LBI-38609A

ERICSSON

Mobile Communications

FMD™
SYSTEM MODEL

Operator's Manual

TABLE OF CONTENTS

Copyright © July 1991, Ericsson GE Mobile Communications Inc.

SAFETY INFORMATION

The operator of any mobile should be aware of certain hazards common to the operation of vehicular radio transmissions.

A list of the possible hazards are:

- *Explosive Atmospheres*

  Just as it is dangerous to fuel a vehicle with the motor running, be sure to turn the radio off while fueling the vehicle. Do not carry containers of fuel in the trunk of the vehicle when the radio is mounted in the trunk.

- *Interference To Vehicular Electronic Systems*

  Electronic fuel injection systems, electronic anti-skid breaking systems, electronic cruise control systems, etc., are typical of the types of electronic devices that may malfunction due to the lack of protection from radio frequency energy present when transmitting. If the vehicle contains such equipment, consult the dealer for the make of vehicle and enlist his aid in determining if such electronic circuits perform normally when the radio is transmitting.

- *Dynamite Blasting Caps*

  Dynamite blasting caps may be caused to explode by operating a radio within 500 feet of the blasting caps. Always obey the "Turn Off Two Way Radio" signs posted where dynamite is being used. When transporting blasting caps in your vehicle:

  a. *Carry the blasting caps in a closed metal box with a soft lining.*

  b. *Leave the radio OFF whenever the blasting caps are being put into or removed from the vehicle.*

- *Radio Frequency Energy*

  To prevent burns or related physical injury from radio frequency energy, do not operate the transmitter when anyone outside of the vehicle is within two feet of the antenna.

INTRODUCTION

The Ericsson GE FMD mobile radio is a synthesized radio that uses microcomputer technology to provide high reliability and performance. The radio is designed to provide mobile dispatch service in both trunked and conventional operation.

The FMD consists of a radio assembly and control unit in a single housing. The control unit may be optionally remote mounted. The control unit is equipped with an alphanumeric display and switches for control of the radio. The display and switch locations are backlighted for night time use.

The FMD is PC Programmable to meet the specific needs of your communications system. This manual provides information on the features and operating procedures for your radio. There may be descriptions for features which are not programmed on your particular radio.

CONTROLS, INDICATORS, AND DISPLAYS

The FMD System radio contains twenty four switches, an eight character alphanumeric display, nine indicators, and twelve LEDs. In addition, there are times when part of the eight character display will be used to display the radio status.

A layout of the FMD front panel is shown in Figure 1.

CONTROLS

PWR *Momentary switch. Press once to turn on the radio. Push again to turn off the radio.*

VOLUME *Two momentary switches (auto ramping).* **VOLUME UP** *and* **VOLUME DOWN***. Beeps are heard while step- ping the volume when no call is in process. Hold the switch (up or down) to auto ramp the volume.*

SYSTEM *Two momentary switches (auto ramping). The* **SYSTEM UP** *and* **SYSTEM DOWN** *switches are used to select system changes. The alphanumeric name of the system will appear without changing systems the first time either* **SYSTEM** *switch is pressed. (Note: the radio may be programmed with wrap around on the system selection; this would allow the radio to switch from the highest to lowest system with one change instead of wrapping all the way through the list).*

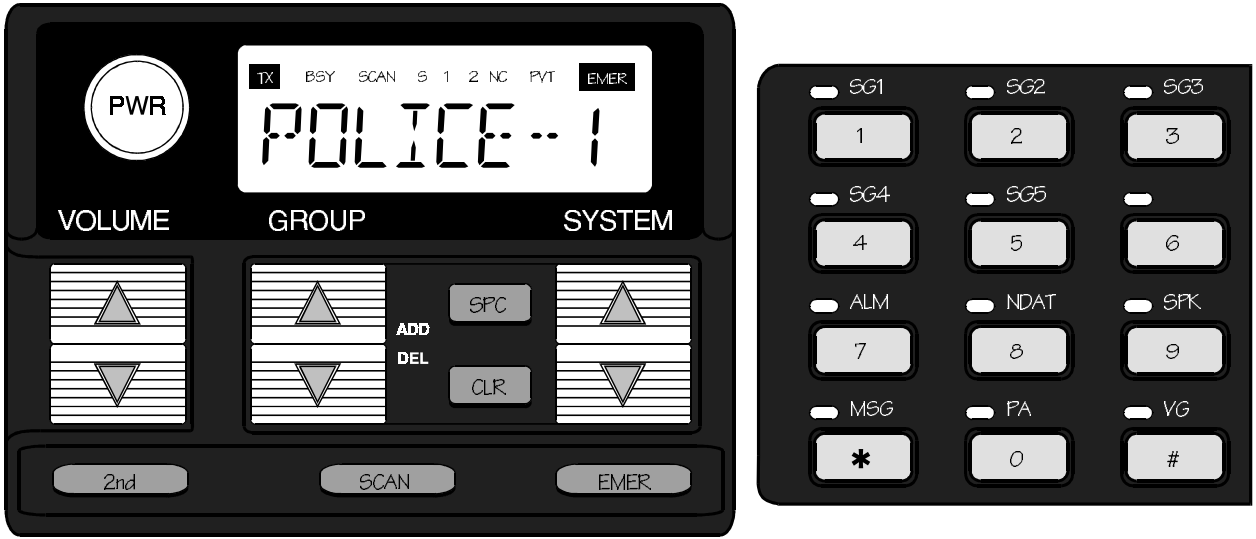

Figure 1 FMD System Front Panel

GROUP *Two momentary switches (auto ramping). The* **GROUP UP** *and* **GROUP DOWN** *switches are used to select the current group/channel selection. (See wrap around note from SYSTEM.)*

SPC *Momentary switch. The* **SPC** *(Special Call) switch is used to enable special call mode if programmed in the radio. Special Calls are used to place telephone interconnect calls and individually call other radios.*

CLR *Momentary switch. The* **CLR** *switch is used to restore the radio to normal group operation (e.g. exit Special Call), monitor a conventional channel.*

2nd *Momentary switch. The* **2nd** *switch is used to select the functions of the DTMF keypad.*

SCAN *Momentary switch. The* **SCAN** *switch is used to toggle scan on and off. When on, the SCAN indicator in the display will be on (note: The radio may be programmed to disable scan when the microphone is off hook. If so programmed, the radio will not scan when the microphone is off hook, but SCAN remains on indicating the state you have selected for normal operation.) The* **SCAN** *switch is also used in conjunction with the* **GROUP** *Up and Down switches to perform the Add and Delete functions.*

EMER *Momentary switch. The EMER switch may be programmed to send an Emergency message and/or select a home group/channel.*

INDICATORS

TX ON indicates the radio is transmitting.

BSY Lights when a group is active (trunked system) or when a channel is busy (conventional system). Flashes when a call is queued on a trunked system.

SCAN ON indicates that the user has enabled the Scan function.

S 1 2 Priority level for Scan: S indicates that the displayed group/channel is enabled for scan. 2 indicates that the conventional channel is set for priority 2. 1 indicates that the conventional channel is set for priority 1.

NC *ON indicates that the radio cannot locate a trunked system. This indicates that the radio is not functional for voice or data communications. FLASHING indicates that the radio is operating in trunked failsoft mode and some of the features of the system may not be available for use (e.g. Telephone Interconnect).*

PVT *ON indicates that the radio has been set to transmit in Voice Guard encrypted mode (Note: must have a Voice Guard module attached to the radio for this indicator to work).*

EMER *ON indicates that the radio has declared an Emergency on the system (may be programmed to not display when declaring emergencies). FLASHING indicates that another radio on the displayed group has declared an emergency.*

KEYPAD LEDs

The twelve switch keypad is a programmable keypad with multiple layers of functions: DTMF keypad, User Programmable Options, and Status operation. These functions are accessed via Special Call or the 2nd key. The Primary keypad (typically the User Programmable Options) is the one which uses the twelve LEDs (one above each switch). The following functions will cause the corresponding LED above its key to light: External Alarm Active, Mobile Data disabled, External Speaker selected, Message mode, Public Address active, or Voice Guard Private mode.

DISPLAYS

The radio is capable of displaying status messages in the alpha display. Some of these messages will use the entire display while others will use two characters. When the short message is displayed it may be on the right or left of the display. It is separated from the normal information with an indicator such as an asterisk ("").*

Full Length Indicators

INDV *Displayed when your unit receives an individual call from another unit.*

ID ##### — *If programmed, displayed when your unit receives an individual call where ##### is the unit id of the calling radio (Note: If the ID is in your Special Call list, it may show an 8 character name instead of the number).*

GR ##### — *If programmed, displayed when a call is received to your selected group where ##### is the unit ID of the calling radio (Note: If the ID is in your Special Call list, it may show an 8 character name instead of the number).*

PHN CALL — *Displayed when your radio receives a telephone call from the trunked system.*

DATACALL — *Displayed when your radio is involved in a data call.*

**NO DATA* — *Displayed when your radio is in the data disabled state.*

ALL CALL — *Displayed when receiving a System wide call.*

AGENCY — *Displayed when receiving an Agency Call.*

FLEET — *Displayed when receiving a Fleet Call.*

PRIMARY — *Displayed when using 2nd to select primary keypad operation.*

ALTRNATE — *Displayed when using 2nd to select alternate keypad operation.*

KEYPAD — *Displayed when using 2nd to select DTMF from the keypad in conventional mode or in Special Call mode.*

<u>Abbreviated Indicators</u>

C — *Displayed when an individual call has been received and not answered. By selecting Special Call, the call can be recalled for return at a later time (Note: the call is not saved through a power cycle and the ID is cleared by pressing the CLR switch).*

ALERT TONES

The FMD mobile generates a number of alert tones to indicate its current state. These tones are described below:

CALL ORIGINATE

A short tone is sounded whenever you key the microphone Push-To-Talk (PTT) switch and the radio has acquired a channel. This tone indicates that you may proceed to talk (both conventional and trunked operation).

CALL QUEUED (Trunked Operation Only)

If your hear one short, high pitched beep after you key the microphone, this indicates that the system has placed your request in a queue. The tones are sounded at both your transmitting unit and your receiving unit(s), indicating to the user on the receiving end that they will receive a call shortly. If you should unkey the microphone while in queue, your radio will autokey when a channel becomes available (Automatically key (push-to-talk), see AUTOKEY below).

AUTOKEY (Trunked Operation Only)

When you key the microphone to place a call on the system and release the PTT switch before getting to the channel (e.g. a queued call), the radio will automatically key on the channel when it gets the assignment. The radio will generate a long beep and hold the transmitter keyed for two seconds. Press the PTT switch to keep the channel and send your message before this two second timeout has expired.

SYSTEM BUSY (Trunked Operation Only)

If you key the microphone and hear three short, medium pitched beeps, this indicates that the receiving party is already on the system or the system is busy and its queue is full. You must rekey later to access the system.

CALL DENIED (Trunked Operation Only)

If you hear a single low pitched tone when you key the microphone, your request has been denied by the system. This will happen if you are an invalid user or if you are requesting an unavailable service.

OUT OF RANGE/SYSTEM INOPERATIVE (Trunked Operation Only)

If you hear a single low pitched tone immediately after you key the microphone, this indicates your mobile unit is out of range of the repeater. Your radio will try to place the call for a short period after the initial attempt. The radio will generate a second low pitched beep when it gives up trying to place the call. If you hear these beeps when you know you are in calling range, this indicates that the system is off the air, or that your mobile unit needs servicing. When the mobile is out of range, the NC indicator will be displayed.

CARRIER CONTROL TIMER

The Carrier Control Timer alert is a low pitched tone you will hear whenever you have kept the PTT switch continuously pressed for a preprogrammed length of time. The transmitter will shut down when the steady low pitched tone starts, interrupting communications. When on a trunked system, the FMD will generate short beeps prior to unkeying to alert you that the transmission is about to be terminated. To maintain communications, release and re-key the microphone. This resets the timer and turns the transmitter back on. The CCT is a built-in precaution against inadvertent use of the system.

OPERATING NOMENCLATURE

CONVENTIONAL OPERATION

All radios on a conventional system operate in one of two modes: repeated or talk-around. Talk-around (also referred to as "direct mode") provides a direct radio-to-radio short-range communications link. It is intended to maintain communications outside of the main system coverage area. Trunked features (such as call queueing and system scan) are not available in conventional mode.

TRUNKED OPERATION

Trunked operation refers to the use of a set of radio frequency channels by multiple user groups. By using high speed digital signalling, users may place and receive calls to single or multiple users without being monitored by other users (or groups) on the system.

SYSTEM - (Trunked Operation Only)

The term system refers to the particular group of station repeaters and set of group/special calls providing service to the radio. Radios can be preprogrammed to work in different systems by changing the System selection or through wide area roaming.

GROUP OR SUBFLEET (Trunked Operation Only)

A group of users share the same preprogrammed group identification number in their radios. All radios in the same group will receive a dispatch call placed by any one radio in the group.

FLEET (Trunked Operation Only)

A fleet of users consists of multiple groups (subfleets). Radios can be preprogrammed to make fleet calls to simultaneously access multiple user groups.

AGENCY (Trunked Operation Only)

An agency is composed of multiple fleets. Radios can be preprogrammed to initiate agency calls to access multiple fleets.

INDIVIDUAL CALL (Trunked Operation Only)

Every radio in the system has been assigned a preprogrammed, unique individual identification code. A radio may be programmed to individually call another particular radio using Special Call.

WIDE AREA SYSTEM OPERATION (Trunked Operation Only)

This function applies when your systems are networked together in a multi-site configuration. In this mode, your calls are automatically routed to the proper systems. You may notice a delay when you press the PTT switch while the system is connecting the correct sites. The BSY indicator may be on to indicate that you are on the voice channel.

When in the multi-sited mode, your radio may be programmed to look for alternate systems when you go out of range of the currently selected system. If an alternate system is found, the radio will lock onto that system and automatically select the correct information for this new system. Alternately, the radio may be programmed to revert to a conventional channel when out of range of the trunked system.

Each trunked system may also have a priority trunked system associated with it. When set to a system with that priority system programmed, the radio will check for the priority system periodically. If found, it will automatically switch to that system. The timer is reset every time the PTT switch is pressed to avoid interrupting a conversation.

TELEPHONE INTERCONNECT (Trunked Operation Only)

This feature allows you to initiate or receive telephone calls through your radio if the system is configured for this operation.

OPERATING THE RADIO

TURNING THE RADIO ON

1. Push the PWR switch. The display will show the group alpha name once power up is complete. When powering up, the last selected Group or Channel should be displayed unless the radio is programmed for a pre-programmed power up System/Group. On radios with Multi-site features enabled, the radio will automatically log onto the system once power up is complete.
2. Set the volume using the VOLUME UP or DOWN keys. A short beep will sound to show each volume level step. The beeps will not sound if a call is being received.

SELECTING SYSTEM/GROUP/CHANNEL

Use the GROUP, SYSTEM, or SG1-SG5 controls to select a different Group, System, or Channel.

Group Selection:

Press the GROUP Up/Down switches until the desired Group name appears in the alphanumeric display. A tone will be heard each time the Group name changes. On units with Automatic Login for Multi-Site Operation, the radio will transmit briefly after a Group change.

To select a different channel when you have selected a conventional system:
Press the GROUP Up/Down switches until the desired Channel name appears in the alphanumeric display. A tone will be heard each time the channel name changes unless the BSY indicator is on.

System Selection:

Press either SYSTEM switch to bring up the currently selected system. Press and hold that SYSTEM switch until the desired System selection appears.

System-Group Selection:

Assuming the SG1-SG5 functions are mapped to the primary keypad and the primary keypad is selected, simply press and release one of the System-Group keys. When pressed, a beep will sound if the System/Group changes. The display will indicate the new System and Group.

ADJUSTING SQUELCH (CONVENTIONAL)

The squelch may be adjusted on in conventional (non-trunked) operation as follows:

1. *Press and hold the SCAN switch while pressing the SYSTEM UP switch until the BSY indicator is on continuously. Noise will be heard in the speaker if optional Channel Guard is not enabled.*

2. *Press and hold the SCAN switch while pressing the SYSTEM DOWN switch until the BSY indicator goes off.*

3. *Release the SCAN switch.*

ADJUSTING BACKLIGHT LEVEL

The level of the backlighting for the LCD may be adjusted as follows:

NOTE

Pressing the CLR switch disables the squelch on conventional channels. You may want to reduce the volume before setting the backlight level to prevent excessive noise in the speaker.

1. *Press and hold the CLR switch.*

2. *Press the GROUP UP or DOWN switches until the desired level of backlighting (off, low, medium, or high) is obtained.*

3. *Release the CLR switch. The backlight level is stored when the radio is turned off.*

TRUNKED OPERATION

RECEIVING A TRUNKED DISPATCH CALL

1. *Press the VOLUME UP or DOWN switches and listen for the desired level of audio tone.*

2. *Select the System and Group you wish to monitor. The radio will now receive calls directed to the selected System and Group. If an individual call is received, the individual call display will appear.*

PLACING A TRUNKED DISPATCH CALL

To send a message on a trunked system, proceed as follows:

1. *Select the System and Group you wish to transmit on.*

2. *Press and hold down the PTT switch.*

3. *You will hear a short beep indicating that you have access to the system. When you hear the beep, you can begin your message. (NOTE: If you hear more than one tone or a low pitch tone, the system may be busy, your request has been placed in queue, or your call request has been denied for some reason. Refer to the ALERT TONES section for more details.)*

NOTES

If PTT is released before the channel available tone, the channel available tone will be extended. The radio will Autokey for two seconds, allowing time for you to press the PTT switch and talk.

Groups may be programmed as receive-only. If a group is receive-only, nothing will happen when the PTT switch is pressed.

4. *After you have finished your call, releasing the PTT switch ends the call automatically.*

CONVENTIONAL MODE OPERATION

RECEIVING A CALL

1. *Make sure that the radio is turned ON, and the proper channel is selected using the GROUP UP/DOWN and SYSTEM UP/DOWN switches.*

2. *Press the CLR switch to monitor the channel. Noise will be heard if there is no activity on the channel. This function is also useful for setting the desired Volume level.*

3. *You will hear the voice message automatically if a valid message is received by your radio.*

SENDING A MESSAGE

1. *Make sure the radio is turned ON, and the proper Channel and System have been selected.*

2. *Press the CLR switch to determine if the channel is in use. Never transmit a message with your radio while the channel is being used by someone else.*

3. *Press the PTT switch and speak into the microphone after the channel acquisition alert.*

4. *Release PTT when you are finished.*

CONVENTIONAL FAILSOFT OPERATION

In the unlikely event of a failure of the trunked system communications may take place in conventional failsoft mode. Your radio will be automatically directed to a communications channel set up for this purpose. During this mode of operation, your control unit will display "CONV FS" in the alphanumeric display and the NC indicator will flash. You will notice increased activity on your channel during conventional failsoft operation, so be careful not to transmit until the channel is clear.

Operation during conventional failsoft will be the same as operation on a conventional system, except that it will not be possible to select a

NOTE

Emergency and Special Call are not operational during conventional failsoft. Also, the GROUP control will not operate.

communications channel, or use emergency or special call. When trunking is restored, you will automatically be returned to normal operation.

EMERGENCY OPERATION

RECEIVING AN EMERGENCY MESSAGE

From the Selected Group

When you receive an emergency call from a member of the selected Group and System, the EMER Icon will flash, the BSY Icon will light, and a tone will be heard. Follow your standard emergency procedures. The EMER indicator will flash until the emergency is cleared or your radio scans into a non-emergency call.

From a Scanned Group

When you receive an emergency call from a scanned Group (scan operating), the display will flash the name of the Emergency Group, the EMER Icon will flash, and a tone will be heard. The EMER Icon will flash while the voice channel is active.

SENDING AN EMERGENCY MESSAGE

To send an Emergency call to the selected (or Home) System/Group, proceed as follows:

1. *Press and release the EMER switch (holding it pressed for approximately one second) or activate the external emergency switch. The EMER indicator will show continuously (unless programmed off). A message will be sent to the dispatcher with your ID to declare an emergency. You will be given highest priority for voice communication.*

2. *Press the PTT switch and wait for the channel-available tone. Speak into the microphone in a normal voice. All audio and displays will be restored to normal.*

3. *Release the PTT switch when the transmission is completed, and listen for any reply. The TX indicator will go out when you release the PTT switch.*

CLEARING AN EMERGENCY

If your radio has been programmed as a supervisory unit, you may clear emergency calls. When the emergency is no longer in effect, the emergency call may be cleared as follows:

1. *Press and hold the CLR switch.*

2. *Press and release the EMER switch. The EMER indicator will go off.*

3. *Release the CLR switch.*

SPECIAL CALLS (Trunked Operation Only)

The Special Call feature allows you to make calls to individual radios, telephone interconnect calls, and/or System All Calls.

PLACING A TELEPHONE INTERCONNECT CALL

The Telephone Interconnect feature is only available on sysems with interconnect hardware.

1. *Make sure the radio is turned ON, and the proper System has been selected. Press the SPC switch until the Special Call name appears in the display. Press the GROUP Up/Down switches until the desired name appears in the display.*

2. *Press the PTT switch momentarily and release.*

3. *The radio automatically transmits the preprogrammed number stored in the radio's memory. The system will then dial the number and the ringing tone will be heard and the radio. When the landline party answers, you may speak to them by pressing the PTT switch and talking. If the selection is for DTMF overdial, the system will respond with a pseudo dial tone. When you hear the dial tone, proceed with step 4.*

4. *Once you hear the dial tone, use the DTMF microphone (optional) to dial the desired number. When you have finished*

NOTES

Your FMD radio is capable of simplex (one way) conversation only. The person you are talking to can hear you ONLY when you have the PTT switch pressed. You can hear the person on the telephone ONLY when the PTT switch is released.

If you leave the PTT switch released for too long, the system will send three beeps. When you hear these beeps, you have five seconds to press the PTT switch before the call is automatically terminated.

dialing, press the "" key on the DTMF keypad to tell the system to dial the number.*

5. *To terminate the call, momentarily press the CLR switch or hang up the microphone.*

RECEIVING A TELEPHONE INTERCONNECT CALL

1. *Receiving a telephone interconnect call is identical to receiving an individual trunked dispatch call (see RECEIVING A TRUNKED DISPATCH CALL section). When the telephone call is received, the radio will display "PHN CALL".*
2. *To terminate the call, momentarily press the CLR switch or hang up the microphone.*
3. *If you were out of the vehicle when the call came in, the display will show "C*" or "*C" to indicate that a call was received.*

PLACING AN INDIVIDUAL CALL

1. *Make sure the radio is turned ON, and the proper System has been selected. Press the SPC switch until the Special Call name appears in the display. Press the GROUP Up/Down switches until the desired name appears in the display.*

2. *Press the PTT switch and wait for the channel available tone before talking.*

3. *When completed, release the PTT switch and listen for any reply.*

4. *When your call is finished, press the CLR switch or return the microphone to the hookswitch. The previously selected Group name will appear on the display.*

RECEIVING AN INDIVIDUAL CALL

When you receive an Individual Call (call directed only to your radio), the display will change to one of the following displays:

1. *"* INDV *"*

2. "ID xxxxx", where xxxxx is the numeric ID of the calling radio.

3. " ALPHA ", where ALPHA is the alpha name of the calling radio.

Receiving an Individual Call will also cause the BSY indicator to turn on. After the transmission, the BSY indicator will go out. The display will continue to show the above until the predefined timeout for calling back expires. During the callback period, press the PTT switch to return the call. If the call is not returned before the time has expired, the display will return to the Group display with a "C" at the left side or a "*C" at the right side of the display. This indicates a call has been received. The id may be recalled by pressing SPC. While the display shows the ID, pressing PTT will allow calling back the originating party. Pressing CLR will cause the call display to go out and the ID to be erased.*

GROUP SCAN OPERATION

You may program your radio to scan a number of Groups or Channels for activity.

NOTES

1. The radio will remember the scan state through a power cycle unless programmed with a predefined power up state.

2. The radio may be programmed to stop scanning when the microphone is removed from the hookswitch.

ADDING/DELETING TO/FROM SCAN

To add a Group/Channel to Scan

1. *Press the SCAN switch if the SCAN Icon is on, to turn scan off.*

2. *Select the Group or Channel to be added to Scan using the Group switches.*

3. *Press and hold the SCAN switch. While holding SCAN switch press the GROUP UP to add the group or channel to scan. The S indicator will be displayed. In conventional mode, to select priority channels, press the GROUP UP switch again to select priority 2 (the S indicator will go out and the 2 indicator will come on). To select priority 1, press the GROUP UP switch a third time (the 2 indicator will go out and the 1 indicator will come on).*

To delete a Group/Channel from Scan

1. *Select the Group or Channel to be removed from Scan using the GROUP switches.*

2. *While holding the SCAN switch, press the GROUP DOWN to delete the group or channel from scan. The S, 1, or 2 Icon will go out. When scanning, use this procedure to remove an undesirable scanned group from the list.*

STARTING OR STOPPING SCAN

1. *Press the SCAN switch to turn on scan. The SCAN indicator will go on.*

2. *Press the SCAN switch again to turn off scan. The SCAN indicator will go off.*

2nd SWITCH

The 2nd switch is used to select the mode of operation of the twelve digit keypad. This keypad is PC Programmable for the needs of the individual user. It has three levels of operation: Primary operation with LED indications, Alternate Operation, and DTMF Keypad operation. The Primary and Alternate keypads are individually programmable. Press the 2nd switch until the desired keypad level appears. Press the desired function on the keypad before the display times out and return to the previous display. If the timeout occurs, simply press the 2nd switch until the desired function appears again.

EMER SWITCH

The Emergency switch is used to send an Emergency message (see Sending An Emergency Message). It can also be used to select a Home Group or Channel. Be sure to understand operation of this switch prior to using the radio.

KEYPAD FUNCTIONS

PRIMARY KEYPAD (Assume User Options)

SYSTEM-GROUP SELECTION

The FMD System model is capable of up to five preprogrammed System Group Selections. For operation of these keys, see Selecting System/Group/Channel.

EXTERNAL ALARM

The radio may be programmed to use an External Alarm. The External Alarm, when enabled, will be triggered by receipt of an individual call. The alarm may be used to sound the horn or turn on the lights depending on your individual need. The alarm is controlled as follows:

1. *Press and release the keypad switch. The display will show "ALRM ON " (the display will show for a short time and then return to the normal group display) and the corresponding LED on the key will light indicating that the external alarm is now triggered.*

2. *Press and release the keypad switch again. The display will show "ALRM OFF" and the LED will go out indicating that the external alarm is now off.*

MOBILE DATA DISABLE

NOTE

Trunked or conventional radio transmission is not available when Public Address is active.

*If a mobile data device is attached to your radio, there are occasions when the radio will automatically disable mobile data (see Mobile Data). If you want to disable data for some other reason, you may press the NDAT (No Data) switch on the keypad. The LED will illuminate and the display will temporarily show "*NO DATA". Pressing the NDAT switch again will restore data operation.*

EXTERNAL SPEAKER

The SPK switch is used to select the optional external speaker. If the external speaker option is not enabled, this switch in not functional. When enabled, the LED above the SPK switch will turn on and all audio will routed to the external speaker. (Note: If public address is selected, the internal speaker is automatically selected.)

MESSAGE

The MSG switch is used to send preprogrammed messages to the trunked system. When programmed, pressing MSG will cause either the " MESSAGE" display or the previously sent message to appear in the display. While this display is active, press a DTMF digit (0-9) to select the preprogrammed message to send. When the display times out, the MSG LED will start to flash. The LED will come on solid when the trunked system acknowledges the message. The LED will remain flashing and the display will show " NO ACK" if the system fails to acknowledge the message.*

PUBLIC ADDRESS

The radio may be programmed to use an external speaker as a PA (public address) system. When this option is used, microphone audio is routed to the external speaker when PTT is keyed. Operation is as follows:

1. *Press and release the keypad switch. The display will show "PUB ADDR" and the LED above the key will light.*

2. *Press the microphone PTT switch to activate speaker PA. Use the VOLUME switches to adjust the PA volume while PTT is keyed. Release PTT when done. When PA is selected, group call can still be received (note: the display will still show "PUB ADDR"). When a call is received, audio will be routed to the internal speaker.*

3. *Press keypad switch to return to normal operation. The display will return to the selected group.*

VOICE GUARD

When a Voice Guard Module is attached to an FMD this switch can be used to toggle a group or channel between private and clear transmit operation. Each group or channel may be programmed for clear voice only in which case the switch will not operate. On groups or channels enabled for encryption, the switch can select private or clear transmissions. When private is selected, the PVT indicator is on, the LED above the VG key is on, and the Private LED on the Voice Guard module is on. When Clear is selected, the PVT indicator and the VG LED on the FMD are off and the Clear LED on the Voice Guard module is on.

ALTERNATE KEYPAD (Assume Status Operation)

Use the 2nd switch to select the Alternate keypad. When the display shows "ALTRNATE", press a DTMF keypad (0-9) switch. The display will show the status name. As long as the status name shows, you may select a different status prior to one being transmitted to the DACS. Once the display timeout occurs, the FMD will either transmit the status directly to the DACS or wait for the DACS to poll the radio and then transmit the status. If the status is not properly acknowledged by the DACS, " NO ACK" will be displayed.*

If Status is programmed on the primary keypad, once the display timeout occurs, the LED above the selected key will start to flash. Once the system acknowledges the status, the LED will come on solid. In this mode, you may view the status by pressing the keypad digits and pressing CLR before the display timeout to retain your original status.

DTMF KEYPAD OPERATION

DTMF overdial is optionally available in Conventional mode or in Special Call mode.

CONVENTIONAL KEYPAD OPERATION

To overdial DTMF digits, press and release the 2nd switch until the " KEYPAD " display comes up. Dial the desired number before the display timeout occurs. The radio will self key and send the digits as you dial.

SPECIAL CALL OPERATION

When in Special Call mode, the keypad is automatically selected for DTMF keypad operation. To select Primary or Alternate operation, use the 2nd switch. To dial a number, follow the procedures below:

INDIVIDUAL CALLS:

Use the keypad to enter the ID of the radio to be called (from 1 to 5 digits). Valid ID's are in the range of 1 to 16,382. Press PTT to place the individual call. Once pressed, operation is the same as Placing an Individual Call.

TELEPHONE INTERCONNECT CALLS:

Use the keypad to enter the phone number to be dialed. Press the "" key to dial the number. Operation proceeds just like Placing a Telephone Interconnect Call. Once the call is placed, the keypad can be used to overdial digits as described under Conventional Keypad Operation.*

LAST NUMBER REDIAL:

To recall the last number dialed (Special Call only), select Special Call mode. While in Special Call, simply press the SCAN switch. The display will show the last number entered. If the number was an individual call, simply press PTT to call the individual. If the number was a Telephone Interconnect call, press "" to dial the number (note: DTMF overdial numbers are not stored in the Last Number Redial buffer).*

MOBILE DATA

Your FMD radio is equipped to interface with a Mobile Data Terminal/Computer Host. When placing or receiving data calls, the FMD display will show "DATACALL". When "DATACALL" is present, voice calls are disabled. You will miss all voice calls made to the radio when data is being exchanged. You can stop transmission and reception of data by one of the following:

1. *Remove the microphone from the hookswitch.*

2. *Hold the CLR switch down and press PTT. A high pitched beep will be heard. Release the CLR switch.*

3. *Declaring an Emergency (not to be used unless an actual emergency condition exists).*

4. *Press the NDAT button on the keypad.*

*When entering the no-data mode, the display will show "*NO DATA" if a Radio Data Interface (RDI) is attached. This will remain displayed for a programmable period. The LED above the NDAT button on the keypad will also illuminate for the entire time data is disabled. This mode is cleared by one of the following (depending on how it was activated):*

1. *Replace the microphone into the hookswitch.*

2. *Repeat the CLR-PTT sequence.*

3. *Use the CLR-PTT sequence during the Emergency to enable data.*

4. *Press the NDAT button on the keypad. This will clear any of the four sequences used to stop data from above.*

OPERATING PROCEDURES

Two way FM radio systems must be operated in accordance with the rules and regulations of the Federal Communications Commission (FCC). As an operator of two way radio equipment, you must be thoroughly familiar with the rules that apply to your particular type of radio operation. Following these rules will help to eliminate confusion, assure the most efficient use of existing radio channels, and result in a smoothly functioning radio network.

When using your two-way radio, remember these rules:

1. *It is a violation of FCC rules to interrupt any distress or emergency message. As your radio operates in much the same way as a telephone "party line", always listen to make sure that the line is clear--that no one else is on the air--before sending any messages. If someone is sending an emergency message--such as reporting a fire, or asking for help in an accident--KEEP OFF THE AIR!*

2. *Use of profane or obscene language is prohibited by Federal Law.*

3. *It is against the law to send false call letters, or a false distress or emergency message.*

4. *The FCC requires that you keep conversations brief and confine them to business. To save time, use coded messages whenever possible.*

5. *Using your radio to send personal messages (except in an emergency) is a violation of FCC rules. You may send only those messages that are essential for the operation of your business.*

6. *It is against Federal Law to repeat or otherwise make known anything you overhear on your radio. Conversations between others sharing your channel must be regarded as confidential.*

7. *The FCC also requires that you identify yourself at certain specific times by means of your call letters. Refer to the rules that apply to your particular type of operation for the proper procedure.*

8. *No changes or adjustment shall be made to the equipment except by an authorized or certified electronic technician.*

OPERATING TIPS

The following conditions tend to reduce the effective range of two-way radios and should be avoided whenever possible.

- *Operating the radio in low areas of terrain or while under power lines or bridges.*

- *Obstructions such as mountains or buildings between the vehicle sending and the system/person receiving the message.*

In areas where transmission or reception is poor, some improvements may be obtained by insuring that the antenna is vertical (particularly if a glass mount antenna is used). Moving a few yards in another direction or moving to a higher elevation may also improve communications.

NOTES

Printed in U.S.A.

Printed in Japan

POWER
ON-OFF

VOLUME
INCREASES/DECREASES
VOLUME LEVEL

GROUP
SELECTS:
GROUP/CHANNEL
SPECIAL CALL
SCAN PRIORITY
BACKLIGHT

2ND
TOGGLES BETWEEN PRIMARY
AND ALTERNATE KEYPAD OPERATION

CLEAR
TERMINATES A CALL
EXIT SPECIAL CALL
CLEAR EMERGENCIES
MONITOR IN CONVENTIONAL MODE
ADJUST BACKLIGHT

SCAN
SCAN ON-OFF
ADJUST PRIORITY

SPECIAL CALL
ENTERS SPECIAL CALL
TO PLACE TELEPHONE
AND UNIT TO UNIT CALLS

SYSTEM
SELECT SYSTEMS
ADJUST SQUELCH

EMERGENCY
SEND EMERGENCY MESSAGE
SELECT HOME GROUP/CHANNEL

KEYPAD
DTMF KEYPAD
OPTIONAL FUNCTIONS
STATUS KEYPAD

POWER
ON-OFF

VOLUME
INCREASES/DECREASES
VOLUME LEVEL

GROUP
SELECTS:
GROUP/CHANNEL
SPECIAL CALL
SCAN PRIORITY
BACKLIGHT

2ND
TOGGLES BETWEEN PRIMARY
AND ALTERNATE KEYPAD OPERATION

CLEAR
TERMINATES A CALL
EXIT SPECIAL CALL
CLEAR EMERGENCIES
MONITOR IN CONVENTIONAL MODE
ADJUST BACKLIGHT

SCAN
SCAN ON-OFF
ADJUST PRIORITY

SPECIAL CALL
ENTERS SPECIAL CALL
TO PLACE TELEPHONE
AND UNIT TO UNIT CALLS

SYSTEM
SELECT SYSTEMS
ADJUST SQUELCH

EMERGENCY
SEND EMERGENCY MESSAGE
SELECT HOME GROUP/CHANNEL

KEYPAD
DTMF KEYPAD
OPTIONAL FUNCTIONS
STATUS KEYPAD