ASTRO® Digital XTL™ 5000

Dual-Radio
W3 Handheld Control
Head System

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Instruction Manual



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Dual-Radio
W3 Handheld Control Head System
Instruction Manual

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Foreword

The information contained in this manual relates to the ASTRO® Digital XTL™ 5000 Dual-Radio W3 Handheld Control Head (HHCH) System. This manual provides sufficient information to enable an individual to install, configure, operate, and troubleshoot an ASTRO Spectra Dual-Radio Handheld Control Head System.

Product Safety and RF Exposure Compliance



Before using this product, read the operating instructions for safe usage contained in the Product Safety and RF Exposure booklet enclosed with your radio.

ATTENTION!

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For a list of Motorola-approved antennas, batteries, and other accessories, visit the following web site which lists approved accessories: http://www.motorola.com/cgiss/index.shtml.

Manual Revisions

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Related Publications

ASTRO Digital XTL 5000 Mobile Radio with W3 Control Head User's Guide 6881096C67
ASTRO Digital XTL 5000 Mobile Radio with W4, W5, W7, and W9 Control Heads User's Guide 6881096C68
ASTRO Digital XTL 5000 Mobile Radio Installation Manual 6881096C72
ASTRO Digital XTL 5000 Mobile Radios Universal Crypto Module Field Installation Instructions 6881097C53
ASTRO Digital XTL 5000 VHF/UHF Range 1/700-800 MHz Mobile Radio Basic Service Manual 6881096C73
ASTRO Digital XTL 5000 VHF/UHF Range 1/700-800 MHz Mobile Radio Detailed Service Manual 6881096C74
ASTRO Digital Spectra and Digital Spectra Plus Mobile Radios W3/W4/W5/W7/W9 Control Head Models Service Manual 6881096C77
CPS Programming Installation Guide 6881095C44
KVL 3000 User's Manual 6881131E16
System 9000 Direct Entry Keyboard Instruction Manual 68P80101W22

Chapter 1 Introduction

1.1 General

A typical ASTRO Digital XTL 5000 Dual-Radio W3 Handheld Control Head (HHCH) System consists of two XTL 5000 mobile radios (in different frequency bands), a single W3 HHCH, an interconnect cable with a quick-disconnect adaptor for the HHCH, and two speakers.

When equipped, typical features such as Scan, Secure, DTMF Hot Keypad, Volume Control, Radio Selection, Push-To-Talk, and Monitor will be accessible through the HHCH.

1.1.1 Dual-Radio Software

The dual-radio option is supported by mobile host firmware release 6.5 or greater and ASTRO 25 Mobile CPS release R05.00.00 or greater.

1.1.2 Accessory Support

The dual-radio system supports the use of a Motorola Siren/PA. Refer to Section 2.3.13, "Siren/PA," on page 2-6 for details on the Siren/PA operation in a dual-radio system.

The dual-radio system supports the use of an Emergency Footswitch. Refer to Section 2.3.6, "Emergency Operation," on page 2-4 for details on how Emergency is handled in a dual-radio system.

The dual-radio system does NOT support the use of a VRS.

1.2 Ordering Information

The dual-radio option is not available for field upgrades. FLASHport® does not support the dual-radio option. As a result, all mobile radios in the dual-radio system must be ordered from the factory with the dual-radio option(s).

The unique orderable options of the dual-radio system are as follows:

Table 1-1. Dual-Radio Options

Item Number	Description	Quantity
G72AASP	W3 HHCH with Quick Disconnect	One per dual-radio system required.
W845BA	Dual-Radio Cable Kit for W3	One per dual-radio system required.
G474AB	Multi-Radio Software	Two per dual-radio system required. Each mobile must be equipped with this option in order to function within the dual-radio system.

1.3 Notations Used in This Manual

Throughout the text in this publication, you will notice the use of notes, cautions, and warnings. These notations are used to emphasize that safety hazards exist, and care must be taken and observed. Because some notations do not apply to information found in this manual, they are not used.

NOTE: An operational procedure, practice, or condition that is essential to emphasize.



CAUTION indicates a potentially hazardous situation which, if not avoided, might result in equipment damage.



WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or injury.



DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or injury.

You might also find in this manual the use of the asterisk symbol (*) to indicate a negative or NOT logic true signal.

Chapter 2 Dual-Radio Operation

2.1 Overview

The typical dual-radio system contains two mobile radios, a W3 HHCH, two speakers, and associated cabling (see Figure 2-1). The dual-radio option allows one HHCH to control two radios. One radio is designated the Primary Radio, while the other radio is designated the Auxiliary Radio. Only one radio is accessible from the control head at any one time. The accessible radio is referred to as the Selected Radio, while the other radio is referred to as the Unselected Radio. The control-head indicators and display always reflect the state of the Selected Radio. In general, button presses (for example, Push-to-Talk (PTT)) only affect the Selected Radio, unless otherwise noted throughout this document. The Unselected Radio is normally in the receive, scan, or emergency state.

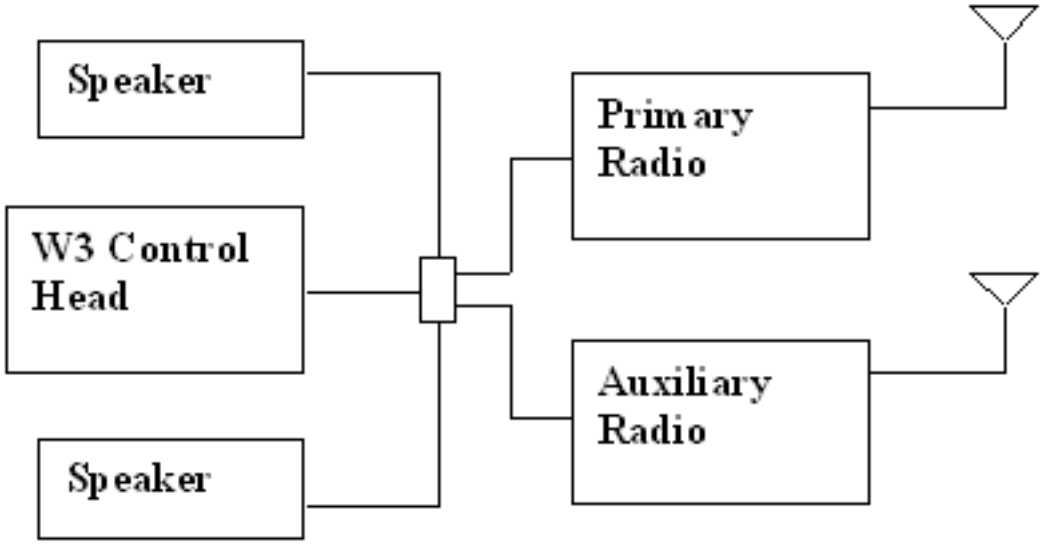


Figure 2-1. Dual-Radio System Block Diagram

2.2 Control-Head Operation

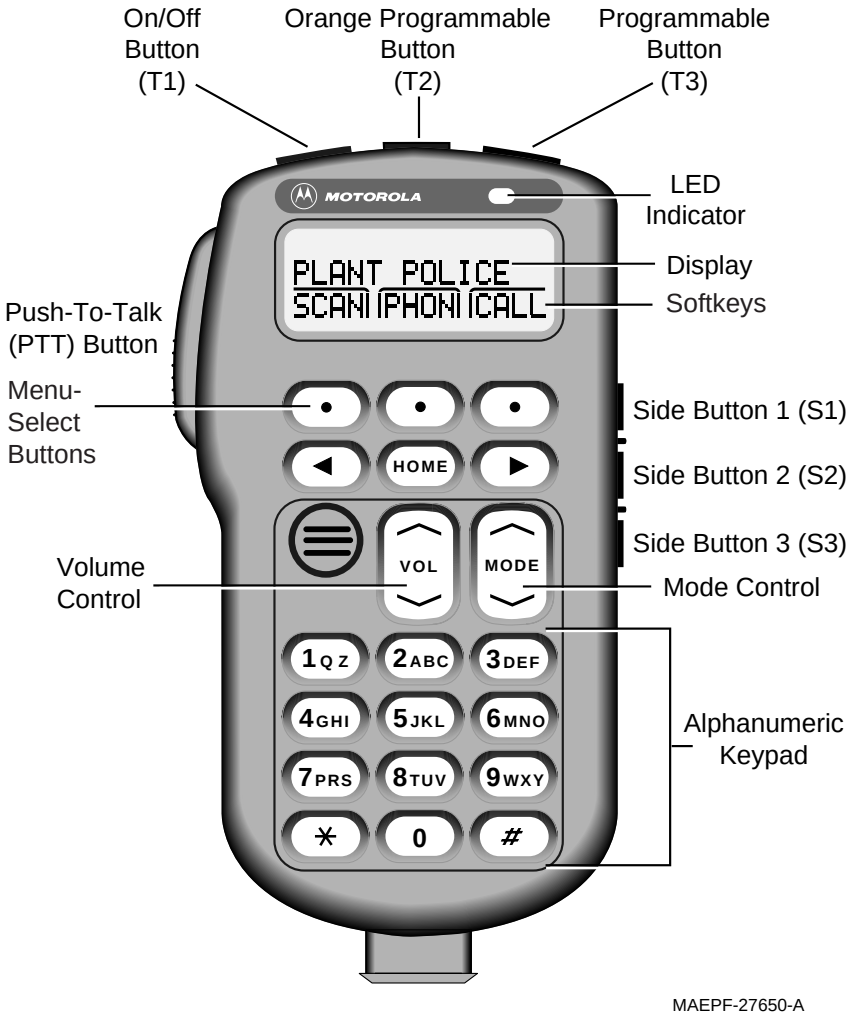


Figure 2-2. W3 Handheld Control Head (HHCH)

The W3 HHCH (Figure 2-2) is used to control both radios. Refer to the W3 Control Head User's Guide (6881096C67) for detailed information regarding the use and operation of the XTL 5000 mobile with the W3 control head. All radio features normally accessible with a W3 Control Head are supported in a dual-radio system unless otherwise noted in this manual.

2.2.1 Display

The display shows the status of the currently selected mobile radio. When a radio is selected, all of its displays and indicators will be seen on the control head. When a radio is deselected, the displays and indicators, other than the LED indicator (see Section 2.2.2 on page 2-3), associated with it are not seen. When switching between radios, the "Radio ID Alias" configured in the mobile's codeplug (see Codeplug Configuration) is displayed temporarily to show which radio has just been selected. If the user is unsure which radio is selected, a long press of the Auxiliary Radio Button temporarily displays the selected radio's "Radio ID Alias".

2.2.2 LED Indicator

The W3 control head LED indicator reflects the transmit or receive state of both the Selected and Unselected radio. Table 2-1 shows what state the LED indicator will be in for each situation.

Table 2-1. W3 LED Indicators

Radio	Receive	Transmit
Selected	Rapidly Flashing RED LED (Conventional) No Flashing RED LED (Trunking)	Solid RED LED
Unselected	Slowly Flashing RED LED	Solid RED LED

In cases where both the Selected and Unselected radios are active (receiving or transmitting), the Red LED will always reflect the state of the Selected Radio.

2.2.3 Buttons

In general, button presses (e.g., Push-to-Talk (PTT)) only affect the Selected Radio, unless otherwise noted throughout this document. The Unselected Radio is not accessible via the control head until the user changes radios (see Auxiliary Radio Button).

2.2.4 Backlight

The backlight on the W3 Control Head can be turned off with the press of a button. This button can be programmed using ASTRO 25 Mobile Customer Programming Software (CPS) (see Chapter 3, "Codeplug Configuration"). The backlight setting is retained when power is cycled if "Save Dim State" is selected in CPS. If there are any errors during power-up, the backlight is turned on.

NOTE: The LED Indicator remains unaffected by the backlight setting.

2.3 Feature Operation

The following section describes the features available for the dual-radio system.

2.3.1 Power-Up

Power-up operation is the same as for a single-radio configuration. When the power on/off button is pressed, the display shows a radio-specific power-up message followed by the mode name.

The Primary Radio normally powers up as the Selected Radio. If the Primary Radio is disconnected or fails during power-up, the Auxiliary Radio powers up as the Selected Radio.

2.3.2 Auxiliary Radio Button

The Auxiliary Radio Button is a programmable button used to control which radio is selected (see Chapter 3, "Codeplug Configuration" for information on programming the Auxiliary Button). A short press of the Auxiliary Radio Button will cause a radio switch to occur. The Selected Radio will become Unselected and vice versa. A long press of the Auxiliary Radio Button will cause the display to temporarily show the “Radio ID Alias” of the currently selected radio (see Chapter 3, "Codeplug Configuration" for information on assigning the “Radio ID Alias”).

When a radio switch is made using a short press of the Auxiliary Radio button, additional control head button presses will not be allowed until the “Radio ID Alias” is shown on the display. This indicates that the radio switch is complete. If a control head button is pressed prior to completion of the radio switch, the user will hear a bonk on the Primary Radio’s speaker.

If the Auxiliary Radio Button is pressed when a temporary feature such as private call or phone is active, the temporary feature will be exited. This puts the radio back into receive or scan, and the radio switch will occur.

A radio switch will not be allowed while PTT is pressed (Auxiliary Radio Button presses will be ignored in this case).

NOTE: When the user presses the Auxiliary Radio Button and one of the radios is missing, has become disconnected or failed during power-up, the dual-radio feature will still attempt to switch radios. This will result in an approximate 2-second delay followed by a Bad Key Tone. During this delay, any key presses by the user will be ignored. If the Primary Radio fails after powerup, the Auxiliary Radio Button will no longer be functional.

2.3.3 Volume

The volume up/down rocker is used to adjust the volume of the Selected Radio. To adjust the volume of the Unselected Radio, the user must first press the Auxiliary Radio Button to select that radio, and then adjust the volume as usual. When the user switches radios, the volume settings for both radios remain unchanged.

Example: Radio 1 is selected and at volume level 2. Radio 2 is deselected and at volume level 8. The user presses the volume up rocker, adjusting the speaker volume for Radio 1 to level 5. The user then presses the Auxiliary Radio Button, so that Radio 2 is now selected. Radio 1's volume level remains at level 5. Radio 2's volume level remains at level 8 and can now be adjusted.

2.3.4 PTT Operation

When the PTT button is pressed, only the Selected Radio will key up. A radio switch will not be allowed while PTT is pressed.

NOTE: Simulcast operation, where both radios transmit at the same time, is not supported. When the selected radio is transmitting, the unselected radio’s speaker will be muted.

2.3.5 Monitor/HUB Operation

When the W3 is removed from the Hang-Up Box (HUB), the Selected Radio will stop Scanning (if applicable) and monitor the current channel. If this radio is deselected, it will stop monitoring the current channel and continue Scanning (if applicable). HUB will always be considered on-hook in the Unselected Radio.

A button can be programmed on the W3 for Monitor operation. When this button is pressed, the Selected Radio will monitor the current channel. This radio will continue to monitor the current channel, even if it is deselected.

2.3.6 Emergency Operation

When the Emergency Button or an Emergency Footswitch is pressed, the Selected Radio will enter into Emergency and the Unselected Radio will be unaffected. If an Emergency Footswitch is to be used, it must be connected to the emergency connector at the dual-radio quick-disconnect for correct operation (see Chapter 5, "Dual-Radio Installation" for more details). Similarly, if Hot Mike to Follow is Enabled, the Selected Radio only will key up with mic audio upon entering Emergency.

When in Silent Emergency, the Auxiliary Radio Button will be ignored until the silence is broken. The Unselected Radio's audio will also be muted until the silence is broken.

2.3.7 Radio Inhibit

The over-the-air Radio Inhibit message can be targeted at either the Primary or Auxiliary radio and will act on both radios simultaneously. At power-up, both radios will be inhibited or both radios will be uninhibited.

2.3.8 Version Number Display

To view the version information of a radio, use the Auxiliary Radio Button to first select the desired radio, then press the Home button five times. This can only be accessed immediately after powerup. You must cycle power off and back on using the control head to repeat this for the second radio.

2.3.9 Speaker Muting

When the Selected Radio transmits audio or enters into Silent Emergency Alarm, all speaker audio from the Unselected Radio will be muted.

2.3.10 OTAR (Over-The-Air Rekeying)

Both radios (if equipped) are capable of supporting OTAR. The OTAR System can direct rekeys to either radio in the dual-radio system, one radio at a time. User initiated rekey requests are for the Selected Radio only. In order to rekey both radios, the user will first initiate a rekey request on the Selected Radio. Once there is a successful rekey, the user can then change the selected radio using the Auxiliary Radio Button. The user can then initiate a rekey request for the newly Selected Radio.

NOTE: During system rekey request, both radios may transmit at the same time.

Successful OTAR rekeys on conventional channels are associated with tone and display indications. Successful OTAR rekeys on trunking channels are associated with a tone indication.

2.3.11 Integrated Voice and Data

Both radios are capable of Integrated Voice and Data (IV&D). Both radios are capable of receiving or transmitting data whether or not they are currently selected.

NOTE: While transmitting data on an ASTRO channel, the other radio will be allowed to un-mute to received audio. While transmitting data on a non-ASTRO channel, the other radio will be muted for the duration of the data transmission.

When performing a voice transmission PTT on the selected radio, the unselected radio can transmit data.

2.3.12 Dual-Radio Quick-Disconnect Cable

A special cable will be used to connect both mobile radios directly to a W3 Control Head. This cable will allow the W3 Control Head to be quickly disconnected, causing the system to shut down immediately. To turn the system back on, the control head must be reconnected and the power button must be pressed.

This cable will provide all of the necessary connections for two mobile radio speakers, ignition sense, and an emergency footswitch. See the Installation section of this manual for the correct cable connections.

2.3.13 Siren/PA

The Siren/PA must be connected directly to the Primary Radio for correct operation. When configured properly the siren and PA features will work when either radio is selected (see Chapter 3, "Codeplug Configuration"). The External Radio feature will only work for the Primary Radio. This is due to the routing configuration of the Primary Radio's receive audio to the Siren/PA. The Auxiliary Radio's receive audio is not routed to the Siren, and there is no audio routing between the mobiles.

Chapter 3 Codeplug Configuration

The following steps are codeplug setting instructions for configuring a mobile radio to function as part of the Dual-Radio System.

NOTE: As further described in the following sections, all control and display items should be programmed the same in both the Primary and Auxiliary radios in order for the Dual-Radio System to function correctly.

3.1 Enabling the Multi-Radio Software Option

When the radios ship from the factory equipped with the Multi-Radio Software Option, the codeplug is not configured for use in a dual-radio system. Using ASTRO 25 Mobile CPS version R05.00.00 or newer, the Multi-Radio option can be enabled in the **Radio Configuration->Radio Wide->Advanced II** screen (Figure 3-1) by clicking on the checkbox next to the **Multi Radio System** tag.

NOTE: This field can only be enabled when the codeplug is configured for a W3 HHCH.

NOTE: The Change Control Head function will be disabled until the **Multi Radio System** checkbox is deselected.

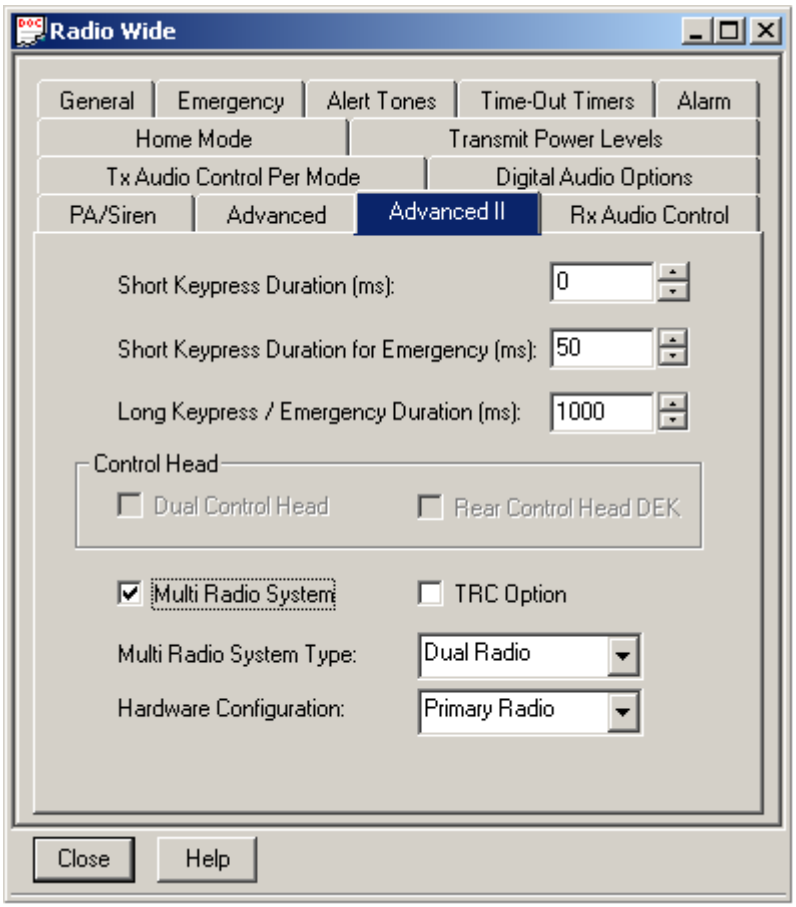


Figure 3-1. Radio Wide Advanced II Screen—Multi Radio System Checkbox

3.2 Selecting the Multi Radio System Type

Once the Multi Radio Software Option is enabled, the **Multi Radio System Type** and **Hardware Configuration** pull-down menus become editable (Figure 3-2). The **Multi Radio System Type** can then be set to “Dual Radio”. The “Hot Red Receiver” system type is not supported in the mobile software, so selecting it instead of “Dual Radio” causes the **Multi Radio System Type** to be shown as an “invalid field”.

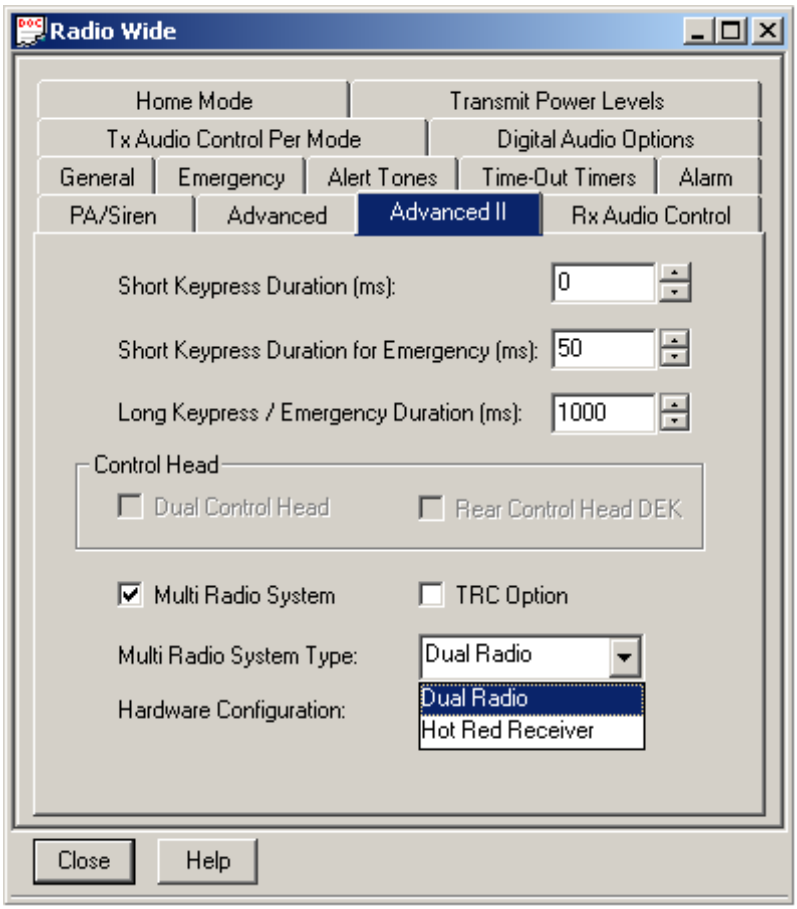


Figure 3-2. Radio Wide Advanced II Screen—Multi Radio System Type Field

3.3 Selecting Primary vs. Auxiliary Configuration

The **Hardware Configuration** must be set to compliment the other mobile used in the Multi-Radio system. There can only be one “Primary Radio” and one “Auxiliary Radio” in each dual-radio system; therefore, one radio must have the **Hardware Configuration** codeplug field set to “Primary Radio” and the other radio must have the **Hardware Configuration** codeplug field set to “Auxiliary Radio” (Figure 3-3).

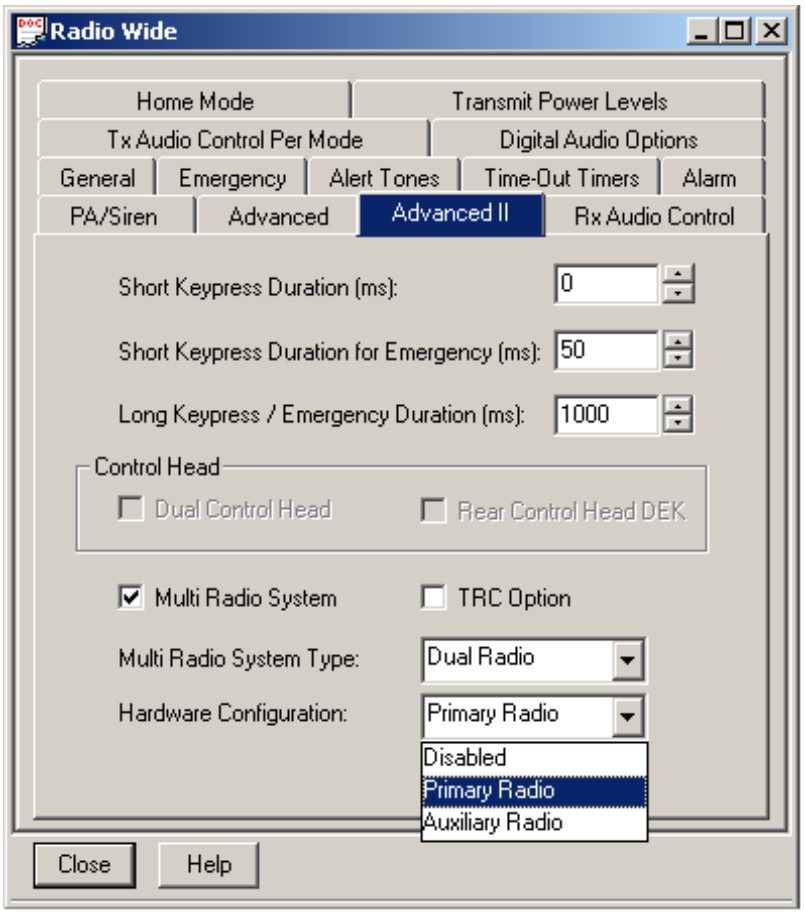


Figure 3-3. Radio Wide Advanced II Screen—Hardware Configuration Field

3.4 Entering Radio ID Alias

Since the radio is being used as part of a dual-radio system, it is required that the radio have a "Radio ID Alias". This is located in the **Radio Configuration->Radio Wide->General** screen (Figure 3-4) in ASTRO 25 Mobile CPS. The Alias will be momentarily displayed on the control head when a radio switch occurs. This will indicate to the user which radio will be accessible from the control head. (For example: If the dual-radio system is comprised of a VHF-band mobile for communication with the police dispatch center and a UHF-band mobile for communication with Fire/ Rescue, then the "Radio ID Alias" could be "POLICE" in the VHF mobile and "FIRE/RES" in the UHF mobile.)

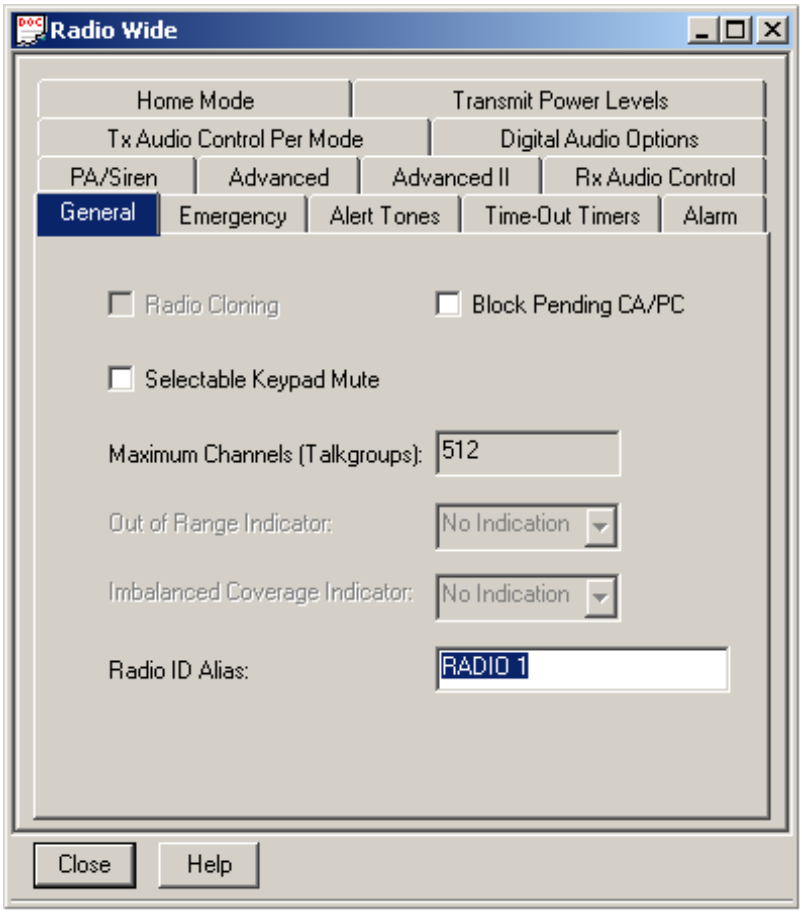


Figure 3-4. Radio Wide General Screen—Radio ID Alias Field

3.5 Microphone Gain Adjustment

The Dual-Radio System requires a fixed gain adjustment for the microphone audio line. This setting is located in the **Radio Configuration->Radio Wide->Tx Audio Control Per Mode** screen (Figure 3.5) in ASTRO 25 Mobile CPS.

Three adjustable gain settings are present: Analog Fixed Gain, Digital Fixed Gain, and Securenet Fixed Gain. All of these Fixed Gain settings must be increased to "3" by clicking once on each item's up arrow. This step must be performed for both the Primary and the Auxiliary radio.

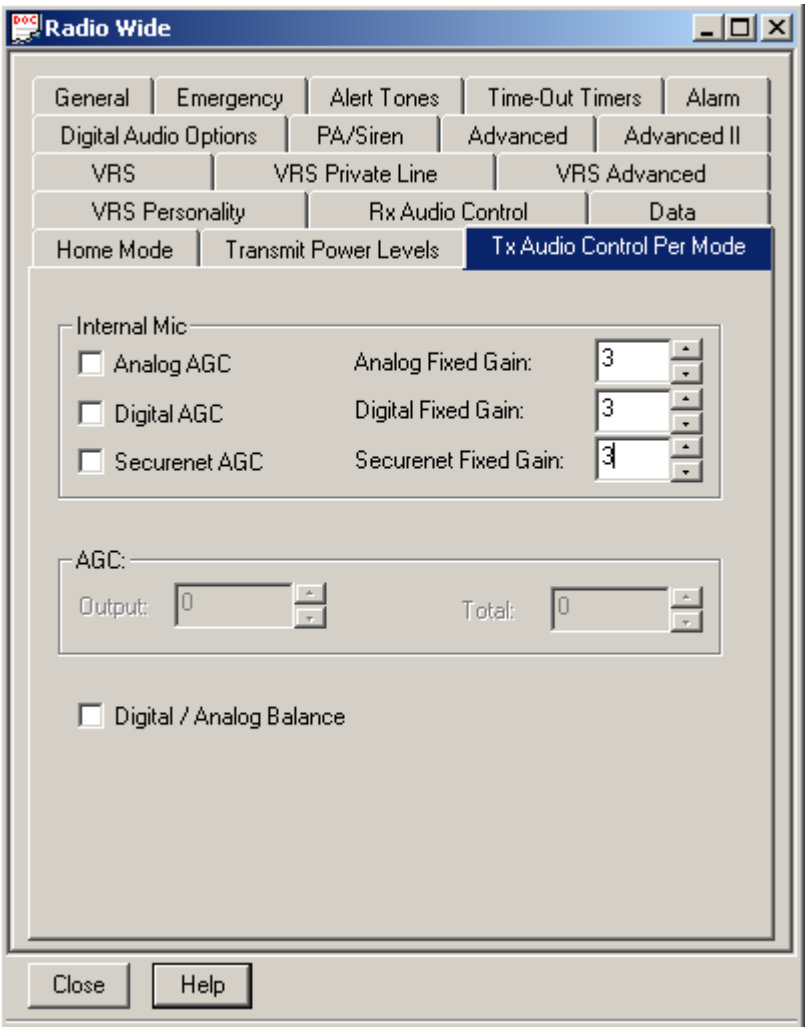


Figure 3-5. Radio Wide General Screen—Microphone Gain Adjustment

3.6 Aux Button Configuration

The final configuration item for the dual-radio system is to program a button on the control head to switch between the mobile radios. This button is known as the Auxiliary Radio Button. On the W3 control head the Auxiliary Radio Button can be assigned to any of the programmable button locations in the **Radio Configuration->Controls->Control Head** screen (Figure 3-6) in the ASTRO 25 Mobile CPS. In Figure 3-6, the Top-Right Button (T3) has been selected as the location of the Auxiliary Radio Button.

Since there are no button indicators on the W3 control head, the only indication the user will have to determine which radio is currently being selected is the “Radio Alias ID”. The “Radio Alias ID” is momentarily displayed on the control head after a radio switch occurs. As a result, it is recommend that Zone names be configured to display a unique value for each radio (ex: “R1” and “R2”). This will allow the user to quickly determine which radio is selected by checking the Zone name displayed on control head.

NOTE: Be sure to program the Auxiliary Radio Button to the same programmable button location for both Conventional and Trunking in both the Primary and Auxiliary radios.

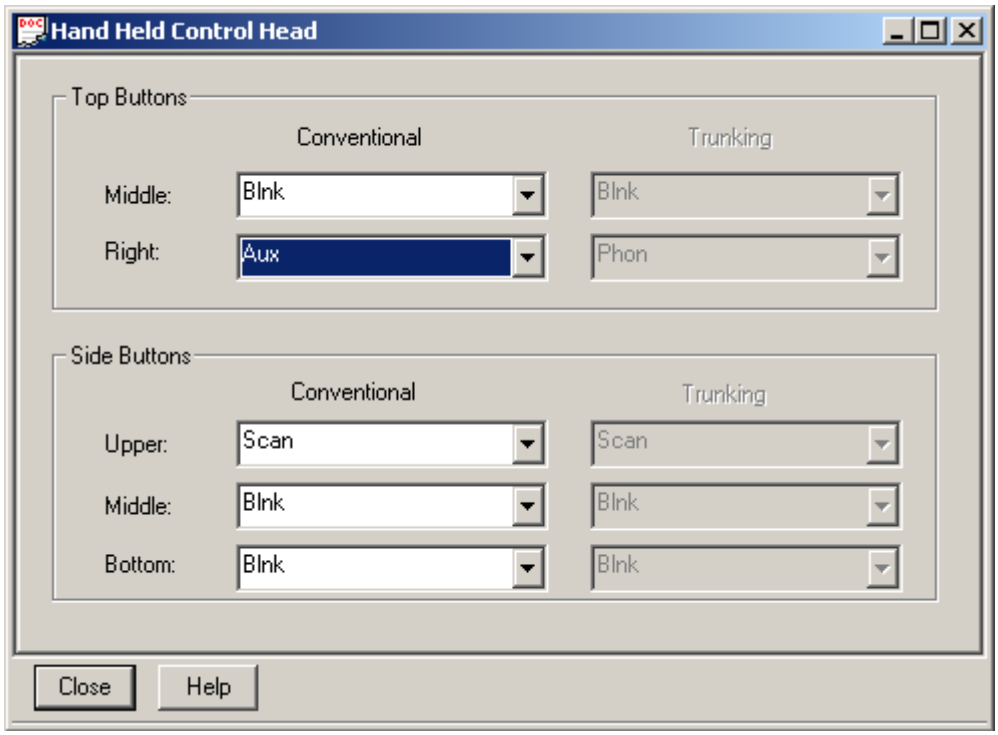


Figure 3-6. Aux Button Configuration Screen

3.7 Backlight Configuration

The Light Button is another important control function that must be programmed to the same button location in each radio. In a dual-radio system, the backlight function is only handled by the Primary radio, so the programmable button location set to “Light” in the Primary radio’s codeplug will always control the backlight function regardless of which radio is selected.

3.8 Siren and DEK Accessory Configuration

The Siren/PA option must be enabled in both radios in order for the Siren/PA to function correctly in the Dual Radio System. If a DEK box is being used to control the Siren/PA, then both radios must have the same DEK box button programming so that when a radio switch is made, the indicator and button functions do not change.

Notes

Chapter 4 Troubleshooting

4.1 Power-Up Errors

In the event that there is a setup problem while powering up the system, the system attempts to notify the user of this problem by displaying a power-up error messages (see Table 4-1). The control head displays power-up errors occurring in either radio.

If one of the radios is not connected at power-up, an error message is displayed, and the remaining radio continues to function. If both radios are configured as Primary Radios or both radios are configured as Auxiliary Radios, a fatal error is displayed and the system will not function. See Chapter 3, "Codeplug Configuration" for details on codeplug configuration.

Any power-up failure during the self-check routine will cause the associated radio to generate a Bad Key Tone.

NOTE: In the event that there are errors with encryption on the Unselected Radio, they will not be displayed on the control head at power-up. Instead, the error will be shown when that radio is selected and the user presses PTT to transmit. All audible indications of the error will be heard at power-up regardless of radio selection.

Table 4-1. XTL 5000 Dual-Radio Power-Up Self-Check Error Codes

Error Code	Description	Error Type	Troubleshooting Chart
ERROR 21 or 01/02	Flash ROM Codeplug Checksum	NON-FATAL	Reprogram the Codeplug.
ERROR 01/10 followed by 02/10	Primary Radio Hardware Failure	NON-FATAL	Check the Primary Radio connection.
ERROR 21/10 followed by 22/10	Auxiliary Radio Hardware Failure	NON-FATAL	Check the Auxiliary Radio connection.
ERROR 21 or 01/12	Security Partition Checksum	NON-FATAL	Reprogram the security partition.
ERROR 21 or 01/22	Tuning Codeplug Checksum	FATAL	Reprogram the tuning partition.
FAIL 21 or 01/81	FLASH ROM Checksum	FATAL	Reprogram the Radio.
FAIL 21 or 01/82	FLASH ROM Codeplug Checksum	FATAL	Reprogram the Codeplug.
FAIL 21 or 01/88	External SRAM Failure	FATAL	Turn the radio off, then on.
FAIL 21 or 01/90	General Hardware	FATAL	Turn the radio off, then on.
FAIL 21 or 01/92	Security Partition Checksum	FATAL	Reprogram the security partition.
FAIL 21 or 01/93	FLASHport AUTHENT CODE Failure	FATAL	Contact the Depot.
FAIL 21 or 01/98	Internal RAM Failure	FATAL	Turn the radio off, then on.
FAIL 21 or 01/A2	Tuning Codeplug Checksum	FATAL	Reprogram the tuning partition.
FAIL 22 or 02/81	DSP ROM Checksum	FATAL	Reprogram the DSP firmware.
FAIL 22 or 02/88	DSP RAM Fatal Error	FATAL	Turn the radio off, then on.

Table 4-1. XTL 5000 Dual-Radio Power-Up Self-Check Error Codes (Continued)

Error Code	Description	Error Type	Troubleshooting Chart
FAIL 22 or 02/90	General DSP Hardware Failure	FATAL	Turn the radio off, then on.
FAIL 21/90	Multiple Primary or Auxiliary Radios - This can be caused by both radios being programmed as Primary or both radios being programmed as Auxiliary.	FATAL	Reconfigure the codeplugs so that one radio is set as Primary, and one is set as Auxiliary.
ERROR 29 or 09/10	Secure Hardware Failure	NON-FATAL	Replace the secure module
FAIL 29 or 09/90	Secure Hardware Fatal Error	FATAL	Replace the secure module
FL 21 or 01/A0	Abacus IC Failure	FATAL	Turn the radio off, then on.
FL 22 or 02/C0	Wrong Microprocessor	FATAL	Send the radio to the depot; Replace the daughter card.
Note: 01, 02, or 09 denotes a failure on the Primary Radio. 21, 22, or 29 denotes a failure on the Auxiliary Radio.			

See the *ASTRO Digital XTL 5000 Mobile Radio Basic Service Manual* for all other error codes.

Chapter 5 Dual-Radio Installation

5.1 Installation Planning

The ASTRO Digital XTL 5000 Dual Radio System consists of several different components (see Figure 5-1) and some preliminary planning should be completed before beginning actual system installation. The W3 Handheld Control Head (HHCH), emergency footswitch, and speakers mount in the operator's compartment. It is recommended that the radios be mounted in the vehicle's trunk. Be sure the chosen locations for all housings do not expose the units to dirt or moisture.

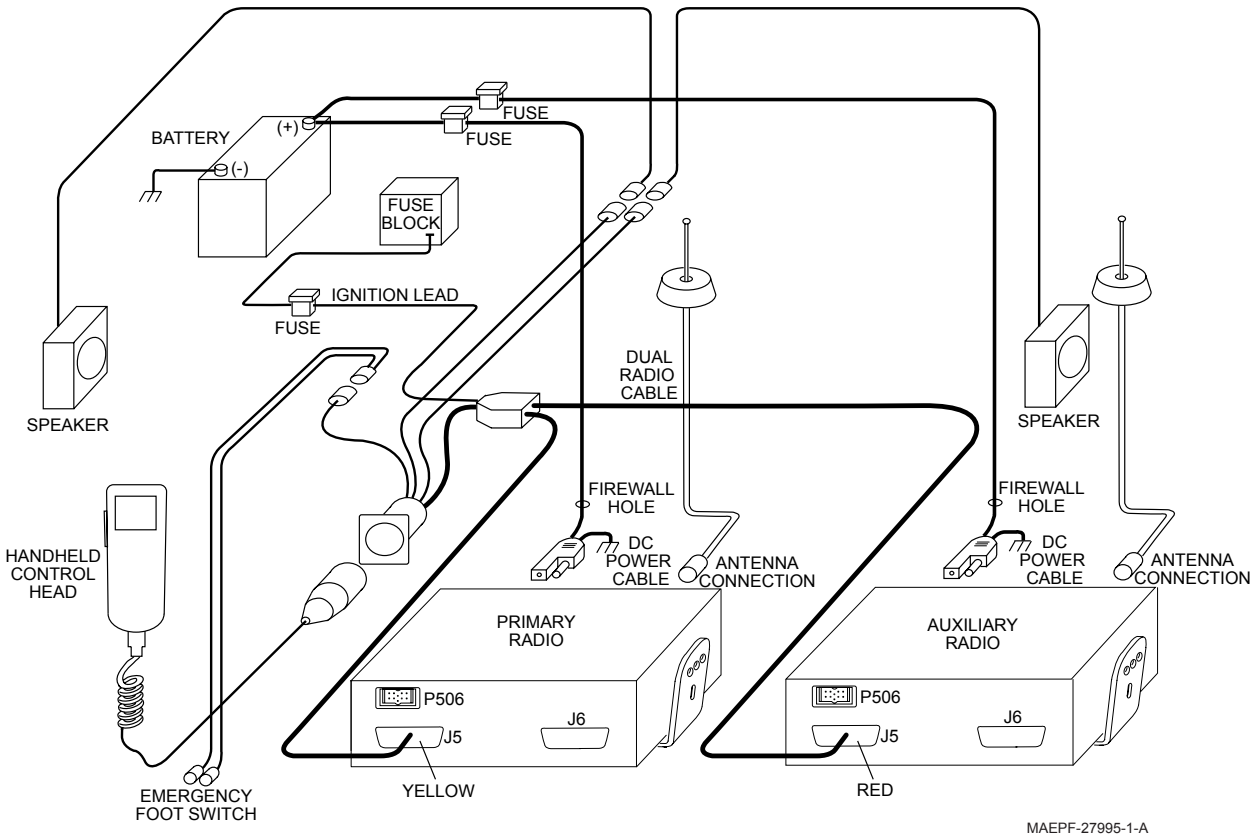


Figure 5-1. ASTRO Digital XTL 5000 Dual-Radio W3 Handheld Control Head System

5.2 Trunk Units

This section describes trunk unit installations.

5.2.1 Radio Mounting

Refer to Section 2.2, Radio Mounting, of the ASTRO XTL 5000 Digital Mobile Radio Installation Manual (P/N 6881096C72).

5.2.2 Cables

This section describes the installation of the dual-radio system cables.

5.2.2.1 Dual-Radio Cable

The 3064426H01 cable connects the Primary and Auxiliary radios to the W3-style HHCH (via the quick-disconnect connector). Attach the yellow radio connector end of the 3064426H01 cable to the front left of the Primary radio (female connector, labeled “Control Unit”). Securely tighten the two screws. Attach the red radio connector end of the cable to the front left of the Auxiliary radio (female connector, labeled ”Control Unit”). Securely tighten these two screws also. The quick-disconnect end of the 3064426H01 cable will attach to the HHCH and is mounted in the operator’s compartment. This end of the cable also contains the connections for the speakers, the emergency foot switch, and the ignition sense.

5.2.2.2 Power and Ground Cables

Route the red radio power cables from both radios to the vehicle’s battery compartment, using accepted industry methods and standards. It is important that both power leads are connected to the battery, rather than using one power lead through the vehicle and splitting it to both radios. This is because it is possible to have both mobile radios transmit at the same time (OTAR, data, etc.) and the power cable for each radio is rated to handle the maximum transmit current of that radio only.

Be sure to grommet the firewall hole to protect the cable. Remove the 15-amp (P/N 6580283E06) or 20-amp (P/N 6580283E07) fuse from the fuseholder and connect the red lead of the radio power cable to the positive battery terminal using the hardware provided as shown in Figure 5-2. Connect the black lead to a convenient solid chassis ground point. DO NOT connect the black lead directly to the battery’s negative terminal.

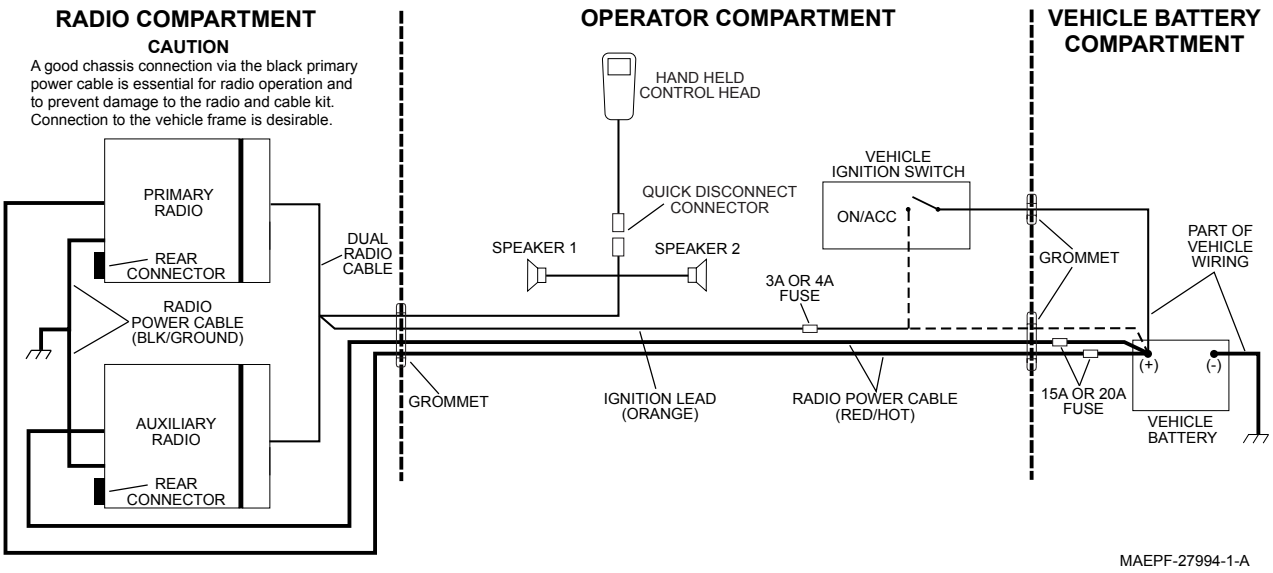


Figure 5-2. Cabling Interconnect Diagram for W3 Remote Mount

The black cables must have a good ground connection if the radios are to operate properly, and to prevent damage to the radios and cable kits. They should be grounded to the vehicle frame in the same location. On some late-model automobiles, the ground connection between the vehicles chassis and engine block is inadequate for good mobile radio operation. DO NOT remedy this by connecting the radio units ground cables directly to the battery. Connect a flexible metal ground strap between the engine block and a vehicle chassis point common to the radio set ground. Be sure the strap is heavy enough to carry maximum transmitter supply current.

All cables should be dressed out of the way as much as possible to prevent damage.

5.2.2.3 Ignition Cable

The 3064426H01 Dual-Radio cable has an ignition sense cable that must be used with every mobile installation. The ignition sense cable allows the radio to be turned on and off with the vehicle ignition switch, and allows the radio to remember the state of the radio on/off switch, even if it is changed while the vehicle is off.

- For radio ON/OFF control independent of the ignition switch, connect the orange ignition cable to ”battery hot” at the vehicle fuse block.
- For radio ON/OFF control via the ignition switch, connect the orange ignition cable to “ignition” at the fuse block.

The ignition sense cable uses either a 3-Amp (P/N 6580283E01) or 4-Amp (P/N 6580283E02) fuse. For other considerations when connecting the ignition cable, see the ASTRO XTL 5000 Digital Mobile Radio Basic Service Manual (P/N 6881096C73).

5.3 Installation Considerations

Be aware of the following installation considerations:

1. Turn the vehicle’s ignition switch off during installation.
2. Connect both black leads to the same vehicle chassis point. This prevents possible ground loop damage to the system should the ground point become bad.
3. Locate all fuses near the battery or the ignition.

5.4 Power Connections

Do the following:

1. Route the orange fused lead to the ignition voltage or battery voltage (see Section 5.2.2.3, "Ignition Cable").
2. Route the red fused lead from each radio directly to battery positive.
3. Connect the black lead from each radio to the vehicle chassis.

5.5 Dual-Radio Handheld Control Head Cable

Refer to Figure 5-1 on page 5-1. The 3064426H01 cable connects the Handheld Control Head kit PMN1035A to the dual remote radios via the quick-disconnect.

NOTE: Follow standard installation practices when routing and connecting all system cables. Use labels to identify both ends of each cable and make sure that all connections are electrically sound. Be sure that cables are secure and not routed or lying where they can be snagged, cut, or crushed.

5.6 Operator Compartment Units

This section describes operator compartment unit installations.

5.6.1 Quick-Disconnect Connector

NOTE: The HHCH quick-disconnect connector typically mounts under the driver's seat. This allows the operator to disconnect it quickly and easily if so desired. Be sure adequate clearance exists between the connector and the seat for all positions of seat adjustment.

Mount the HHCH connector bracket using the #10-16 x 3/4' self tapping screws supplied in the HLN4831A Hardware kit. Be sure it is easily accessible. Allow for the forward and backward movement of the seat. Use the #4-40 screws, nuts and lock washers to hold the HHCH connector to the bracket.

5.6.2 Speaker Mounting

Refer to Section 2.6, Speaker, of the ASTRO XTL 5000 Digital Mobile Radio Installation Manual (P/N 6881096C72).

Connect both speakers to the white, two-pin connectors at the quick-disconnect end of the 3064426H01 cable. Note the speaker wires are black/red and black/violet for the Primary radio and are green and orange for the Auxiliary radio. Be sure the plugs are fully seated, and then tie up any surplus cable.

5.6.3 HHCH Hang-Up Clip

Refer to Section 2.7, Microphone Hang-Up Clip, of the ASTRO XTL 5000 Digital Mobile Radio Installation Manual (P/N 6881096C72).

5.6.4 Emergency Footswitch

Refer to Chapter 3, Options and Accessories Installation, of the ASTRO XTL 5000 Digital Mobile Radio Installation Manual (P/N 6881096C72). When installing the footswitch, discard the green and black extension wires packaged in the footswitch kit and use instead the wiring packaged with the 3064426H01 Dual-Radio cable.

5.7 Antenna Mounting

The three most important factors in antenna placement are maximizing the distance between the two antennas, maximizing the distance between the radios and the antennas (particularly between the VHF antenna and the radios), and using good ground planes for the antennas.

Mount the VHF antenna on the middle of the roof of the vehicle and the UHF antenna on the middle of the trunk. The further away from the edge and towards the middle of the roof or trunk that you can go, the better the ground plane for the respective antenna. This mounting configuration separates each antenna and puts the VHF antenna far away from the radios. The next best placement for the antennas is to locate them both on top of the roof. Mount the UHF antenna near the rear of the vehicle, about 6 inches from the edge of the roof.

As stated above, the antennas have a better ground plane the farther away from the edge of the roof. The antennas must also be a reasonable distance from each other to minimize the interference between them.



Caution

Avoid using lip-mounted antennas. A lip-mount does not supply an adequate ground plane for the antennas.

Notes

Appendix A Other Configurations

A.1 Converting to a Single-Radio System

1. Read the codeplug of the XTL 5000 mobile in the Dual-Radio System.
2. Using CPS, change the Multi-Radio system field to "Disabled".
3. Write the codeplug into the XTL 5000 mobile.
4. Disconnect the unique W3 control head with Quick Disconnect connector and the Dual-Radio cable from the Dual-Radio System.
5. Connect a standard W3 control head and cable to the newly configured XTL 5000 mobile.

A.2 Changing the Control-Head Type

- This configuration is not supported.
- Changing the control-head type from a W3 style is not supported on the XTL 5000 mobile.
- In addition, the Dual-Radio System is only compatible with the W3 control-head type. All other control-head types are not supported.

A.3 Converting Radios Equipped With Option G474 into a Dual-Radio System

NOTE: Radios must be equipped for operation with a W3 control head.

1. Disconnect the standard W3 control head(s) and cable(s) from the two XTL 5000 mobiles, if applicable.
2. Connect the unique W3 control head with Quick Disconnect connector and the Dual-Radio cable to the two XTL 5000 mobiles.
3. Read the codeplug of the XTL 5000 mobile in the Dual-Radio System.
4. Using CPS, follow the setup instructions in Chapter 3. "Codeplug Configuration" to configure the Dual-Radio System.
5. Write the codeplug into the XTL 5000 mobile.
6. Repeat this codeplug configuration with the second XTL 5000 mobile.

A.4 Converting Radios Not Equipped With Option G474 into a Dual-Radio System

- This configuration is not supported. The radios must contain option G474 from the factory. The option for Dual Radio (G474) is not supported by FLASHport and cannot be added to radios already in the field.

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