STRATA

# MICROWAVE RADIO
COMMUNICATIONS

# TRANSMITTER
## OPERATOR'S GUIDE

No. 400xxx
Firmware : 1.011
2/6/04

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| Revision | Date |
|----------|------|
| A | June 2002 |
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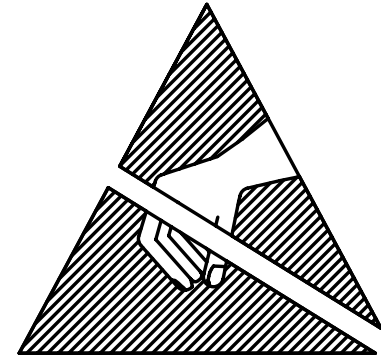


# *Warning*

## *Electro Static Discharge*

*Failure to properly ground the equipment and work area may result in damage to the equipment. Before attempting to install or make adjustments, take the following precautions:*

1. *Perform all work on a static free work surface.*
2. *Use a wrist grounding strap at all times grounded to the bench or chassis of the equipment where the*

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# *Safety Precautions*

**Cautions, Warnings, and Notes**

Use the following to table to interpret how distinguish between Cautions, Warnings, and Notes.

| *Caution* | Gives information which, if strictly observed, will prevent personal injury or death, or damage to personal property or the environment. |
|---|---|
| *Warning* | Give information which if strictly followed, will prevent damage to equipment or other goods. |
| *Note* | Provides supplementary information. |

**Safety Symbols**

The following safety symbols are used in this manual:

| | *CAUTION:* *Risk of Electric Shock* |
|---|---|
| | *WARNING:* *General Warning* *Risk of Danger* |
| | *WARNING:* *Electrostatic Discharge.* *Possible Damage* *to Equipment* |

**Nomenclature and Markings**

| | **Fuse** – Identifies fuse boxes or their location. |
|---|---|
| | **Frame or Chassis Ground** – Identifies the frame chassis terminal. |
| | **Earth Ground** – Identifies the earth ground terminal. |
| | **Protective Earth Ground** – Identifies any terminal which is intended for connection to an external conductor for protection against electric shock in case of a fault, or the terminal oa a protective earth ground electrode. |

# Important Safeguards

## Caution:

1. *Read all of these instructions.*
2. *Save these instructions for later use.*
3. *Follow all warnings and instructions marked on the units.*

---

**1** **Read Instructions** - All safety and operating instructions should be carefully read before operating the equipment.

**2** **Retain Instructions** - The safety and operating instructions should be retained and stored in a convenient place for future reference.

**3** **Heed Warnings** - All warnings on this equipment, and in the operating instructions should be strictly adhered to.

**4** Follow Instructions - All operating and user instructions should be properly implemented for optimum and safe performance.

**5** **Cleaning** - Do not use liquid cleaners or aerosol cleaners. Instead, use only a damp cloth for cleaning.

**6** **Attachments** - Do not use attachments not authorized by MRC. Using unauthorized attachments may create safety hazards or damage the equipment.

**7** **Water and Moisture** - Indoor equipment is not designed to withstand water or moisture beyond the limits noted in the product specifications.

**8** **Accessories** - Do not place equipment on an unstable cart, stand, tripod, bracket, or table. The product could fall, causing serious personnel injury or damage the equipment. Use only equipment recommended by MRC. When mounting or installing the equipment, follow the manufacturer's instructions.

**9** **Power Sources** - The equipment should be operated only from the type of power source indicated on the unit, or in the operating instructions. For 220 VAC operation, the proper power cord must be used.

**10** **Grounding or Polarization** - AC powered versions of this product are equipped with a 3-wire plug with an integral grounding pin. This plug fits into a standard, grounded power outlet. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounded plug.

**11** **Power Cord Protection** - Power supply cords should be routed so that they are not likely to be walked on or pinched by other equipment items. Pay particular attention to cords at plugs, convenience receptacles, and at the point where they enter and exit the equipment.

**12** **Object or Liquid Entry** - Never spill liquids or insert objects of any kind through openings in the equipment. Such actions can result in fire or electric shock.

**13** **Damage Requiring Servic**e - Unplug the radio product from the power outlet and contact service personnel when the following conditions occur:

1. If the power supply cord or plug has been damaged.

2. If liquid has been spilled in the equipment, or objects have fallen into the equipment.

3. If the equipment does not operate normally by following the operating instructions and adjusting only those controls that are covered by the operating instructions. Improperly adjusting or tampering with controls not covered in the operating instructions may result in damage to the equipment or require extensive work by a qualified technician to restore the radio to its normal operation.

When the equipment exhibits a distinct change in performance indicating the need for service.

**14** **Replacement Parts** - When replacing parts is required, use only parts authorized by MRC. Unauthorized substitutions could result in fire, electric shock, or damage to the equipment.

**15** **Safety Check** - Upon completing any service or repairs to the equipment, ensure that safety checks are performed to determine that the equipment is in proper operating condition

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# *Introduction*

## 1.1 Overview

The STRATA Transmitter System provides a reliable and highly flexible portable microwave system making it ideal for tripod, airborne, or mobile installations. The STRATA Transmitter's key features are:

- Analog, Digital, or Analog/Digital Switchable Configurations
- MPEG Encoding (4:2:0, 4:2:2)
- COFDM Modulation with Selectable Guard Interval
- Digital Modulation for QPSK, 16QAM, and 64QAM
- NTSC or PAL Modulation with Audio (4 mono or 2 stereo)

### 1.1.1 Terms

In this section, note the following abbreviation of terms.

- **MPEG** – MPEG Encoding
- **COFDM** – COFDM Modulation

### 1.1.2 System Components

The system is made of the following components:

- TCU - Transmitter Control Unit – The TCU can be equipped with an FM Modulator. COFDM/MPEG module, or both. For more information, see *Figure 1-2, STRATA Transmitter Options on page 1-2*.
- TXU - Transmitter Unit – The contains the RF Transmitter Unit. The TXU can be equipped with an FM Modulator or COFDM/MPEG module, but not both. For more information, see *Figure 1-2, STRATA Transmitter Options on page 1-2*.
- HPU - High Power Unit. The HPU is used with the TXU to increase output power.
- AC Power Supply (optional) - The AC power supply provides DC power from an AC source to power one or more units in a system.

### 1.1.3 Single Unit Systems

The TXU or TCU can be used independently as a single unit application:

- The TXU as a stand-alone Transmitter accepting an IF input.
- The TXU as a stand-alone transmitter featuring FM modulation or MPEG & COFDM.
- The TCU as a separate unit can also be used for FM modulation, MPEG & COFDM, or both FM modulation and MPEG & COFDM.

### 1.1.4 Multi--Unit Systems

The TCU, TXU, and HPU can be configured as part of an integrated system.

- The TCU can be used to house the FM Modulator and MPEG/COFDM module supplying an IF signal to a TXU containing only the RF transmitter.
- Or the TXU can be used to house the FM Modulator or MPEG/COFDM module supplying an RF signal to the HPU re-transmitting the signal at a higher output.
- Further, the HPU can be added to a TCU and TXU as shown in *Figure 1-1*.
- In addition, the TCU can be separated from the TXU and HPU in applications where the transmitter needs to be located in another location.

**Figure 1-1  STRATA Transmitter System**



### 1.1.5 HPU Power Amp

The HPU increases the signal power from 2 and 12 watts depending on the modulation and format used. The HPU installs as part of an integrated stack for either tripod or aircraft applications. The HPU is always powered from the TXU. For more information, see "*Powering the STRATA Transmitter," Section 3 on page 3-1*.

The HPU will accept antenna mounts similar to the TXU.

**Figure 1-2  STRATA Transmitter Options**
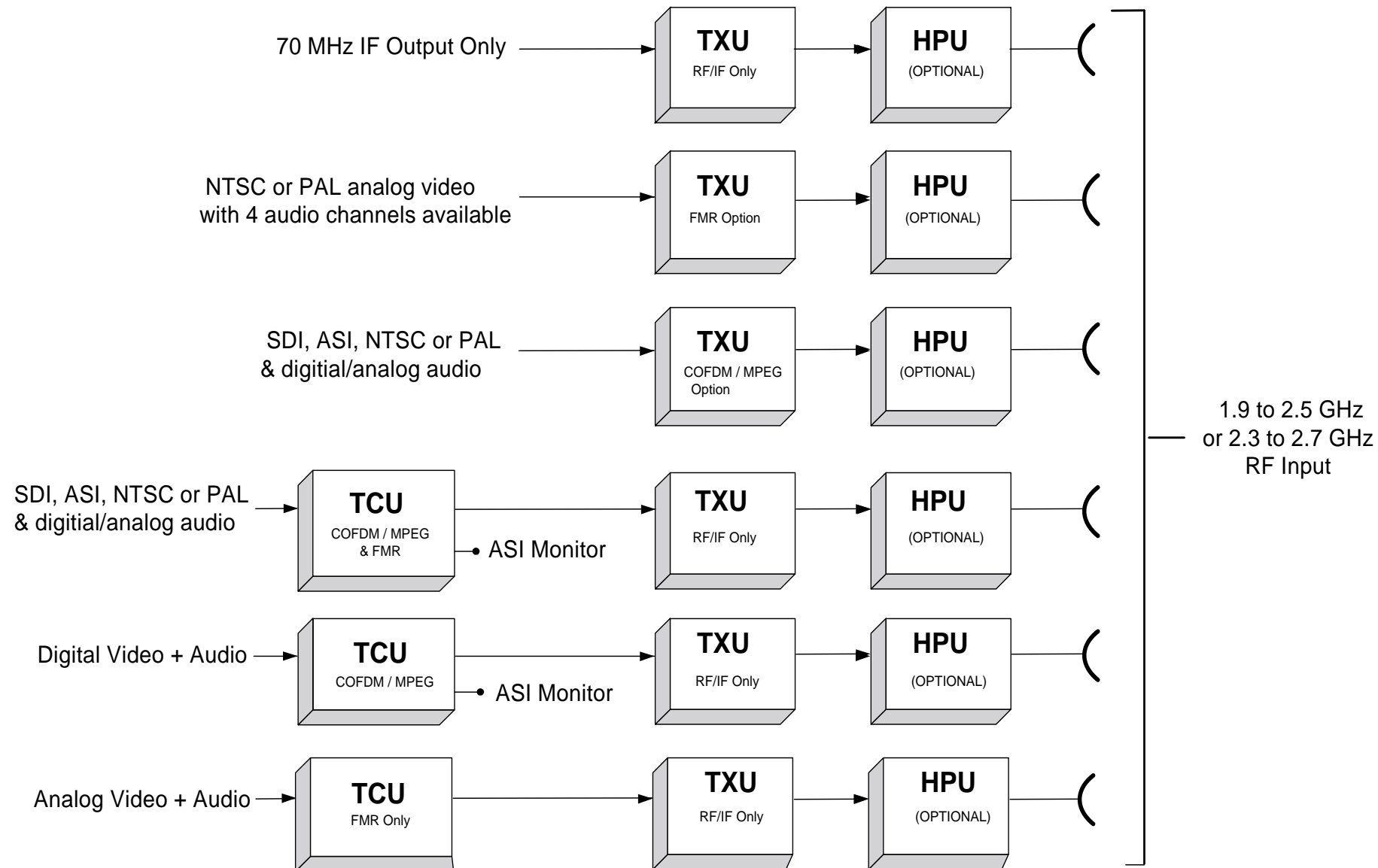
## 1.2     System Power

STRATA Transmitter Units can be powered from any DC source. The voltage required depends on the number of units in the system, and whether the units are physically separated. In addition, in applications where units are physically separated, the DC voltage can be superimposed on the IF and RF signals allowing the system to be powered from a single unit.

For more information, see "*Powering the STRATA Transmitter," Section 3 on page 3-1*.

## 1.3     System Communications Links

A STRATA Transmitter system provides a communication link between units. Information is passed between the TCU and TXU on the IF signal, and between the TXU and HPU on the RF signal. This feature allows an operator to control every component of the system from either the TCU or TXU.

**Figure 1-3   Communication Link Block Diagram**
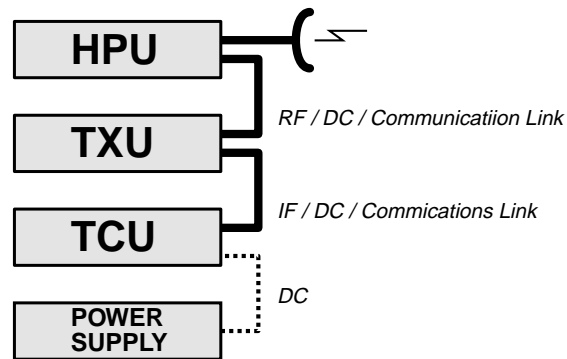


Note:

System can be controlled from either the TCU or TXU

### 1.3.1     Orderwire Communication

Orderwire communications at speeds up to xx provide an addition data carrier for communications between links. Connection to the transmitter is made to the serial connector. See Appendix C for connections and cabling.

## 1.4     STRATA Tx Configurator Software

STRATA TX Configuration Software is shipped with every STRAT transmitter. System presets are set at the factory depending on the customer order. Changes can be made to existing presets using the TX Configuration menu system (*Figure 1-4*).

A PC or laptop computer connects to the serial port of the TCU or TXU. Once connected, the following functions are possible:

- Upload current presets from the system to the PC.
- Make modifications to current presets and download back to the system.
- Store multiple presets to the PC using unique file names.

Storing presets allows the user the flexibility of storing multiple sets of system presets to be recalled later.

**Figure 1-4   Radio Menu**
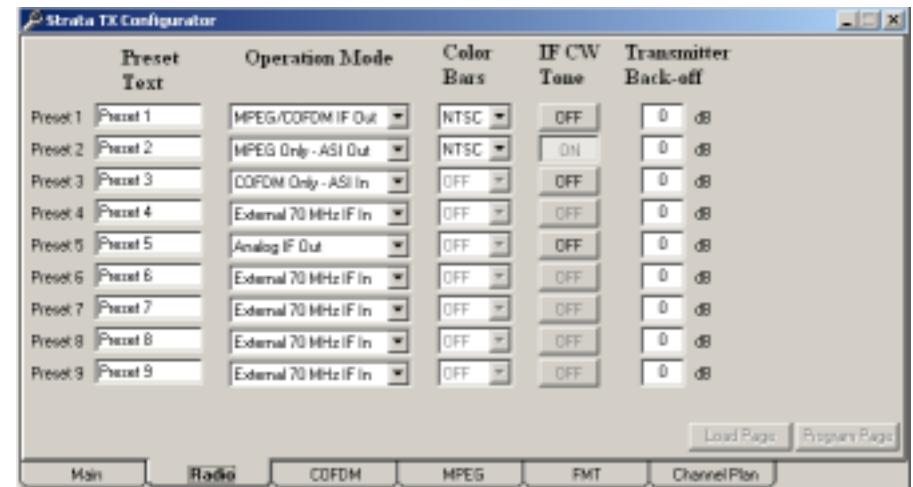


For more information, refer to "*STRATA Tx Configurator," Section 5 on page 5-1*

### 1.4.1    Front Panel Controls

System changes can be made on single or multi-unit systems using a single push button/rotary switch (*Figure 1-5*). You can make certain changes from the front panel control switch to existing system presets. However, most changes can only be made using the "*STRATA Tx Configurator," Section 5 on page 5-1*.

**Figure 1-5  Front Panel Control Switch**
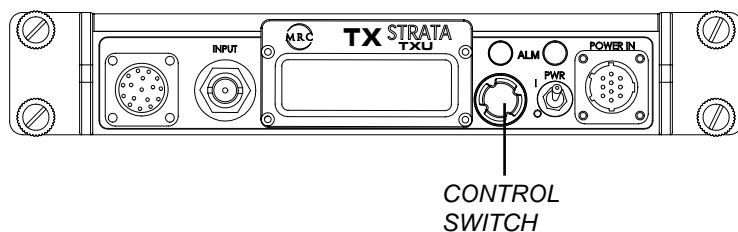


CONTROL
SWITCH

For more information, refer to "*Front Panel Controls," Section 4 on page 4-1*.

## 1.5    Remote Control Operation

For portable, mobile, or airborne installations, two remote control panels are available:

- STRATA TX Standard Remote Control Panel (*Figure 1-6*) – Features 10 selectable presets. For creating presets, see "*STRATA Tx Configurator," Section 5 on page 5-1*.
- STRATA TX Aircraft Remote Control Panel (*Figure 1-7*) – Simplified version of the standard model featuring 2 presets for ease of operation.

Both models feature auto or manual display intensity controls.

### 2.5.0.1    STRATA TX Remote Control Panel (*Figure 1-6*)
***Controls***
- 10 Preset Selections
- Transmit/Standby mode
- HI or Low power output mode
- Channel and Offset

***Displays***
- Channel and Offset
- Preset

**Figure 1-6  Remote Control Panels**



### 2.5.1    STRATA TX Aircraft Remote Control Panel
***Controls***
- 2 Preset Selections (Analog and Digital)
- Transmit/Standby modes
- HI or Low power output mode
- Channel and Offset

***Displays***
- Channel and Offset
- Presets (Analog and Digital)

**Figure 1-7  Aircraft Remote Control Panels**



For additional information, see the following technical manuals:
- STRATA TX Remote Control Panel Operator's Guide (400489)
- STRATA TX Aircraft Remote Control Panel Operator's Guide (400490)

# *Installation*

<div style="text-align: right">

# 2

</div>

## 2.1 Overview

STRATA radio systems can be installed in a variety of applications for portable, airborne, or mobile applications.

### 2.1.1 Glossary Terms

In this section, a "**unit**" refers to either:
- TCU - Transmitter Control Unit
- TXU - Transmitter Unit
- HPU - High Power Unit
- AC Universal Power Supply

A "**stack**" refers to one or more units used as a part of a system.

### 2.1.2 Mounting Options

Two types of mounting brackets are provided:
- **Fixed Mounting Bracket** – Use this bracket where you have only front panel access to the system in order to install or remove system units. This bracket is offered in two or three unit models. For mechanical mounting information, see *Section 2.2, "Fixed Mounting Bracket"*.
- **Universal Mounting Bracket** - This mounting bracket lets you install any number of units in a stack. You install one unit in each bracket. Units can be removed from the bracket without having to disable the stack. For mechanical mounting information, see *Section 2.3, "Universal Mounting Bracket," on page 2-4*.

## 2.2 Fixed Mounting Bracket

Using the fixed bracket, units must be ordered with mounting flanges for attaching to the bracket. Units are secured to the mounting bracket using the cap screws attached to the flanges as shown in *Figure 2-1*.

**Figure 2-1 Transmitter Mounted in 3 Unit Fixed Bracket**



FIXED MOUNTING BRACKET

FLANGES

CAPTIVE SCREWS

### 2.2.1 Fixed Bracket Mounting Dimensions

For mechanical dimensioning for the 2 or 3 unit fixed bracket, refer to the following drawings:
- *Figure 2-2, "2 Unit Fixed Bracket Dimensions" on page 2-2*
- *Figure 2-3, "3 Unit Fixed Bracket Dimensions" on page 2-3*

**Figure 2-2  2 Unit Fixed Bracket Dimensions**

.187"
[4.74 mm]
Typical for Entire Bracket

4.19"
[10.6 cm]

1.5"
[3.81 cm]

5.5"
[13.97 cm]

2.25"
[5.71 cm]

4.19"
[10.6 cm]

8.00"
[20.32 cm]

10.75"
[27.3 cm]

2.17"
[5.51 cm]

2.17"
[5.51 cm]

2.00"
[5.08 cm]

8.00"
[20.32 cm]

4.00"
[10.16 cm]

1.50"
[3.81 cm]

4.375"
[11.11 cm]

3.375"
[8.57 cm]

2.00"
[5.08 cm]

8.75"
[22.25 cm]

**Figure 2-3  3 Unit Fixed Bracket Dimensions**

.187"
[4.74 mm]
Typical for Entire Bracket

6.313"
[16.0 cm]

1.5"
[3.81 cm]

5.5"
[13.97 cm]

4.06"
[10.31 cm]

6.31"
[16.02 cm]

8.00"
[20.32 cm]

2.17"
[5.51 cm]

2.17"
[5.51 cm]

1.25"
[3.2 cm]

8.00"
[20.32 cm]

4.00"
[10.16 cm]

1.50"
[3.81 cm]

4.375"
[11.11 cm]

3.375"
[8.57 cm]

2.00"
[5.08 cm]

8.75"
[22.25 cm]
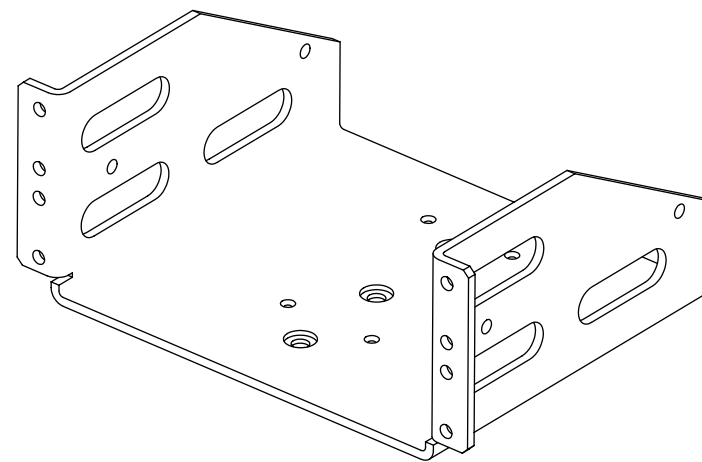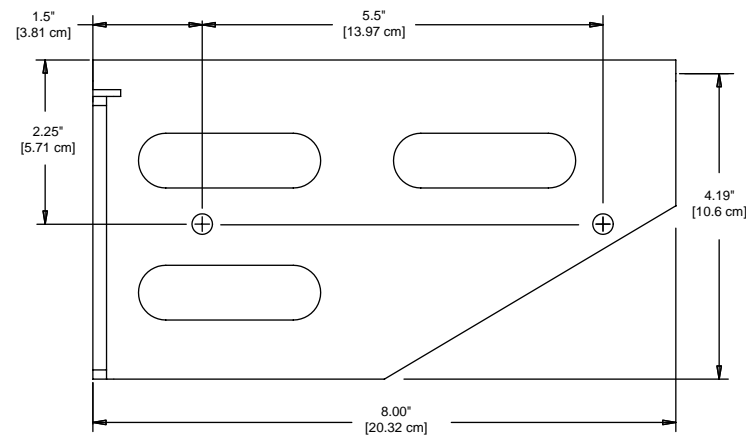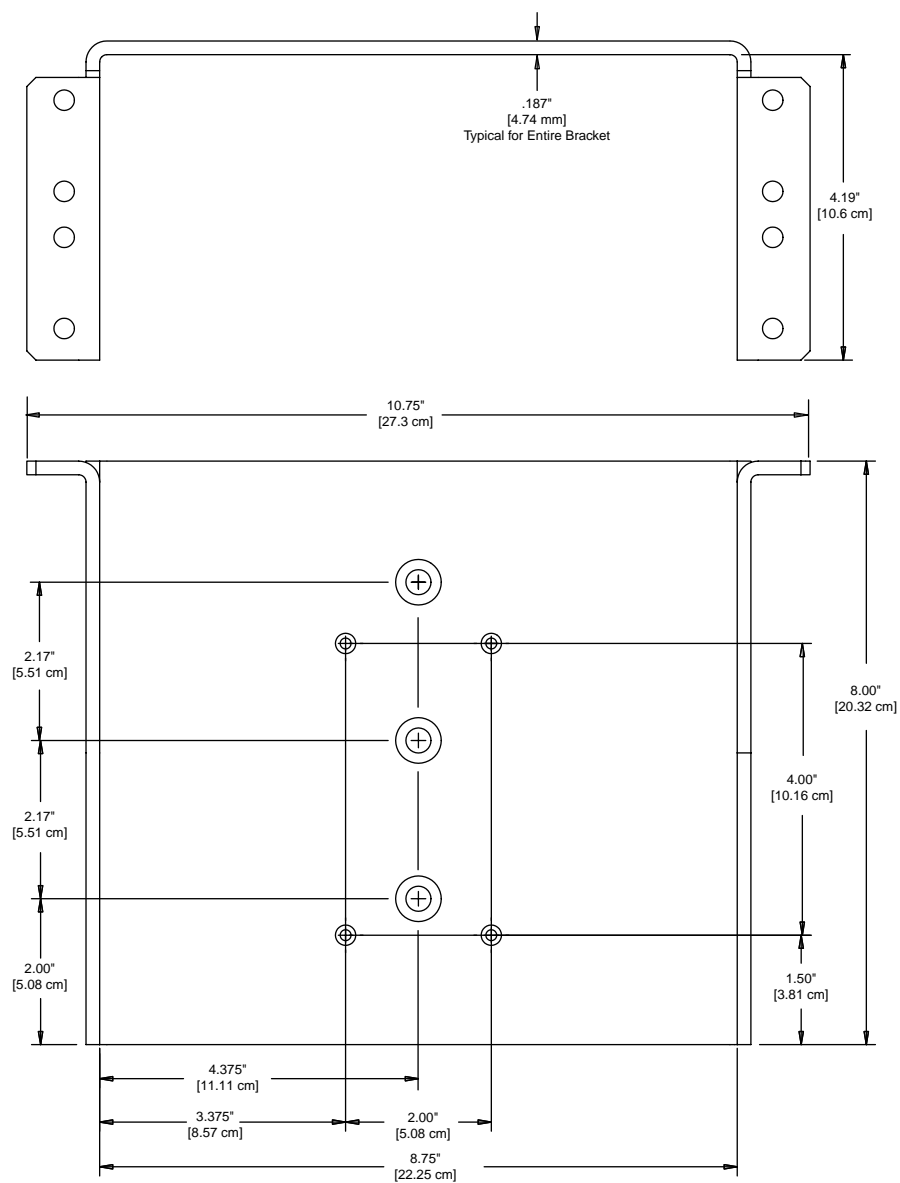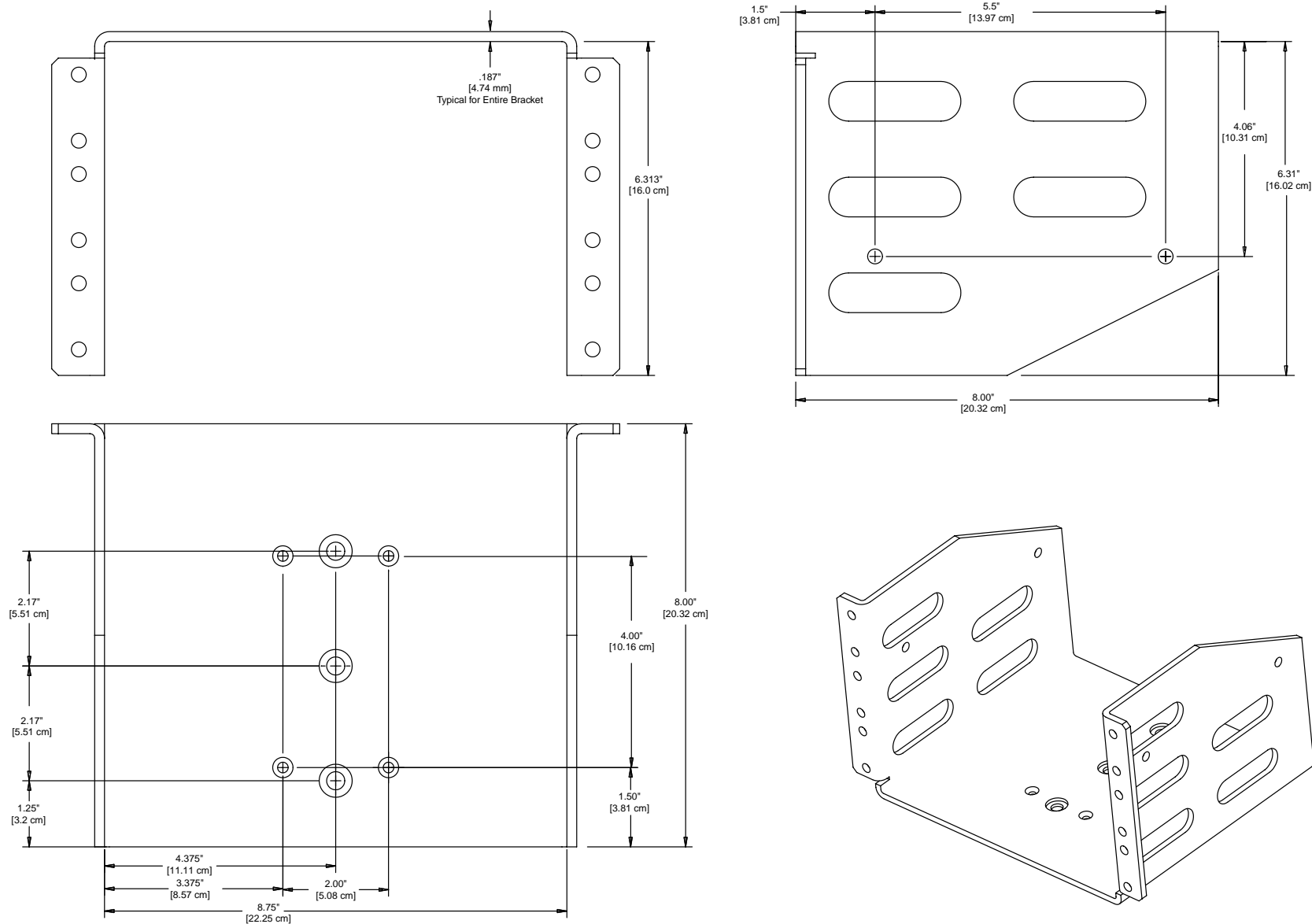
## 2.3    Universal Mounting Bracket

The Universal Mounting Bracket (U-Bracket) lets you install multiple units as shown in *Figure 2-4*. Individual units are mounted to a single bracket using a set of latches (*Figure 2-5*). Brackets can be easily added and removed from a stack of units using the two captive screws on either side of the bracket. In addition, units can be removed from their brackets without removing it form the stack.

**Note:** *Due to the added height of the High Power Unit, it must always be installed at the top of the stack of units.*

**Figure 2-4  3 Unit Stack using Universal Brackets**





CAPTIVE SCREW

LATCH
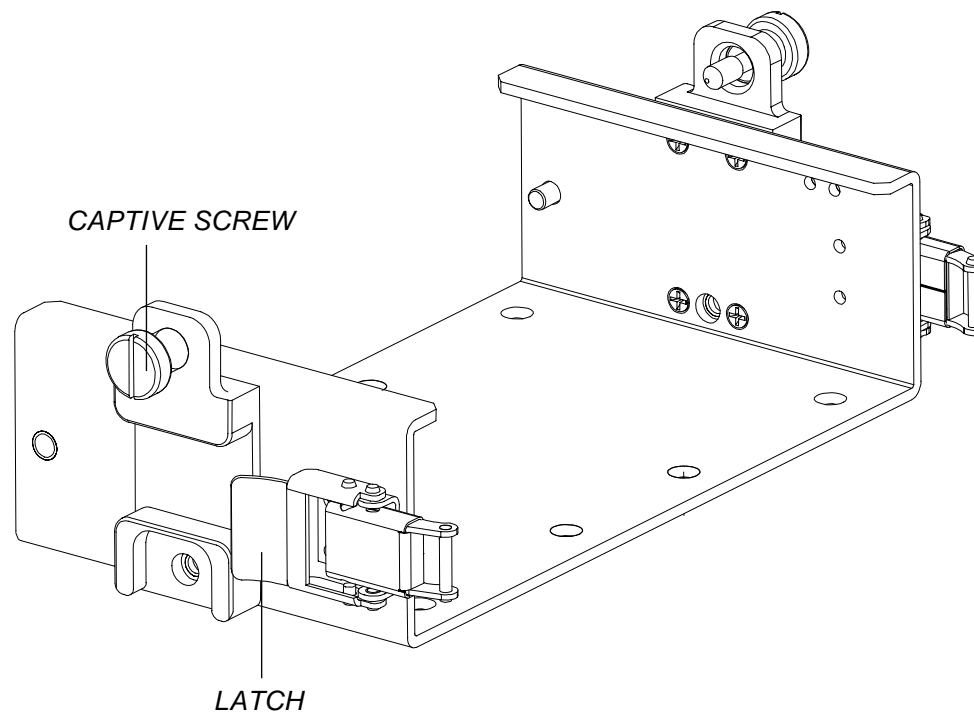
2.3.1     Adding and Removing Units from the Stack

Follow these steps to remove units from a stack.

**Step 1**    Loosen the captive screws on both sides of the unit as shown in *Figure 2-6*.

**Figure 2-6  Captive Screws on Universal Bracket**
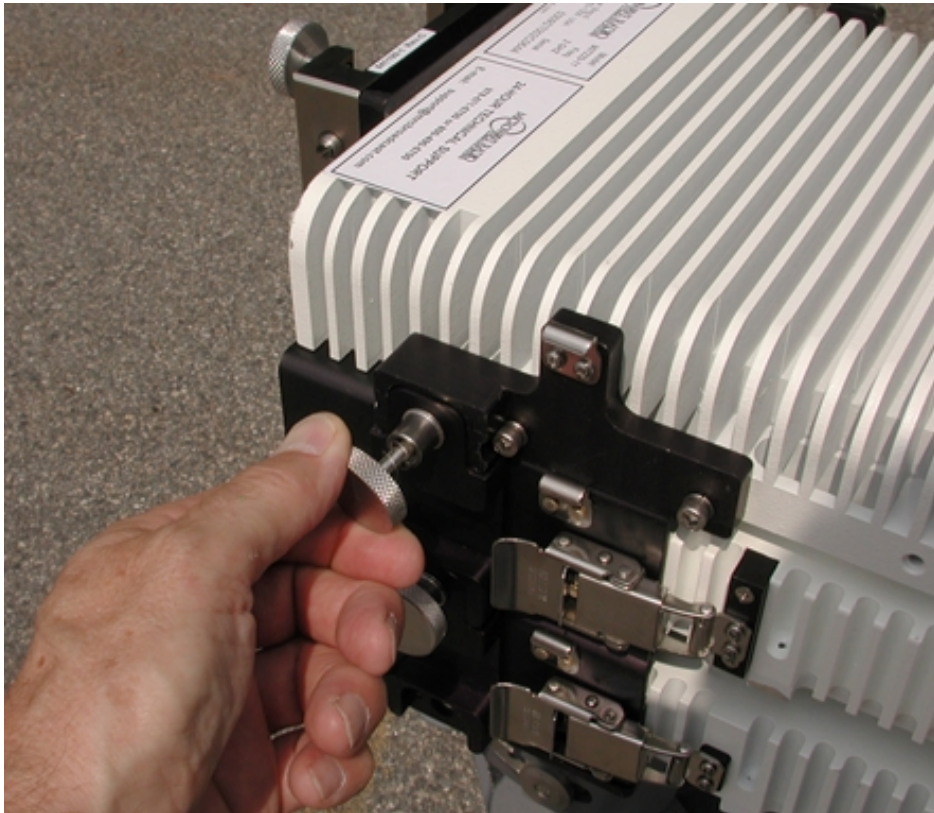


**Step 2**    Once the captive screws are loosened, lift the unit from the stack as shown in *Figure 2-7*.

**Figure 2-7  Removing Unit from Stack with Universal Bracket**
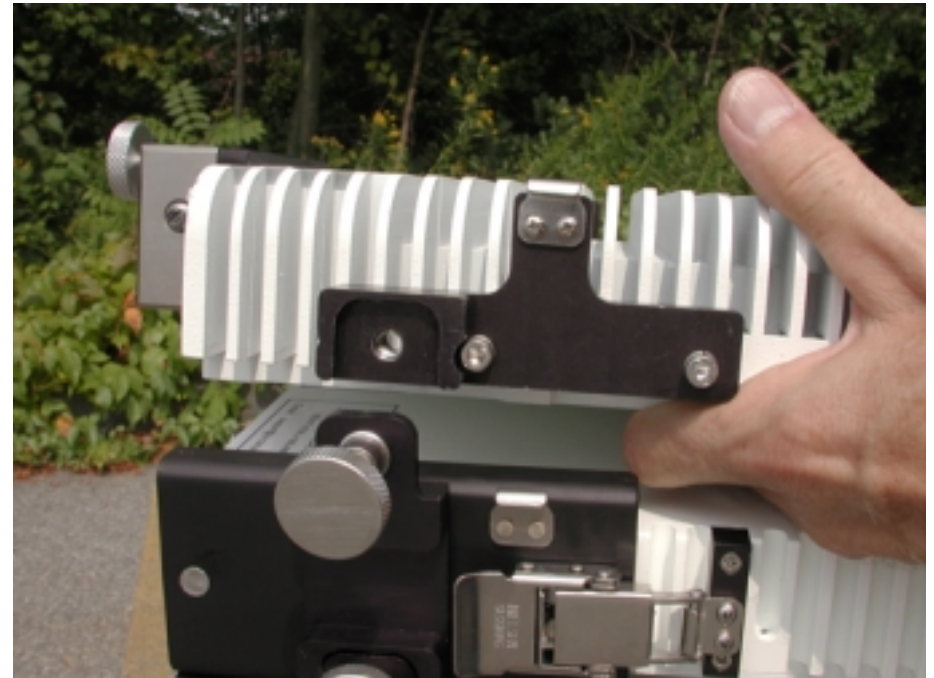


**Step 3**    To install the bracket, reverse these steps.

2.3.2      Installing and Removing a Unit from the Bracket

You can remove a unit from it s individual bracket without removing it from the stack.

---

**Note:**      *For ease of removal, be sure to level the unit stack.*

---

Follow these steps:

**Step 1**     Pull the latch and latch release toward the front of the unit as shown in *Figure 2-8*.

**Figure 2-8  Latch and Latch Release**



LATCH

LATCH RELEASE

PULL IN THIS DIRECTION
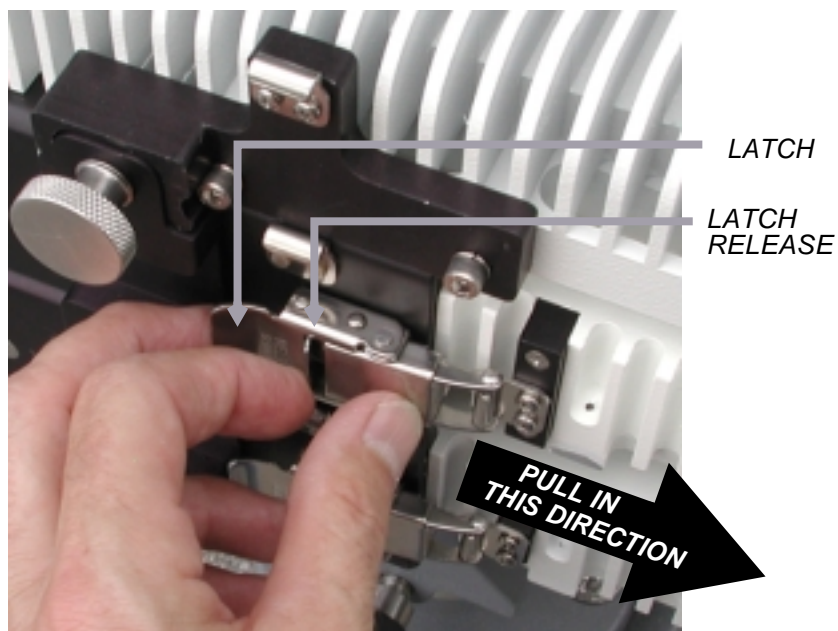
**Step 2**     Once the latch releases, make sure it is clear of the unit as shown in *Figure 2-9*. Repeat this for the latch on each side of the unit.

**Figure 2-9  Moving Latch Clear of Unit**



**Step 3**     Next remove the unit from the bracket as shown *Figure 2-10*.

**Figure 2-10  Unit Removed from Universal Bracket**

## 2.4 Tripod Installation

Units can be installed on a tripod using either the fixed or universal brackets.
Both fixed or universal brackets are designed for the following parts:

- Quick Release Adapter - This adapter is design to used with MRC's medium and heavy weight tripods. The adapter lets you quickly mount and dismount a stack of units. For a dimensioned drawing, see *Figure 2-13*.
- Adapter Plate - The adapter plate is used to mount either fixed or universal brackets to the Quick release adapter. For a dimensioned drawing, see *Figure 2-14*.

**Figure 2-11  Quick Release Adapter and Adapter Plate**
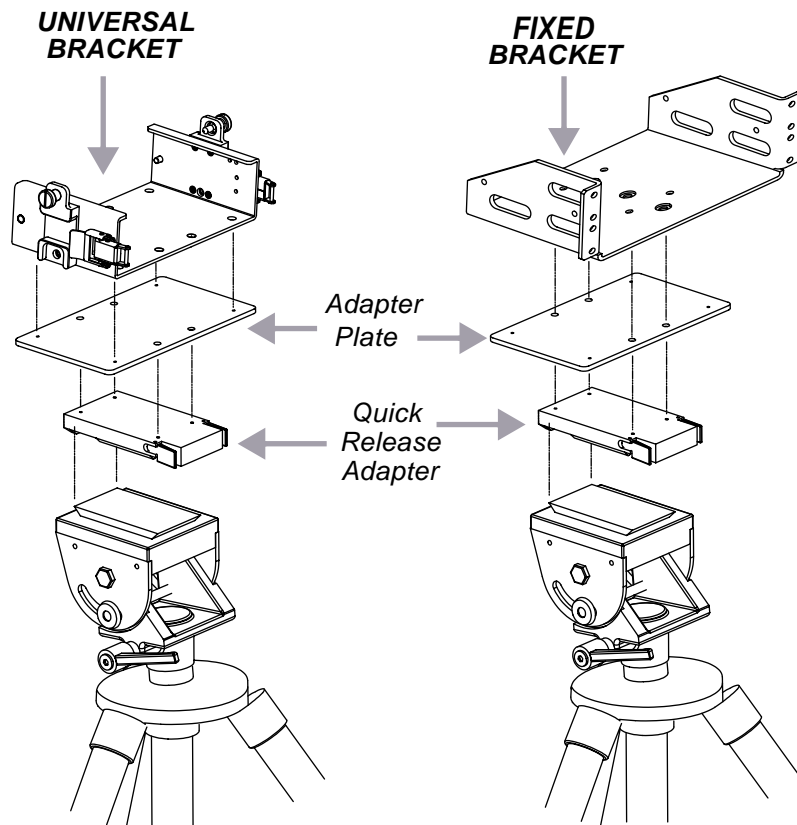


2.4.1    Quick Release Adapter

To install the quick release adapter on the tripod mount:

**Step 1**    Align the adapter with the edge of the tripod head (*Figure 2-15*)

**Step 2**    Press both tabs on the adapter to seat the adapter on the tripod head.

**Step 3**    Release the tabs to secure adapter.

**Figure 2-12  Quick Release Adapter**
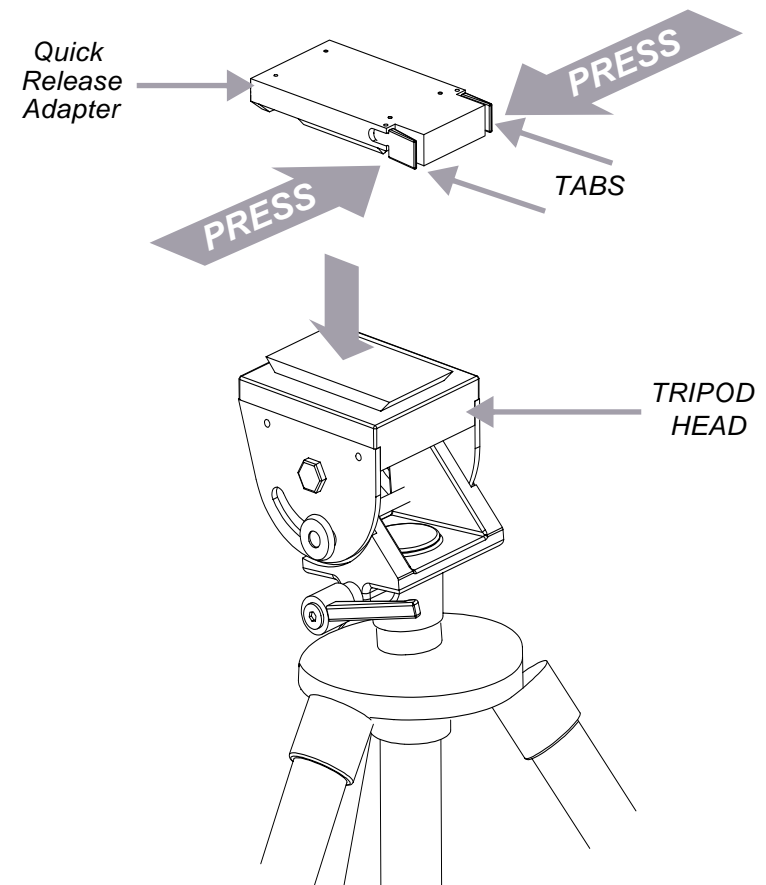
**Figure 2-13  Quick Release Adapter**



5.75"
[14.6 cm]

3.375"
[8.57 cm]

2.00"
[5.08 cm]

.585"
[14.86 mm]

.80"
[20.32 mm]

3.17"
[8.05 cm]

.400"
[10.6 mm]

4.00"
[10.16 cm]

.138-32 UNC-2B
.28 EFF THD
(4 PLACES)
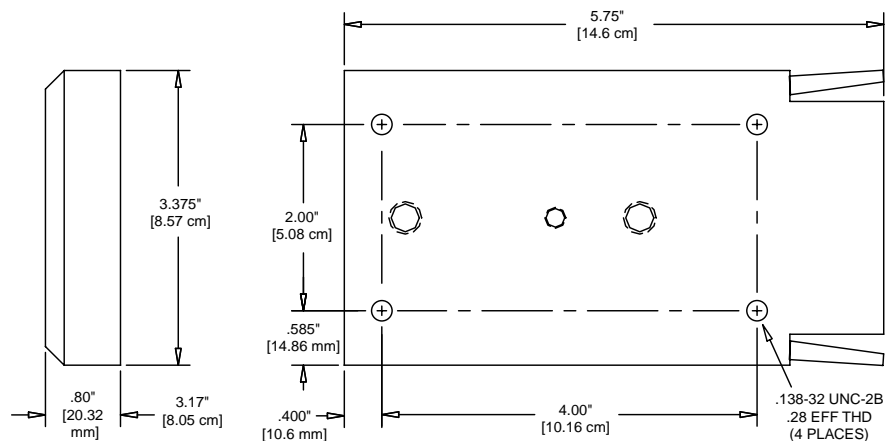
**Figure 2-14  Adapter Plate**



7.875"
[20.00 cm]

.875"
[22.22 mm]

7.00"
[17.78 cm]

.875"
[22.22 mm]

.187"
[4.74 mm]

4.00"
[10.16 cm]

.50"
[12.7mm]

4.25"
[10.79 cm]

2.00"
[5.08 cm]

.50"
[12.7mm]
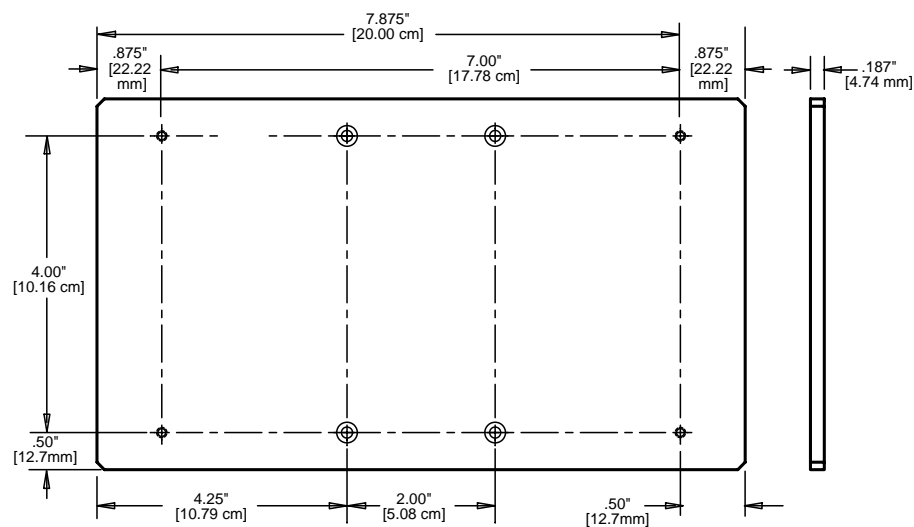
*Figure 2-15* shows a typical tripod installation using the universal brackets, adapter plate, and quick release adapter.

**Figure 2-15  Tripod with 4 Units using Universal Brackets**



*MegaHorn Antenna*

*Antenna Lock Plate*

*Universal Mounting Brackets*

*Adapter Plate*

*Quick Release Adapter*

*Pan & Tilt Head*

*Tripod*
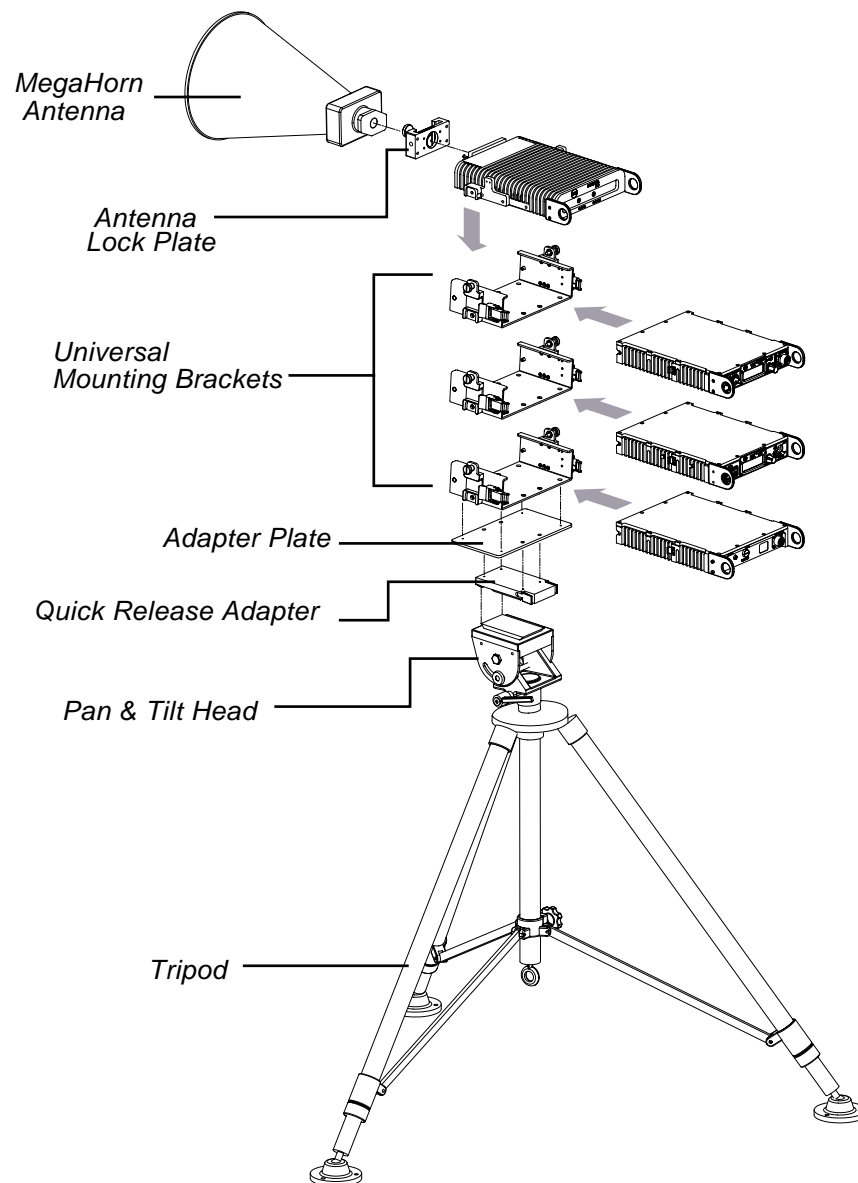
# *Powering the STRATA Transmitter*

**3**

## 3.1    Overview

The STRATA Transmitter must be powered up correctly in order to assure proper operation as well to provide safety for the operator and equipment.

## 3.2    Safety Precautions

**Step 1**    Read this chapter carefully. Make sure you understand which model type of the Transmitter you are using.

**Step 2**    Follow the procedures carefully to protect against injury or damage to the STRATA Transmitter or test equipment.

**Step 3**    Check that all connections are securely fastened.

## 3.3    Model Variations

The STRATA Transmitter system can be ordered in one of two models which offer different options for controlling DC power when it is superimposed with the IF or RF signal between units. The model variations are:

- **Superimposing** of the DC Power with the IF and RF signals between units. In this system, power is carried on the IF coaxial cable from the TCU to the TXU. In addition, DC power is carried on the RF coaxial cable from the TXU to the HPU. To turn the DC power on or off, the operator uses the front panel menus. For more information, see "*DC Voltage Settings – Non Over-Ride Switch Models," Section 3.6.1 on page 3-4*.

- **Superimposing and Manual Override** of DC Power with the IF and RF signals carried on the coaxial cables between units. In this system, the operator can turn the DC power on or off using both the front panel menus and switches located on the front and rear panels of the TXU, and the front panel of the TCU. For more information, see "*DC Voltage Settings – Over-Ride Switch Models," Section 2.6.3 on page 3-5*.

To identify the correct model, see the following sections:

### 3.3.1    Identifying TXU Units

If your system **does not** have manual override features, the TXU will not have the DC Over-ride switches on the front and rear panel as shown in *Figure 3-1*

**Figure 3-1  TXU With No DC Over-ride Switches**



*Rear View*



*Front View*
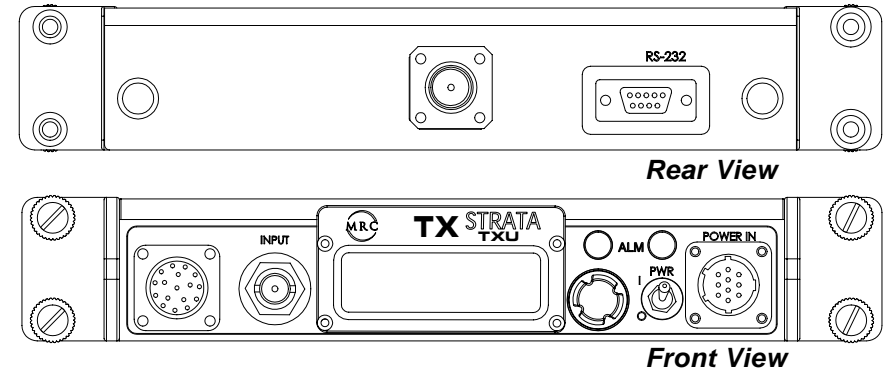
If your system **does** have manual override features, the TXU will have the DC Power Over-ride Switches on the front and rear panel as shown in *Figure 3-2*

**Figure 3-2  TXU with DC Override Switches**



*DC Over-ride Switch (See Note)*        *Rear View*



*Front View*
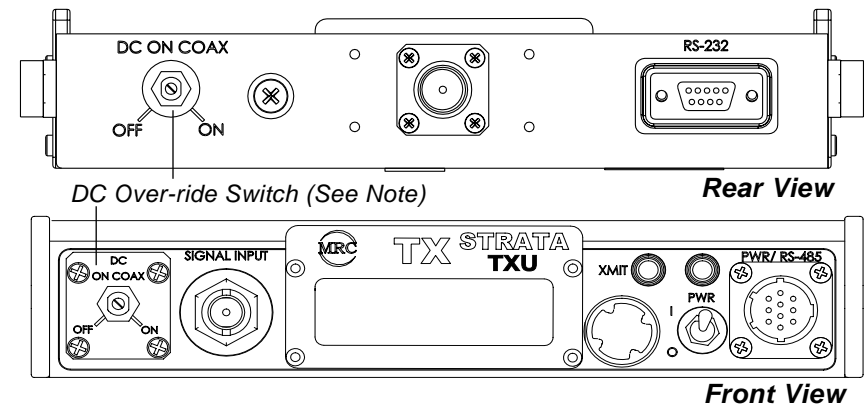
**Note:**    *On TXU models designed with the DC Over-ride Switch, if the unit is equipped with either the FMT Modulator or the MPEG/COFDM module, the front panel DC Over-ride Switch will have an Audio Input Connector installed in its place similar to the one shown in Figure 3-1*

### 3.3.2    Identifying TCU Units

If your system **does not** have the DC Override Switch features, the TCU front panel will look like those shown in *Figure 3-3*.

**Figure 3-3  TCU Without DC Override Switch**
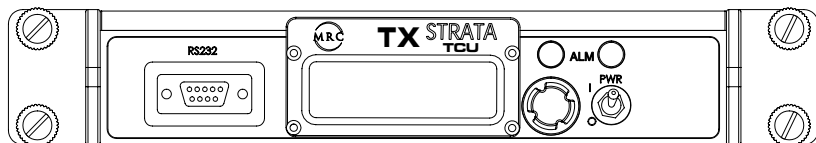


If your system **does** have the DC Override Switch features, the TCU front panel will look like those shown in *Figure 3-4*.

**Figure 3-4  TCU With DC Over-ride Switch**

*DC Over-ride Switch*
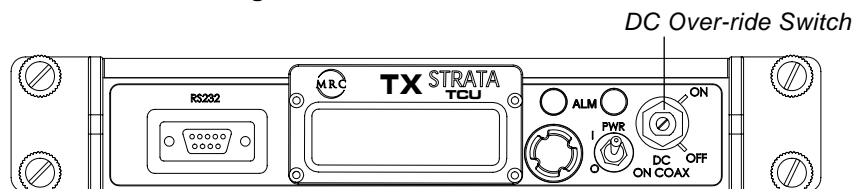


## 3.4    Powering STRATA Units

The method you use to power the transmitter can vary depending on the following:

• The transmitter configuration, whether you're using a single TCU, a TXU and HPU, or a TCU, TXU, and HPU as an integrated system.
• Whether the TCU and TXU are to be co-located or physically separated over some distance.

Once you understand which configuration you're using, refer to *Table 3-2, "Power Requirements," on page 3-3*.

### 3.4.1    Power Connections

To apply power to the TXU or TCU, refer to *Table 3-1*. MRC provides the necessary power connector. For more information, see:

• *Section 3.4.2, "Front Panel Power Connection," on page 3-2*
• *Section 3.4.3, "Power Harness Assembly," on page 3-2*

### 3.4.2    Front Panel Power Connection

*Table 3-1* and *Figure 3-5* show the power connector pin designations for the power front panel power connector for both the TCU and TXU.

**Table3-1          Power Connections**

| CONN. PIN | Description | Diagram |
|-----------|-------------|---------|
| A | + DC Volts | **Figure 3-5  Power Connector** |
| B | + DC Volts | |
| C | + DC Volts | |
| D | GND | |
| E | GND | |
| F | GND | |
| G | – | |
| H | – | |



### 3.4.3    Power Harness Assembly

Assemble the power harness as shown (*Figure 3-6*) in using the power connector provided with the transmitter.
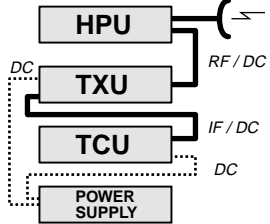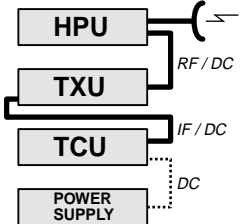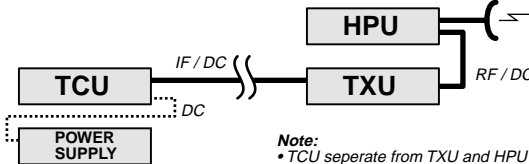
**Figure 3-6  Power Cable Assembly**



WIRE RECEPTACLE    COLLAR    RUBBER WIRE GUIDE    PLASTIC INSERT    CABLE HOUSING    RUBBER GROMMET    CABLE CLAMP    CLAMP SCREWS

*ASSEMBLED CONNECTOR AND CABLE*
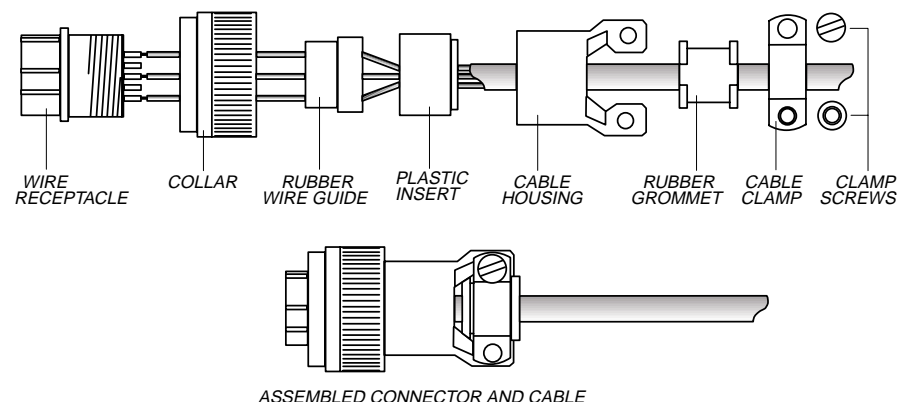
## 3.5    Power Requirements

*Table 3-2* describes the power requirements for stand-alone and multi-unit transmitter systems.

**Table3-2        Power Requirements**

| Application | TCU | TCU + TXU | HPU | Notes | Block Diagram |
|---|---|---|---|---|---|
| • Stand-alone TXU<br>• Stand-alone TCU<br>• Co-located TXU, TCU, & HPU | 12 to 48 Vdc | 12 to 48 Vdc | 12.5 to 22 Vdc<br>or<br>22 to 48 Vdc | (Note 1) | When the TXU and TCU are powered separately, the superimposed DC voltage between the TCU and TXU is turned off. See *Section 3.6, "DC Superimposed Voltages," on page 3-4* |
| Helicopter Application | 28 Vdc | 28 Vdc | 22 to 48 Vdc | (Note 2) | |
| Remote power from TCU<br>(Note 3) | 48 Vdc | (Note 7) | (Note 5, 8) | (Note 6) | When the TXU and TCU are both powered from the TCU, the DC superimposed voltage is turned on. See *Section 3.6, "DC Superimposed Voltages," on page 3-4* |
| TCU/TXU < 100' apart | (Note 4) | 24 to 48Vdc | (Note 8) | (Note 3) | When the TXU and TCU are both powered from the TCU, the DC superimposed voltage is turned on. See *Section 3.6, "DC Superimposed Voltages," on page 3-4* |
| TCU/TXU > 100' apart | (Note 4) | 48 Vdc | (Note 5, 8) | (Note 4) | |

**Notes:**

1.  DC input voltage range is determined by HPU device (two voltage range options).Power the TCUTXU from the same power source – do not use the coaxial cable powering option.

2.  Helicopter DC powering requires 22 – 48 volts for the HPU.

3.  Unless the application requires powering from the TCU, always power from the TXU.

4.  The actual voltage supplied to the TCU is determined by the IF coaxial cable length.

5.  For remote powering applications requiring the HPU option, use the 22 – 48 volt HPU power option.

6.  Only use the TCU powering option when power is not available at the TXU.When powering separated TCU/TXU components, powering from the TXU is the preferred choice.

7.  The actual voltage supplied to the TXU is determined by the IF coaxial cable length.

8.  The actual voltage supplied to the HPU is determined by the RF coaxial cable length.

## 3.6 DC Superimposed Voltages

DC Voltage is applied to units directly or superimposed in the following way:

• DC Voltage is superimposed on the IF signal from the TCU to TXU.
• DC Voltage is superimposed on the RF signal from the TXU to HPU.

**Note:** *Currently, you can only power the HPU from the TXU.*

How you power the STRATA transmitter depends on the particular application. Be sure to read *"Powering STRATA Units," Section 3.4 on page 3-2.*

**Warning:** *DC voltage superimposed with the IF or RF signal may cause damage to test equipment. Turn off DC voltage before trouble shooting the transmitter.*

### 3.6.1 DC Voltage Settings – Non Over-Ride Switch Models

**Note:** *If you are unsure which model transmitter you are using, see "Model Variations," Section 3.3 on page 3-1.*

Depending on how the transmitter is powered, the DC Voltage can be turned on or off between the TCU and TXU, and between the TXU and HPU.

#### 2.6.1.1 Turning DC superimposed Power On or OFF - TCU to TXU

To turn DC Voltages on or off between the TCU and TXU, do the following:

**Step 1** Using the front panel control switch, turn the control switch counter clockwise to the menu named "75 Ohm Coax."The menu displays either "Power On" or "Power Off" as shown in *Figure 3-7*:

**Step 2** Press the control switch. The display will blink displaying the current state.

**Step 3** Press the control switch to select either "Power On" or "Power Off."

**Note:** *If the transmitter is in transmit mode while changing the DC power setting, the transmitter will automatically be placed in standby mode. To place the transmitter in transmit mode, press the control switch for one second.*

### 2.6.2 Turning DC Superimposed Power On or OFF – TXU to HPU

To turn DC Voltages on or off between the TXU and HPU, do the following:

**Step 1** Using the front panel control switch, turn the control switch counter clockwise to the menu named "NO HPU." The menu displays either "No HPU" or "HPU Present" as shown in *Figure 3-7*:Press the control switch. The display will blink displaying the current state.

**Step 2** Press the control switch to select either "No HPU" or "HPU Present."

**Note:** *If the transmitter is in transmit mode while changing the DC power setting, the transmitter will automatically be placed in standby mode. To place the transmitter in transmit mode, press the control switch for one second.*

**Figure 3-7  Setting DC Power from Front Panel Menus**



HPU

TXU          *RF / DC*

TCU          *IF / DC*

POWER
SUPPLY       *DC*

*Note:*

*TCU, TXU, and HPU at the same location.*

*This method is recomended for powering co-located systems when power can not be applied to TXU.*

```
HPU Coax
HPU Present
```

***Options:***
HPU Present
No HPU

```
75 Ohm Coax
Power On
```

***Options:***
Power On
Power Off
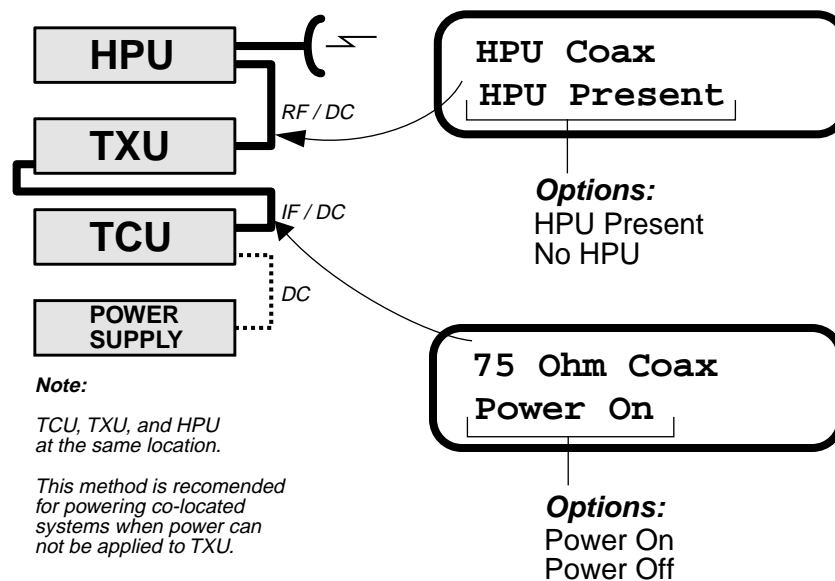
### 2.6.3    DC Voltage Settings – Over-Ride Switch Models

If you are unsure which model transmitter you are using, see "*Model Variations," Section 3.3 on page 3-1*.

On system configurations where the DC voltage is superimposed, DC Voltage can be turned on or off between the TCU and TXU, and between the TXU and HPU. On models equipped with DC override switches, DC voltage can be turned on or off using one of two methods:

- Use the front panel menus as described in "*DC Voltage Settings – Non Over-Ride Switch Models," Section 3.6.1 on page 3-4*.
- Use the override switches found on the front and rear panel of the TXU and the rear panel of the TCU. For the switch locations on the TXU and TCU, refer to:
  - *Figure 3-2, TXU with DC Override Switches on page 3-1*
  - *Figure 3-4, TCU With DC Over-ride Switch on page 3-2*

**Warning:** *DC voltage superimposed with the IF or RF signal may cause damage to test equipment. Turn off DC voltage before troubleshooting the transmitter.*

#### 2.6.3.1    Override Switch Settings

DC Override Switches are located on the TXU front and rear panel along with the TCU rear panel. *Figure 3-8* shows the switch setting for the on and off positions.

**Figure 3-8  DC Override Switch ON/OFF Settings**

"OFF" Position          "ON" Position
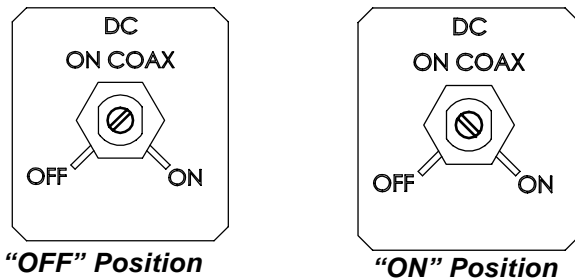
### 2.6.4    DC Override Switch Settings

*Table 3-3* describes the DC Override switch settings for systems using TXU, TCU, and HPU units.

**Table3-3        DC Override Switch Settings**

| System Configuration | TCU | | TXU | | |
| --- | --- | --- | --- | --- | --- |
| | TCU Menu "75 Ohn Coax" | TCU Rear Panel Override Switch | TXU Menu "HPU Coax" | TXU Front Panel Override Switch | TXU Rear Panel Override Switch |
| TCU, TXU, and HPU powered from TCU | ON | ON | ON | ON | ON |
| TCU, TXU, and HPU powered from TXU | ON | ON | ON | ON | ON |
| TCU, TXU, and HPU powered separately | OFF | OFF | ON | OFF | ON |
| TCU and TXU powered from TCU | ON | ON | ON | ON | OFF |
| TCU and TXU powered from TXU | ON | ON | ON | ON | OFF |
| TCU and TXU powered separately | OFF | OFF | OFF | OFF | OFF |
| TCU Stand-alone | OFF | OFF | – | – | – |
| TXU Stand-alone | – | – | OFF | OFF | OFF |

## 3.7    STRATA AC Power Supply

The STRATA AC Power Supply provides DC power to one or more units in a system. MRC provides the power supply in two versions:

- +15 Vdc @ 10 Amps
- + 48 Vdc @ 5.1 Amps

The power requires the following AC voltage input:

- 15 Volts Version – 115 / 230 VAC @ 5.5 Amps
- 48 Volts Version – 115 / 230 VAC @ 3.5 Amps

To determine which version is required for a particular system, See "*Power Requirements," Section 3.5 on page 3-3*. *Figure 3-9* shows the front and rear view of the power supply showing connectors, controls, and indicators.

**Figure 3-9  AC Power Supply - Front and Rear View**

*Front View*
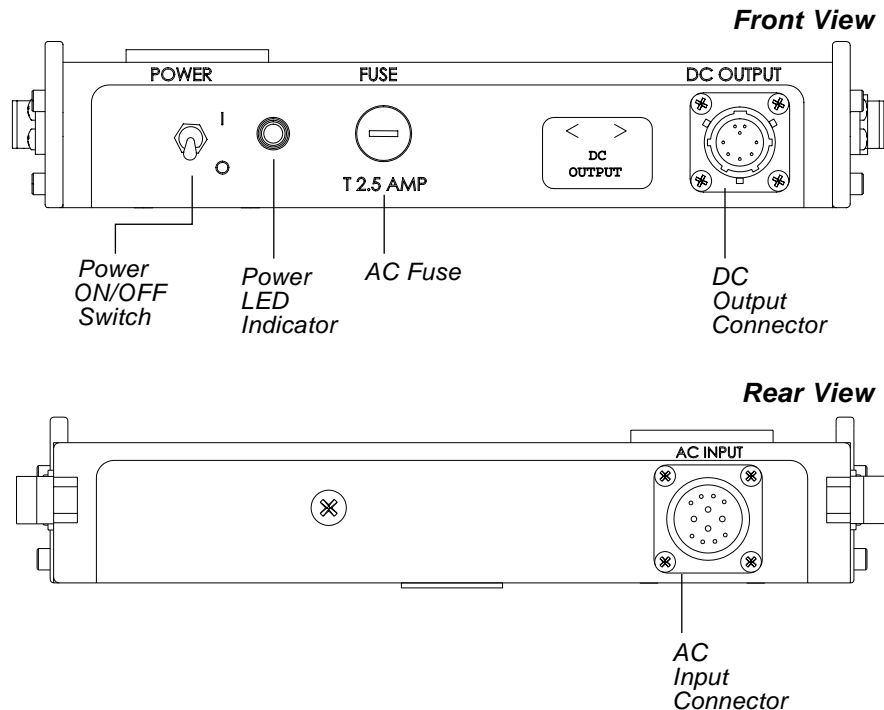


**3.7.1    AC Power Supply Connections**

*Table 3-4* and *Figure 3-10* show the power connector pin designations for the AC Input connections to the AC Power Supply.

**Table3-4          AC Power Supply Input Connections**

| CONN. PIN | Description | Diagram |
|-----------|-------------|---------|
| A | AC | **Figure 3-10  Power Connector** |
| B | – | |
| C | AC | |
| D | – | |
| E | – | |
| F | – | |
| G | – | |
| H | – | |
| J | – | |
| K | – | |
| L | GND | |
| M | –s | |



*Rear View*

## 3.8    Powering Up and Test

Once the STRATA has been installed, select the method for power a single or multi-unit system. See "*Power Requirements," Section 3.5 on page 3-3* to determine which method you are using.

### 3.8.1    Power Cables

MRC provides the following standard interconnect cables for powering single or multiple units.

- DC Power Cable with Terminators - This cable is equipped with an 8-pin power connect on one end with six power and ground terminals on the other. Use this cable to power either TXU or TCU. For a diagram of the cable, see *Figure 3-15, DC Cable Harness with Terminators (907673) on page 3-9*.

- DC to DC Cable - The cable is equipped with two 8-pin power connectors on each. Use this cable to connect the DC output from the AC power supply to either the TXU or TCU.

### 3.8.2    Check Harness and Connections

Use the following procedure to power and test the system.

**Step 1**    Check that the power cable harness has been correctly assembled according to "*Power Harness Assembly," Section 3.4.3 on page 3-2*.

**Step 2**    Check all coaxial cables and connectors have been properly installed.

**Note:**    *MRC recommends you secure cables with cable ties to provide strain relief from cables being accidently pulled or crimped.*

### 3.8.3    Powering Individual Units

Whether you are using a single unit TXU or TCU, or an integrated system of TXU, TCU, and HPU, you should first apply power to the TXU and TCU as individual units.

**Step 1**    Disconnect all external connectors including IF, RF, audio, and video connections.

**Step 2**    Insert the power connector into the power receptacle on either the front panel of the TXU or rear panel of TCU. Align the pins and press and rotate the connector collar until it securely seated (*Figure 3-6 on page 3-2*).

**Step 3**    Toggle the front panel Power Switch (*Figure 3-11*) to the ON position ("1"), the front panel Power LED should glow in amber, red, and then green.

Figure 3-11  TCU and TXU Front Panel Power Switch



*Power LED*

*Power Switch*
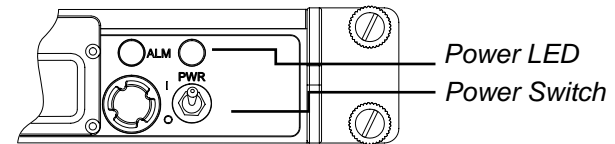
**Step 4**    If the unit does power up, correctly, check the power supply for voltage, and re-check all connections.

**Step 5**    Once you have verified the unit is powered correctly, repeat this procedure for the TXU or TCU.

### 3.8.4    Powering the TXU from the TCU

Once you have tested each unit in the system individually, you are ready to test an integrated system of more than one unit.

**Step 1**    Connect the IF coaxial cable between the TCU and TXU.

**Step 2**    Set all front panel power switches to the off position on the TXU and TCU.

**Step 3**    Connect power to the TCU.

**Step 4**    Verify which model of TCU and TXU you are using ("*Model Variations," Section 3.3 on page 3-1*). If your system has DC override switches, check switch and menu settings ("*DC Superimposed Voltages," Section 3.6 on page 3-4*).

**Step 5**    On the TCU, toggle the front panel Power Switch (*Figure 3-11*) to the ON position ("1"), the front panel Power LED should glow in amber, red, and then green.

**Step 6**    On the TXU, toggle the front panel Power Switch (*Figure 3-11*) to the ON position ("1"), the front panel Power LED should glow in amber, red, and then green.

**Step 7**    If the unit does not power up correctly, check the power supply for voltage, and re-check all connections. Check switch and menu settings ("*DC Superimposed Voltages," Section 3.6 on page 3-4*).

### 2.8.4.1 HPU Power Up and Test

Once you have verified that the TXU and TCU are powered correctly, you are ready to test the HPU.

**Step 1**  Connect the RF coaxial cable between the TXU and HPU.

**Step 2**  Verify which model of TCU and TXU you are using ("*Model Variations," Section 3.3 on page 3-1*). If your system has DC override switches, check switch and menu settings ("*DC Superimposed Voltages," Section 3.6 on page 3-4*).

**Step 3**  Using the front panel control switch, turn the control switch counter clockwise to the menu named "HPU Coax."The menu displays either "HPU Preset" or "No HPU" as shown in *Figure 3-12*. Press the control switch. The display will blink displaying the current state.

**Step 4**  Rotate the control switch to select "Power On."

**Step 5**  Press the control switch to store the setting.

**Figure 3-12  HPU Coax Menu**

```
 HPU Coax
 HPU Present
```

***Options:***
HPU Present
No HPU
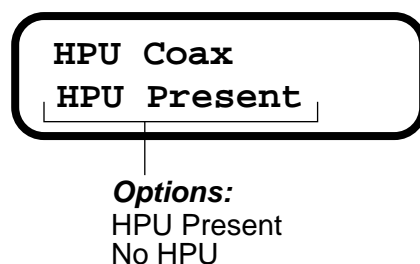
**Step 6**  Both the "DC Power" and "RF Power" LEDs should illuminate (*Figure 3-13*).

**Figure 3-13  HPU Front Panel Indicators**



*RF Output Indicator*          *Power LED Indicator*
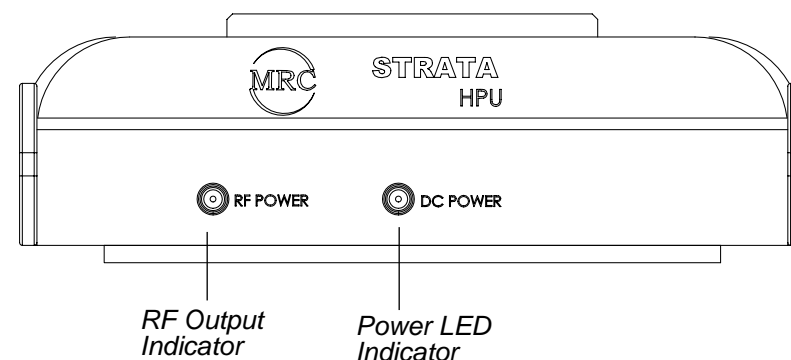
**Step 7**  If both LEDs do not illuminate, check all power connections and menu settings.

**Figure 3-14  DC to DC Power Cable (907481)**



```
RED    A ─────────────── A   +V
RED    B ─────────────── B   +V
RED    C ─────────────── C   +V
BLK    D ─────────────── D   GND
BLK    E ─────────────── E   GND
       F                 F
       G   WIRING DIAGRAM G
       H                 H
```

```
WIRE HARNESS ASSY
DC TO DC (48 VOLTS)
     9074811
```

**Figure 3-15  DC Cable Harness with Terminators (907673)**



```
RED   A   +
RED   B   +
RED   C   +
BLK   D   −
BLK   E   −
NC    F   NC
NC    G   NC
NC    H   NC
```

```
FRONT VIEW
CONNECTOR
```
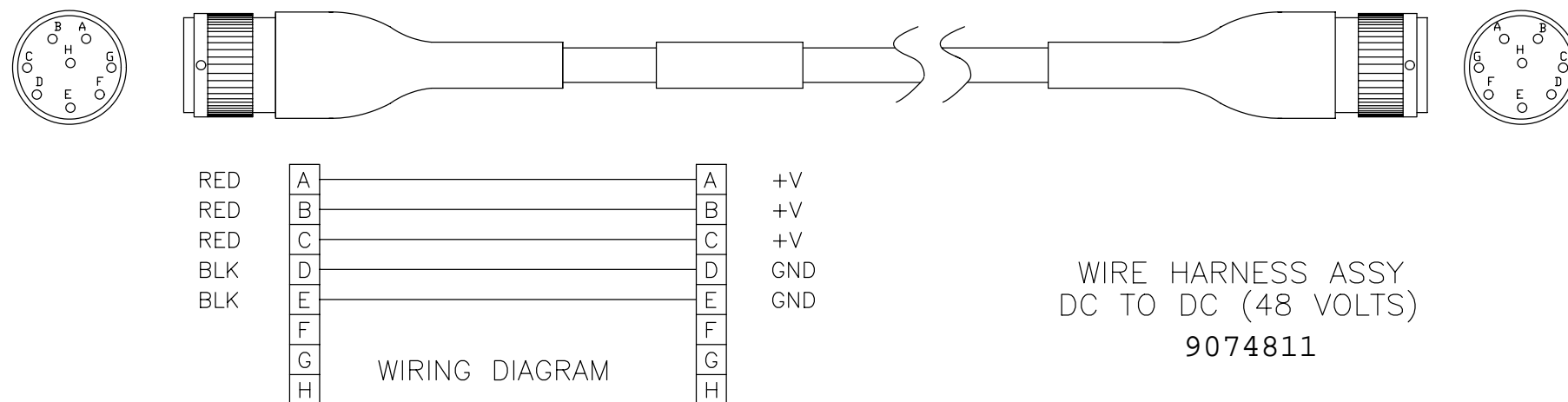
```
WIRE HARNESS ASSEMBLY
DC OUTPUT
907673
```
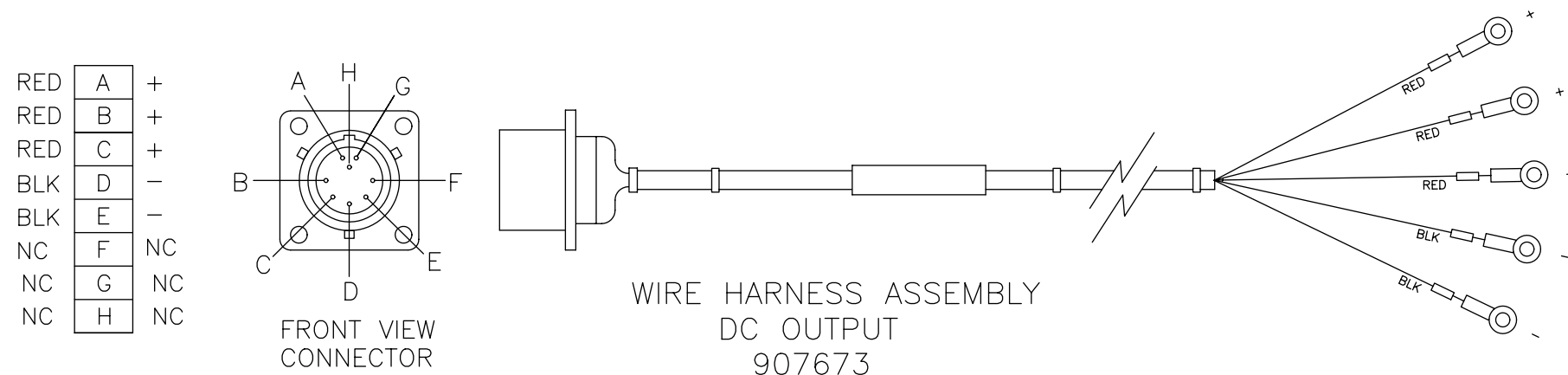
# *Front Panel Controls*

## 4.1    Overview

Front Panel controls for the STRATA Transmitter have been designed to provide adequate control of most features. For advanced settings, you should make use of system presets. To learn how to create presets, see "*STRATA Tx Configurator," Section 5 on page 5-1*.

## 4.2    TXU and TCU Front Panel Controls & Indicators

System settings are modified or monitored using a single rotary/push button control switch as shown in *Figure 4-1*. System settings can be modified and saved, or monitored for current status. Command and Display Screens are shown on the front panel display (*Figure 4-1*).

### 4.2.1    LED Indicators

Both the TXU and TCU have the following LED Indicators as described in *Table 4-1* and shown in *Figure 4-1*.

**Table3-1          Front Panel LED Indicators**

| Function | Name | Color |
|----------|------|-------|
| Power | (PWR) | 1. When the unit is powered up, this LED will light as AMBER, RED, and then GREEN for normal operation.<br>2. AMBER for start-up and diagnostic phase<br>3. Remains RED if an error condition occurs. |
| Transmit | (XMIT) | 1. BLUE when transmitting. |

### 4.2.2    Using the Front Panel Control Switch

Use the following actions to make changes or navigate through the screens (*Figure 4-1*).

- Rotate the Control Switch clockwise to display the Monitor Screens.
- Rotate the Control Switch counter-clockwise to select Command Screens
- Press the Control Switch:
  - for one second to place the transmitter in transmit mode.
  - for one second to place the transmitter in standby mode from transmit mode
  - to select options in the Command Screens
  - to save changes in the Command Screens

**Figure 4-1  Front Panel Control Switch Operation**



*PWR*
*"GREEN" for normal operation*
*"AMBER" at start up*
*"RED" for error condition*

*XMIT*
*"BLUE" when transmitting*

*Display*

## Control Switch

*Select Command Screens*

*Display Monitor Screens*

*Press to "TRANSMIT"*
*or*
*Select Options in Command Screens*

*Section 4.3, "Command Screens," on page 4-2*

*Section 4.4, "Display Screens," on page 4-5*

## 4.3   Command Screens

**Figure 4-2  Transmitter Command Screen**
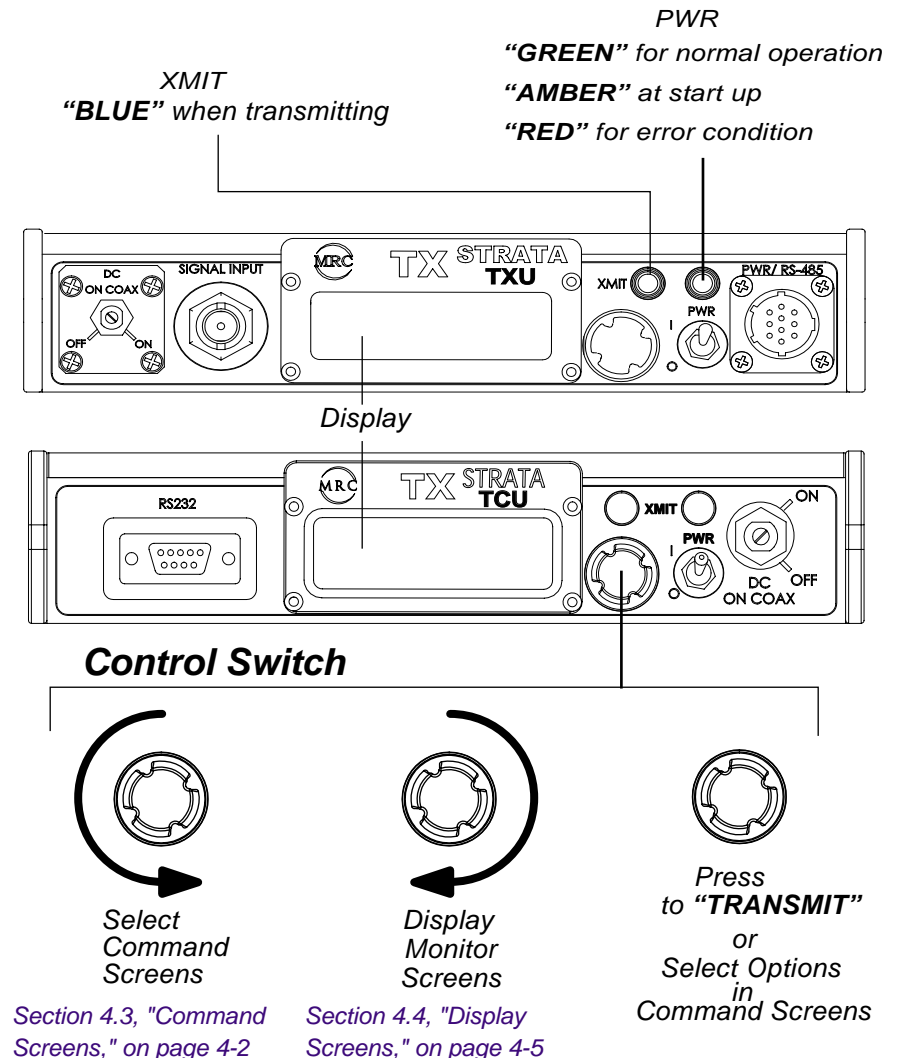
*Figure 4-2* shows the Command Screens provided by rotating counter clockwise the front panel control switch. *Table 4-2* summarizes the front panel commands with reference to instructions.

**Table3-2          Command Screens**

| Command | Section |
|---|---|
| Setting the RF Channel and Offset | • See *Section 4.3.1, "Changing Channel and Offset," on page 4-3* |
| Changing the Preset (1 to 9) | • See *Section 4.3.2, "Changing Presets," on page 4-3*<br>• See also"*STRATA Tx Configurator," Section 5 on page 5-1*. |
| Set Power Output (Transmitter Attenuation) | • See *Section 4.3.3, "Setting Power Attenuation," on page 4-4* |
| Turning TXU to HPU DC Voltage on or off | • See *Section 4.3.4, "Turn Voltage from TXU to HPU On or OFF," on page 4-4*<br>• See also "*Powering the STRATA Transmitter," Section 3 on page 3-1* |
| Turning the TCU to TXU DC Voltage on or off. | • See *Section 2.3.5, "Turning Voltage from TCU to TXU On or Off," on page 4-5*<br>• See also "*Powering the STRATA Transmitter," Section 3 on page 3-1* |

**Note:**    *When making changes in a Command Screen, If no action is taken for 7 seconds, the display reverts back to the Display Screen.*

*Display Screen* ———————

```
Preset #1
HPU Rdy +6
```

*Options:* ———————
  *Set Channel*

```
Set Channel
Ch 6 +
```

*Options:* ———————
  *Set Preset 1 thru 9*

```
Change Preset
Preset #1
```

*Options:* ———————
  *0 thru 31 dB*

```
Set Power Out
Atnn 0dB
```

*Options:* ———————
  *HPU Present*
  *No HPU*

```
HPU Coax
HPU Present
```

*Options:* ———————
  *Power On*
  *Power Off*

```
75 Ohm Coax
Power On
```

**Note:**    *Display reverts back to Display Screen if no action is taken after 7 seconds.*

### 4.3.1   Changing Channel and Offset

This screen lets you select an RF Channel and offset other than the programmed preset channel. The number of channels available depends on the frequency band. For more information, see "*Channel & Fequencies," Section B on page B-1*.

**Step 1**   Turn the Control Switch Counter Clockwise to select the "Set Channel" Screen (*Figure 4-3*).

**Figure 4-3  Set Channel Screen**

*Options:* ─────────┐
*Set Channel*

```
Set Channel
Ch 6 +
```

**Step 2**   Press the control switch once and release.The current channel will blink.

> **Note:**   *Attempting to change channels while the transmitter is in transmit mode will place the transmitter in standby mode.*

**Step 3**   Turn the Control Switch to select a channel and offset.

**Step 4**   Once you've selected a channel and offset, press the control switch to store the setting.

> **Note:**   *The selected preset will retain the new channel setting until the radio is powered off. Powering the unit up will restore the original channel setting. For more information on creating and changing presets, see "STRATA Tx Configurator," Section 5 on page 5-1.*

**Step 5**   Place the transmitter in transmit mode by pressing the control switch for one second.The front panel "XMIT" LED (blue) should light.

### 4.3.2   Changing Presets

This screen lets you select a Preset from the programmed presets stored in the transmitter. The STRATA Transmitter is shipped with factory presets often customized for the customer.

System presets can only be created and changed using the STRATA Tx Configurator Software. Presets are downloaded into the transmitter and where they are store in memory. If you need to make changes to factory presets, see "*STRATA Tx Configurator," Section 5 on page 5-1*.

**Step 1**   Turn the Control Switch Counter Clockwise to select the "Set Preset" Screen (*Figure 4-3*).

**Figure 4-4  Change Preset Screen**

```
Change Preset
Preset #1
```

*Options:* ─────────┐
*Set Preset 1 thru 9*
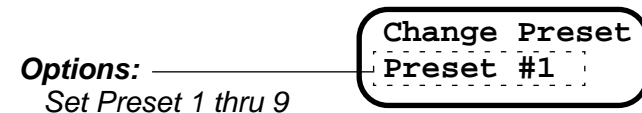
**Step 2**   Press the control switch once and release.The current preset will blink.

> **Note:**   *Attempting to change presets while the transmitter is in transmit mode will place the transmitter in standby mode.*

**Step 3**   Turn the Control Switch to select a preset.

**Step 4**   Once you've selected a preset, press the control switch to store the setting.

> **Note:**   *You can changes the channel and offset of a preset. The changes will remain until you power the unit off. Powering the unit on will restore the original channel and offset settings of the preset. To change channel and offset, "Changing Channel and Offset," Section 4.3.1 on page 4-3*

**Step 5**   To place the transmitter in transmit mode, press the control switch for one second. The front panel "XMIT" LED (blue) should light.

### 4.3.3 Setting Power Attenuation

This screen lets you set the power output of the transmitter by controlling the attenuation in dB. This setting does not effect the output power of the HPU if one is used.

---

**Note:** *Maximum power output occurs with 0 dB of attenuation applied.*

---

**Step 1** Turn the Control Switch Counter Clockwise to select the "Set Preset" Screen (*Figure 4-3*).

**Figure 4-5  Power Output Screen**

*Options:* ——
*0 thru 31 dB*

```
Set Power Out
Attn 0dB
```

**Step 2** Press the control switch once and release.The output power will blink.

---

**Note:** *Attempting to change output while the transmitter is in transmit mode will place the transmitter in standby mode.*

---

**Step 3** Turn the Control Switch to select the attenuation.

**Step 4** Once you've selected the attenuation, press the control switch to store the setting.

---

**Note:** *You can changes the attenuation of a preset. The changes will remain until you power the unit off. Powering the unit on will restore the original channel and offset settings of the preset. To change channel and offset,* "*Changing Channel and Offset," Section 4.3.1 on page 4-3*.

---

**Step 5** To place the transmitter in transmit mode, press the control switch for one second. The front panel "XMIT" LED (blue) should light.

### 4.3.4 Turn Voltage from TXU to HPU On or OFF

When the HPU and TXU are used together, the HPU is powered using voltage from the TXU. The voltage is superimposed on the RF cable from the TXU to HPU. This screen lets you turn the voltage on or off from the TXU to HPU.

#### 2.3.4.1 Model Variations

Certain STRATA Transmitters are shipped with "DC Override" switches which provide added control to turn DC superimposed voltage on or off.

• If the unit is equipped with override switches, you'll need to use both the override switches and the "HPU Coax" Screen to control the DC voltage between the TXU and HPU.

• If the unit is not equipped with override switches, you need only to use the "HPU Coax" Screen to control the DC voltage between the TXU and HPU.

---

**Warning:** *It's important to identify which model transmitter you are using. Failure to do so make cause damage to the unit. For more information, see "Powering the STRATA Transmitter," Section 3 on page 3-1.*

---

**Step 1** Turn the Control Switch Counter Clockwise to select the "HPU Coax" Screen (*Figure 4-6*). Press the control switch to toggle between "HPU Present" (Voltage ON) or "No HPU" (Voltage OFF).

**Figure 4-6  HPU Coax Screen**

*Options:* ——
*HPU Present - Voltage "ON"*
*No HPU - Voltage "OFF"*

```
HPU Coax
HPU Present
```

---

**Note:** *Turning the HPU voltage off while the transmitter is in transmit mode will place the transmitter in standby mode.*

---

**Step 2** If the transmitter is in Standby mode and the HPU voltage is turned on, place the transmitter in transmit mode by pressing the control switch for one second. The front panel "XMIT" LED (blue) should light.

**2.3.5    Turning Voltage from TCU to TXU On or Off**

This screen lets you turn the voltage on or off from the TCU to the TXU.

On systems where both the TCU and TXU are used together, the units can be powered in one two ways:

• Separately, that is, individual power connections from a power supply to each unit.

• Or, the TXU can be powered from the TCU. In this configuration DC voltage is superimposed on the IF cable which connects from the TCU to the TXU.

**2.3.5.1    Model Variations**

Certain STRATA Transmitters are shipped with "DC Override" switches which provide added control to turn DC superimposed voltage on or off.

**Warning:** *It's important to identify which model transmitter you are using. Failure to do so make cause damage to the unit. For more information, see "Powering the STRATA Transmitter," Section 3 on page 3-1.*

**Step 1**    Turn the Control Switch Counter Clockwise to select the "75 Ohm Coax" Screen (*Figure 4-7*). Press the control switch to toggle between "Power On" (Voltage ON) or "Power OFF" (Voltage OFF).

**Figure 4-7  75 Coax Screen**

```
  ┌──────────────────┐
  │ 75 Ohm Coax      │
  │ ┌─────────────┐  │
  │ │ Power On    │  │
  │ └─────────────┘  │
  └──────────────────┘
```

*Options:*
      *Power On*
      *Power Off*
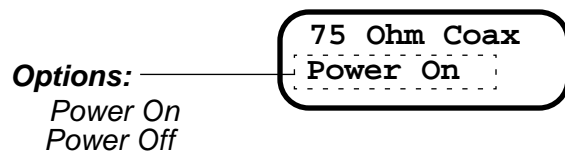
**Note:**    *Turning the TCU/TXU voltage off while the transmitter is in transmit mode will place the transmitter in standby mode.*

**Step 2**    If the transmitter is in Standby mode and the HPU voltage is turned on, place the transmitter in transmit mode by pressing the control switch for one second. The front panel "XMIT" LED (blue) should light.

**4.4    Display Screens**

The display screens only display the current system configuration as set up by the STRATA Configurator Software, or the front panel controls. To summarize, the following displays are available from the front panel:

• Frequency

• Mode - Analog or Digital.
    – For analog mode displays, see *Figure 4-8, Analog Command and Display Screens on page 4-6*.
    – For digital mode displays, see *Figure 4-9, Digital Command and Display Screens on page 4-7*.

• Audio Settings

• Video Settings

• System Errors

To make changes to current presets, see "*STRATA Tx Configurator," Section 5 on page 5-1*.

**Figure 4-8  Analog Command and Display Screens**

Preset #1
HPU Rdy +6

1999.000 MHz
*Section 5.11, "Channel Plan Menu," on page 5-10*

Mode
Analog - IF
*Section 5.7, "Radio Menu," on page 5-6*

Audio #1 ON
Pre 4.83 MHz

Audio #2 ON
Pre 4.83 MHz

Audio #3 ON
Pre 4.83 MHz
*Section 5.10, "FMT Menu," on page 5-9*

Audio #4 ON
Pre 4.83 MHz

Vid Dev 4MHz
No Video

IF CW OFF
*Section 5.7, "Radio Menu," on page 5-6*

No Errors
*Appendix A, Error Codes*

**Figure 4-9  Digital Command and Display Screens**

**Preset #1**
**HPU Rdy +6**

**2458.50 MHz**
**HPU Ready C8** ——————————————— *Section 5.11, "Channel Plan Menu," on page 5-10*

**Mode**
**COFDM - IF** ——————————————— *Section 5.7, "Radio Menu," on page 5-6*

**CO QPSK 8MHz**
**FE 1/2 GI 1/8**

**NTSC NOPdstl**
**Vid In 4:2:0** ——————————————— *Section 5.8, "COFDM Menu," on page 5-7*

**Video Delay**
**Normal**

**MPEG Audio A**
`Analog`

**MPEG Audio A** ——————————————— *Section 5.9, "MPEG Menu," on page 5-8*
`Analog`

**IF CW OFF** ——————————————— *Section 5.7, "Radio Menu," on page 5-6*

`No Errors` ——————————————— *Appendix A, Error Codes*

# *STRATA Tx Configurator*

**5**

## 5.1    Overview

This section describes how to set up the STRATA Tx System using the STRATA Tx Configurator Software. The Tx Configurator lets you set up and store system configurations or "Presets "to be recalled later when they are needed.

The STRATA Tx Configurator Software provides expanded features in addition to those provided on the front panel controls. For more information on front panel controls, see section *Section 4, Front Panel Controls on page 4-1*.

### 5.1.1    Customer Files

Each STRATA Transmitter is shipped with the factory ordered presets installed on the radio. In addition, the Preset and Channel Plan files are also stored on the Product CD shipped with the radio.

## 5.2    System Requirements

The SRATA Tx Configurator Software requires the following hardware and software:

***Hardware***

- PC compatible LAPTOP or desktop computer
- Serial Cable with DB9 connectors

***Software***

- Operating System: Windows 98/NT/2000/XP
- Disk space: 50 MB
- Memory: 512 MB

## 5.3    Installation and Setup

Use the following procedure in *Table 5-1* to setup the transmitter for operation.

**Table 5-1        Set Procedures Sequence**

| Task | | Menu Section |
|---|---|---|
| **Step 1** | Install the STRATA Configurator | *Installing the Configurator Software, Section 5.4 on page 5-2* |
| **Step 2** | Connect the STRATA TXU/TCU to a PC | *Connecting the PC to the Tx System, Section 5.5 on page 5-3* |
| **Step 3** | Set up the Main Menu options | *The Main Menu, Section 5.6 on page 5-5* |
| **Step 4** | Set up the Tx system option settings | *Radio Menu, Section 5.7 on page 5-6* |
| **Step 5** | Set up COFDM option settings | *COFDM Menu, Section 5.8 on page 5-7* |
| **Step 6** | Set up MPEG option settings | *MPEG Menu, Section 5.9 on page 5-8* |
| **Step 7** | Set up FMT options settings | *FMT Menu, Section 5.10 on page 5-9* |
| **Step 8** | Set up channel frequencies | *Channel Plan Menu, Section 5.11 on page 5-10* |

## 5.4 Installing the Configurator Software

5.4.1    Installing the software from the ZIP format

**Step 1**    Before beginning the installation, quit all other programs.

**Step 2**    Load the CD into the drive. Launch Windows Explorer and look for the "D" drive (or the drive letter associated with the CD drive). Click on this drive.

**Step 3**    The file "**STRATACONFIGINSTALL.ZIP**" should appear in the "Contents" box. Double-click on this file.

**Step 4**    The WinZip wizard will open. Press the **NEXT** key.

**Step 5**    You will be asked if you want to add this folder to you Favorite Zip Files. Click **NO**. (unless you want the file in the "favorites" folder).

**Step 6**    On the next screen, make sure:

**Unzip or Install from STRATACONFIGINSTALL.ZIP is checked.**

Press the **NEXT** key.

**Step 7**    On the next screen, you will be prompted to choose a folder where WinZip will place the unzipped folder. The default is:

**C:\unzipped\STRATAConfigInstall**

If this is the folder you choose, Press **UNZIP NOW**.

**Step 8**    The folder will be unzipped to the file specified. A window will open with the unzipped file named:

**STRATAConfigInstall.exe**

At this point, press **CLOSE** on the WinZip wizard. Do not close the window at this point.

**Step 9**    Double-click on the file named:

**STRATAConfigInstall.exe.**

**Step 10**    The InstallShieldWizard will open and the software installation will begin. Follow the prompts and the installation is straight forward. You will have the opportunity to change the folder that the files are placed in. The default file is:

**C:\Program Files\MRC Broadcast\STRATA Configuration Program 1.0**

**Step 11**    To verify the installation, see *Section 5.4.3, Installation Verification on page 5-2*.

5.4.2    Installing the software from the EXE file format

**Step 1**    Load the CD into the drive. Launch Windows Explorer and look for the "D" drive (or the drive letter associated with the CD drive). Click on this drive.

**Step 2**    The file "**STRATAConfigInstall.exe**" should appear in the "Contents" box. Double-click on the file STRATAConfigInstall.exe. The **InstallShieldWizard** will open and the actual software installation will begin. Follow the prompts and the installation is straight forward. You will have the opportunity to change the folder that the files are placed in. The default file is:

**C:\Program Files\MRC Broadcast\STRATA Configuration Program 1.0**

5.4.3    Installation Verification

**Step 1**    Click the file:

**STRATA Configuration Program 1.0**

**Step 2**    The Main Menu Screen displays. To verify the correct version has been installed, Press the **About** button. The Tx Configurator Version Screen displays as shown in *Figure 5-1*.

**Figure 5-1  STRATA Tx Firmware and Radio Version**
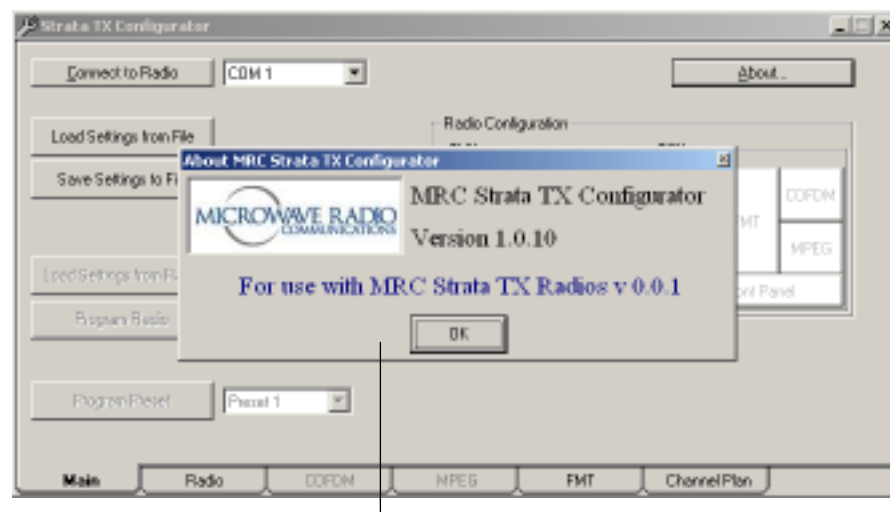


*Transmitter Firmware and Radio Revision*

## 5.5 Connecting the PC to the Tx System

The PC connects to the STRATA Tx system using the serial port located on either on the front of the TCU (*Figure 5-2*), or the rear of the TXU (*Figure 5-3*).

**Figure 5-2  TCU Serial Connection**
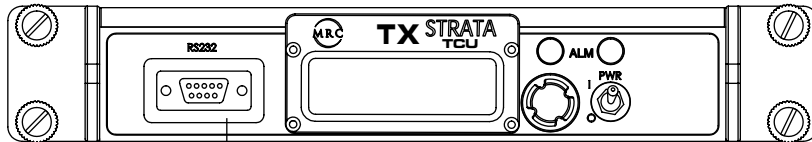


*Serial Connection*

**Figure 5-3  TXU Serial Connection**
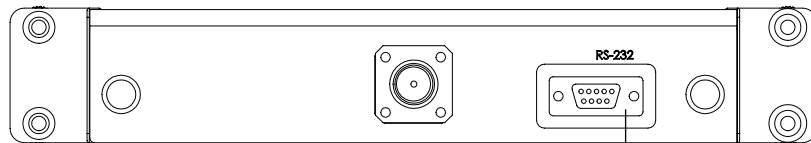


*Serial Connection*

### 5.5.1 Serial Cable

Use a DB9 Null Serial Cable or one that complies with the following diagram as show in *Figure 5-4*.

**Figure 5-4  Serial Cable Wiring Diagram**
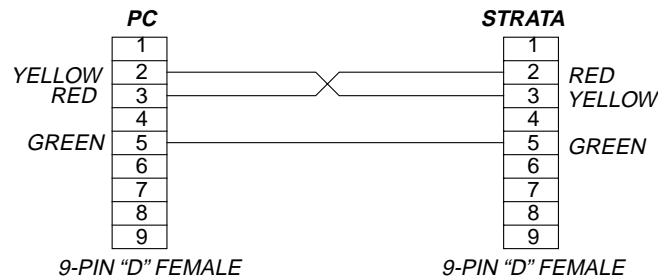


### 5.5.2 Connecting and Verifying

**Step 1**   Connect the PC serial port to the TCU or TXU as shown in *Section 5.5.1, Serial Cable on page 5-3*.

**Step 2**   Apply DC power to the STRATA TX radio system and turn the front panel power switch to ON for the TXU and TCU.

**Step 3**   Start the STRATA Configurator application. You should see the following main menu appear:

**Figure 5-5  Configurator Main Menu**
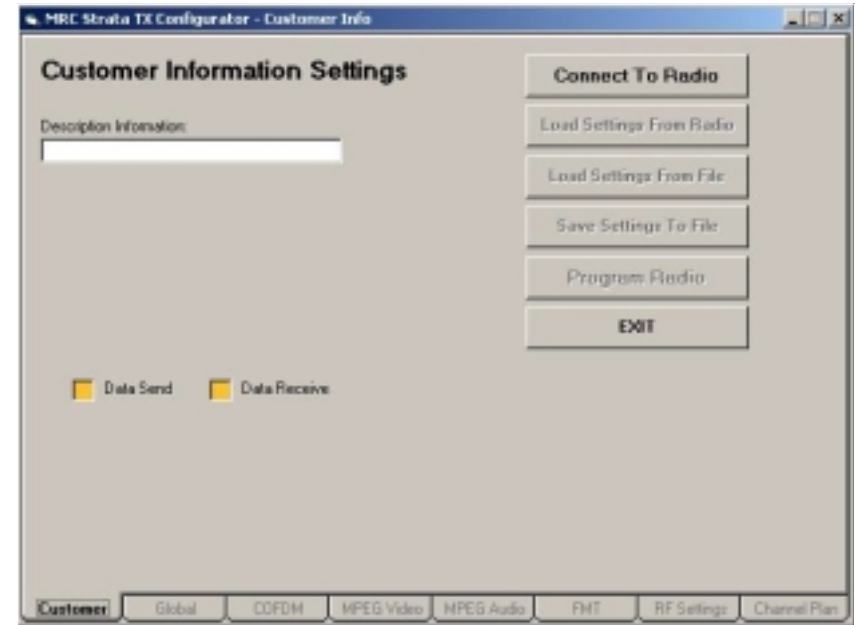


**Step 4**   Click on the "Connect to Radio" to display the following screen:

**Figure 5-6  Connect to Radio Screen**
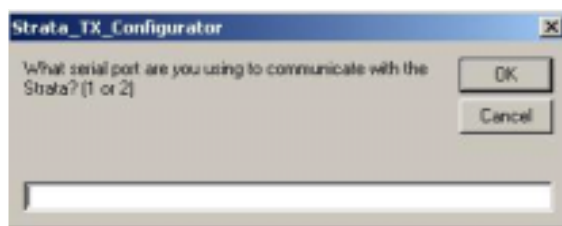


**Step 5**    Select port Comm Port 1 or Comm Port 2.

**Note:**    *If the STRATA TX Configurator Software is unable to open a valid serial data port or an invalid number is entered, you will receive the following error dialog:*

**Figure 5-7  Connect to Radio "Error" Screen**



**Step 6**    If you are unable to open a serial port or establish a valid serial port connection to a STRATA TX radio system, exit the application and resolve the problem.

**Step 7**    Once a connection is established with a STRATA TX System, you should see the main Customer Screen display with all front panel controls activated as shown in *Figure 5-8*.

**Note:**    *An active programming or configuration retrieval session requires approximately 2 minutes to complete. Do not disturb the radio system or serial data connections until an indication is received that the current operation has completed.*

## 5.6　The Main Menu

The Main Menu displays the current system configuration for the TXU and TCU.

***Radio Menu Buttons:***

- **Connect to Radio** – Establishes communication between a PC to the TCU or TXU. The active com port is displayed (COM1 to COM4).
- **Load Settings** - Load custom system configuration presets stored in an STX file on a PC.
- **Save Settings** - Stores custom system configurations to the PC.
- **About** - Displays the current Firmware and Radio Version. See *Figure 5-1*
- **Load setting from Radio** - Uploads current radio setting to the Configurator program.
- **Program Radio** - Downloads settings to the TXU or TCU.
- **Program Preset** - Select a Preset radio configuration. A Preset is a stored radio configuration including channel plan, FMT Modulation, COFDM, or MPEG settings.

***Menu Tabs to display the following menus:***

- Radio Menu
- COFDM Modulation
- MPEG Encoding
- FMT Modulator
- Channel Plan

***Configuration Blocks"***

- TXU - Set up for FMT or COFMD / MPEG configurations.
- TCU - Set up for FMT, COFMD, or MPEG configurations.

---

**Note:**　　*Figure 5-8 shows the Main Menu before the system configuration is set up.*

---

**Figure 5-8  Main Menu**
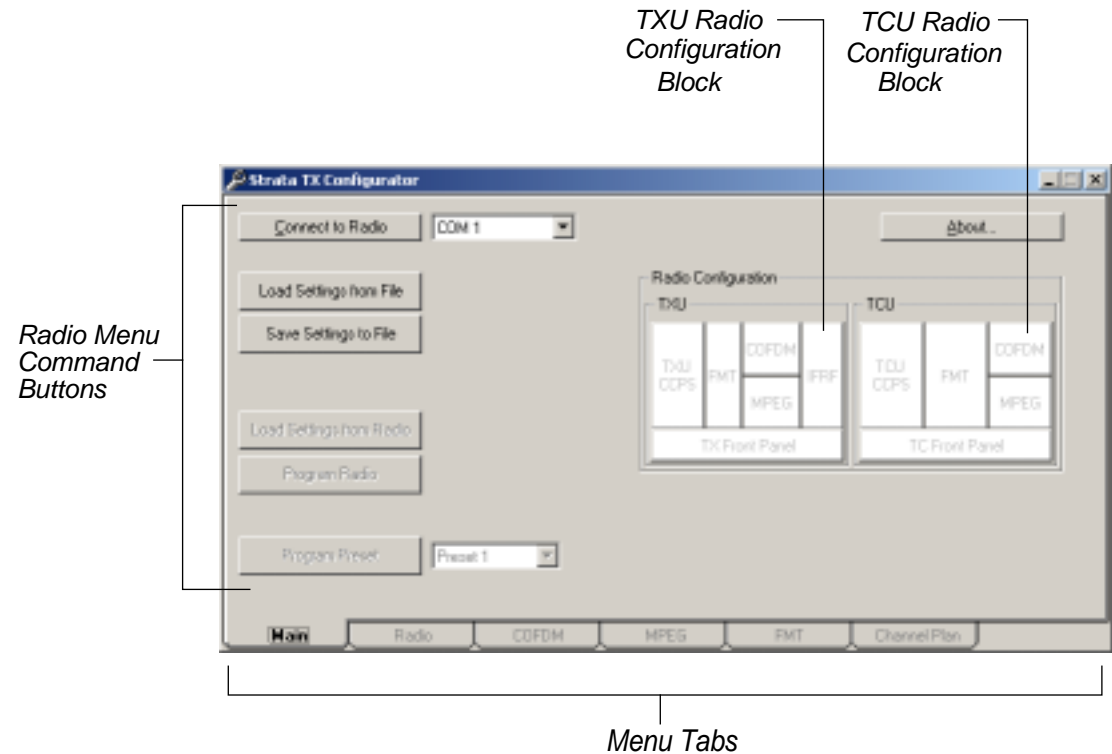


Step 1　Select the hard ware options for the TXU and TCU Configuration Blocks as shown in *Figure 5-8*. Click the hardware option buttons within the configuration blocks. The buttons will darken if the hardware is installed.

Step 2　Once you've selected the hardware options, proceed to *Section 5.7, Radio Menu on page 5-6*.

## 5.7    Radio Menu

The Radio Menu lets you create and modify option settings. Use *Table 5-2* and *Figure 5-9* as a guide.

**Table 5-2          Radio Menu Option Settings**

| Option | Description |
|---|---|
| Operation Mode | MPEG/COFDM IF Out – 70 MHz COFDM IF output from the internal COFDM/MPEG board supplied to output and monitor ports (to TXU if present). |
| | MPEG Only ASI Out – Supplies a DVB ASI transport stream to the signal output connector and the monitor output connector.<br>Note: This mode is only accessed when the TCU is operated in a stand-alone configuration. |
| | COFDM Only – ASI In – Bypasses internal MPEG encoder and routes an externally supplied ASI stream to the monitor and output connectors (to TXU if present). |
| | External 70 MHz IF in – 70 MHz IF input signal from input connector routed through TCU to TXU (if present). |
| | Analog IF Output – Routes 70 MHz FM output to the TXU (if present). This mode is only supported with the FMT option installed. |
| Color Bars | PAL - 625 Line video |
| | NTSC - 525 Line Video |
| | Auto - Color Bars display at loss of video |
| | OFF - Turned off |
| IF CW Tone | OFF - Carrier Wave Tone OFF |
| | ON - Carrier Wave Tone ON |
| Transmitter Backoff | *n* db – Sets the attenuation for the transmitter. |

**Note:**    *The Tx System must be configured for the correct hardware option for certain options to work.*

**Figure 5-9  Radio Menu**

Operation Mode:
MPEG/COFDM IF Out
MPEG Only ASI Out
COFDM Only – ASI In
External 70 MHz IF in
Analog IF Output

Color Bars:
PAL
NTSC
Auto
OFF

IF CW Tone
OFF
ON

Transmitter Backoff
0 to n db
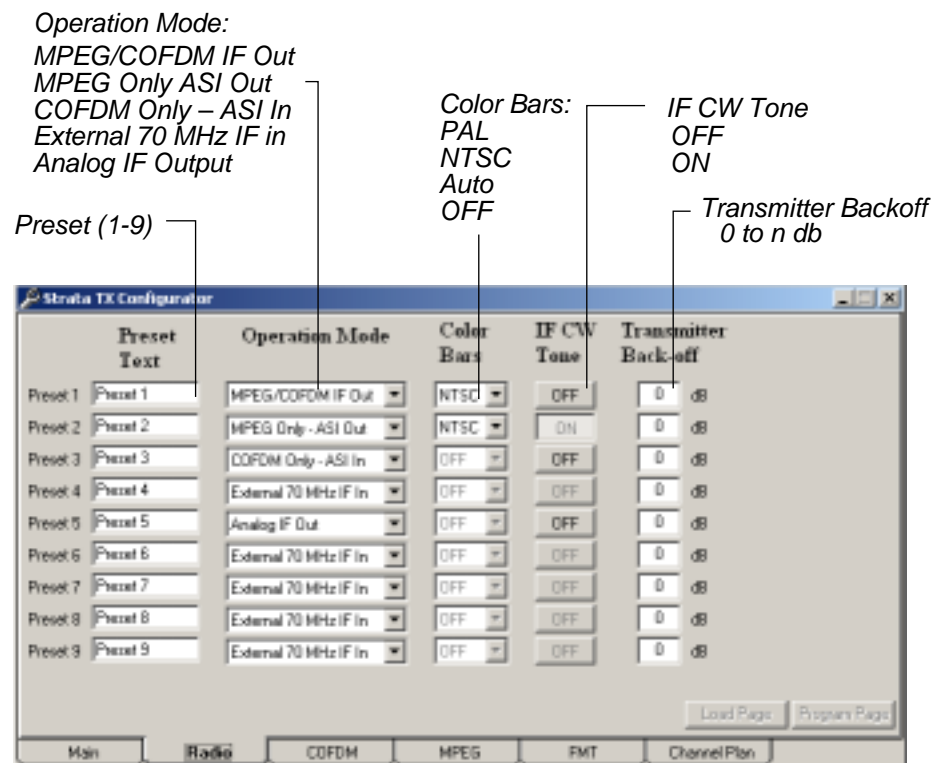
Preset (1-9)



**Step 1**    Select an Operation Mode for one or all of the Presets. The Operation Mode will determine which option settings are available in the COFDM, MPEG, FMT, and Channel Plan Menus.

**Step 2**    Select Color Bar, CW Tone, and Transmitter attenuation.

## 5.8    COFDM Menu

The COFDM Menu (*Figure 5-11*) sets options for those Presets using COFDM modulation. *Table 5-2* describes the option features for COFDM settings.

**Figure 5-11  COFDM Menu**

*Modulation:*
 *QPSK*
 *16 QAM*
 *64 QAM*

**Figure 5-10  Radio Menu Option Se**

| Option | Description |
|---|---|
| Modulation | QPSK, 16 QAM. 64 QAM |
| | Used to select each digital modulation mode for COFDM operation and DVB-S mode when applicable |
| | **Note:** 64 QAM modulation may not be used in the DVB-S mode of operation. |
| FEC (Forward Error Correction) | 1/2, 2/3, 3/4, 5/6, 7/8 |
| Bandwidth | 6, 7, or 8 MHz |
| Guard Interval | 1/4, 1/8, 1/16, 1/32 |

*(FEC) Forward Error Correction:*
 *1/2*
 *2/3*
 *3/4*
 *5/6*
 *7/8*



**Step 1**    Select the modulation for the Presets using COFDM modulation.

**Note:**       *Presets using COFDM have darkened characters.*

**Step 2**    Select FEC, Bandwidth and Guard Interval.

*Bandwidth:*
 *6 MHz*
 *7 MHz*
 *8 MHz*

*Guard Interval:*
 *1/4*
 *18*
 *1/16*
 *1/32*
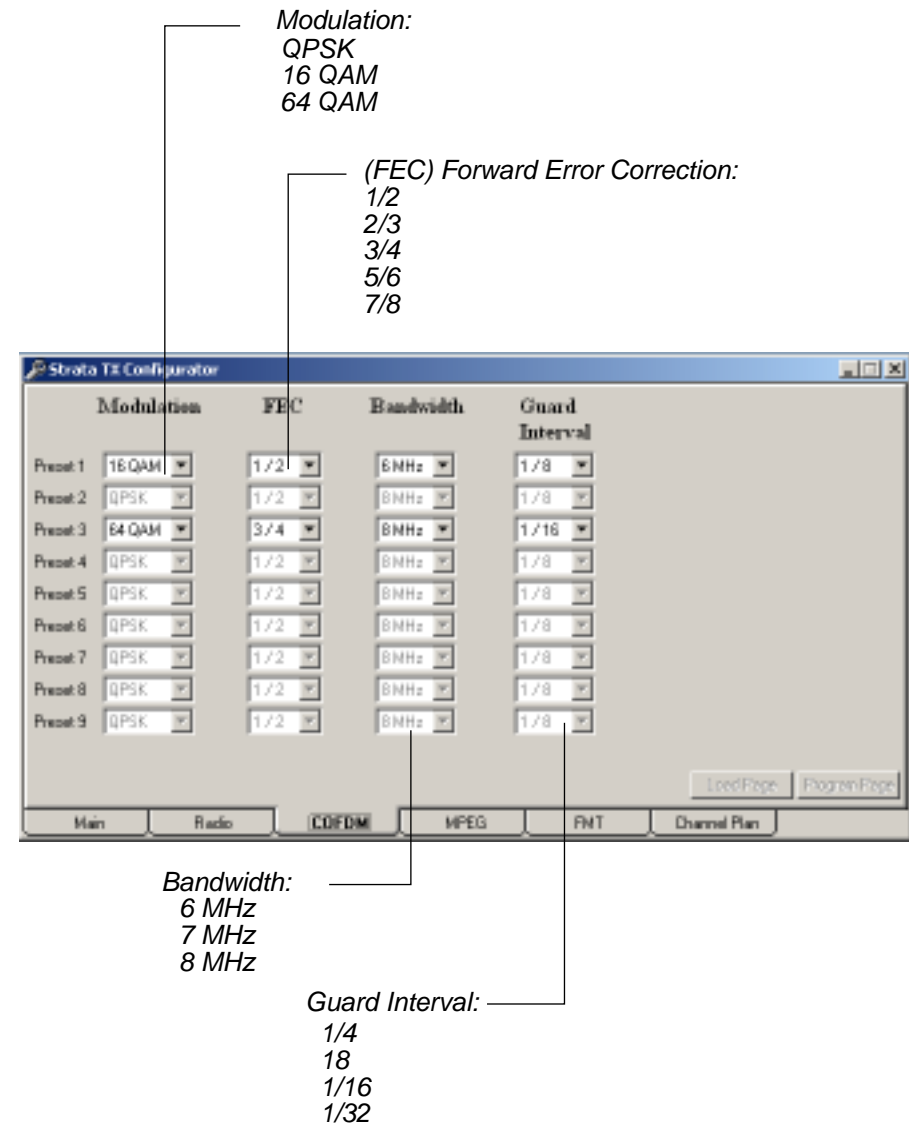
## 5.9    MPEG Menu

The MPEG Menu sets options for the MPEG Encoding when the MPEG and
COFDM module is used in either the TXU or TCU. Note that only those Presets
with the MPEG and COFDM setting can be modified in this menu.

**Table 5-3         MPEG Menu Option**

| Option | Description |
|---|---|
| Service Name | Identifies a unit or integrated stack by function, location, or type. |
| Network Name | Station name, network affiliate, or application |
| Video Input | NTSC – 525 line format<br>PAL – 625 line format |
| Chroma Format | 4:2:0 (420 profile @ main level)<br>4:2:2 (422 profile @ main level) |
| Delay Mode | Standard or Low Delay Mode |
| ASI Bit Rate | Displayed only when using "MPEG Only - ASI Out" as a preset option. |
| Wayside Channel Baud Rate | 1200, 2400, 4800, 9600, 19200, 38400 |
| Audio Type | MPEG or Linear Audio. |
| Audio A Mode | Dual Mono or Stereo |
| Audio A Input | Test Tone, Analog, SDI Embedded, or AES/EBU |
| Audio B Mode | (Same as Audio A) |
| Audio B Input | |
| BISS Encryption | BISS, BISS-1, or BISS-E Encryption Modes<br>• BISS-1 requires Key<br>• BISS-E requires Key and ID<br>**Note:** BISS-1 or BISS-E Encryption must be licensed through MRC. Encryption keys and ID codes are set at the factory and cannot be altered in the field. |

### 5.9.1    Audio Settings

Audio channels are grouped as follows:
 • Audio A sets options for channels 1 and 2
 • Audio B sets options for channels 3 and 4

Using the MPEG module let you use both analog and digital audio channels.
For more information, see *Audio & Video Connections, Section 6 on page 6-1*

**Figure 5-12  MPEG Menu**
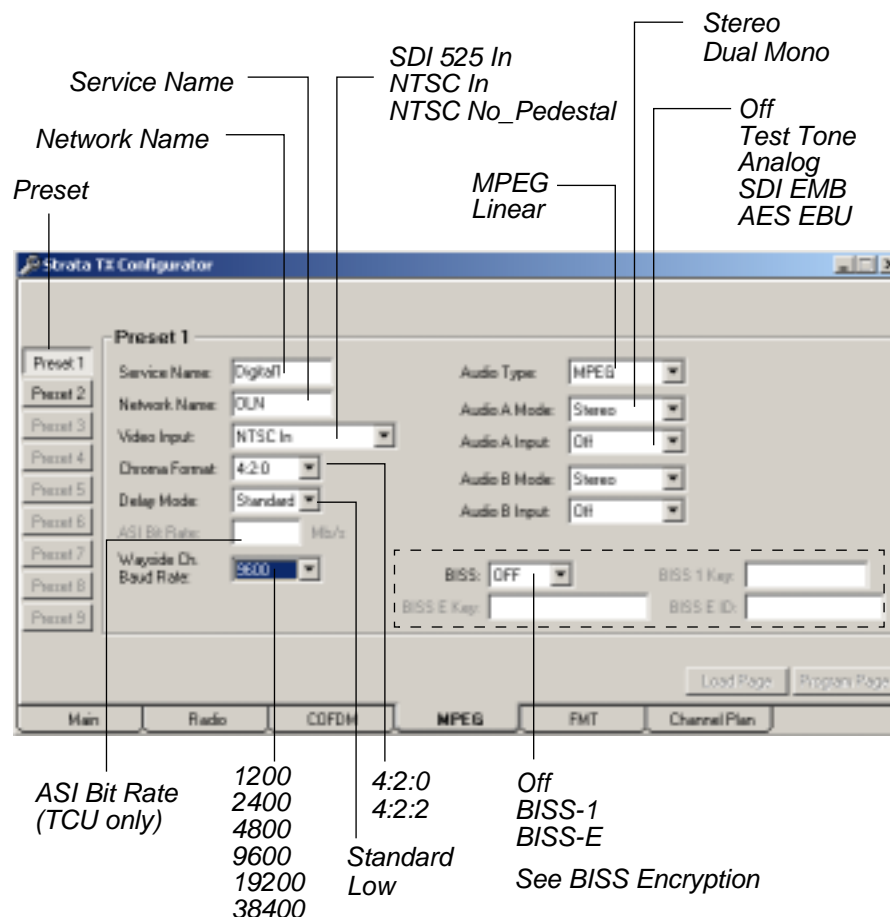
## 5.10 FMT Menu

The FMT Menu sets options for the FMT modulator if used in either the TCU or TXU. Audio settings are set for each for the 4 available channels as shown in *Table 5-4*.

**Table 5-4**      **FMT Menu Options**

| Option | Options Description |
|---|---|
| Video Deviation | 3 MHz or 4 MHz |
| Audio Channel 1 | Frequency: See channel frequencies in *Figure 5-13*.<br>Enabled:<br>   – Enables audio channel when box is checked.<br>   – Disables audio channel when box is un-checked.<br>Pre-emphasis:<br>   – Enables audio pre-emphasis when box is checked.<br>   – Disables audio pre-emphasis when box is un-checked. |

**Figure 5-13  FMT Menu**



*4830 KHz*
*5200 KHz*
*5800 KHz*
*6200 KHz*
*6800 KHz*
*7020 KHz*
*7500 KHz*
*8065 KHz*
*8300 KHz*
*8590 KHz*

*Video Deviation*
*- 3 MHz*
*- 4 MHz*

## 5.11   Channel Plan Menu
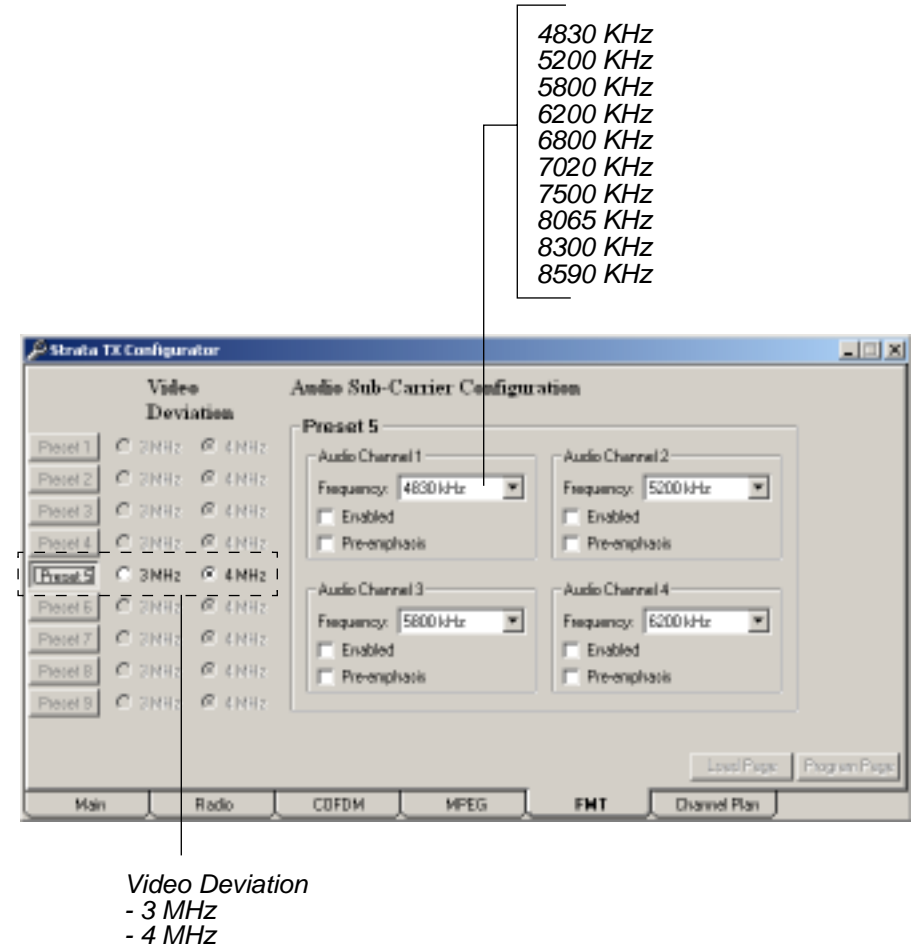
**Figure 5-14  Channel Plan Menu**

The Channel Plan Menu sets options for frequency and offset. Frequency can be set in the following ways for the 10 available channels:

*Channel Frequency and Offset (–/+)*

• Use the standard frequency plan
• Create custom frequencies and offsets

**Table 5-5          Channel Plan Menu Options**

| Option | Options Description |
|---|---|
| Video Deviation | 3 MHz or 4 MHz |
| Center | Center frequency |
| Offset + | Plus offset from center frequency |
| Offset – | Minus offset from center frequency |

*Channel Plan Menu Buttons:*

• **Clear Channel Plan** – Clears all fields leaving them blank. Use this feature first if creating a custom channel plan.
• **Default FCC Channel Plan –** Loads the default FCC channel plan.
• **Load Plan from File –** Loads the a channel plan from stored in a file. The channel plan files use the extension ".CHP."
• **Save Plan to a File –** Loads the a channel plan from stored file. The channel plan files use the extension ".CHP."

# *Audio & Video Connections*

# 6

## 6.1 Overview

The STRATA Transmitter system provides a variety of configurations for transporting audio and video signals. The STRATA Transmitter provides options for separate audio and video input as well as analog composite and embedded digital formats.

### 6.1.1 Glossary

The following terms are used in this section:

- Audio circuit – One 3 wire balanced circuit capable of carrying one tone or voice signal. An audio circuit can carry:
    - – 1 analog balanced audio channel or:
    - – 2 digital AES/EBU channels

The STRATA Transmitter provides for a maximum of 4 audio circuits:

- Analog – 4 monaural or 2 stereo channels carried on 4 XLR connectors
- AES/EBU – 2 digital channels carried on one XLR connector – 4 digital channels carried on two XLR connectors.

## 6.2 Factory Settings

Audio inputs and outputs are factory configured in two ways:

- Software setup specifically set up each customer needs and hardware configuration. See *"STRATA Tx Configurator," Section 5 on page 5-1*.
- Hardware Configuration - This involves cabling options from the front panel audio connector to the FMT or MPEG modules. Cabling options are configured by the customer order. See *Section 6.5, "Audio Configurations," on page 6-2*.

## 6.3 Audio Input

### 6.3.1 FMT Audio Input

Analog can be input to the system in the following ways.

- Analog audio as part of a composite video input to the transmitter.
- 4 separate analog channels connected to the front panel audio connector.

In a TCU with both MPEG and FMT modules installed, 4 analog audio channels are connected in series to the FMT and then COFDM modules.

### 6.3.2 MPEG Audio Input

Audio circuits must be configured in pairs:

- Audio A - Channels 1 & 2
- Audio B - Channels 3 & 4

To configure audio channels, see *"STRATA Tx Configurator," Section 5 on page 5-1*.

### 6.3.3 AES/EBU Audio Input

The STRATA Transmitter can be configured to input AES/EBU audio. This requires the transmitter to be configured at the factory, or the unit must be upgraded by MRC Technical Services. For audio connections, see *Table 6-4 on page 6-5*.

## 6.4 Audio and Video Set Up

**Step 1** Identify the audio configuration for your radio based on the option modules installed according to the customer requirements as stated in the order. See *Section 6.5, "Audio Configurations," on page 6-2*.

**Step 2** Determine the audio input connection, whether to the TCU or TXU. System s where the TXU and TCU are co-located have the audio connection made to the TCU.

For TXU Connections, see *Section 6.6, "TXU Audio & Video Connections," on page 6-3*.

For TCU Connections, see *Section 6.7, "TCU Audio & Video Connections," on page 6-4*.

**Step 3** If the audio is being input separately to the system, use the wiring instructions found in *Table 6-4 on page 6-5*. MRC provides an audio cable with 4 XLR connectors as shown in *Figure 6-6, Audio XLR Cable (907471) on page 6-6*.

## 6.5    Audio Configurations

The STRATA Transmitter provides for a maximum of 4 audio circuits. *Table 6-1* shows audio configurations available for TXU or TCU units.

**Table 6-1        TXU and TCU Audio Configurations**

| Audio Configuration | Notes | Connection from Front Connector to Modules | Comments |
|---|---|---|---|
| **TXU - FMT Only** | | | |
| 4 analog | 1 | • 4 circuits connected from the audio connector to the FMT module. | |
| **TXU - MPEG Only** | | | |
| 4 analog | 2 | • 4 circuits connected from the audio connector to the MPEG module (analog connectors) | |
| 4 digital | 2 | • 4 circuits connected from the audio connector to the MPEG module (digital connector) | |
| 2 analog<br>2 digital | 2<br>2 | • 2 analog circuits connected from the audio connector to the MPEG module (analog connector)<br>• 2 digital circuits connected from the audio connector to the MPEG module (digital connector) | |
| **TCU - FMT Module Only** | | | |
| 4 analog | 1 | • 4 circuits connected from the audio connector to the FMT module. | |
| **TCU - MPEG Module Only** | | | |
| 4 analog | 2 | • 4 circuits connected from the audio connector to the MPEG module (analog connectors) | |
| 4 digital | 2 | • 4 circuits connected from the audio connector to the MPEG module (digital connector) | |
| 2 analog<br>2 digital | 2<br>2 | • 2 analog circuits connected from the audio connector to the MPEG module (analog connector)<br>• 2 digital circuits connected from the audio connector to the MPEG module (digital connector) | |
| **TCU - FMT & MPEG Module** | | | |
| 4 analog | 1 | • 4 circuits connected from the audio connector to the FMT module (analog connectors) | Might be used in combination with SDI embedded audio |
| 2 analog<br>2 digital | 1<br>2 | • 2 audio circuits connected from the audio connector to the FMT module (analog connector)<br>• 2 audio circuits connected from the audio connector to the MPEG module (digital connector) | |
| 4 digital | 2 | • 4 circuits connected from the audio connector to the MPEG module (digital connector). | Might be used in combination with SDI embedded audio |
| *Notes:* | | | |
| **1.**  Termination jumpers required on FMT module<br>**2.**  Audio terminated on MPEG module<br>**3.**  Terminator not required when bridged to MPEG module | | | |

## 6.6    TXU Audio & Video Connections

The TXU provides several audio and video input and output options.

*Figure 6-1* shows the block diagram of the TXU which can house either the FMT modulator or the MPEG/COFDM module. This diagram, show s the multiple selectable inputs available.

**Figure 6-1  STRATA TXU Functional Diagram**
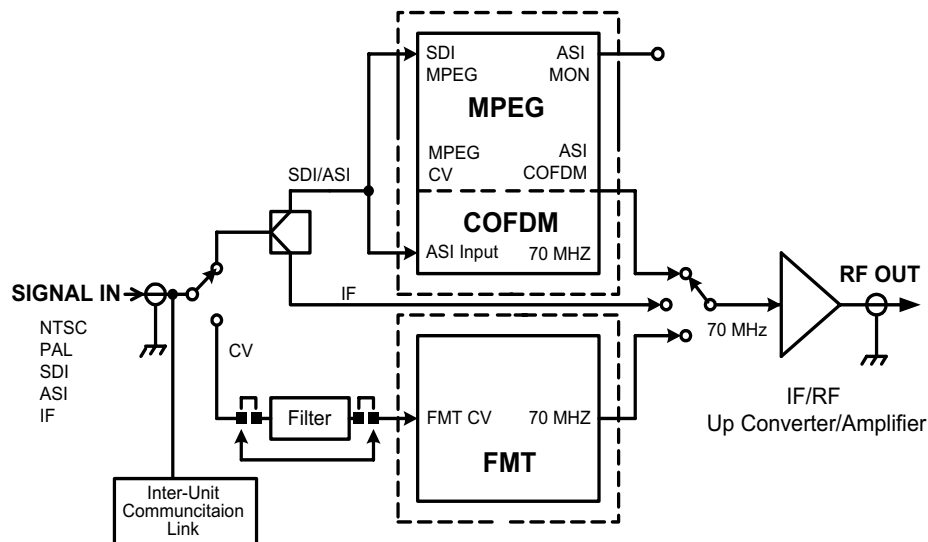


### 6.6.1    Audio Connections

Audio connections are made to the 10 pin front panel connector (*Figure 6-2*). For audio connections, see *Table 6-4 on page 6-5* and *Figure 6-5 on page 6-5*.

| Note: | *If the TXU is being used as a stand-alone RF Unit in combination with a TCU, then all audio connections are made to the TCU. In this case the TXU audio connector is replaced with a DC Override switch. For more information, see "Powering the STRATA Transmitter," Section 3 on page 3-1.* |
|---|---|

### 6.6.2    Video Connections

Video connections are made to a single BNC front panel connector (*Figure 6-2*).

Video input selections are made by selecting presets from the front panel control switch. Presets are created using the STRATA Configurator Software. For more information, see *"STRATA Tx Configurator," Section 5 on page 5-1*.

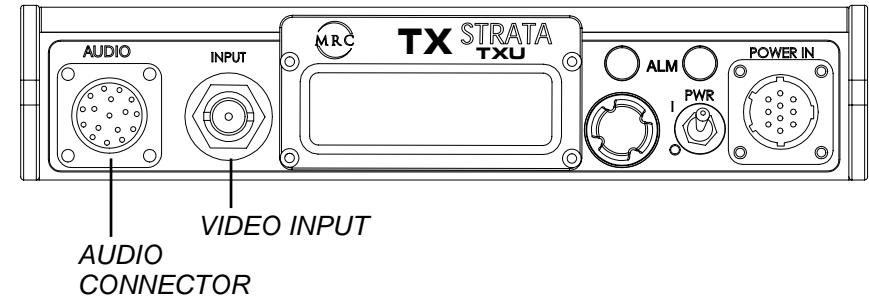**Figure 6-2  Front Panel Controls and Connections**



*Table 6-2* describes the video input options for the TXU. Input and output options depend on the option modules installed

**Table 6-2        TXU Input and Output Signal Options**

| Option Module | Signal Input | Signal Output | Notes |
|---|---|---|---|
| MPEG/COFDM | NTSC/PAL | COFDM - RF | Up-converted Channeled RF signal |
|  | SDI (525/625) | COFDM - RF |  |
|  | ASI | COFDM - RF |  |
|  | IF | RF |  |
| FMT | NTSC/PAL | CV - RF | NTSC/PAL CV Channelized RF |
|  | IF | RF | Up-converted Channelized RF signal |
| No options (Transmitter only) | IF | RF | Up-converted Channelized RF signal |

*Figure 6-1* shows the block diagram of the TXU which can house either the FMT modulator or the MPEG/COFDM module. This diagram, show s the multiple selectable inputs available.

## 6.7    TCU Audio & Video Connections

The TXU provides several audio and video input and output options.

*Figure 6-3* shows the block diagram of the TXU which can house either the FMT modulator or the MPEG/COFDM module. This diagram, show s the multiple selectable inputs available.

**Figure 6-3  TCU Block Diagram**
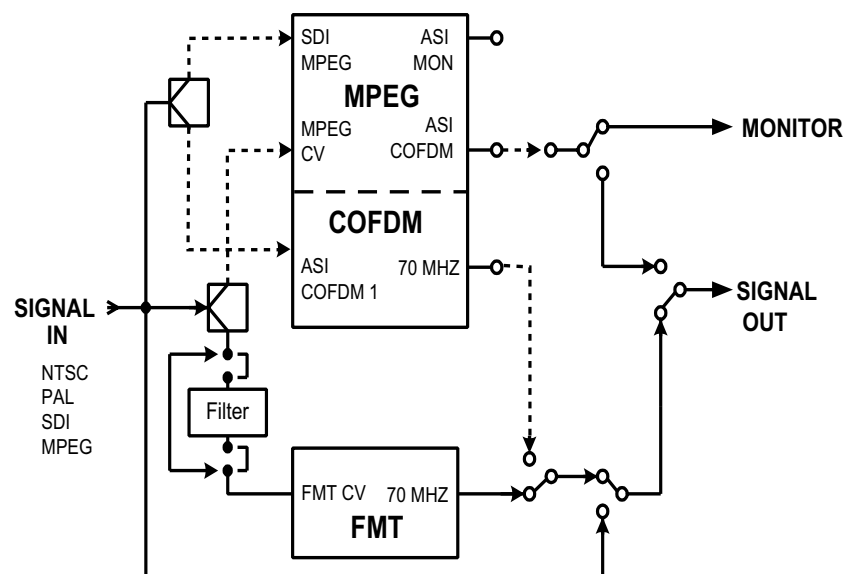


### 6.7.1    Audio Connections

Audio connections are made to the 10 pin rear panel connector (*Figure 6-4*). For audio connections, see *Table 6-4 on page 6-5* and *Figure 6-5 on page 6-5*.

### 6.7.2    Video Connections

Video connections are made to a single BNC rear panel connector (*Figure 6-4*).

Video input selections are made by selecting presets from the front panel control switch. Presets are created using the STRATA Configurator Software. For more information, see *"STRATA Tx Configurator," Section 5 on page 5-1*.
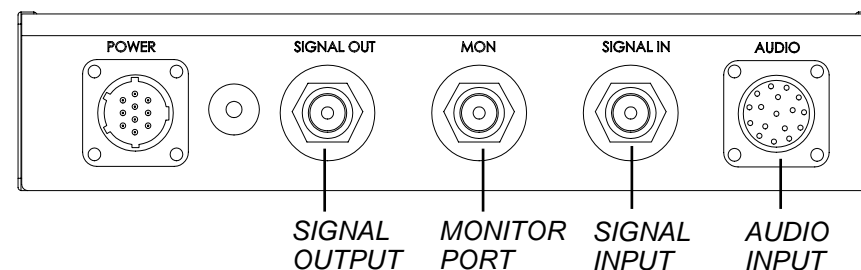
**Figure 6-4  TCU Rear Panels**



*SIGNAL       MONITOR      SIGNAL       AUDIO*
*OUTPUT       PORT          INPUT        INPUT*

**Table 6-3              TCU Input & Output Signal Options**

| System Option | Signal Input | Signal Output | Monitor Output | Alternate Output |
|---|---|---|---|---|
| MPEG/COFDM Only * | NTSC/PAL | ASI | | |
| | SDI (525/625) | ASI | | |
| | NTSC/PAL | COFDM - IF | COFDM | |
| | SDI (525/625) | COFDM - IF | COFDM | |
| | ASI | COFDM - IF | COFDM | |
| | IF | IF | IF | IF Bypass Mode |
| FMT Only | NTSC/PAL | IF Composite Video | IF Composite Video | NTSC/PAL Composite Video IF |
| | IF | IF | IF | IF Bypass Mode |
| MPEG/COFDM and FMT * | NTSC/PAL | ASI | | |
| | SDI (525/625) | ASI | | |
| | NTSC/PAL | COFDM - IF | COFDM | |
| | NTSC/PAL | IF Composite Video | IF Composite Video | NTSC/PAL IF |
| | SDI (525/625) | COFDM - IF | COFDM | |
| | ASI | COFDM - IF | ASI or COFDM | |
| | IF | IF | IF | IF Bypass Mode |

* = ASI output possible when TCU used in stand-alone (MPEG only) mode

## 6.8    Audio Connections

*Table 6-4* describes wiring for the audio connector.

**Note:**    *AES/EBU audio requires the transmitter to be configured at the factory.*

**Table 6-4        STRATA Tx Audio Connections**

| Channel | Audio Connector | Analog Audio Connections | AES/EBU Connectors | XLR Connections | Audio Connector |
|---------|-----------------|--------------------------|--------------------|-----------------|-----------------|
| 1 | A | (RETURN) RIGHT CH 1 | Channel #2 + | #1 – Pin 3 | **Figure 6-5  Audio Connector** |
| 1 | B | GND *(Note 1)* | GND | #1 – Pin 1 | |
| 1 | C | (LIVE) RIGHT CH 1 | Channel #2 + | #1 – Pin 2 | |
| 2 | D | (RETURN) LEFT CH 1 | Can #1 + | #2 – Pin 3 | |
| 2 | (B) | GND *(Note 1)* | GND | #2 – Pin 1 | |
| 2 | E | (LIVE) LEFT CH 1 | Can #1 + | #2 – Pin 2 | |
| 3 | F | (RETURN) RIGHT CH 2 | | #3 – Pin 3 | |
| 3 | G | GND *(Note 1)* | | #3 – Pin 1 | |
| 3 | H | (LIVE) RIGHT CH 2 | | #3 – Pin 2 | |
| 4 | J | (RETURN) LEFT CH 2 | | #4 – Pin 3 | |
| 4 | (G) | GND *(Note 1)* | | #4 – Pin 1 | |
| 4 | K | (LIVE) LEFT CH 2 | | #4 – Pin 2 | |

**1.**  Channels 1 and 2 use the same GND connection B. Channels 3 and 4 use the same GND connection G.

**Figure 6-6  Audio XLR Cable (907471)**
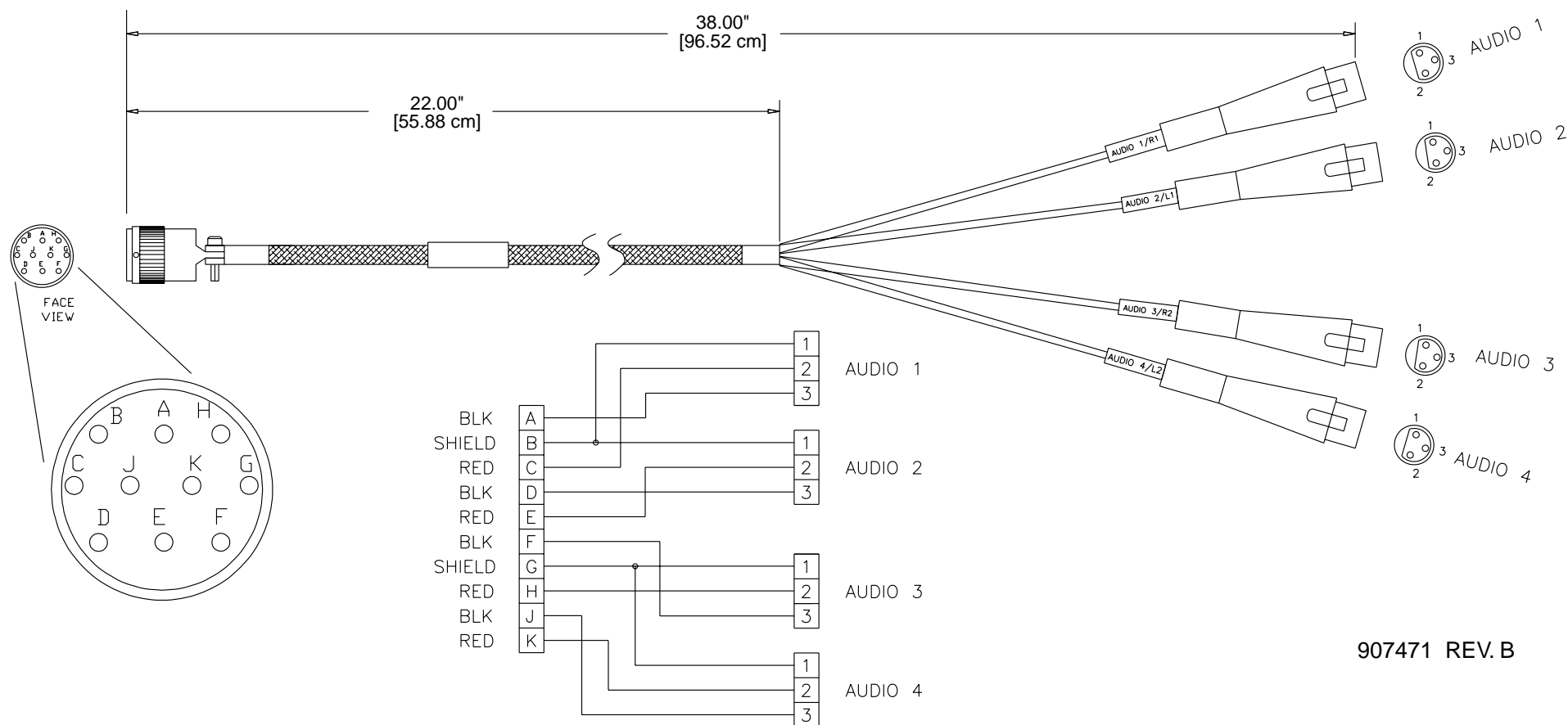


907471 REV. B

# *Wayside Data Channel*

**7**

## 7.1    Overview

The wayside channel is a simplex data (*Figure 7-1*) channel transmitting data from the STRATA Transmitter system to a STRATA Receive system. Data is input to the TXU or TCU using connections to the serial port through an interface cable provided by MRC.

**Figure 7-1  Wayside Simplex Data Channel**
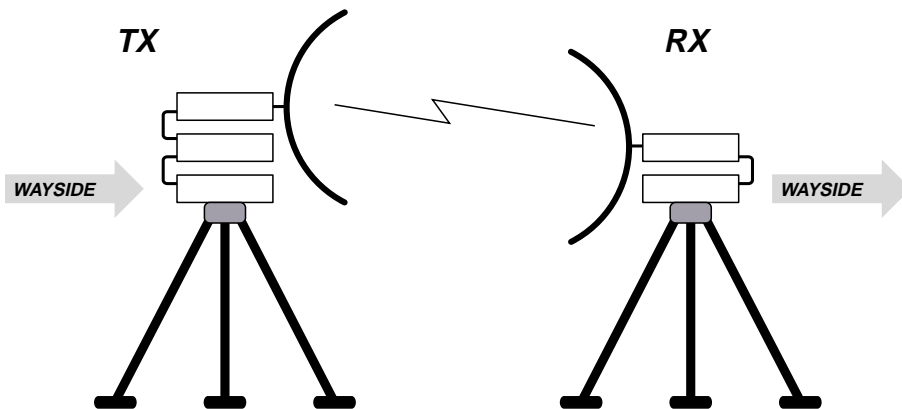


### 7.1.1    Compatibility

MRC has verified the wayside channel to be compatible with the following receivers:

- Tandberg Alteia IRD (Integrated Receiver Decoder)
- STRATA Receiver Unit (RXU) with MPEG Decoding
- STRATA Receiver Unit (RCU) with MPEG Decoding

## 7.1.2    Wayside Connections to Audio Circuits

**Note:** *Early production models of the STRATA Transmitter Unit TXU or Transmitter Control Unit (TCU) used connections on the front panel audio connector to connect to the data port on the MPEG module inside the unit. You should verify your order to see how you system is configured.*

*Figure 7-2* shows a block diagram of the connections required for connections to the Audio Connector.

**Figure 7-2  Wayside on Audio Wiring Diagram**
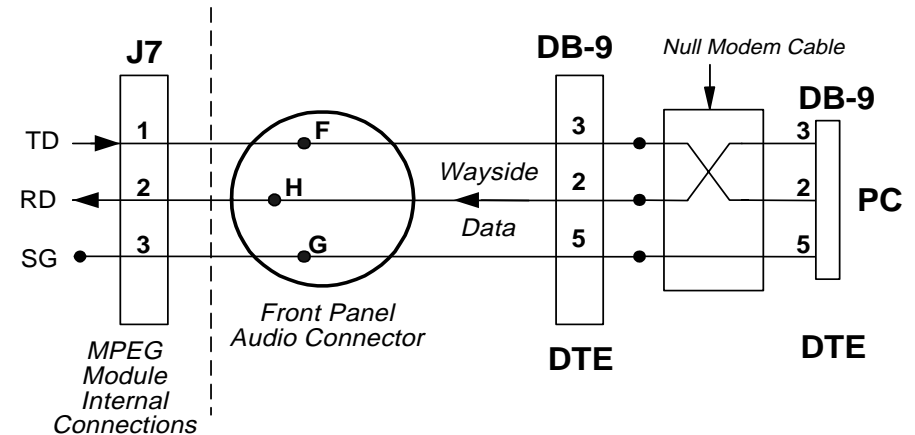


## 7.2    Setup and Installation

Follow these steps for wayside data channel:

**Step 1**    Connect wayside channel using the interface cable to serial port.

**Step 2**    Select the Baud Rate for both the Transmitter and Receiver end of the system.

- To set the baud rate on the Transmitter, see: *Section 5, "STRATA Tx Configurator," on page 5-1*.

**Step 3**    Test the connection.

## 7.3    Wayside Connections on the Serial Port

Connecting the wayside channel to the serial port requires the Serial/Wayside Interface cable. The cable connects the serial and has connections for both the wayside channel as well serial connection to the PC or laptop required for the STRATA Configurator.

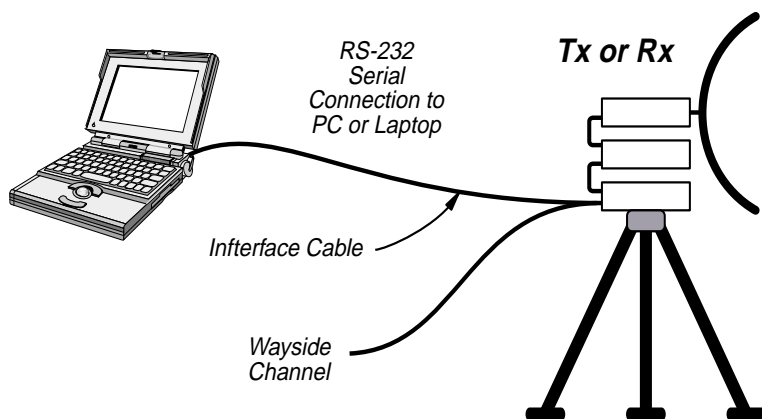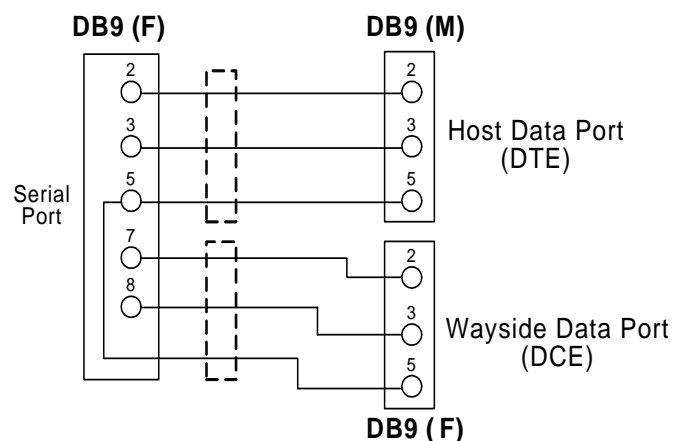**Figure 7-3  Wayside and Serial Interface Connections**



*Figure 7-4* shows the data connections on the Transmit end of the Wayside Channel for the serial port o

**Figure 7-4   Interface Cable Connections**



### 7.3.1    Transmitter to Receiver Connections

To verify the data path connections, refer to *Figure 7-6* and *Figure 7-6*.

*Figure 7-6* shows the data connections on the Transmit end of the Wayside Channel for the serial port on the TXU or TCU. Both serial and wayside connections are shown.

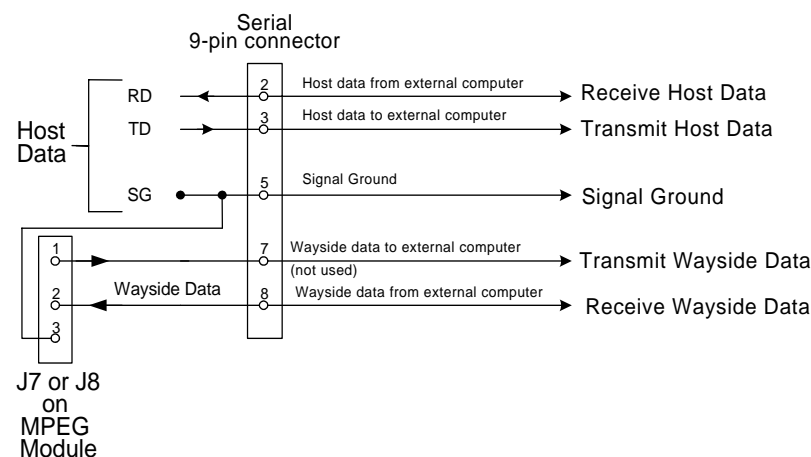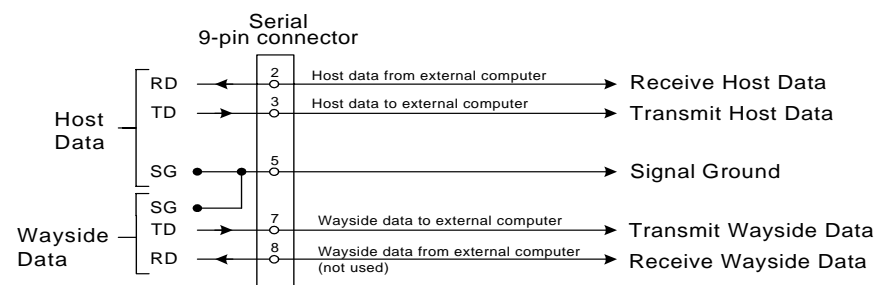**Figure 7-5  Transmitter Wayside Connections**



*Figure 7-6* shows the data connections on the Receive end of the Wayside Channel for the serial port on the RCU or RXU. Both serial and wayside connections are shown.

**Figure 7-6  Receiver Wayside Data Connections**

# *Error Codes*

<div style="text-align: right">

# A

</div>

## A.1    Strata TX Front Panel Error Code List

Rotating the front panel TCU or TXU control knob allows access to displayed error codes whenever the unit PWR LED color changes from green to amber. The list below references trouble conditions with displayed error codes.

**Table A-1       TXU Error Codes**

| Error Codes | MID |
|---|---|
| TXU IF FAULT | E020 |
| TXU RF FAULT | E021 |
| TXU PS 48 VOLT LINE | E030 |
| TXU PS 5.5 VOLT LINE | E031 |
| TXU PS 7 VOLT LINE | E032 |
| TXU PS 11 VOLT LINE | E033 |
| TXU PS TEMPERATURE | E034 |
| TXU PS IF COAX CURRENT | E035 |
| TXU PS IF COAX VOLTAGE | E036 |
| TXU PS IF COAX WATTAGE | E037 |
| TXU PS RF COAX CURRENT | E038 |
| TXU PS RF COAX VOLTAGE | E039 |
| TXU PS RF COAX WATTAGE | EP3A |
| TXU PS CKT CURRENT | EP3B |
| TXU PS CKT VOLTAGE | E0EC |
| TXU PS CKT WATTAGE | E03D |
| TXU PS DC BUS | E03E |

**Table A-2       TCU Errosr Codes**

| Error Codes | MID |
|---|---|
| TCU PS 48 VOLT LINE | E040 |
| TCU PS 5.5 VOLT LINE | E041 |
| TCU PS TEMPERATURE | E042 |
| TCU PS COAX CURRENT | E043 |
| TCU PS COAX VOLTAGE | E044 |
| TCU PS COAX WATTAGE | E045 |
| TCU PS CKT CURRENT | 3046 |
| TCU PSCKT VOLTAGE | E047 |
| TCU PS CKT WATTAGE | E048 |
| TCU PS DC BUS | E049 |

**Table A-3       HPU Error Codes**

| Error Codes | MID |
|---|---|
| HPU PS 48 VOLT LINE | E060 |
| HPU PS 5.5 VOLT LINE | E061 |
| HPU PS 11 VOLT LINE | E062 |
| HPU PS TEMPERATURE | E063 |
| HPU PS COAX CURRENT | E064 |
| HPU PS COAX VOLT | E065 |
| HPU PS COAX WATTAGE | E066 |
| HPU PS CKT CURRENT | E067 |
| HPU PS CKT VOLTAGE | E068 |
| HPU PS CKT WATTAGE | E069 |
| HPU PS DC BUS | E06A |

**Table A-4        MPEG/COFDM Error Codesm**

| Error Codes | MID |
|---|---|
| COFDM ENCODER COMM ERROR | E080 |

**Table A-5        FMT Error Codes**

| Error Codes | MID |
|---|---|
| FMT VIDEO PLL UNLOCK | E0E0 |
| FMT AUDIO1 PLL UNLOCK | E0E1 |
| FMT AUDIO2 PLL UNLOCK | E0E2 |
| FMT AUDIO3 PLL UNLOCK | E0E3 |
| FMT AUDIO4 PLL UNLOCK | E0E4 |
|  |  |
| SYSTEM_ERROR_SUMMARY | E400 |

**Table A-6        System Errors**

| Error Codes | MID |
|---|---|
| SYSTEM_ERROR_SUMMARY | E400 |

# *Channel & Fequencies*

## B.1 Initial Factory Presets

This appendix lists the RF channel frequency for each RF band. These frequencies are programmed into each STRATA Transmitter.

## B.2 Standard Channel Frequencies

- *Table B-1, 2 GHz RF Channel Guide (U.S. Broadcast), on page B-1*

**Table B-1    2 GHz RF Channel Guide (U.S. Broadcast)**

| Setting | (-) Offset (MHz) | (0) Center (MHz) | (+) Offset (MHz) |
|---------|------------------|------------------|------------------|
| 1 | 1994.75 | 1999.0 | 2003.25 |
| 2 | 2012.25 | 2016.5 | 2020.75 |
| 3 | 2029.25 | 2033.5 | 2037.75 |
| 4 | 2046.25 | 2050.5 | 2054.75 |
| 5 | 2063.25 | 2067.5 | 2071.75 |
| 6 | 2080.25 | 2084.5 | 2088.75 |
| 7 | 2097.25 | 2101.5 | 2105.75 |
| 8 | 2454.25 | 2458.5 | 2462.75 |
| 9 | 2471.25 | 2475.5 | 2479.75 |
| 10 | 2487.75 | 2492.0 | 2496.25 |
| 11 | 2487.75 | 2492.0 | 2496.25 |
| 12 | 2487.75 | 2492.0 | 2496.25 |
| 13 | 2487.75 | 2492.0 | 2496.25 |
| 14 | 2487.74 | 2492.0 | 2496.25 |

## B.3 Future Bands

- *Table B-2, 6 GHz RF Channel Guide (U.S. Broadcast), on page B-1*
- *Table B-3, 12 GHz RF Channel Guide (U.S. Broadcast), on page B-2*
- *Table B-4, 13 GHz RF Channel Guide (U.S. Broadcast), on page B-2*

**Table C-2    6 GHz RF Channel Guide (U.S. Broadcast)**

| Setting | (–) Offset (MHz) | (0) Center (MHz) | (+) Offset (MHz) |
|---------|------------------|------------------|------------------|
| 1 | 6881.25 | 6887.50 | 6893.75 |
| 2 | 6906.25 | 6912.50 | 6918.75 |
| 3 | 6913.25 | 6937.50 | 6943.75 |
| 4 | 6956.25 | 6962.50 | 6968.75 |
| 5 | 6981.25 | 6987.50 | 6993.75 |
| 6 | 7006.25 | 7012.50 | 7018.75 |
| 7 | 7031.25 | 7037.50 | 7043.75 |
| 8 | 7056.25 | 7062.50 | 7068.75 |
| 9 | 7081.25 | 7087.50 | 7093.75 |
| 10 | 7106.25 | 7112.50 | 7118.75 |
| 11 | 6421.25 | 6437.50 | 6443.75 |
| 12 | 6456.25 | 6462.50 | 6468.75 |
| 13 | 6481.25 | 6487.50 | 6493.75 |
| 14 | 6506.25 | 6512.50 | 6518.75 |

Table C-3       **12 GHz RF Channel Guide (U.S. Broadcast)**

| Setting | (–) Offset (MHz) | (0) Center (MHz) | (+) Offset (MHz) |
|---------|------------------|------------------|------------------|
| 1 | 12706.25 | 12712.50 | 12718.75 |
| 2 | 12731.25 | 12737.50 | 12743.75 |
| 3 | 12756.25 | 12762.50 | 12768.75 |
| 4 | 12781.25 | 12787.50 | 12793.75 |
| 5 | 12806.25 | 12812.50 | 12818.75 |
| 6 | 12831.25 | 12837.50 | 12843.75 |
| 7 | 12856.25 | 12862.50 | 12868.75 |
| 8 | 12881.25 | 12887.50 | 12893.75 |
| 9 | 12906.25 | 12912.50 | 12918.75 |
| 10 | 12931.25 | 12937.50 | 12943.75 |

Table C-4       **13 GHz RF Channel Guide (U.S. Broadcast)**

| Setting | (–) Offset (MHz) | (0) Center (MHz) | (+) Offset (MHz) |
|---------|------------------|------------------|------------------|
| 11 | 12956.25 | 12962.50 | 12968.75 |
| 12 | 12981.25 | 12987.50 | 12993.75 |
| 13 | 13006.25 | 13012.50 | 13018.75 |
| 14 | 13031.25 | 13037.50 | 13043.75 |
| 15 | 13056.25 | 13062.50 | 13068.75 |
| 16 | 13081.25 | 13087.50 | 13093.75 |
| 17 | 13106.25 | 13112.50 | 13118.75 |
| 18 | 13131.25 | 13137.50 | 13143.75 |
| 19 | 13156.25 | 13162.50 | 13168.75 |
| 20 | 13181.25 | 13187.50 | 13193.75 |
| 21 | 13206.25 | 13212.50 | 13218.75 |
| 22 | 13231.25 | 13237.50 | 13243.74 |