies

Prefabricated AC Power Cable Assemblies are available from MRC to connect the PTX-PRO **PWR** connector to either 120 VAC or 240 VAC.

The AC Power Cable Assemblies are 6.0 ft. (1.8 m) long. The 120 VAC Power Cable Assembly comes complete with power connectors on both ends. The following figure shows the wiring diagram of the 120 VAC Power Cable Assembly.



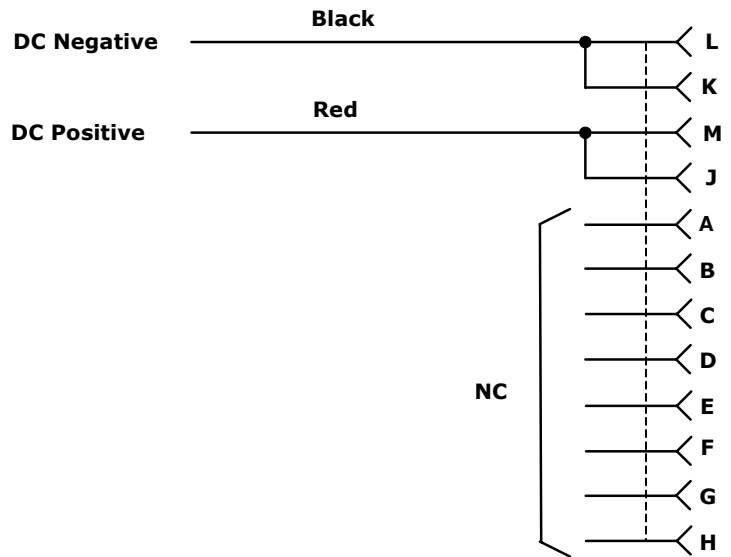
The 240 VAC Power Cable Assembly comes with a power connector on one end only. The user must provide the input power connector for the 240 VAC version of the Power Cable Assembly. The following figure shows the wiring diagram of the 240 VAC Power Cable Assembly.



DC Power Cable Assembly

A prefabricated DC Power Cable Assembly is available from MRC to connect the PTX-PRO **PWR** connector to a DC power source.

The DC Power Cable Assembly is 10 ft. (3 m) long. The DC Power Cable Assembly comes with a power connector on one end only. The following figure shows the wiring diagram of the DC Power Cable Assembly.

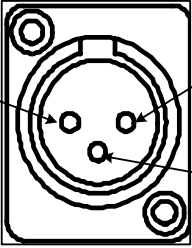


A.3 Audio Connections

The PTX-PRO can provide analog or digital audio inputs. All audio inputs are available at either the front or rear panel audio connectors.

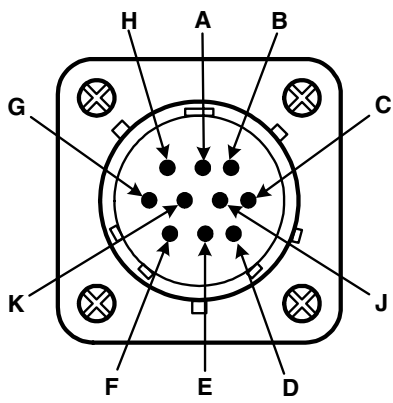
A.3.1 Front Panel Audio Connections

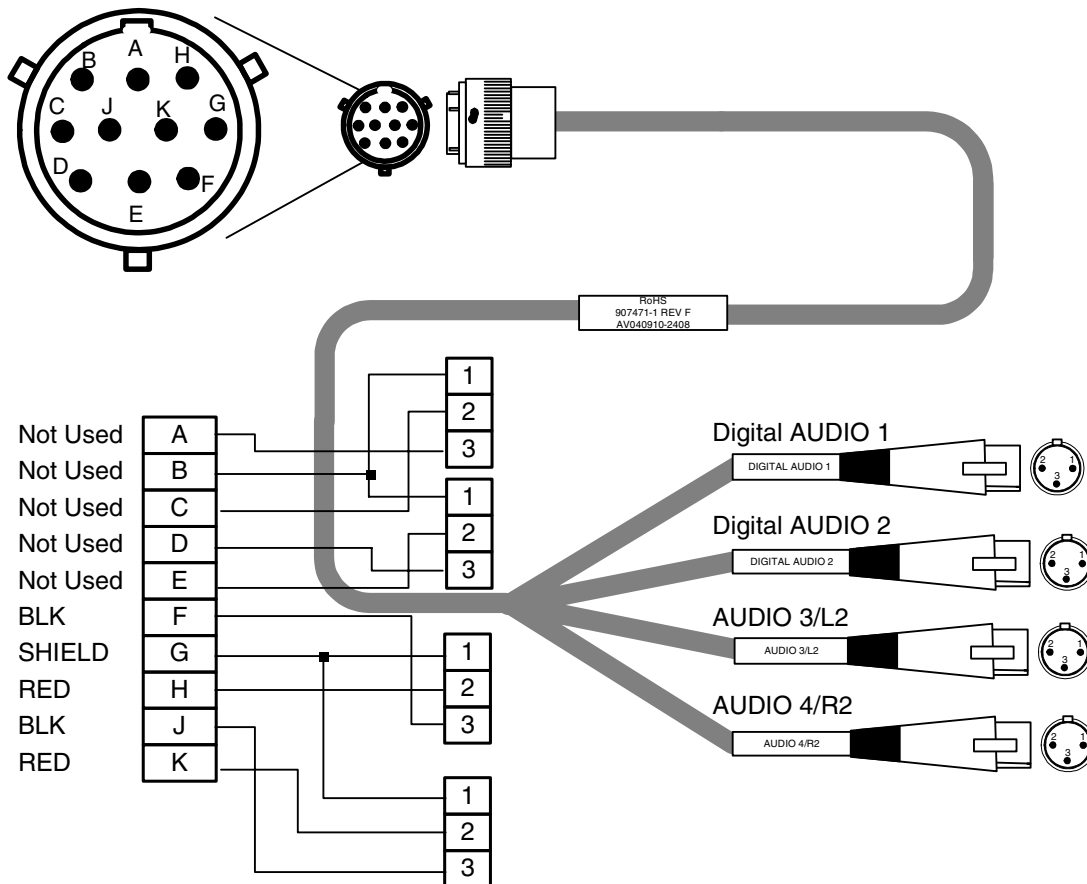
Front panel **AUDIO 1/L1** and **AUDIO 2 XLR/R1** connectors are used for MPEG Audio A inputs or analog subcarriers 1 and 2. Connector pin-outs are shown in the following table.

Connector Information	Pin-Out	Signal Description
	1	Ground
	2	Live (+)
	3	Return (-)

A.3.2 Rear Panel Audio Connections

The rear panel **AUDIO 3 & 4 / AES-EBU** connector is used for MPEG Audio B inputs or analog subcarriers 3 and 4. The mating connector is an Amphenol (MS3116F12-10S) or ITT Cannon (KPT06F12-10S). Rear panel **AUDIO 3 & 4 / AES-EBU 10-PIN male** connector pin-outs are shown in the following table. A prefabricated cable assembly (as shown in the following figure) splits the audio connections into two separate cables with XLR connectors. One cable assembly is included with each PTX-PRO ordered.

Connector Information	Pin-Out	Signal Description
	A	DIGITAL 1 CH1 +
	B	DIGITAL 1/2 GND
	C	DIGITAL 1 CH1 -
	D	DIGITAL 2 CH2 +
	E	DIGITAL 2 CH2 -
	F	ANALOG 3 LEFT CH2 -
	G	ANALOG 3/4 COM
	H	ANALOG 3 LEFT CH2 +
	J	ANALOG 4 RIGHT CH2 -
	K	ANALOG 4 RIGHT CH2 +



The PTX-PRO provides a maximum of four audio circuits. Each audio circuit is a 3-wire balanced circuit capable of carrying one tone or voice signal. An audio circuit can carry one analog balanced channel or two digital AES/EBU channels.

A.3.3 MPEG Audio input

MPEG audio circuits must be configured in pairs with the *MRC Radio Configurator* software:

- **Audio 1** - LEFT/RIGHT or Digital AES/EBU.
- **Audio 2** - LEFT/RIGHT or Digital AES/EBU.

A.3.4 AES/EBU Audio input

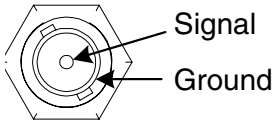
The PTX-PRO only provides digital audio when operating in digital mode.

In digital mode, the PTX-PRO receives a digital signal and routes the data to the MPEG decoder and then to the COFDM demodulator. The PTX-PRO audio switching circuitry connects the input of the MPEG decoder to the **AUDIO** connector.

When configured for digital audio input (AES/EBU), the MPEG decoder provides two paired channels of digital data (+ and –), or four individual channels. All four circuits are balanced inputs, with each pair (+ and –) sharing one ground.

A.4 Video Connections

The PTX-PRO provides several video options on the front panel, using 75 Ohm BNC connectors, as described in the following table and in [Section 1.1, Front Panel Controls, Indicators, and Connectors](#) on page 1-2.

Operation Mode	Connector	Signals
	Signal Input	NTSC/PAL (525/625) or 70 MHz IF
	Monitor (output)	70 MHz
	SDI/SD/HD (input)	SDI (525/625) or HD-SDI
	ASI INPUT	ASI input

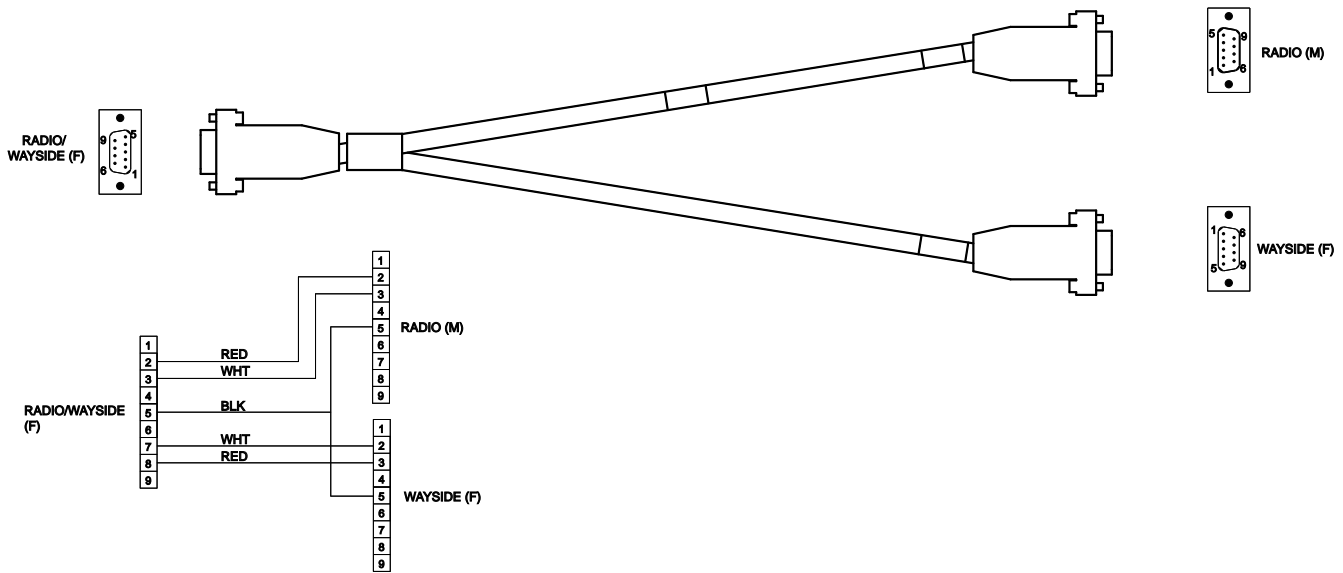
Note If your PTX-PRO has only 3 BNC connectors on the front panel, your SDI and ASI share the same connector.

A.5 Data Connections

The PTX-PRO has an **RS-232** data connector on the rear panel for the following purposes:

- Remote Control using a STRATA RX Remote Control Panel
- Radio Programming using a PC
- Wayside Data communication.

To access both radio and Wayside data, connect the DB-9 female **RS-232** connector of the Multipurpose Data Cable (shown) to the PTX-PRO **RS-232** connector.



The Multipurpose Data Cable contains two DB-9 female connectors and one DB-9 male connector and contains band markers indicating connections to **HOST**, **WAYSIDE**, and **RS-232** connectors.

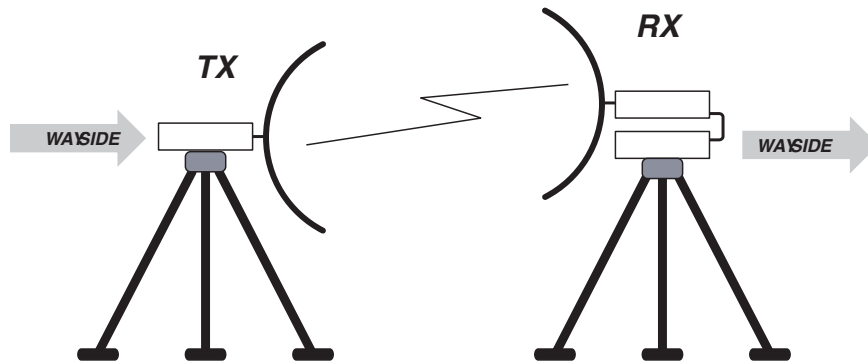
- The **HOST** DB-9 male connector is a Data Terminal Equipment (DTE) device that connects to a PC. When you connect the Multipurpose Data Cable to a **HOST** DB-9 male DTE device, you also must connect a null modem between the DTE device and the **HOST** male connector. If the **HOST** connector is connected to a DCE device, you cannot use a null modem cable, but you will need a straight pin-to-pin extension cable.
- The **WAYSIDE** DB-9 female connector is a Data Communication Equipment (DCE) device connector that connects to a modem, GPS, etc. When you connect the Multipurpose Data Cable to a **WAYSIDE** DB-9 female DCE device, you also must connect a null modem between the DCE device and the **WAYSIDE** female connector. If the **WAYSIDE** connector is connected to a DTE device, you cannot use a null modem cable, but you will need a straight pin-to-pin extension cable.

The following table shows programming connections using the Multipurpose Data Cable.

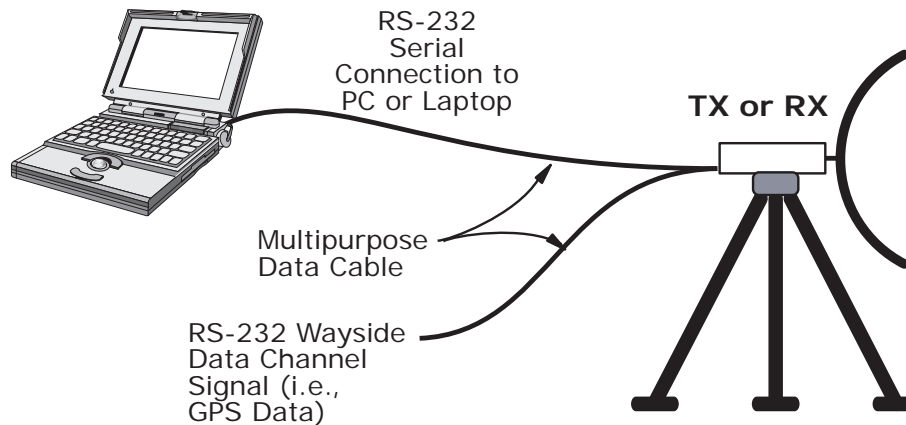
Connector	Pin	Function
	1	N/C
	2	Receive Data
	3	Transmit Data
	4	N/C
	5	GND
	6	N/C
	7	Transmit Data (sends Wayside data to an external device)
	8	Receive Data (carries Wayside data from an external device)
	9	N/C

A.5.1 Wayside Data

The Wayside channel is a simplex data channel receiving data at the PTX-PRO from a transmitter system. The PTX-PRO outputs data using connections to the serial port through a Multipurpose Data Cable.



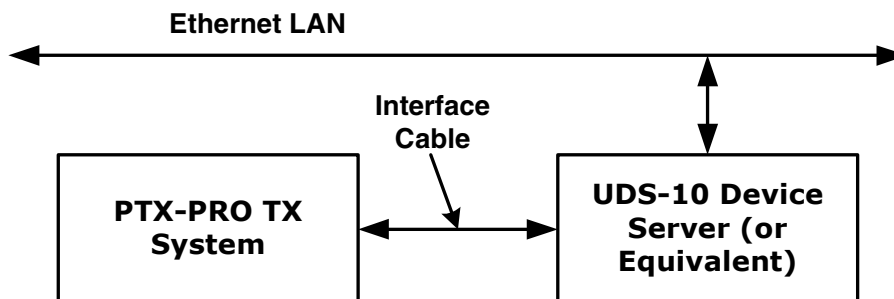
Connect the Wayside channel to the serial port using a Serial/Wayside Multipurpose Data Cable as shown in the following figure.



The cable connects to the **RS-232** connector on the PTX-PRO and has connections for both the Wayside channel and the PC required for use with the *MRC Radio Configurator* software.

A.5.2 Networking

You can connect the **RS-232** connector on the PTX-PRO to a network to monitor and program the PTX-PRO from a remote location. To connect the PTX-PRO to a network, you will need the following items.



- **Device Server**

Also called Serial-to-Ethernet converters, the device servers take serial RS-232 data and convert it to the format needed for an Ethernet network.

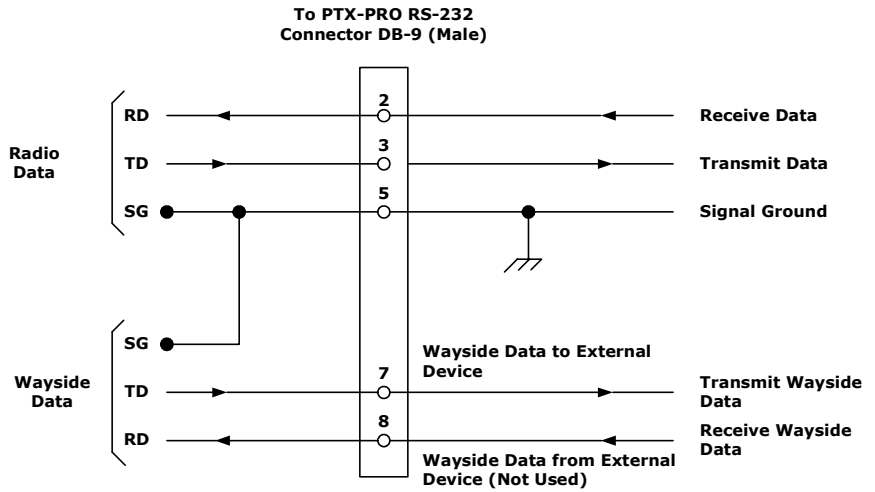


You can use a Lantronix UDS-10 because it accepts data via a DB-25 connector, and connects to the network via an RJ-45 connector.

- **Interface Cable**

This cable connects to the PTX-PRO data connector (DB-9) on one end and connect to the device server on the other (for example, a DB-25 connector in the case of the UDS-10).

This is a custom cable which you will have to fabricate.



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