APX 4000 (2 KNOBS) MODEL 2

Model 2

MOTOROLA

Zone A
Channel 1

Zone | Chan | Scan

FIRE

DECLARATION OF CONFORMITY

This declaration is applicable to your radio only if your radio is labeled with the FCC logo shown below.

DECLARATION OF CONFORMITY

Per FCC CFR 47 Part 2 Section 2.1077(a)

Responsible Party

Name: Motorola Solutions, Inc.

Address: Motorola Solutions, Inc., 1303 East Algonquin Road Schaumburg, IL60196, U.S.A.

Phone Number: 1-800-927-2744

Hereby declares that the product:

Model Name: **APX 4000**

conforms to the following regulations:

FCC Part 15, subpart B, section 15.107(a), 15.107(d) and section 15.109(a)

Class B Digital Device

As a personal computer peripheral, this device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation.

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

Caution

RF Energy Exposure and Product Safety Guide
for Portable Two-Way Radios

ATTENTION!

This radio is restricted to Occupational use only.
Before using the radio, read the RF Energy Exposure and Product Safety Guide for Portable Two-Way Radios which contains important operating instructions for safe usage and RF energy awareness and control for Compliance with applicable standards and Regulations.

For a list of Motorola-approved antennas, batteries, and other accessories, visit the following website:
http://www.motorolasolutions.com/APX

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio transmitter has been approved by Industry Canada to operate with the Motorola-approved antenna types with the maximum permissible gain and required antenna impedance for each antenna type indicated.
Antenna types not included, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

SOFTWARE VERSION

All the features described in the following sections are supported by the radio's software version **R13.00.00** or later.
See **Accessing Radio Information** to determine your radio's software version.
Check with your dealer or system administrator for more details of all the features supported.

Notice to Users (FCC and Industry Canada)

This device complies with Part 15 of the FCC rules and RSS 210 of the Industry Canada rules per the conditions listed below:
1 This device may not cause harmful interference.
2 This device must accept any interference received, including interference that may cause undesired operation.
3 Changes or modifications made to this device, not expressly approved by Motorola, could void the user's authority to operate this equipment.

RADIO PARTS AND CONTROLS

MODEL 2

Antenna

16-Position Channel Knob

Volume Knob

Top (Orange) Button*

LED

Top Light bar

Microphone

Top Side (Select) Button*

Speaker

Push-to-Talk (PTT) Button

Accessory Connector

Side Button 1*

Menu Select Buttons

Main Display

Side Button 2*

4-Way Navigation Button

Home Button

Data Feature Button

Keypad

FLEET MAP

	Z1	Z2	Z3	Z4	Z5	Z6
C1						
C2						
C3						
C4						
C5						
C6						
C7						
C8						
C9						
C10						
C11						
C12						
C13						
C14						
C15						
C16						

❑ Charging the Battery

⚠️ **WARNING**

To avoid a possible explosion:
• **DO NOT** replace the battery in any area labeled "hazardous atmosphere".
• **DO NOT** discard batteries in a fire.

The Motorola-approved battery shipped with your radio is uncharged. Prior to using a new battery, charge it for a minimum of 16 hours to ensure optimum capacity and performance.

Note: When charging a battery attached to a radio, turn the radio off to ensure a full charge.

Battery Charger

To charge the battery, place the battery, with or without the radio, in a Motorola-approved charger.
The charger's LED indicates the charging progress; see your charger's user guide.

PREPARING YOUR RADIO FOR USE

❑ Attaching/Removing the Battery

Slide the battery into the radio's frame until the bottom latch clicks into place.

Battery

To remove the battery, turn the radio off. Lift up the latch then slide the battery down to remove the battery from the radio.

Battery Latch

Note: If your radio is preprogrammed with volatile-key retention, the encryption keys are retained for approximately 30 seconds after battery removal.

Check with your dealer or system administrator for more information. You can view the status of your IMPRES battery.

❑ Attaching/Removing the Antenna

With the radio turned off, set the antenna in its receptacle and turn clockwise to attach it to the radio.

To remove the antenna, turn the antenna counterclockwise. Make sure you turn off the radio first.

Antenna

❑ Attaching/Removing the Accessory Connector Cover

The accessory connector is located on the antenna side of the radio. It is used to connect accessories to the radio.

Note: To prevent damage to the connector, shield it with the connector cover when not in use.

Insert the hooked end of the cover into the slot above the connector.
Press downward on the cover's top to seat it in the slot.
Once in place, tighten by rotating the thumbscrew clockwise by hand.

To remove the accessory connector cover, rotate the thumbscrew counterclockwise until it disengages from the radio.

If the thumbscrew is too tight, use an Allen wrench to loosen it first.

Rotate and lift the connector cover to disengage it from the radio.

Hooked End

Accessory Connector Cover

Hex Socket Head

PREPARING YOUR RADIO FOR USE

❑ Attaching/Removing the Belt Clip

Align the grooves of the belt clip with those of the radio and press upward until you hear a click.

To remove the clip, use a flat bladed object to press the belt clip tab away from the radio.
Then, slide the clip downward and away from the radio.

Belt Clip Grooves

PREPARING YOUR RADIO FOR USE

❑ Turning on/off the Radio

Rotate the **On/Off/Volume Control Knob** clockwise until you hear a click.

If the power-up test is successful, you see the Home screen.

Note: If the power-up test is unsuccessful, you see **Error XX/YY** (**XX/YY** is an alphanumeric code).
Turn off the radio, check the battery, and turn the radio back on. If the radio fails the power-up test again, record the **Error XX/YY** code and contact your dealer.

Note: If the power-up test is successful, but you see **Hardware board absent** or **Hw Board Mismatch**.
Then, send the radio to the qualified technician to fix this error.
If the power-up test is successful, but you see, **Hw Board Failed** or **Man-Down Hw Error**, send the radio to the qualified technician to fix this error.

To turn off the radio, rotate the **On/Off/Volume Control Knob** counterclockwise untilyou hear a click.

On/Off/Volume Control Knob

PREPARING YOUR RADIO FOR USE

❑ **Adjusting the Volume**

To increase the volume, rotate the **On/Off/Volume Control Knob** clockwise.

To decrease the volume, rotate the **On/Off/Volume Control Knob** counterclockwise.

On/Off/Volume
Control Knob

IDENTIFYING RADIO CONTROLS

❑ Accessing the Preprogrammed Functions

You can access various radio functions through one of the following ways:
- A short or long press of the relevant programmable buttons.
  OR
- Use the **Menu Select Buttons** (⬤ , ⬤⬤ , and ⬤∴).

Using the Menu Select Buttons

The **Menu Select Buttons** allow to access the menu entries of features.

Note: Check with your dealer or system administrator for the list of features activated in your radio.

Your radio may be preprogrammed differently from the following example, but the steps for selecting a channel may appear as shown below:

.   ⬤⬤

Using the Navigation Buttons

Home Button

The 🏠 button returns you to the Home (default) screen. In most cases, this is the current mode.
For selected radio features, the 🏠 button is also used to save user-edited radio settings or information before returning you to the Home screen.

Note: Some features do not require you to press 🏠 to go to the Home screen. Refer to the individual feature sections in this manual for further details on saving user-edited radio settings or information.

Data Feature Button

Use this button to access data-related features, such as the Text Messaging Service (TMS) feature screen.

4-Way Navigation Button

Use this button to scroll up, down, left or right.
Press and release one of the button to scroll from one entry to the next one. Press and hold one of the button to have the radio toggles through the list automatically (release the button to stop).

❑ Push-To-Talk (PTT) Button

The **PTT** button on the side of the radio serves two basic purposes:

• While a call is in progress, the **PTT** button allows the radio to transmit to other radios in the call.
Press and hold down **PTT** button to talk. Release the **PTT** button to listen.
The microphone is activated when the **PTT** button is pressed.

• While a call is not in progress, the **PTT** button is used to make a new call.

Push-to-Talk (PTT) Button

❑ Status Icons

The 160 x 90 pixel front liquid crystal display (LCD) of the radio shows radio status, text entries, and menu entries. The top display row contain color icons that indicate radio operating conditions.

The following are the icons that appear on the radio's display.

Receiving
Radio is receiving a call or data.

Transmitting
Radio is transmitting a call or data.

Battery
The number of bars (0 – 4) shown indicates the charge remaining in the battery. Blinks when the battery is low.

Received Signal Strength Indicator (RSSI)
The number of bars displayed represents the received signal strength for the current site, for trunking only. The more stripes in the icon, the stronger the signal.

Direct
• On = Radio is currently configured for direct radio-to-radio communication (during conventional operation only).
• Off = Radio is connected with other radios through a repeater.

Power Level
• L = Radio is set at Low power.
• H = Radio is set at High power.

IDENTIFYING STATUS INDICATORS

Z **Scan**
Radio is scanning a scan list.

Z. **Vote Scan Enabled**
The vote scan feature is enabled.

❑ Top Light bar and LED Indicators

The Top Light bar and LED indicators show
the operational status of your radio.

Top Light bar

LED

IDENTIFYING STATUS INDICATORS

❑ **Top Light bar and LED Indicators**

LED Indications

Solid red – Radio is transmitting.

Blinking red – Radio is transmitting at low battery condition.

Rapidly blinking red – Radio has failed the self test upon powering up or encountered a fatal error.

Solid yellow (Conventional Only) – Channel is busy.

Blinking yellow – Radio is receiving a secured transmission.

Solid green – Radio is powering up, or is on a non-priority channel while in the Scan List Programming mode.

Blinking green – Radio is receiving an individual or telephone call, or is on a Priority-Two channel while in the Scan List Programming mode.

Rapidly blinking green – Radio is on a Priority-One channel while in the Scan List Programming mode.

Note: No LED indication when the radio receives a clear (non-secured) transmission in trunking Mode.

❑ Intelligent Lighting Indicators

This feature temporary changes the radio's display backlight color and the alert text background color to help signal that a radio event has occurred.

Note: This feature must be preprogrammed by a qualified radio technician.

Backlight and Bar Color	Notification	When
Orange	Emergency Alerts	The radio initiates an emergency alarm or call.
		The radio receives an emergency alarm or call.
		The radio initiates the Man Down Post-Alert timer.
		The radio initiates Fireground Evacuation alarm.
Red	Critical Alerts	The radio battery is low.
		The radio is out of range.
		The radio enters fail-soft mode.
		The radio is unable to establish a full connection with the system.
		The radio is unable to authenticate or register with the system.
		The radio lost GPS signal or GPS function fails.
Green	Call Alerts	The radio receives a private call.
		The radio receives a phone call.
		The radio receives a call alert.
		The radio receives a selective call.
		The radio lost GPS signal or GPS function fails.

IDENTIFYING STATUS INDICATORS

Orange	Red	Green
Emergency Alerts	Critical Alerts	Call Alerts

❑ Alert Tones

An alert tone is a sound or group of sounds. Your radio uses alert tones to inform you of your radio's conditions. The following table lists these tones and when they occur.

You Hear	Tone Name	Heard
Short, Low-Pitched Tone 🔊 **Play**	Radio Self Test Fail	When radio fails its power-up self test.
	Reject	When unauthorized request is made.
	Time-Out Timer Warning	Four seconds before time out.
	No ACK Received	When radio fails to receive an acknowledgment.
	Individual Call Warning Tone	When radio is in an individual call for greater than 6 seconds without any activity.
Long, Low-Pitched Tone 🔊 **Play**	Time-Out Timer Timed Out	After time out.
	Talk Prohibit/**PTT** Inhibit	(When **PTT** button is pressed) transmissions are not allowed.
	Out of Range	(When **PTT** button is pressed) the radio is out of range of the system.
	Invalid Mode	When radio is on an unpreprogrammed channel.
A Group of Low-Pitched Tones 🔊 **Play**	Busy	When system is busy.

IDENTIFYING STATUS INDICATORS

You Hear	Tone Name	Heard
Short, Medium-Pitched Tone 🔊 **Play**	Valid Key-Press	When correct key is pressed.
	Radio Self Test Pass	When radio passes its power-up self test.
	Clear Voice	At beginning of a non-coded communication.
	Priority Channel Received	When activity on a priority channel is received.
	Emergency Alarm Entry	When entering the emergency state.
	Central Echo	When central controller has received a request from a radio.
Long, Medium-Pitched Tone 🔊 **Play**	Volume Set	When volume is changed on a quiet channel.
	Emergency Exit	When exiting the emergency state.
A Group of Medium-Pitched Tones 🔊 **Play**	Fail-soft	When the trunking system fails.
	Automatic Call Back	When voice channel is available from previous request.
	Talk Permit	(When **PTT** button is pressed) verifying system accepting transmissions.
	Keyfail	When encryption key has been lost.
	Console Acknowledge	When status, emergency alarm, or reprogram request ACK is received.
	Received Individual Call	When Call Alert or Private Call is received.
	Site Trunking	When a SmartZone trunking system fails.
Short, High-Pitched Tone (Chirp)	Low-Battery Chirp	When battery is below preset threshold value.

IDENTIFYING STATUS INDICATORS

You Hear	Tone Name	Heard
Ringing	Fast Ringing	When system is searching for target of Private Call.
	Enhanced Call Sent	When waiting for target of Private Call to answer the call.
	Phone Call Received	When a land-to-mobile phone call is received.
Gurgle 🔊 **Play**	Dynamic Regrouping	(When the **PTT** button is pressed) a dynamic ID has been received.
Unique, Low-Pitched Chirp	New Message	When a new message is received.
Unique, High-Pitched Chirp	Priority Status	When a priority message is received.
Incremental-Pitched Tone	Bluetooth Paired Tone	When Bluetooth accessory is paired with the radio.
	Bluetooth Connected Tone	When Bluetooth accessory is connected to the radio.
Decremental-Pitched Tone	Bluetooth Unpaired Tone	When Bluetooth accessory is unpaired from the radio.
	Bluetooth Disconnected Tone	When Bluetooth accessory is disconnected from the radio.
A Group of Very High-Pitched Tones	Man Down Post-Alert	When the Post-Alert Timer is active.

GENERAL RADIO OPERATION

❑ Selecting a Zone

A zone is a group of channels.

Procedure:

1 < or > to **Zone**.

2 Press the **Menu Select** button directly below **Zone.**

3 ⋀ or ⋁ to the required zone.

4 Press the **PTT** button to transmit on the displayed zone channel.

OR
Press the **Side Middle B**utton for Zone UP

Press **Side Bottom** Button for Zone Down

❑ Selecting a Radio Channel

A channel is a group of radio characteristics, such as transmit/receive frequency pairs.

Procedure:

[16-Position Select Knob]
1 Turn the preprogrammed **16-Position Select Knob** to the desired channel.

❑ Repeater or Direct Operation

The **REPEATER** operation increases the radio's range by connecting with other radios through a repeater.
The transmit and receive frequencies are different.

The **DIRECT** or "talkaround operation" allows you to bypass the repeater and connect directly to another radio.
The transmit and receive frequencies are the same.

Menu Select Buttons

Home Button

Keypad

Data Feature Button

4-Way Navigation Button

**Zone A
Chan 1**
Direct mode
Chan | Scan | Dir

ADVANCED FEATURES

❑ **Scan Lists**

Scan lists are created and assigned to individual channels/groups.

Your radio scans for voice activity by cycling through the channel/group sequence specified in the scan list for the current channel/group.

Your radio supports different types of Scan Lists:
• Trunking Priority Monitor Scan List
• Conventional Scan List
• Talkgroup Scan List

ADVANCED FEATURES

❑ Scan Lists

Viewing a Scan List

Procedure:

1 < or > to **ScnL.**

2 Press the **Menu Select** button directly below **ScnL.**

3 ⌃ or ⌄ to view the members on the list.

4 Press 🏠 to exit the current display and return to the Home screen.

Menu Select Buttons

Data Feature Button

Home Button

4-Way Navigation Button

Keypad

ADVANCED FEATURES

❏ Scan Lists

Editing the Scan List

This feature lets you change scan list members and priorities.

Procedure:

[Preprogrammed Button]
1 Long press the preprogrammed **Scan List Programming** button (side button).

2 ⌃ or ⌄ to the entry you want to edit.

3 Press the **Menu Select** button directly below **Sel** to add and/ or change the priority of the currently displayed channel in the scan list.
OR
Press the **Menu Select** button directly below **Del** to delete the currently displayed channel from the scan list.
OR
Press the **Menu Select** button directly below **Rcl** to view the next member of the scan list.

4 ⌃ or ⌄ to select more channels to be added or deleted.

5 Press 🏠 to exit scan list programming and return to the Home screen.

OR
[Menu]
1 ⟨ or ⟩ to **ScnL**.

2 Press the **Menu Select** button directly below **ScnL**.
The display shows the lists that can be changed.

3 ⌃ or ⌄ to the entry you want to edit.

4 Press the **Menu Select** button directly below **Sel** to add and/ or change the priority of the currently displayed channel in the scan list.
OR
Press the **Menu Select** button directly below **Del** to delete the currently displayed channel from the scan list.

ADVANCED FEATURES

☐ Scan

Turning Scan On or Off

This feature allows you to monitor traffic on different channels by scanning a preprogrammed list of channels.

Procedure:

[Preprogrammed Button]

1 Press the preprogrammed **Scan** button to initiate or stop scan.

2 **Side Top Button**

Menu Select Buttons

Home Button

Data Feature Button

4-Way Navigation Button

Keypad

ADVANCED FEATURES

❑ Scan

Deleting a Nuisance Channel

If a channel continually generates unwanted calls or noise (termed a "nuisance" channel), you can temporarily remove the unwanted channel from the scan list.

This capability does not apply to priority channels or the designated transmit channel.

Procedure:

[Preprogrammed Button]

1 When the radio is locked onto the channel to be deleted, press the preprogrammed **Nuisance Delete** button.
The radio continues scanning the remaining channels in the list.

OR
[Menu]

1 < or > to **Nuis**.

2 Press the **Menu Select** button directly below **Nuis**.
The radio continues scanning the remaining channels in the list.

16-Position Channel Knob

Volume Knob

Top Side (Select) Button*

Push-to-Talk (PTT) Button

Side Button 1*

Side Button 2*

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ADVANCED FEATURES

☐ Scan

Restoring a Nuisance Channel

Procedure:

To restore the deleted nuisance channel, do one of the following:

• Turn the radio off and then turning it on again.
OR
• Stop and restart a scan via the preprogrammed **Scan** button or menu.
OR
• Change the channel via the **16-Position Select knob**.

16-Position Channel Knob

Volume Knob

Top Side (Select) Button*

Push-to-Talk (PTT) Button

Side Button 1*

Side Button 2*

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❑ **Emergency Operation**

The Emergency feature is used to indicate a critical situation.

If the **Top (Orange)** button is preprogrammed to send an emergency signal, this signal overrides any other communication over the selected channel.

Your radio supports the following Emergency mode:
• Emergency Alarm with Emergency Call
•

Only **one** of the Emergency modes above can be assigned to the preprogrammed **Emergency** button.

Note: To exit emergency at any time, press and hold the preprogrammed **Emergency** button for about a second.

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ADVANCED FEATURES

❑ Emergency Operation

Sending an Emergency Alarm with Emergency Call

Procedure:

1 Press the preprogrammed **Emergency** button.

*The display shows **Emergency** and the current zone or channel.*
You hear a short, medium-pitched tone and the LED momentarily blinks red.
OR
*The display shows **No emergency**, if the selected channel does not support emergency.*

2 The radio enters the Emergency Call state when:
You receive the dispatcher's acknowledgment.
*The display shows **Ack received**.*
OR
You receive no acknowledgement.
*The display shows **No acknowledge**.*
OR
You press the **PTT** button while in the Emergency Alarm mode.

3 Press and hold the **PTT** button.
Speak clearly into the microphone.

4 Release the **PTT** button to end the transmission and wait for a response from the dispatcher.

5 Press and hold the preprogrammed **Emergency** button for about a second to exit the Emergency Call mode.

ADVANCED FEATURES

❑ Trunking System Controls

Using the Fail-soft System

The fail-soft system ensures continuous radio communications during a trunked system failure.

If a trunking system fails completely, the radio goes into fail-soft operation and automatically switches to its fail-soft channel.

Procedure:

1 During fail-soft operation, your radio transmits and receives in conventional operation on a predetermined frequency.

2 You hear a medium-pitched tone every 10 seconds and the display shows **Fail-soft**.

When the trunking system returns to normal operation, your radio automatically leaves fail-soft operation and returns to trunked operation.

Model 2

Model 3

ADVANCED FEATURES

☐ Trunking System Controls

Going Out of Range

When your radio goes out of the range of the system, it can no longer lock onto a control channel.

Procedure:

1 *You hear a low-pitched tone.*
AND/OR
*The display shows the currently selected zone/channel combination and **Out of range**.*

Your radio remains in this out-of-range condition until:
It locks onto a control channel.
OR
It locks onto a fail-soft channel.
OR
It is turned off.

☐ Trunking System Controls

Using the Site Trunking Feature

If the zone controller loses communication with any site, that site reverts to site trunking.

The display shows the currently selected zone/channel combination and **Site trunking**.

Note: When this occurs, you can communicate only with other radios within your trunking site.

Model 2   *Model 3*

❑ Using the Time-Out Timer

This feature turns off your radio's transmitter. You cannot transmit longer than the preset timer setting.

If you attempt to do so, the radio automatically stops your transmission, and you hear a talk-prohibit tone.

The timer is defaulted at 60 seconds, but it can be preprogrammed from 3 to 120 seconds, in 15-second intervals, or it can be disabled entirely for each radio mode, by a qualified radio technician.

Note: You will hear a brief, low-pitched, warning tone four seconds before the transmission times out.

Procedure:

1 Hold down the **PTT** button longer than the preprogrammed time.
You hear a short, low-pitched warning tone, the transmission is cut-off, and the LED goes out until you release the PTT button.

2 Release the **PTT** button.
The timer resets.

3 Press the **PTT** button to re-transmit.
The time-out timer restarts and the LED lights up solid red.

❑ **Setting the Time and Date**

You can set the time and date for your radio.

Settings:

- The default time setting is a 12-hour clock.
  The display shows **12:00AM**.
- The AM/PM selection is not available for the 24-hour clock setting.
- The default setting for the domestic date shows **MDY**.

Note: Check with your dealer or system administrator for additional programmable settings for this feature.

Procedure:

1 < or > to **Clck**.

2 Press the **Menu Select** button directly below **Clck**.
The display shows the current setting of the radio.

3 Press the **Menu Select** button directly below **Edit**.
The first item blinks.

4 ∧ or ∨ to change the selected item.
  OR
  < or > one or more times to move to an item you wish to change.
  ∧ or ∨ to change the selected item.
  OR
  Press the **Menu Select** button directly below **Exit** to exit the screen without making any changes and return to the Home screen.

5 Press the **Menu Select** button directly below **Ok** once you have finished to save your changes and return to the Home screen.
  OR
  Press the **Menu Select** button directly below **Cncl** to discard all changes and return to the Home screen.

Press 🏠 at any time to return to the Home screen without saving your changes.

Note: If a call arrives while the radio is in the clock-setting menu, the radio exits clock setting and displays the call information. Any changes made before the call is NOT saved.