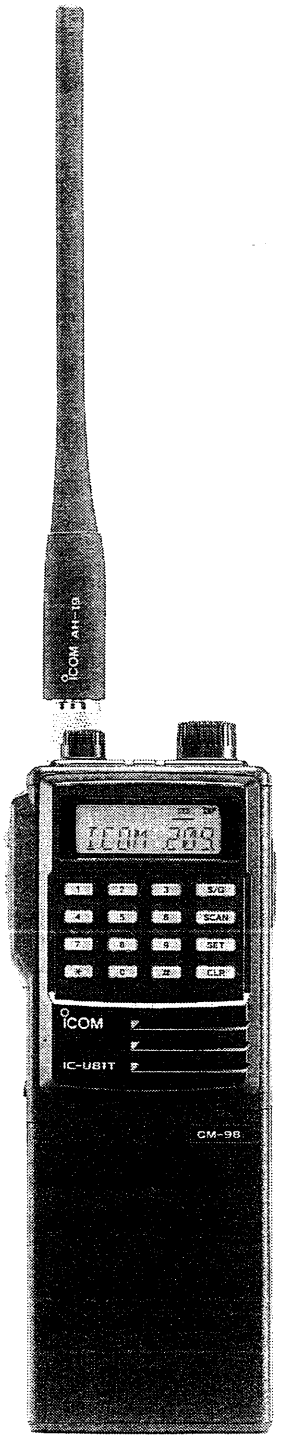
ICOM

# INSTRUCTION MANUAL

800 MHz TRUNKED TRANSCEIVER

# IC-U81T

Icom Inc.



# IMPORTANT SAFETY PRECAUTIONS

**READ ALL INSTRUCTIONS** carefully and completely before using the transceiver.

**SAVE THIS INSTRUCTION MANUAL!** This instruction manual contains important safety and operating instructions for the IC-U81T.

**NEVER** allow the antenna to come close to, or touch, the eyes, face, or any exposed body parts while the radio is transmitting.

**NEVER** connect the radio to an AC outlet.

**NEVER** operate the radio near electrical blasting caps or in an explosive area.

**NEVER** allow children to operate the radio.

**NEVER** expose the radio to rain, snow or any other liquids.

**NEVER** disassemble the radio. Incorrect reassembly may result in a fire hazard or electric shock.

**AVOID** placing the radio in excessively humid or dusty environments, or in direct sunlight.

**NEVER** attempt to transmit without an antenna. Transmitting without an antenna may damage the radio.

**NEVER** use an accessory which Icom does not sell or recommend, as it could result in a fire hazard or an electric shock.

**AVOID** using or storing the radio in extreme cold (under − 30℃; − 22℉) or extreme heat (over + 60℃; + 140℉).

**AVOID** the use of chemical agents such as benzine or alcohol when cleaning, as they can damage the radio's surfaces.

**BE CAREFUL!** The rear panel will become hot when operating the radio continuously for long periods.

# TABLE OF CONTENTS


**IMPORTANT SAFETY PRECAUTIONS** ..... i
**TABLE OF CONTENTS** ..... ii

**1 PANEL DESCRIPTION** ..... **1~3**
- Top panel ..... 1
- Front and side panels ..... 2
- Display panel ..... 3

**2 FEATURES SUMMARY** ..... **4**
- LTR features ..... 4
- LTR/AmeriCom features ..... 4
- AmeriCom features ..... 4

**3 BATTERY PACK** ..... **5~6**
- Battery pack replacement ..... 5
- Cautions ..... 5
- Charging ..... 6

**4 ACCESSORIES** ..... **7**
- Unpacking ..... 7
- Accessory attachment ..... 7

**5 QUICK REFERENCE GUIDE** ..... **8~9**

**6 BASIC OPERATION** ..... **10~14**
- Operating modes ..... 10
- General operation ..... 10
- Selecting Systems and Groups ..... 11
- Receiving calls ..... 11
- Placing standard calls ..... 12
- Placing telephone and unique ID calls ..... 12
- Procedures for placing DTMF telephone calls ..... 13
- Placing a preprogrammed AmeriCom telephone or unique ID call ..... 13
- Calling your radio from a standard telephone ..... 14

**7 FEATURE DESCRIPTIONS AND OPERATIONS** ..... **15~20**
- LTR features ..... 15
- LTR/AmeriCom features ..... 17
- AmeriCom features ..... 19

**8 SUPERVISORY TONES** ..... **21~22**

**9 PROGRAMMING INFORMATION** ..... **23**

**10 SPECIFICATIONS AND OPTIONS** ..... **24**
- Specifications ..... 24
- Options ..... 24

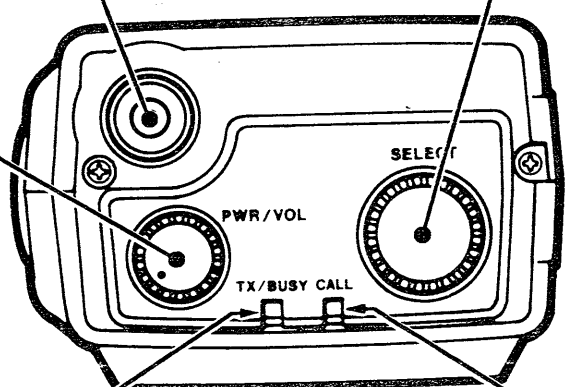
# 1 PANEL DESCRIPTION

## ■ Top panel

**ANTENNA CONNECTOR [ANT]**
Connects the supplied flexible antenna.
**CAUTION:** DO NOT attempt to transmit without an antenna as this may damage the radio.

**ON/OFF POWER AND VOLUME CONTROL KNOB [PWR/VOL]**
Turns the radio ON or OFF and adjusts the speaker volume.

**TRANSMIT/BUSY LIGHT [TX/BUSY]**
Lights up in red when the radio is transmitting, flashes in red when the radio is getting permission to transmit and lights up in green when the [PTT] is pressed and the system is busy. Try your call again.




**SELECT KNOB [SELECT]**
Rotates to select different radio settings. The primary use is selecting a System or a Group within a System. Also used with the [SET] button to change other user controlled features.

**CALL LIGHT [CALL]**
Lights up in yellow when someone tried to call your radio and there was no response. Press [PTT] or any front panel button to turn it off.

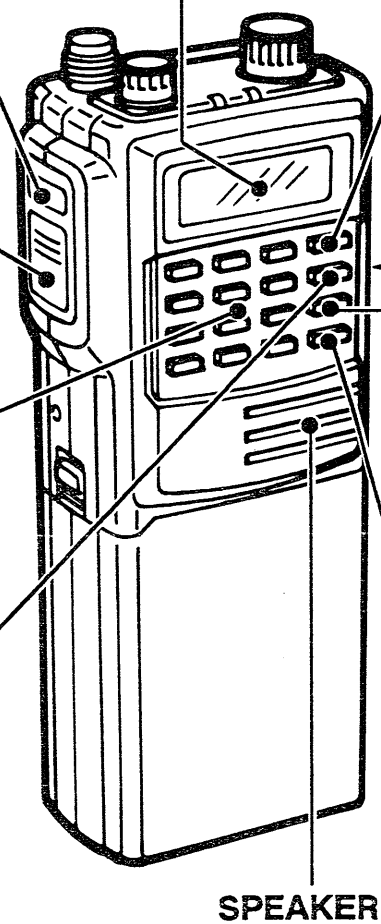
# ■ Front and side panels

**LIGHT BUTTON [LIGHT]**
Turns ON the LCD backlighting on the display and illuminates the keypad. Lights remain active for 5 seconds after the last button on the radio is pressed.

**PTT BUTTON [PTT]**
Pushed to activate the transmitter. Released to receive. PTT means push-to-talk.

**DTMF KEYBOARD**
For placing telephone and unique ID calls (see p. 13).

**SCAN BUTTON [SCAN]**
Press this button to activate the different Scan features in the radio. The "SYS" and "GRP" Icons on the display will flash to indicate what type of scan is being selected. After scanning has started, bars that replace the System and Group numbers indicate which type of scan is active. See "FEATURE DESCRIPTIONS AND OPERATIONS."



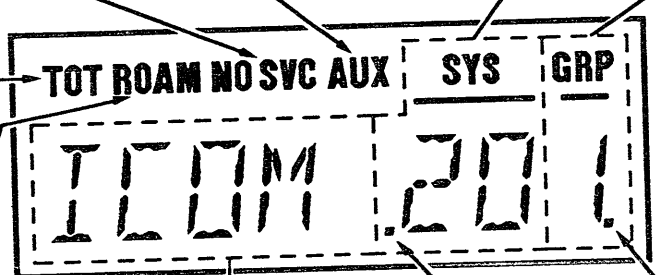

**SYSTEM/GROUP BUTTON [S/G]**
Activates System Select or Group Select within a System. Bar-shaped Display Icons beneath the "SYS" icon or the "GRP" icon on the display show whether System Select or Group Select is active.

**SPEAKER-MICROPHONE CONNECTOR [SP/MIC]**
Used to connect the optional EM-77 SPEAKER-MICROPHONE.

**SET BUTTON [SET]**
Activates a sequence of user controlled features. The display will indicate which feature is active for user control. The radio will not transmit or receive while the [SET] button is being used. See "FEATURE DESCRIPTIONS AND OPERATIONS."

**CLEAR BUTTON [CLR]**
This button disables scan and also returns the radio to the active operating mode after using the [SET] button.

## Display panel




**AUXILIARY [AUX]**
If AUX appears, the radio will transmit on high power (2.5 watts).

**NO SERVICE [NO SVC]**
Appears when the radio cannot be used with the current system setting.

**TIME OUT TIMER [TOT]**
Appears when you have talked longer than allowed for one transmission.

**ROAMING [ROAM]**
AmeriCom feature that indicates the radio is searching for a new system to use.

**NO AUTHORIZATION "NO AUTHZ"**
Appears when the radio has been disabled and will not work. Contact your system operator.

**ALPHA CHARACTERS**
Name for radio setting or user prompt for controlling radio.

**SYSTEM [SYS]**
Indicates the active System. The bar indicates the select knob will change Systems.

**GROUP [GRP]**
Indicates the active Group. The bar indicates the select knob will change Groups.

**GROUP LOCKOUT INDICATOR**
This is the decimal point on the right side of the Group display. It indicates that the displayed Group has been locked out of scanning.

**SYSTEM LOCKOUT INDICATOR**
This is the decimal point on the left side of the System display. It indicates that the displayed System has been locked out of scanning.

## LTR features

- Three types of scan: System, Group or System and Group.
- Selectable scan lockout.
- Floating or fixed revert.

## LTR/AmeriCom features

- Up to 20 Systems selectable.
- Up to 10 Groups selectable.
- Each System can be programmed for LTR or AmeriCom operation.
- Talk-around (radio to radio operation) capable.
- Programmable time out timer.
- Call indicator.
- Hi/Low transmit power (1 or 2.5 watts).
- Proceed tone to signal when talking can begin.
- Transmit inhibit when selected Group is busy.

## AmeriCom features

- Over-the-air-programming. (1)
- Many calling formats using Group ID's (GID) and Unique Radio ID's (UID) including radio-to-radio "private" calls. (2)
- Wide area calls via network link. (2)
- Lock-onto-tower (roaming) with automatic System change. (2)
- Up to 35 pre-programmed telephone and UID numbers stored in System/Group settings. (2)

(1)This feature is available if the radio is operating in it's "HOME" AmeriCom cell. An AmeriCom System does not need to be selected.

(2)These features are available if the radio is operating in an AmeriCom cell and an AmeriCom equipped System is active. An exception is unique ID calls which are received even if an AmeriCom System is not selected.

# 3 BATTERY PACK

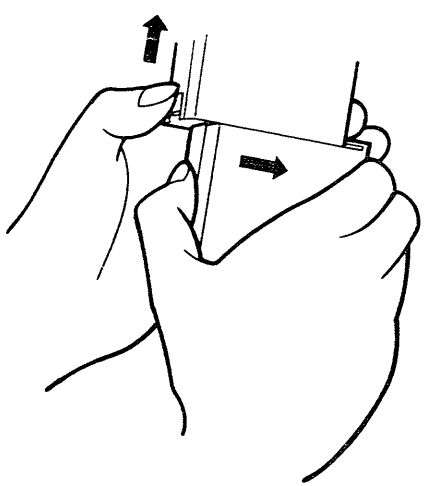
## Battery pack replacement

Before replacing the battery pack, [PWR/VOL] MUST be rotated fully counterclockwise, until a click is heard, to turn the power OFF.

- To REMOVE the battery pack from the radio:
  Push and hold the battery release button upwards, then slide the battery pack to the right (with the front panel facing you).

- To ATTACH the battery to the radio:
  Mate the notched ends between the battery pack and the radio, then slide the battery pack until it snaps into place.

See diagram below.



## Cautions

**NEVER** use an unauthorized battery pack or charger. This may damage the radio.

**NEVER** incinerate a discarded battery pack. Internal battery gas may cause an explosion.

**NEVER** immerse the battery pack in water. If the battery pack becomes wet, be sure to wipe it dry.

**NEVER** short terminals of the battery pack. Internal components may become damaged. Current may flow into nearby metal objects, so be careful when placing battery packs in handbags, etc.

**AVOID** charging the battery pack in extreme cold (under 0℃) or extreme heat (over + 40℃). The battery pack may not fully charge under these conditions.

# ■ Charging

Prior to using the radio for the first time, the battery pack must be fully charged for optimum life and operation.*

**CAUTION:** To avoid damage to the radio, turn it OFF while charging.

1) Connect the charger's power cord to a domestic AC power outlet.

2) Insert the appropriate supplied charge adapter (AD-17) into the charging slot of the charger as shown in the diagram at right.

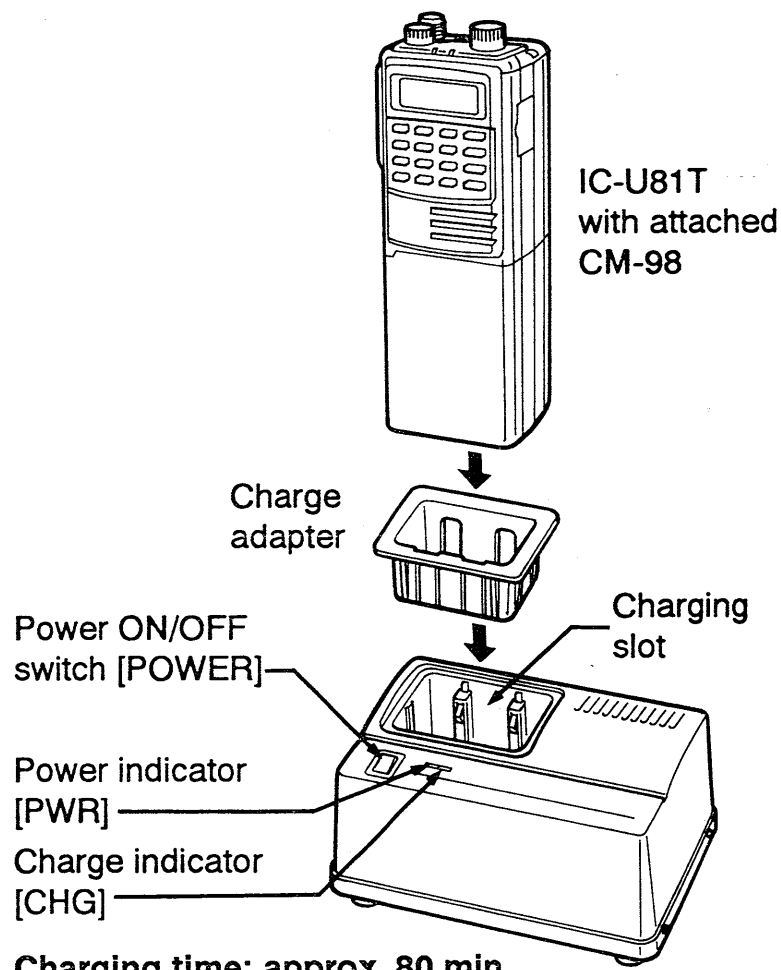
3) Insert the radio (with attached battery pack) into the charge adapter.

4) Turn the charger [POWER] ON.
   • The [PWR] and [CHG] indicators both light.

5) When charging is complete, the charging indicator [CHG] automatically turns OFF.

***NOTE:** Be sure and read the instructions supplied with the optional BM-82U DESKTOP CHARGER.

• **Charging with the optional BM-82U DESKTOP CHARGER**




**Charging time: approx. 80 min.**

# 4 ACCESSORIES

## ■ Unpacking

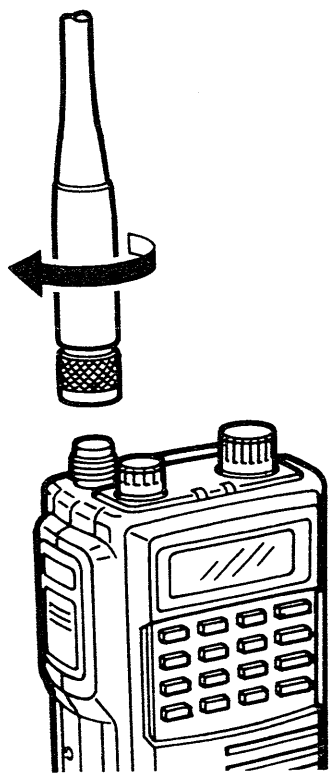
**Accessories included with the IC-U81T:**

| | Qty. |
|---|---|
| ① Antenna (AH-19) | 1 |
| ② Belt clip and screws | 1 set |
| ③ Battery pack (CM-98) | 1 |

## ■ Accessory attachment

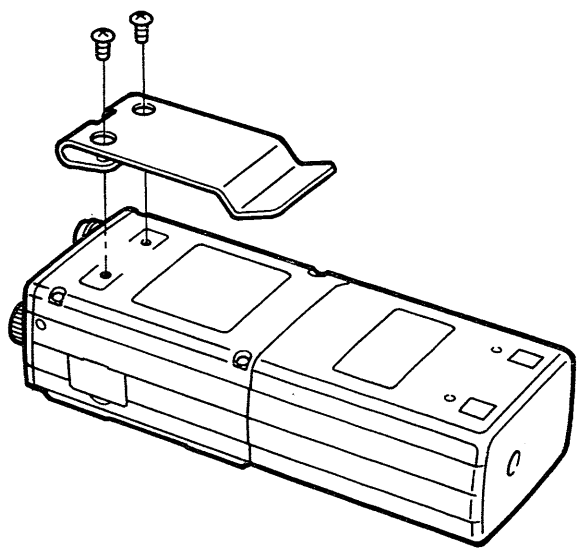
• **Antenna**

To attach the AH-19 flexible antenna to the IC-U81T, screw the base of the antenna onto the antenna connector (top panel) in a clockwise direction. To remove the antenna, reverse this procedure. See diagram below.



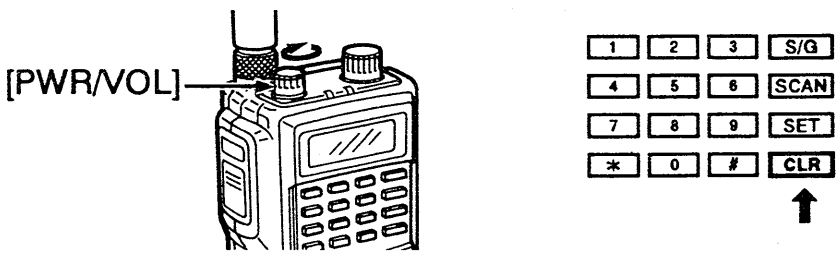
• **Belt clip**

The belt clip allows you to attach the radio to your belt for convenient carrying. Attach the belt clip to the back panel using the two supplied screws. See diagram below.



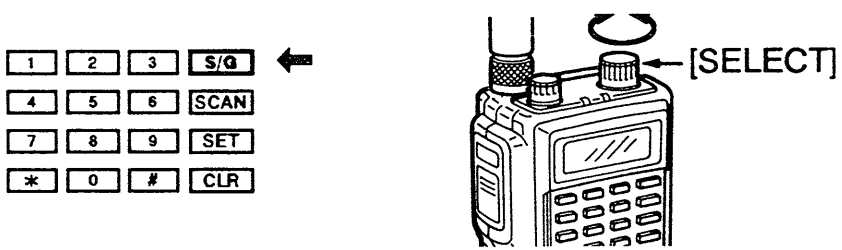
## ◇ ON/OFF and setting speaker volume

Rotate the [PWR/VOL] knob. Press the [CLR] button to check the speaker volume.




## ◇ Changing Systems and Groups

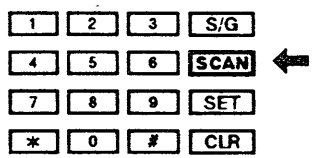
A bar beneath the "SYS" or "GRP" icon on the display indicates whether the [SELECT] knob will change Systems or Groups within a System. If the select function you want is not active, press the [S/G] button once. Rotate the [SELECT] knob to change settings.




**NOTE:** If your radio is programmed with only 1 Group in each System setting, you will not need to use the [S/G] button. Activate the bar under "SYS." Once the System select function is active, you can change to any setting in the radio by rotating the [SELECT] knob.

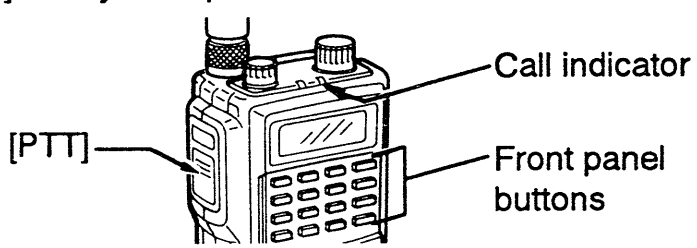
## ◇ Controlling scan (when an LTR system is selected)

Each press of the [SCAN] button changes the scan setting in the following sequence: Group scan, System scan, System and Group scan, Scan off. Steady "SYS" and "GRP" icons indicate scan is OFF. Flashing "SYS" and/or "GRP" icons indicate the type of scan that is selected. Dashes in place of the System or Group numbers indicate the type of active scan. (See p.16 for details)



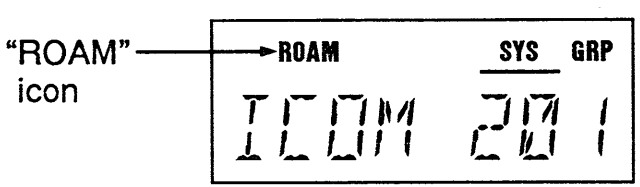

## ◇ Turning call indicator OFF

Press [PTT] or any front panel button.



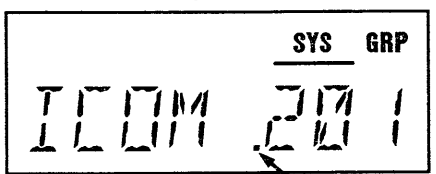

## ◇ Roam indicator (when an AmeriCom system is selected)

Icon is displayed when the radio is searching for a new antenna site and/or system to use for communications.



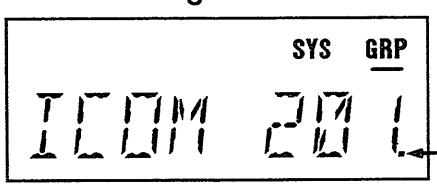
### ◇ System lockout indicator

This is the decimal point on the left side of the System display. It indicates that the displayed System has been locked out of scanning.



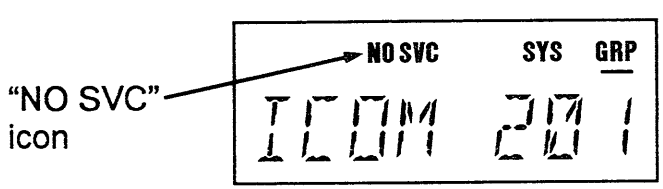

### ◇ Group lockout indicator

This is the decimal point on the right side of the Group display. It indicates that the displayed Group has been locked out of scanning.



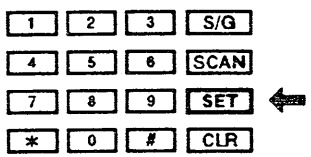

### ◇ If "NO SVC" (no service) icon is displayed

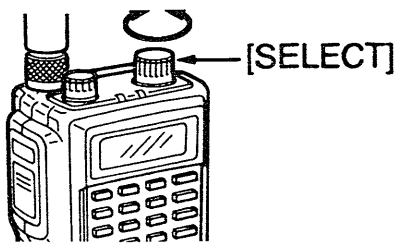
The radio cannot be used with the current setting. Use the [SELECT] knob to try other System settings. Your radio may also be programmed to talk directly to other radios, by-passing the trunking systems. Contact your system operator about using this radio capability called "Talk-around."



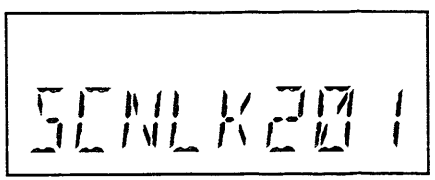

### ◇ Controlling other radio features and settings

Repeated presses of the [SET] button will give access to controlling different radio features. Once a feature is selected the setting can be controlled by rotating the [SELECT] knob. The features accessed and controlled through the [SET] button include:

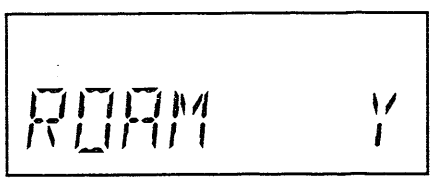


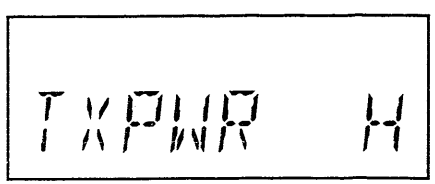

- **Scan lockout (SCNLK)**
  Control which System and Group settings are included in scan. (p. 18)




- **Roaming (ROAM)**
  Turn this AmeriCom feature ON or OFF. See "AmeriCom features." (p. 20)




- **Transmit power (TXPWR)**
  Select transmit power of 1 watt low power (L) or 2.5 watts high power (H). (p. 19)



## Operating modes

This radio can be programmed with up to 20 different Systems and 10 different Groups within each System. Each System can be either an LTR compatible or AmeriCom system.

System or Group settings may also be programmed to make calls to other individual radios or to make telephone interconnect calls.

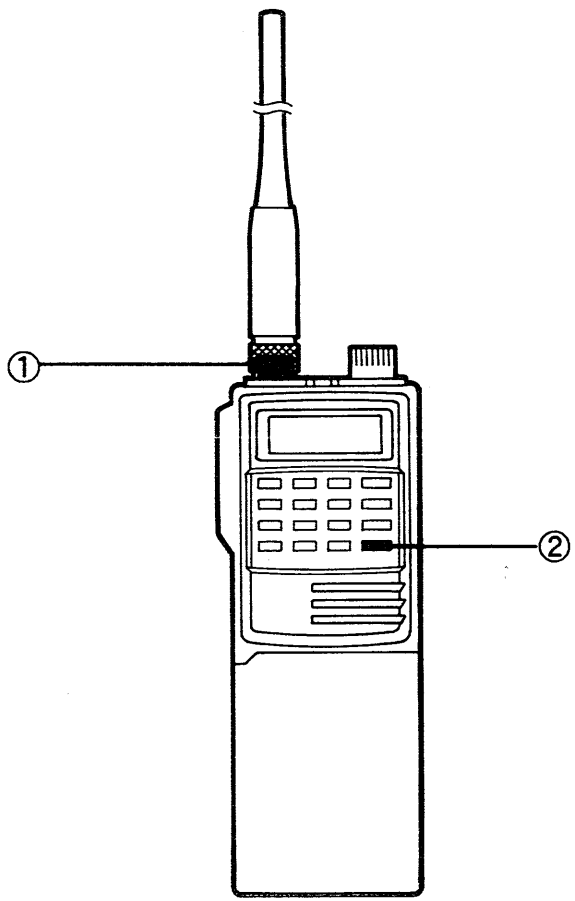
Telephone calls can be made by using the DTMF keyboard to dial the phone number on both LTR or AmeriCom systems or with pre-stored numbers on an AmeriCom system.

To make a telephone or interconnect call, the system that a radio is working on must be equipped for this feature, and the radio must be programmed for this capability.

## General operation

①Turn the radio ON and increase speaker volume by turning the [PWR/VOL] knob clockwise.

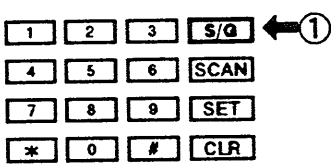
②Test the speaker volume level by pressing the [CLR] button and listening to the tone.

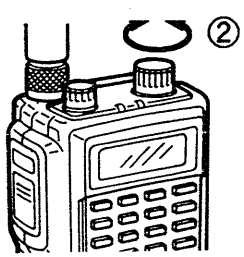


## ■ Selecting Systems and Groups

①An icon shaped like a bar beneath the "SYS" (System) or "GRP" (Group) icon on the display indicates whether the [SELECT] knob will change the System setting or the Group setting. Each press of the [S/G] button will change the radio between System select and Group select.

②Rotating the [SELECT] knob to the left or right will change the setting, System or Group, that is active.



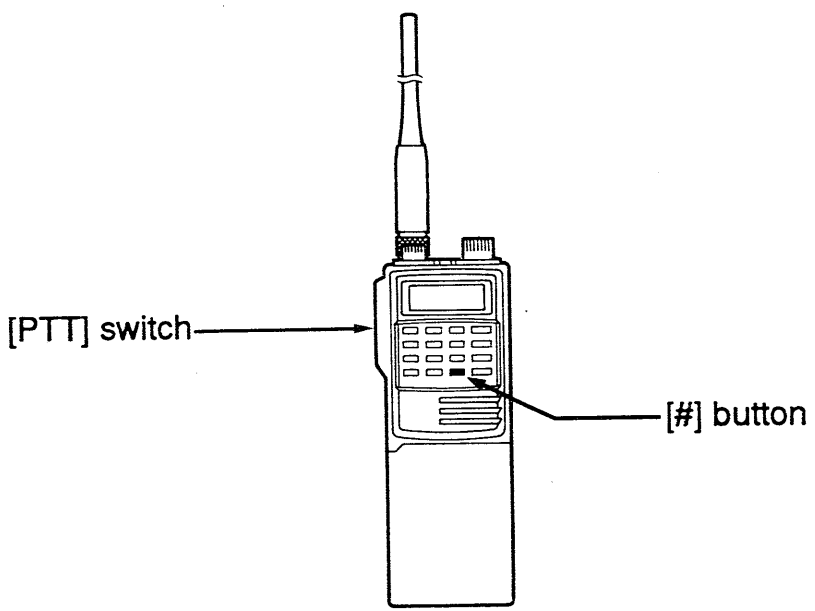

- If there is only one System programmed into the radio, turning the [SELECT] knob while the System bar is active will not change the radio setting but it will create feedback tones.
- If a System is programmed with only one group, turning the [SELECT] knob while the Group bar is active will not change the radio setting but it will create feedback tones.

## ■ Receiving calls

①When a voice message or ringing is heard, press the [PTT] once to respond. The [PTT] is pressed to talk and released to listen. When the [PTT] is pressed, the speaker is also turned OFF.

②Hold the radio 2 to 4 inches from your mouth for best performance. Speak slowly and distinctly in a normal conversation voice. Do not shout.

③When the call is finished, press the [#] button.



## ■ Placing standard calls

① If scanning, halt scanning by turning scan off with the [CLR] button.

② Select the desired System and Group setting.

③ Press and hold the [PTT] (push-to-talk) switch. When the proceed tone sounds, speaking can begin.

If the busy or intercept tone sounds instead, a busy or out-of-range condition exists and you may not be able to complete the call on this attempt. Refer to the "Proceed tone" (p. 23) for more information.

**NOTE:** It is normal for the red transmit indicator to flash during the first second of a call. This indicates that the voice path is being established.

④ Press the [PTT] switch to talk and release it to listen. When the conversation is finished, press the [#] button.

## ■ Placing telephone and unique ID calls

The procedures to place telephone calls, using a DTMF pad to dial the number, are the same for both LTR and AmeriCom systems.

AmeriCom equipped systems can also store and process pre-stored telephone or unique ID numbers. These calls can be made without a DTMF pad.

Unique ID calls are calls to specific radios that are operating in your AmeriCom network. These calls are always placed using the AmeriCom telephone/unique ID procedure. Unique ID calls are not available on LTR systems.

**[DIALING METHOD]**

| Trunking system | DTMF pad | Pre-stored number |
|---|---|---|
| **AmeriCom** | Applicable | Applicable |
| **LTR** | Applicable | Not applicable |

## Procedures for placing DTMF telephone calls

① If scanning, halt scanning by pressing the [CLR] button.

② Select the desired System and Group setting for telephone calls.

③ Momentarily press the [PTT] switch to acquire a dial tone. In some systems it is best to press and hold the [PTT] until a proceed tone is heard and then release it.

④ After you hear a dial tone, use the following procedure to enter the number you wish to call. Press and hold the first digit for a "one two" count. The other numbers may be dialed as quickly as you wish.

⑤ Do not hold the [PTT] switch; wait to hear the phone ring. When your party answers, press the [PTT] switch to talk and release to listen.

⑥ When the call is finished, or if the party does not answer, the call should be terminated by pressing the [#] button. You will hear a sequence of three tones when the system releases your call.

## Placing a preprogrammed AmeriCom telephone or unique ID call

① Select the desired System and Group setting.

② Momentarily press the [PTT] switch to initiate the call request. After a few seconds, a double beeping tone should sound to indicate that the request was received and the call is in queue. If an intercept tone sounds, the request was not received, usually because of an out-of-range condition. (See "SUPERVISORY TONES" on p. 22.)

③ When the beeping tone stops, a ringing tone will sound to indicate that the other party is being rung. If the call is being made to a unique radio and the beeping tone continues for an extended period such as 20 seconds, the radio is probably not in service and the call shoud be tried later. If resources are not available to complete the call, the AmeriCom fast busy tone is heard. (See "SUPERVISORY TONES" on p. 22)

④ When the party answers, press the [PTT] switch to talk and release it to listen.

⑤ When the call is finished, it can be terminated by pressing the [#] button on the DTMF pad.

# ■ Calling your radio from a standard telephone

## ◇ If the radio is in an LTR system

① Dial the number of the radio system in which the radio is operating.

② When the proceed tone is heard (see "SUPERVISORY TONES" on p. 22), dial the five digit number of your radio using a tone-type telephone. Your system operator will tell you what number to call. The first digit must be dialed within 5 seconds of hearing this tone and no more than 5 seconds can elapse between digits or the call is terminated.

③ Ringing is heard when the radio is being contacted.

## ◇ If the radio is in an AmeriCom system

① If your radio (or group of radios) has been assigned a unique telephone number, dial that number. If the call is placed in a queue, a double beeping tone sounds. A ringing tone sounds when the radio is being rung.

② If your radio has not been assigned a unique telephone number, dial the number of the radio system the radio is using.

③ When the proceed tone sounds (three beeps) dial the twelve digit number assigned your radio using a tone-type telephone. Your system operator will tell you the number to dial. The first digit must be dialed within 2 seconds after hearing the tone and no more than 2 seconds can elapse between other digits or the call may be terminated. If the call is placed in a queue you will hear a double beeping tone. A ringing tone sounds when the radio is being rung.

# 7 FEATURE DESCRIPTIONS AND OPERATIONS

## LTR features

### ◇ Scan features

Scanning is a feature that allows your radio to automatically listen for calls from multiple settings of Systems or Groups. Your portable radio has four operating conditions: Scan off, Group scan, System scan, System and Group scan.

- **Each press of the [SCAN] button:**
  Changes the scan setting in the following sequence: Group scan, System scan, System and Group scan, Scan off. Whenever your radio is first turned ON the condition will be scan off. Scan is also turned OFF by pressing the [CLR] button.

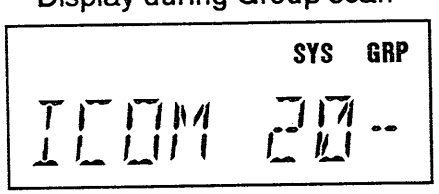
- **Scan off**
  In this condition the radio will only receive calls from the active System/Group setting. The radio displays steady "SYS" and "GRP" icons along with both the System and Group numbers.

- **Group scan**
  All Groups in the active System are scanned for calls. To select Group scan press the [SCAN] button until only the "GRP" icon is flashing. When scan starts, the "GRP" icon will go steady and the Group number will be replaced by a dash " – ."

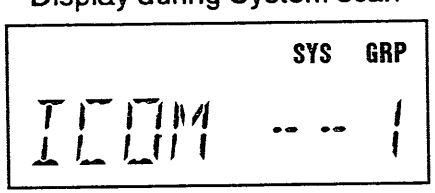
- **System scan**
  All Systems programmed into your radio will be scanned for calls. The radio will monitor the same Group number on each System. Any Systems that do not have that Group number are skipped. To select System scan press the [SCAN] button until only the "SYS" icon is flashing. When scan starts, the "SYS" icon will go steady and the System numbers will be replaced by dashes "- - ."

- **System and Group scan**
  All Groups on all Systems are scanned for calls. To select System and Group scan press the [SCAN] button until the "SYS" and "GRP" icons are flashing. When scan starts, the "SYS" and "GRP" icons will go steady and the System and Group numbers will be replaced by dashes "- - -."

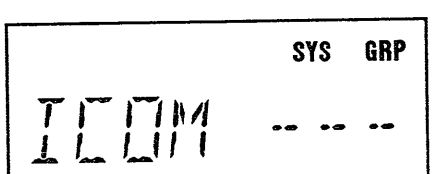
Display during Group scan




Display during System scan




Display during System and Group scan



- **Fixed versus floating revert**
  During scan your radio can be programmed to always transmit on your initial System/Group (the System/Group setting that is active when scan is turned ON) or it can be programmed to automatically transmit on the System/Group where a call has been heard.

  If your radio is programmed for fixed revert, the initial System/Group will always be used for transmit, even if a call is heard from another setting.

  If floating revert is programmed, the System/Group active for transmit automatically changes each time the radio scans to a new setting.

  When scan is turned OFF or suspended by the user the radio will go back to the initial System/Group that was active when scan was turned ON. Fixed or floating revert is programmed by your system operator.

- **Dwell times**
  Determine how long your radio will wait to automatically resume scanning after transmitting or receiving. These dwell times are controlled through your system operator's programming.

- **Display feedback**
  While scan is turned ON, the display will show the name and System/Group numbers of the setting that a call is being heard on. If you have fixed revert in your radio, you can look at your display while a call is being heard to determine the setting you need to use for any response.

- **Scan lockout**
  See "User controlled features." (p. 17)

# ■ LTR/AmeriCom features

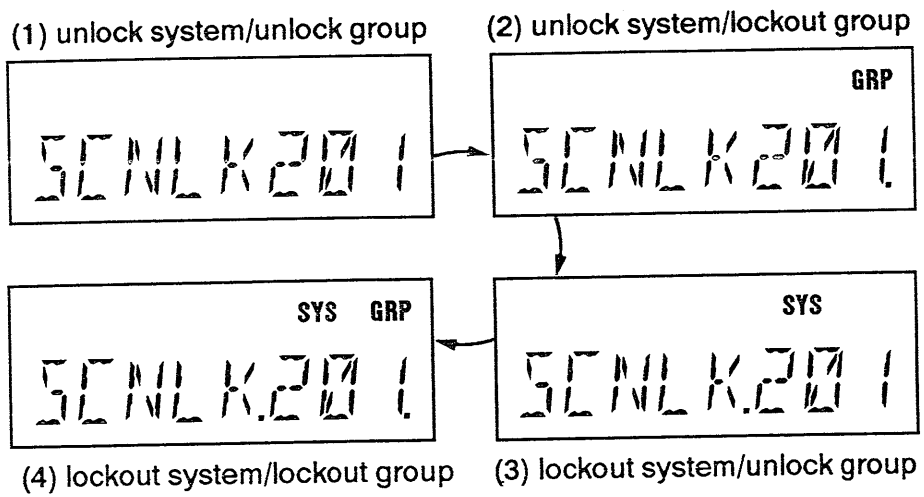
## ◇ User controlled features

Repeated presses of the [SET] button puts the radio in SET mode and allows you to access and control a number of your radio's features. Once the feature you wish to control is active, the [SELECT] knob is turned to the right or left to change the setting for the feature. After you have changed a feature, the next press of the [SET] button will take you out of SET mode. While the radio is in SET mode, it wil not transmit or receive.

The [CLR] button can also be used to exit SET mode. When the [CLR] button is used, changes you have made are not saved.

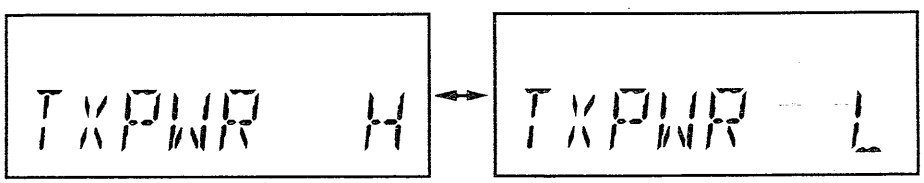
- **Scan lockout* (SCNLK)**

  All Systems or Groups applicable to a type of scan are included in the scanning process unless they are "locked out" by the user. Scan lockout allows the user to exempt the current System and/or Group from scanning. Press the [SET] button once and "SCNLK" is displayed along with the System and Group numbers for the last active System/Group setting. Decimal points (see "PANEL DESCRIPTION") indicate that a System or Group has been locked out of scan. Rotating the [SELECT] knob clockwise advances through these settings:




*LTR only feature.

- **Hi/Low transmit power**
  This feature is controlled by using the [SET] button to display "TXPWR" in the large display and rotating the [SELECT] knob to the left and right to select "H" or "L." If high power has been selected, the "AUX" will be shown on the radio's upper display (see "Panel display").




High power Low power

High power provides 2.5 watts of output power, while low power provides 1 watt of output power.

- **Roaming**
  See "AmeriCom features" on p. 19.

## ◇ Talk-around

Your radio has the ability to talk directly to another compatible radio. This is very useful for two radios that have left the coverage of a trunking system and still need to talk to each other. There are FCC restrictions on the use of this capability. Please consult you system operator about using this feature.

## ◇ Time out timer

Your radio may limit the length of an individual transmission. The length of time you are allowed to talk during a single transmission is programmed by your system operator. After you have exceeded your time limit "TOT" will appear on the panel display and tones will sound. (See "SUPERVISORY TONES – Time out timer warning tone.")

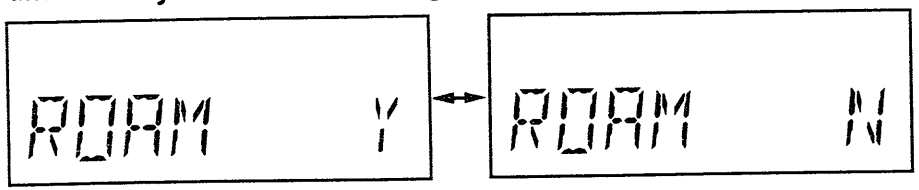
# ■ AmeriCom features

These features are available if your radio is operating on an AmeriCom equipped system. Ask your system operator if you are uncertain about the type of system you are using.

## ◇ Roaming

An AmeriCom network can create the automatic use of different systems or sites. As your radio is moved out of the coverage of one AmeriCom site and into another, the radio can automatically change to the new site. During the process of roaming, the "ROAM" icon will appear on your display. (See "Display panel" on p. 3) After roaming, the radio display will show the new System/Group setting to tell the user where the radio is working. The AmeriCom system is also notified about your location and calls to your radio are automatically routed to you through the AmeriCom network.

- **Roam ON/OFF**
  The roam feature is controlled by the user as part of the SET features. Use multiple presses of the [SET] button until the display says "ROAM." Rotate the [SELECT] knob to the right to turn ROAM ON ("Y") or to the left for ROAM OFF ("N"). The default when the radio is first turned ON is ROAM ON. If you have a situation where you do not want your radio to change settings, even if a different system has a stronger signal, turn ROAM OFF.




Roam ON　　Roam OFF

## ◇ Over-the-air-programming

Your radio can be reprogrammed remotely by sending it new information using a designated AmeriCom system. During this procedure the display will show "OAP," and none of the radio controls work until the process is complete.

## ◇ Networking

Calls can be automatically made to other radios even if they are not working at the same site as your radio. The AmeriCom system keeps track of where radios are operating and will route calls to other sites as required. This feature is a major benefit of the AmeriCom system. Networking does not require any specific action by the radio user. However, if a network call is made there may be some delay in having the call processed.

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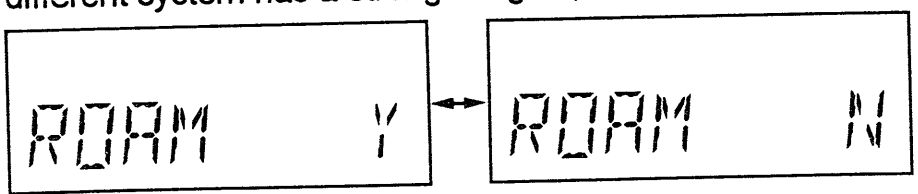


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### ◇ Types of calls

AmeriCom systems work with two types of radio identification. A mobile may work with it's Unique ID (UID) which is different from any other radio or it may work with a Group ID (GID) that is shared with other radios.

- **Private conversation**
  If a radio places a call using its UID to identify itself and also calls another radio using its UID the conversation will not be heard by any other radios and will be "private."

- **Group or shared conversation**
  If a radio uses a GID to identify itself or to call other units, all radios with the same GID will hear the conversation.

These two ID formats (UID and GID) can be used in any combination. Calls can also be placed within a single system site or between different systems across the AmeriCom network.

**Types of calls supported by AmeriCom**

| | Pattern 1 | Pattern 2 | Pattern 3 | Pattern 4 |
|---|---|---|---|---|
| **Transmitting** | UID | GID | UID | GID |
| **Receiving** | UID | UID | GID | GID |

If a radio transmits with a GID, all radios in that Group will hear the call even if the call is to another UID or GID.

Any type of call can be pre-stored into a System/Group setting in your radio by your system operator, or a call can be made by using a DTMF pad input. The radio can hold at least 35 pre-stored numbers. It can store more numbers depending on the length of each number. Each pre-stored number is assigned to a specific System/Group setting. After one of these System/Group settings is selected, a press of [PTT] will automatically dial the number. (See "BASIC OPERATION" on p. 11)

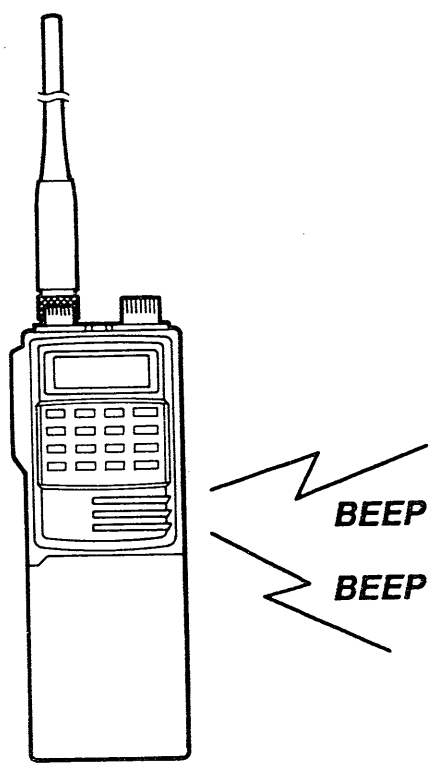
Most calls can also be made using the DTMF pad. However, DTMF calls would not identify your radio with a Unique ID.

Contact your system operator about changing your pre-stored radio settings or making DTMF based calls.

# 8 SUPERVISORY TONES

The IC-U81T portable generates a high and low tone. These two tones provide user feedback through the radio speaker. They are not transmitted over the air. The trunked system that your radio operates on will generate additional tones. This manual only explains the tones generated by the radio.

The radio produces the following feedback tones: Bad key, Busy, Retry, Deny, DTMF, Key press, Proceed, Queue and Time out warning.




◇ **Bad key** – two high tones.
Acknowledges the user has pressed a key or turned the select knob, and warns that the radio is unable to perform that action. Bad key also sounds when the radio is in the process of ending an AmeriCom interconnect call and the user turns the select knob.

◇ **Busy tone** – repeating cycle of high and low tones.
Signals that the system is in range but all repeaters are currently in use. Sounds when the user presses [PTT], and continues until they release [PTT] or when a repeater becomes available for transmit.

◇ **Retry tone** – single high tone.
Indicates there is a delay in contacting the system. Retry sounds when the radio is placing an interconnect or dispatch call and does not hear a response from the system. The radio makes six attempts to reach the system, and sounds the retry tone at the third through the sixth tries. The deny tone sounds after the sixth try.

◇ **Deny tone** – repeating cycle of long high tone and long low tone.
This indicates an attempted call failed. Sounds while [PTT] is pressed and an LTR system is out of range. If a call fails on an AmeriCom system the tone will last for two cycles or four tones.

◇ **DTMF feedback tones** – created when DTMF tones are transmitted to the system.

The DTMF pad creates a single feedback tone when a button is pressed.

◇ **Key press tone** – single low tone.

Acknowledges that a control button has been pressed, the select knob rotated, or [PTT] pressed for some types of calls on an AmeriCom system.

◇ **Proceed tone** – one low tone and one high one.

Sounds after the user has pressed [PTT] and the radio obtains use of a free repeater. Microphone audio is transmitted immediately after the tone. This tone also sounds if a radio has been out of service and service is restored.

◇ **Queue tone** – cycle of two tones and a pause.

Indicates that an interconnect call is in the process of being set up by the trunking system. It continues until the call is connected or aborted.

◇ **Time out timer warning tone** – two long low tones.

Warns the user that [PTT] has been held too long for one transmission and the call is about to be cut off. The tone sounds once five seconds before cut off, and continuously at cut off until [PTT] is released. (See "Time out timer" on p. 19)

# 9 PROGRAMMING INFORMATION

## ◇ Initial programming

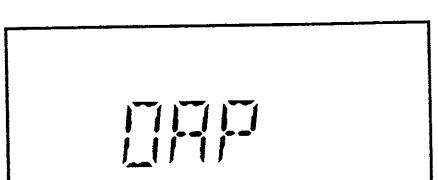
Before your radio will work it must be programmed. If your radio has not been programmed, the display will show "NO PROG" and you should contact your system operator.

## ◇ LTR compatible systems

The different settings for your radio are controlled by your trunking system operator or dealer. If you feel a change is desired, contact the location that provided the current programming that is in the radio.

## ◇ AmeriCom systems

Your radio can be programmed remotely so long as it is turned ON and operating in its home cell. This process is called OVER-THE-AIR-PROGRAMMING. There are situations when your radio will be re-programmed even if you have not requested a change. While this is happening, the radio will read "OAP." You will not be able to use your radio during the time that "OAP" is on the display. Under normal conditions OAP will only take 1~2 minutes. When your display returns to normal, you may use your radio again.



# Specifications

## GENERAL

| | |
|---|---|
| • Frequency coverage | : 806~821 MHz (transmit)<br>851~866 MHz (receive, transmit in the talk-around) |
| • Mode | : FM (16K0F3E, 15K0F1D) |
| • Power supply requirement | : CM-98 BATTERY PACK |
| • Current drain | : Transmit 2.2 A(H) 1.7 A(L)<br>Receive, standby 120 mA<br>max. audio output 350 mA |
| • Usable temperature range | : −30 ℃ ~ +60 ℃; −22 ℉ ~ +140 ℉ |
| • Dimensions (projections not included) | : 60(W) × 159(H) × 44(D) mm;<br>2.4(W) × 6.3(H) × 1.7(D) in |
| • Weight | : 540 g; 1.2 lb |

## TRANSMITTER

| | |
|---|---|
| • Output power | : 2.5 W (H) 1 W (L) |
| • Spurious emissions | : Less than −60 dB |

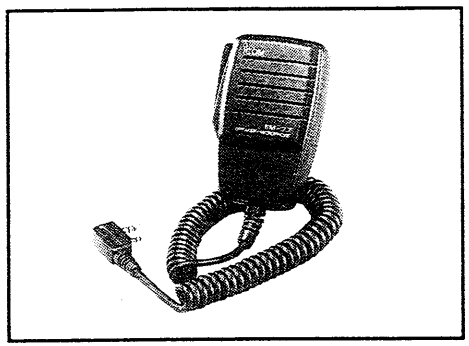
## RECEIVER

| | |
|---|---|
| • Receive system | : Double superheterodyne |
| • Sensitivity | : 0.32 μV for 12 dB SINAD |
| • Adjacent channel selectivity | : −60 dB |
| • Spurious response rejection | : −65 dB ( −60 dB at ½ IF) |
| • Intermodulation rejection | : −60 dB |
| • Blocking and desensitization | : 90 dBμ e.m.f. |
| • Audio output power | : More than 500 mW |

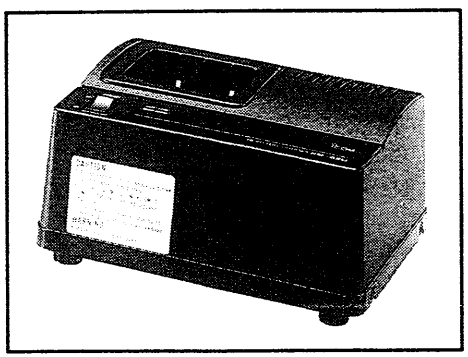
**All specifications are subject to change without notice or obligation.**

# Options

• **EM-77 SPEAKER-MICROPHONE**
Combination speaker and microphone.



• **BM-82U DESKTOP CHARGER**
Rapidly charges the CM-98 within 80 min.

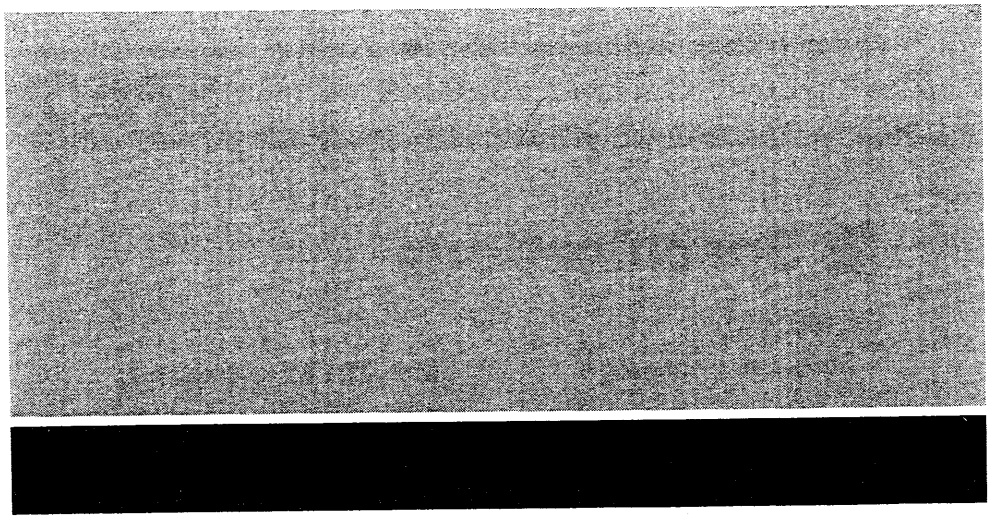


• **CM-98 BATTERY PACK**
7.2 V, 1400 mAh. The same type as supplied with the radio.

• **AH-19 FLEXIBLE ANTENNA**
The same type as supplied with the radio.

• **LC-77 CARRYING CASE**

**Count on us!**



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