Two-Way Radios

User Guide

RMU2080d Display model

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http://businessonline.motorolasolutions.com
Go to: Resource Center > Product Information > Manual > Accessories.

CONTENTS

Contents 1
Product Safety 4
Introduction 5
Package Contents 5
FCC Licensing Information 7
Interference Information 7
Batteries and Chargers Safety Information. 9
Operational Safety Guidelines. 10
Radio Overview 11
Parts Of The Radio 11
On/Off/Volume Knob. 12
Channel Selector Knob 12
Accessory Connector 12
Model Label 12
Microphone 12
Antenna. 12
LED Indicator 12
Front Buttons 12
Side Buttons 13
The Lithium-Ion (Li-Ion) Battery 13
Battery Features. 15
About the Li-Ion Battery 15
Battery Recycling and Disposal 16
Installing the Lithium-Ion (Li-Ion) Battery 17
Removing the Lithium-Ion (Li-Ion) Battery 17
Holster 18
Power Supply, Adaptor and Drop-in Tray Charger 18
Battery Life Information 19
Battery Meter 20
Charging the Battery 21
Drop-in Tray Charger LED Indicators . . 23
Estimated Charging Time 24
Multi-Unit Charger LED Indicators 26
Getting Started **28**
Turning radio ON/OFF 28
Adjusting Volume 28
Reading The Display 28
Selecting a Channel. 29
Talking and Monitoring. 29
Receiving a Call 29

CONTENTS

Signal Strength Indicator and Channel Busy Indicators 30
Talk Range 30
Radio LED Indicators 32
Hands-Free Use/VOX 33
With Compatible VOX Accessories. 33
Hands Free without Accessories (iVOX) 34
Toggle Voice Prompt in User Mode 34
Power Up - Tone Mode. 34
Reset to Factory Defaults 34
Keypad Beeps. 34
Keypad Lock/Unlock 35
Menu Options 35
Setting VOX /iVOX Sensitivity. 35
Programming Features 37
Advanced Configuration Mode 37
Entering Advanced Configuration Mode 37
Programming Rx (Reception) Frequencies 38
Programming Rx (Reception) Codes (CTCSS/DPL) 38
Programming Scramble 39
Programming Maximum Number Of Channels. 40
Programming Call Tones 40
Programming Microphone Gain Level 41
Programming Microphone Accessory Gain Level 42
Other Programming Features 43
Scan. 43
Programming Scan List 44
Programming Weather Channel 44
Editing Channel Alias Name 45
Nuisance Channel Delete 46
Customer Programming Software (CPS). 46
Time-Out Timer 47
Power Select 47
Call Tones 47
Scramble 47
Reverse Burst 48
Weather Channel 48
NOAA Weather Alert 50
Cloning Radios. 51

Cloning with a Multi Unit Charger (MUC) 51
CPS and Cloning Cables (Optional Accessory). 53
Cloning Radio using the Radio to Radio (R2R) Cloning Cable (Optional Accessory). 54
Cloning using the Customer Programming Software (CPS) 56
Troubleshooting 57
Use and Care 61
Frequency and Code Charts 62
RM UHF Frequencies Chart 62
RMU2080d – UHF Default Frequencies Chart. 65
CTCSS and PL/DPL Codes 66
Motorola Limited Warranty for the United States and Canada 72
Accessories 76
Audio Accessories. 76
Battery. 76
Cables 76
Chargers 76
Carry Accessories 77
Software Applications. 77
RM Series™ Features Summary. 79
New Features 88
Programmable Buttons Chart. 90
Icons Chart 91

CONTENTS

PRODUCT SAFETY

PRODUCT SAFETY AND RF EXPOSURE COMPLIANCE

Caution

Before using this product, read the operating instructions and RF energy awareness information contained in the Product Safety and RF Exposure booklet enclosed with your radio.

ATTENTION!

This radio is restricted to occupational use only to satisfy FCC RF energy exposure requirements.

For a list of Motorola-approved antennas, batteries and other accessories, visit the following website which lists approved accessories:

www.motorolasolutions.com/RMseries

INTRODUCTION

Thank you for purchasing the Motorola® RM Series™ Radio. This radio is a product of Motorola's 80 plus years of experience as a world leader in the designing and manufacturing of communications equipment. The RM 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: Read this user guide carefully to ensure you know how to properly operate the radio before use

Business Radios,
Mailstop 1C15, Motorola
8000 West Sunrise Boulevard
Plantation, Florida 33322

PACKAGE CONTENTS

- Radio
- Holster
- Lithium-Ion Battery
- Power Supply
- Quick Reference Guide
- Warranty Card
- Drop-in Tray Charger
- Product Safety & RF Exposure Booklet

For a copy of a large-print version of this user guide or for product-related questions, contact

1-800-448-6686 in the USA
1-800-461-4575 in Canada
1-888-390-6456 on TTY (Text Telephone)

For product related information, visit us at:

www.motorolasolutions.com/RMseries

FCC LICENSING INFORMATION

INTERFERENCE INFORMATION

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

RM Series™ Business two-way radios operate on radio frequencies that are regulated by the Federal Communications Commission (FCC).

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, request document 000601 which includes all forms and instructions. If you wish to have the document faxed, mailed or have questions, 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 Code Charts”. For questions on determining the radio frequency, 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.

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

BATTERIES AND CHARGERS SAFETY INFORMATION

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

Before using the battery charger, read all the instructions and cautionary markings on

- the charger,
- the battery, and
- 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.

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 up to 100 feet (30.48 m), and 16AWG for lengths up to 150 feet (45.72 m).

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.

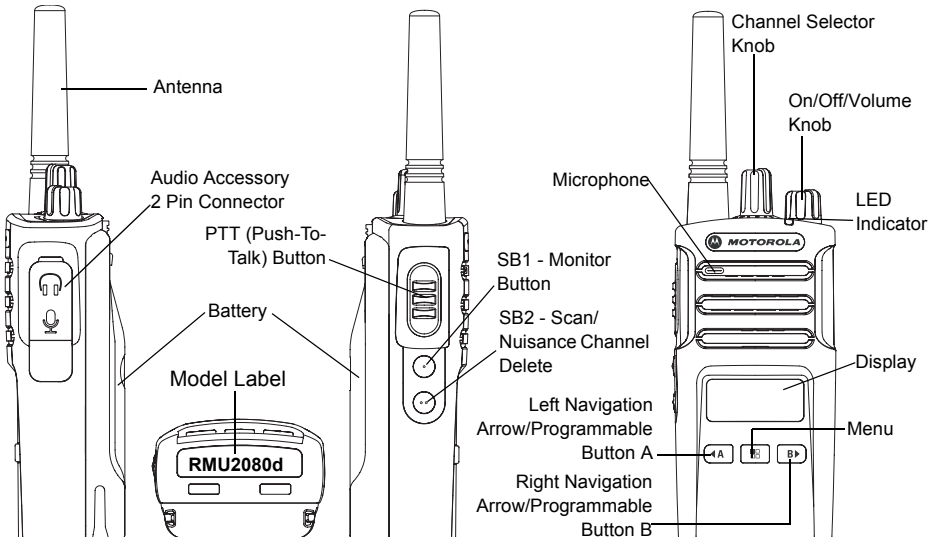
7. To reduce risk of electric shock, unplug the charger from the AC outlet before attempting any maintenance or cleaning

OPERATIONAL SAFETY GUIDELINES

- Turn the radio OFF when charging battery.
- The charger is not suitable for outdoor use. Use only in dry locations/conditions.
- Connect charger only to an appropriately fused and wired supply of the correct voltage (as specified on the product).
- Disconnect charger from line voltage by removing main plug.
- The outlet to which this equipment is connected should be nearby 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 power supply equipment must not exceed 40°C (104°F).
- Power output from the power supply unit must not exceed the ratings stated on the product label located at the bottom of the charger.
- Make sure that the cord is located where it will not be stepped on, tripped over, or subjected to water, damage, or stress.

RADIO OVERVIEW

PARTS OF THE RADIO



On/Off/Volume Knob

Used to turn the radio ON or OFF and to adjust the radio's volume.

Channel Selector Knob

Used to switch the radio to different channels.

Accessory Connector

Used to connect compatible audio accessories.

Model Label

Indicates the model of the radio.

Microphone

Speak clearly into the microphone when sending a message.

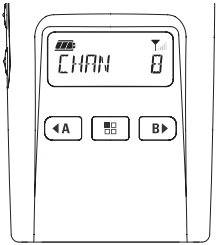
Antenna

For model **RMU2080d**, the antenna is non-removable.

LED Indicator

Used to give battery status, power-up status, radio call information and scan status.

Front Buttons



- **(Menu) Button**

Gives access to set up features like VOX/iVOX levels, etc.
It also allows you to move through all the features while in Programming Mode.
Default set to preset Channel 1.

- **Programmable Button**

Allows you to choose level or toggle options for features the Menu is on.
Default set to generate current programmed call tone.

- **Programmable Button**

Allows you to choose level or toggle options for features the Menu is on.

Default set to Backlight Mode.

Note: A short press of either Programmable Button (A or B) tunes the radio to the preset channel and the radio will play a good chirp. You can assign different functions to these buttons via the CPS. For example: Backlight Time Out, Reverse Burst, Scan/Nuisance Channel Delete, Monitor and Call Tones. To learn more about how to program these buttons, refer to “Entering Advanced Configuration Mode” on page 37 and “Customer Programming Software (CPS)” on page 46

Side Buttons

Push-to-Talk (PTT) Button

- Press and hold down this button to talk, release it to listen.

Side Button 1 (SB1)

- The Side Button 1 is a general button that can be configured by the Customer Programming Software - CPS. The default setting of SB1 is ‘Monitor’.

Side Button 2 (SB2)

- The Side Button 2 is a general button that can be configured by the CPS. The SB2 default setting is ‘Scan/Nuisance Channel Delete’.

The Lithium-Ion (Li-Ion) Battery

RM Series comes with a Standard Capacity Li-Ion battery. Other batteries may be available. For more information, see “Battery Features” on page 15.

This User Guide covers the RMU2080d model from the RM Series radios. The radio's model is shown on the bottom of the radio and provides the following information:

Table 1: RMU2080d Radio Specifications

Model	Frequency Band	Transmit Power (Watts)	Number of Channels	Antenna
RMU2080d	UHF	2	8	Non-removable

BATTERY FEATURES

RM Series radios provide Lithium-Ion batteries that come in different capacities that defines the battery life.

About the Li-Ion Battery

The RM Series radio comes equipped with a rechargeable Li-Ion battery. This battery should be fully charged before initial use to ensure optimum capacity and performance.

Battery life is determined by several factors. Among the more critical are the regular overcharge of batteries and the average depth of discharge with each cycle. Typically, the greater the overcharge and the deeper the average discharge, the fewer cycles a battery will last. For example, a battery which is overcharged and discharged 100% several times a day, lasts fewer cycles than a battery that receives less of an overcharge and is discharged to 50% per day. Further, a battery which receives minimal overcharging and averages only 25% discharge, lasts even longer.

Motorola batteries are designed specifically to be used with a Motorola charger and vice versa. Charging in non-Motorola equipment may lead to battery damage and void the battery warranty. The battery should be at about 77°F (25°C) (room temperature), whenever possible. Charging a cold battery (below 50° F [10°C]) may result in leakage of electrolyte and ultimately in failure of the battery. Charging a hot battery (above 95°F [35°C]) results in reduced discharge capacity, affecting the performance of the radio. Motorola rapid-rate battery chargers contain a temperature-sensing circuit to ensure that batteries are charged within the temperature limits stated above.

Battery Recycling and Disposal

Li-Ion rechargeable batteries can be recycled. However, recycling facilities may not be available in all areas. Under various U.S. state laws and the laws of several other countries, batteries must be recycled and cannot be disposed of in landfills or incinerators. Contact your local waste management agency for specific requirements and information in your area. Motorola fully endorses and encourages the recycling of Li-Ion batteries. In the U.S. and Canada, Motorola participates in the nationwide Rechargeable Battery Recycling Corporation (RBRC) program for Li-Ion battery collection and recycling.

Many retailers and dealers participate in this program. For the location of the drop-off facility closest to you, access RBRC's Internet web site at:

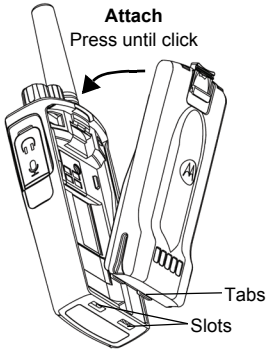
www.rbrc.com

or call:

1-800-8-BATTERY

This internet site and telephone number also provides other useful information concerning recycling options for consumers, businesses and governmental agencies.

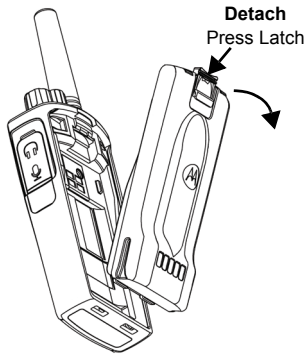
Installing the Lithium-Ion (Li-Ion) Battery



1. Turn OFF the radio.
2. With the Motorola logo side up on the battery pack, fit the tabs at the bottom of the battery into the slots at the bottom of the radio's body.
3. Press the top part of the battery towards the radio until a click is heard.

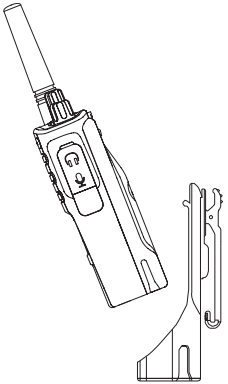
Note: To learn about the Li-Ion Battery Life features, refer to "About the Li-Ion Battery" on page 15

Removing the Lithium-Ion (Li-Ion) Battery



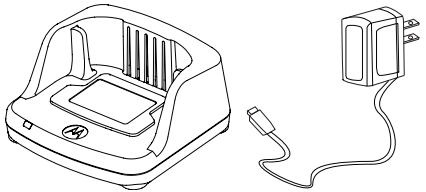
1. Turn OFF the radio.
2. Push down the battery latch and hold it while removing the battery.
3. Pull the battery away from the radio.

Holster



1. Insert the radio into the base of the holster at an angle. Press the radio against the back of the holster until the hooks on the holster are inserted in the top recesses of the battery.
2. To remove, using the top tab on the holster, detach the hooks of the holster from the top recesses of the battery. Slide the radio at an angle and remove from the holster.

Power Supply, Adaptor and Drop-in Tray Charger



The radio is equipped with one Drop-in Tray Charger and one Power Supply with Adaptor. For more information, refer to “Chargers” on page 76.

Battery Life Information

When the Battery Save feature is set to ON (enabled by default), the battery life lasts longer. The following table summarizes battery life estimations:

Table 2: Li-Ion Battery Life with Tx Power 2 Watts

Battery Type	Battery Save OFF	Battery Save ON
Standard	12 Hours	15 Hours
High Capacity	N/A	N/A

Note: Battery life is estimated based on 5% transmit / 5% receive / 90% standby standard duty cycle.

Battery Meter

The battery meter located in the upper left corner of the radio display indicates how much battery power the radio has remaining.

Table 3: RM Series Battery Meter

Battery Type	Battery Meter		
	3 Bars	2 Bars	1 Bar
Li-Ion			
	100 – 70%	70 – 30%	35 – 0% (≤ 10% when blinking)

Charging the Battery

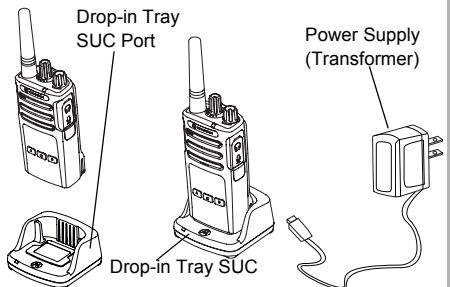
The RM Series radio offers two types of Power Supplies:

- Standard Power Supply and,
- Rapid Power Supply

Note: The radio comes with a Standard Power Supply.

To charge the battery (with the radio attached), place it in a Motorola-approved Drop-in Tray Single Unit Charger or Drop-in Tray Multi Unit Charger.

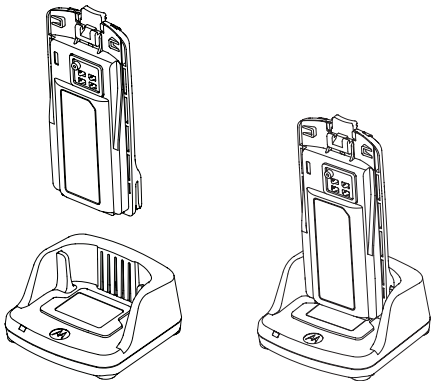
Charging with the Drop-in Tray Single Unit Charger (SUC)



1. Place the Drop-in Tray Charger on a flat surface.
2. Insert the connector of the Power Supply into the charger port on the back of the Drop-in Tray Charger.
3. Plug the AC Adaptor into a power outlet.
4. Insert the radio into the Drop-in Tray Single Unit Charger with the radio facing the front, as shown.

Note: When charging a battery attached to the radio, turn the radio OFF to ensure a full charge. See “Operational Safety Guidelines” on page 10 for more information.

Charging A Stand-Alone Battery



To charge only the battery - at step 4 on page 21, insert the battery into the tray, with the inside surface of the battery facing the front of the Drop-in Tray Single Unit Charger as shown above. Align the slots in the battery with the alignment ribs in the Drop-in Tray Single Unit Charger.

Table 4: Motorola Authorized Batteries

Part Number	Description
PMNN4434_R	Standard Li-Ion Battery
PMNN4453_R	High Capacity Li-Ion Battery

Drop-in Tray Charger LED Indicators

Table 5: Charger LED Indicator

Status	LED Indicator	Comments
Power On	Green for approximately 1 second	
Charging	Steady Red	
Charging Complete	Steady Green	
Battery Fault (*)	Red Fast Flash	
Waiting to Charge (**)	Amber Slow Flash	
Battery Level Status	N/A	Battery empty
	Flash Red 1 Time	Battery low
	Flash Amber 2 Times	Battery medium
	Flash Green 3 Times	Battery High

(*) Normally, re-positioning the battery pack will correct this issue.
(**) Battery temperature is too warm or too cold or wrong power voltage is being used.

If there is NO LED indication:

1. Check if the radio with battery, or the battery alone, is inserted correctly. (refer to step 4 of "Charging with the Drop-in Tray Single Unit Charger (SUC)" on page 21)
2. Ensure that the power supply cable is securely plugged into the charger socket using an appropriate AC outlet and there is power to the outlet.
3. Confirm that the battery being used with the radio is listed in Table 4.

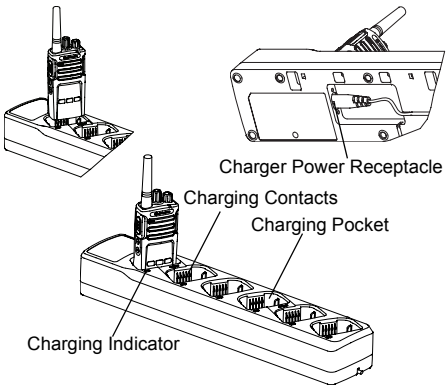
Estimated Charging Time

The following table provides the estimated charging time of the battery. For more information, see “Battery” on page 76.

Table 6: Battery Estimated Charging Time

Charging Solutions	Estimated Charging Time	
	Standard Battery	High Capacity Battery
Standard	≤ 4.5 Hours	N/A
Rapid	≤ 2.5 Hours	N/A

Charging a Radio and Battery using a Multi Unit-Charger - MUC (Optional Accessory)



The Multi-Unit Charger (MUC) allows drop-in charging of up to 6 radios or batteries. Batteries can be charged with the radios or removed and placed in the MUC separately. Each of the 6 charging pockets can hold a radio (with or without the Holster) or battery, but not both.

1. Place the Multi-Unit Charger on a flat surface.
2. Insert the power cord plug into the MUC's dual pin connector at the bottom of the MUC.
3. Plug the power cord into an AC outlet.
4. Turn the radio OFF.
5. Insert the radio or battery into the charging pocket with the radio or battery facing away from the contacts.

Note:

- This Multi-Unit Charger clones up to 2 radios (2 Source radios and 2 Target radios). Refer to "Cloning with a Multi Unit Charger (MUC)" on page 51 for more information.
- More information on the Multi-Unit Charger's operation is available in the Instruction Sheets provided with the MUC. For more information on the parts and their part numbers, refer to Chapter "Accessories" on page 76.

Multi-Unit Charger LED Indicators

Table 7: Charger LED Indicator

Status	LED Indicator	Comments
Power On	Green for approximately 1 second	
Charging	Steady Red	
Charging Complete	Steady Green	
Battery Fault (*)	Red Fast Flash	
Waiting to Charge (**)	Amber Slow Flash	
Battery Level Status	N/A	Battery empty
	Flash Red 1 Time	Battery low
	Flash Amber 2 Times	Battery medium
	Flash Green 3 Times	Battery High

(*) Normally, re-positioning the battery pack will correct this issue.
(**) Battery temperature is too warm or too cold or wrong power voltage is being used.

If there is NO LED indication:

1. Check if the radio with battery or the battery alone, is inserted correctly (refer to step 5 of "Charging a Radio and Battery using a Multi Unit-Charger - MUC (Optional Accessory)" on page 25).
2. Make sure the power cord is securely plugged into the MUC and the appropriate AC outlet. Make sure there is power to the AC outlet.
3. Confirm that the battery being used with the radio is listed in Table 4.

GETTING STARTED

For the following explanations, refer to “Parts Of The Radio” on page 11.

TURNING RADIO ON/OFF

To turn ON the radio, rotate the On/Off/Volume Knob clockwise. The radio plays one of the following:

- Power up tone and channel number announcement, or
- Battery level and channel number announcements, or
- Silent (Audible tones disabled)

The LED blinks red briefly.

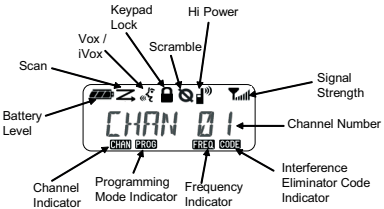
To turn the radio OFF, rotate the On/Off/Volume Knob counterclockwise until you hear a ‘click’ and the radio LED Indicator turns OFF.

ADJUSTING VOLUME

Turn the On/Off/Volume Knob clockwise to increase the volume, or counterclockwise to decrease the volume.

Note: Do not hold the radio too close to the ear when the volume is high or when adjusting the volume

READING THE DISPLAY



Note: The radio display shown here is for icon location only. Each radio display may appear different (channel and code) based on the pre-programmed radio defaults and features available in the model or region. Pressing any button, except the PTT button, will turn on the backlight.

SELECTING A CHANNEL

To select a channel, turn the Channel Selector Knob until you reach the desired channel. An audible voice indicates the selected channel.

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

TALKING AND MONITORING

It is important to monitor for traffic before transmitting to avoid 'talking over' someone who is already transmitting

To monitor, long press and hold the SB1(*) button to access channel traffic. If no activity is present, you will hear 'static'. To release, press SB1 again. Once channel traffic has cleared, proceed with your call by pressing the PTT button. When transmitting, the LED Indicator stays solid red.

Notes:

- To listen to all activity on a current channel, short press the SB1 to set the CTCSS/DPL code to 0. This feature is called 'CTCSS/DPL Defeat (Squelch set to SILENT)'.
- (*) This assumes SB1 is not being programmed for a different mode.

RECEIVING A CALL

1. Select a channel by pressing the rotating the Channel Selector Knob until you reach the desired channel.
2. Make sure the PTT button is released and listen for voice activity.
3. The LED Indicator stays solid red when the radio is receiving a call.
4. To respond, hold the radio vertically 1 to 2 inches (2.5 to 5cm) from mouth. Press the PTT button to talk; release it to listen.

Signal Strength Indicator and Channel Busy Indicators

When there is activity on a frequency, the radio displays the Signal Strength Indicator icon and the radio LED blinks faster. When your radio is receiving (Rx) and there is activity on the same frequency and code as your radio, the radio Signal Strength Indicator icon can change from 1 (weakest) to 6 (strongest) depending on the radio reception coverage. This helps you to determine if your radio is moving out of range.

Note: Obstacles blocking the signal path affects the strength of incoming signal.

TALK RANGE

TALK RANGE		
Model	**Industrial**	**Multi-Level**
	Inside steel/ concrete Industrial buildings	**Inside multi-level buildings**
UHF 2W	Up to 250,000 Sq. Ft.	Up to 20 Floors

To establish a proper two-way communication, the channel, frequency, and interference eliminator codes must be the same on both radios. This depends on the stored profile that has been preprogrammed on the radio:

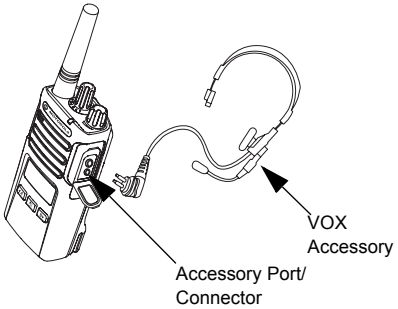
1. **Channel:** Current channel that the radio is using, depending on radio model.
2. **Frequency:** The frequency the radio uses to transmit/receive.
3. **Interference Eliminator Code:** These codes help minimize interference by providing a choice of code combinations.
4. **Scramble Code:** Codes that make the transmissions sound garbled to anyone listening who is not set to that specific code.
5. **Bandwidth:** Some frequencies have selectable channel spacing, which must match other radios for optimum audio quality.

For details on how to set up frequencies and CTCSS/DPL codes in the channels, refer to “Advanced Configuration Mode” on page 37.

RADIO LED INDICATORS

RADIO STATUS	LED INDICATION
Channel Busy	Solid Orange
Cloning Mode	Double Orange Heartbeats
Cloning In Progress	Solid Orange
Fatal Error at Power up	One Green Blink, One Orange Blink, One Green Blink, then repeat for 4 seconds
Low Battery	Orange Heartbeat
Low Battery Shutdown	Fast Orange Heartbeat
Monitor	LED is OFF
Power-Up	Solid Red for 2 seconds
'Idle' Programming Mode / Channel Mode	Green Heartbeat
Scan Mode	Fast Red Heartbeat
Transmit (Tx)/Receive (RX)	Solid Red
Transmit in Low Power Select	Solid Orange
VOX/iVOX Mode	Double Red Heartbeats

HANDS-FREE USE/VOX



Motorola RM Series radios can operate hands-free (VOX) when used with compatible VOX accessories.

With Compatible VOX Accessories

The default factory setting for VOX sensitivity level is OFF (‘0’). Before using VOX, use the Customer Programming Software (CPS) to set the VOX sensitivity level to a different level from ‘0’. Then, perform the following steps:

1. Turn the radio OFF.
2. Open accessory cover.
3. Insert the audio accessory’s plug firmly into accessory port.
4. Turn radio ON. The LED Indicator will blink double red
5. Lower radio volume BEFORE placing accessory near ear.
6. To transmit, speak into accessory microphone and to receive, stop talking.
7. VOX can be temporarily disabled by pressing the PTT button or by removing the audio accessory.

VOX can also be activated using the (Menu) button without using the CPS.

Note: To order accessories, refer to: **www.motorolasolutions.com/RMseries**, call **1 (800) 448-6686**, or contact your Motorola point of purchase

Hands Free without Accessories (iVOX)

- Press the PTT button while turning ON the radio to enable iVOX. The icon «ʃ blinks.
- iVOX can be temporarily disabled by pressing the PTT button.
- A short press of the PTT Button re-enables iVOX.

Note:

- There is a short delay between the time when you start talking and when the radio transmits.
- For more information on setting VOX/iVOX sensitivity, refer to “Setting VOX /iVOX Sensitivity” on page 35.

Toggle Voice Prompt in User Mode

Short press the SB1 Button while turning ON the radio to enable/disable the Voice Prompt in User Mode. (Default is set to ON).

Power Up - Tone Mode

To enable/disable power up tone mode, press SB1 and SB2 buttons simultaneously for 2-3 seconds while powering up the radio until you hear the pre-programmed power up tone. 3 different power-up tones are available:

- Power up tone and channel number announcement, or
- Battery level and channel number announcements, or
- Silent (Audible tones disabled)

Reset to Factory Defaults

Reset to Factory Defaults will set back all radio features to the original factory default settings. To do so, press PTT, SB2 and SB1 simultaneously while turning ON the radio until you hear a high tone chirp.

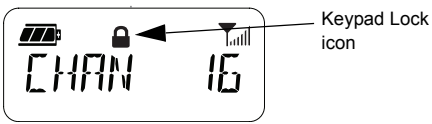
Keypad Beeps

To enable/disable Keypad Beeps, short press the SB2 button while turning ON the radio until you hear ‘chirp’ tone.

Keypad Lock/Unlock

You can lock the keypad to avoid accidentally changing your radio settings. To lock the radio keypad, press and hold the [▪▪] (Menu) button for 4 seconds.

Note: The PTT Button and Programmable Button A (if Call Tone feature has been assigned) cannot be locked using this feature.



MENU OPTIONS

To access the radio MENU, short press the [▪▪] (Menu) button. The radio displays the feature options. For each options, use the [A◂] and [B▸] buttons to navigate. After selecting your desired option settings, you can:

- press [▪▪] (Menu) button to save and go to the next option, or
- long press the PTT button to save and exit, or
- turn OFF the radio to exit without saving the changes.

The MENU mode times out automatically if there is no activity detected for more than 10 seconds.

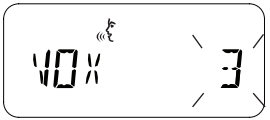
Setting VOX /iVOX Sensitivity

The VOX/iVOX sensitivity settings can be adjusted via the MENU as well as the CPS. To modify via the MENU, make sure you have enabled VOX or iVOX. (Refer to “Hands-Free Use/VOX” on page 33 or “Hands Free without

Accessories (iVOX)" on page 34 for more information). Once VOX/iVOX is enabled, short press the [Menu] (Menu) button.

If iVOX is enabled when you press the [Menu] (Menu) button, the radio displays the following:

If VOX is enabled (with accessory connected to the radio) when you press the [Menu] (Menu) button, the radio displays the following:



To change the sensitivity level, use the [A] and [B] buttons:

- 0 = OFF (For VOX accessories only)
- 1 = Low sensitivity
- 2 = Medium sensitivity
- 3 = High sensitivity

Once you have selected the desired sensitivity level, you can:

- press the [Menu] (Menu) button to go to the next step, or
- turn OFF the radio to exit without saving changes.

Note: The default sensitivity is 'Medium' for VOX and 'High' for iVOX.

PROGRAMMING FEATURES

ADVANCED CONFIGURATION MODE

Advanced Configuration mode is a special radio mode that allows you to program basic radio's features by using the radio's front panel programming.

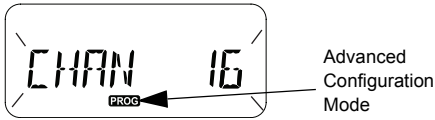
Entering Advanced Configuration Mode

To enter Advanced Configuration Mode, press and hold the PTT Button and the SB1 Button simultaneously for 3 seconds, while turning ON the radio. A unique tone sounds, indicating the radio has entered Advanced Configuration Mode. The radio LED blinks a green heartbeat.

Note:

- The Advanced Configuration Mode defaults to the 'Idle' Programming Mode.
- 'Idle' Programming Mode is the stage in the Programming Mode where the radio waits for the user to start the radio programming cycle.

When the radio is set to Advanced Configuration Mode, the PROG icon displays and the current channel aliasing name blinks to indicate that you can rotate the Channel Selector Knob to select the channel you want to program.



In Advanced Configuration Mode, the radio is capable of setting values for each channel by toggling between the different programming modes available:

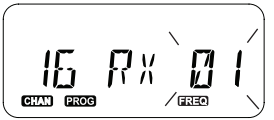
- Frequencies,
- CTCSS/DPL Codes (Interference Eliminator Code),
- Scramble,
- Maximum Channels,
- Call Tone,
- Microphone Gain,
- Scan, and
- Weather Channel.

- To move along the different Programming Selection Mode without saving changes, short press the PTT Button or [▪] (Menu) Button.
- To save changes, long press the PTT Button. The radio returns to 'Idle' Programming Mode.
- When in 'Idle' Programming Mode, long press the PTT button to exit the Programming Mode.
- Whenever you wrap around to the beginning of the Programming Mode options, the radio automatically saves all changes made, even if you turn OFF the radio.
- Exit the Programming Mode without saving changes (as long as you have not wrapped around to the beginning of the Programming Mode options) by turning OFF the radio.

PROGRAMMING RX (RECEPTION) FREQUENCIES

Once you have chosen the channel you want to program, short press the PTT button or [▪] (Menu) button to scroll through the options until you reach 'Frequency Programming Mode'.

The radio display shows the frequency code as follows:



To program the desired frequency, use the [◂A] and [B▸] buttons to navigate to the frequency code value you need. Long press the PTT button to exit and save, or short press the PTT button to move to the next programming feature without saving.

PROGRAMMING RX (RECEPTION) CODES (CTCSS/DPL)

Once you have chosen the channel you want to program, short press the PTT button or [▪] (Menu) button to scroll through the options until you reach the 'Code Programming Mode'.

The radio display shows the CTCSS/DPL code as follows:

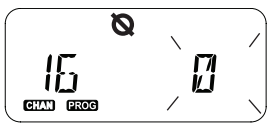
To program the desired code, use the [A] and [B] buttons until you get the CTCSS/DPL code value you want to set up. Long press the PTT button to exit and save, or short press the PTT button to move to the next programming feature without saving.

PROGRAMMING SCRAMBLE

The scramble feature makes your transmissions sound garbled to anyone listening without the same scramble code. It does not guarantee confidentiality, but it adds an extra layer of privacy. Scramble mode is by default set to 'OFF'.

Once you have entered Advanced Configuration Mode and selected the channel in which you want to enable Scramble (), scroll up or down through the programming modes by short pressing the PTT button or [Menu] button until the radio reaches the Scramble Programming Mode.

The radio display shows the Scramble settings as follows:



The current scramble value blinks. You can select the desired scramble value (0,1,2 or 3) by pressing the [A] and [B] buttons. Long press the PTT button to exit and save, or short press the PTT button to move to the next programming feature without saving.

Note: The values available for scrambling are dependent to the values programmed via

the CPS. Scramble is disabled when the value is set to '0'.

PROGRAMMING MAXIMUM NUMBER OF CHANNELS

You can configure the maximum number of channels for the radio. Once you have entered the Advanced Configuration Mode, scroll up or down through the programming modes by short pressing the PTT button or [≡] (Menu) button until you reach the 'Maximum Channel Programming Mode'.

The radio display shows the Maximum Number of Channels as follows:

The radio display blinks the current maximum number of channels programmed. Use the [◂A] and [B▸] buttons until you get the desired maximum number of channels. Long press the PTT button to exit and save, or short press the PTT button to move to the next programming feature without saving.

Note: The values available for maximum channel settings are dependent on the maximum number of channels the radio supports.

PROGRAMMING CALL TONES

Call Tones feature allows you to transmit an audible tone to other radios on the same channel to alert them that you are about to talk or to alert them without speaking.

In 'Call Tone Selection Mode' you can configure the type of call tone for the radio. The settings available are dependent on the maximum number of call tones your radio supports.

To program Call Tones, enter the Advanced Configuration Mode and scroll up or down through the programming modes until your display radio shows the 'Programming Call

Tones' selection by short pressing the PTT button or [≡] (Menu) button.

The radio display shows the Programming Call Tone' as follows:

The radio display blinks the current call tone setting. You can select the desired call tone value (0,1,2 or 3) by pressing the [◂A] and [B▸] buttons. Each time you select a different value, your radio sounds the selected call tone (except for value '0').

Once you have selected the desired call tone, long press the PTT button to exit and save, or short press the PTT button to move to the next programming feature without saving.

Note: The values available for Call Tones settings are dependent on the values programmed via the CPS. Call Tones is disabled when the value is set to '0'.

PROGRAMMING MICROPHONE GAIN LEVEL

To configure the Microphone Gain Level, enter the Advanced Configuration Mode and scroll up or down through the programming modes by short pressing the PTT button or [≡] (Menu) button until you reach the 'Microphone Gain Level Programming Mode'.

The radio display shows the Microphone Gain Level as follows:

The radio display blinks the current Microphone Gain Level setting. You can select the desired Microphone Gain Level (1 = low gain, 2 =

medium gain or 3 = high gain) by pressing the [A] and [B] buttons.

Once you have selected the desired Microphone Gain Level, long press the PTT button to exit and save, or short press the PTT button to move to the next programming feature without saving.

Note: The values available for Microphone Gain Level settings are dependent on the maximum Microphone Gain Level the radio supports.

PROGRAMMING MICROPHONE ACCESSORY GAIN LEVEL

To configure the Microphone Accessory Gain Level, enter the Advanced Configuration Mode and scroll up or down through the programming modes by short pressing the PTT button or [Menu] button.

The radio display shows the Microphone Accessory Gain Level as follows:

The radio blinks the current Microphone Accessory Gain Level setting. You can select the desired Microphone Accessory Gain Level (1 = low gain, 2 = medium gain or 3 = high gain) by pressing the [A] and [B] buttons.

Once you have selected the desired Microphone Gain Level, long press the PTT button to exit and save, or short press the PTT button to move to the next programming feature without saving.

Note: The values available for Microphone Accessory Gain Level settings are dependent on the maximum Microphone Accessory Gain Level the radio supports.

OTHER PROGRAMMING FEATURES

Scan

Scan allows you to monitor other channels to detect conversations. When the radio detects a transmission, it stops scanning and goes to the active channel. This allows you to listen and talk to people in that channel without having to change channel manually. If there is talking going on Channel 2 during this time, the radio stays on Channel 1 and you will not hear Channel 2. After talking has stopped in Channel 1, the radio waits for 5 seconds before resuming scan again.

- To start scanning, press the SB1 or SB2 button. When the radio detects channel activity, it stops on that channel until activity on that channel ends. You can talk to the person(s) transmitting without having to switch channels by pressing the PTT button.

Note: Scan has to be programmed either to SB1 or SB2 button via CPS. SB2 is by default Scan/Nuisance Channel delete button. If Auto-Scan has been enabled for a particular channel, do not press SB1 or SB2 (programmed for scan) to start scanning, as the radio does it automatically.

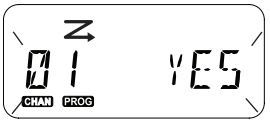
- To stop scanning, short press the SB1 or SB2 button (programmed for scan) again.
- By pressing the PTT button while the radio is scanning, the radio will transmit on the channel which was previously selected before Scan is activated. If no transmission occurs within 5 seconds, scanning resumes.
- If you want to scan a channel without the Interference Eliminator Codes (CTCSS/DPL), set the code settings for the channels to '0' in the CTCSS/DPL Programming Selection Mode.

Note: Whenever the radio is set to Scan, the LED Indicator blinks a Red Heartbeat.

Programming Scan List

You can enable or disable the Channel Scanning feature for each channel in your radio. To do so, enter the Advanced Configuration Mode and select the channel you want to program. Scroll through the programming modes by short pressing the PTT button or [≡] (Menu) button until you reach the 'Scan Programming Mode'.

The radio display shows the Scan Programming Mode as follows:



Both the channel number and current scan setting (YES = Enable or NO = Disable) blinks on the display, indicating you can choose your setting. To set the channel number, rotate the Channel Selector Knob until you reach the desired channel number.

Once you have selected the channel, proceed to enable ('YES') or disable ('NO') the scan feature by pressing the SB2 (*) button. Once you have set the values you need, long press the PTT button to exit and save, or short press the PTT button to move to the next programming feature without saving.

Note:

- (*) This assumes the SB2 button is not programmed for a different mode.
- If the Maximum Channel setting in the radio is set to '1', the Scan Programming option is disabled and will not show on the radio display.

Programming Weather Channel

Weather Channel Programming Mode is the last programming mode available. You can enable or disable the Weather Channel.

To do so, enter the Advanced Configuration Mode and select the channel you want to program. Scroll through the programming modes by short pressing the PTT button or

(Menu) button until you reach the 'Weather Channel Programming Mode'.

Press the A and B buttons to enable or disable the mode.

Editing Channel Alias Name

To edit a Channel Alias Name, turn ON the radio and press and hold the PTT button simultaneously with the A button for 3 seconds. The radio generate a special beep upon entering the 'Channel Alias Mode'.

The radio display shows the current channel alias name and channel number blinking as follows:

Choose the channel number you want to edit by rotating the Channel Selector Knob. Once you have selected the channel number, short press the PTT button or (Menu) button to start editing the channel alias name.

- The character to be changed starts blinking. If it's a blank character, a cursor starts blinking.
- To change character, press the A and B buttons until the desired character is reached. To move to next character on the right, press the (Menu) button. The character sequence is [A-Z], " " (Blank Space), [0-9] and Special Characters. No lower case is allowed.

Long press the PTT button to save and go back to the 'Channel Alias Mode' to choose other channel to edit the alias name or turn OFF the radio to exit without saving the changes.

Note: If the channel alias name is left blank, long pressing the PTT button does not save or leave the alias name.

Nuisance Channel Delete

Nuisance Channel Delete allows you to temporarily remove channels from the Scan List. This feature is useful when irrelevant conversations on a 'nuisance' channel ties up the radio's scanning feature.

To delete a channel from the Scan List:

- Start Scan mode by short pressing the SB2(*) button.
- Wait until the radio stops at the channel you wish to eliminate. Long press the SB2 button to delete it. You cannot delete the channel with scan enabled (home channel).
- The channel will not be scanned again until you exit the Scan mode by short pressing the SB2 button again or by turning OFF the radio and back ON.

Note: (*) This assumes the SB2 button is not programmed for a different mode.

CUSTOMER PROGRAMMING SOFTWARE (CPS)

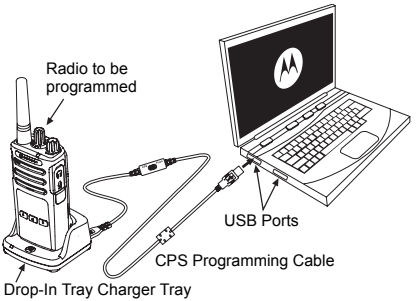


Figure 1: *Setting up the radio to the CPS*

The easiest way to program or change features in your radio is by using the Customer Programming Software (CPS) and the CPS Programming Cable(*). CPS Software is available for free as web based downloadable software at:

www.motorolasolutions.com/RMseries

To program, connect the RM Series radio via the Drop-in Charger Tray and CPS Programming Cable as shown in **Figure 1 on page 46**. Toggle the cable switch of the CPS Programming Cable to '**CPS Mode**'.

CPS allows you to program frequencies, PL/DPL Codes as well as other features such as: Bandwidth Select, Time-out Timer, Power Select, Scan List, Call Tones, Scramble, Reverse Burst, etc. CPS is a very useful tool as it can also lock the Front-Panel Radio Programming or restrict any specific radio feature to be changed (to avoid accidentally erasing the preset radio values). It also provides security by giving the option to set up a password for profile radio's management. For more information, refer to Features Summary Chart Section at the end of the User Guide.

Note: (*) CPS Programming Cable P/N# HKKN4027_ is an accessory sold separately. Please contact your Motorola point of purchase for more information.

Time-Out Timer

Transmissions can be terminated when the PTT button is pressed by setting up a Time-Out Timer.

Power Select

Power Select allows you to select between high and low transmission power per frequency in each channel. The power levels for RM Series 2W toggle between 1W and 2W.

Note: Some frequencies may have FCC transmit power restrictions that disallow them to be set at a higher power level. For more information, refer to the "Frequency and Code Charts" on page 62

Call Tones

See "Programming Call Tones" on page 40.

Scramble

See "Programming Scramble" on page 39.

Reverse Burst

Reverse Burst eliminates unwanted noise (squelch tail) during loss of carrier detection. You can select values of either 180 or 240 to be compatible with other radios.

- The features described in previous pages are just some of the features CPS has. CPS offers more capabilities. For more information refer to the HELP file in the CPS.
- Some of the features available with the CPS software may vary depending on the radio model.

WEATHER CHANNEL

NOAA Weather Radio All Hazards (NWR) is a nationwide network of radio stations broadcasting continuous weather information directly from the nearest National Weather Service office. NWR broadcasts official Weather Service warnings, watches, forecasts and other hazard information 24 hours a day, 7 days a week.

Working with the Federal Communication Commission's (FCC) Emergency Alert System, NWR is an "All Hazards" radio network, making it your single source for comprehensive weather and emergency information. In conjuction with Federal, State and Local Emergency Managers and other public officials, NWR also broadcasts warning and post-event information for all types of hazards – including natural (such as earthquakes or avalanches), environmental (such as chemical releases or oil spills), and public safety (such as AMBER alerts or 911 Telephone outages).

Known as the “Voice of NOAA’s National Weather Service”, NWR is provided as public service by the National Oceanic and Atmospheric Administration (NOAA), part of the Department of Commerce. NWR includes 1000 transmitters, covering all 50 states, adjacent coastal waters, Puerto Rico, the U.S. Virgin Islands and the U.S. Pacific Territories. NWR requires a special radio receiver or scanner capable of picking up the signal. Broadcasts are found in the VHF public service band at these seven frequencies.

Public Service Band Frequencies (MHz)	
162.400	162.425
162.450	162.475
162.500	162.525
162.550	

The channel position 8 on all RM Series radios with channel selector knob is configured at the factory as a NOAA Weather Radio.

The NOAA Weather Radio feature can be disabled or configured to any of the other available channel positions via the Customer Programming Software (CPS) or in Advanced Configuration Mode. When a channel that has the NOAA Weather Radio is selected, the RM radio generates an audible voice announcement indicating the channel and weather frequency number. (E.g.: “Channel 8: Weather 1”). The weather frequency number announced is one of the 7 NOAA national frequencies that is currently tuned in the weather radio. The weather frequency can be changed while in the Weather Channel Programming mode by pressing the SB2 button to enter Weather menu and then using the SB1 button to toggle up or SB2 button to toggle down. The PTT button acts as the menu

button to advance to channel menu or weather menu alert menu.

NOAA Weather Alert

The RM series radio is capable of monitoring the NOAA frequency for any alerts issued by the National Weather Service. When the Weather Alert feature is enabled. the radio will “mute” the daily weather radio. You can then move the channel position to a standard 2 way radio frequency and continue with normal communication.

The Weather Alert allows the radio to “listen” for a Warning Alarm Tone (WAT) from the National Weather Service. If a WAT is detected, the weather radio will “un-mute” and the message being broadcasted will be heard on the RM radio.

If the RM radio is tuned to a 2 way channel (normal operation and weather alert feature ON), the radio will “un-mute” and the message being broadcasted will be heard when a WAT is detected. While monitoring an alert, pressing the PTT button or changing channels exits the weather alert and returns to normal operation.

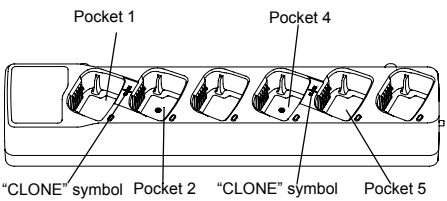
Note: Using the Weather Alert Feature impacts normal battery life.

CLONING RADIOS

You can clone RM Series radio profiles from one Source radio to a Target radio by using any one of these 3 methods:

- Using a Multi Unit Charger (MUC- optional accessory),
- Using two Single Unit Chargers (SUC) and a Radio-to-Radio cloning cable (optional accessory),
- the CPS (free software download)

Cloning with a Multi Unit Charger (MUC)



To clone radios using the MUC, there must be at least two radios:

- a Source radio (radio which profiles will be cloned or copied from) and
- a Target radio (the radio which profile will be cloned from the source radio.)

The Source radio has to be in Pocket 1 or 4 while the Target radio has to be in Pocket 2 or 5, matching in the MUCs pockets by pairs as follows:

- 1 and 2 or,
- 4 and 5.

When cloning, the MUC does not need to be plugged into a power source, but ALL radios require charged batteries.

1. Turn ON the Target radio and place it into one of the MUC Target Pockets
2. Power the Source radio following the sequence below:
    - Press the PTT button and SB2

simultaneously while turning the radio ON.

- Wait for 3 seconds before releasing the buttons until the audible tone is heard.

3. Place the Source radio in the source pocket that pairs with the target pocket you chose in step 1. Press and release the SB1 button.
4. After cloning is completed, the Source radio will announce either “successful” (cloning is successful) or “fail” (cloning has failed). If the Source radio is a display model, it will either show ‘Pass’ or ‘Fail’ on the display (a voice announcement will be played within 5 seconds).
5. Once you have completed the cloning process, turn the radios OFF and ON or, long press the PTT button to exit the ‘cloning’ mode.

Further details on how to clone radios are explained in the Instructions Sheet provided with the MUC.

When ordering the MUC, refer to P/N# PMLN6384_.

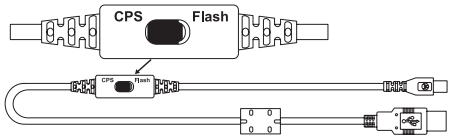
Notes:

- If cloning fails, refer to “What To Do If Cloning Fails” on page 55.
- Paired Target radios and Source radios must be of the same band type in order for the cloning to run successfully.
- MUC pockets numbers should be read from left to right with the Motorola logo facing front.

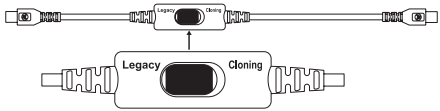
CPS and Cloning Cables (Optional Accessory)

- Both **CPS** and **Cloning Cables** are made to work either with RM Series radios or RDX Series radios. Cloning cable supports a mix of RM and RDX series radios.
- **CPS** cable programs RM series radios. Make sure the cable switch is in “Flash” position. To program a RDX radio with the CPS cable, make sure the cable switch is in “CPS” position and the USB converter provided in the CPS cable kit is attached to the cable.
- **Cloning** cable allows you to clone:
  - –RM Series radios. Make sure the switch is in “Cloning” or “Legacy” position.
  - –RDX Series radios. Make sure the switch is in “Legacy” position with one USB converter on each end of the cloning cable.
  - –RM Series and RDX Series radios. Make sure the switch is in “Legacy” position and use a USB converter to the RDX Single-Unit Charger. The Cloning Cable Kit provides 1 USB converter.

CPS Cable



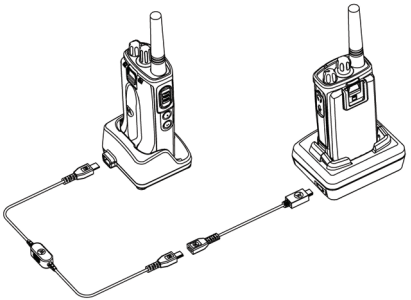
Cloning Cable



USB Converter

Unique Micro to Mini Converter

Cloning Radio using the Radio to Radio (R2R) Cloning Cable (Optional Accessory)



Operating Instructions

1. Before starting the cloning process, make sure you have:

- A fully charged battery on each of the radios.
- Two Single-Unit Chargers (SUC), or 2 SUC for cloning RM Series radios, or 1 SUC for RM Series radio and 1 SUC for RDX Series radio.
- Turn OFF the radios and,

2. Unplug any cables (power supply or USB cables) from the SUCs.

3. Plug one side of the cloning cable mini USB connector to the first SUC and the other end to the second SUC.

Note: During the cloning process, no power is being applied to the SUC. The batteries will not be charged. Only data communication is being established between the two radios.

4. Turn ON the Target Radio and place it into one of the SUCs.

5. For the Source Radio, power ON the radio with the following sequence:

- Press the PTT button and the SB2 button simultaneously while turning the radio ON.
- Place the Source Radio in its SUC. Press and release the SB1 button.

6. Wait 3 seconds before releasing the buttons and you hear a distinctive audible tone. If the Source Radio is a display model radio, it will show ‘Cloning’ on the display.

7. When the cloning is completed, the Source Radio audible voice will announce either “successful” (cloning is successful) or “fail” (cloning process has failed). If the Source Radio is a display model radio, it will either show ‘Pass’ or ‘Fail’ on the display (a voice announcement will be played within 5 seconds).
8. Once the cloning process is completed, turn the Radios OFF and ON again to exit “Clone” mode.

What To Do If Cloning Fails

The radio audible voice will announce “Fail” indicating that the cloning process has failed. In the event that the cloning fails, perform each of the following steps before attempting to start cloning process again:

1. Ensure that the batteries on both radios are fully charged.
2. Check the cloning cable connection on both SUCs.
3. Ensure that the battery is engaged properly on the radio.
4. Ensure that there is no debris in the charging tray or on the radio contacts.
5. Ensure that the Target radio is turned ON.
6. Ensure that the Source radio is in cloning mode.
7. Ensure that the two radios are both from the same frequency band, same region and have the same transmission power.

Note: This cloning cable is designed to operate only with compatible Motorola SUC RLN6175 and PMLN6394_.

When ordering Cloning Cable, please refer to P/N# HKKN4028_. For more information about the accessories, refer to “Accessories” on page 76.

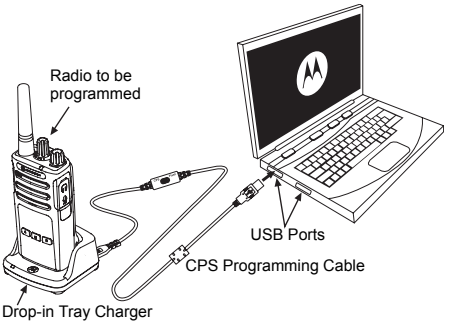
Cloning using the Customer Programming Software (CPS)

When cloning using this method, you need the CPS software, a Drop-In Tray Charger and the CPS Programming Cable.

To order the CPS Programming Cable, please refer to P/N# HKKN4028_.

Information on how to clone using the CPS is available either in:

- the CPS Help File --> Content and Index --> Cloning Radios, or
- in the CPS Programming Cable Accessory Leaflet.



TROUBLESHOOTING

Symptom	Try This...
No Power	Recharge or replace the Li-Ion battery. Extreme operating temperatures may affect battery life. Refer to “About the Li-Ion Battery” on page 15
Hearing other noises or conversation on a channel	Confirm Interference Eliminator Code is set. Frequency or Interference Eliminator Code may be in use. Change settings: either change frequencies or codes on all radios. Make sure radio is at the right frequency and code when transmitting. Refer to “Talking and Monitoring” on page 29
Message Scrambled	Scramble Code might be ON, and/or setting does not match the other radios' settings.
Audio quality not good enough	Radio settings might not be matching up correctly. Double check frequencies, codes and bandwidths to make sure they are identical in all radios

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. To increase range and coverage, you can reduce obstructions or increase power. UHF radios provides greater coverage in industrial and commercial buildings. Increasing power provides greater signal range and increased penetration through obstructions. Refer to “Talking and Monitoring” on page 29
Message not transmitted or received	Make sure the PTT button is completely pressed when transmitting. Confirm that the radios have the same Channel, Frequency, Interference Eliminator Code and Scramble Code settings. Refer to “Talking and Monitoring” on page 29 for further information. Recharge, replace and/or reposition batteries. Refer to “About the Li-Ion Battery” on page 15. Obstructions and operating indoors, or in vehicles, may interfere. Change location. Refer to “Talking and Monitoring” on page 29. Verify that the radio is not in Scan. Refer to “Scan” on page 43 and “Nuisance Channel Delete” on page 46.

Symptom	Try This...
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. Refer to “Talking and Monitoring” on page 29.
Low batteries	Recharge or replace Li-Ion battery. Extreme operating temperatures affect battery life. Refer to “About the Li-Ion Battery” on page 15.
Drop-in Charger LED light does not blink	Check that the radio/battery is properly inserted and check the battery/charger contacts to ensure that they are clean and charging pin is inserted correctly. Refer to “Charging the Battery” on page 21, “Drop-in Tray Charger LED Indicators” on page 23 and “Installing the Lithium-Ion (Li-Ion) Battery” on page 17.
Low battery indicator is blinking although new batteries are inserted	Refer to “Installing the Lithium-Ion (Li-Ion) Battery” on page 17, and “About the Li-Ion Battery” on page 15.

Symptom	Try This...
Cannot activate VOX	VOX feature might be set to OFF. Use the CPS to ensure that the VOX Sensitivity level is not set to '0'. Accessory not working or not compatible. Refer to "Hands-Free Use/VOX" on page 33.
Battery does not charge although it has been placed in the drop-in charger for a while	Check drop-in tray charger is properly connected and correspond to a compatible power supply. Refer to "Charging with the Drop-in Tray Single Unit Charger (SUC)" on page 21 and "Charging A Stand-Alone Battery" on page 22. Check the charger's LEDs indicators to see if the battery has a problem. Refer to "Drop-in Tray Charger LED Indicators" on page 23.

Note: Whenever a feature in the radio seems to not correspond to the default or preprogrammed values, check to see if the radio has been programmed using the CPS with a customized profile.

USE AND CARE

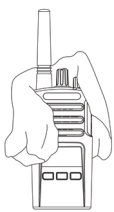
Use a soft damp cloth to clean the exterior

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

FREQUENCY AND CODE CHARTS

RM UHF FREQUENCIES CHART

RM UHF Frequencies

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

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

RM UHF Frequencies (Continued)

Frequency #	Frequency (MHz)	Bandwidth
29	462.9125	12.5 kHz
30	464.4875	12.5 kHz
31	464.5125	12.5 kHz
32	464.5375	12.5 kHz
33	464.5625	12.5 kHz
34	466.0375	12.5 kHz
35	466.0625	12.5 kHz
36	466.0875	12.5 kHz
37	466.1125	12.5 kHz
38	466.1375	12.5 kHz
39	466.1625	12.5 kHz
40	466.1875	12.5 kHz
41	466.2125	12.5 kHz
42	466.2375	12.5 kHz
43	466.2625	12.5 kHz
44	466.2875	12.5 kHz
45	466.3125	12.5 kHz
46	466.3375	12.5 kHz

Frequency #	Frequency (MHz)	Bandwidth
47	466.3625	12.5 kHz
48	467.7875	12.5 kHz
49	467.8375	12.5 kHz
50	467.8625	12.5 kHz
51	467.8875	12.5 kHz
52	467.9125	12.5 kHz
53	469.4875	12.5 kHz
54	469.5125	12.5 kHz
55	469.5375	12.5 kHz
56	469.5625	12.5 kHz
57	462.1875	12.5 kHz
58	462.4625	12.5 kHz
59	462.4875	12.5 kHz
60	462.5125	12.5 kHz
61	467.1875	12.5 kHz
62	467.4625	12.5 kHz
63	467.4875	12.5 kHz
64	467.5125	12.5 kHz

RM UHF Frequencies (Continued)

Frequency #	Frequency (MHz)	Bandwidth
65	451.1875	12.5 kHz
66	451.2375	12.5 kHz
67	451.2875	12.5 kHz
68	451.3375	12.5 kHz
69	451.4375	12.5 kHz
70	451.5375	12.5 kHz
71	451.6375	12.5 kHz
72	452.3125	12.5 kHz
73	452.5375	12.5 kHz
74	452.4125	12.5 kHz
75	452.5125	12.5 kHz
76	452.7625	12.5 kHz
77	452.8625	12.5 kHz

Frequency #	Frequency (MHz)	Bandwidth
78	456.1875	12.5 kHz
79	456.2375	12.5 kHz
80	456.2875	12.5 kHz
81	456.3375	12.5 kHz
82	456.4375	12.5 kHz
83	456.5375	12.5 kHz
84	456.6375	12.5 kHz
85	457.3125	12.5 kHz
86	457.4125	12.5 kHz
87	457.5125	12.5 kHz
88	457.7625	12.5 kHz
89	457.8625	12.5 kHz

Note: Frequencies #57 to #89 are 33 new additional frequencies

RMU2080d – UHF DEFAULT FREQUENCIES CHART

RM UHF 8CH Radios Default Frequencies – RMU2080

Channel	Frequency #	Frequency (MHz)	Code #	Code	Bandwidth
1	2	464.5500	1	67.0 Hz	12.5 kHz
2	8	467.9250	1	67.0 Hz	12.5 kHz
3	5	467.8500	1	67.0 Hz	12.5 kHz
4	6	467.8750	1	67.0 Hz	12.5 kHz
5	10	461.0625	1	67.0 Hz	12.5 kHz
6	12	461.1125	1	67.0 Hz	12.5 kHz
7	14	461.1625	1	67.0 Hz	12.5 kHz
8	WC	162.4000	1	67.0 Hz	12.5 kHz

Note: WC = Weather Channel Frequency

CTCSS AND PL/DPL CODES

CTCSS Codes

CTCSS	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

CTCSS	Hz
14	107.2
15	110.9
16	114.8
17	118.8
18	123
19	127.3
20	131.8
21	136.5
22	141.3
23	146.2
24	151.4
25	156.7
26	162.2

CTCSS	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
122 (*)	69.3

Note: (*) New CTCSS code.

PL/DPL Codes

DPL	Code
39	23
40	25
41	26
42	31
43	32
44	43
45	47
46	51
47	54
48	65
49	71
50	72
51	73
52	74
53	114
54	115

DPL	Code
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
69	223
70	226

DPL	Code
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
84	346
85	351
86	364

PL/DPL Codes (Continued)

DPL	Code
87	365
88	371
89	411
90	412
91	413
92	423
93	431
94	432
95	445
96	464
97	465
98	466
99	503
100	506
101	516
102	532
103	546

DPL	Code
104	565
105	606
106	612
107	624
108	627
109	631
110	632
111	654
112	662
113	664
114	703
115	712
116	723
117	731
118	732
119	734
120	743

DPL	Code
121	754
123	645
124	Customized PL
125	Customized PL
126	Customized PL
127	Customized PL
128	Customized PL
129	Customized PL
130	Inverted DPL 39
131	Inverted DPL 40
132	Inverted DPL 41
133	Inverted DPL 42
134	Inverted DPL 43
135	Inverted DPL 44
136	Inverted DPL 45
137	Inverted DPL 46
138	Inverted DPL 47

PL/DPL Codes (Continued)

DPL	Code
139	Inverted DPL 48
140	Inverted DPL 49
141	Inverted DPL 50
142	Inverted DPL 51
143	Inverted DPL 52
144	Inverted DPL 53
145	Inverted DPL 54
146	Inverted DPL 55
147	Inverted DPL 56
148	Inverted DPL 57
149	Inverted DPL 58
150	Inverted DPL 59
151	Inverted DPL 60
152	Inverted DPL 61
153	Inverted DPL 62
154	Inverted DPL 63
155	Inverted DPL 64

DPL	Code
156	Inverted DPL 65
157	Inverted DPL 66
158	Inverted DPL 67
159	Inverted DPL 68
160	Inverted DPL 69
161	Inverted DPL 70
162	Inverted DPL 71
163	Inverted DPL 72
164	Inverted DPL 73
165	Inverted DPL 74
166	Inverted DPL 75
167	Inverted DPL 76
168	Inverted DPL 77
169	Inverted DPL 78
170	Inverted DPL 79
171	Inverted DPL 80
172	Inverted DPL 81

DPL	Code
173	Inverted DPL 82
174	Inverted DPL 83
175	Inverted DPL 84
176	Inverted DPL 85
177	Inverted DPL 86
178	Inverted DPL 87
179	Inverted DPL 88
180	Inverted DPL 89
181	Inverted DPL 90
182	Inverted DPL 91
183	Inverted DPL 92
184	Inverted DPL 93
185	Inverted DPL 94
186	Inverted DPL 95
187	Inverted DPL 96
188	Inverted DPL 97
189	Inverted DPL 98

PL/DPL Codes (Continued)

DPL	Code
190	Inverted DPL 99
191	Inverted DPL 100
192	Inverted DPL 101
193	Inverted DPL 102
194	Inverted DPL 103
195	Inverted DPL 104
196	Inverted DPL 105
197	Inverted DPL 106
198	Inverted DPL 107
199	Inverted DPL 108

DPL	Code
200	Inverted DPL 109
201	Inverted DPL 110
202	Inverted DPL 111
203	Inverted DPL 112
204	Inverted DPL 113
205	Inverted DPL 114
206	Inverted DPL 115
207	Inverted DPL 116
208	Inverted DPL 117
209	Inverted DPL 118

DPL	Code
210	Inverted DPL 119
211	Inverted DPL 120
212	Inverted DPL 121
213	Inverted DPL 123
214	Customized DPL
215	Customized DPL
216	Customized DPL
217	Customized DPL
218	Customized DPL
219	Customized DPL

Notes

MOTOROLA LIMITED WARRANTY FOR THE UNITED STATES AND CANADA

What Does this Warranty Cover?

Subject to the exclusions contained below, Motorola, Inc. warrants its telephones, pagers, and consumer and business two-way radios (excluding commercial, government or industrial radios) that operate via Family Radio Service or General Mobile Radio Service, Motorola-branded or certified accessories sold for use with these Products ("Accessories") and Motorola software contained on CD-ROMs or other tangible media and sold for use with these Products ("Software") to be free from defects in materials and workmanship under normal consumer usage for the period(s) outlined below.

This limited warranty is a consumer's exclusive remedy, and applies as follows to new Motorola Products, Accessories and Software purchased by consumers in the United States, which are accompanied by this written warranty.

Products and Accessories

Products Covered	Length of Coverage
Products and Accessories as defined above, unless otherwise provided for below.	**One (1) year** from the date of purchase by the first consumer purchaser of the product unless otherwise provided for below.
Decorative Accessories and Cases. Decorative covers, bezels, PhoneWrap™ covers and cases.	**Limited lifetime warranty** for the lifetime of ownership by the first consumer purchaser of the product.
Business Two-way Radio Accessories	**One (1) year** from the date of purchase by the first consumer purchaser of the product.
Products and Accessories that are Repaired or Replaced.	**The balance of the original warranty or for ninety (90) days** from the date returned to the consumer, whichever is longer.

Exclusions

Normal Wear and Tear. Periodic maintenance, repair and replacement of parts due to normal wear and tear are excluded from coverage.

Batteries. Only batteries whose fully charged capacity falls below 80% of their rated capacity and batteries that leak are covered by this limited warranty.

Abuse & Misuse. Defects or damage that result from: (a) improper operation, storage, misuse or abuse, accident or neglect, such as physical damage (cracks, scratches, etc.) to the surface of the product resulting from misuse; (b) contact with liquid, water, rain, extreme humidity or heavy perspiration, sand, dirt or the like, extreme heat, or food; (c) use of the Products or Accessories for commercial purposes or subjecting the Product or Accessory to abnormal usage or conditions; or (d) other acts which are not the fault of Motorola, are excluded from coverage.

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Altered Products. Products or Accessories with (a) serial numbers or date tags that have been removed, altered or obliterated; (b) broken seals or that show evidence of tampering; (c) mismatched board serial numbers; or (d) nonconforming or non-Motorola housings, or parts, are excluded form coverage.

Communication Services. Defects, damages, or the failure of Products, Accessories or Software due to any communication service or signal you may subscribe to or use with the Products Accessories or Software is excluded from coverage.

Software

Products Covered	Length of Coverage
Software. Applies only to physical defects in the media that embodies the copy of the software (e.g. CD-ROM, or floppy disk).	**Ninety (90) days** from the date of purchase.

Exclusions

Software Embodied in Physical Media. No warranty is made that the software will meet your requirements or will work in combination with any hardware or software applications provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected.

Software NOT Embodied in Physical Media. Software that is not embodied in physical media (e.g. software that is downloaded from the internet), is provided “as is” and without warranty.

WHO IS COVERED?

This warranty extends only to the first consumer purchaser, and is not transferable.

HOW TO OBTAIN WARRANTY SERVICE OR OTHER INFORMATION?

Contact your Motorola point of purchase.

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5896277 5894292 5864752 5699006 5742484 D408396 D399821 D387758 D389158 5894592 5893027 5789098 5734975 5861850 D395882 D383745 D389827 D389139 5929825 5926514 5953640 6071640 D413022 D416252 D416893 D433001

EXPORT LAW ASSURANCES

This product is controlled under the export regulations of the United States of America. The Governments of the United States of America may restrict the exportation or re-exportation of this product to certain destinations. For further information contact the U.S. Department of Commerce.

ACCESSORIES

AUDIO ACCESSORIES

Part No.	Description
53815	Headset w/Boom Mic BR
HMN9026_R	Remote Speaker Mic BR
HKLN4477_	Surveillance Earpiece BR
53865	Headset w/Swivel Boom Mic
53866	Earbud w/Clip PTT Mic BR
56517	Earpiece w/Inline Mic
RLN6423_	Swivel Earpiece BR

BATTERY

Part No.	Description
PMNN4434_R	Standard Li-Ion Battery
PMNN4453_R	High Capacity Li-Ion Battery

CABLES

Part No.	Description
HKKN4028_	Radio to Radio Cloning Cable
HKKN4027_	CPS Programming Cable

CHARGERS

Part No.	Description
PMLN6384_	Multi-Unit Charger (MUC) Kit - North America
PMLN6394_	Standard Drop-In Tray Charger

CARRY ACCESSORIES

Part No.	Description
HKLN4510_	Swivel Holster

SOFTWARE APPLICATIONS

Part No.	Description
82012694001	Customer Programming Software (CPS)

Notes

Features	Programmable Via Advanced Configuration		Programmable via CPS		Default Value	Programming Tips
	Display	Non-Display	Display	Non-Display		
Backlight	No	N/A	Yes	N/A	5 Seconds	Choose the backlight's time out by using the CPS.
Battery Save (2)	No	No	Yes	Yes	ON	Toggle ON/OFF via CPS only.
Buttons Reset	No	No	Yes	Yes	ON	Available only via CPS. Allows resetting the radio buttons to factory default values. Refer to Radio Buttons Summary Table.
Call Tones (4)	Yes	No	Yes	Yes	OFF / BUTTON A	Advanced Configuration available only for Display Models by going into Advanced Configuration Mode(1). Values available are 0 (OFF),1, 2 and 3. To enable/disable Call Tones press Button A (default button).

Features	Programmable Via Advanced Configuration		Programmable via CPS		Default Value	Programming Tips
	Display	Non-Display	Display	Non-Display		
Channel Aliasing	Yes	N/A	Yes	N/A	OFF	Only Display Models. To enter or exit Channel Aliasing mode press PTT and [◀A] buttons simultaneously while turning radio ON for 3 sec. After editing, to exit and save, long press the PTT. ***Note:*** *To edit, refer to Programming Features/ Editing Channels.*
Channels	Yes	Yes	Yes	Yes	Model Dependant	You can select channels using the Channel Selector Knob (non-display models) or the [▦] (MENU) button (display models). You can also add or delete channels using the CPS. ***Note:*** *Enabling/disabling channels via CPS automatically affects the Maximum Channels you are able to program via front panel.*

Features	Programmable Via Advanced Configuration		Programmable via CPS		Default Value	Programming Tips
	Display	Non-Display	Display	Non-Display		
Cloning Mode	Yes	Yes	Yes	Yes	ENABLED	Enables radio to enter cloning mode in order to clone its profile settings into other radios (using Radio to Radio Cloning Cable or Multi-Unit Charger). Press PTT, SB2 while turning radio ON. ***Note:*** *You can clone radios using the CPS.*
CPS Manager Lock	No	No	Yes	Yes	N/A	This feature is referred in the CPS software as “Codeplug Password”. It prevents unauthorized access to the CPS to the radio’s programmed configuration. Make sure you set up a 4 digits password that is easy to remember.
Frequencies	Yes	Yes	Yes	Yes	Channel and Model Dependant	There are 89 UHF frequencies available. Use Advanced Configuration Mode (1) for configuration via the front panel radio programming. Refer to Frequencies and Codes Charts Section for details.

Features	Programmable Via Advanced Configuration		Programmable via CPS		Default Value	Programming Tips
	Display	Non-Display	Display	Non-Display		
Bandwidth Range	N/A	N/A	N/A	N/A	Model Dependant	Radios Bandwidth is fixed and non-programmable. Bandwidth Range for 2W radios: VHF 150.8 - 160 Mhz / UHF 450-470 Mhz.
Codes, Interference Eliminator Codes (CTCSS/DPL)	Yes	Yes	Yes	Yes	Channel and Model Dependant	Use Advanced Configuration Mode for front panel radio configuration. There are 219 codes available.For details refer to Frequencies and Codes Charts Section.
IVOX, enable/ disable	Yes	Yes	Yes	Yes	OFF	Hands free without accessories. To enable IVOX, long press the PTT button while turning radio ON and until the IVOX icon blinks (on Display Model).
IVOX, sensitivity Level	Yes	N/A	Yes	N/A	HIGH (Level 3)	Available for Display models only. Allows user to specify IVOX sensitivity level. For front panel radio configuration use the [▪▪] (MENU) button.
Keypad Beep (or Keypad Tone) (2)	Yes	Yes	Yes	Yes	ON	Press SB2 while turning ON radio to enable/disable keypad beep.

Features	Programmable Via Advanced Configuration		Programmable via CPS		Default Value	Programming Tips
	Display	Non-Display	Display	Non-Display		
Keypad Lock (2)	Yes	N/A	Yes	N/A	UNLOCKED	Press and hold [MENU] (MENU) button for 4 seconds to lock the radio keypad. To unlock, press [MENU] (MENU) button for 4 seconds.
LEDs Enabled/ Disabled	No	No	Yes	Yes	Enabled	Using CPS, you can disable radio LEDs.
Low Battery Alert - Shutdown	N/A	N/A	N/A	N/A	ON	Gives a sequence of loud and high beep tones to alert battery level is low. LED will blink orange several times. This a non-programmable feature.
Maximum Channels (2)	Yes	No	Yes	Yes	Model and CPS programmable dependant	Use the Advanced Configuration Mode to get the Active Channels Menu option. ***Note:*** *Default value is set to the maximum number of channels that the radio supports.*
Microphone Gain Level, ACCESSORY	Yes	No	Yes	Yes	Medium (Level 2)	For front panel programming enter Advanced Configuration Mode (1).

Features	Programmable Via Advanced Configuration		Programmable via CPS		Default Value	Programming Tips
	Display	Non-Display	Display	Non-Display		
Microphone Gain Level, RADIO	Yes	No	Yes	Yes	Medium (Level 2)	For front panel programming enter Advanced Configuration Mode (1).
Monitor (4)	Yes	Yes	Yes	Yes	SB1 Button	Long Press SB1 to monitor and press SB1 again to release. ***Note:*** *PL/DPL defeat feature should be disabled in order to monitor.*
Nuisance Ch Delete (4)	Yes	Yes	Yes	Yes	SB2 Button	Press SB2 to start scanning and wait until the radio lands on the channel you want to delete. Long press SB2 to delete the channel. ***Note****: The nuisance deleted channel will be restored into the scan list when the radio is turned OFF or you exit SCAN.*
PL Defeat	Yes	Yes	Yes	Yes	SB1 Button	Also known as 'Squelch defeat'. Short Press SB1 to enable PL/DPL defeat so you can listen or monitor any activity in the channel without noise. Press SB1 again to disable PL/DPL defeat.

Features	Programmable Via Advanced Configuration		Programmable via CPS		Default Value	Programming Tips
	Display	Non-Display	Display	Non-Display		
Power Select (4)	No	No	Yes	Yes	2W (1W Model dependant)	Use CPS to program a SBx button to be used for selecting the transmission power level you want for each channel. ***Note**: There may be power restrictions depending on the frequency chosen in each channel.*
Power Up Text	No	N/A	Yes	N/A	MOTOROLA	Text that shows up in the radio display when you turn ON the radio. Default text is MOTOROLA. Programmable via CPS.
Reset to Factory Defaults (2)	Yes	Yes	Yes	Yes	Enabled	Allows to restore radio's factory defaults. Press PTT, SB1, SB2 simultaneously for 3 seconds while turning ON radio.
Reverse Burst	No	No	Yes	Yes	180	Reverse Burst eliminates unwanted noise (squelch tail) during loss of carrier detection. Use CPS to select values 180 or 240.

Features	Programmable Via Advanced Configuration		Programmable via CPS		Default Value	Programming Tips
	Display	Non-Display	Display	Non-Display		
Scan	Yes	Yes	N/A	N/A	SB2 Button	Short press SB2 to enable/disable scan.
Multiple (16) Scan List	Yes	No	Yes	Yes	ON - All Channels	Use CPS for editing Scan List (adding/removing channels to be scanned). For display models only: you can add/delete channels in the scan list using front panel by going into Advanced Configuration Mode(1).
Scan, Auto Scan	No	Yes	Yes	Yes	OFF	Feature available only for Non Display Models. For front programming using front panel radio enter Advanced Configuration Mode(1)
Scramble (4)	Yes	No	Yes	Yes	OFF (level 0)	Display models: you can program scramble using front panel by going into Advanced Configuration Mode(1). Non display models: program either SB1 or SB2 button
Time-Out Timer	No	No	Yes	Yes	60 seconds	Use CPS to program to program how long the PTT can be pressed before the transmission is automatically terminated. Values are 60, 120 and 180 seconds. (Pressing again PTT will start the transmission again).

Features	Programmable Via Advanced Configuration		Programmable via CPS		Default Value	Programming Tips
	Display	Non-Display	Display	Non-Display		
VOX Sensitivity Level	Yes	No	Yes	Yes	OFF (level 0)	Front panel radio programming available in display models by pressing PTT or [MENU] (MENU) buttons and scrolling down/up with [A] and [B] buttons to set value. Long press PTT to save.
VOX, enable/ disable	Yes	Yes	Yes	Yes	OFF	Allows to use 'hands-free' mode connecting microphone accessories. To enable connect external accessory and power up radio. ***Note:*** *The VOX sensitivity level default value is set to OFF in the CPS settings. Before using this feature, check VOX sensitivity level.*

(1) To enter Advanced Configuration Mode, press and hold both PTT and SB1 simultaneously for 3-5 seconds while turning radio ON (LED will start to blink green). Short press PTT to get to the different programming options.

(2) Using CPS you can prevent this feature to be programmed via front panel radio.

(3) Contact your Motorola Point of purchase for enabling this feature and/or for radio models details.

(4) For Non-Display Models, feature can be enabled for front panel programming by assigning feature to SB1 or SB2. For Display models: Feature can be enabled to any of the programmable buttons rather than the default ones. For more details refer to Programming Buttons Chart or CPS Menus.

New Features

Features	Programmable Via Advanced Configuration		Programmable via CPS		Default Value	Programming Tips
	Display	Non-Display	Display	Non-Display		
Channel Busy Lock Out	No	No	Yes	Yes	OFF	This feature prevents radio's transmitter from being activated if a signal strong enough to break through the noise 'squelch' is present.
Silent Mode	No	No	Yes	Yes	OFF	Silent Mode is only activate when VOX/iVOX is activated. Choices available are: • OFF (Default): The radio will work in normal mode. • Accessory Audio Only: Audio is played through accessory. • No Audio: Audio is disabled even the received radio.
Power Up Audio	No	No	Yes	Yes	Tone Only + Channel	Selects the audio the radio will play when it is powered up

Features	Programmable Via Advanced Configuration		Programmable via CPS		Default Value	Programming Tips
	Display	Non-Display	Display	Non-Display		
Priority Scan	No	No	Yes	Yes	OFF	Set the current channel with high priority scan. If Weather Alert is enabled and the radio is in two-way radio mode, the radio shall enable Weather Alert Scan and ignore public priority scan, talkaround scan or Auto-Scan.
Pre-Defined Voice Prompt (VP)	No	No	Yes	Yes	Channel Number	16 pre-defined channel aliases to select for voice announcement.

Programmable Buttons Chart

Button	Monitor	Scan / Nuisance Delete	Call Tone	Power Select	Scramble	Backlight	No Operation
SB1	Default	✓	✓	✓	✓	✓	✓
SB2	✓	Default	✓	✓	✓	✓	✓
BUTTON A (*)	✓	✓	Default	✓	✓	✓	✓
BUTTON B (*)	✓	✓	✓	✓	✓	Default	✓

Notes:

- Buttons come programmed to default functions. Using CPS you can assign one of the features shown in the chart, so the button can toggle values using radio front panel
- (*) Display models only.

Icons Chart

Icon	Symbol	Comments
Battery Level		Displayed during normal radio mode operation, displays battery life remaining
Channel	CHAN	Displayed during normal radio operation and when programming channel features
Code	CODE	Displayed during normal radio operation and when programming codes features
Frequency	FREQ	Displayed during normal radio operation and when programming frequency features
Keypad lock		Displayed whenever the Keypad lock feature is enabled (keypad is locked)
Program	PROG	Displayed whenever the radio is set up to Programming Mode.
Scan		Displayed whenever the radio is set to SCAN mode.

Icon	Symbol	Comments
Scramble		Displayed whenever scramble is enabled.
Power Select		Displayed whenever the channel is transmitting or set to a high-power selection
Signal Strength		RSSI Display Icon numbers of bars will indicate the strength of the received signal.
Vox/IVox		Displayed when IVOX/VOX enabled or when programming MIC / MIC gain features.

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