TELEX

RADIO DISPATCH PRODUCTS

MTRBi
Installation Manual

up to and including version 1.000

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For warranty and service information, refer to www.telex.com/warranty.

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Claims

No liability will be accepted for damages directly or indirectly arising from the use of our materials or from any other causes. Our liability shall be expressly limited to replacement or repair of defective materials.

Warning:

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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CHAPTER 1

Introduction

Overview

The **MTRBi** (MOTORBO interface) allows C-Soft consoles to communicate with and control a MOTOTRBO** Professional Digital Two-Way Radio System using an IP-223. The MTRBi connects directly to an IP-223 which transfers data between the MOTOTRBO radio and the C-Soft console. The MTRBi supports MOTOTRBO mobile radios.

Hardware Requirements

The MTRBi interfaces with the following hardware:

- MOTOTRBO Mobile Radio
- IP-223 Adapter Panel
- DB-9 Splitter Cable, optional (P/N 30195300)

NOTE: A serial splitter cable is required when attaching two (2) serially controlled accessories to one (1) IP-223 or when line 2 has a serial device attached.

REFERENCE: For more information, see the IP-223 Technical Manual, (P/N 803641)

Software Requirements

The MTRBi requires the following software:

- C-Soft Software version 5.30 or later
- IP-223 Software version 4.50 or later
- MOTOTRBO Customer Programming Software

Computer System Requirements

The C-Soft software drives the minimum computer system and network requirements to run the MTRBi.

REFERENCE: For more information, see the C-Soft Technical Manual (P/N LIT000082000).

Features

- Receive Audio
- Transmit Audio (Private and Group Calls)
- Zone and Channel Changing
- Transmit Text Message
- Quick Text
- Radio Check
- Radio Disable
- Radio Enable
- Remote Monitor
- Call Alert
- GPS Read
- Radio GPS Location Plotted on Google Earth
- Receive Caller ID
- Call History
- Crosspatch
- Up to 10 Parallel C-Soft Consoles per one (1) MTRBi line.

MTRBi

Front Panel

1. **Fixed Cable Connection** - Connects the MTRBi to the MOTOTRBO radio.

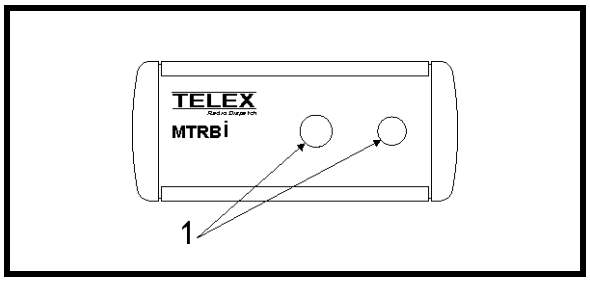


FIGURE 1. MTRBi Front

Back Panel

2. **DB-9 Connection** - Connects the MTRBi to the IP-223.

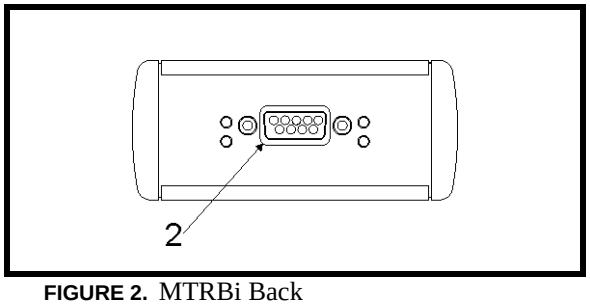


FIGURE 2. MTRBi Back

Specifications

Power Requirements	10–15Vdc, 70mA, Rated Voltage 12Vdc
Audio Distortion	0.2% at 1Khz
Audio Frequency Response	50Hz–20kHz with Load Resistor 600 Ohm
Operating Temperature	-20°C to +60°
Dimensions	3.95 “ (100mm) Wide x 3.39” (86mm) Deep x 1.46” (37mm) High
Actual Weight	.45lbs (220g)
Shipping Weight	1.63lbs (740g)
Shipping Dimensions	11.89” (302mm) Wide x 9.92” (252mm) Deep x 3.23” (82mm) High
USB Version	1.1 and 2.0
Storage Conditions	-40°C to +85C, Humidity 100%
Operating Conditions	-20°C to +60°C, Humidity 95%

TABLE 1. DB-9 Connector Specifications

Pin Function	Parameter	Condition	Specifications
RxD and TxD[a]	Output Voltage Swing	-	±5V–±9V
CSQ/COR-PL/Grp[a]	Output Voltage	-	V_{ol} 0V, V_{oh} +5V

a. For more information, see “DB-9 Cable” on page 12.

TABLE 2. 26-Pin Connector Specifications

Pin Function	Parameter	Condition	Specifications
TX Audio Input (Analog)[a]	Microphone Signal Voltage Producing 60% Modulation	1kHz Tone, Low Impedance Voltage Source measurement	70mVrms–90mVrms, 80mVrms Typical
RX Audio Output (Analog)[a]	Level in Default Mode	600 Ohm Load, 100–3400Hz, -20dBm0 Receive Level -10dBV Nominal Consumer Line Level	295mVrms–370mVrms, 330mVrms Typical

a. For more information, see “26-Pin IDC Cable” on page 13.

CHAPTER 2

Installation and Setup

WARNING: Do not open the unit. No user serviceable parts are contained within. Bosch is not be responsible for damage. If the unit is opened, the warranty may be voided. For troubleshooting steps, contact the technical support center. See “Contact Information” on page 2.

Installation

IMPORTANT:

- We recommend the installation is completed while offline and before installing in a live system.
- To save time, always configure the Motorola**[1] CPS software before configuring IP-223 and C-Soft.

To **install your MTRBi:**

Step 1 Set up the **IP-223 jumpers**. See “IP-223 Jumper Settings” on page 12.

Step 2 Connect the MTRBi to the **MOTOTRBO** Professional Digital Two-Way Radio** and **the IP-223**. See “MTRBi Connections” on page 12.

Step 3 Configure the **MOTOTRBO** software. “MOTOTRBO Configuration” on page 15.

Step 4 Configure the **IP-223** software for MTRBi. See “IP-223 Software Configuration” on page 29.

Step 5 Configure a **MOTOTRBO system** in C-Soft. See the C-Soft Technical Manual (P/N LIT000082000).

Step 6 Configure **C-Soft** for MTRBi. See “System Reset” on page 39.

Step 7 Mount the **MTRBi**. See “MTRBi Mounting” on page 39.

Step 8 Reset the **system**. See “System Reset” on page 39.

Step 9 Test the MTRBi **connection**. See “Test the MOTOTRBO to C-Soft Communication Status” on page 40.

1. See “Copyright Notice” on page 2.

Hardware Installation

IP-223 Jumper Settings

The IP-223 jumpers must be configured for MTRBi use.

To **set the IP-223 jumpers for MTRBi**, do the following:

1. On Line 1, set **J3, J9, J11, J16, J21,** and **J35** to position A.
2. On Line 2, set **J19, J20, J25, J26, J28,** and **J29** to position A.

REFERENCE: For more information, see the IP-223 Technical Manual (P/N 803641).

MTRBi Connections

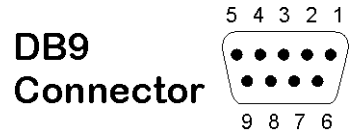
DB-9 Cable

A DB-9 cable interface to connect the MTRBi to the IP-223's DB-9 and DB-25 ports is provided with the MTRBi. The DB-9 port is located on the back of the MTRBi while the DB-9 and DB-25 ports are located on the back of the IP-223.

The **DB-9 Connector** pin outs are shown in Table 3 on page 12.

TABLE 3. DB-9 Connector Pin Outs

Pin	Pin Name	Function
1	RX Audio	Receive Audio from Radio (Output)
2	RXD	Data from Control Device (Input)
3	TXD	Data to Control Device (Input)
4	TX Audio	Transmit Audio to Radio (Microphone Input)
5	Gnd	Ground
6	CSQ/COR—PL/Grp	Signal Quality (TTL, Output)
7	-	Not Used
8	-	Not Used
9	Audio Gnd	Extra Ground for Audio



26-Pin IDC Cable

A 26-pin **IDC** (Insulation Displacement Connector) cable, configured for Motorola **MAP** (Mobile Application) use, is fixed to the front of the MTRBi. This cable is used to connect the MTRBi to the MOTOTRBO radio allowing access to MAP functions programmed in the MOTOTRBO radio.

The 26-pin pin outs are shown in Table 4 on page 13 for pin outs.

TABLE 4. 26-Pin Connector Pin Outs

Pin	Pin Name	Function
1	USB+	Data (+)
2	USB-	Data (-)
3	VBus	
4	USB Gnd	Ground for USB
5	-	-
6	-	-
7	SW B+	Power Supply
8	Gnd	Ground
9	-	-
10	-	-
11	TX Audio	Transmit Audio (Microphone Input)
12	Audio Gnd	Ground or Audio
13	-	-
14	RX Audio	Receive Audio (Output)
15	-	-
16	Gnd	Ground
17	GPIO_1	PTT (Input)
18	GPIO Gnd	Ground for GPIO (PTT, PL/Grp, CSQ/COR)
19	GPIO_2	PL/Grp (Output)
20	GPIO_6	CSQ/COR for Analog Channel (Output)
21	-	Reserve
22	-	Reserve
23	Emergency	Emergency Switch (Input)
24	-	Reserve
25	Ignition	Ignition Sence (Input)
26	-	Reserve

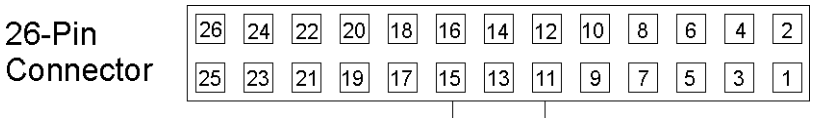


TABLE 5. IP-223 to MTRBi Cable Wiring

Cable[a]	IP-223	Cable[a]	MTRBi	Function
P1	Pin 24	P3	Pin 1	RX Audio
P1	Pin 25	P3	Pin 4	TX Audio
P1	Pin 20	P3	Pin 6	CSQ-COR
P1	Pin 7	P3	Pin 9	Audio Ground
P2	Pin 3	P3	Pin 2	RXD
P2	Pin 2	P3	Pin 3	TXD
P2	Pin 5	P3	PIn 5	Ground

a. See Figure 3.

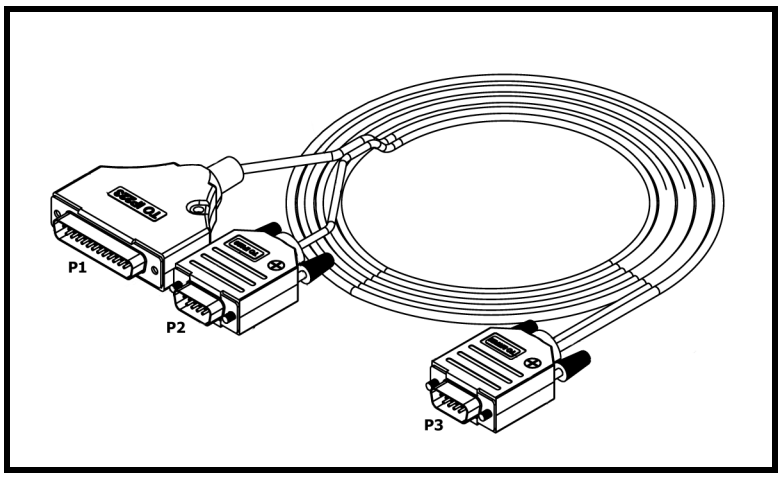


FIGURE 3. MTRBi Cables

MTRBi Connections

The **MTRBi cables** are used to connect an IP-223 and MOTOTRBO mobile radio to the unit.

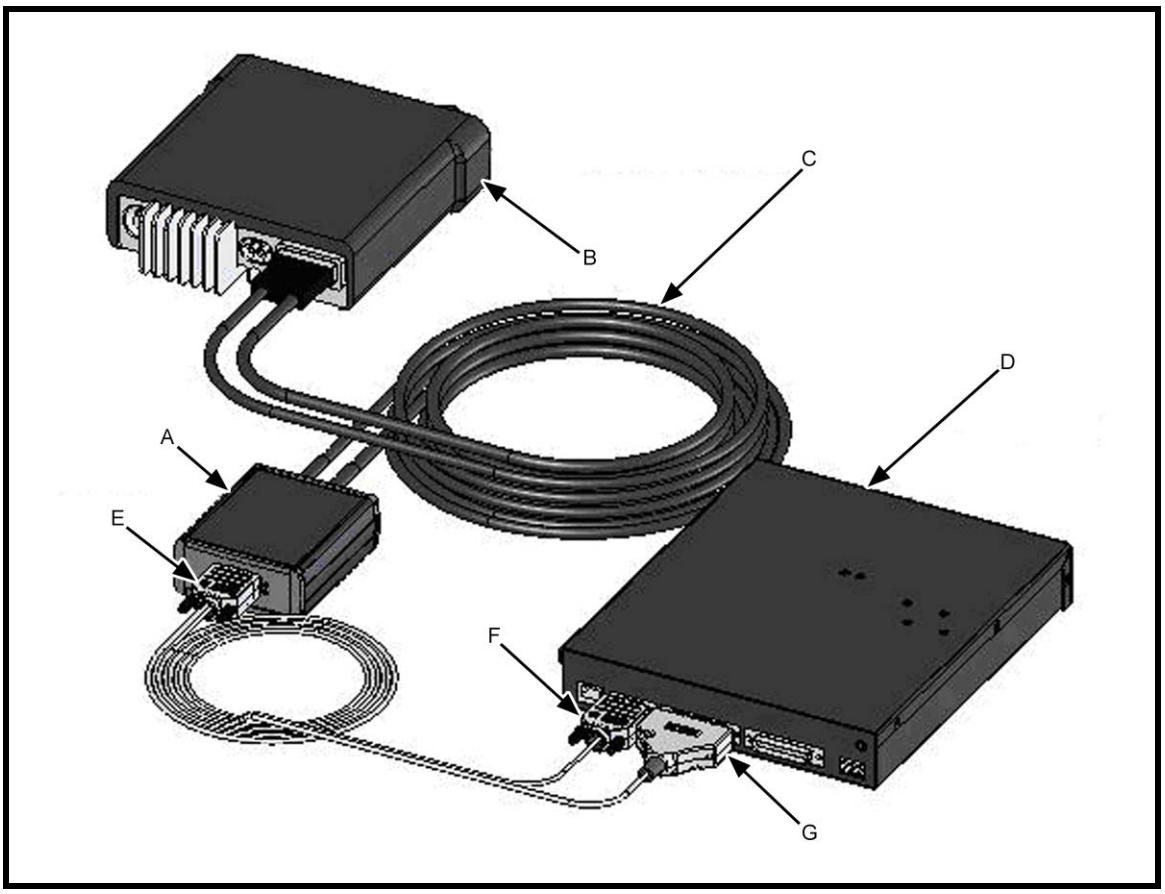


FIGURE 4. MTRBi Connections

To **connect the MTRBi to the system**, do the following:

1. Ensure **no power** is supplied to the MTRBi (A), IP-223 (D), the IP-223 and the mobile radio (B).
2. Connect the **26-pin IDC cable** (C) to the back of the MOTOTRBO radio (B).
3. Connect the **standalone DB-9** connector (E) to the MTRBi (A).
    a. If connecting to both IP-223 ports, install a DB-9 Splitter cable (not shown).
4. Connect the **DB-9** (F) and **DB-25** connector (G) to the back of the IP-223 (D).
   OR
   Connect the **DB-9 Splitter cable** (not shown) and DB-25 connector (G) to the back of the IP-223.
5. Connect the **IP-223** to the C-Soft network (not shown).
6. Connect **power** (not shown) to the IP-223 (D).
7. Connect **power** (not shown) to the MOTOTRBO radio (B).
   Power is supplied from the radio.

MOTOTRBO Configuration

IMPORTANT: The following **MOTOTRBO configuration** instructions are provided for your convenience and do not replace instructions provided by Motorola's technical documentation. The Motorola software/documentation is subject to change without prior notice.

The MOTOTRBO **CPS** (Customer Programming Software) is used to configure mobile or portable radio(s) to interface with an MTRBi. All fields that affect the MTRBi, required and optional, are discussed. Your specific installation determines other CPS settings.

REFERENCE: For more information, see Motorola's technical documentation.

Get Started

Before you start the configuration process, the MOTOTRBO CPS must be set to expert view.

To **begin the MOTOTRBO configuration**, do the following:

> From the MOTOTRBO CPS menu bar, select **View|Expert** from the menu bar.
> *The MOTOTRBO software is ready to configure the MOTOTRBO radio(s).*

General Settings (MOTOTRBO)

The **General Settings** window, shown in Figure 5, is used to configure the Radio's ID and activate GPS. These fields are required for a successful mobile or portable radio interface to the MTRBi. Other settings may be required for your specific installation.

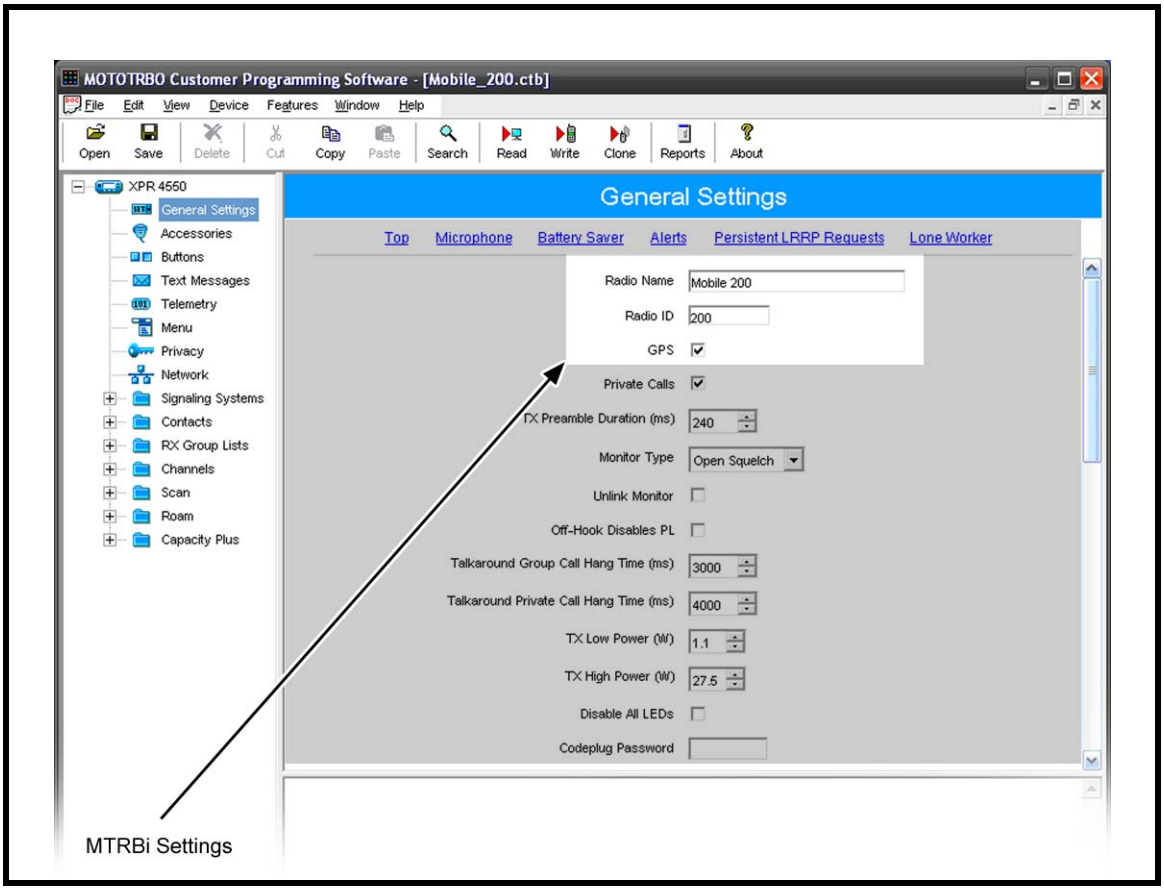


FIGURE 5. General Settings Window—MOTOTRBO

To **configure the radio's ID**, do the following:

1. From the MOTOTRBO CPS navigation pane, select **General Settings**.
   The General Settings window appears.
2. In the Radio Name field, enter the **radio's name** (e.g Mobile 200).
3. In the Radio ID field enter the **radio's ID number** (e.g. 200).
4. If the mobile radio is equipped with GPS receivers, select the **GPS** check box to enable the GPS function.

Accessories Window (MOTOTRBO)

The **Accessories** window, shown in Figure 6, is used to configure the cable type when a mobile radio is connected. This field is required for a successful mobile radio interface to the MTRBi. Other settings may be required for your specific installation.

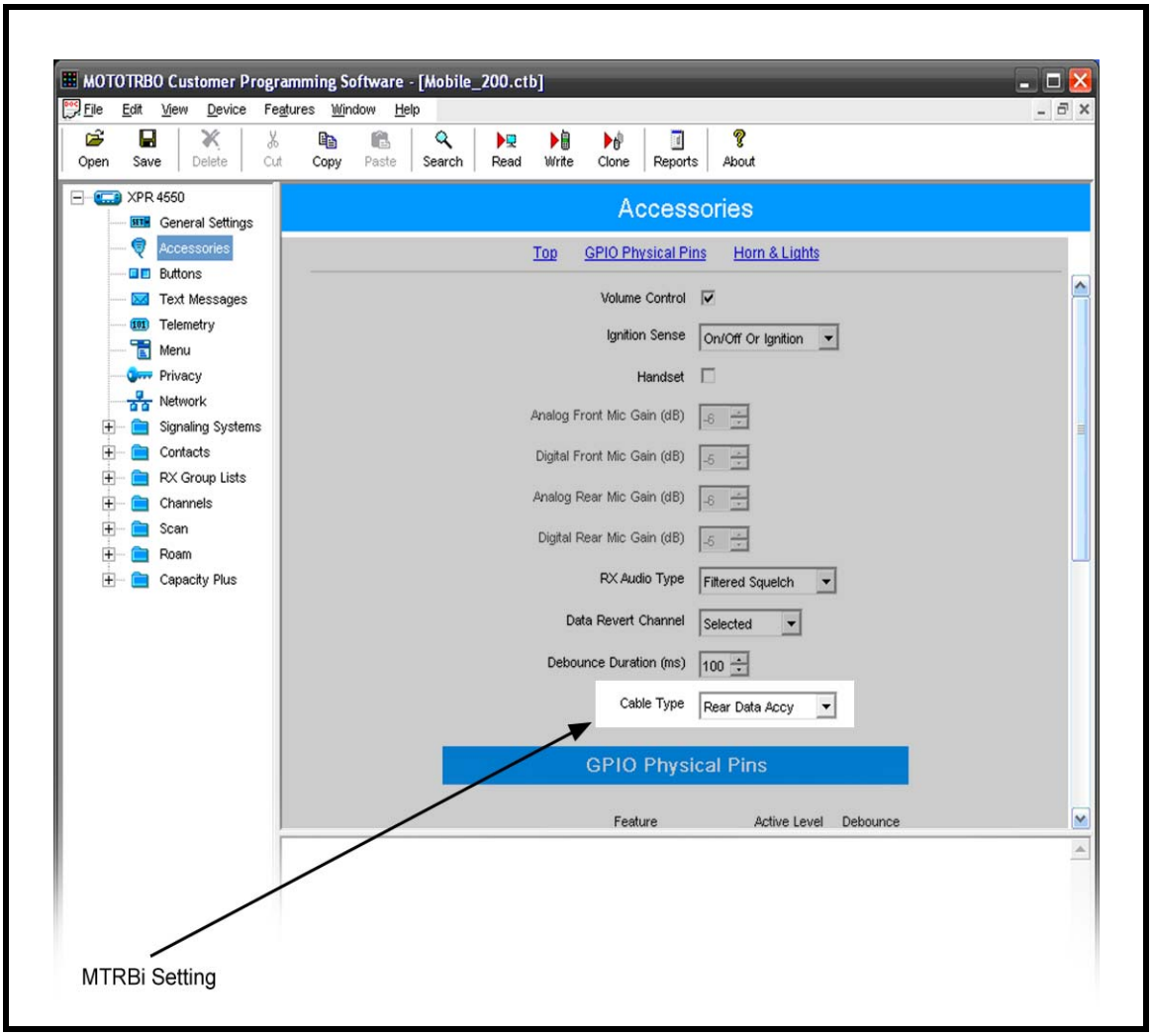


FIGURE 6. Accessories Window—MOTOTRBO

To **configure the cable type**, do the following:

1. From the MOTOTRBO CPS navigation pane, select **Accessories**.
   The Accessories window appears.
2. If the radio is a mobile type, from the Cable Type drop down menu, select **Rear Data Accy** for mobile radios.
   The radio operates as a USB device for non-IP communication. The microphone and speaker are muted.

NOTE: The factory setting for the cable type is typically Motorola.

Accessories—GPIO Physical Pins Window (MOTOTRBO)

The **GPIO Physical Pins** window, shown in Figure 7, is used to configure the pins for access to MTRBi features. These fields are required for a successful mobile radio interface to the MTRBi. Other settings may be required for your specific installation.

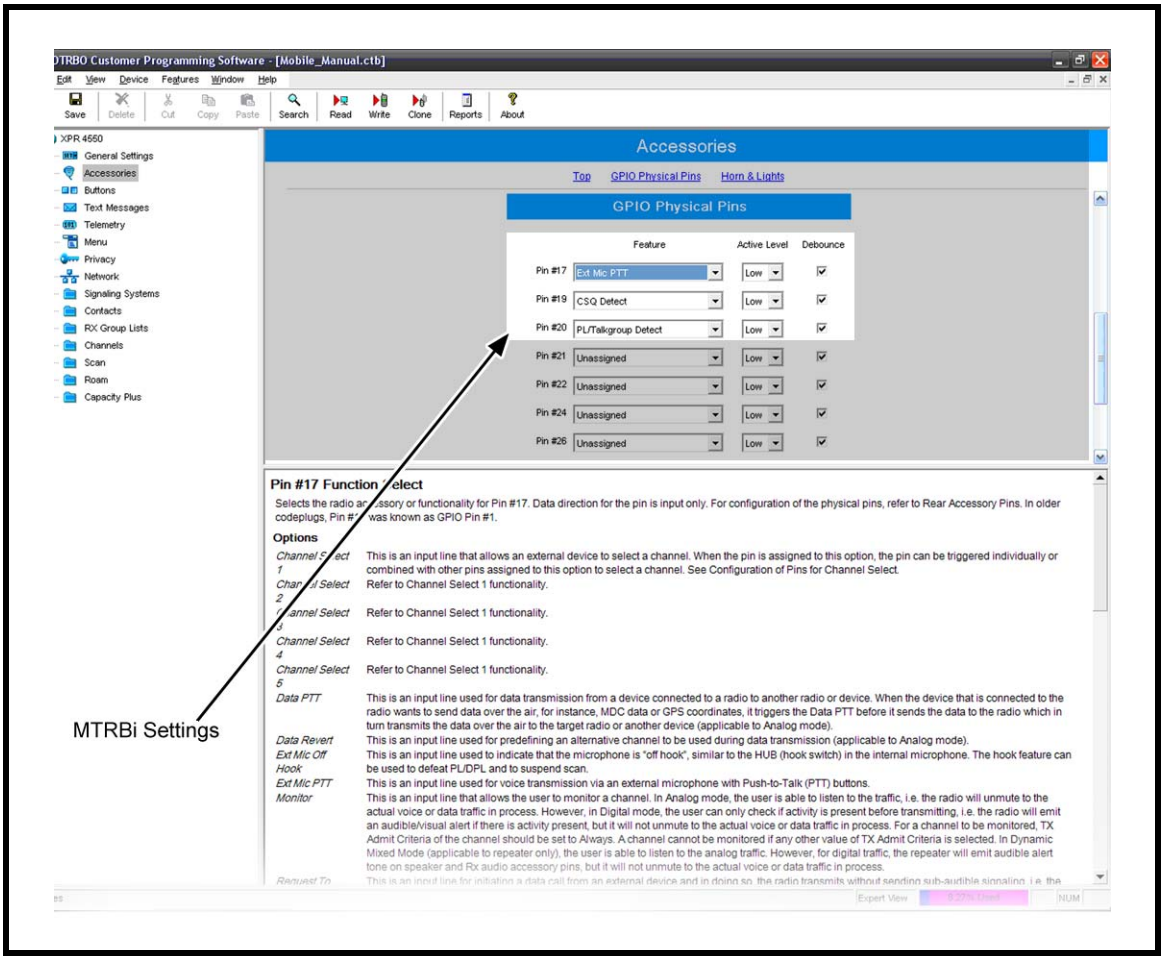


FIGURE 7. Accessories, GPIO Physical Pins Window—MOTOTRBO

To **configure the pins for MTRBi use**, do the following:

1. From the MOTOTRBO CPS navigation pane, select **Accessories**.
   The Accessories window appears.
2. Scroll to the **GPIO Pins** section.
3. For Pin #17
   a. Select **Ext Mic PTT** from the Feature drop down menu.
   b. Select **Low** form the Active Level drop down menu.
   c. Select the **Debounce** check box.
4. For Pin #19
   a. Select **CSQ Detect** from the Feature drop down menu.
   b. Select **Low** from the Active Level drop down menu.
   c. Select the **Debounce** check box.
5. For Pin #20
   a. Select **PL/Talkgroup Detect**.
   b. Select **Low** from the Active Level Drop down menu.
   c. Select the **Debounce** check box.

Network Window (MOTOTRBO)

The **Network** window, shown in Figure 8, is used to configure the **CAI** (Common Air Interface) and **UDP** (User Diagram Protocol) settings. These fields are required for a successful mobile or portable radio interface to the MTRBi. Other settings may be required for your specific installation.

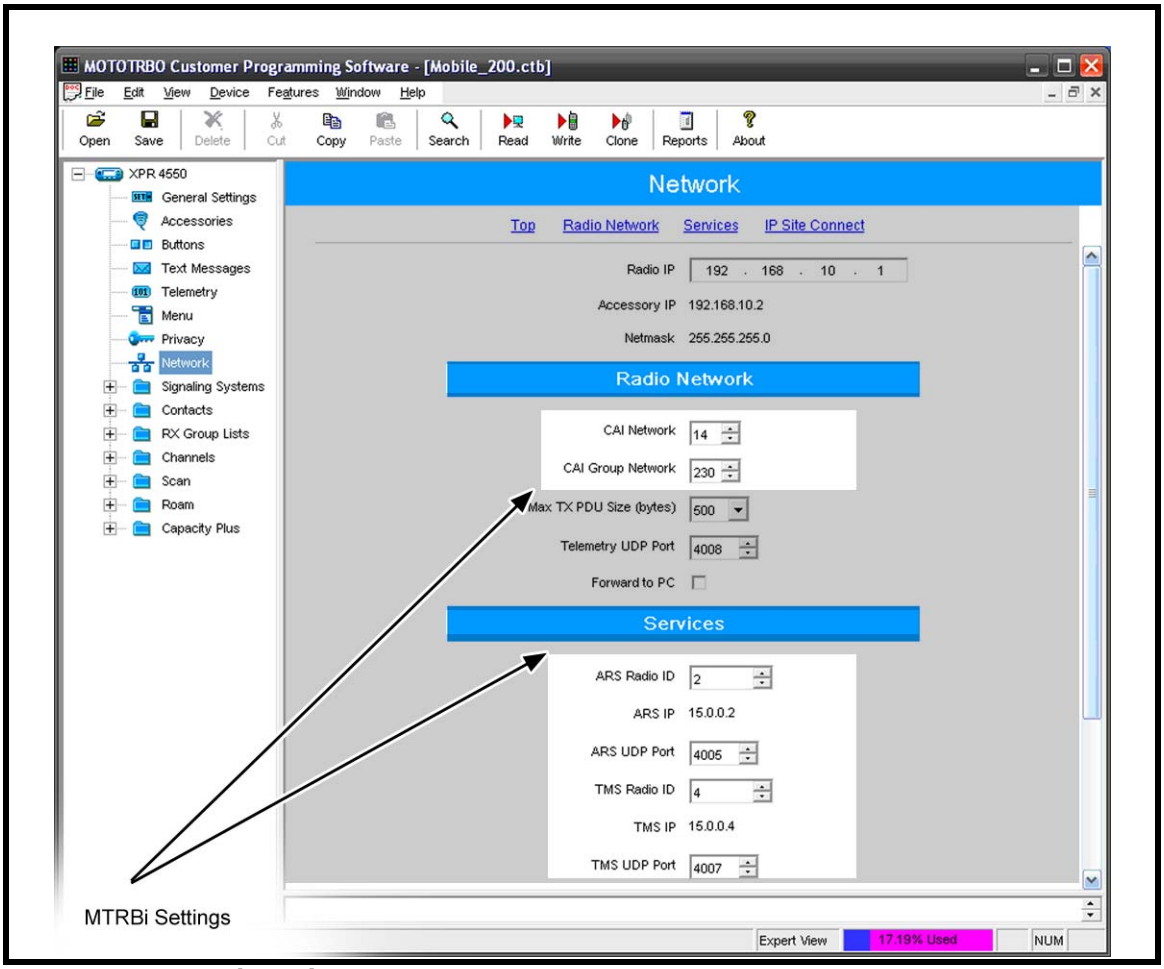


FIGURE 8. Network Window—MOTOTRBO

To **configure the radio's CAI network and CAI group network**, do the following:

1. From the MOTOTRBO CPS navigation pane, select **Network**.
   The Network window appears.
2. From the CAI Network drop down menu, select a **CAI Network**[2] for the MOTOTRBO system.
3. From the CAI Group Network drop down menu, select a **CAI Network Group**[2] for the MOTOTRBO system.
4. From the Telemetry UDP Port drop down menu, select **4008**.
5. From the ARS UDP Port drop down menu, select **4005**.
6. From the TMS UDP Port drop down menu, select **4007**.
   Network communication ports are configured.

EXAMPLE: The CAI Network and CAI Network groups on the MOTOTRBO network window are 14 and 230 respectively. See Figure 8. The CAI Network and CAI Group Network fields on the MOTOTRBO Setup page in C-Soft are 14 and 230 respectively. See "MOTOTRBO Setup Page" on page 35.

2. These CAI network values must match the CAI settings for all MOTOTRBO radios in the system.

Signaling Systems Window (MOTOTRBO)

The **Signaling Systems** window, shown in Figure 9, is used to configure disable/enable and monitor commands. These fields are optional for a mobile or portable radio interfacing with an MTRBi Other settings may be required for your specific installation.

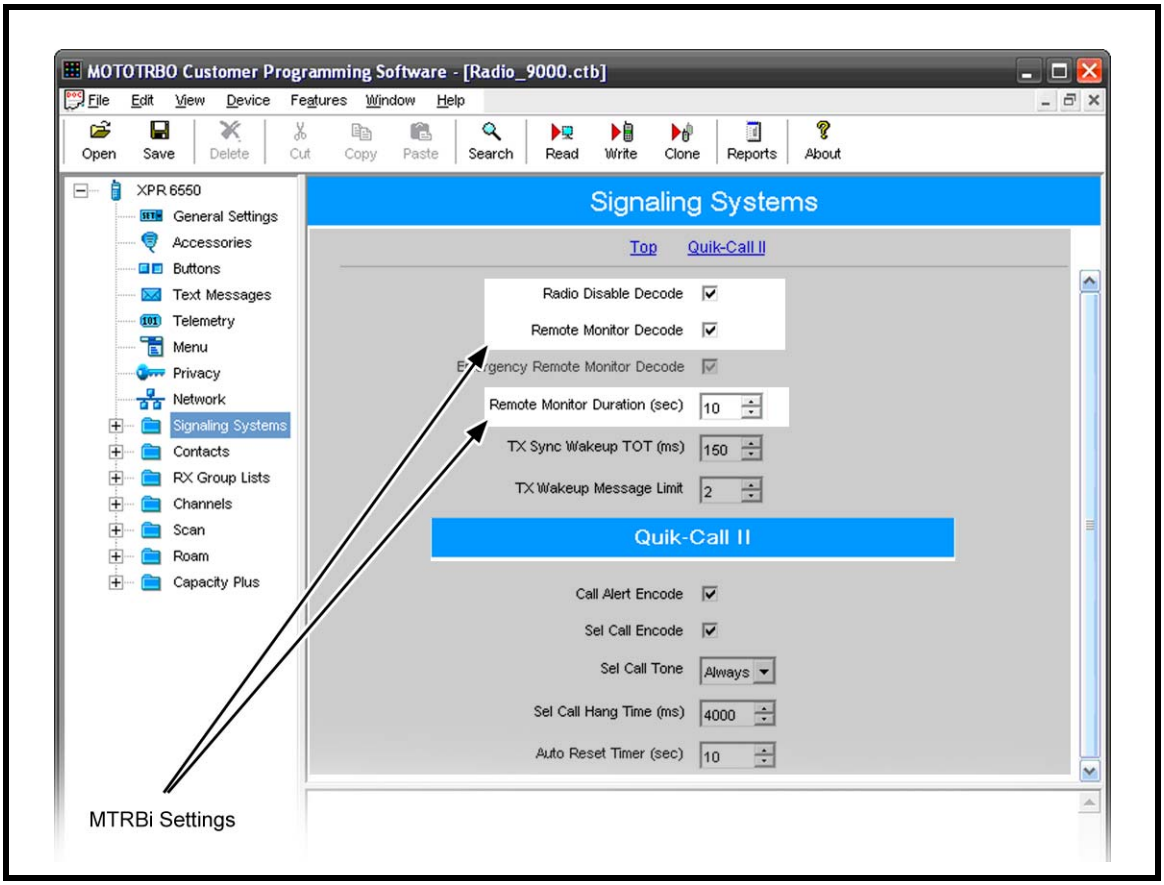


FIGURE 9. Signaling Systems—MOTOTRBO

To **allow radio disable and configure monitoring**, do the following:

1. From the MOTOTRBO CPS navigation pane, select Signaling Systems.
   The Signaling Systems window appears.
2. Select the **Radio Disable Decode** check box.

   NOTE: This enables the radio to receive and process a disable command sent from another radio. It is useful in the case of a lost or stolen radio. When applied all channels on the radio are disabled.
3. Select the **Remote Monitor Decode** check box.

   NOTE: This enables the radio to receive and process a remote monitor command sent from another radio.
4. From the Remote Monitor Duration spin box, select a **duration**, in seconds, for the monitor function.

   NOTE: The receiving radio activates its microphone and transmitter for the duration specified in the Remote Monitor Duration field. The Remote Monitor Decode check box must be selected to activate this feature.

Channels Window (MOTOTRBO)

The **Channels** window, shown in Figure 10, is used to configure a scan list and enable the **ARS** (Automatic Registration Services). Selecting the ARS check box is required to enable a mobile or portable radio with GPS or text messaging capabilities to function properly with an MTRBi. Scan control is optional for a mobile or portable radio. Other settings may be required for your specific installation.

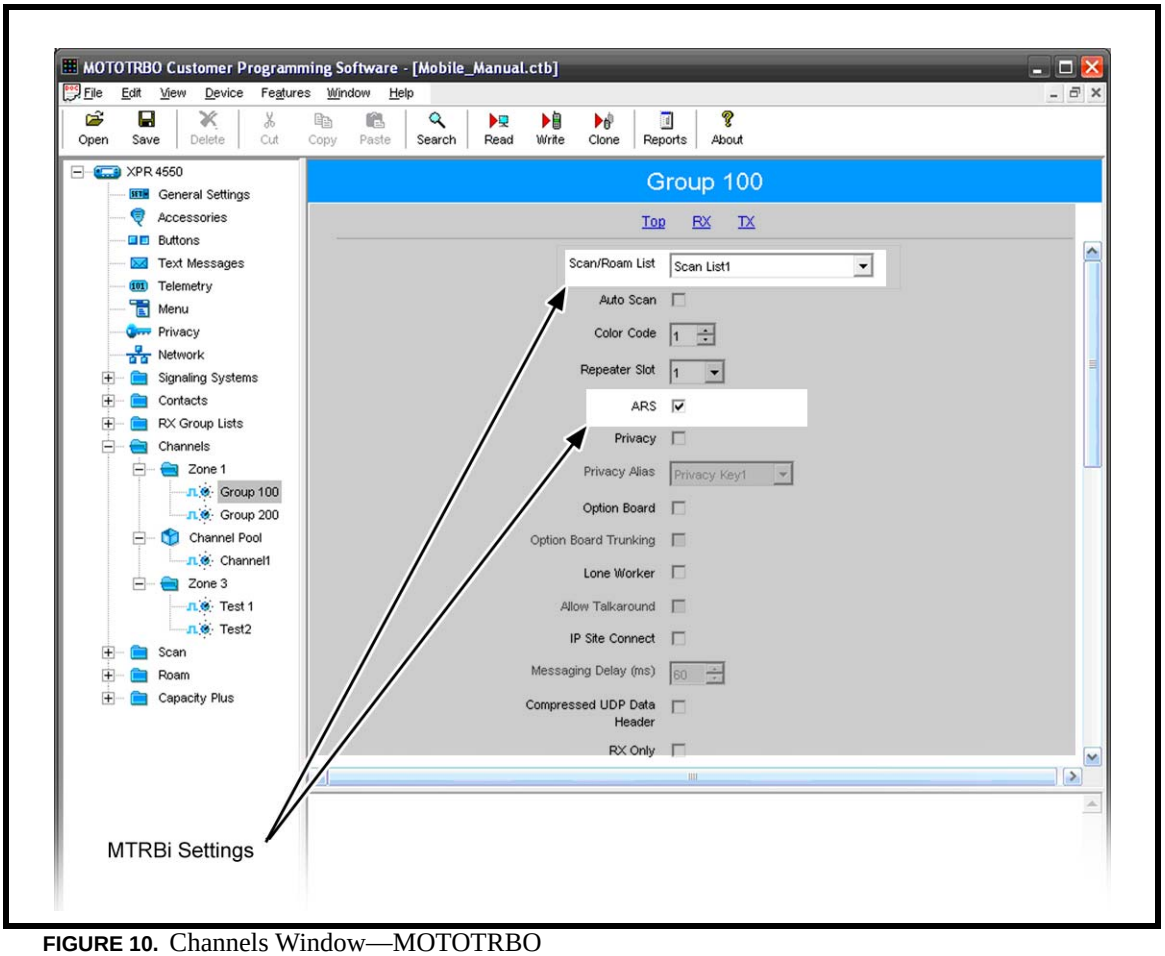


FIGURE 10. Channels Window—MOTOTRBO

To **enable GPS or text messaging**, do the following:

1. From the MOTOTRBO CPS navigation pane, select **Channels**.
2. From the navigation pane, select the **zone folder** you created (e.g. zone 1).
3. From the navigation pane, select the **scan list** folder you created (e.g. Group 100).
4. If the mobile radio is equipped with GPS or text messaging receivers, select the **ARS** check box.

Menu Window (MOTOTRBO)

The **Menu** window, shown in Figure 11, is used to configure the MOTOTRBO radio's display set up. The settings on this window are optional for a mobile or portable radio interfacing with an MTRBi.

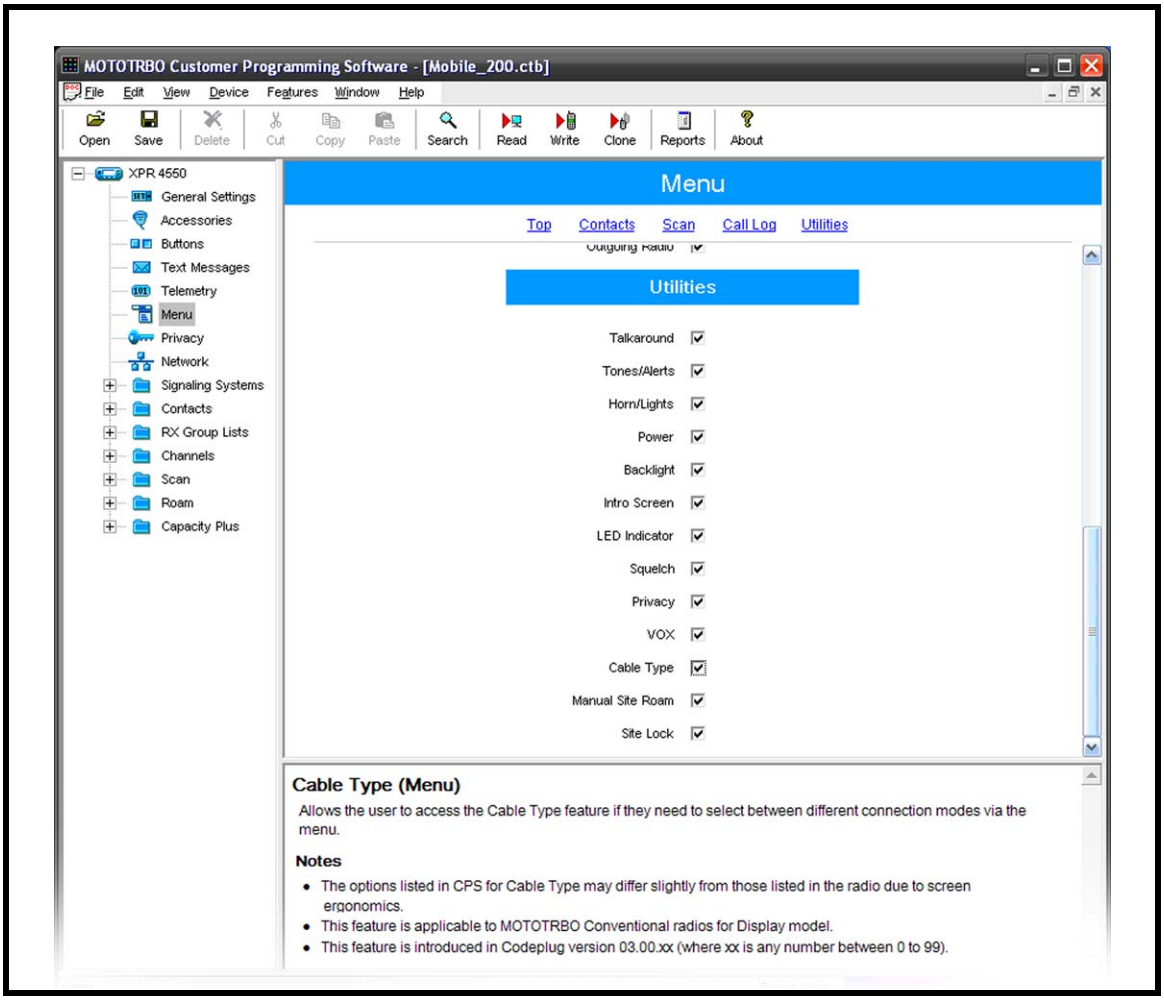


FIGURE 11. Menu Window—MOTOTRBO

To **configure the radio to display information**, do the following:

NOTE: Use this setup for display model mobile radios.

1. From the MOTOTRBO CPS navigation pane, select **Utilities**.
   The Utilities window appears.
2. Scroll to view the **Utilities** section.
   The Utilities section appears.
3. In the Utilities group box section, select the desired **Utilities** check boxes (optional).
   The radio is configured to display MTRBi information.
   - Talkaround
   - Tones/Alerts
   - Horn/Lights
   - Power
   - Backlight
   - Intro Screen
   - LED Indicator
   - Squelch
   - Privacy
   - VOX
   - Cable Type
   - Manual Site Roam
   - Site Lock

Sys 1 Window (MOTOTRBO)

The **Sys1** window, shown in Figure 12, is used to configure a digital emergency. The settings on this window are optional for a mobile or portable radio interfacing with an MTRBi.

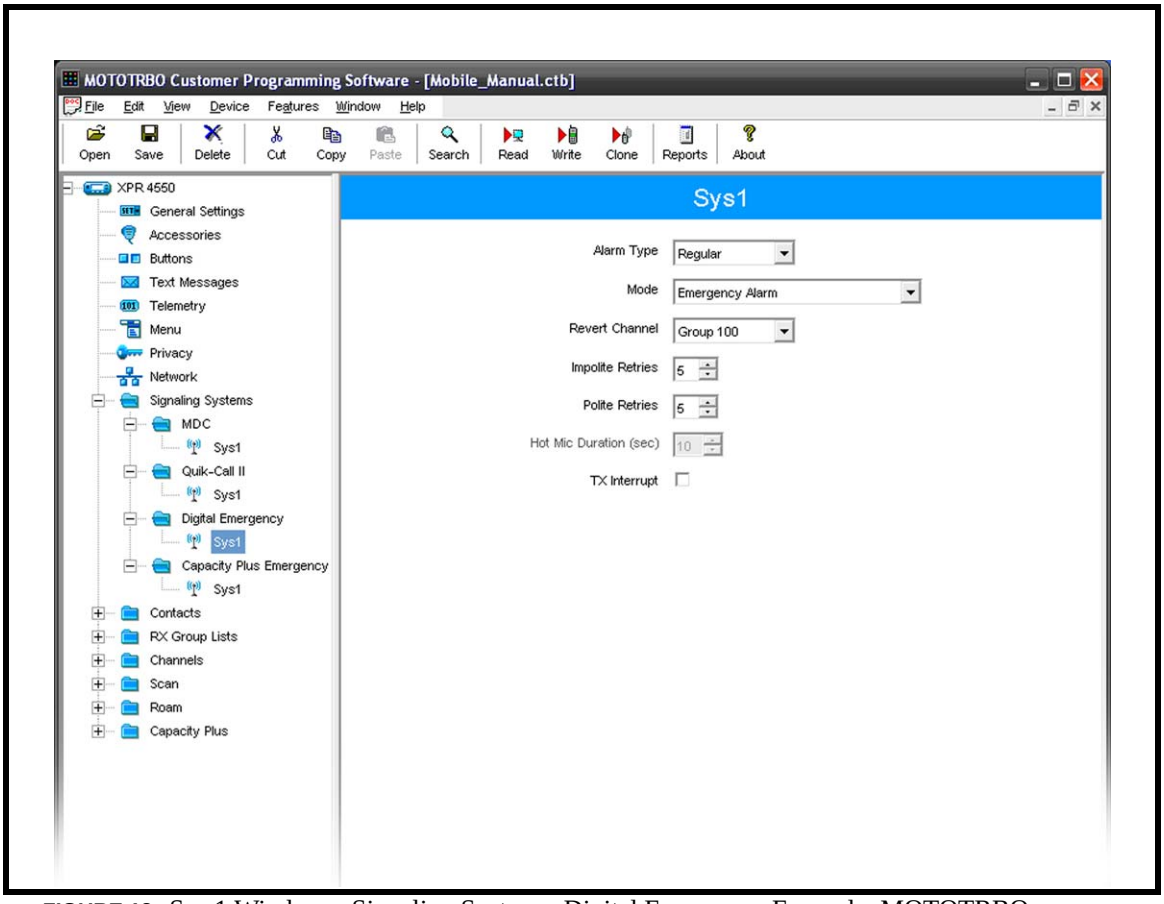


FIGURE 12. Sys 1 Window—Signaling Systems; Digital Emergency Example, MOTOTRBO

To **configure an emergency**, do the following:

1. From the MOTOTRBO CPS navigation pane, select **Signaling Systems|Digital Emergency|Sys 1**.
   The Sys 1 window appears.
2. From the Alarm Type drop down menu, select an **alarm type** (e.g. Regular).
3. From the Mode drop down menu, select an **Alarm** (e.g. Emergency Alarm).
4. From the Revert Channel drop down menu, select a **channel** (e.g. Group 100).
5. From the Impolite Tries spin box, select a **quantity** for impolite tries (e.g. 5).
6. From the Polite Tries spin box, select a **quantity** for polite tries (e.g. 5).
7. Clear the **TX Interrupt** check box.
   The Emergency alarm is configured.

REFERENCE: For more information about the Hot Mic Disable spin box, see Motorola's technical documentation.

Contacts Window (MOTOTRBO)

The **Contacts** window, shown in Figure 13, is used to configure group calls to be triggered by C-Soft. For example, if a Group ID of 300 is set up in C-Soft, but not in the MOTOTRBO CPS, then that group call does not work in C-Soft Runtime. The settings on this window are optional for a mobile or portable radio interfacing with an MTRBi.

NOTE: The radio's unit ID and group ID can not be read from the C-soft console. The unit and group IDs must be entered in C-Soft manually. We recommend the IDs are entered in C-Soft before connecting to a live system.

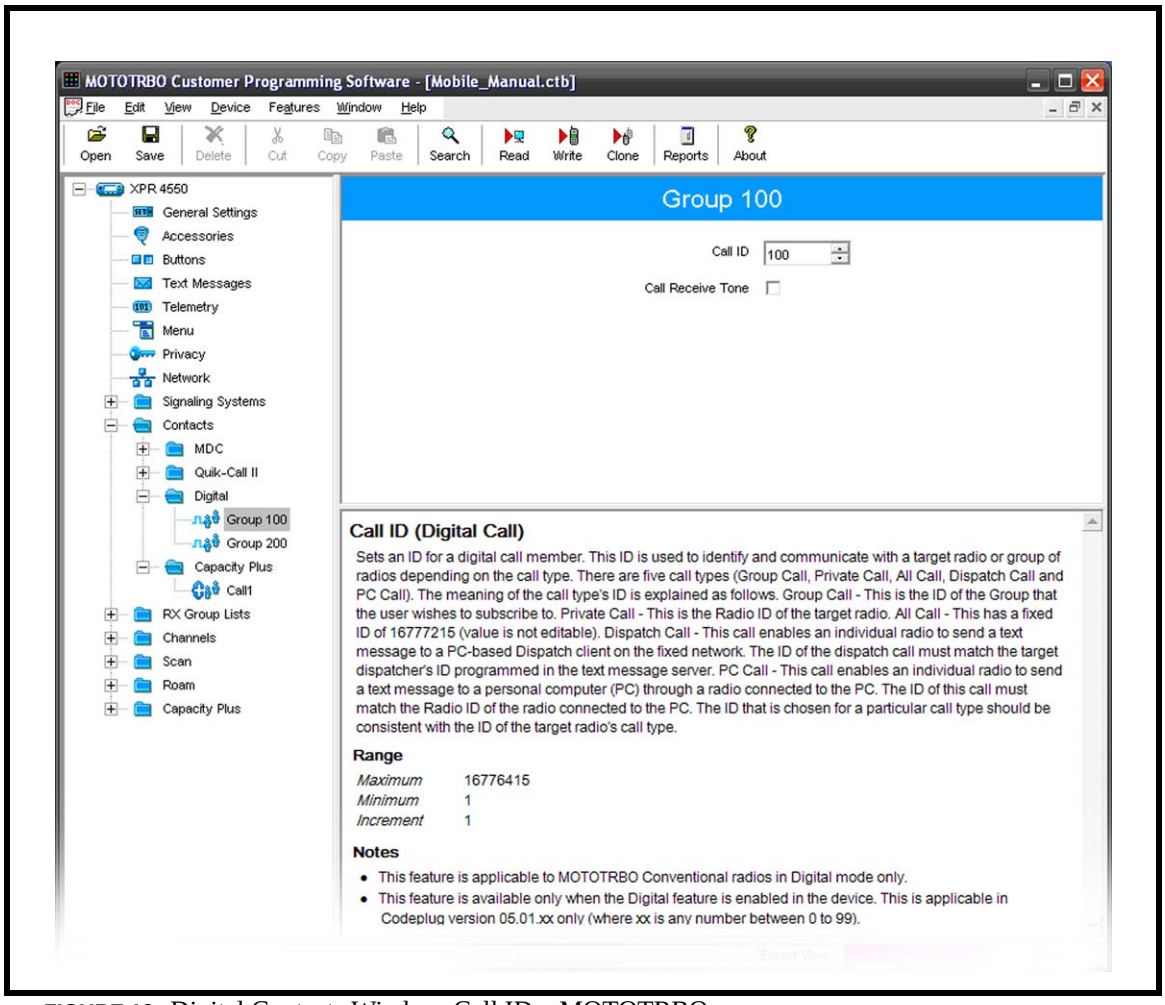


FIGURE 13. Digital Contacts Window, Call ID—MOTOTRBO

To **define a digital call in the system**, do the following:

1. From the MOTOTRBO CPS navigation pane, select **Contacts|Digital**.
2. Select the **digital call folder** you created (e.g. Group 100).
3. From the Call ID drop down menu, select the **group ID** to assign to the system (e.g. 100).

NOTE:

- The call (group) ID must also be configured in C-Soft. This is accomplished in the Group ID window.
- Group, Private, All, Dispatch, and PC calls can be added to the Digital folder.

REFERENCE:

- For more information, see Motorola's technical documentation.
- For more information, see the C-Soft Technical Manual (P/N LIT000082000).

RX Group List Window (MOTOTRBO)

The **RX Group Lists** window, shown in Figure 14, is used to configure the receiver group list The settings on this window are optional for a mobile or portable radio interfacing with an MTRBi.

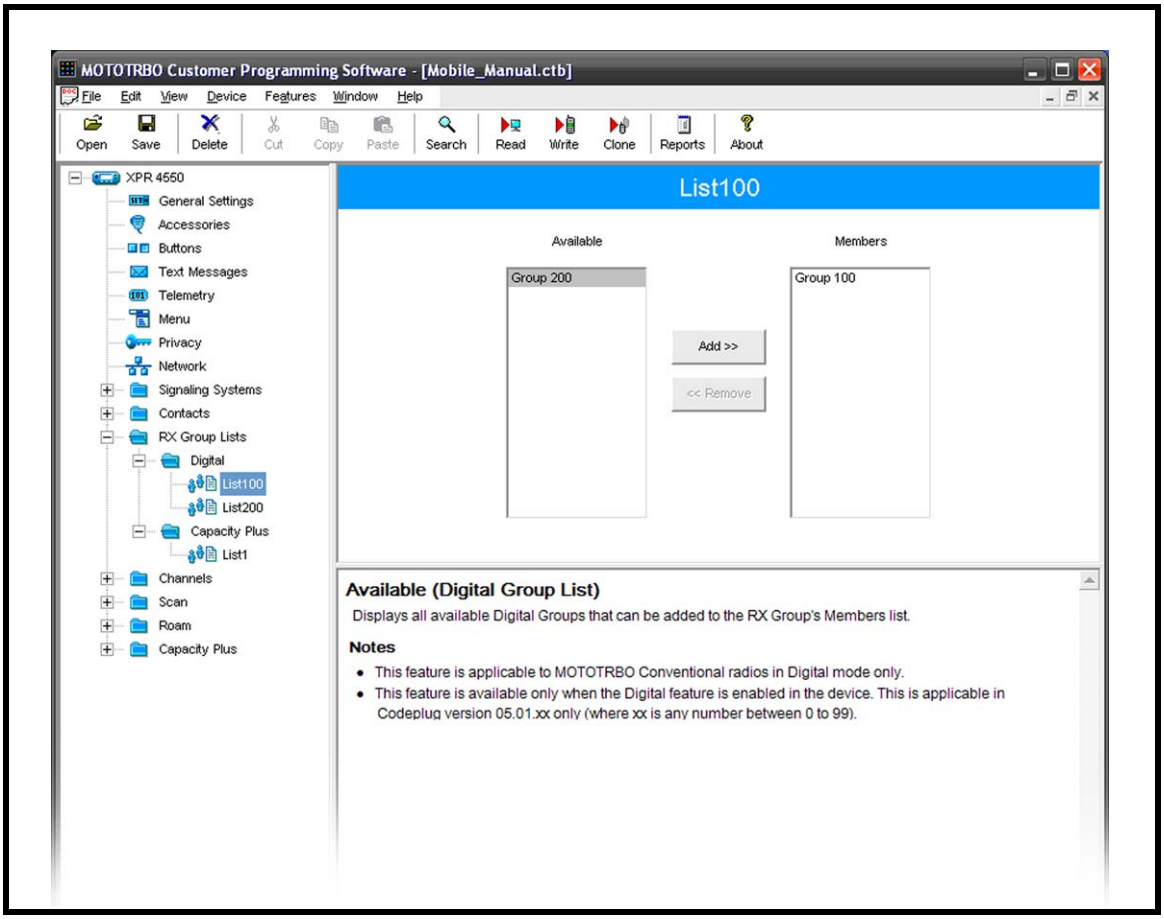


FIGURE 14. RX Group List Window—Receiver Group List Example, MOTOTRBO

To **configure RX group lists**, do the following:

1. Expand the **RX Group Lists** folder in the navigation pane.
2. Right-click the **Digital** folder.
   A flyout menu appears.
3. Click **Add | RX Groups**.
   The RX group list is added to the Digital folder.

Channels Window (MOTOTRBO)

The **Channels** window, shown in Figure 15, is used to configure the acknowledgement channel for digital emergency calls. At least one (1) acknowledgement channel must be configured in this window to send digital emergency calls. The settings on this window are optional for a mobile or portable radio interfacing with an MTRBi. Other settings may be required for your specific installation.

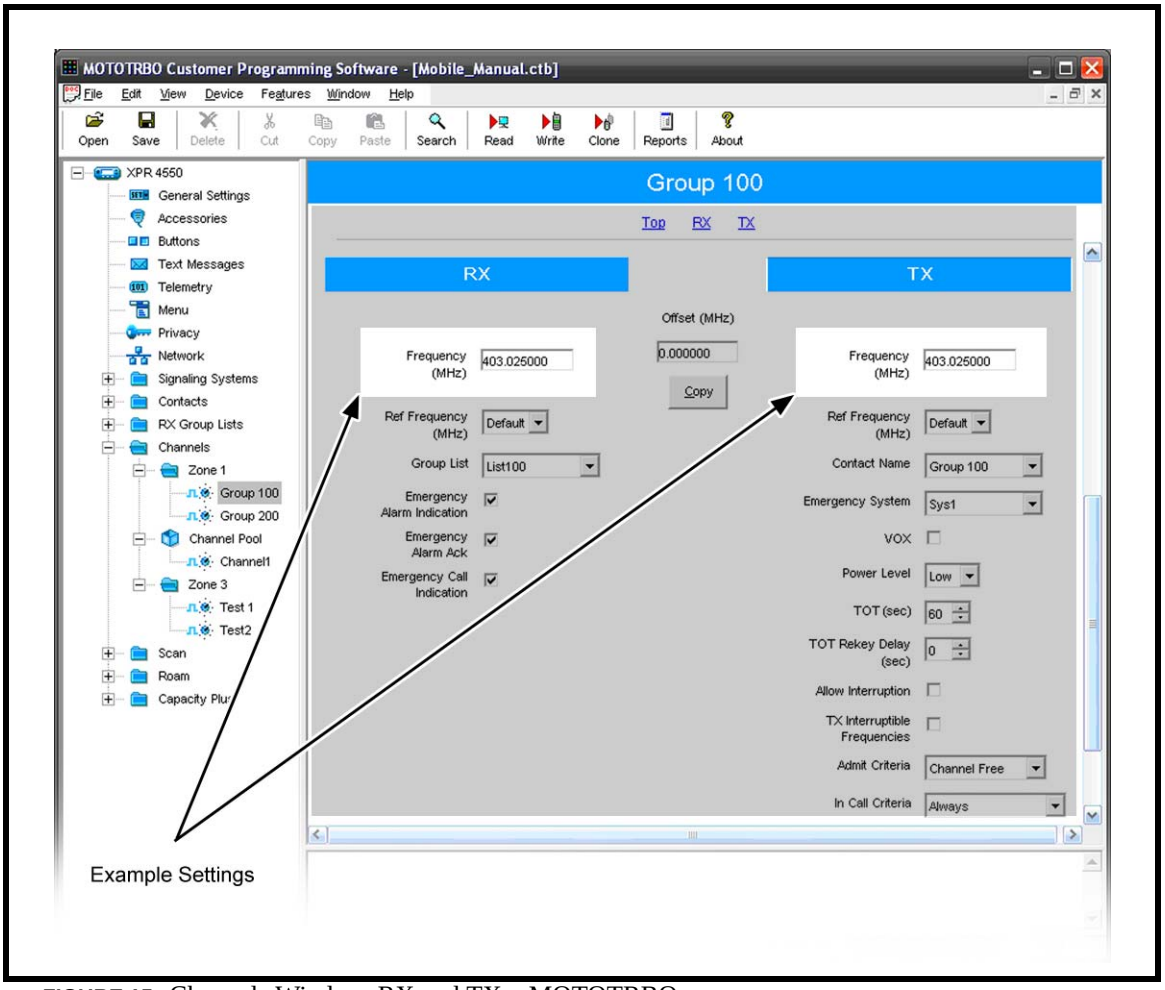


FIGURE 15. Channels Window, RX and TX—MOTOTRBO

To **configure an acknowledgement channel**, do the following:

NOTE: An acknowledgement channel is required to send and receive emergencies.

1. In the RX Frequency field, enter the **frequency** used to receive an emergency (e.g. 403.025000).
2. In the TX Frequency field, enter the **frequency** used to send an emergency (e.g. 403.025000).

Scan Window (MOTOTRBO)

The **Scan** window, shown in Figure 16, is used to make scan list(s) available for scan control. The settings on this window are optional for a mobile or portable radio interfacing with an MTRBi. Other settings may be required for your specific installation

NOTE: At least one (1) scan list is required in order to execute scan control.

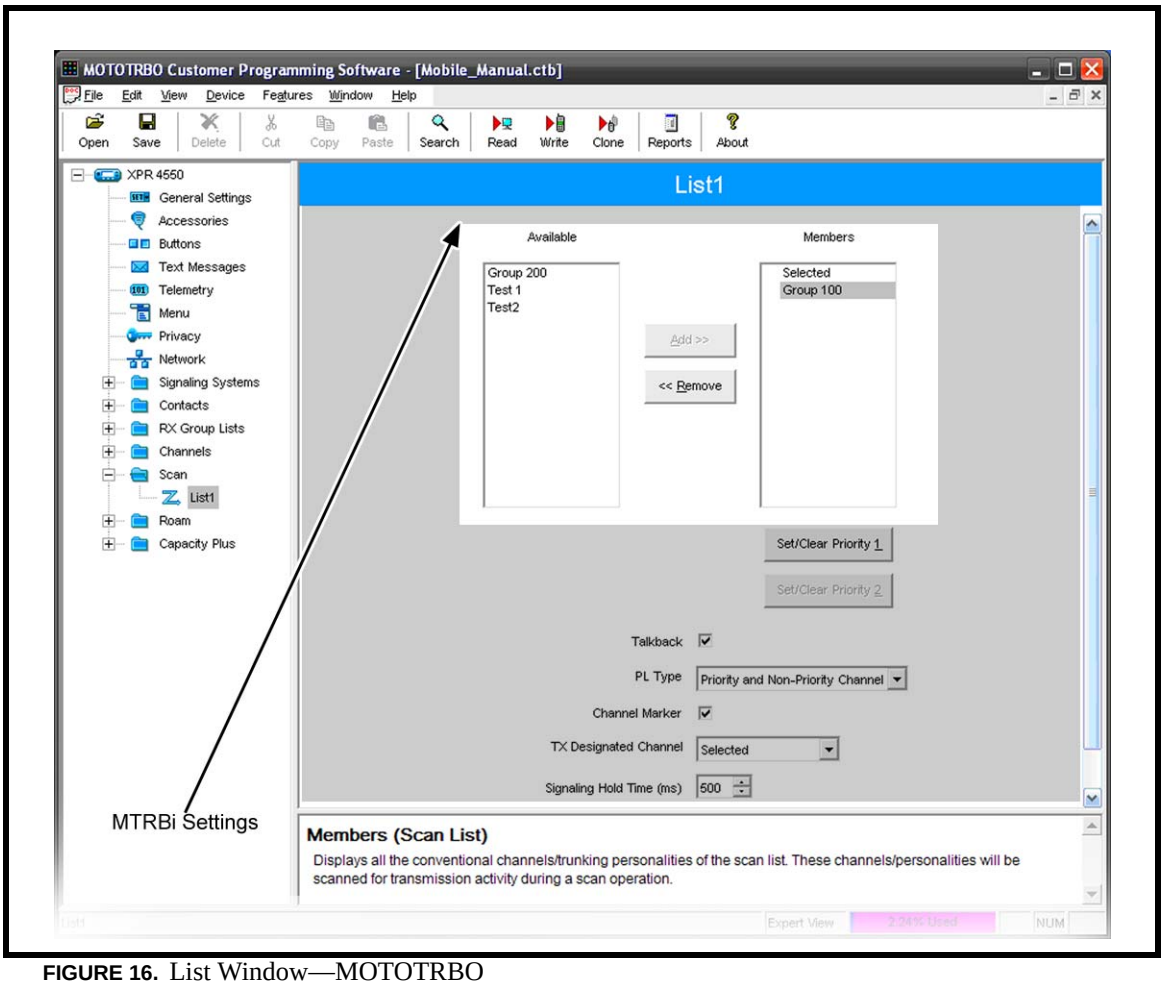


FIGURE 16. List Window—MOTOTRBO

To **configure a list for scan control**, do the following:

1. From the MOTOTRBO CPS navigation pane, select **Scan|List 1**.
   The List1 window appears.
2. From the Available field, select a **list**.
   The Add button becomes active.
3. Click the **Add** button.
   The selected list is added to the Members list.

   NOTE: To remove a list from the Members field, select the **list**, and click **<<Remove**.
   The list appears in the Available field.

IP-223 Software Configuration

The MTRBi and the IP-223 exchange serial data over the network. The following IP-223 fields are required to enable the MTRBi to communicate with the IP-223.

NOTE: These instructions do not contain the entire IP-223 configuration process.

REFERENCE: For more information, see the IP-223 Technical Manual (P/N 803641).

Multicast Address Setup Window

The **Multicast Address Setup** window, shown in Figure 17, is used to configure the line's Multicast Addresses and Serial Over IP parameters.

Line Multicast Setup

The **Line Multicast Setup** section, shown in Figure 17, is used to configure the Multicast Addresses for communicating with the C-Soft console and the MTRBi.

Use the Per Line Parameters window, shown in Figure 18 to configure C-Soft's Multicast Addresses.

REFERENCE: For more information, see the C-Soft Technical Manual (P/N LIT000082000).

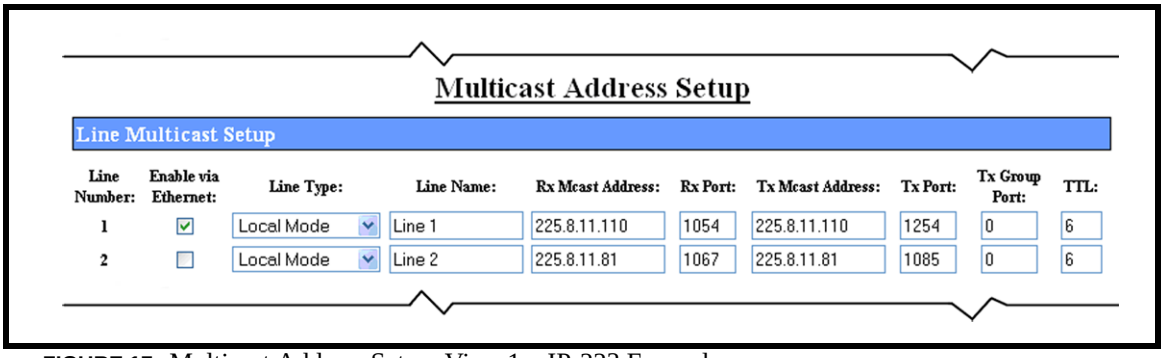


FIGURE 17. Multicast Address Setup, View 1—IP-223 Example

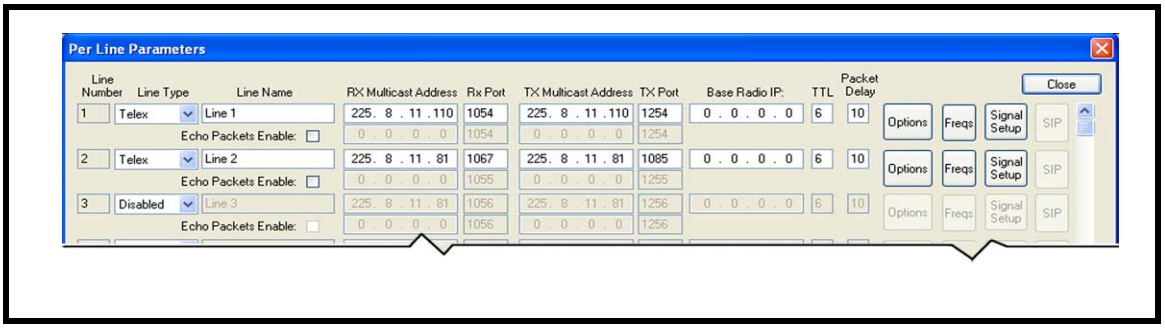


FIGURE 18. Per Line Parameters—C-Soft Example

To **configure the IP-223 Multicast**, do the following:

1. From the Multicast Address Setup window, select the **Enable via Ethernet** check box.
   The line is enabled.
2. From the Line Type drop down menu, select **Local Mode**.
3. In the Line Name filed, enter a **name** for the line.
4. Enter the **appropriate values** in the following fields[3].
   - Rx MCast (i.e. Multicast) Address.
   - RX Port
   - TX MCast (i.e. Multicast) Address.
   - TX Port
5. In the TTL (Time To Live) field enter the **number** of routers each packet passes through before being discarded.
6. Click **Submit**.
   The changes are temporarily saved.

   NOTE: The Tx Group Port field is not used for MTRBi setup.

3. *These values must match the C-Soft configuration. See "Per Line Parameters Window" on page 32. Contact your network administrator for these values.*

Serial Over IP

The **Serial Over IP** section of the Multicast Address Setup window, shown in Figure 19, is used to configure the IP-223 to receive serial data through the serial data port and send the data to the IP network. **SOIP** (Serial Over Internet Protocol) can also take data from an IP Network and send it to the serial port.

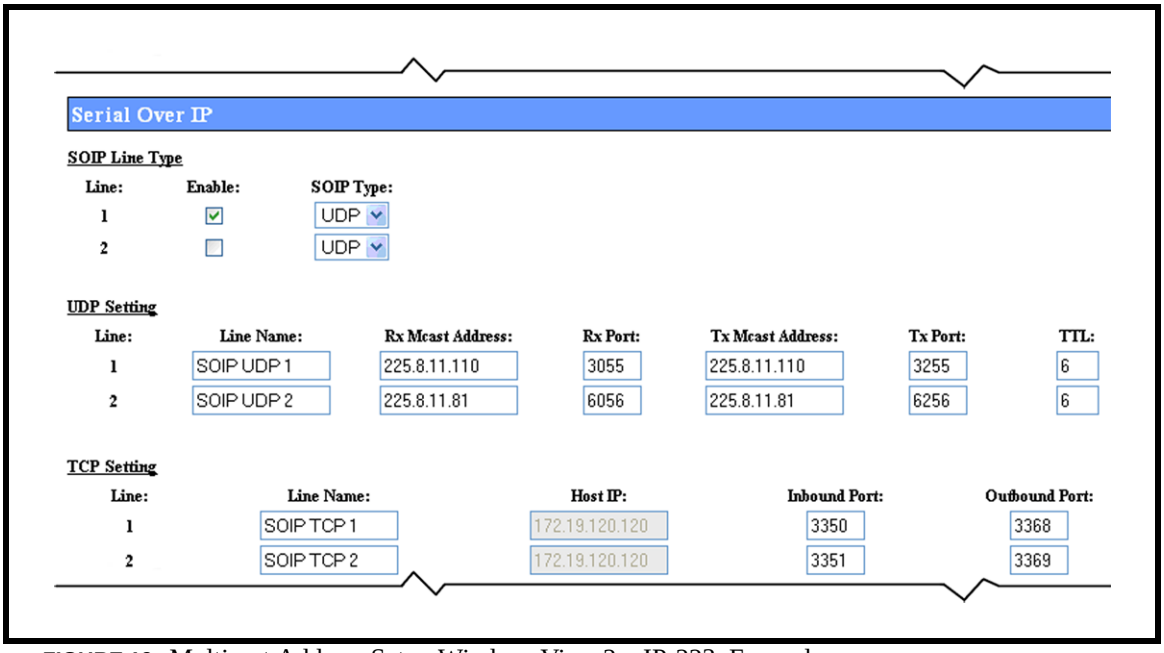


FIGURE 19. Multicast Address Setup Window, View 2—IP-223, Example

To **configure the line for SOIP**, do the following:

1. In the Serial Over IP section, select the **Enable** check box.
   The line is enabled for SOIP.
2. From the SOIP Type drop down menu, select **UDP**.
   The UDP Setting fields become active.
3. In the Line Name field, enter a **name** for the line.
4. Enter the **appropriate values** in the following fields[4].
   - RX Mcast (i.e. Multicast) Address
   - Rx Port
   - Tx Mcast (i.e. Multicast) Address
   - Tx Port
5. In the TTL field, enter the **number** of routers each packet passes through before being discarded.
6. Click **Submit**.
   The changes are temporarily saved.

To **permanently save changes,** do the following:

1. Click **Save to EEPROM**.
   The Save to EEPROM window opens.
2. Click **Save Parameters**.
   Changes are now permanently saved to the IP-223 console.

4. *These values must match the C-Soft Configuration. See* "MOTOTRBO Setup Page" on page 35. *Contact your network administrator for these values.*

Per Line Parameters Window

The **Per Line Parameters** window, shown in Figure 20, is used to configure the serial port and the port parameters for SOIP.

Serial Port Mode

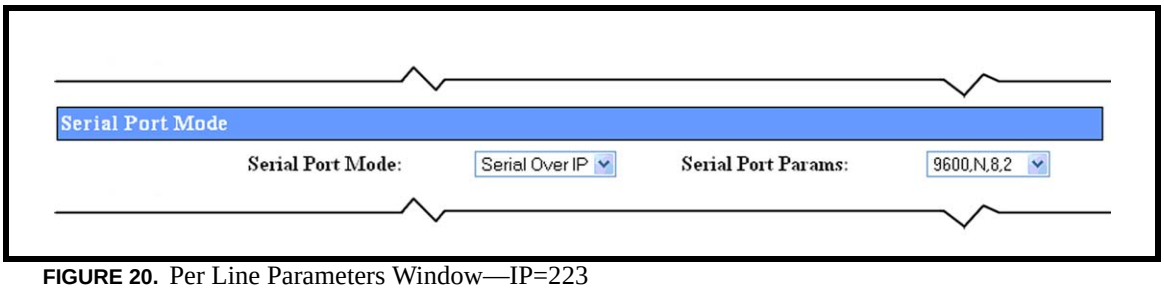


FIGURE 20. Per Line Parameters Window—IP=223

To **configure the serial port mode**, do the following:

1. Open the **Per Line Parameters** window.
2. From the Serial Port Mode drop down menu, select, **Serial Over IP.**
3. From the Serial Port Params drop down menu, select **9600, N, 8, 2**.
   The Serial port mode is configured.
4. Click **Submit**.
   The changes are temporarily saved.

To **permanently save changes,** do the following:

1. Click **Save to EEPROM**.
   The Save to EEPROM window opens.
2. Click **Save Parameters**.
   Changes are now permanently saved to the IP-223 console.

C-Soft Configuration

Once the IP-223 and MOTOTRBO radio are configured, C-Soft requires specific per line parameters to enable communication to the MOTOTRBO radio through the IP-223 and MTRBi. At the minimum, one (1) MOTOTRBO line, one (1) MOTOTRBO Select button and one (1) MOTOTRBO Window button must be configured in C-Soft Designer for use in the C-Soft console. These configurations are discussed below.

NOTE:

- A MOTOTRBO system must be configured before proceeding with configuring a MOTOTRBO line, a MOTOTRBO Select button, and MOTOTRBO Window button.
- Only one (1) MOTOTRBO Window button can be set up in C-Soft Designer.
- These instructions contain a portion of the entire C-Soft configuration process.

REFERENCE: For more information, see the C-Soft Technical Manual (P/N LIT000082000).

Per Line Parameters Window

The **Per Line Parameters** window, see Figure 18, is used to set the line name, line type, address, Multicast Address and Port number for the line.

To **configure the C-Soft Per Line Parameters**, do the following:

1. From C-Soft Designer menu bar, select **Edit | Setup Per Line Parameters** from the menu bar.
   The Per Line Parameters window appears.
2. From the Line Type drop down menu, select **Telex**.
3. Select the **Enable** check box.
   The line is enabled.
4. In the Line Name field, enter a **name** for the line.
5. Enter the **appropriate values** in the following fields[5].
   - RX Multicast Address
   - Rx Port
   - TX Multicast Address.
   - TX Port
6. In the TTL field, enter the **number** of routers each packet passes through before being discarded.
7. Click **Close**.

5. *These values must match the IP-223 parameters. See “Multicast Address Setup Window” on page 29. Contact your network administrator for these values.*

Signaling Parameters Window

The **Signaling Parameters** window, shown in Figure 21, is used to program a MOTOTRBO system type at the per line level.

General Signal Setup Page. When the Signal Setup button on the Per Line Parameters window is clicked, the General Signal Setup page appears.

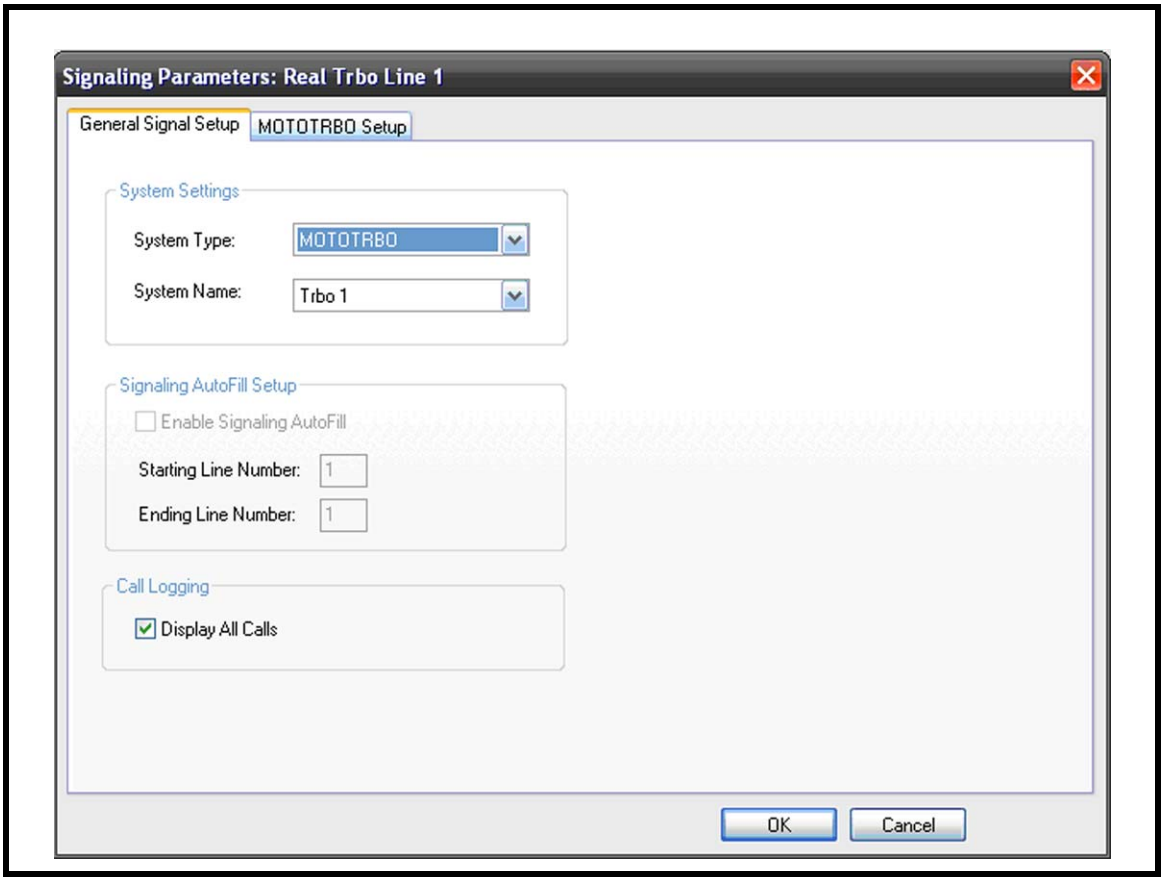


FIGURE 21. Signaling Parameters—General Signal Setup Page

To **configure signaling parameters for a MOTOTRBO line**, do the following:

1. From the System Type drop down menu, select **MOTOTRBO**.
   The System Name field becomes active and the MOTOTRBO Setup tab appears.
2. From the System Name drop down menu, select the **system** you want to use for the line (e.g. Trbo1).

   NOTE: Before a system name can be selected, a MOTOTRBO system must already be set up in C-Soft.
3. Click the **MOTOTRBO Setup** page.
   The MOTOTRBO Setup page appears.

   REFERENCE: For more information, see the C-Soft Technical Manual (LIT000082000).

MOTOTRBO Setup Page. When MOTOTRBO is selected from the System Type drop down menu, the MOTOTRBO Setup page appears.

The MOTOTRBO Setup page, shown in Figure 22, is used to configure the Multicast Address for SOIP, allowing C-Soft to communicate with the MTRBi and MOTOTRBO radio through the IP-223.

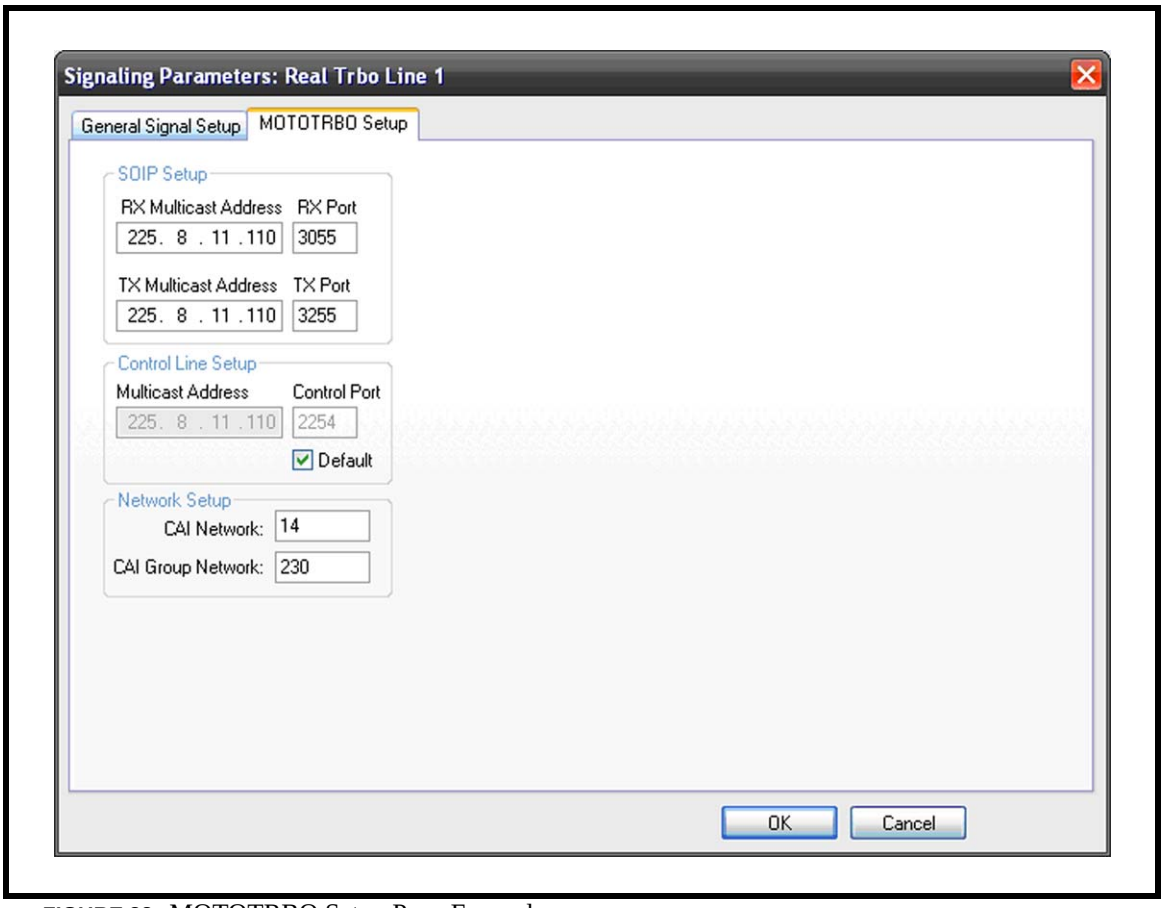


FIGURE 22. MOTOTRBO Setup Page Example

To **set up the SOIP parameters for the line**, do the following.

NOTE: The CAI Network and CAI Group Network values are initially configured in the MOTOTRBO COS.

1. Enter the **appropriate values** in the following fields[6].
    - RX Multicast Address
    - TX Multicast Address
    - RX Port
    - TX Port
2. If your system requires the default Control Port number to be changed, clear the **Default** check box.
   The control port field is active.
    c. In the Control Port field enter a **port number**.
       Parallel consoles can send information back and forth.
4. In the CAI Network field, enter the **same CAI Network value**[7] configured in the MOTOTRBO CPS.
5. In the CAI Group Network field, enter the **same CAI Group Network value**[7] configured in the MOTOTRBO CPS.
6. Click **OK**.

6. *These values must match the Serial Over IP section of the Multicast Address Setup window on the IP-223. See "Serial Over IP" on page 31.*
7. *These values must match the CAI Network and CAI Group Network fields in the MOTOTRBO CPS. See "Network Window (MOTOTRBO)" on page 19.*

MOTOTRBO Radio Setup Page. When the MOTOTRBO function is selected from the UI Element drop down menu, the MOTOTRBO Radio Setup page appears.

The MOTOTRBO Radio Setup page is used to enter time intervals to check for the master console.

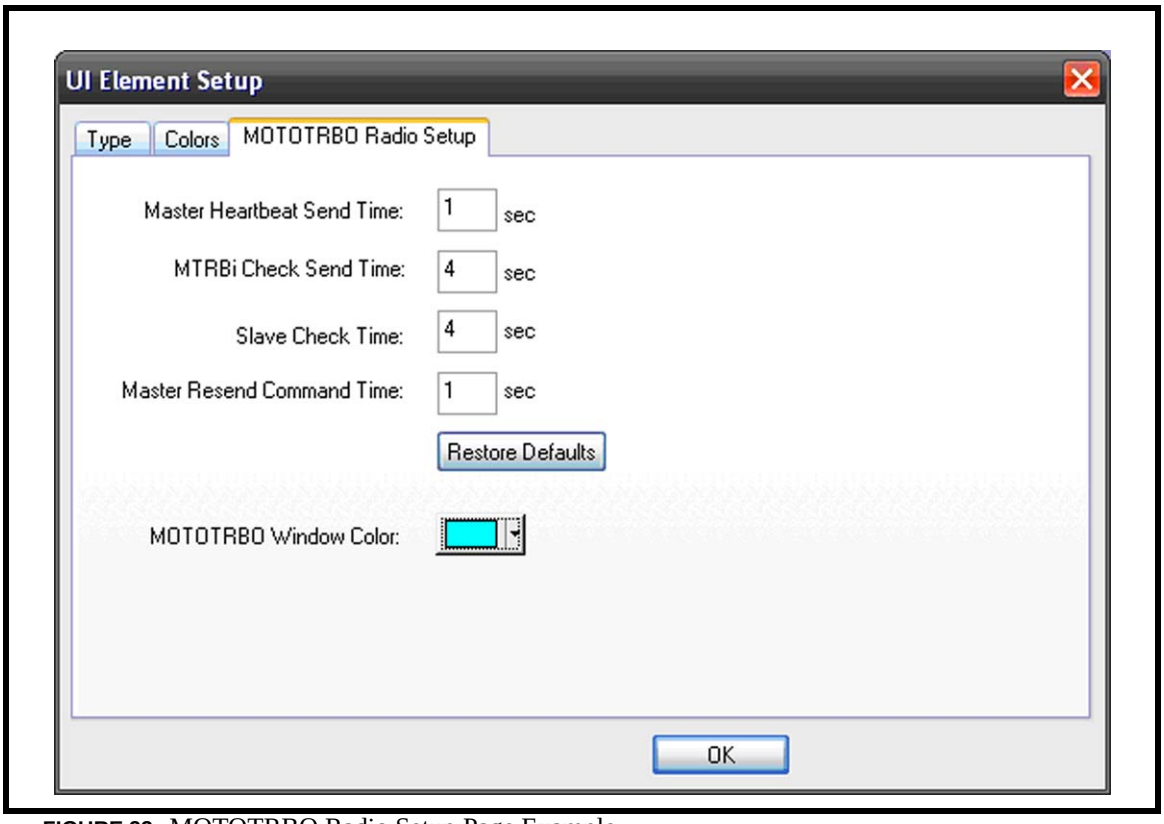


FIGURE 23. MOTOTRBO Radio Setup Page Example

To **add a MOTOTRBO button**, do the following:

1. From the insert menu, select **Add UI Button**.
   A None button appears on the console window.
2. Right-click the **None** button.
   A shortcut menu appears.
3. From the shortcut menu, select **Properties**.
   The UI Element Setup window appears.
4. From the UI Element drop down menu, select **MOTOTRBO** window.
   The MOTOTRBO Radio Setup tab appears.
5. Click the **MOTOTRBO Radio Setup** page.
6. In the Master Heartbeat Send Time field, enter an **interval**, in seconds, for the master console to send its heartbeat out to all other consoles on the control line (e.g. 1)
7. In the MTRBi Check Send Time field, enter an **interval**, in seconds, for C-Soft to check if the MTRBi on a certain line is alive (e.g. 4).

   NOTE: Allow one (1) second for the check function to complete.

   EXAMPLE: If this field is set to four (4) seconds, the console sends an MTRBi check command then waits for four (4) minus one (1) second, or three (3) seconds for a response.
8. In the Slave Check Time field, enter an **interval**, in seconds, for the console to wait to receive a heartbeat from the master before it turns into the master (e.g. 4).

EXAMPLE: At startup, the console waits four (4) seconds for a heartbeat, if nothing is received, the console changes to the master console. If a heartbeat is detected, the console remains a slave and resets to four (4) seconds.

9. In the Master Resend Command Time field, enter an **interval**, in seconds, for C-Soft to resend a MOTOTRBO command (e.g. 1).

   EXAMPLE: If C-Soft sends a MOTOTRBO command and does not get a response in one (1) second, it sends the command again, waits one (1) second, if nothing sends again, waits one (1) second. If no response is received after three (3) tries the command is cleared and goes to the next command to send to the buffer. The maximum tries is three (3).

10. Click **OK**.
11. Select **File | Save** from the menu bar.
    The Save As window appears.
12. In the File Name field, enter the **name** for the file.
13. Click **OK**.
    The C-Soft file is saved.

GPS Installation

The GPS location of the MOTOTRBO radio can be mapped using Google Earth and C-Soft at the same time.

To **install Google Earth**, do the following:

1. Using an internet browser, go to **http://earth.google.com/**.
2. Download the latest version and accept all **default file locations**.

   NOTE:

   - When installing Google Earth, the default file locations must be accepted in order for C-Soft to read information from Google Earth.
   - When running C-Soft runtime, a KML file called *Mototrbo.kml* is created. This file is updated each time a radio's GPS location is read.
     - The KML file location for Windows XP is C:\Documents and Settings\All Users\Application Data\Telex Communications design_folder, or, for Windows 7 is C:\ProgramData\Tele Communications\design_folder.

MTRBi Mounting

The **MTRBi** can be mounted underneath or on top of a desk using the MTRBi's built-in brackets.

NOTE:

- Screws are not supplied with the unit.
- The MTRBi can be flipped 180 degrees to mount under the desk.

Mounting

To **install the MTRBi on the desk topside or underside**, do the following:.

1. Ensure there is enough **clearance** for back and front panel connections.
2. Place the **MTRBi** in position.
3. Mark **hole positions** on the mounting surface.
4. Drill **holes** to accept a #8 screw (C).
5. Using the built-in bracket (B), attach the **MTRBi (A)** to the mounting surface.

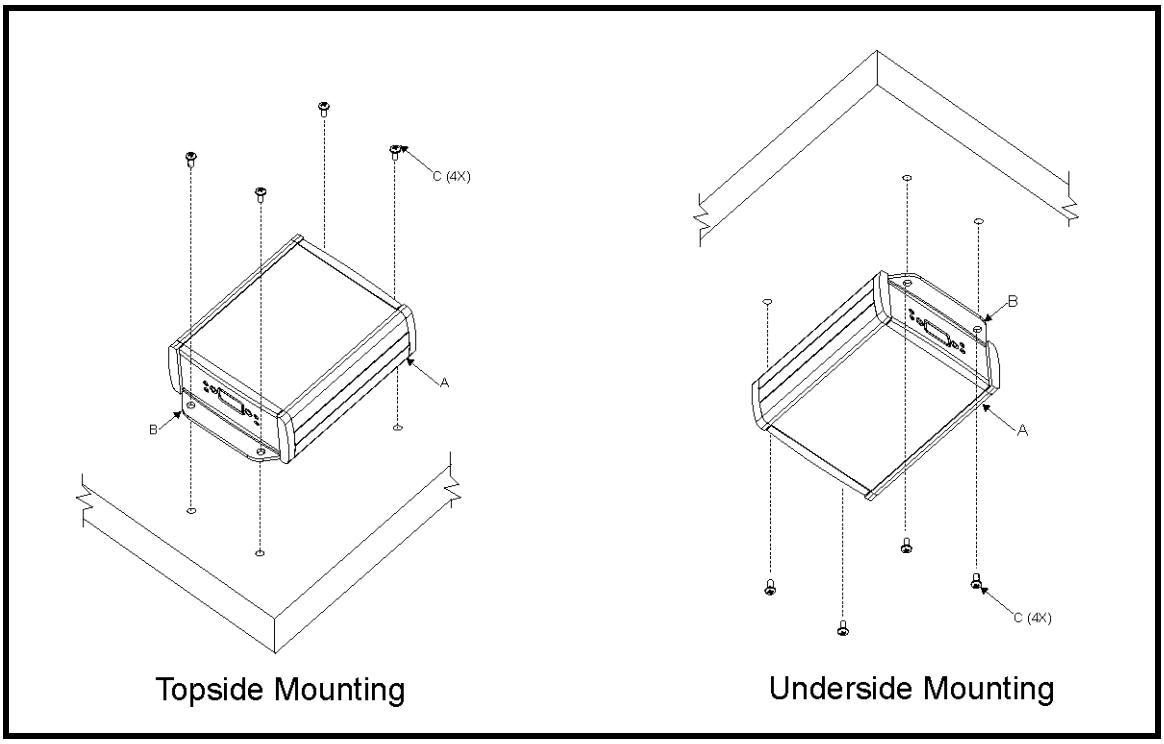


FIGURE 24. MTRBi Mounting

System Reset

Once the installation, configuration and mounting are complete, the units should be reset.

To **reset the system**, do the following:

1. Turn **off** power to the MTRBi, the MOTOTRBO radio and the IP-223.
2. Turn **on** power to the IP-223.
   SOIP appears in the IP-223 display.
3. Turn **on** power to the MOTOTRBO radio.
   Power is supplied to the MOTOTRBO radio and the MTRBi.

Test the MOTOTRBO to C-Soft Communication Status

Once the configuration process is complete, communication between the MOTOTRBO radio and C-Soft can be checked with the MOTOTRBO dispatching window in C-Soft Runtime.

To **verify communication status**, do the following:

1. While in the C-Soft console, click a **MOTOTRBO select** button.
2. Click the **MOTOTRBO** window button.
   The MOTOTRBO dispatching window appears.
3. View the **successful connection indicators**:
   - The Zone and Channel fields populate with the zone and channel configured on the selected line.
   - The channel name appears on the PTT button.
   - The status indicator is green.

   OR
   View the **failed** connection indicators:
   - The Zone and Channel fields are disabled and blank.
   - *PTT* appears on the PTT button.
   - The Status indicator is red.

NOTE: For technical support, see “Contact Information” on page 2.

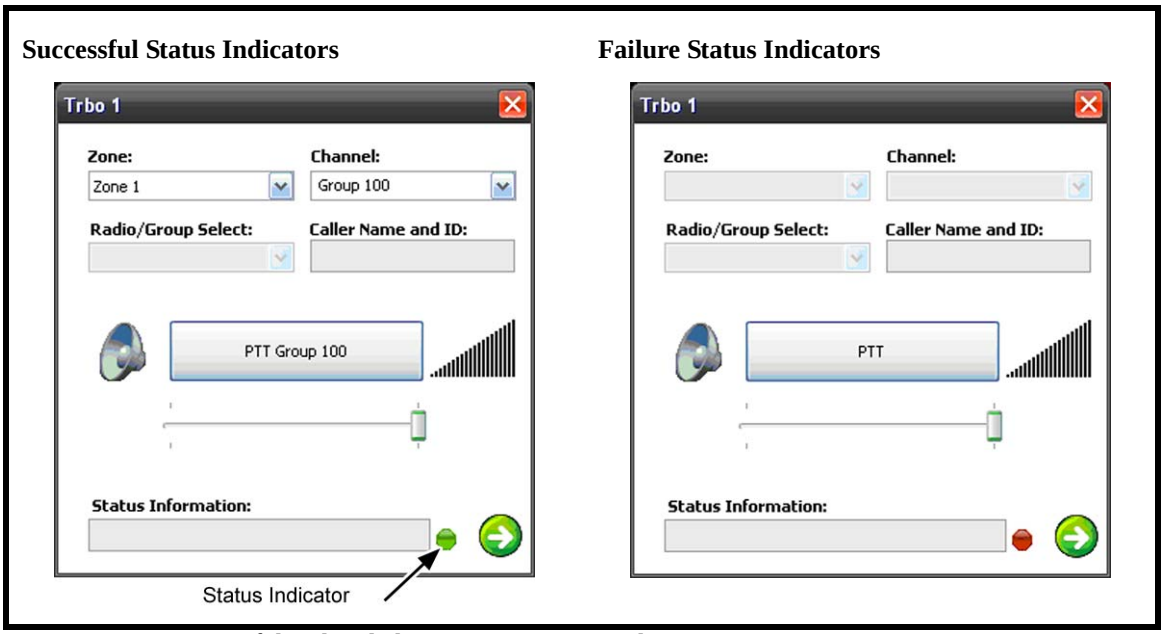


FIGURE 25. Successful and Failed Connection Status Indicators

Initiate a MOTOTRBO Call

When the MOTOTRBO radio and C-Soft are in communications, a call can be initiated.

To **initiate a MOTOTRBO call**, do the following:

1. While in the C-Soft console, click a **MOTOTRBO** select button.
2. Click the **MOTOTRBO window** button.
   The MOTOTRBO dispatching window appears. The Zone and Channel fields are automatically populated.
3. Click the dispatching window's **PTT** button.
   The dispatching window and select buttons display the following information:
   - *A universal no symbol appears on the microphone icon indicating it is closed.*
   - *The Status Information field updates with call name and ID.*
   - *A WAIT icon momentarily appears on the line's select button.*
   - *When all devices are in communication with each other, a TALK icon appears on the line's select button, the universal symbol no longer appears on the microphone icon, and the Status Information field includes In Progress to indicate the console can communicate with the radio. See Figure 26.*

NOTE: The console's PTT can also be clicked.

REFERENCE: For more information, see the C-Soft Technical Manual (P/N LIT000082000).

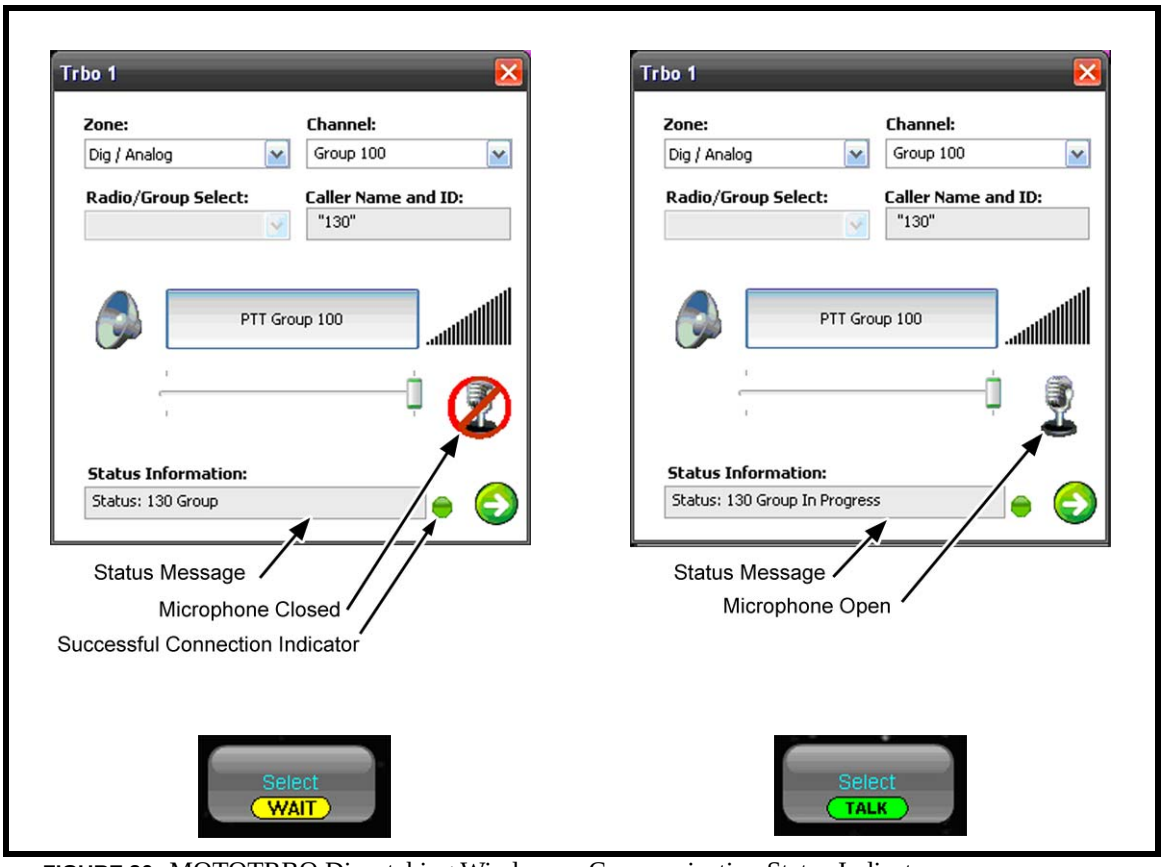


FIGURE 26. MOTOTRBO Dispatching Windows—Communication Status Indicators

CHAPTER 3

MTRBi Updates

MTRBi Firmware Updates

The **MTRBI Firmware** version is updated using a flash software file provided on our downloads page.

To **update the MTRBi firmware**, do the following:

1. Download the current version of the **MTRBi firmware** from the Telex website.
   A new version of the MTRBi's .hex file is saved to the default download location on your computer.
2. Using the R232 serial cable, connect the **MTRBi** to the PC.
3. Double-click the MTRBiFlasher.exe file.
   The MTRBi Flasher window appears.
4. From the COM Port drop down menu, select a **COM port** (e.g. COM1).
5. Click **Open**.
   The Find window appears.
   OR
   In the Hex file field enter the **path** to the .hex file.
6. Click **Start Flash**.
   The new file version is saved to the MTRBi. An Update successful message appears.
7. Click **Exit**.
8. Reset the **MOTOTRBO** radio.
   The device is reset. The MTRBi is updated.

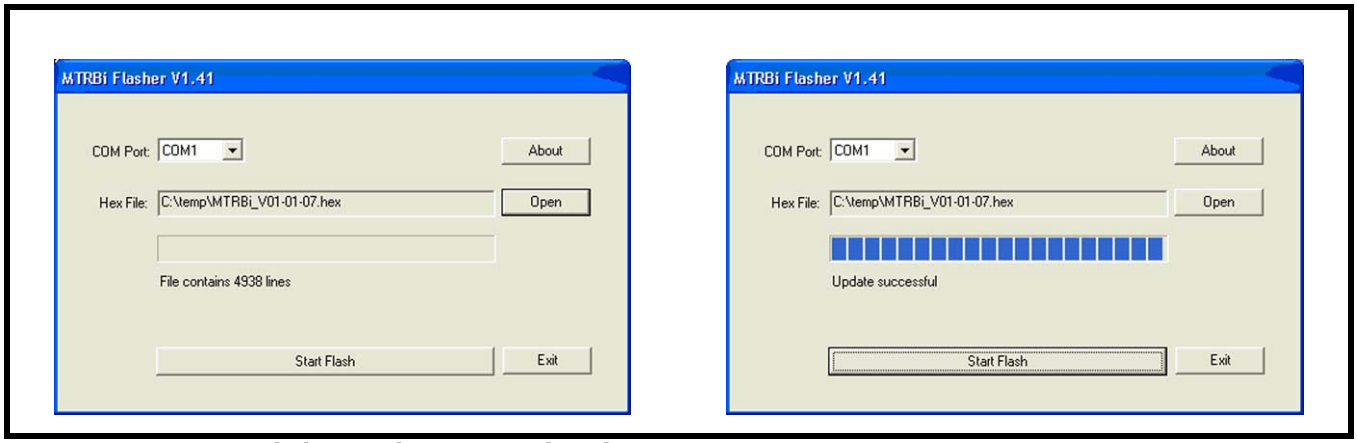


FIGURE 27. MTRBi Flasher Windows—Hex File and Success Messages