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7. This warranty applies only to RELM products sold by dealers within the United States and used exclusively in the United States.

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9. This written warranty constitutes the final, complete and exclusive statement of warranty terms and no person is authorized to make any other warranties or representations on behalf of RELM.

MINI-COM SERIES PORTABLE FM TRANSCEIVERS

MPV32 and MPU32

Instruction Manual



RELM Communications, Inc.

7001-2228-100

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RELM: The Choice of Professionals

Welcome to the RELM Communications family of professional two-way radios and systems, and thank you for purchasing one of our fine products. We are confident that you will be pleased with this product and that it will provide you many years of dependable, trouble-free communications.

About Our Company

Formerly known as Regency Electronics, Inc., RELM Communications, Inc., is a U.S. manufacturer of two-way FM radio products. We are backed by more than 40 years of experience in the electronic communications industry and have earned a worldwide reputation for providing dependable, hard working products at a fair price.

You may remember us as Symmetrics, or Wilson, or as Regency Land Mobile. Your first experience with us may have been with crystal based mobile and portable radios. We were pioneers in the development of synthesized radios, incorporating built-in tone signalling options such as CTCSS, DCS and Two-Tone Sequential and a host of user friendly operational features, like scanning and keyboard control. Our innovation in commercial radio continues today with the introduction of an *INSTANT PRIORITY™* button, a reversible display and area grouping of channels.

We are truly a commercial communications company with a dedicated commitment to two-way radio design, manufacturing, sales and service. We have selected a new name — a name which bolsters our position as a communications company and symbolizes our steadfast commitment to the land mobile industry.



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Our nationwide network of authorized dealers assures that you will receive prompt, high quality service for all your RELM products. For more information about our products or how we can meet your special applications, please call us at 1-800-821-2900.

PACKING LIST

- 1 - Transceiver Unit with Belt Clip
- 1 - Flexible, Helical-wound Antenna
- 1 - 10.8V Rechargeable Ni-Cd Battery
- 1 - WCMP Battery Charger
- 1 - Instruction Manual (P/N 7001-2228-100)

IMPORTANT

Please read all instructions thoroughly before operating the Unit

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INTRODUCTION

NOTE: In this manual, the words Transceiver, Radio and Unit are used interchangeably.

MPV32 and MPU32 are 32-channel, state-of-the-art, synthesized portable FM Transceivers. The MPV32 operates in the 148-174 MHz VHF band. MPU32 operates in the 403-430 MHz and 450-480 MHz UHF band. Each Unit has a non-volatile memory that requires no battery to maintain its Dealer-programmed information.

Two RF power outputs are available - Low: 1 Watt; High : 5 Watts for MPV32; 4 Watts for MPU32.

Each Unit features a Priority function which periodically samples a User-selectable channel for activity. It also features a built-in DTMF Keypad.

A Liquid Crystal Display (LCD) provides useful information such as Channel Number and Status, Priority Channel and Status, Output Power Level Status, etc. See page 5 for details.

The Radio can be programmed by a Factory-authorized Service Dealer to provide any number of channels from 1 to 32, CTCSS tone frequencies, DTMF and Selective Calling operation, Radio Common Carrier (RCC) operation and other features to meet various User requirements. See pages 22 and 23 for details.

Optional Accessories:

- BCMP Drop-in Quick Charger
- BPMP7 10.8V (700 mA-H) Rechargeable Battery
- BPMP1 10.8V (1000 mA-H) Rechargeable Battery
- LCMP Leather Carrying Case
- SMMP External Speaker/Microphone

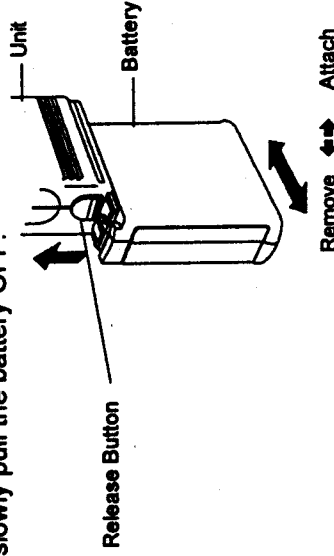
INSTALLATION

BATTERY INSTALLATION AND REMOVAL

A. To attach the battery, align the grooves on the battery case with those on the Unit and slide it into place until a "snap" is heard.

NOTE: If the the Unit is turned on and the display starts "flashing", the battery is *low* and needs to be charged. See pages 7 and 19 for details.

B. To remove the battery, press UP on the Release Button and slowly pull the battery OFF.



ANTENNA INSTALLATION AND REMOVAL

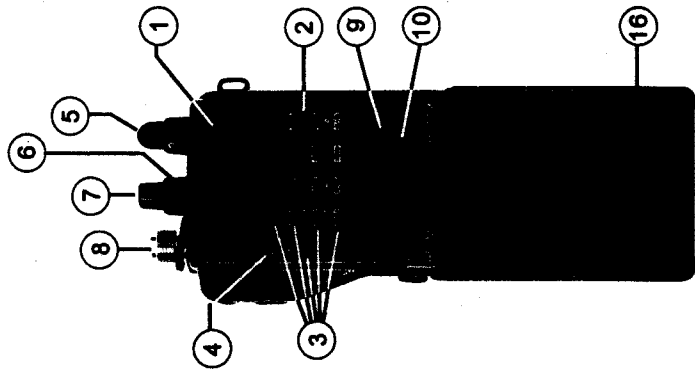
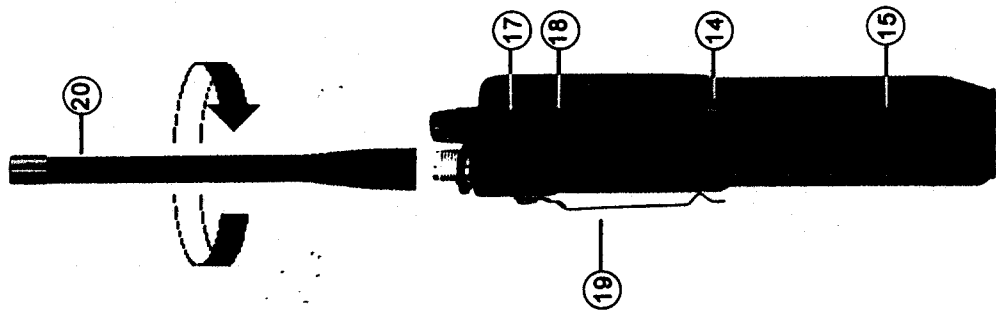
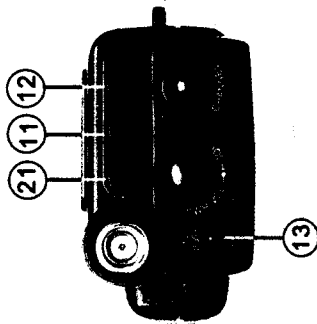
See Side View on page 4 for details. The MPV32 uses a RDMPV antenna, the MPU32 uses a RDMPUA antenna and the MPU32B uses a RDMPUB antenna.

A. To install the antenna, carefully place it on the TNC type antenna connector located on the LEFT side of the Unit. Turn the antenna *clockwise* until it is firmly attached.

B. To remove the antenna, turn the antenna *counter-clockwise* until it can be lifted away from the Unit.

TRANSCEIVER DETAILS

Top View

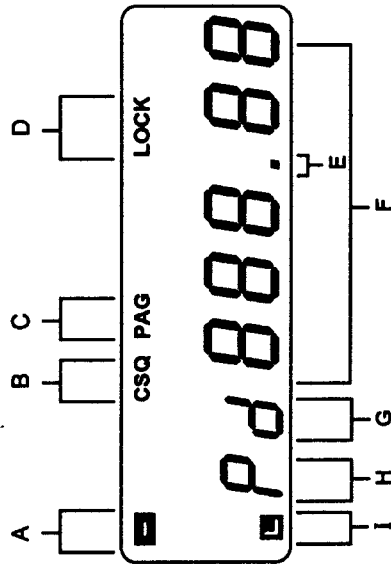


Side View

Front View

1 The LCD Display

- A. Blinking when battery voltage is low.
- B. Displayed when the CTCSS TONE Mode or Busy Channel Lockout is enabled.
- C. Displayed when the SELECTIVE CALLING (DTMF) Mode is enabled and the Channel is programmed for DTMF decode. Displayed continuously when Unit is programmed for RCC operation.
- D. Displayed when the Key Pad and Channel Selector are locked (disabled).
- E. Blinking when Unit is in SCAN Mode and has stopped on a channel.
- F. Indicates the channel number and when the Unit is scanning (SCAN displayed). It also displays the Telephone Number keyed in when Unit is programmed for RCC operation.
- G. Displayed when the channel being shown is deleted from the Scan List.
- H. Displayed when the Priority Function is enabled. Blinking when the channel being shown is the Priority Channel.
- I. Displayed when the transmitter's output power is Low.



2 Keypad

The Keypad is used to select channels, DTMF tones and special User-selectable functions or features.

- 3 Operation Keys**
These five keys (or buttons) permit the User to control or to select the basic operation of the Unit.
- The **M/S** Key provides for selecting either **MANUAL** or **SCAN** Mode.
- The **A/D** Key is used to Add or Delete a channel from the User's Scan List. It also is an "A" for DTMF encoding purposes.
- The **PRI** Key is used to enable/disable the Priority Function and to select the Priority Channel. It also is a "B" for DTMF encoding purposes.
- The **T/M** Key provides for enabling/disabling the CTCSS or Selective Calling (DTMF) TONE Mode. When either TONE Mode is disabled, the Unit is in the MONITOR Mode. It also is a "C" for DTMF encoding purposes.
- The **ENT** Key is used when programming the Unit. It is also a "D" for DTMF encoding purposes.
- 4 LAMP/LK Key**
Pressing this key turns the LCD illumination ON for approximately 2 seconds. See page 8 for more details.
- 5 CHANNEL (Channel Selector)**
This control is used to change the channel number. Turning this control also takes the Unit out of the SCAN Mode.
- 6 SQL (Squelch Control)**
This control is used to eliminate speaker noise and reduce battery drain while not receiving a transmission. The Unit must be squelched (turn control *clockwise*) for proper SCAN operation.
- 7 PWR VOL (Power Switch/Volume Control)**
Turning this control in the *clockwise* direction turns the Unit ON. Turning it further in the *clockwise* direction increases the volume.
- 8 Antenna Connector**
The supplied helical antenna (RDMPV, VHF; RDMPUA or RDMPUB, UHF) is installed on this type TNC connector.

- 9 Speaker**
This is the Transceiver's built-in speaker.

- 10 Microphone**
This is the Transceiver's built-in condenser type microphone.

- 11 MIC (External Microphone Jack)**
This 2.5MM jack is used to connect an external microphone to the Transceiver. Keep the protective plug in place when the jack is not used.

- 12 SP (External Speaker Jack)**
This 3.5MM jack can be used to connect an 8 Ohm external speaker or ear phones. No sound is available from the built-in speaker when a plug is installed in this jack. Keep the protective plug in place when the jack is not used.

NOTE: The optional SMMP External Speaker/Microphone utilizes both jacks (2.5MM and 3.5MM).

- 13 TX/BUSY (Transmitting/Busy Indicator)**
This indicator lights RED when transmitting and lights GREEN when a signal is being received. It also lights GREEN when the Unit is unsquelched. This is a helpful guide in setting the Squelch Control.

- 14 Release Button**
The battery is locked in place by this button.

- 15 Battery**
This is a rechargeable Nickel-Cadmium type battery. Either the **BPMP7** or **BPMP1** is included with the Unit and is a 10.8V battery.

- 16 Nickel-Cadmium Battery Recharge Terminal**
This terminal is used to recharge the **BPMP7** or **BPMP1** Nickel-Cadmium battery. The **WCMP** Battery Charger (also included) will fully charge the **BPMP7** in approximately 14 to 16 hours or the **BPMP1** in approximately 20 to 22 hours if either the Unit is turned off or the battery is removed from the Unit. Be sure to re-install the protective plug when the Charger is dis-connected.

17) FUNC (Function Button)

Holding down the FUNC button while certain keys are pressed enables these keys' second function, which are:

- **FUNC + LAMP/LK**
Pressing the LAMP/LK Key turns the LCD illumination on until either the Unit is switched OFF or the LAMP/LK Key is pressed again while holding down the FUNC button.
- **FUNC + PRI**
Pressing the PRI Key programs the channel being displayed as the Priority Channel, if the PRIORITY Function is deactivated.
- **FUNC + T/M**
Pressing the T/M Key toggles the SELECTIVE CALLING Tone Mode from enabled to disabled and vice versa.
- **FUNC + 1**
Pressing the 1 Key toggles the Unit's Power Level from Hi (4 Watts UHF or 5 Watts VHF) to 1 Watt and vice versa.

• **FUNC + 2**

Pressing the 2 Key toggles the Lock feature for the Key Pad from *Unlocked* to *Locked* and vice versa. The Channel Selector is not affected.

• **FUNC + 3**

Pressing the 3 Key toggles the *Beep* status from enabled to disabled and vice versa. ALL beeps are affected by this selection.

18) PTT (PTT Button)

This button is used to switch between transmission and reception. To transmit, hold in this button. Releasing this button will return the Transceiver to the reception mode.

19) Belt Clip

When not using the belt clip, install the mounting screws in order to help ensure water resistance.

20) Antenna

The antenna is a TNC connector-type helical wound antenna.

21) PRG (Programming Jack)

This coaxial type jack is used by the Dealer for cloning and programming the Unit.

OPERATION

Each time the Unit changes mode or a key is pressed, a *beep* is heard. This feature can be disabled by the User (see *Beep Feature*, page 19), but in this Manual it is assumed to be enabled.

TURNING UNIT ON

1. Rotate the **PWR VOL** knob *clockwise* to turn power ON. The display will show the last operating mode.
2. Adjust the audio's volume by turning the **PWR VOL** knob *clockwise* to increase the audio output, or *counter-clockwise* to decrease it. If necessary, first turn the **Squelch (SQL)** Control *counter-clockwise* until noise is heard. Then set the Volume Control to the desired level.

3. Turn the **Squelch Control (SQL)** *clockwise* until "noise" is no longer heard (squelched). Battery life is maximized if the Unit is squelched when not receiving a signal. While in the SCAN Mode, the Squelch Control may require being turned slightly more *clockwise* to a setting that permits proper scanning operation.

If the Unit has been programmed for *Busy Channel Lockout* (see page 14 for details), "noise" may not be heard. If this is the case, put the Unit in the SCAN Mode (press the **M/S** Key) and turn the Squelch Control until *SCRN* appears in the display.

If the **SELECTIVE CALLING** Tone Mode is enabled (see page 13) or if the Unit is programmed for RCC operation (see page 16), "noise" will not be heard. In this case, turn the Squelch Control *clockwise* until the **BUSY LED (Green)** is off.

RECEIVER OPERATION

Unless the Unit is programmed for RCC operation, the Receiver operates in one of two basic modes: **MANUAL** or **SCAN**. In either mode, a particular channel may be User selected for being sampled on a Priority basis. See page 11 for details.

MANUAL Mode

In this mode, the Unit monitors activity on the displayed channel. To put the Unit in the MANUAL Mode, if it is in the SCAN Mode, either:

1. Press the **M/S** Key, or
2. Turn the Channel Selector knob, or
3. Press the desired channel's number (two digits; 01 - 32).

To select a particular channel, either turn the Channel Selector until the desired channel is displayed or key in the channel's two-digit number. The display will show, for example:



SCAN Mode

To put the Unit in the SCAN Mode, if it is in the MANUAL Mode, press the **M/S** Key. "SCAN" should appear in the display.

REMINDER: The Squelch Control must be set for proper scanning operation. See page 9 for details.

In this mode, only channels in the Scan List will be scanned for activity. The User can select which channels are to be included (added) or excluded (deleted) from the List.

ADDING/DELETING CHANNELS TO THE SCAN LIST

Put the Unit in the MANUAL Mode. Press the desired channel's number (01-32), or turn the Channel Selector knob until the desired channel is in the display. Pressing the **A/D** Key toggles the channel's Scan List status. If a small "d" appears at the left side, the channel is now deleted from the List. If the small "d" disappears, the channel is added to the List. For a deleted channel, the display will show, for example:



REVIEWING SCAN LIST

To review the Scan List, put the Unit in the MANUAL Mode and then slowly turn the Channel Selector knob until all channels have been observed. Any channel without the small "d" is included in the Scan List.

NOTE: If the Scan List has no channels, a low tone (error beep) will be heard when the **M/S** Key is pressed. Also, "SCAN" will not appear in the display. At least one channel must be in the Scan List for the Unit to be put in the SCAN Mode.

SCAN OPERATION

When in the SCAN Mode, the Unit will scan only those channels in the User-selected Scan List. The display will show the word "SCAN", which indicates that the Unit is actively "scanning" the User selected channels.

When a proper signal is received on a channel, the scanning action will stop and the channel's audio will be heard. After activity ceases on the channel, the Unit will delay (or stay) on that channel for 1/2 to 9 seconds and then resume scanning.

NOTE: The delay, often referred to as Scan Delay, is Dealer-programmable. See Option No. 7 on page 23 for details.

If the **PTT** switch is pressed while the Unit is scanning, the Priority Channel is immediately accessed for the transmission. After the **PTT** switch is released, the Unit will stay on the Priority Channel for at least two seconds to wait for a response. If there is no activity (or signal), the Unit will then resume scanning.

PRIORITY Function ACTIVATING OR DEACTIVATING PRIORITY

To activate (or deactivate) Priority, press the **PRI** Key. When the Priority Function is activated, "P" will appear in the display. For example:



PRIORITY CHANNEL SELECTION

First, put the Radio in the MANUAL Mode and deactivate the Priority Function. Second, select the desired channel either by pressing the channel's two-digit number or by turning the Channel Selector knob. Third, press and hold down the FUNC button and then press the PRI Key.

Priority Operation in MANUAL Mode

When a channel other than the Priority Channel is manually selected, the Unit will sample the Priority Channel approximately every two seconds. If any activity is found on the Priority Channel, the Radio will stay on the Priority Channel and monitor the transmission. After the transmission is completed, the Unit will remain on the Priority Channel for approximately 2 seconds and then return to the non-priority channel.

Priority Operation in SCAN Mode

When the Radio has stopped on an active *non-priority* channel, it will periodically look at the Priority Channel. If the Priority Channel has activity, the Radio will then stay on the Priority Channel. After the activity is completed and the Priority Channel has timed out, the Radio will return to the non-priority channel.

If the Priority Channel is NOT active, the Radio will quickly return to the (non-priority) channel that was interrupted. When activity on the non-priority channel is completed, the Unit will resume scanning after the Scan Delay has timed out.

tone Mode

CTCSS OPERATION

To enable the built-in CTCSS tone decoder (see Option No. 3, page 22), press the T/M Key. A small "CSQ" will appear in the display, as shown in the following example:



NOTE: The Unit can be programmed by the Dealer for CTCSS tones. Each channel may be programmed for non-tone, for the same tone, or for a different tone. In other words, each channel can have its own unique tone set-up.

If a signal with an improper or non-matching CTCSS tone is received, the **BUSY** LED will light, but the squelch will not open and no audio will be heard. Press the T/M Key to disable the TONE Mode and then the signal's audio can be heard, unless *Busy Channel Lockout* is enabled.

SELECTIVE CALLING OPERATION

SELECTIVE CALLING Tone Mode operation is available only in the MANUAL Mode, on a channel programmed with DTMF tones and Priority is disabled. To enable the built-in DTMF decoder (see Option No. 4, page 22), press the T/M Key while holding down the FUNC button. A small "PAG" will appear in the display, as shown in the following example:



If a signal with proper or matching DTMF tones is received, three beeps will be heard, then the squelch will open and audio will be heard. The DTMF decoder is automatically reset on every press of the PTT switch and when the unit has not received a signal for approximately 2.5 seconds.

NOTE: The Unit can be programmed by the Dealer for DTMF tones. Each channel can have its own unique set of DTMF tones.

For proper two-way communications, while in the SELECTIVE CALLING Tone Mode, the DTMF tones must be sent on every press of the PTT switch in order to open the receiving Unit's squelch on each transmission. See Option No. 5 on page 22 for more details.

If SELECTIVE CALLING is enabled, CTCSS or BCL operation is overridden. Thus, if "CSQ" and "PAG" are both in the display, audio can be heard only if a signal with the proper DTMF tones is received.

The SELECTIVE CALLING Tone Mode is disabled if:

- A different channel is selected, or
- The Unit is put into the SCAN Mode, or
- The PRI Key is pressed, or
- The T/M Key is pressed while the FUNC button is held down.

BUSY CHANNEL LOCKOUT

Busy Channel Lockout (BCL) is a special TONE Mode feature, when enabled by the Dealer, that prohibits monitoring (listening to) or transmitting on a channel that is receiving a signal with an *improper* CTCSS tone. No matter where the Squelch Control is set, audio will NOT be heard unless the signal has the proper tone. The **BUSY LED** (green) will be on, but audio may not be heard. The **T/M** Key will be disabled and thus, the Unit can not be put into the **MONITOR Mode**.

TRANSMITTER OPERATION

WARNING: An FCC license is required on all transmit channels. Do NOT transmit on unlicensed channels.

WARNING: Do NOT operate this Unit close to electrical blasting caps, or in an explosive atmosphere such as fuel or solvent vapors, dust, etc.

Procedure

1. Select the desired channel. Monitor the channel for activity *before* transmitting to avoid interfering with communications already in progress. If the **BUSY LED** is ON and no audio is heard, the signal probably has a different tone than what is programmed for the channel.
 2. Press and hold in the Push-to-Talk (**PTT**) switch located on the left side of the Unit. The Red **TX LED** will light and stay on as long as the **PTT** switch is held in.
 - a. If **BCL** is enabled and the channel is receiving an incorrect tone, a series of beeps will be heard and the Unit will NOT transmit (**TX LED** stays off).
 - b. Also, if the channel is Receive Only, a series of beeps will be heard and the Unit will NOT transmit (**TX LED** stays off).
- ## HIGH/LOW Power Selection
- To change the Unit's Power Output level from *High* (4 or 5 Watts) to *Low* (1 Watt), or vice versa, first put the Unit in the **MANUAL Mode**. Second, press and hold in the **FUNC** button and then press the **1** Key. A small will appear in the display to indicate Low Power. High Power is indicated by the absence of .

If the is "flashing" (Low Battery indication), the Unit will then automatically revert to Low Power when transmitting in order to help prolong the Battery's operational life.

DTMF Operation

The Dealer can program any Channel for DTMF decoding and encoding. Each channel can have 4 DTMF tones (numbers 0 through 9; * and #; A, B, C and D). For encoding purposes, the Dealer can program the Unit so that the DTMF tones are automatically sent upon either the first or every press of the **PTT** switch. See Option No. 5 on page 22. The "first" press of the **PTT** switch is the initial activation of the transmitter on the channel. Subsequent pressings of the **PTT** switch will NOT send the DTMF unless:

- a. The channel's number is entered again by the key pad, or
- b. The Channel Selector is turned off the channel and then back to it, or
- c. The Unit is turned off and then back on, or
- d. A different channel is selected.

Individual DTMF tones can also be sent, while transmitting, by pressing the corresponding button on the Keypad or one of the four Operational Keys.

NOTE: For DTMF encoding purposes: the **A/D** Key is an **A**, the **PRI** Key is a **B**, the **T/M** Key is a **C** and the **ENT** Key is a **D**.

Time Out Timer

A transmit Time Out Timer is built into the Unit. The Timer can be programmed by the Dealer to automatically shut down the transmitter after 15 seconds (or up to 60 seconds) of operation even if the **PTT** switch is held in continuously. The Dealer can also *disable* the Timer. In which case, the length of any transmission is determined by how long the **PTT** switch is held in.

If the Timer is enabled, a series of beeps will be heard and the **TX LED** will go out when the **PTT** switch is held in after the Timer has timed out. To resume transmitting, momentarily release the **PTT** switch and then press again.

RCC OPERATION

General

Radio Common Carrier (RCC) operation provides the User with mobile telephone capabilities. The Unit can originate or receive calls somewhat similar to regular telephone usage. However, conversation is not carried on in a two-way manner, but in a push-to-talk (PTT) and release-to-listen manner.

When programmed (by the Dealer) for RCC operation, the Unit is always in the MANUAL Mode. Channel selection can be made only by use of the rotary Channel Selector switch. The display will always show "PAG" (small letters) and either the Channel Number or a key in Telephone Number. The Dealer will also program in a special identifying code referred to as the Unit's Automatic Number Identification (ANI) Code.

The keypad is used to enter a regular Telephone Number consisting of 7 to 11 digits (numbers 0 to 9) and for DTMF type operation. The Telephone Number is displayed as it is keyed in. The digits are shown starting at the right end of the display. Only the last 5 digits entered are displayed, but the first 6 (if 11 are entered) are still in memory. The display does not show any DTMF entries.

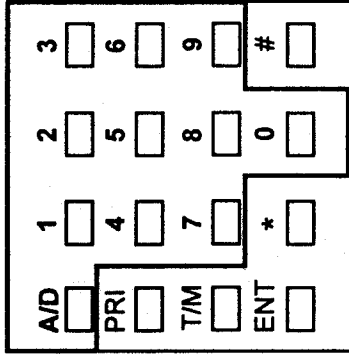


Figure 1.

Telephone Number Keypad.

When used for entering a Telephone Number, the PRI, T/M and ENT keys are non-usable. See Figure 1 on page 16. The A/D key is used to delete (clear) a digit just pressed or previously entered digits. Each press of the A/D key deletes the right end digit and any remaining digits then scroll to the right. If the A/D key is pressed and held in for approximately 3 seconds, all of the digits are deleted.

The Telephone Number, when entered, is saved in what is commonly referred to as "scratch pad" memory. The Number will remain in this memory until either a new Number is entered, the A/D key is used to delete it, or the Unit is turned OFF. Changing channels does not affect the scratch pad's memory.

When used as a DTMF Keypad, all keys are usable. See Figure 2 on page 16. However, the A/D, PRI, T/M and ENT keys are then used as A, B, C and D respectively. All of the other keys are used as indicated. The keypad is enabled for DTMF usage only when the PTT button is pressed. In other words, the Unit must be transmitting (PTT held in) for the keys to become usable for DTMF purposes.

To Originate A Call

Key in the desired Telephone Number (up to 11 digits). If the channel is not busy, press the * key to automatically transmit the connect (*) tone, the Unit's ANI Code and then, after the RCC Delay time (programmed by Dealer), the Telephone Number.

REMINDER: The Telephone Number does not have to be keyed in each time a call is to be made, unless it is to be changed or the Unit has been turned OFF since the last call.

The Radio is now in the Receive Mode and the PTT button can be pressed, which enables the Transmitter and the DTMF keypad. At this time, while holding in the PTT button, either press the desired DTMF keys and/or speak into the Radio's microphone. After your end of the conversation is finished, release the PTT button to listen to any reply. To end the contact, press the # key to automatically send the disconnect (#) tone and the ANI code.

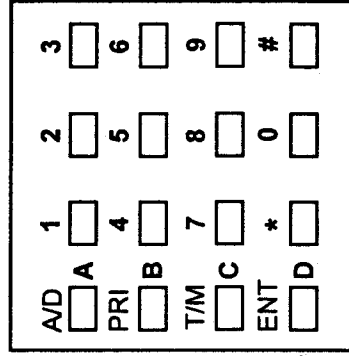


Figure 2.

DTMF Keypad.

If a Telephone Number is not in the scratch pad memory (it has been deleted or the Unit was turned OFF) and the * key is pressed, the Radio will still transmit the connect (*) tone and the ANI code. It will then go to the Receive Mode and wait for a dial tone to be received. After the dial tone is received, press the PTT button and key in the desired Telephone Number.

To Receive a Call

With the Radio in the Receive Mode, squelch will open only when it receives an ANI code that corresponds (identical) to its own ANI code. At this time, the PTT button is enabled and can be pressed to start transmitting your end of the conversation. Release the PTT button to listen to any reply.

OTHER USER-SELECTABLE FEATURES

KEYPAD LOCK

The Keypad and all other buttons (except FUNC, LAMP/LK, PTT and the Channel Selector) can be "LOCKED" or be made inoperative while the Unit is in the Receiver Mode. These buttons can still be used for DTMF encoding while the Unit is in the Transmitter Mode. The Unit can be in either the MANUAL or the SCAN Mode. Press and hold in the FUNC button and then press the 2 Key. A small "LOCK" will appear in the display to indicate the LOCK function is enabled. Use the same procedure to disable the LOCK function.

IMPORTANT: DO NOT use Keypad Lock if the Unit is programmed for RCC operation. Certain keys are used while the Unit is in the Receive Mode.

BEEP

When the Beep feature is enabled, a beep can be heard when any button (except LAMP/LK and PTT) is pressed or when the Channel Selector is turned to Channel 01. To disable this feature, press and hold in the FUNC button and then press the 3 Key. No beeps will be heard except for when the PTT is pressed and the channel is a Receive Only channel. In this case, a series of error beeps will be heard until the PTT button is released.

BATTERY INFORMATION

GENERAL INFORMATION

Keep the Battery charged. It may be charged without being installed on the Unit. Either the WCMP Wall-mounted Charger supplied with the Unit or the optional accessory BCMP Drop-in Quick Charger may be used.

Do NOT use any other charger, or damage to the Battery may occur.


The WCMP Charger will fully charge the BPMP7 in approximately 14 hours and the BPMP1 in approximately 20 hours. The BCMP Drop-in Charger will fully charge either battery in approximately 1 3/4 hours. These times are dependent upon the Unit being turned off or the battery is not installed.

NOTE: The BPMP7 or BPMP1 battery is not fully charged when shipped from the Factory. It should be properly charged before use.

POWER SAVE FUNCTION

A Power Save Timer is built into the Unit. With the Unit in the MANUAL Mode and not receiving a signal, the Power Save Function conserves battery power, by reducing the current drain for a selected period of time. The Timer automatically shuts down the receiver for 100 milliseconds and then turns it back on for approximately 225 milliseconds, for a total cycle time of 325 milliseconds. See page 23 for more details.

FOR LONGEST BATTERY LIFE AND BEST PERFORMANCE

1. Charge the Battery to full capacity: 14 to 20 hours with the WCMP; for the BCMP Quick Charger allow 1 3/4 hours.
2. Use the Battery as soon and as much of its capacity as possible and practical. A Battery that is charged and discharged completely will maintain the longest operating time capacity. Also, typically 3 to 5 charge-discharge cycles are required to bring a new Battery up to its rated capacity.
3. Store and charge the Battery at a room temperature of 65 to 75°F (18 to 24°C). A Battery that has been stored for over a month should be recharged before being put into service, due to chemical self-discharge which occurs at a rate of approximately 1% per day. Do NOT charge a cold battery that is at 32°F (0°C) or below until it is at least above 45°F (7°C).
4. Reduced capacity of the Battery may result from repeated identical shallow discharge-full charge cycles. If such a condition is suspected, use the Battery until the Transceiver indicates a Low Battery ("flashing" ) , then fully recharge and discharge again. Repeat this cycle 3 to 5 times. Full rated capacity should then be available.

CAUTION: Do NOT short or incinerate the Battery.

IMPORTANT: Please recycle or properly dispose of any non-usable or defective BPMP7 or BPMP1 battery.

MAINTENANCE

NOTE: All adjustments affecting transmitter power output, carrier frequency or modulation **MUST** be performed by a qualified electronics technician.


CAUTION: Do NOT tamper with internal adjustments. Damage to the equipment and/or improper operation may result.

Service Reminder

Have the Transceiver checked periodically by a qualified electronics technician.

TROUBLESHOOTING

Perform the simple checks indicated below prior to returning the Unit for service.

Trouble	Check
No reception.	Check antenna connection
Does not scan.	Check squelch setting.
No sound.	Volume Control Setting.
No display or "flashing"  .	Low Battery; charge or replace.
Key Pad buttons don't work.	Is "LOCK" in the display? Disable the LOCK function (p. 18).
Can't transmit on a selected channel.	Is Channel Receive Only? Is BCL enabled and BUSY LED is ON? If it is, you will hear a series of beeps while PTT is depressed. Has * been pressed? (RCC only)

For service, in or out of Warranty, send Unit to:

Customer Service Department
RELM Communications, Inc.
 7505 Technology Drive
 West Melbourne, FL 32904

For information, contact: 1-800-422-6281
 FAX: 1-407-676-4403

NOTE: For in-Warranty service information, read the Warranty Statement on the back cover of this manual.

SUMMARY OF DEALER'S PROGRAMMING OPTIONS

1. Number of Channels – the Unit can be programmed for 1 to 32 channels. Any channel not programmed is *deleted* and can not be accessed by the User.

NOTE: The Unit can be modified to have 64 channels. This optional modification is available from your local RELM Dealer or from RELM's Customer Service Department.

2. Receive Only Channel – the transmit frequency can be *deleted* from any channel, thus making that channel only capable of receiving. This would be very useful for such purposes as monitoring a channel (a National Weather Service Channel for example) that would not require or permit transmitting.

3. CTCSS Tones – any one of 39 CTCSS (Continuous Tone-Controlled Squelch System) Tones can be programmed for any channel. The tone used for a channel's decode (receive) frequency can *either* be the same, or different, from that channel's encode (transmit) frequency.

4. DTMF Tones – any four DTMF (Dual-Tone Multi-Frequency) Tones, consisting of 0 – 9, * and #, A – D, can be programmed for any channel.

5. DTMF Operation – The Unit can be programmed to automatically send the DTMF Tones either after the first press of the PTT switch or for every press of the PTT switch.

For proper two-way SELECTIVE CALLING operation, the DTMF tones must be sent on every press of the PTT switch in order to open the other or receiving Unit's squelch. This is because a Unit's DTMF decoder is always automatically reset after it transmits while in the SELECTIVE CALLING Tone Mode. Also, the Unit's DTMF decoder automatically resets if it has not received a signal for approximately 2.5 seconds. Thus, it needs to receive the DTMF tones again to open squelch.

6. Busy Channel Lockout – the Unit can be programmed to prevent listening or transmitting on a channel if that channel is receiving a signal that has a CTCSS Tone or DTMF Tones that do NOT match its own Tone or Tones. Thus, it is a *busy* channel and should not be used at this time.

7. Scan Delay – the Unit can be programmed to delay (for 1/2, 1 or up to 9 seconds) the restart of the scanning action after the signal has gone away. This delay gives the User some time to respond to the signal before scanning resumes.

8. Time Out Timer – the Unit's Time Out Timer can either be disabled completely or set to only allow a transmission of 1/4, 1/2 or 1 minute duration. The Timer is normally used to prevent excessively long transmissions that might be deliberate or caused by an inadvertent or accidental pressing of the PTT switch.

9. RCC Operation – The Unit can be programmed to be used in the Radio Common Carrier (RCC) Services. If programmed as such, it can not be used as a normal or standard 2-way radio. RCC Delay (1/2 to 9 seconds) is also selected when the Unit is programmed for RCC operation. RCC Delay is the time after the ANI is sent before the scratch pad number is automatically sent.

POWER SAVE TIMER DETAILS

The built-in Power Save Timer automatically shuts down the receiver for a period of time as determined by the Unit's microprocessor. At the end of the Timer's shut down period, 100 milliseconds, the receiver is activated again for approximately 225 milliseconds.

If a signal is present during this time, it stays activated for 5 seconds after the signal is gone and then the Timer shuts it down again for 100 milliseconds. Pressing any button, or turning the Channel Selector, immediately turns on the receiver for at least 5 seconds.

The current drain is reduced to approximately 10mA during the Timer period. Thus, the *average* current drain is less for the total cycle time (325 milliseconds) and is approximately 29 mA.

SPECIFICATIONS

(Subject to change without notice)

General

Number of Channels	1 - 32 (64 option available)
Frequency Range	148 - 174MHz (VHF)
MPV32	403 - 430MHz (UHF)
MPU32A	450 - 480MHz (UHF)
MPU32B	15MHz (VHF); 20MHz (UHF)
Operational Bandwidth	30kHz (VHF); 25kHz (UHF)
Channel Spacing	2.5kHz (VHF)
Channel Increments	5kHz/6.25kHz (UHF)
Size (with BPMP7; W x D x H)	2.45" x 1.38" x 6.40"
Metric (cm)	6.22 x 3.50 x 16.26
Weight (with BPMP7 and Antenna)	15.5oz. (0.44 kg)
Power Requirements	10.8V, Nominal
Battery Voltage	29mA, Typical
Current Drain	40mA, Max. (VHF)
Squelched (w/Power Saver)	45mA, Max. (UHF)
Squelched (w/out Power Saver)	150mA, Max.
Rated Audio	650mA
Transmit - 1 Watt (MPV32)	750mA
1 Watt (MPU32)	1350mA
Transmit - 5 Watts (MPV32)	1450mA
4 Watts (MPU32)	50 Ohms
Antenna Impedance	8 Ohms
Speaker Impedance	± 5 PPM Max.
Frequency Stability	-30°C to + 60°C
Operating Temperature	(-22°F to + 140°F)
RCC Memory	1 - 11 digits
Scratch Pad	1 - 7 digits
ANI	
Receiver	
Sensitivity (12dB SINAD)	0.25µV Max.
Threshold Squelch	0.20µV Max.
Selectivity (Adjacent Channel)	-75dB Min. (VHF)
	-70dB Min. (UHF)
Spurious Rejection	-67dB Min.

(Continued on next page)

SPECIFICATIONS

(Continued)

Receiver (continued)

Intermodulation	-70dB Min. (VHF)
	-67dB Min. (UHF)
Hum and Noise Ratio	-40dB Min.
Rated Audio Output	250mW Min.
Audio Distortion @ 0.25W	10% T.H.D. Max.
Scan Rate	10 Ch/Sec.
Priority Sampling Rate	Once every two seconds
Transmitter	
RF Output Power	5W/1W, ± 1dB
MPV32	4W/1W, ± 1dB
MPU32	-70dBc Min. (VHF)
Spurious/Harmonic Emissions	-63dBc Min. (UHF)
	± 5kt-Hz
	-40dB Min.
	5% Max.
Modulation	Part 90
FM Hum and Noise	Part 90
Audio Distortion	Part 22, 74, 90, 95
FCC Emission Designator	
14K8F1D (MPV)	
14K8F3D (MPU)	
16K0F3E	
FCC Type Acceptance	
MPV32	Part 22, 74, 90
MPU32A	Part 22, 74, 90
MPU32B	Part 22, 74, 90, 95