



MOTOROLA

RDX SERIES TWO-WAY RADIO

User's Guide

DRAFT



6880309T01

Models RDU2020 and RDV2020

Introduction

Thank you for purchasing a Motorola® RDX Series Radio. Your radio is a product of Motorola's 70 plus years of experience as a world leader in the designing and manufacturing of communications equipment. The RDX Series radios provide cost-effective communications for businesses such as retail stores, restaurants, schools, construction sites, manufacturing, property and hotel management and more. Motorola professional two-way radios are the perfect communications solution for all of today's fast-paced industries.

Note: Please read this manual carefully to ensure you know how to properly operate the radio before use.

Package Contents

- Radio
- Spring Action Belt Clip
- Lithium Ion Battery
- 10-Hour Charger
- User's Guide
- Warranty Card
- Drop-In Charging Tray (not included with all models)

For product-related questions, please contact:

1-800-448-6686 in the USA

1-800-461-4575 in Canada

1-888-390-6456 on your TTY (Text Telephone)

On the web, please refer to: www.motorola.com/radios/professional

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FCC Licensing Information

RDX Series professional two-way radios operate on radio frequencies that are regulated by the Federal Communications Commission (FCC). In order to transmit on these frequencies, you are required to have a license issued by the FCC.

Application is made available on FCC Form 601 and Schedules D, H, and Remittance Form 159.

To obtain these FCC forms please request document **000601** which includes all forms and instructions. If you wish to have the document faxed, mailed or have questions, please use the following contact information.

Faxed contact the Fax-On- Demand system at:	Mailed call the FCC forms hotline at:	Questions regarding FCC license contact the FCC at:
1-202-418-0177	1-800-418-FORM 1-800-418-3676	1-888-CALL-FCC 1-888-225-5322 Or: http://www.fcc.gov

Before filling out your application, you must decide which frequency(ies) you can operate on. See Frequencies and Bandwidths.

For questions on determining your radio frequency, please call Motorola Product Services at: 1-800-448-6686.

Changes or modifications not expressly approved by Motorola may void the user's authority granted by the FCC to operate this radio and should not be made. To comply with FCC requirements, transmitter adjustments should be made only by or under the supervision of a person certified as technically qualified to perform transmitter maintenance and repairs in the private land mobile and fixed services as certified by an organization representative of the user of those services.

Replacement of any transmitter component (crystal, semiconductor, etc.) not authorized by the FCC equipment authorization for this radio could violate FCC rules.

Note: Use of this radio outside the country where it was intended to be distributed is subject to government regulations and may be prohibited.

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

This document contains important safety and operating instructions. Please read these instructions carefully and save them for future reference.

Before using the battery charger, read all the instructions and cautionary markings on (1) the charger and (2) the battery (3) and on the radio using the battery.



1. To reduce risk of injury, charge only the rechargeable Motorola authorized batteries. Other batteries may explode, causing personal injury and damage.
- WARNING** 2. Use of accessories not recommended by Motorola may result in risk of fire, electric shock, or injury.
3. To reduce risk of damage to the electric plug and cord, pull by the plug rather than the cord when disconnecting the charger.
4. An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in risk of fire and electric shock. If an extension cord must be used, make sure that the cord size is 18AWG for lengths of up to 100 feet (30.48m), and 16AWG for lengths up to 150 feet (45.72m).

Warnings (Cont.)

5. To reduce risk of fire, electric shock, or injury, do not operate the charger if it has been broken or damaged in any way. Take it to a qualified Motorola service representative.
6. Do not disassemble the charger – it is not repairable and replacement parts are not available. Disassembly of the charger may result in risk of electrical shock or fire.
7. To reduce risk of electric shock, unplug the charger from the AC outlet before attempting any maintenance or cleaning.

Operational Safety Guidelines

- This equipment is not suitable for outdoor use. Use only in dry locations/conditions.
- Connect equipment only to an appropriately fused and wired supply of the correct voltage (as specified on the product).
- When not in use, disconnect the transformer from the AC outlet.
- The socket outlet to which the transformer is connected should be close by and easily accessible.
- In equipment using fuses, replacements must comply with the type and rating specified in the equipment instructions.
- Maximum ambient temperature around the transformer unit must not exceed 40°C (104°F).
- Output power from the transformer unit must not exceed the ratings stated on the product label located on the bottom of the charger.
- Make sure the cord is located where it will not be stepped on, tripped over, or subjected to water, damage, or stress.

Product Safety and RF Exposure for Portable Two-Way Radios

The information provided in this document supersedes information contained in user guides published prior to **February 2002**.



C a u t i o n

BEFORE USING THIS RADIO, READ THIS INFORMATION WHICH CONTAINS IMPORTANT OPERATING INSTRUCTIONS FOR SAFE USAGE AND RF ENERGY

AWARENESS AND CONTROL INFORMATION AND OPERATIONAL INSTRUCTIONS FOR COMPLIANCE WITH RF ENERGY EXPOSURE LIMITS IN APPLICABLE NATIONAL AND INTERNATIONAL STANDARDS. ALSO READ THE OPERATIONAL INSTRUCTIONS FOR SAFE USAGE. FOR RADIOS THAT HAVE BEEN APPROVED AS INTRINSICALLY SAFE, READ THE INSTRUCTIONS AND INFORMATION ON INTRINSIC SAFETY ON PAGE 15.

RF Energy Exposure Awareness and Control Information and Operational Instructions for Occupational Use

Note: This radio is intended for use in occupational/controlled conditions where users have full knowledge of their exposure and can exercise control over their exposure to meet the occupational limits in FCC/ICNIRP and International standards. This radio device is NOT authorized for general population consumer use

This two-way radio uses electromagnetic energy in the radio frequency (RF) spectrum to provide communications between two or more users over a distance. It uses radio frequency (RF) energy or radio waves to send and receive calls. RF energy is one form of electromagnetic energy. Other forms include, but are not limited to, sunlight and x-rays. RF energy, however, should not be confused with these other forms of electromagnetic energy, which when used improperly, can cause biological damage. Very high levels of x-rays, for example, can damage tissues and genetic material.

Experts in science, engineering, medicine, health, and industry work with organizations to develop standards for safe exposure to RF energy. These standards provide recommended levels of RF exposure for both workers and the general public.

These recommended RF exposure levels include substantial margins of protection.

All Motorola two-way radios are designed, manufactured, and tested to ensure they meet government-established RF exposure levels. In addition, manufacturers also recommend specific operating instructions to users of two-way radios. These instructions are important because they inform users about RF energy exposure and provide simple procedures on how to control it. Please refer to the following websites for more information on what RF energy exposure is and how to control your exposure to assure compliance with established RF exposure limits:

<http://www.fcc.gov/oet/rfsafety/rf-faqs.html>

<http://www.osha.gov/SLTC/>

[radiofrequencyradiation/index.html](http://www.osha.gov/SLTC/radiofrequencyradiation/index.html)

Federal Communication Commission (FCC) Regulations (US markets only)

The FCC rules require manufacturers to comply with the FCC RF energy exposure limits for portable two-way radios before they can be marketed in the U.S. When two-way radios are used as a consequence of employment, the FCC requires users to be fully aware of and able to control their exposure to meet occupational requirements. Exposure awareness can be

facilitated by the use of a product label directing users to specific user awareness information. Your Motorola two-way radio has a RF Exposure Product Label. Do not remove this RF Exposure Label from the device. Also, your Motorola user manual, or separate safety booklet includes information and operating instructions required to control your RF exposure and to satisfy compliance requirements.

Compliance with RF Exposure Standards

Your Motorola two-way radio is designed and tested to comply with a number of national and International standards and guidelines (listed below) for human exposure to radio frequency electromagnetic energy. **This radio complies with the IEEE (FCC) and ICNIRP exposure limits for occupational/controlled RF exposure environments at operating duty factors of up to 50% talk-50% listen and is authorized by the IEEE/ICNIRP for occupational use only.**

In terms of measuring RF energy for compliance with these exposure guidelines, **your radio generates measurable RF energy only while it is transmitting (during talking), not when it is receiving (listening) or in standby mode.**

Note: The approved batteries, supplied with this radio, are rated for a 5-5-90 duty cycle (5% talk–5% listen–90% standby), even though this radio complies with IEEE/ICNIRP occupational exposure limits at usage factors of up to 50% talk.

Your Motorola two-way radio complies with the following RF energy exposure standards and guidelines:

- United States Federal Communications Commission, Code of Federal Regulations; 47 CFR part 2 sub-part J
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- Ministry of Health (Canada) Safety Code 6. Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz, 1999
- Australian Communications Authority Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard, 2003
- ANATEL ANNEX to Resolution No. 303 of July

2, 2002 "Regulation of limitation of exposure to electrical, magnetic and electromagnetic fields in the radio frequency range between 9 KHz and 300 GHz" and "Attachment to resolution # 303 from July 2, 2002"

RF Exposure Compliance and Control Guidelines and Operating Instructions

To control your exposure and ensure compliance with the occupational/controlled environment exposure limits, always adhere to the following procedures:

Guidelines:

- User awareness instructions should accompany device when transferred to other users.
- Do not use this device if the operational requirements described herein are not met.

Operating Instructions

- Transmit no more than the rated duty factor of 50% of the time. To transmit (talk), push the Push-To-Talk (PTT) button. To receive calls, release the PTT button. Transmitting 50% of the time, or less, is important because this radio generates measurable RF energy exposure only when transmitting (in terms of measuring for standards compliance).
- When worn on the body, always place the radio in

a Motorola-approved clip, holder, holster, case, or body harness for this product. Using approved body-worn accessories is important because the use of non-Motorola-approved accessories may result in exposure levels, which exceed the IEEE/ICNIRP occupational/controlled environment RF exposure limits.

- If you are not using a body-worn accessory and are not using the radio in the intended use position, along side the head in the phone mode (TETRA only), in front of the face in the hand held mode, then ensure the antenna and the radio are kept 2.5 cm (one inch) from the body when transmitting. Keeping the radio at a proper distance is important because RF exposures decrease with increasing distance from the antenna.

Hand-held Mode - Operating Instructions

- Hold the radio in a vertical position in front of the face with the microphone (and other parts of the radio including the antenna) at least 2.5 cm (one inch) away from the nose or lips.

Antenna should be kept away from the eye. Keeping the radio at a proper distance is important since RF exposures decrease with increasing distance from the antenna.



Phone Mode (TETRA only) - Operating Instructions

- When placing or receiving a phone call, hold your radio product as you would a wireless telephone. Speak directly into the microphone.

Approved Accessories

- Use only Motorola-approved supplied or replacement antennas, batteries, and accessories. Use of non-Motorola - approved antennas, batteries and accessories may exceed IEEE/ICNIRP RF exposure guidelines.
For a list of Motorola-approved accessories, visit the following website, which lists approved accessories for your radio model.

<http://www.motorola.com/governmentandenterprise>

Additional Information

For additional information on exposure requirements or other training information, visit <http://www.motorola.com/rfhealth>.

Electromagnetic Interference/Compatibility

NOTE: Nearly every electronic device is susceptible to electromagnetic interference (EMI) if inadequately shielded, designed or otherwise configured for electromagnetic compatibility.

Facilities

To avoid electromagnetic interference and/or compatibility conflicts, turn off your radio in any facility where posted notices instruct you to do so. Hospitals or health care facilities may be using equipment that is sensitive to external RF energy.

Aircraft

When instructed to do so, turn off your radio when on board an aircraft. Any use of a radio must be in accordance with applicable regulations per airline crew instructions.

Medical Devices

Pacemakers

The Advanced Medical Technology Association (AdvaMed) recommends that a minimum separation of 15 cms (6 inches) be maintained between a handheld wireless radio and a pacemaker. These recommendations are consistent with those of the U.S. Food and Drug Administration.

Persons with pacemakers should:

- ALWAYS keep the radio more than 15 cms from their pacemaker when the radio is turned ON.
- Not carry the radio in the breast pocket.
- Use the ear opposite the pacemaker to minimize the potential for interference.

Turn the radio OFF immediately if you have any reason to suspect that interference is taking place.

Hearing Aids

Some digital wireless radios may interfere with some hearing aids. In the event of such interference, you may want to consult your hearing aid manufacturer to discuss alternatives.

Other Medical Devices

If you use any other personal medical device, consult the manufacturer of your device to determine if it is adequately shielded from RF energy. Your physician may be able to assist you in obtaining this information.

Use of Communication Devices While Driving

Always check the laws and regulations on the use of radios in the areas where you drive.

- Give full attention to driving and to the road.
- Use hands-free operation, if available.
- Pull off the road and park before making or answering a call, if driving conditions or regulations so require.

**WARNING****OPERATIONAL WARNINGS****For Vehicles With Air Bags**

Refer to vehicle manufacturer's manual prior to installation of electronic equipment to avoid

interference with air bag wiring.

Do not place a portable radio in the area over an air bag or in the air bag deployment area. Air bags inflate with great force. If a portable radio is placed in the air bag deployment area and the air bag inflates, the radio may be propelled with great force and cause serious injury to occupants of the vehicle.

Potentially Explosive Atmospheres

(Explosive atmospheres refers to hazard classified locations that may contain hazardous gas, vapors, or dusts.)

Turn off your radio prior to entering any area with a potentially explosive atmosphere, unless it is a radio type especially qualified for use in such areas as "Intrinsically Safe" (for example, Factory Mutual, CSA, UL, CENELEC or ATEX Approved). Do not remove, install, or charge batteries in such areas. Sparks in a potentially explosive atmosphere can cause an explosion or fire resulting in bodily injury or even death.

The areas with potentially explosive atmospheres referred to above include fuelling areas such as below decks on boats, fuel or chemical transfer or storage facilities, areas where the air contains chemicals or particles, such as grain, dust or metal powders. Areas with potentially explosive atmospheres are often but not always posted.

Blasting Caps And Blasting Areas

To avoid possible interference with blasting operations, turn off your radio when you are near electrical blasting caps, in a blasting area, or in areas posted:

"Turn off two-way radio". Obey all signs and instructions.



Caution

OPERATIONAL CAUTIONS**Antennas**

Do not use any portable radio that has a damaged antenna. If a damaged antenna comes into contact with your skin, a minor burn can result.

Batteries

All batteries can cause property damage and/or bodily injury such as burns if a conductive material such as jewellery, keys, or beaded chains touch exposed terminals. The conductive material may complete an electrical circuit (short circuit) and become quite hot. Exercise care in handling any

charged battery, particularly when placing it inside a pocket, purse, or other container with metal objects.

INTRINSICALLY SAFE RADIO INFORMATION

The Intrinsically safe approval unit refers to a product that has been approved as intrinsically safe by an approval agency (for example FM Approvals, CSA, UL, CENELEC or ATEX) and certifies that a particular product meets the Agency's applicable intrinsic safety standards for specific types of hazardous classified locations. A portable radio that has been approved for intrinsic safety will have Approval label attached to the radio to identify the unit as being Approved for specified hazardous atmospheres. This label specifies the hazardous Class/Division/Group along with the part number of the battery that must be used. The Intrinsically Safe Approval Label will be located on the portable radio unit.

Operational Cautions for Intrinsic Safe Equipment

- Do not operate radio communications equipment in a hazardous atmosphere unless it is a type especially qualified (for example, FM, UL, CSA, or CENELEC or ATEX approved). An explosion or fire may result.
- Do not operate a radio unit that has been approved as intrinsically safe product in a hazard-

ous atmosphere if it has been physically damaged (for example, cracked housing). An explosion or fire may result.

Do not replace or charge batteries in a hazardous atmosphere. Contact sparking may occur while installing or removing batteries and cause an explosion or fire.



WARNING

Warnings for Radios Approved as Intrinsically Safe

Radios must ship from the Motorola manufacturing facility with the hazardous atmosphere capability and the intrinsic safety approval labelling (FM, UL, CSA, CENELEC or ATEX). Radios will not be upgraded to this capability and labeled once they have been shipped to the field. A modification changes the unit's hardware from its original design made by the original product.

- **Do not replace or change accessories in a hazardous atmosphere. Contact sparking may occur while installing or removing accessories and cause an explosion or fire.**
- **Turn the radio off before removing or installing a battery or accessory.**
- **Do not disassemble an intrinsically safe product in any way that exposes the internal circuits of the unit.**
- **Failure to use an intrinsically safe approved battery or Approved accessories specifically approved for the radio unit may**

result in the dangerously unsafe condition of an unapproved radio combination being used in a hazardous location.

- Unauthorized or incorrect modification of the intrinsically safe approved Product will negate the approval rating of the product.
- Incorrect repair or relabeling or any intrinsically safe Agency-approved radio could adversely affect the Approval rating of the unit.
- Use of a radio that is not intrinsically safe in a hazardous atmosphere could result in serious injury or death.

Repair



WARNING

REPAIRS FOR MOTOROLA PRODUCTS WITH INTRINSICALLY SAFE APPROVAL ARE THE RESPONSIBILITY OF THE

USER.

- Repairs to a Motorola FM approved radio product should only be done at a location that has been FM audited under the FM 3605 repairs and service standard.
- Contact Motorola for assistance regarding repairs and service of Motorola intrinsically safe equipment.

A repair constitutes something done internally to the unit that would bring it back to its original condition. Items not considered as repairs are

those in which an action is performed on a unit which does not require the outer casing of the unit to be opened in a manner which exposes the internal electrical circuits of the unit.

Do Not Substitute Options or Accessories

The Motorola communications equipment certified as intrinsically safe by the approving agency, (FM, UL, CSA, CENELEC or ATEX) is tested as a complete system which consists of the listed agency Approved portable, Approved battery, and Approved accessories or options, or both. This Approved portable and battery combination must be strictly observed. There must be no substitution of items, even if the substitute has been previously Approved with a different Motorola communications equipment unit. Approved configurations are listed by the Approving Agency (FM, UL, CSA, CENELEC or ATEX).

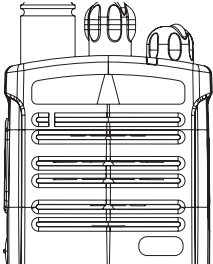
The Intrinsically Safe Approval Label affixed to radio refers to the intrinsically safe classification of that radio product, and the approved batteries that can be used with that system.

The manual PN referenced on the Intrinsically Safe Approval Label identifies the approved Accessories and/or options that can be used with that portable radio unit.

Using a non Motorola intrinsically safe battery and/or accessory with the Motorola approved radio unit will void the intrinsically safe approval of that radio unit.

Getting Started

This User's Guide covers **multiple RDX** Series models, and may detail some features your radio does not have. Your model number is shown on **the front of the radio, underneath the speaker**, and tells you the following information:

Model	Model Number Location	Frequency Band	Transmit Power (Watts)	Number of Channels
RDU2020		UHF	2	2
RDV2020		VHF	2	2

Installing the Spring Action Belt Clip

1. Slide the **spring action belt clip grooves** into the **belt clip rails on the back of the battery pack** and slide it down into **place** until it snaps.
2. To remove, push the **release tab on the back of the battery surface** and **pull the spring action belt clip upward to remove**.

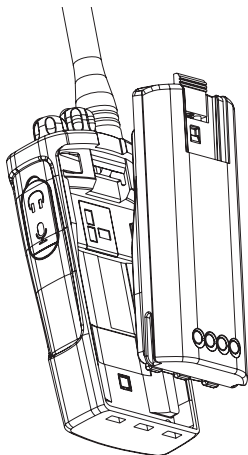
Note: In case of loss, please contact your point-of-sale or call 1-800-448-6686 to request replacement part number **4280383X62**.

Installing the **Lithium Ion Battery Pack**

Your radio is powered by an **Li-Ion battery pack**, which provides up to **22 hours*** of usage.

1. With the Motorola logo side up, **on the battery pack, place the battery into the radio.**
2. Push the battery into the battery compartment to fit **properly** into place.

*Based on 5% transmit/ 5% receive/ 90% standby standard duty cycle (**22 hours with battery save enabled or 18 hours with battery save disabled**).



Turning Your Radio On or Off

Turn clockwise for On or counterclockwise for Off.




The radio chirps and the LED briefly lights up..

Adjusting the Volume

You can set the volume by turning.

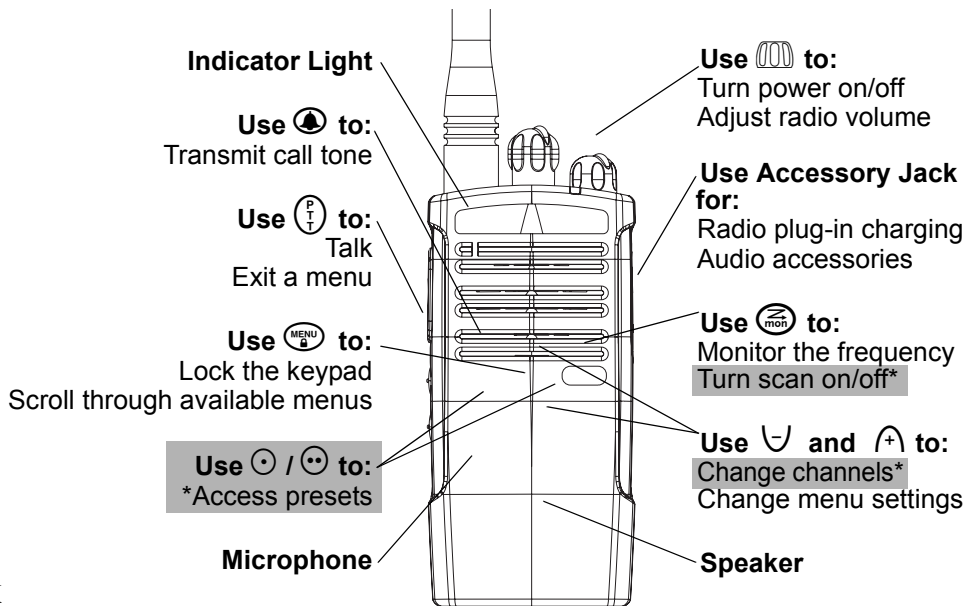
Note: Do not hold the radio too close to your ear when adjusting the volume or if it is at a high setting.

Using the Radio

1. Press and hold  to check for channel activity. If you hear static, the channel is clear to use. Do not transmit if someone is speaking on the channel. Press  again to stop monitoring the channel.
2. Press and hold  and speak into the microphone. To maximize clarity, hold the radio two-to-three inches away from your mouth.

Note: The LED light on the front of the radio lights up solid green red when transmitting.

Basic Operation



* XU2600 and XV2600 only

Battery and Charging Options

You have several battery and charging options on your RDX Series Two-Way Radio.

Li-Ion Battery

See “Installing the Lithium Ion Battery Pack” on page 19.

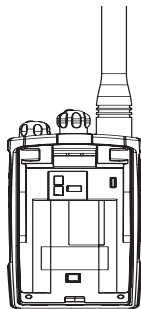
Alkaline Batteries

Your radio can also use 5 AA Alkaline batteries with the purchase of an Alkaline Battery Frame (sold separately); alkaline cells provide up to TBD hours* of radio use.

1. Slide the 5 - AA Alkaline batteries into the Alkaline Battery Pack (part number RHN1005), matching the markings inside of the compartment.
2. Snap the battery pack into the back of the radio into place.

Note: Your two-way radio will automatically acknowledge the use of Alkaline batteries in use.

*Please refer to the diagram and Battery Life on page 24.



Charging the Radio

1. Place the drop-in charging tray on a flat surface.
2. Insert the mini USB plug of the 10-hour charger into the USB port on the back of the drop-in charging tray.
3. Plug the AC adaptor into a power outlet. Insert the battery or radio into the tray with the Motorola logo or radio front facing the front of the charger.

Note: To extend battery life, do not overcharge. Charging the battery over the weekend is acceptable. If the radio is on while charging, it will take longer to fully charge. Use only the charger supplied with the radio, or other RDX Series power accessories.

You can charge only one radio or battery at a time.

Battery Life


Watts	Li-Ion	Alkaline
2	22 Hours	<TBD> Hours
1	<TBD> Hours	<TBD> Hours

RDX Series Factory Defaults

Your RDX radio is programmed at the factory to the following settings. If you need to change settings, refer to Programming Features on page 27.

Channel	UHF			VHF		
	Frequency	Code	Bandwidth	Frequency	Code	Bandwidth
1	2	67.0	25.0	3	67.0	25.0
2	8	67.0	25.0	4	67.0	25.0

- Call Tone: Off (0)
- VOX: Off (0)
- Scramble: Off (0)

To restore your radio to factory default programming, turn the radio on while holding the , Side button 1, and Side button 2 for three seconds.

Talking and Receiving

Signal Strength Indicator/Channel Busy

When transmitting the LED on the front of the radio will be solid green.

When receiving, the LED on the front of the radio will be solid red.

Note: Obstacles that block the signal path may affect the strength of the incoming signal.


Talk Range

	Industrial	Multi-Level
Model	Inside steel/concrete industrial buildings	Inside multi-level buildings
UHF 2W	Up to 250,000 Sq. Ft.	TBD
VHF 2W	Up to 180,000 Sq. Ft.	TBD

Hands-Free Use/VOX

Motorola RDX radios can operate hands-free (VOX) when used with compatible VOX accessories. A short delay occurs between when you start talking and the radio transmits.

With Compatible VOX Accessories

1. Turn radio off.
2. Open accessory cover.
3. Insert plug of audio accessory firmly into accessory jack.
4. Turn radio on. Radio LED will flash double green
5. Lower radio volume BEFORE placing accessory near ear.
6. To transmit, speak into accessory microphone and to receive, stop talking.
7. You can disable VOX operation by pressing  or removing the audio accessory.

Note: To order accessories, refer to: www.motorola.com/radios/professional, call 1 (800) 448-6686, or contact your point of purchase.

Setting VOX Sensitivity


You can adjust the sensitivity of your radio's accessory or microphone during VOX operation to suit different operating environments. These menus appear only if the VOX feature is in use.

Press Side button 1 to increase or Side button 2 to decrease the sensitivity level.

- 0 = Off (VOX with accessories only, default settings)
- 1 = Low sensitivity
- 2 = Medium sensitivity
- 3 = High sensitivity

Monitoring a Channel

Check for channel activity.

1. Press and hold . You will hear static if the channel is clear.
2. Press side button 1 icon again to release.

Programming Features

You can change the following features by entering the programming mode. To talk with someone on your two-way radios, these settings must match:

- Channel
- Frequency
- Interference Eliminator Code
- Bandwidth (for optimal clarity)



You can also use the programming mode to set the following:

- Call tones
- Microphone Gain

Note: You cannot enter programming mode while a VOX accessory is plugged into the radio.

Entering Programming Mode

You must enter Programming Mode to change your communication settings.

1. Press and hold   for three seconds while turning on your radio. The radio beeps.


Programming a Channel




Each channel has its own Frequency, Interference Eliminator Code, and Bandwidth Settings.

Program each channel separately.

Select the channel that you will be programming by rotating the channel selector knob.

Programming the Frequency

Sets the frequency that your radio will use. Enter Programming Mode by pressing , Side button 1, and side button 2 for 3 seconds.

1. Enter programming mode (+SB1+hold for 3 seconds).
2. Selects the desired Channel (using Rotary Selector).
3. Press  to move to the "Tens Digit" of Frequency, then scroll up or down using SB1/SB2 to set the "10's" value.
4. Press  to move to "Units Digit" of Frequency, then scroll up or down using SB1/SB2 to set the "1's" value.

For example:

UHF frequency code 12 = 461.1125 would be programmed as $\left(\begin{smallmatrix} P \\ \vdots \\ T \end{smallmatrix}\right)$ + SB1 + M + SB1 + SB1

$\left(\begin{smallmatrix} P \\ \vdots \\ T \end{smallmatrix}\right)$ gets you to the 10's numeral placement

SB1 gets you to scroll up to the number 1 (only one press)

M confirms your placement & moves you to the units number placement
by pressing SB1 twice you increased the number from 0 to 2

Note: Both LED and Audio beeps will advise user of what number is being programmed (i.e. 2 = 2 beeps and LED will flash twice)

Programming the Interference Eliminator Code

The Interference Eliminator Code helps minimize interference by providing you with code combinations, which filter out static, noise, and unwanted messages.

1. Press $\left(\begin{smallmatrix} P \\ \vdots \\ T \end{smallmatrix}\right)$ to move to the "Hundreds Digit" of Code, then scroll up or down using SB1/SB2 to set the "100's" value.
2. Press $\left(\begin{smallmatrix} P \\ \vdots \\ T \end{smallmatrix}\right)$ to move to the "Tens Digit" of Code, then scroll up or down using SB1/SB2 to set the "10's" value.
3. Press $\left(\begin{smallmatrix} P \\ \vdots \\ T \end{smallmatrix}\right)$ to move to the "Units Digit" of Code, then scroll up or down using SB1/SB2 to set the "1s" value.

Note: Both LED and Audio beeps will advise user of what number is being programmed (i.e. 2 = 2 beeps and LED will flash twice)

Programming Bandwidth (when FCC allowable)

Some frequencies have selectable channel spacing, which must match other radios for optimal radio quality. Bandwidth settings are programmed for each channel.

1. Enter Programming Mode as necessary, refer to “Entering Programming Mode” on page 28.

Note: Spirit GT radios operate at 12.5 kHz. The M Series radios may operate at 25.0 kHz or 12.5 kHz bandwidth if selectable. If you have questions on radio use, call 1-800-448-6686.

Programming Call Tones

Your radio can transmit call tones to other radios in your group so you can alert them that you are about to talk. The default is set to 0 (off) or you may choose 1, 2, or 3 to choose a distinctive call tone.

1. Enter Programming Mode as necessary, refer to “Entering Programming Mode” on page 28.

Programming Microphone Gain

The sensitivity of your radio’s microphone can be adjusted to suit different users or operating environments.

1. Enter Programming Mode as necessary, refer to “Entering Programming Mode” on page 28.

2. Press sb1 or sb2 to select the sensitivity level.
 - 3 = High sensitivity, for quiet environments
 - 2 = Medium sensitivity, the default setting
 - 1 = Low sensitivity, for loud environments
3. Press and hold M to exit.

Cloning

You can duplicate RDX Series radio settings from one radio to another by using optional accessories.

There are two methods in which the radios can be cloned:

Using the Radio-to-Radio Cloning Cable (RLN6303)

1. Ensure both programmed and non-programmed radios are OFF
2. Connect one side of the USB cable, to the back of the charging tray.
3. Connect the opposite side of the USB cable, to the back of the second charging tray.
4. Place the non-programmed radio into one of the charging trays and turn it ON
5. Place the programmed radio into the second charging tray - keep it OFF
6. Once the radio is positioned properly in the charging tray, press and hold down the PTT, side button 2, and turn the radio ON.

Using the Multi-Unit Charger (RLN6309)

1. Enter programming mode on the programmed radio ($\text{P} \downarrow \text{T}$) + SB1 + ON)
2. Place the programmed radio in one of the front pockets of the multi unit charger.
3. Turn the non-programmed radio ON and place it directly behind the programmed radio.
4. Press and hold PTT on the programmed radio until the non-programmed radio beeps.
5. Turn the non-programmed radio OFF and back ON again to test cloning occurred.
6. Exit programming mode on the programmed radio.



Note: You can clone only one radio at a time.





The MUC does not need to be plugged in for Cloning feature to work.

Radios must be of the same band; UHF or VHF. Also, multi-channel models can clone to single-channel radios, but only the first channel is cloned.


Advanced Features

You can set the following features by pressing and holding additional button(s) **while you turn on your radio.**

To Do This	Press this Key While Turning On the Radio	Default Setting
Turn End-of-Transmission Tone on/off When enabled, your two-way radio transmits a tone when you finish transmitting. It's like saying "Roger" or "Over."		Off
Turn Battery Save on/off Decreases attack time, which is the brief period of time between when the radio receives a transmission on its frequency and broadcasts audio. Turning Battery Save off decreases battery life by approximately 20%.		On

To Do This	Press this Key While Turning On the Radio	Default Setting
<p>Toggle Phase Shift</p> <p>Changes your phase shift for optimal communication with other Motorola radios.</p> <p>180° XTN Series (factory default), M Series, Spirit M-Series, and Radius SP21</p> <p>240° Spirit HP and Radius SP50</p>	 	180°
<p>Restore Factory Defaults</p> <p>Returns your radio to its original factory settings to verify proper operation. Refer to page 24 for factory default settings.</p>	 	---

Troubleshooting

Symptom	Try This:
No Power	Recharge or replace battery RLN6305 battery pack. Reposition or replace alkaline batteries if the Alkaline Battery Frame (RLN6306) has been purchased.
Message not transmitted	Make sure  is completely pressed while transmitting. Recharge or replace batteries. Verify the transmit light is illuminated solid green while speaking.
Hearing other noises or conversation on a channel	Frequency or Interference Eliminator Code may be in use, change on all radios if possible. See “Programming the Interference Eliminator Code” on page 29.
Poor Audio Quality	Scramble Code is On (2-watt models only), and/or setting does not match other radios’ settings. Bandwidth of radios does not match. See “Programming Bandwidth (when FCC allowable)” on page 30.

Symptom**Try This:****Limited talk range**

Steel and/or concrete structures, heavy foliage, buildings or vehicles decrease range. Check for clear line of sight to improve transmission.

Wearing radio close to body such as in a pocket or on a belt decreases range. Change location of radio.

Message not received

Confirm radios have the same Channel, Frequency, Interference Eliminator Code settings.

Recharge or replace batteries.

Move to another location. Obstructions and operating indoors, or in vehicles may decrease range.

Heavy static or interference

Radios are too close, they must be at least five feet apart.
Radios are too far apart or obstacles are interfering with transmission.

Low batteries

Recharge or replace battery pack. Extreme operating temperatures affect battery life. See "Battery Life" on page 24.

Symptom**Try This:**

**Charger light
does not come
on**

Reinsert radio/battery.

Clean battery/charger contacts.

Verify that the USB connector is inserted correctly into the charging tray.

**Cannot enter
Programming
mode**

Unplug any audio accessories and retry.

Use and Care



Use a soft damp cloth to clean the exterior.



Do not immerse in water.



Do not use alcohol or cleaning solutions.

If the radio is submerged in water...



Turn radio off and remove batteries.



Dry with soft cloth.



Do not use radio until completely dry.

Frequencies and Bandwidths

The charts on the next few pages provide frequency information. These charts are useful when using Motorola RDX Series two-way radios with other business radios. Frequency Programming Number is identical to Spirit M, GT and S-Series frequency position (where applicable).

VHF Frequencies

Program ming Number	Frequency (MHz)	Bandwidth
1	151.6250	25.00
2	151.9550	25.00
3	154.5700	25.00
4	154.6000	25.00
5	151.7000	12.5/25.0
6	151.7600	12.5/25.0
*7	151.8200	12.5/25.0
*8	151.8800	12.5/25.0
*9	151.9400	12.5/25.0
10	151.5125	25.00
11	151.6550	25.00
12	151.6850	25.00
13	151.7150	25.00
14	151.7450	25.00
15	151.7750	25.00

Program ming Number	Frequency (MHz)	Bandwidth
16	151.8650	25.00
17	151.8950	25.00
18	151.9250	25.00
19	152.7000	25.00
20	154.4900	25.00
21	154.5150	25.00
22	154.5275	25.00
23	154.5400	25.00
24	154.6000	25.00
25	154.6550	25.00
26	158.4000	25.00
27	158.4075	25.00

***Note:** Due to FCC regulations, these frequencies transmit at only 1 watt.

UHF Frequencies

Programmi ng Number	Frequency (MHz)	Bandwidth
1	464.5000	12.5/25.0
2	464.5500	12.5/25.0
3	467.7625	12.5/25.0
4	467.8125	12.5/25.0
5	467.8500	12.5/25.0
6	467.8750	12.5/25.0
7	467.9000	12.5/25.0
8	467.9250	12.5/25.0
9	461.0375	12.5
10	461.0625	12.5
11	461.0875	12.5
12	461.1125	12.5
13	461.1375	12.5
14	461.1625	12.5

Programmi ng Number	Frequency (MHz)	Bandwidth
15	461.1875	12.5
16	461.2125	12.5
17	461.2375	12.5
18	461.2625	12.5
19	461.2875	12.5
20	461.3125	12.5
21	461.3375	12.5
22	461.3625	12.5
23	462.7625	12.5
24	462.7875	12.5
25	462.8125	12.5
26	462.8375	12.5
27	462.8625	12.5
28	462.8875	12.5

UHF Frequencies (Continued)

Programmi ng Number	Frequency (MHz)	Bandwidth
29	462.9125	12.5
30	464.4875	12.5
31	464.5125	12.5
32	464.5375	12.5
33	464.5625	12.5
34	466.0375	12.5
35	466.0625	12.5
36	466.0875	12.5
37	466.1125	12.5
38	466.1375	12.5
39	466.1625	12.5
40	466.1875	12.5
41	466.2125	12.5
42	466.2375	12.5

Programmi ng Number	Frequency (MHz)	Bandwidth
43	466.2625	12.5
44	466.2875	12.5
45	466.3125	12.5
46	466.3375	12.5
47	466.3625	12.5
48	467.7875	12.5
49	467.8375	12.5
50	467.8625	12.5
51	467.8875	12.5
52	467.9125	12.5
53	469.4875	12.5
54	469.5125	12.5
55	469.5375	12.5
56	469.5625	12.5

UHF Frequencies (Continued)

Programmi ng Number	Frequency (MHz)	Bandwidth
57	462.1875	12.5
58	462.4625	12.5
59	462.4875	12.5
60	462.5125	12.5
61	467.1875	12.5
62	467.4625	12.5
63	467.4875	12.5
64	467.5125	12.5
65	451.1875	12.5
66	451.2375	12.5
67	451.2875	12.5
68	451.3375	12.5
69	451.4375	12.5
70	451.5375	12.5

Programmi ng Number	Frequency (MHz)	Bandwidth
71	451.6375	12.5
72	452.3125	12.5
73	452.5375	12.5
74	452.4125	12.5
75	452.5125	12.5
76	452.7625	12.5
77	452.8625	12.5
78	456.1875	12.5
79	456.2375	12.5
80	456.2875	12.5
81	456.3375	12.5
82	456.4375	12.5
83	456.5375	12.5
84	456.6375	12.5

Programmi ng Number	Frequency (MHz)	Bandwidth
85	457.3125	12.5
86	457.4125	12.5
87	457.5125	12.5

Programmi ng Number	Frequency (MHz)	Bandwidth
88	457.7625	12.5
89	457.8625	12.5
-	-	-

Interference Eliminator Codes

Display Number	Code (Hz)
1	67.0
2	71.9
3	74.4
4	77.0
5	79.7
6	82.5
7	85.4
8	88.5
9	91.5
10	94.8
11	97.4
12	100.0
13	103.5

Display Number	Code (Hz)
14	107.2
15	110.9
16	114.8
17	118.8
18	123.0
19	127.3
20	131.8
21	136.5
22	141.3
23	146.2
24	151.4
25	156.7
26	162.2

Display Number	Code (Hz)
27	167.9
28	173.8
29	179.9
30	186.2
31	192.8
32	203.5
33	210.7
34	218.1
35	225.7
36	233.6
37	241.8
38	250.3

Carrier Squelch (0) disables interference eliminator codes.

Digital Interference Eliminator Codes

Display Number	Digital Code
39	023
40	025
41	026
42	031
43	032
44	043
45	047
46	051
47	054
48	065
49	071
50	072
51	073
52	074
53	114

Display Number	Digital Code
54	115
55	116
56	125
57	131
58	132
59	134
60	143
61	152
62	155
63	156
64	162
65	165
66	172
67	174
68	205

Display Number	Digital Code
69	223
70	226
71	243
72	244
73	245
74	251
75	261
76	263
77	265
78	271
79	306
80	311
81	315
82	331
83	343

Digital Interference Eliminator Codes (Continued)

Display Number	Digital Code
84	346
85	351
86	364
87	365
88	371
89	411
90	412
91	413
92	423
93	431
94	432
95	445
96	464

Display Number	Digital Code
97	465
98	466
99	503
100	506
101	516
102	532
103	546
104	565
105	606
106	612
107	624
108	627
109	631

Display Number	Digital Code
110	632
111	654
112	662
113	664
114	703
115	712
116	723
117	731
118	732
119	734
120	743
121	754

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Products Covered	Length of Coverage
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Professional Two-way Radio Accessories.	One (1) year from the date of purchase by the first consumer purchaser of the product.
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Exclusions

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Products Covered	Length of Coverage
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D389158 5894592 5893027 5789098 5734975 5861850 D395882 D383745
D389827 D389139 5929825 5926514 5953640 6071640 D413022 D416252
D416893 D433001

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RDX Series Programming Quick Reference

Function	Appearance
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
Press & hold side button 1 for 3 sec. and turn on radio to enter programming mode.

Frequency	Press  until FREQ displays. To change, press  or  .
------------------	---

*depending upon model

*depending upon model




Interference Eliminator Code	— — — — <u>Appears after FREQ shows. Set</u> — — — — for each channel.
-------------------------------------	--

Press  until **b** displays. Press  or  to select **H** (25.0 kHz) or **L** (12.5 kHz).

Bandwidth	Note: If bandwidth is not flashing, it is not selectable on the chosen frequency.
------------------	---

RDX Series Programming Quick Reference

Radio On	Visual
----------	--------




 as needed, then  or 

Call Tone	Choose 1, 2, 3, or 0 = Off (default).
------------------	---------------------------------------

RDX Series Programming Quick Reference

Radio On

Visual

 as needed, then  or 

**Microphone
Gain**

Choose:

- 1 Low Sensitivity
- 2 Medium Sensitivity
- 3 High Sensitivity



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Motorola® RDX Series



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SMALL PARTS**

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This product is not intended to be used
as a toy or plaything.

