WARNING
Certain combinations of chemical environments can adversely affect thermoplastic resins. For this reason, lubricants, cleaning agents, solvents or any other material which may come in contact with the finished parts should be carefully evaluated for compatibility. We recommend a mild dishwashing soap for cleaning the exterior of the product.

Recycling or Disposal of Batteries
This product is powered by a nickel-cadmium (Ni-Cad) rechargeable battery. At the end of its useful life, the battery can be recycled. However, recycling facilities may not be available in all areas. Under various state or local laws, the battery must be recycled or disposed of properly and cannot be disposed of in landfills or incinerators.

In addition, U.S. Environmental Protection Agency (EPA) regulations classify used Ni-Cad batteries as hazardous waste, unless certain exemptions apply.

Motorola fully endorses and encourages the recycling of Ni-Cad batteries. If you are located in the United States, you can ship post paid your used Ni-Cad batteries to INMETCO, an EPA approved recycling facility, at this address:

INMETCO
P.O. Box 720
245 Portersville Road
Ellwood City, PA 16117
Telephone: (412) 758-5515
Fax: (412) 758-9311

Consideration should be given to the methods of collecting, labeling, and shipping used Ni-Cad batteries. Your federal, state or locate EPA should be consulted for specific legal requirements and for recycling options in your area.

Motorola, as a responsible corporate citizen, has always been concerned with the protection of the environment. Please feel free to call the phone number 1-800-422-4210 for further information.
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Introduction

Welcome To The Motorola Radius P110 Radio

The Radius P110 Portable Radio is a sophisticated state-of-the-art unit. It incorporates the latest technology available in two-way radio communications.

The use of microcomputer technology makes changing radio characteristics such as operating frequencies and squelch codes both economical and fast. Any computer equipped Radius dealer can easily reprogram your radio's operating characteristics, or your radio can be "cloned" from a radio already programmed to your desired frequencies and codes.

The P110 radio meets tough environmental demands while providing cost effective and reliable communications. It meets the U.S. Government Military Standards 810C, D and E for low pressure, high temperature, low temperature, temperature shock, solar radiation, rain, humidity, salt fog, dust, vibration, and shock. The P110 radio also meets the Electronic Industry Association RS316B electrical and mechanical specifications. The Motorola Accelerated Life Test (ALT) assures that possible failures brought on by field stress and abuse are identified and designed out of your radio before it reaches your hands.

All of these features provide for better, yet more cost effective communications for you.
Inspection

When you receive your packaged P110 Radio, inspect the shipping carton for any signs of damage. Next, remove and check the contents of the packing case to be sure that all items ordered have been included. Contents of the packing case may be different from those listed if optional accessories were ordered.

Packaged Model Contents

- P110 Radio
- Heliflex Antenna (VHF Models) or Flexible Whip Antenna (UHF Models)
- Rapid Charge High Capacity Nickel-Cadmium Battery
- Operating Instructions Manual
- Compact 10 Hour Charger and Transformer
- Carry Holder
- 3-inch Spring Action Belt Clip

Inspect the equipment thoroughly. If any part of the equipment has been damaged in transit, report the extent of the damage to the transportation company immediately.
Controls, Switches, Indicators, and Connectors

**Controls, Switches, Indicators, and Connectors**

**On/Off/Volume Control**
Turns the radio on and off and adjusts the volume level.

**Rotary Channel Selector Switch**
Selects the operating channel.

**LED Indicator**
A bi-colored light-emitting diode (LED) indicates the radio’s operating status.

**Accessory Connector**
Provides accessibility for connection to remote accessories such as a remote speaker microphone.

**NOTE**
The Accessory Connector Cover protects the Accessory Connector. This cover should remain in place whenever the radio is not being used with an accessory.
Push-To-Talk (PTT) Button

When depressed and held, engages the transmitter and puts radio in the transmit mode. When released, the radio operates in the receive mode.

Control Button

This can be programmed as a Monitor, Volume Set (manual monitor), or Scan Nuisance Delete button. If programmed for Monitor or Volume Set, pressing the Control button will monitor the channel for activity. Neither tone nor digital Private-Line (PL/DPL) squelch is active when monitoring. If programmed for Scan Nuisance Delete, pressing the Control button will delete a nuisance channel while in the scan mode.

Antenna

Heliflex (VHF models) or a Flexible Whip (UHF models) with threaded base.
Alert Tone Indicators

**Power-Up**

Each time the radio is turned on, a microcomputer and synthesizer self-test occurs. A high pitched alert tone is generated for approximately 1/8 second to indicate that the microcomputer and synthesizer are functioning properly. A second low pitched tone is generated if the start-up test is not successful.

**Transmit on Blank or Receive-Only Channels**

Pressing the PTT button while tuned to a blank or "receive-only" channel causes an alert tone. The tone continues as long as the PTT button is depressed. The radio transmitter is not enabled.

**Transmit Inhibition Busy Channel with Busy Channel Lockout**

Pressing the PTT button during a "busy channel" condition (other than your PL/DPL group) generates a continuous busy tone that lasts as long as the button is depressed.

**Time-Out Timer**

The time-out timer limits the amount of transmission time to a preset length (off, 30 or 60 seconds). At the end of this time an alert tone indicates that your transmission has been cut off. The alert will continue as long as the PTT switch is depressed.
Low Battery Alert

If the battery is low on your radio, an audible alert tone alerts you during transmit or receive mode. During transmit, on the release of the PTT button, the radio emits 2 medium pitched chirps. During receive/standby mode, the radio emits 2 medium pitched chirps. These tones emit approximately every 20 minutes during transmit or receive mode until the battery is completely drained of power.
Scan and Signalling Alert Tones

Transmit on Radios with PTT-ID

When the PTT button is depressed a side tone is heard as the unit I.D. is being transmitted. When the tone ends, start your voice message in the standard manner.

Selective Call

A 2 beep alert tone is generated whenever a Selective Call is received, the radio unsquelches and the callers message is heard.

Call Alert

A 4 beep alert tone is generated whenever a Call Alert (page) is received. The alert tone repeats until the PTT or monitor button is pressed.

Scan Activate

A 1 beep alert tone is heard whenever scan is initiated by selecting a preprogrammed rotary scan channel location.

Priority Alert Tone

A 1 beep alert tone is heard if the radio is scanning and a conversation is initiated on the priority scan channel.

Scan Talkback Tone

A medium pitched 1 beep alert tone is sounded when you rotate the channel selector knob out of the scan position after the radio has locked on a channel and reaches the last active channel within the channel scan list.
Multifunction LED Indicators

Transmit Mode (PTT Button Pressed)
- Continuous Red Light - Normal Transmission
- Flashing Red Light - Low Battery

Receive Mode (PTT Button Not Pressed)
- Flashing Red Light - Channel Busy, indicates the presence of activity on the operating channel
- Continuous Yellow Light (4 seconds) - Channel Monitor Active (PL/DPL Disable)
- Flashing Yellow Light - Selective Call or Call Alert present
- Flashing Green Light - Channel Scan feature active
**Dealer Programmable Functions**

**Per Radio Functions**
- Default
  - All Alert Tones: Enabled
  - All LED Indicators: Enabled
  - Low Battery Alert: Enabled
  - Time-Out-Timer: Enabled to 60 seconds
  - Channel Busy Light: Disabled
  - Monitor Button: Monitor

**Per Channel Functions**
- Default
  - Rx Frequency: Test
  - Tx Frequency: Test
  - PL/DPL Decode: Test
  - PL/DPL Encode: Test
  - Rx Only Channel: Disabled
  - Busy Channel Lockout: Disabled

**Channel Scan Functions**
- Default
  - Channel Scan List: Test
  - TalkBack Channel Scan: Enabled
  - Scan Activate Tone: Enabled
  - Priority Alert Tone: Disabled
  - TalkBack Channel Tone: Enabled

**Signalling Functions**
- Default (Not Available on 2 Channel Models)
  - Quik-Call II Signalling: Disabled
  - MDC-1200 Signalling: Test
Getting Started

**Antenna Installation**

Fasten the antenna to the radio by placing the threaded end of the antenna into the large threaded antenna bushing on top of the radio. Rotate the antenna clockwise until tightly fastened into place.
Getting Started

Battery Installation or Replacement

To Install Battery

1. Align the tabs on the top of the battery to the guide rails on the radio (Figure 2).
2. Press battery and radio together.
3. Slide the battery towards the top of the radio until the battery latches click into place (arrow 1).

To Remove Battery

The basic operation needed for battery removal is illustrated in Figure 2.

1. Disengage both battery latches, located on each side of the bottom of the radio (arrow 1).
2. Move battery down on guide rails about 1/2 inch (arrow 2).
3. Pull the battery away from the guide rails and remove from housing.

On page 12 there are two different methods for battery removal.

NOTE
Before each removal attempt, push battery bottom towards top of radio to properly seat battery. Figures 3 & 4 show right-handed operators, use mirror image of figures for left-handed users.
Method A:
1. Hold radio horizontally with speaker side facing down (Figure 3).
2. Pull battery latches, at the same time, towards the front of the radio housing using your thumb and index finger (arrows 1).
3. Use your thumb to slide the battery towards the bottom of the radio about 1/2 inch (arrow 2).
4. Pull the battery away from the guide rails and remove from housing.

Method B:
1. Hold radio with the speaker side in the palm of your right hand (Figure 4).
2. Push battery latches, at the same time, towards the front of the radio housing using your thumb and index finger (arrow 1).
3. Use your thumb of your right hand to slide the battery towards the bottom of the radio about 1/2 inch (arrow 2).
4. Pull the battery away from the guide rails and remove from housing.
Operation

To Power-Up

Rotate the volume control 1/2 turn clockwise to turn on the radio. A power-up alert tone is generated for approximately 1/8 second to indicate that the radio has passed a self-test of the microcomputer.

NOTE
If the short power-up alert tone is not generated, or if a second low alert tone is generated (indicating corrupted radio programming), turn the radio off, check the battery (charge or replace if necessary), and turn the radio back on again. If the power-up alert tone is still not generated, a fault exists in the radio. Contact your local Motorola Radius dealer.

To Receive

1. Set the channel selector to the desired channel position.

2. Listen for a transmission and adjust the volume control to a comfortable listening level. If no transmission is heard, depress and hold the volume control button to unsquelch the radio and adjust the volume to a comfortable listening level.

3. The radio is now set to receive all calls on the selected frequency.

4. If you wish to monitor a channel (disable PL/DPL) press the side mounted control button. If programmed as a Monitor Button, the LED glows yellow for 4 seconds to confirm that the coded squelch is disabled. Any time the PTT button is pressed when the P110 is in the monitor mode (disable PL/DPL), the LED temporarily glows yellow to remind you that this state is active. The radio remains in the monitor mode until the control button is pressed again, to reverse the state.
5. If programmed as a Volume Set Button (manual monitor), the radio has the ability to monitor until the button is released. While pressed, a “rushing noise” will be present which indicates the current level setting of the volume control.

**NOTE**
All P110 radio models have an internal squelch setting which is adjusted at the factory. The squelch level setting is not a user-operated control; however, it may be reprogrammed using the Radio Service Software available at your local Motorola Radius dealer.

**To Transmit**

1. Set the channel selector to the desired channel position.

2. Do not interrupt another user. Listen for activity on your channel. If the channel on which you are transmitting is programmed to receive PL/DPL, momentarily depress the control button to listen for channel activity. The channel must be clear before transmitting.

3. While holding the radio in a vertical position with the speaker-microphone grille two to three inches from your mouth, press the PTT button on the side of the radio and speak slowly and clearly into the grille area. When finished transmitting, release the PTT button to receive. When the PTT button is depressed, the LED glows red and remains on for the entire length of the transmission, and turns off when the PTT button is released.

**NOTE**
When the PTT button is depressed (and as long as the PTT button remains depressed), the battery voltage is automatically monitored and if the voltage is low, the LED flashes red to alert you of the low battery condition. In addition, a double alert tone is sounded when the PTT button is released.
Operation with Standard Features

To fit your particular needs, a number of features are available to enhance the operation of your P110 radio. These capability features are described for you in this section.

**Time-Out Timer**

The Time-Out Timer (T.O.T) feature alerts you if the transmitter is keyed for a long period. This feature prevents channel tie-up and excess battery drain in case of an inadvertent keying of the transmitter. The radio operates normally in the receive mode with the T.O.T. feature. However, in the transmit mode, a single transmission (uninterrupted depression of the PTT button) "times-out" after 30 or 60 seconds and the radio reverts back to the receive mode, even with the PTT button remaining depressed. After the 30 or 60 second time out, a continuous alert tone is generated in the receive mode until the PTT button is released.

**Volume Set**

When programmed as a Volume Set button, the Control button will initiate the volume set feature. This gives the radio the ability to monitor the current radio volume level whenever this button is pressed. A “rushing noise” is present for the duration of the button press that indicates the current level setting of the volume control.
Busy Channel Lockout

Busy Channel Lockout is a privacy feature that prevents the radio from listening to or transmitting over conversations outside its talkgroup, keeping lines of communication clear. Whenever the radio is not allowed to talk, you will hear busy tone if you attempt to transmit. The radio will be allowed to transmit:

1. when the channel is clear
2. during the group’s repeater hang time, until a carrier drop is seen
3. when receiving transmissions from your own group (Common PL/DPL code).

Whenever a channel is programmed for PL/DPL busy channel lockout, pressing the Control button does not put the radio into the carrier squelch mode. This means that the radios with PL/DPL busy channel lockout programmed cannot monitor or listen to the other groups’ transmissions. Furthermore, the volume set function is also disabled on any channel that is preprogrammed as a PL/DPL busy channel lockout channel.

On carrier squelch channels, Transmit Inhibit is available to prohibit transmissions when any carrier is present.
You can encode Dual Tone Multiple Frequency (DTMF) tones through the optional 12 button keypad. The tones are used for:

- access to the landline telephone network
- remote control operation

**DTMF Telephone Interconnect Operation**

1. Press and hold the PTT button.
2. Press the desired numeric keys on the DTMF keypad to transmit the tones. As long as the PTT button is held while the digits are pressed, the corresponding DTMF tones are transmitted.

**NOTE**

After this operation is completed, the PTT button resumes its normal function.
Optional Enhancements
(Not Available on 2 Channel Models)

Channel Scan
This optional feature allows you to monitor a number of channels. The receiver checks each channel in a preprogrammed list for activity (up to 7 channels on the 8 channel model).

Two types of channel scan are offered in the P110: non-priority and priority scan. Both types of channel scan are available with PL/DPL operation. To initiate the scan feature, rotate the channel selector switch to the channel in which scan is programmed. If a conversation is initiated on any of the channels that the radio is scanning, the radio stops on the active channel and you can listen to the conversation.

NOTE
The P110 scan list is not operator selectable; however, it may be reprogrammed through the Radio Service Software available at your local Motorola Radius dealer.

- Non Priority Channel Scan
  With this type of scan operation, no one scan channel has priority over another. The scanner stops on the first scan channel with activity, and when the activity is over and a 3-second "hang-time" has expired, proceeds to the next scan channel.

- Priority Channel Scan
  Any one of the radio's programmed channels may be designated as the priority channel. Whenever activity occurs on the priority channel, the scanner automatically stops there and the priority alert tone is heard. Even if you are listening to another channel in the scan list, the radio automatically goes to the priority channel when there is activity.

- PL/DPL Channel Scan
  Private-Line operation is offered with priority and non-priority channel scan. With this mode of scanning operation, the scanner stops on only the scan channels coded with the proper PL/DPL tone if PL/DPL signalling is active when you initiate scan.

NOTE
If the monitor mode is not active when the scanning feature is initiated, the radio performs a PL type of scan. If the monitor mode is active when the scanning feature is initiated, the radio performs a CSQ type of scan.
Optional Enhancements  

- **Talkback Scan**  
  This is an option of the channel scan features listed on page 19 that is used when the PTT button is pressed when scanning has stopped on a channel. When transmit or receive activity ceases on a scan channel, a "hang time" of approximately 3 seconds occurs prior to the radio resuming scan for other channel activity. This "hang time" gives you time to receive or respond to a call before scanning resumes. The "hang-time" is programmable through the Radio Service Software available at your local Motorola Radius Dealer.

- **Designated Channel Scan (Home Revert)**  
  Pressing the PTT button while the radio is scanning causes the radio to transmit on the preprogrammed designated channel location. This channel location is programmable through the Radio Service Software available at your local Motorola Radius Dealer.

  **NOTE**  
  If both Designated Channel Scan and Talkback Scan are selected, the radio transmits on the active channel. If however, there are no active channels, the radio transmits on the Designated Channel.

- **Scan Talkback Tone**  
  The Scan Talkback Tone feature enables you to find the last active channel received during scan mode. A beep is emitted when the channel selector knob is rotated to the last channel received during scan.

- **Scan Nuisance Delete**  
  When a conversation occurs and it is not your priority channel or designated scan channel, you can temporarily eliminate this channel from the scan list by pressing the side Control button (if the Control button is programmed for Scan Nuisance Delete). To add the deleted channel back to the pre-programmed scan list, you must exit and reenter the scan function.

  **NOTE**  
  The Volume Set feature is replaced whenever the side control button is programmed to operate the Scan Nuisance Delete feature.
Signalling Enhancements

Quik-Call II Decoding

Call Alert
Call Alert works similarly to tone-only pagers. When a Call Alert (page) is received, a series of 4 beep decode tones are heard while the LED flashes yellow. The LED continues flashing yellow and alert tone continues until the call alert is acknowledged by the radio. If you transmit by pushing the PTT button or change the rotary channel selector while a Call Alert signal is in progress, the LED stops flashing and the Call Alert tone is disabled.

Voice Selective Call
This feature operates like a standard pager providing a one-time voice message. When a Voice Selective Call is received by the radio, a one-time 2 beep decode tone is heard while the LED flashes yellow. The radio unmutes and the voice message is heard. The LED continues flashing yellow while the voice message is heard. The Voice Selective Call feature does not require any action to acknowledge the message and after the transmission is completed, the radio returns to normal operation.

MDC-1200 Encoding

PTT ID
When on a channel with the PTT ID feature, the radio transmits an identification code (unit ID) to the base station, indicating which portable is in operation. This code is sent whenever the PTT button is pressed. A sidetone is heard as the ID is being transmitted; when the tone ends, start your voice message in the standard manner. The LED glows red during the time that the ID is sent out.

Signalling and Channel Scan
Signalling and channel scan are compatible in the P110 radio. However, during scan operation, a Voice Selective Call on a particular channel could be missed since the radio may not be checking that channel when the Voice Selective Call is being sent.

It is recommended that priority scan be selected and the signalling channel be designated the priority channel to improve the likelihood that the Voice Selective Call is received.
Battery Information

The P110 radio receives its power (7.5V DC) from a rechargeable nickel-cadmium battery as listed in the accessories section. These batteries, designed specifically for use in the P110 radio, are a safe, dependable power source. Proper care of the battery will ensure its effectiveness and allow for peak performance of the radio.

Recharging Nickel-Cadmium Batteries

Recharge the battery before use to ensure optimum capacity and performance. The battery was designed to be used only with a Motorola P110 charger. Charging in non-Motorola equipment may lead to battery damage and void the battery warranty.

NOTE

When charging a battery that is attached to a radio, always turn the radio off to ensure a full charge.

Charging Temperature

The battery should be about 77° (room temperature) whenever possible. Charging a cold battery (below 50°F) may result in leakage of electrolyte, and ultimately, in failure of the battery. Charging a hot battery (about 95° F) results in reduced discharge capacity, affecting the performance of the radio. P110 rapid rate battery chargers contain a temperature sensing circuit.
to ensure that the battery is charged within these temperature limits. If the charger is not performing a rapid rate charge, the charger’s LED flashes red to indicate that the battery is being charged at a slow trickle rate. For additional information on batteries and battery charging, refer to the battery charger information in the service manual.

**Short Circuit**

Care should be taken to avoid external short-circuiting of the battery.

---

**CAUTION**

A sustained high rate discharge (e.g., a paper clip placed accidentally across the battery contacts) may permanently damage the battery, void the battery warranty, and create a burn or fire hazard.

---

**Memory Effect (Reduced Charge Capacity)**

The Memory Effect was a phenomenon which caused a temporary loss in battery capacity or voltage due to repetitive shallow discharging or low term overcharging. This Memory Effect has been virtually eliminated in Motorola batteries with the use of the latest in cell technology from our selected cell suppliers.

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**Nickel-Cadmium Battery Disposal**

For disposition, Nickel-cadmium sealed rechargeable batteries should be delivered to an authorized metals reclamation dealer (refer to inside front cover of this manual).

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**WARNING**

DO NOT DISPOSE OF ANY BATTERIES IN A FIRE AS THEY MAY EXPLODE!
NOTE
THE BATTERY IS SHIPPED FROM THE FACTORY UNCHARGED AND MUST BE CHARGED BEFORE USE.

WARNING
TO REDUCE RISK OF INJURY, CHARGE ONLY MOTOROLA NICKEL-Cadmium TYPE RECHARGEABLE BATTERIES LISTED. OTHER TYPES OF BATTERIES MAY BURST, CAUSING PERSONAL INJURY AND DAMAGE.

• Do not expose charger to rain or snow.
• Use of an attachment not recommended or sold by Motorola may result in a risk of fire, electric shock, or injury to persons.
• To reduce risk of damage to electric transformer and cord, pull by the transformer rather than the cord when disconnecting charger.
• Position cord so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
• An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used make sure:
  (1) That pins on plug of extension cord are the same number, size and shape as those on transformer,
  (2) That extension cord is properly wired and in good condition, and
(3) The cord size is 18AWG for lengths of up to 100 feet, and 16AWG for lengths up to 150 feet.

• Do not operate charger with damaged cord or plug — replace them immediately.

• Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to your local Motorola Radius technician.

• Do not disassemble charger; take it to your local Motorola Radius dealer when service or repair is required. Incorrect reassembly may result in risk of electric shock or fire.

• To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.

To Operate Charger

1. Insert the battery, with or without the radio, into the charger pocket. (Be sure that the radio is off).

2. Insert plug into the charger and plug the transformer into the appropriate AC power outlet.

3. When the battery is fully inserted, the LED glows red. The LED continues to glow red while the battery is charging.
4a. For Single-Unit Standard Rate Battery Chargers only:
When a standard-charge battery reaches full charge, no change in the LED occurs (red glow remains). The battery fully charges in 10 hours.

**NOTE**
You can turn the radio on while it is in the charger and have it receive normally. However, allow at least 25% more time for the battery to reach full capacity. DO NOT TRANSMIT WHILE THE RADIO IS IN THE CHARGER.

4b. For Single-Unit and Multi-Unit Rapid-Charge Battery Chargers only: When charging a rapid-charge battery, the LED glows green indicating CHARGE COMPLETE when the battery reaches full charge. This LED also indicates that the battery is now charging at a trickle rate. A LED flashes red indicating that the battery may be out of "rapid charge range". The rapid charge automatically begins when the battery is within the correct range. Typical charge times for Rapid-Charge Battery Chargers are as follows:

60-90 Minutes for High Capacity Battery

**NOTE**
A new battery or one which has not been used for several months may cause a premature fully charged indication. These batteries should be trickle charged overnight before putting them into service.

5. If the LED does not glow red when the battery is inserted into the charger, check the battery and charger contacts to be sure they are clean. There are no user serviceable parts in the charger. If the charger fails to operate, contact your local Motorola Radius dealer.
Accessories

Radius offers several accessories to increase communications efficiency. Many of the accessories available are listed below, but for a complete list, consult your Radius dealer.

Antennas:
- NAD6502 — Black 146-174 MHz VHF Antenna (Standard With Unit)
- HAD9338 — Yellow 136-162 MHz VHF Antenna
- HAD9742 — Black 136-162 MHz VHF Stubby Antenna
- HAD9743 — Blue 162-174 MHz VHF Stubby Antenna
- HAD9934 — Pink 174-195 MHz VHF Antenna
- NAE6483 — None 403-520 MHz UHF Antenna (Standard With Unit)
- NAE6521 — Red 400-440 MHz UHF Stubby Antenna
- NAE6522 — Green 438-470 MHz UHF Stubby Antenna
- NAE6523 — Black 470-520 MHz UHF Stubby Antenna
- HAD9728 — None Tunable Antenna Kit (VHF)

NOTE
Each of the color coded antennas listed is designed to cover only the frequency split indicated. Therefore, it is important to order the correct antenna (frequency split) to match a specific customer frequency.

Carrying Accessories:
- HLN9985 Waterproof Bag
- HLN8153 Nylon Carry Case
- HLN9076 Molded Carry Holder With Belt Clip
- HLN8255 Replacement 3" Spring Action Belt Clip
- HLN9012 Leather Carry Case With Belt Loop
- HLN9013 Leather Carry Case With Swivel
- HLN9014 DTMF Leather Carry Case With Swivel
- HLN9015 Replacement Strap For Leather Carry Case
- HLN9084 Replacement Strap for Molded Carry Holder (HLN9076)
- HLN9149 Swivel Belt Loop Adapter (for use with HLN8153 and HLN9012)
- HLN8052 Wrist Strap
- HLN8414 Chest Pack Carry Holder
- NTN5243 Shoulder Strap (for all carry cases)
- NTN5629 Replacement 3" Swivel Belt Loop
- HLN9035 Replacement 2-1/2" Swivel Belt Loop

Vehicular Accessories:
- HLN9719 Vehicular Charger 1 Hour/12 Volt
- NDN4014 Vehicular Battery Eliminator

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Accessories P10 Portable Radios

**Nickel-Cadmium Battery Chargers:**
- HTN9630 Charger 1 Hour/120 Volt
- HTN9802 Charger 1 Hour/220 Volt
- HTN9803 Charger 1 Hour/240 Volt
- HTN9167 Charger 90 Minute/120 Volt
- HTN9168 Charger 90 Minute/220 Volt
- HTN9702 Charger 10 Hour/120 Volt
- HTN9804 Charger 10 Hour/220 Volt
- HTN9805 Charger 10 Hour/240 Volt
- HTN9748 Charger Multi 6 Unit 1 Hour/120 Volt
- HTN9811 Charger Multi 6 Unit 1 Hour/220 Volt
- HTN9812 Charger Multi 6 Unit 1 Hour/240 Volt
- HTN9164 Charger Multi 6 Unit 90 Minute/120 Volt
- HTN9165 Charger Multi 6 Unit 90 Minute/220 Volt
- HLN9405 Charger Conversion Kit Multi 6 Unit/120 Volt
- HLN9406 Charger Conversion Kit Multi 6 Unit/220 Volt
- HLN9407 Charger Conversion Kit Multi 6 Unit/240 Volt
- HLN9944 Wall Mounting Bracket For Multi Unit Charger
  (for use with HTN9748, HTN9811 and HTN9812)
- HLN9293 Wall Mounting Bracket For Multi Unit Charger
  (for use with HTN9748, HTN9164 and HTN9165)

**Batteries:**
- HNN8148 1200 mAh High Capacity Battery

**Audio/RF Accessories:**
- HMN9787 Light Weight Headset With Swivel Boom Mic
- HMN9013 Lightweight Headset II With Swivel Boom Mic
- BDN6647 Medium Weight Headset With Swivel Boom Mic
- BDN6648 Heavy Duty Headset With Swivel Boom Mic
- HMN9021 Medium Weight Dual Muff Headset (over the head)
- HMN9022 Medium Weight Dual Muff Headset (behind the head)
- HMN9725 Remote Speaker Microphone
- HMN9754 2 Piece Surveillance Microphone
- BDN6646 Ear Microphone With PTT Interface
- BDN6706 Ear Microphone With VOX Interface
- HMN9752 Earpiece With Volume Control
- HMN9727 Earpiece Without Volume Control
- HLN9756 BNC Adapter
- HLN8096 Audio Accessory Security Clamp
- HLN3138 DTMF Retrofit for 8 Channel Models Only
- BDN6720 Flexible Ear Receiver - Earpiece w/o Volume Control
  (Flexible Plastic Earloop, Speaker rests External to Ear)

*Prices and Availability Subject to Change Without Notice*
Troubleshooting

If you experience difficulty, check the following items before requesting service.

1. Review steps under OPERATION.
2. Be sure the frequency select switch is set to the correct channel.
3. Replace or recharge the battery.
4. If reception is poor, check the antenna. It must be undamaged and operated in the vertical position for best reception.
5. Try several different operating locations, especially when operating the radio inside buildings.
6. Check transmitter by transmitting to another portable radio or communications receiver. If the receiver has a signal strength ('S') meter, make comparison readings against another portable radio. Also check the antenna.
Service

Because this unit contains a radio transmitter, Federal law prohibits anyone from making any internal adjustments to the transmitter unless specifically licensed to do so by government regulations. If any operational difficulties should arise, report them to your local Motorola Radius dealer.

Proper repair and maintenance will assure efficient operation and long life for this radio.
General Radio Care

1. Avoid physical abuse of your radio such as carrying it by the antenna or remote microphone.

2. Wipe the battery contacts with a lint-free cloth to remove dirt, grease, or other material which may prevent good electrical connections.

3. When not in use, keep the accessory jack covered with the protective cap.

4. Clean the radio exterior using a cloth moistened with water. See inside front cover.

CAUTION
Use of chemicals such as detergents, alcohol, aerosol spray, and/or petroleum products may be harmful and damage the radio housing and cover.
Safety Information

The Federal Communications (FCC) with its action in General Docket 79-144, March 13, 1985 has adopted a safety standard for the human exposure to radio frequency (RF) electromagnetic energy emitted by FCC-regulated equipment. Proper operation of this radio will result in user exposure substantially below the FCC recommended limits.

**DO NOT** hold the radio such that the antenna is too close to, or touching exposed parts of the body, especially the face or eyes while transmitting. The radio performs best if the microphone is two or three inches away from the lips and the radio is vertical.

**DO NOT** hold the transmit (PTT) button on when not actually desiring to transmit.

**DO NOT** allow children to play with any radio equipment containing a transmitter.

**DO NOT** operate a portable transmitter near unshielded electrical blasting caps or in an explosive atmosphere unless it is a type especially qualified for such use.

**DO NOT** operate the portable with a headset or other audio accessories at high volume levels. Hearing experts advise against continuous high volume operation. If you experience a ringing in your ears, reduce volume level or discontinue use.
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Licensing Information

Your Radius radio operates on FM radio communication frequencies and is subject to the Rules and Regulations of the Local Communications Governing Agencies. These agencies may require that all operators using Private Land Mobile or General Mobile Radio frequencies obtain a radio license before operating their equipment. The operator receives a license for use of the radio equipment under a specific eligibility and on a particular frequency or set of frequencies. To determine eligibility for use of Private Land Mobile Service frequencies contact your local communications governing agency. They are able to supply information required to properly obtain and complete the license application form.

Agency addresses for several countries are listed below:

In the United States contact:
Federal Communications Commission
Consumer Assistance
Branch License Division
Gettysburg, PA 17326
Tel.(717) 337-1212

In Canada contact:
Head Equipment Approval Unit
Department of Communications
1241 Clyde Avenue
Ottawa, Ontario K2C-1Y3
Canada
Tel(613) 998-5968

In the United Kingdom contact:
Radio Communications Agency
P.O. Box 20
London
SE1 8TZ
Tel 71 215 2152
In Mexico contact:

Secretaria De Comunicaciones Y Transportes
Direccion General De Politicas
Y Normas De Comunicaciones
Av. Eugenia No. 197-5o. Piso
Mexico, D.F. 06700

In Singapore contact:

Telecommunications Authority of Singapore
3rd Storey Comcenter
31 Exeter Road
Singapore, 0923
Singapore

In Japan contact:

Communications Research Laboratory
Ministry of Posts & Telecommunications
MKK Building
7-2,5-chome
Yashio, Shinagawaku
Tokyo, 140 Japan

In Hong Kong Contact:

Hong Kong Telecommunications Authority
Telecommunications Branch
Post Office, Hong Kong
6/F Sincere Building
173 Des Voeux Road Central
Hong Kong

In other countries, contact your local Radius dealer for licensing information.