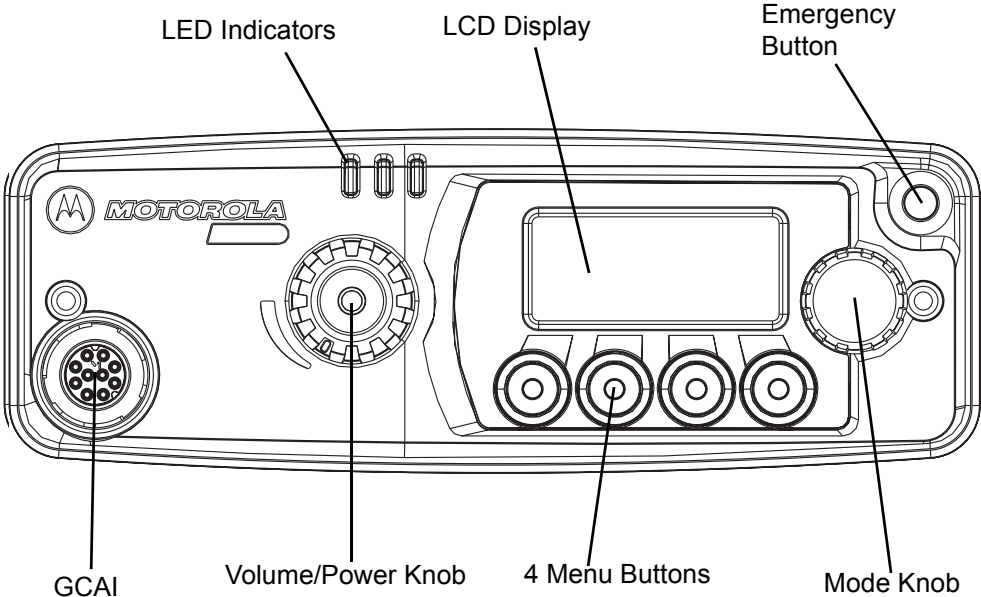


# PM1500 Control Head



# PM1500 User Guide

Mobile Radio



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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, Inc.

Address: 8000 West Sunrise Boulevard

Plantation, FL 33322 USA

Phone Number: 1-888-567-7347

Hereby declares that the product:

Model Name: **PM1500**

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.

---

## Product Safety and RF Exposure Compliance



Caution

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

### ATTENTION!

**This radio is restricted to occupational use only to satisfy FCC RF energy exposure requirements. Before using this product, read the RF energy awareness information and operating instructions in the Product Safety and RF Exposure booklet enclosed with your radio (Motorola Publication part number 6881095C99) to ensure compliance with RF energy exposure limits.**

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## Notations Used in This Manual

Throughout the text in this publication, you will notice the use of WARNING, CAUTION, and Note notations. These notations are used to emphasize that safety hazards exist, and care that must be taken or observed.




**WARNING:** An operational procedure, practice, or other condition, which might result in injury or death if not carefully observed.



**CAUTION:** An operational procedure, practice, or other condition, which might result in damage to the equipment if not carefully observed.

**Note:** Note: An operational procedure, practice, or other condition, which is essential to emphasize.

The following special notations identify certain items:

<i>Example</i>	<i>Description</i>
<b>Programmable button or</b> 	Buttons and keys are shown in bold print or as a key symbol.
<b>CALL</b>	Menu items (softkeys) are similar to the way they appear on the radio's display.

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## Notes

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## Notes

# Introduction

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## Using Your Radio: The Basics

This chapter gives you the basic knowledge you need in order to use your radio. The following topics are covered:

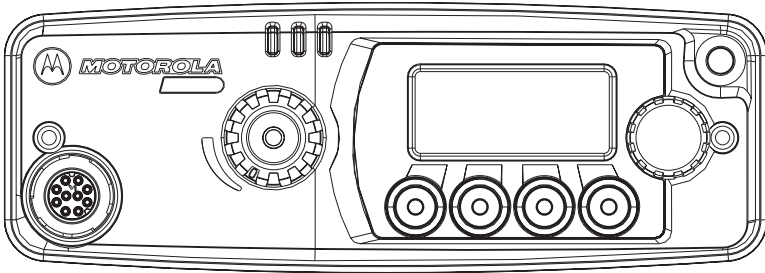
- Getting Started (page 2)
- Major Radio Components (page 4)
- Operating Your Control Head (page 6)
- Turning On the Radio (page 6)
- Setting the Volume (page 7)
- Turning the Display/Keypad Light On or Off (page 7)
- Display Status (page 8)
- Feature Control (page 8)
- Interpreting Radio Status Indicators (page 9)

## Getting Started

The PM™ 1500 Analog Mobile Radio is among the most sophisticated two-way radios available. It can operate in the following frequency ranges:

<i>VHF</i>	<i>UHF</i>
136-174 MHz	380-470 MHz

These channels provide maximum communications capability under varying operating conditions.



The PM1500 Mobile Radio can include an optional RS-232 data port to interface with external devices, such as certain laptop computers.

**Note:** In this manual—

Your PM1500 Mobile Radio utilizes Motorola's revolutionary **FLASHport™** technology. This allows your radio's capabilities to be flexible, because **FLASHport** makes it possible to add software that drives these capabilities both at the time of purchase and later on. Similar to how a computer can be loaded with different software, your radio's features and capabilities can be upgraded with software.

**FLASHport** allows you to add software to your radio as your needs change and as technology advances, making your radio investment go further.

**FLASHport** is the future of radio communications, and it's yet another example of Motorola's commitment to your satisfaction.

## Major Radio Components

Your radio has two major components: the radio unit installed in your vehicle and the control head that is used to activate various radio features. You may also have radio accessories installed based on the specific configuration of your radio.

This user guide describes how to use your radio and its control head. The foldout page inside the back cover of this guide contains an illustration of the control head showing all the controls and programmable buttons situated on the control head. Keep this foldout open as a reference as you review the procedures in this user guide.

## The PM1500 Radio

The PM1500 radio unit contains a receiver, a transmitter, and associated internal circuitry. The radio is programmed by your system manager to meet your specific needs and/or those of your workgroup.

## The Control Head

The control head that came with your PM1500 radio has the following features (refer to the foldout at the back of this user guide):

- **Power On/Volume Knob:** Used to turn the radio on or off and also to adjust the volume.
- **One-line, 8-character-per-line, liquid-crystal display (LCD):** Shows alphanumeric messages or feature information as you use your radio. Also displays annunciators above the character lines, indicating the status of certain radio functions (see page 7).



- **Mode Knob:** Used to rotate through the list of available options, and also acts as a channel selector.

- **Emergency Button:** Programmed as the emergency button by default but can be custom programmed as any other feature.
- **LED indicator:** Green/red/yellow light-emitting diode that indicates radio status as you operate various features (see page 9).
- **Four Programmable Menu Buttons:** Check with your system manager for information on how these buttons have been programmed. Use the foldout at the back of this manual to record the functions that have been programmed to each button.
- **PTT button on mic:** Pressed to transmit on the displayed mode and released to receive.

## Operating Your Control Head

Your control head is designed for ease of use and flexibility of feature control. Before operating the radio, familiarize yourself with the various controls, indicators, and alert tones. Refer to the foldout diagrams in the front and back of this manual for your particular control head.

### Turning On the Radio

Do the following:

- To turn the radio on, push the Volume/Power knob on the control head to turn it on.

After a short time, the red, green and yellow LEDs light up, indicating that the radio is powering up.

The display then shows `PM 1500`.

When the radio is fully powered on, the Zone and Channel text and menu items are displayed. The backlight will turn on to the last selected dim level.

**Note:** Pressing the Power/Volume Knob before the LEDs light up will be ignored.

Pressing the power button anytime after the LEDs light up will **TURN OFF** the radio.

**Note:** If `FL ##/##` appears in the display, the radio will not function until the condition has been corrected.

If `ERR ##/##` appears, some non-critical data has been changed. If either of these displays appear, if the display goes blank, or if the unit appears to be locked up, refer to the "Troubleshooting" section.



## Setting the Volume

Rotate the **Volume** knob clockwise to increase the volume and counterclockwise to decrease the volume.

---

## Adjusting the Display/Keypad Backlight Dim Level

The display light is useful when you need to read the information on the display and locate keys on the keypad in less than optimal lighting conditions (for example, during night time).

To adjust the display and keypad light: Press the DIM softkey, which is one of the four of the programmable menu buttons.

The Control Head ships from the factory with the backlight set to HIGH.

---

## Keypad Microphone Option

When accessing a feature on the radio, use the left or right toggles on the navigation key to access further options within the menu.

If you cannot locate a menu item, it may not be programmed, or it may not apply to the radio's current setting.

The keypad also enables you to use certain capabilities within features such as Call Alert and Selective Call. These capabilities are described in detail within the appropriate sections of this manual.

**Note:** The checkmark and X buttons on the keypad microphone are for future use and not currently used by the radio.

---

## Conventional Channels

Conventional channels consist of a transmit and receive frequency pair, and associated squelch code pair, and a time-out timer value. See “Conventional Radio Features” on page 29.

## Field Programming

Other radio features may be slaved to the selected mode by field programming. This *mode slaving* means that the radio is preprogrammed to automatically give you the proper operation for each mode you select.

You may use the control head to program your own mode names. The names you assign are clearly shown in the alphanumeric display. You can see all the key operating information, including the mode selected or being scanned, and the on/off status of various features. The operating conditions are shown either by the display or by visual/ audio indicators, or by both.

## Display Status

The control head display indicates your selected mode, or the currently active receive mode.

## Feature Control

You can turn the various radio features on or off, change modes, and adjust the volume.

To exit a feature, such as call, press the **EXIT** or **HOME** button located on the keypad mic.







## Interpreting Radio Status Indicators



Your radio has three types of status indicators:

- Status annunciators that appear on the display
- LED indicators
- Alert tones

### Status Annunciators

These are small icons that appear on the display above the channel name indicating status as you operate various radio features.

<i>Annunciator</i>	<i>Indication</i>
	Carrier Squelch All active traffic on the selected channel is being monitored. When not displayed, traffic is not open to monitoring.
	Call Received Flashes when a Selective Call, Call Alert is received.
	Scan The radio is scanning a preprogrammed list of channels/modes for activity.
	Priority Scan Indicates scanning of a priority mode (flashing for Priority 1 Mode; solid for Priority 2 mode).
	Low Tx Power Level Transmission Power is low. (By default, the radio transmission power is set too high, at which state this icon will not show up.)
	Direct/Talkaround When on, indicates you are talking directly to another radio. When off, you are talking through a repeater.

<b><i>Annunciator</i></b>	<b><i>Indication</i></b>
	View/Program Mode The radio is in the view or program mode. (flashing for program mode; solid for view mode.)
	In-Call User Alert Voice muting has been activated as radio is receiving.

## LED Indications

The LED indicator on the front of the control head indicates operational status as you use various features:

<b><i>LED State</i></b>	<b><i>Indication</i></b>
Continuous RED when you press PTT button to transmit	Normal transmission
YELLOW	Channel activity is present
GREEN	Receiving a call or page

## Alert Tones

Your radio uses alert tones to inform you of radio conditions.

<b><i>Tone Type</i></b>	<b><i>Indication</i></b>	<b><i>Action</i></b>
Short, low pitched tone	Unsuccessful power-up. Radio failed self-test. Radio not ready for use.	Contact your service representative.
	Invalid (bad) key press. A key press was rejected.	-
	Time-out timer warning. Transmission time will expire in four seconds.	-

<b><i>Tone Type</i></b>	<b><i>Indication</i></b>	<b><i>Action</i></b>
Short, medium pitched tone	Valid (good) key press. A key press was accepted.	-
	Pressed emergency button to enter emergency. Emergency entered.	-
Short, high pitched tone	Successful power-up. Radio passed self-test.	-
Continuous, low pitched tone	Transmit on receive-only mode. Pressed PTT button on receive only mode.	Release PTT button.
	Transmit inhibit on busy mode. Pressed PTT button while mode is busy	
	Invalid mode. An invalid or unprogrammed operation.	-
	Time-out timer timed out. Transmission terminated.	Release PTT button.
Continuous, medium pitched tone	Emergency alarm/call exit. Exiting.	-

<b><i>Tone Type</i></b>	<b><i>Indication</i></b>	<b><i>Action</i></b>
Single, medium pitched tones followed by group of four medium pitched tones	Your page has been received by the target radio.	-
Group of two medium pitched tones	Selective Call received.	-
Group of four medium pitched tones every five seconds	Call Alert (page) received by your radio.	-
Four short, medium pitched tones	Emergency alarm acknowledged.	-
Continuous, low pitched tone	No Emergency. Current conventional system does not have emergency enabled. No emergency tone.	-
Group of two high pitched tones	Fast ring in Selective call. System is searching for target radio.	-

# Basic Operating Procedures

---

## Basic Functions

This chapter shows you how to access the radio's basic functions and includes the following topics:

- Monitoring Conventional Modes (page 14)
- Selecting the Zone or Mode (page 15)
- Receiving on Conventional Modes (page 16)
- Adjusting Squelch Settings (page 16)
- Selecting the Transmit Level (page 17)
- Transmitting on Conventional Modes (page 17)

## Monitoring Conventional Modes

To monitor conventional modes, do the following:

- 1 Press the preprogrammed Monitor button.
- 2 The display shows **MON ON** and the carrier squelch annunciator is turned on indicating that the squelch circuit has been opened, allowing you to monitor all the traffic on the channel.



---

To cancel monitoring


- 1 Press the preprogrammed Monitor button.
- 2 The display shows **MON OFF** and the carrier squelch annunciator is turned off.





## Selecting the Zone or Mode (Channel)

A *channel* is a group of radio characteristics such as transmit/receive frequency pairs stored in your radio. A *zone* is a grouping of channels. A *mode* is a combination of zones and channels. Your radio is programmed by your system manager to have channels and zones that you need in order to perform your day-to-day operations. When your radio powers up, it defaults to the last selected zone and channel before it was powered off previously. At times, you may need to select a different zone or channel to transmit or receive on, as follows:

- 1 Press the  button below *zone*.
- 2 The display shows the current zone and mode.
- 3 Rotate the Mode Knob until the desired zone is displayed



**OR**

- 4 Press **ZHUP** or **ZNDN** preprogrammed buttons or softkeys to scroll through the zones.



**OR**

- 5 If you know the zone number, enter it using the keypad on the keypad mic.
- 6 Press the **PTT** button to begin transmitting on the displayed zone.
- 7 To select a particular mode within a zone, rotate the **Mode Knob** until the desired mode is displayed.

**Note:** After the selection timer expires, the radio will automatically select the zone and mode.

## Receiving on a Conventional Mode

Follow these steps to receive while on conventional mode:

- 1 Select a desired zone and mode.
- 2 When you hear a transmission, use the **Volume Knob** to adjust the volume to a comfortable listening level.

Your radio is now set to receive on the selected mode.

**Note:** If the mode is busy when your radio is receiving a clear signal, the yellow LED blinks continuously until the mode is not in use.

---

## Adjusting the Squelch Level

Your radio's ability to transmit or receive signals varies as you move away from or close to your base station. You can adjust your radio's squelch to improve its ability to receive transmissions.

Do the following:

- 1 Press **SQL**.  
The display shows **SQL XX**, where **XX** is a squelch level setting of 0 to 15.
- 2 To scroll to the desired squelch setting, choose on the following:

Rotate the **Mode Knob**

**OR**

Press the + or - softkeys

**OR**

Use the navigation keys on the keypad mic.

- 3 Press the **EXIT** softkey to return to the selected channel.
-

## Transmitting on Conventional Modes

Follow these steps to transmit while on a conventional mode:

- 1 Select a desired zone and mode.
- 2 When a mode becomes available, press and hold the PTT button to transmit. Speak clearly into the mic.

**Note:** If you try to transmit on a receive-only mode, you will hear a continuous low-pitched (“invalid mode”) tone.

---

## Time-Out Timer

This feature limits the amount of time you can continuously transmit. Your system manager can program the timer for up to 465 seconds at 15-second intervals. PM1500 radios are programmed at the factory to time-out after 60 seconds.

**Note:** You hear a low-pitched alert tone four seconds before your transmission is about to expire.

If you hold down the **PTT** button longer than the programmed time, you hear a continuous, low-pitched tone. This tone ceases to sound when you release the **PTT** button, and you are not allowed to transmit.

# General Radio Features

---

## Often-Used Features

This chapter shows you how to access the most frequently used features. The following topics are covered:

- Emergency Call and Alarm (page 19)
- Scan Operation (page 21)
- Optional External Alarms (Horn and Lights) (page 24)
- Push-To-Talk Identification (PTT-ID) (page 26)
- Call Alert Page (page 26)

## Emergency Call and Alarm

The emergency call and alarm features allow you to have priority channel access to the dispatcher in an emergency situation.

The desired type of emergency feature—alarm, call, call and alarm — can be preprogrammed by a qualified radio technician.

The radio must be turned on to activate any emergency feature.

### Initiating an Emergency Alarm

The emergency alarm feature sends a data transmission to alert the dispatcher of your emergency condition and identify your unit ID.

Press the emergency button.

A tone sounds and the display alternates `EMERGENCY` with the current zone/channel.

A dispatcher acknowledgment `ACK RCVD` display follows.

The radio automatically returns to normal operation. No further action is required.

---

## Initiating an Emergency Call and Alarm

If the radio has both emergency call and alarm features, it automatically proceeds to the call mode after the alarm is acknowledged.

- 1 Press the emergency button to activate the emergency call/ alarm feature.

The display begins alternating `EMERGENCY` with the current zone/ channel.

A dispatcher acknowledgment (four high-pitched tones) follows, accompanied by an `ACK RCVD` display.

- 2 Press the **PTT** button and announce your emergency.
- 3 To exit from the emergency state altogether, press and hold the emergency button until a tone sounds.

The alternating `EMERGENCY` display disappears, and the radio returns to normal operation.

**Note:** Turning the radio off also cancels the emergency state.

---

## Special Considerations for Emergencies

- If you press the emergency button while in a mode that has no emergency capability, a low-pitched tone sounds.
- If the emergency alarm is not acknowledged, a tone sounds and the display shows `NO ACK`.
- If you press the emergency button, then change to a mode that has no emergency capability, a `NO EMERG` display alternates with the mode name display, and a continuous low-pitched tone sounds until a valid emergency mode is selected or until the emergency is cancelled.
- When an emergency is active, changing to another mode where emergency is enabled causes an emergency alarm and/or emergency call to be active on the new mode.

## Types of Scan

Your PM1500 radio can monitor traffic on many different channels by scanning a list containing as many as 15 conventional or trunked modes. Up to 2 different scan lists are available per radio. A special package configured by your service provider can allow up to a maximum of 20 scan lists. Setting the modes to be scanned is programmed in advance by a qualified radio technician.

### Types of Scan Lists

<i>List Type</i>	<i>Description</i>
Conventional	Only conventional modes are in the list.

### Types of Scanning

<i>Scan Type</i>	<i>Description</i>
Automatic (autoscan)	When selected, a channel with autoscan automatically begins scanning its associated scan list. The radio continues auto scanning until you select a channel without autoscan enabled.
Operator-Selectable	Scan can be programmed, by a qualified radio technician, to be selected either from a menu or by a preprogrammed <b>Scan</b> button.

**Note:** You cannot turn scan off on a mode that has autoscan enabled.

**Note:** Scan lists stay in memory when you turn scan off, turn the radio off, or disconnect the radio from the battery.

## Turning Scan On or Off

- 1 Press button below **SCAN**.

OR



Alternatively press the preprogrammed **Scan** button.

- 2 The display shows **SCAN ON** if previously **SCAN OFF** was selected and the scan indicator is turned on.



OR

- 3 The display shows **SCAN OFF** if previously **SCAN ON** was selected and the scan indicator is turned on.





## Deleting Nuisance Modes

During scanning, you can temporarily delete modes you do not want to hear. This feature must be preprogrammed by your system manager.

Follow these steps to delete a nuisance mode:

- 1 When the radio is locked onto the mode you want to delete, Press the preprogrammed *Nuisance Delete* button.

**OR**

Press the **NUIS** softkey to delete the mode.

A valid key-press chirp tone sounds. The mode is deleted and the radio continues to scan the remaining modes

**Note:** You cannot delete priority modes and the designated transmit channel.

- 2 To resume scanning the deleted mode, press scan off and then back on again.

**OR**

Turn the power off and then back on again.

---

## Hang Up Box (HUB)

To temporarily suspend Scan Mode operation, remove the microphone from the Hang Up Box (HUB). You are allowed to use the microphone while scan is suspended. Priority Member scanning is **not** suspended, however. This feature applies to all Scan Lists and Scan Types. Scan is resumed once the microphone is returned to the holding clip and the preprogrammed hang time has elapsed.

**Note:** Priority Scan List members are continuously scanned only when the Scan List, **Designated Tx Member** field is set to "Talkback" in the radio programming. Otherwise, all scan mode operation is suspended.

## Optional External Alarms (Horn and Lights)

All control heads can be equipped for external alarms (horn and lights) that are activated when a Call Alert page or Selective Call, is received.

These features are useful when you must leave the vehicle, but need to receive any incoming messages.

The radio always powers up with the horn and lights feature enabled.

## Activating the External Alarm(s)

### Non-Permanent Horn and Lights

- 1 Press the H/L softkey momentarily.  
If necessary use the ► or ◀ buttons on the keypad mic to access other options within the menu.

The last selected alarm(s) are enabled, and the display alternately shows the enabled alarm(s), then the selected mode.

- 2 Press the H/L softkey a second time to turn off the alarm(s).
-

## Receiving a Call While Alarms Are Turned On

When a call is received, the vehicle's horn sounds for four seconds, and/or the car lights turn on for 60 seconds. The time interval can be modified by a qualified radio technician.

The display alternates between the type of call received (**CALL** or **PAGE**) and the selected mode name.

### Turning Off Non-Rearmable External Alarm

- 1 To turn off the external alarm(s), press the **PTT** button or any control-head button.

**Note:** Pressing the **CALL** or **PAGE** softkey will turn off the external alarm(s) and place you directly in that feature.

The **Volume** knob and the **DIM** button have no effect on the state of the external alarm(s).

- 2 To rearm the horn and lights feature, press the **H/L** softkey momentarily.
- 

### Turning Off Rearmable External Alarms

To turn off the external alarm(s), press the **PTT** button or any control head softkey or button other than the **H/L** softkey.

Pressing **CALL** or **PAGE** softkey turns off the external alarm(s) and places you directly in that feature. When the external alarm(s) are turned off, they will be automatically rearmed.

**Note:** Pressing the **H/L** softkey turns off the external alarm(s) and exits the horn and lights feature. To re-arm the feature, press the **H/L** softkey momentarily.

The **Volume** knob and the **DIM** have no effect on the state of the external alarms.

---

## **PTT-ID (For MDC and DTMF Modes only)**

This stands for Push-to-Talk ID. This feature is programmed as needed for each channel by your system manager.

If this feature is made available for your talkgroup, it allows you to see the ID number of the radio from which you are receiving a transmission. This ID could be up to eight characters in length and is shown on your display as well as on your dispatcher's display.

In addition, your radio ID number is automatically sent when you transmit.

## **Call Alert**

The Call Alert feature allows a radio to selectively alert another radio, and to determine whether or not that radio received the alert. A Call Alert page can be initiated, depending on the signaling (MDC, QCII or DTMF) that has been preprogrammed on the channel, after an unsuccessful Selective Call or as a separate feature.

The PM1500 Controller Head is capable of responding to a Call Alert initiated by another radio. It features a unique list of up to 100 preprogrammed ID numbers. A name can be assigned to each ID in the list for your convenience.

## Sending a Call Alert

- 1 Press the **PAGE** softkey.

The **Call Alert** indicator lights and a valid-key chirp sounds.

For MDC, the display shows the last transmitted/received unit ID number.

For DTMF, it shows the last transmitted ID.

For QCII, it shows the first entry in the call list.

- 2 Select a radio in one of the following ways:

- **From the ID number list:**

- Do nothing if you want to call the unit ID currently displayed.

**OR**

- Use the prestored list by using the mode knob or navigation keys on the keypad mic to locate the name/ID you want to call.

**OR**

- Enter, using the keypad on the keypad mic, the ID of the desired unit.

**Note:** Using the keypad to enter the ID of another unit can only be accomplished from the first display shown when **Page** was entered. If the list has been entered, scroll to the first display.

- 3 Press the **SEL** softkey or the microphone **PTT** button.

The display changes to **PLS WAIT**.

**4** Choose one of the following:

- When the called radio acknowledges the page, four additional tones sound and the display changes to **ACK RCVD.**

The radio returns to normal operation.

- If, after six seconds, the called unit fails to acknowledge the alert, a low-pitched tone sounds and the display changes to **NO ACK.**

Try again by pressing the **PTT** button or the **SEL** softkey,

**OR**

Press the **HOME** button to exit.

---

# Conventional Radio Features

---

## Features Used in Conventional Operation

This chapter shows you how to access features available in conventional operation. The following topics are covered:

- Smart PTT (page 30)
- Conventional Talkgroup Calls (page 31)
- Conventional Talkaround (page 32)
- Selective Calls (page 33)

## Smart PTT

Smart PTT is a per-mode feature that gives the system manager better control of radio operations. When smart PTT is enabled in your radio, you will not be able to transmit on an active mode. If you try to transmit (press the **PTT** button) on a busy or active smart PTT channel, a continuous tone sounds until you release the PTT button, and the transmission is inhibited.

The yellow LED lights when the radio is receiving to indicate that the mode is busy.

Three radio-wide variations of smart PTT can be enabled on your radio:

- |   |   |
|---|---|
| Transmit Inhibit on Busy Mode with Carrier            | You will not be able to transmit if any activity is detected on the mode.   |
| Transmit Inhibit on Busy Mode with Wrong Squelch Code | You will not be able to transmit on an active mode that has a squelch code other than your own.                               |
| Quick-Key Override                                    | You can override either of the two previous transmit-inhibit states by quick-keying the radio (two quick PTT button presses). |



## Conventional Talkgroup Calls

The *Talkgroup Select* feature allows you to manually select any one of the available talkgroups.

- 1 Press the **TGRP** softkey.  
The display changes to show the last selected talk group.
- 2 Rotate the **Mode Knob** to choose a different talkgroup.
- 3 Press the **SEL** softkey to save the talkgroup.

The radio returns to the home display.

**Note:** To select the default talkgroup, press the **SEL** softkey while the radio displays **PSET**.

Selecting the **PSET** softkey causes the radio to return to its preprogrammed talkgroup.

To abort the talkgroup menu, press the **HOME** button or the **PTT** button:

- Pressing the **HOME** exits the talkgroup select menu without saving the selected talkgroup choice.
- Pressing the **PTT** button exits the menu without saving the selected talkgroup and allows the radio to transmit.

**Note:** If the encryption key slaved to the new talkgroup is erased, the display shows **KEY FAIL** and a momentary tone is generated. If the encryption key that is slaved to the new talkgroup is not allowed, the display shows **ILGL KEY** and a momentary tone is generated.

---

## Conventional Talkaround

### Talk Direct (Mobile-To-Mobile)

To talk directly to another unit without going through the conventional repeater system:

- 1 Press the **DIR** softkey momentarily.

The **DIR** indicator lights, indicating that the radio is now transmitting directly to another unit.

- 2 To return to repeater operation, press the **DIR** softkey again.

The **DIR** indicator goes out.

**Note:** A conventional personality can be configured to always transmit on the direct mobile-to-mobile frequency. In this case, the **DIR** indicator is lit continuously while the mode is selected.

---

## Selective Call

The Selective Call feature not only allows you to carry on a conversation that is heard only by the two parties involved, but also enables you to determine whether the unit you are calling is in service.

The PM1500 Control Head is capable of responding to a Selective Call initiated by another radio. It features a unique list of preprogrammed ID numbers. This depends on the signaling type (MDC, QCII or DTMF) that has been programmed on the channel. A name may be assigned to each ID in the list for your convenience.

## Answering a Selective Call

When a Selective Call is received, two high-pitched tones sound and the display alternates between `CALL RCV` and the home display.

- 1 Press the `CALL` softkey within 20 seconds of receiving the call. (This time is programmable by a qualified radio technician.)

The display shows the ID number of the calling unit.

- 2 To respond to the call, press the `PTT` button and talk.

If 20 seconds pass before you press the `CALL` softkey, you will not respond privately to the call just received. Instead, when you press the `CALL` softkey, you enter the *Selective Call* state, as described in “Selective Call” on page 33.

**Note:** If you do not press the `CALL` softkey before pressing the `PTT` button, your conversation will be heard by all members of the talk group.

---

## Initiating a Selective Call

To initiate a Selective Call, select a unit to call, then place the call.

- 1 Press the **CALL** softkey.
- 2 Select a unit in one of the following ways:
  - **From the ID number list:**
    - Do nothing if you want to call the unit ID currently displayed.
  - OR**
  - Use the prestored list by turning the **Mode** knob to locate the name/ID you want to call.
  - OR**
  - Enter, using the keypad on the keypad mic, the ID of the desired unit.

**Note:** Using the keypad to enter the ID of another unit can only be accomplished from the first display shown when **CALL** was entered. If the list has been entered, scroll to the first display. Press the numeric keys on the keypad mic to enter the digit of the location number to access a preprogrammed call ID.

- 3 Press the microphone **PTT** button.

A telephone-type ringing sounds if the unit you are calling is in service.

- 4 When the receiving unit answers, identify yourself and begin your Selective Call.
- 5 To return to normal operation, press the **HOME** button.

**Note:** If you do not press the **HOME** button to hang up, your unit will remain in the Selective Call state with the other unit. You will miss all subfleet traffic.

---

## Viewing Your Unit ID Number

- 1 Press the **CALL** softkey momentarily to select the Selective Call feature.
  - 2 Do one of the following:
    - Use the left navigation key on the keypad mic or the Mode Knob to locate the **MY ID** display.

**OR**

    - The display will alternate between **MY ID** and your ID number.
  - 3 To return to normal operation, press the **HOME** button.
- 

## Editing a Unit ID Number in the List

The Selective and Call Alert page features share the same prestored list of units' IDs.

- 1 Press and hold the **CALL** softkey to review the **Call ID** list.
- 2 Use the navigation keys to locate the list member you want to change.
- 3 Press the **NUM** softkey to edit a number.
- 4 Use the keypad mic to update the entry.
- 5 When all the digits are entered, press the **SAVE** softkey to store the new ID.

- 6 Repeat steps 2 through 5 until all the desired IDs have been entered.

**OR**

Do one of the following:

- Press the **HOME** button to return to normal radio operation.

**OR**

- Press **PTT** to exit the feature.

**Note:** The maximum number of characters permitted in a text line is **8**.

---

## Editing a Name in the List

The Selective Call and Call Alert page features share the same prestored list of unit IDs.

- 1 Press and hold the **CALL** or **PAGE** softkey to enter the **Call** ID list.
- 2 Use the navigation keys on the keypad mic or the Mode Knob to locate the list member you want to change.

**OR**

Use the numbered keys to go immediately to the location of a member in the list. For example, press **2** to go to the second member in the list; press **1** and **0** to go to the tenth member in the list, and so on.

- 3 Press the **NAME** softkey to edit a name.
- 4 Change the characters or numbers using any of the numeric keys (**0** through **9**) and special function keys (**\***, **#**) with the keypad mic.

**Note:** The maximum number of characters permitted in a text line is **8**. If you try to add too many characters, you will hear a low-pitched tone.

To edit, do any or all of the following:

- Press the key of the desired character the number of times shown in the table. For example, to enter the character **C**, press the **2** key three times.
- To leave a space in the text, press the up **▶** navigation key on the keypad mic to move the blinking cursor to the next character position, and then enter the next character.
- To delete characters, press the down **◀** navigation key to move backwards over existing characters.

When the last character on the display has been erased, press the down **◀** navigation key again to leave the name-edit mode, without making any changes, and begin the procedure again at step 2.

- 5** To save the changes, press and hold the **SAVE** softkey.
- 6** Repeat steps 2 through 5 until you have modified all the desired names.

**OR**

Do one of the following:

- Press the **HOME** button to return to normal radio operation.

**OR**

- Press **PTT** to exit the feature.

# Troubleshooting

---

The following are suggestions to assist you in troubleshooting possible operating problems.



## CAUTION

The cables that connect to the rear of the radio could have live voltage on some of their pins. Do not remove or reconnect these cables. Only a qualified radio technician should perform this task. Service performed by unauthorized personnel may cause the radio to transmit an emergency alarm even if the unit is turned off.

If your radio is locked up or the display shows FL 01/90, turn the radio off and then back on. If this does not correct the condition, take the radio to a qualified radio technician for service.

If radio operation is intermittent, check with other persons using the system for similar problems before taking the radio in for service.

If symptoms persist or, if your unit exhibits other problems, contact a qualified radio technician.



# Accessories

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Motorola provides the following approved accessories to improve the productivity of your PM1500 mobile two-way radio.

For a list of Motorola-approved antennas, batteries, and other accessories, visit the following web site:

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

## Antennas

Part No.	Description
HAD4006_	VHF, 136–144 MHz, quarterwave whip, roof mount
HAD4007_	VHF, 144–150.8 MHz, quarterwave, roof mount
HAD4008_	VHF, 150.8–162 MHz, quarterwave, roof mount
HAD4009_	VHF, 162–174 MHz, quarterwave, roof mount
HAD4017_	VHF, 146-174 MHz, quarterwave
RAD4010_	VHF, 136–174 MHz, halfwave, roof mount
HAE4003_	UHF, 450–470 MHz, quarterwave whip
HAE4011_	UHF, 450–470 MHz, 3.5 db, roof mount
HAE6010_	UHF, 380–433 MHz, 3.5 db gain
HAE6012_	UHF, 380–433 MHz, quarterwave whip
HAE6013_	UHF, 380–470 MHz, 2.0 db gain, wideband
RAE4014_RB	UHF, 450–470 MHz, 5.0 db

## Cables

Part No.	Description
HKN4192_	Power, 20-ft., remote-mount
HKN6188_	Control head power cable (includes ignition sense)
HKN6164_	Remote Mount Cable (CAN) - 40m (131 ft)
HKN6165_	Remote Mount Cable (CAN) - 35m (115 ft)
HKN6166_	Remote Mount Cable (CAN) - 23m (75 ft)
HKN6167_	Remote Mount Cable (CAN) - 15m (50 ft)
HKN6168_	Remote Mount Cable (CAN) - 10m (30 ft)
HKN6169_	Remote Mount Cable (CAN) - 5m (17 ft)
HKN6170_	Remote Mount Cable (CAN) - 3m (10 ft)
HKN6183_	Cable, CH Programming (RS-232)

## Microphones

Part No.	Description
HMN1090_	Standard Mic
HMN4079_	Keypad Mic
HMN1089_	Water Resistant Mic
HLN1457_	Handset w/Hang up

## Miscellaneous

Part No.	Description
GKN6271_	Ignition Sense Cable
GLN7278_	PTT Footswitch
HKN4258_	External Alarm Cable
HMN1087_	Gooseneck PTT
HLN5113_	Emergency footswitch
HLN5131_	Emergency pushbutton switch
HLN6953_	Buzzer Kit 110 MA
TLN4533_	External Alarm Relay

## Speakers

Part No.	Description
HSN4038_	7.5 W external
HSN4039_	13 W external

## Trunnion Kits

Part No.	Description
HLN6909_	Quick-release, high-power
HLN6910_	Standard high-power
HKN6186_	Trunnion, CH Remote Mount

# Appendix: Maritime Radio Use in the VHF Frequency Range

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## Special Channel Assignments

### Emergency Channel

If you are in imminent and grave danger at sea and require emergency assistance, use **VHF Channel 16** to send a distress call to nearby vessels and the United States Coast Guard. Transmit the following information, in this order:

1 "MAYDAY, MAYDAY, MAYDAY."

2 "THIS IS \_\_\_\_\_, CALL SIGN \_\_\_\_\_."

*State the name of the vessel in distress 3 times, followed by the call sign or other identification of the vessel, stated 3 times.*

3 Repeat "MAYDAY" and the name of the vessel.

4 "WE ARE LOCATED AT \_\_\_\_\_."

*State the position of the vessel in distress, using any information that will help responders to locate you, e.g.:*

- *latitude and longitude*
- *bearing (state whether you are using true or magnetic north)*
- *distance to a well-known landmark*
- *vessel course, speed or destination*

5 State the nature of the distress.

6 Specify what kind of assistance you need.

7 State the number of persons on board and the number needing medical attention, if any.

8 Mention any other information that would be helpful to responders, such as type of vessel, vessel length and/or tonnage, hull color, etc.

9 "OVER."

10 Wait for a response.

11 If you do not receive an immediate response, remain by the radio and repeat the transmission at intervals until you receive a response. Be prepared to follow any instructions given to you.

## Non-Commercial Call Channel

For non-commercial transmissions, such as fishing reports, rendezvous arrangements, repair scheduling, or berthing information, use **VHF Channel 9**.

## Operating Frequency Requirements

A radio designated for shipboard use must comply with Federal Communications Commission Rule Part 80 as follows:

- on ships subject to Part II of Title III of the Communications Act, the radio must be capable of operating on the 156.800 MHz frequency
- on ships subject to the Safety Convention, the radio must be capable of operating:
  - in the simplex mode on the ship station transmitting frequencies specified in the 156.025–157.425 MHz frequency band, and
  - in the semiduplex mode on the two frequency channels specified in the table below.

**Note:** Simplex channels 3, 21, 23, 61, 64, 81, 82, and 83 **cannot be lawfully used** by the general public in US waters.

Additional information about operating requirements in the Maritime Services can be obtained from the full text of FCC Rule Part 80 and from the US Coast Guard.

**Table A-1: VHF Marine Channel List**

Channel Number	Frequency (MHz)	
	Transmit	Receive
1	156.050	160.650
2	156.100	160.700
*	156.150	160.750
4	156.200	160.800
5	156.250	160.850
6	156.300	–
7	156.350	160.950

**Table A-1: VHF Marine Channel List (Continued)**

Channel Number	Frequency (MHz)	
	Transmit	Receive
8	156.400	–
9	156.450	156.450
10	156.500	156.500
11	156.550	156.550
12	156.600	156.600
13**	156.650	156.650
14	156.700	156.700
15**	156.750	156.750
16	156.800	156.800
17**	156.850	156.850
18	156.900	161.500
19	156.950	161.550
20	157.000	161.600
*	157.050	161.650
22	157.100	161.700
*	157.150	161.750
24	157.200	161.800
25	157.250	161.850
26	157.300	161.900
27	157.350	161.950
28	157.400	162.000
60	156.025	160.625
*	156.075	160.675
62	156.125	160.725
63	156.175	160.775
*	156.225	160.825
65	156.275	160.875
66	156.325	160.925

**Table A-1: VHF Marine Channel List (Continued)**

Channel Number	Frequency (MHz)	
	Transmit	Receive
67**	156.375	156.375
68	156.425	156.425
69	156.475	156.475
71	156.575	156.575
72	156.625	–
73	156.675	156.675
74	156.725	156.725
75	***	***
76	***	***
77**	156.875	–
78	156.925	161.525
79	156.975	161.575
80	157.025	161.625
*	157.075	161.675
*	157.125	161.725
*	157.175	161.775
84	157.225	161.825
85	157.275	161.875
86	157.325	161.925
87	157.375	161.975
88	157.425	162.025

\* Simplex channels 3, 21, 23, 61, 64, 81, 82, and 83 **cannot be lawfully used** by the general public in US waters.

\*\* Low power (1 W) only

\*\*\* Guard band

**Note:** A – in the Receive column indicates that the channel is transmit only.

## Glossary

<b>ACK</b>	Acknowledgment of communication.
<b>Call Alert</b>	A one-way alert, with audio and/or display messages.
<b>Channel</b>	A group of characteristics, such as transmit/receive frequency pairs, radio parameters, and encryption encoding.
<b>Coded Squelch</b>	Tone Private-Line™ or Digital Private-Line. Used on conventional channels to make sure you hear only the communication meant for you.
<b>Conventional</b>	Typically refers to radio-to-radio communications, sometimes through a repeater. You share a frequency, or frequencies, with other users without the aid of a central controller to assign communication channels. Therefore, you should monitor each channel before transmitting to avoid interfering with another user who may be transmitting.
<b>Cursor</b>	A visual tracking marker (a blinking line) that indicates a location on the display.
<b>Digital Private-Line (DPL) Coded Squelch</b>	A continuous, sub-audible data signal, transmitted with the carrier.
<b>Dispatcher</b>	An individual who has radio system management duties.
<b>FCC</b>	Federal Communications Commission.
<b>Hang Up</b>	Disconnect.



<b>Home Display</b>	The first display information after the radio completes its self test.
<b>LCD</b>	Liquid-Crystal Display.
<b>Mode</b>	A programmed combination of operating parameters; for example, a channel or talkgroup.
<b>Mode-Slaving</b>	Radio programmed to automatically give the proper operation for a given mode you have selected.
<b>Monitoring (Conventional Operation)</b>	Press a programmed monitor button to listen to another user active on the channel. This way, you may be prevented from talking over someone else's conversation.
<b>Push-To-Talk (PTT) button</b>	The PTT button engages the transmitter and puts the radio in transmit (send) operation when pressed. Press this button to transmit; release it to receive.
<b>Repeater</b>	A conventional radio feature, in which you talk through a receive/transmit facility (repeater) that re-transmits received signals in order to improve communications range and coverage.
<b>RF</b>	Radio Frequency. A part of the general frequency spectrum between the audio and infrared light regions (about 10 kHz to 10,000,000 MHz).
<b>Squelch</b>	The muting of audio circuits when received signal levels fall below a pre-determined threshold. With carrier squelch, you hear all channel activity which exceeds the radio's preset squelch level.

<b>Talkgroup</b>	An organization (or group) of radio users who communicate with each other, using the same communication path.
<b>Tone Private-Line (PL) Coded Squelch</b>	A continuous sub-audible tone transmitted with the carrier.
<b>Zone</b>	A grouping of channels or talkgroups.

# Commercial Warranty and Service

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## Limited Warranty

### MOTOROLA COMMUNICATION PRODUCTS

#### I. WHAT THIS WARRANTY COVERS AND FOR HOW LONG:

MOTOROLA INC. (“MOTOROLA”) warrants the MOTOROLA manufactured Communication Products listed below (“Product”) against defects in material and workmanship under normal use and service for a period of time from the date of purchase as scheduled below:

CHIEF PM 1500 Mobile Units	Two (2) Year
Product Accessories	One (1) Year

Motorola, at its option, will at no charge either repair the Product (with new or reconditioned parts), replace it (with a new or reconditioned Product), or refund the purchase price of the Product during the warranty period provided it is returned in accordance with the terms of this warranty. Replaced parts or boards are warranted for the balance of the original applicable warranty period. All replaced parts of Product shall become the property of MOTOROLA.

This express limited warranty is extended by MOTOROLA to the original end user purchaser only and is not assignable or transferable to any other party. This is the complete warranty for the Product manufactured by MOTOROLA. MOTOROLA assumes no obligations or liability for additions or modifications to this warranty unless made in writing and signed by an officer of MOTOROLA. Unless made in a separate agreement between MOTOROLA and the original end user purchaser, MOTOROLA does not warrant the installation, maintenance or service of the Product.

MOTOROLA cannot be responsible in any way for any ancillary equipment not furnished by MOTOROLA which is attached to or used in connection with the Product, or for operation of the Product with any ancillary equipment, and all such equipment is expressly excluded from this warranty. Because each system which may use the Product is unique, MOTOROLA disclaims liability for range, coverage, or operation of the system as a whole under this warranty.

## **II. GENERAL PROVISIONS:**

This warranty sets forth the full extent of MOTOROLA'S responsibilities regarding the Product. Repair, replacement or refund of the purchase price, at MOTOROLA'S option, is the exclusive remedy. THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER EXPRESS WARRANTIES. IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY. IN NO EVENT SHALL MOTOROLA BE LIABLE FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT, FOR ANY LOSS OF USE, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS, LOST PROFITS OR SAVINGS OR OTHER INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE SUCH PRODUCT, TO THE FULL EXTENT SUCH MAY BE DISCLAIMED BY LAW.

## **III. STATE LAW RIGHTS:**

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION OR EXCLUSIONS MAY NOT APPLY.

This warranty gives specific legal rights, and there may be other rights which may vary from state to state.

## **IV. HOW TO GET WARRANTY SERVICE:**

You must provide proof of purchase (bearing the date of purchase and Product item serial number) in order to receive warranty service and, also, deliver or send the Product item, transportation and insurance prepaid, to an authorized warranty service location. Warranty service will be provided by Motorola through one of its authorized warranty service locations. If you first contact the company which sold you the Product, it can facilitate your obtaining warranty service. You can also call Motorola at 1-888-567-7347 US/Canada.

**V. WHAT THIS WARRANTY DOES NOT COVER:**

- A) Defects or damage resulting from use of the Product in other than its normal and customary manner.
- B) Defects or damage from misuse, accident, water, or neglect.
- C) Defects or damage from improper testing, operation, maintenance, installation, alteration, modification, or adjustment.
- D) Breakage or damage to antennas unless caused directly by defects in material workmanship.
- E) A Product subjected to unauthorized Product modifications, disassemblies or repairs (including, without limitation, the addition to the Product of non-Motorola supplied equipment) which adversely affect performance of the Product or interfere with Motorola's normal warranty inspection and testing of the Product to verify any warranty claim.
- F) Product which has had the serial number removed or made illegible.
- G) Rechargeable batteries if:
  - any of the seals on the battery enclosure of cells are broken or show evidence of tampering.
  - the damage or defect is caused by charging or using the battery in equipment or service other than the Product for which it is specified.
- H) Freight costs to the repair depot.
- I) A Product which, due to illegal or unauthorized alteration of the software/firmware in the Product, does not function in accordance with MOTOROLA's published specifications or the FCC type acceptance labeling in effect for the Product at the time the Product was initially distributed from MOTOROLA.

- J) Scratches or other cosmetic damage to Product surfaces that does not affect the operation of the Product.
- K) Normal and customary wear and tear.

**VI. PATENT AND SOFTWARE PROVISIONS:**

MOTOROLA will defend, at its own expense, any suit brought against the end user purchaser to the extent that it is based on a claim that the Product or parts infringe a United States patent, and MOTOROLA will pay those costs and damages finally awarded against the end user purchaser in any such suit which are attributable to any such claim, but such defense and payments are conditioned on the following:

- A) that MOTOROLA will be notified promptly in writing by such purchaser of any notice of such claim;
- B) that MOTOROLA will have sole control of the defense of such suit and all negotiations for its settlement or compromise; and
- C) should the Product or parts become, or in MOTOROLA's opinion be likely to become, the subject of a claim of infringement of a United States patent, that such purchaser will permit MOTOROLA, at its option and expense, either to procure for such purchaser the right to continue using the Product or parts or to replace or modify the same so that it becomes non-infringing or to grant such purchaser a credit for the Product or parts as depreciated and accept its return. The depreciation will be an equal amount per year over the lifetime of the Product or parts as established by MOTOROLA.

MOTOROLA will have no liability with respect to any claim of patent infringement which is based upon the combination of the Product or parts furnished hereunder with software, apparatus or devices not furnished by MOTOROLA, nor will MOTOROLA have any liability for the use of ancillary equipment or software not furnished by MOTOROLA which is attached to or used in connection with the

Product. The foregoing states the entire liability of MOTOROLA with respect to infringement of patents by the Product or any parts thereof.

Laws in the United States and other countries preserve for MOTOROLA certain exclusive rights for copyrighted MOTOROLA software such as the exclusive rights to reproduce in copies and distribute copies of such Motorola software. MOTOROLA software may be used in only the Product in which the software was originally embodied and such software in such Product may not be replaced, copied, distributed, modified in any way, or used to produce any derivative thereof. No other use including, without limitation, alteration, modification, reproduction, distribution, or reverse engineering of such MOTOROLA software or exercise of rights in such MOTOROLA software is permitted. No license is granted by implication, estoppel or otherwise under MOTOROLA patent rights or copyrights.

#### **VII. GOVERNING LAW:**

This Warranty is governed by the laws of the State of Illinois, USA.

## **Service**

Proper repair and maintenance procedures will assure efficient operation and long life for this product. A Motorola maintenance agreement will provide expert service to keep this and all other communication equipment in perfect operating condition. A nationwide service organization is provided by Motorola to support maintenance services. Through its maintenance and installation program, Motorola makes available the finest service to those desiring reliable, continuous communications on a contract basis. For a contract service agreement, please contact your nearest Motorola service or sales representative, or an authorized Motorola dealer.

Express Service Plus (ESP) is an optional extended service coverage plan, which provides for the repair of this product for a period of three years from the date of shipment from the factory, or the date of delivery if purchased from an authorized Motorola two-way radio dealer. For more information about ESP, contact the Motorola Radio Support Center, 2204 Galvin Drive, Elgin, IL 60123, 1-800-227-6772.

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# PM1500™ Mobile Radio with Control Head

## Quick Reference Card

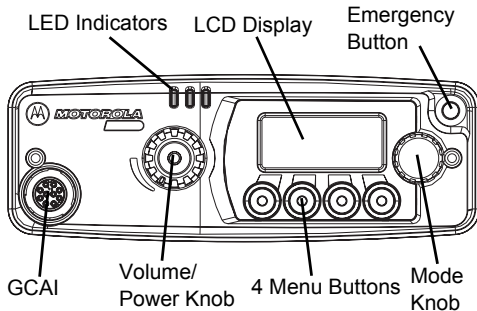
### Product Safety and RF Exposure Compliance



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

### ATTENTION!

This radio is restricted to occupational use only to satisfy FCC RF energy exposure requirements. Before using this product, read the RF energy awareness information and operating instructions in the Product Safety and RF Exposure booklet enclosed with your radio (Motorola Publication part number 6881095C99) to ensure compliance with RF energy exposure limits.



### BASIC OPERATION

#### Turning the Radio On and Off

Push the **Volume/Power** knob to turn it on. When the radio is powered on, the display shows PM1500. You will hear a high-pitched (good power-up) tone. If your radio shows an error on power-up, contact your system manager for assistance.

#### Selecting the Zone and Mode

- 1 Press the ZNUP softkey or ZNDN softkey to scroll to the desired zone.
- 2 Press the CHAN and rotate the Mode Knob to select the mode.

#### Monitoring Conventional Modes

Press the preprogrammed Monitor button. The display shows MON ON.

#### Cancelling Monitoring

Press the preprogrammed Monitor button. The display shows MON OFF.

#### Receiving

- 1 Select the desired zone and mode.
- 2 Turn the Volume Knob to adjust the volume.

#### Transmitting (Conventional Modes)



- 1 Select the desired zone and mode.
- 2 Turn the Volume Knob to adjust the volume.
- 3 When a mode becomes available, press and hold the **PTT** button to transmit; release the PTT button to receive.

### LED INDICATIONS

Action	LED Condition	Meaning
Press the PTT button to transmit	Stead RED	normal transmission
	Unlit	Not transmitting
Release the PTT button to receive	Steady YELLOW	Channel activity present
	Blinking GREEN	Call receive

### STATUS ANNUNCIATORS

Annunciator	Indication
	Carrier Squelch All active traffic on the selected channel in being monitored. When not displayed, traffic is not open to monitoring.
	Call Received Flashes when a Selective Call, Call Alert is received.
	Scan The radio is scanning a preprogrammed list of channels/modes for activity.
	Priority Scan Indicates scanning of a priority mode (flashing for Priority 1 Mode; solid for Priority 2 mode).
	Low Tx Power Level Transmission Power is low. (By default, the radio transmission power is set too high, at which state this icon will not show up.)
	Direct/Talkaround When on, indicates your are talking directly to another radio. When off, you are talking through a repeater.

Annunciator	Indication
	View/Program Mode The radio is in the view or program mode. (flashing for program mode; solid for view mode.)
	In-Call User Alert Voice muting has been activated as radio is receiving.

## GENERAL FEATURES

### Selecting Transmit Power Level

- 1 Press button below PWR  
The display shows HIGH PWR or LOW PWR.
- 2 If HIGH PWR was selected previously, pressing the softkey will display LOW PWR and low power indicators will come on.
- 3 If LOW PWR was selected previously, pressing the softkey will display HIGH PWR and high power indicators will come on.

### Sending an Emergency Alarm

- 1 Press and hold the preprogrammed emergency button (T1). The red LED lights steadily. You hear an emergency tone. The display alternately shows EMERGENCY and the current zone and mode names. When the alarm is acknowledged by the dispatcher, you hear four beeps. The radio returns to normal operation.


### Cancelling an Emergency Alarm

- 1 Press and hold the preprogrammed emergency button (T1) before the alarm is acknowledged. You hear an exit tone and the radio returns to normal operation. If the radio does not return to normal operation, press the PTT button. The radio does not sound an exit tone.

## Sending an Emergency Call


- 1 Press and hold the preprogrammed emergency button (T1). The red LED lights steadily. You hear a short, medium-pitched emergency tone. The display alternately shows EMERGENCY and the current zone and mode names.
- 2 Press the PTT button and announce your emergency.
- 3 To exit the emergency call mode, press the emergency button for a little over 1-1/2 seconds (or for the duration specified by your system manager). You hear a medium-pitched exit tone and the radio returns to normal operation.

## Muting Keypad Tones

- 1 Press the  below MUTE.
- 2 The display shows X TONES if previously TONES was selected and vice versa.

## SCANNING


### Turning Scan On or Off



- 1 Press the  below MUTE.  
Alternatively, press the preprogrammed Scan button.
- 2 The display shows SCAN ON or SCAN OFF.  
Activating SCAN ON will turn on the scan indicator.

## Deleting Nuisance Modes

- 1 When the radio is locked onto the mode you want to delete, press the NUIS softkey. Alternatively, press the preprogrammed Nuisance Delete button. The mode is deleted and you hear a valid key-press chirp.
- 2 To resume scanning the delete mode, turn scan off and then back on again.

## Programming a List

- 1 Press the  below PROG until the display shows the softkey options.

- 2 Press the  below the type of list you wish to access. The display shows a flashing  indicator.
- 3 Rotate **Mode Knob** until you reach the list entry you wish to edit, or enter the number of the item in the list using the keypad.
- 4 Press the NAME or NUM softkey to edit.
- 5 Use the numeric keypad to modify the entry.
- 6 Press the SAVE softkey to save your changes.
- 7 Press EXIT to exit programming mode and return to the home display.

## SELECTIVE CALL AND CALL ALERT

### Calling or Paging the Last ID Number Transmitted or Received

- 1 Press the CALL (of PAGE for Call Alert softkey).
- 2 The display shows the last ID transmitted or received. In the case of Selective Call, the display shows the ID number .
- 3 Proceed to step 1 of "Send a Selective Call" or "Send a Call Alert Page".

### Directly Entering ID Number to be Called/Paged

- 1 Press the CALL (of PAGE for Call Alert softkey).
- 2 The display shows the last ID transmitted or received. In the case of Selective Call, the display shows the ID number .
- 3 Use the numeric keypad to enter the new ID number.
- 4 Proceed to step 1 of "Send a Selective Call" or "Send a Call Alert Page".

## Scrolling to an ID Number in the Call List

- 1 Press the **CALL** (of **PAGE** for Call Alert softkey).
- 2 The display shows the last ID transmitted or received. In the case of Selective Call, the display shows the ID number.
- 3 Use the navigation keys to enter the call list, or press the **LIST**.
- 4 Rotate **Mode Knob** to scroll to the desired list member.
- 5 Proceed to step 1 of "Send a Selective Call" or "Send a Call Alert Page".

## Going Directly to an ID Number in the Call List

- 1 Press the **CALL** (of **PAGE** for Call Alert softkey).
- 2 The display shows the last ID transmitted or received. In the case of Selective Call, the display shows the ID number.
- 3 Use the navigation keys to enter the call list.
- 4 Rotate the **Mode Knob** to scroll to the desired list entry.
- 5 Press the numeric keypad to enter the location number. The display alternately shows the name and ID number associated with the entry. If there are 10 or more list entries, the display shows **ID LOC#XL**. Use the numeric keypad again to enter the second digit of the location number.
- 6 Proceed to step 1 of "Send a Selective Call" or "Send a Call Alert Page".

## Sending Selective Call

- 1 Press the **PTT** button to transmit the displayed ID number. If the radio you are calling is not in service, the display shows **NO ACK**. If the other party does not answer within 20 seconds, the display shows **NO ANSR**.
- 2 Press the **EXIT** to exit the Selective Call, or press the **PTT** button to speak.

- 3 Press **EXIT** to hang up. The radio returns to the home display.

## Sending a Call Alert Page

- 1 Press the **PTT** button to transmit the displayed ID number. If the radio you are paging cannot be reached you will hear only one beep.
- 2 Press the **PTT** button to try again, or press **EXIT** to hang up. If the radio you called has received your page, you will hear five beeps. The radio returns to the home display.

## Answering a Selective Call

When a Selective Call is received, the display alternately shows **CALL RCV** and the current mode name. Then the annunciator will flash. You will hear two alert tones.

- 1 Press the **CALL** softkey, or press the preprogrammed call response button.
- 2 The display shows the last ID number transmitted or received. In the case of Selective Call, the display shows the ID number.
- 3 Press the **PTT** button to answer the call. If you hear a busy tone, the system is busy.
- 4 Press the **CALL** softkey, or the preprogrammed call response button to hang up. The radio saves the Caller's ID number and returns to the home display.

## Answering a Call Alert Page

When a call alert page is received, the display alternately shows **PAGE RCV** and the current mode name. The annunciator flashes, and there is a four beep tone.

- 1 Press the **PTT** button to answer the page. The display shows the current mode. The alert tone and **CALL** are turned off. The ID is saved as the last ID number received.

- 2 Press the **PTT** button to talk, release to listen. Everyone who belongs to the talkgroup will hear your transmission.

### OR

*If you want to respond to the page with a Selective Call:*

- a. Press **CALL**.
  - b. The display shows the ID of the paging radio.
- 3 Proceed to step 1 of "Send a Selective Call" or "Send a Call Alert Page".

## ALERT TONES

Action	LED Condition	Meaning
Short, low pitched tone	Unsuccessful power-up. Radio failed self-test. Radio not ready for use.	Contact your service representative.
	Invalid (bad) key press. A key press was rejected.	
	Time-out timer warning. Transmission time will expire in four seconds.	
Short, medium pitched tone	Valid (good) key press. A key press was accepted	
	Pressed emergency button to enter emergency. Emergency entered.	
Short, high pitched tone	Successful power-up. Radio passed self-test.	
Group of four medium pitched tones every five seconds	Call Alert (page) received.	

Action	LED Condition	Meaning
Continuous, low-pitched tone	Transmit on receive only mode. Pressed PTT button on receiving mode.	Release PTT button.
	Transmit inhibit on busy mode. Pressed PTT button while mode was busy.	
	Invalid mode. An invalid or unprogrammed operation.	
	Time-out timer timed out. Transmission was terminated.	Release PTT button
Continuous, medium pitched tone	Emergency alarm/call exit. Exiting.	
Faint beeping tone every 10 seconds	Failsoft (trunked systems only).	
Single, medium pitched tones followed by group of four medium pitched tones	Your page has been received by the target radio.	
Group of two medium pitched tones	Selective Call received.	



**MOTOROLA**

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