

MONITORADIO RECEIVER



INSTRUCTION

MANUAL

AMATEUR RADIO

For all your 2 Meter FM needs









MARINE RADIO

Powerful and positive communications for ship to shore . . . ship to ship



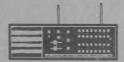


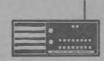




ACTION RADIO

More than 25 VHF High and Low Band or UHF Band Monitoradio / Scanner Receiver Models









PROFESSIONAL RADIO

New, low-cost, powerful 2 way communications for business, public service and farms





UNPACKING

- 1 Receiver Unit
- 1 AC Power Cord
- 2 Telescopic Antennas
- 1 Instruction Manual
- 1 Frequency/Service Label
- 1 Warranty Card To be filled out and returned to:

Regency Electronics, Inc.

7707 Records Street

Indianapolis, Indiana 46226

NOTE

It is highly recommended that the sections on Installation and Operation be read before the initial usage of this unit. A few minutes spent in reading these instructions will certainly reduce the number of questions, and problems, that may airse concerning optimum performance and proper usage. Crystal Installation and Band Programming are thoroughly covered on pages 7 and 8.

MAINTENANCE

It is recommended that the services of a qualified electronic technician be used for troubleshooting.

DO NOT TAMPER WITH INTERNAL ADJUSTMENTS. DAMAGE TO THE EQUIPMENT AND/OR IMPROPER OPERATION MAY RESULT.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

DESCRIPTION

The ACT-E 10 H/L/U is a programmable, 10-channel, crystal-controlled three-band FM Monitor. It is a double-conversion, super-hetrodyne receiver designed for use in the narrow band FM channels of the public service VHF and UHF communications bands. Police, fire, civil defense, and radio telephone are just a few of the numerous services included in the bands that cover 30 to 50 Megahertz, 148-174 Megahertz, and 450 to 470 Megahertz. See page 11 for detailed information for retuning the UHF section to cover 470-500 Megahertz.

This unit can be programmed internally for any combination (up to ten channels) of High VHF band (148-174 Megahertz), Low VHF band (30-50 Megahertz) frequencies, or UHF (450-470 Megahertz) band.

Any combination of one to ten channels can be scanned automatically. Push button controls permit the listener to monitor only those channels of immediate interest, or all ten if he so desires. Manual selection of channels is also provided in case the listener wants to continuously monitor a particular channel.

The ACT-E 10 H/L/U utilizes silicon transistors throughout for dependability. The use of five Integrated Circuits provides compactness and circuit reliability. A ceramic filter employed in the second I.F. ensures optimum performance in areas of the country where many of the services are very closely grouped together. In addition, an Automatic Frequency Control (AFC) circuit (for UHF only) provides automatic adjustment to the receiver's local oscillator frequency in order to compensate for any small change to the station's carrier or receiver frequency.

Some extra features include: screw terminal connections for an external or remote speaker; two jacks for external antennas; terminal bushing for DC power connection.

SPECIFICATIONS

(Subject To Change Without Notice)

Frequency Range
VHF Band (Low)
VHF Band (High)
UHF Band (Factory Tuned)
UHF Band (Retuned)
Offic Balla (Neturiea)
Frequency Separation
VHF Band (Low) 6 DB Bandwidth; 33-47 MHz
10 DB Bandwidth; 30-50 MHz
VHF Band (High) 8 MHz (maximum sensitivity)
12 MHz (usable sensitivity)
UHF Band 8 MHz (maximum sensitivity)
12 MHz (usable sensitivity)
, , , , , , , , , , , , , , , , , , , ,
Sensitivity (At Tune-Up)
VHF Band (Low) 0.5 microvolt for 20 DB quieting
VHF Band (High) 0.6 microvolt for 20 DB quieting
UHF Band 0.7 microvolt for 20 DB quieting
Squelch Sensitivity (Threshold)
VHF Band (Low) 0.3 Microvolt
VHF Band (High) 0.4 Microvolt
UHF Band 0.5 Microvolt
Selectivity 6 DB @ ±7 KHz
50 DB @ ±18 KHz
Spurious Rejection (Except Primary Image) 50 DB
,,,
Modulation Acceptance ±7 KHz
AFC Range (UHF Only) Approx. 10 KHz (±5 KHz)

I.F. Frequencies					
Scanning Rate Approx. 15 channels pe	er sec.				
Audio Output (8 Ω Speaker)					
Power 105-130 VAC, 60 Hz @ 13 Watts maximum 11-15 VDC @ 9 Watts maximum					
FCC Certified Part 15, Su	bpart C				
ACCESSORIES					
DC Power Cord	MA -17				
Cigarette Lighter Plug DC Power Cord	MA -18				
8 Ω, 4" Remote Speaker	MA -34				
TV Trap (for Chan 2, 3, or 4)	MA -36				
70 DB Ceramic Filter (455 KHz)	MA -46				

INSTALLATION

117 VAC Installation:

Connect the AC power cord to the unit and then plug the other end of the cable into any 117 VAC, $60~\rm{Hz}$ receptacle. The ACT-E $10~\rm{H/L/U}$ needs very little ventilation; however, it is good practice to avoid excessively warm locations such as near radiators or heating vents.

Antennas:

For areas with moderate signal strength, the telescopic antennas will be adequate receiving antennas. Insert them through the holes in the cabinet and screw them onto the 6-32 bolts projecting upward. The short (UHF) antenna should be inserted in the forward hole (as viewed from the front of the unit).

In areas of low signal strength, it may be necessary to use a better antenna system for proper reception. An antenna, such as a ground plane type, mounted as high above the ground as practical will greatly increase the signal strength.

If it is determined that both bands will require an outside antenna, then it is suggested that a dual-band VHF antenna (it covers both 30-59MHz and 148-174MHz) be mounted at the top of the mast or whatever is used to vertically support the antennas. The UHF antenna should then be mounted on a cross arm or cross bar several feet below the VHF antenna and at least one foot away from the mast or vertical support. Several manufacturers make special clamps for attaching cross bars or arms to a mast (Antenna Specialists Co. No. ASP-617, for example).

For proper input matching, 50Ω coaxial cable such as RG 58/U should be used. A Motorola type antenna plug (Cinch-Jones No. 13B or H.H. Smith No. 1200) will have to be installed on the receiver end of the cables in order to utilize the antenna connectors located on the rear (back) panel of the unit.

External Speaker:

An external (or remotely mounted) 8 Ω speaker such as Regency's MA-34, can be used by first opening the link be-

tween terminals No. 2 and No. 3. Then, connect one lead of the external speaker to terminal No. 1 and its other lead to terminal No. 3. An 8 Ω speaker is recommended for optimum performance; do NOT use a 3-4 Ω speaker.

Mobile (12 VDC) Installation:

NOTE: Mobile reception of a POLICE frequency by UN-AUTHORIZED personnel is ILLEGAL in some areas. It is the responsibility of the person making the installation to be sure that the user of this receiver is authorized or cleared through the local police department. Under no conditions can Regency Electronics, Inc., the manufacturer of this set, be held responsibile for its unauthorized installation or use.

The ACT-E 10 H/L/U receiver may be used in any car, truck, boat, etc., that has a 12 VDC negative ground system. There are two accessory power cables that provide for proper connection to the vehicle's electrical system. The MA-17 DC power cord is designed for a permanent or semi-permanent type installation. This cable is intended to be left connected to the vehicle's electrical system at all times. The MA-18 Cigarette Lighter Plug DC power cord permits an easy and convenient method of connecting to the vehicle's electrical system by means of the standard vehicle cigarette lighter receptacle. Thus, it can be readily connected or disconnected whenever necessary.

To use the MA-17 DC Power Cord, connect one end of it to the fuse block (usually located near the steering wheel column under the dash) by means of the female quick-connect terminal. Connect the other end to the DC power connector (RED) located on the receiver's rear panel. In addition, a separate ground wire (preferably 18 ga. stranded) will have to connect Terminal #1 (also located on the rear panel) to the vehicle's chassis or electrical ground. Make this ground wire connection as short as possible.

To use the MA-18 Cigarette Lighter Power Cord, two connections will have to be made to the receiver (both are located on the unit's rear panel). First, connect the unshielded spade lug to Terminal #1. This provides the "ground" connection to the receiver. The shielded female quick-connect terminal (it is also the shorter wire of the two) is then pushed on to the male terminal in the DC power connector (RED). After both of these connections are secured, plug the Cigarette Lighter Plug end of the power cord into the vehicle's lighter receptacle. This completes the required power connections.

A 'mobile" antenna, with a Motorola type plug on the coax cable, will provide good reception and still permit easy removal or installation of the receiver. However, each band will require its own external antenna.

In many cases, suitable reception can be obtained with the unit merely placed on the front seat (or transmission hump) and the two telescopic antennas extended.

Crystal Installation:

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Due to the numerous frequencies involved, the crystal is not normally installed by the factory, but by the seller or owner of the unit. Miniature, plug-in crystals are installed by inserting them in receptacles mounted on the printed circuit board.

Access Door will have to be removed. Turn the unit over and then rotate the two Access Door fasteners so that the door may be ilited out in its recommended that the power second (AC lor DC) be disconnected before removing the Access in Door to Also a remove that two telescopic antennas:

Carefully install the crystal in the proper pair of socket pins as indicated in the Crystal Location Drawing on page 14.

The crystal MUST be installed in the proper row for correct operation. The numbers located between two of the rows of pins indicate which group of pins correspond to the channel number on the front panel.

If the crystal is for the UHF band (450 to 500 MHz), it should be installed with one lead in a center row pin (labeled COMMON) and its other lead in the corresponding pin in the row labeled UHF (row on the right, as viewed from the front of the unit). If the crystal is for one of the VHF bands (either High or Low), it should be installed with one lead in a center row pin and its other lead in the corresponding pin in the row labeled VHF (on the left as viewed from the front of the unit). Thus, one of the crystal's leads must always be inserted in a center row socket pin while its other lead is inserted in the proper corresponding outer row socket pin.

Band Programming:

As shipped from the factory, the first three channels are programmed for Low Band VHF, the next four (Channels 4 through 7) are programmed for High Band VHF and the last three (Channels 8 through 10) are programmed for the UHF Band. If desired, this arrangement can be changed to any other combination of High, Low or UHF Band channels. Remove the Crystal Access Door, as described above, and follow the detailed instructions in the next three paragraphs.

If a channel is to be re-programmed (change bands), remove the proper color-coded wire and socket from its present pin and place it onto the corresponding pin in the desired band row. Each row is labeled (see Crystal Location Diagram on page 14) for its respective band (Hi, Lo or UHF). The outer row of pins on the left side (as viewed from the front) is for the Low VHF Band; the center row is for the Hi VHF Band and the other outer row (on the right side, as viewed from the front) is for the UHF Band.

Be sure that each channel has its color-coded wire programmed properly with respect to the crystal installed and to the channel number. Reading from rear to front (Channel 1 through 10), the color-coded wires should be in this order; brown, red, orange, yellow, green, blue, purple (or violet), pink, white and black.

NOTE: If a particular channel is not used (in other words, there is no crystal installed for that channel), the band selection wire must still be connected to either a High Band, a Low Band or to a UHF Band pin. Thus, for proper scanner operation, all of the band selection wires MUST be connected, even though not all channels are used.

After the crystals are installed and any necessary band programming changes are completed, reinstall the Crystal Access Door. Place the door in its opening and rotate the two fasteners so that they are firmly holding the door in place. Turn the unit over; plug the power cord back in and reinstall the two telescopic antennas.

OPERATION

Programming Buttons:

NOTE: The Scan/Manual and Channel Switches are push on-push off type push button switches. The Channel Selector switch is a momentary, springreturn push button switch.

The Scan/Manual button is pushed in for automatic scanning. To activate a particular channel (provided there is a crystal installed for that channel), the push button directly below the channel number must also be pushed in. In addition, the receiver must be squelched off for proper scanning action. Turn the squelch control counter-clockwise until all of the "noise" from the speaker is eliminated.

When the Scan/Manual button is out, the channel is selected manually. First, activate the channel you want to monitor. Then, push in the Channel Selector button. HOLD the button in until the red lamp directly above the desired channel number is lighted and then release it. Thus, if the Scanner was on Channel 3 and you wanted to monitor Channel 5, you would depress the Channel Selector button and hold it until the Channel 5 lamp was lighted. The receiver can be either squelched or unsquelched when manual channel selection is used.

Volume Control/Off-On Switch:

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This control varies the audio output level for the internal speaker. It also varies the level of audio present at the external speaker connection. Clockwise rotation of this control turns the receiver on and increases the volume.

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Squelch Control: And the trade the south a send on so A

This control eliminates background noise in the absence of a signal. Full clockwise rotation removes all squelch action. Turning this control counter-clockwise until the noise disappears permits the receiver to be "quiet" until an actual signal is received. Even if the squelch control is set fully counter-clockwise, the receiver will still operate properly and not be locked-out or prevented from receiving a signal.

CRYSTAL INFORMATION

Frequency Ranges:

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ranges, the unit will still operate, but with some loss in sensitivity. These ranges can be moved up or down in the bands in which case the RF section of the receiver would have to be realigned.

Special Instructions For 470 To 500 MHz Operation:

The ACT-E 10 H/L/U can have its UHF section retuned to cover an eight Megahertz segment of the 470-500 MHz band. It is recommended that the UHF RF Amplifier & Oscillator Tripler capacitors be adjusted by a qualified electronic technician. Note that the crystal frequency formula is different from the 450 to 470 MHz range.

Crystal Specifications:

Because of the accuracy required, Shepherd Industries' crystals are recommended. They are usually available at the source from which the receiver was purchased. If desired, the crystals may be purchased from other manufacturers. The following information or specifications must be included in the order:

A. UHF Band Crystals (450 to 470 MHz)

1. Crystal frequency, determined as follows:
Crystal frequency = Channel frequency -10.7 MHz

Example:

Crystal frequency = $\frac{458.00 \,\text{MHz} - 10.7 \,\text{MHz}}{9} = \frac{447.30 \,\text{MHz}}{9} = 49.7000 \,\text{MHz}$

- 2. Frequency tolerance of .001%
- 3. 3rd Overtone; load capacity of 18 PF; Drive Level of 2 milliwatts.

- 4. Maximum Impedance of 35 Ohms
- 5. Holder is an HC-25/U with pin leads (plug-in type).
- B. UHF Band Crystals (470 to 500 MHz)
 - 1. Crystal frequency, determined as follows:

 Crystal frequency = Channel frequency -10.7 MHz

 10

Example:

Crystal frequency = $\frac{488.00 \,\text{MHz} - 10.7 \,\text{MHz}}{10} = \frac{477.30 \,\text{MHz}}{10} = 47.7300 \,\text{MHz}$

- 2. Frequency tolerance of .001%
- 3. 3rd Overtone; load capacity of 18 PF; Drive Level of 2 milliwatts.
- 4. Maximum Impedance of 35 Ohms
- 5. Holder is an HC-25/U with pin leads (plug-in type).
- C. High VHF Band Crystals (148 to 174 MHz)
 - 1. Crystal frequency, determined as follows:

 Crystal frequency = Channel frequency -10.7 MHz

Example:

Crystal frequency = 155.55 MHz -10.7 MHz = 144.85 MHz = 48.2833 MHz 3

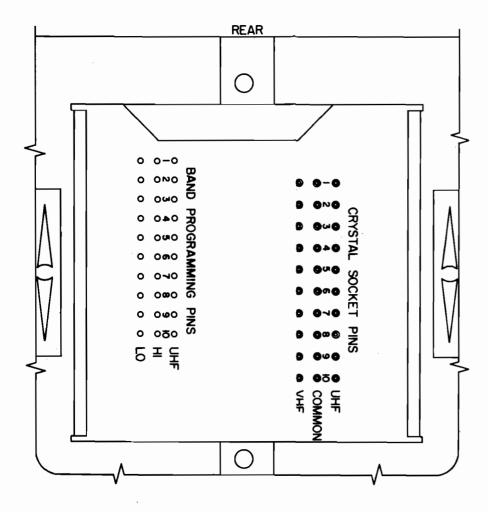
- 2. Frequency tolerance of .001%
- 3. Series resonance 450 Hz; 3rd Overtone
- 4. Maximum Impedance of 35 Ohms
- 5. Holder is an HC-25/U with pin leads (plug-in type).
- D. Low VHF Band Crystals (30 to 50 MHz)
 - 1. Crystal frequency, determined as follows: Crystal frequency = Channel frequency +10.7 MHz

Example:

Crystal frequency = 39.50 MHz +10.7 MHz = 50.2 MHz

- 2. Frequency tolerance of .002%
- 3. Series resonance 450 Hz; 3rd Overtone
- 4. Maximum Impedance of 35 Ohms
- 5. Holder is an HC-25/U with pin leads (plug-in type).

NOTE: "MHz" stands for Megahertz.



CRYSTAL LOCATION DIAGRAM

The National Weather Service provides a continuous (24-hour) broadcast of local and area weather conditions. These weather messages are repeated until the next or updated report is issued. The Weather Service has broadcast facilities in many metropolitan areas of the country (see list on page 16).

If you are located within 25 to 30 miles of one of these cities, reception usually can be obtained with the telescopic antenna. Your local Regency Dealer can advise you about your specific antenna requirement.

NOTE: When set for automatic scan the ACT-E 10 H/L/U will stop and remain on the Weather Channel (since it broadcasts continuously). Thus, this channel should only be activated when you desire to hear the current weather report. See page 9 for detailed channel programming information.

CURRENT LISTING OF CITIES WITH NATIONAL WEATHER SERVICE

STATE	CITY	FREQ.	STATE	CITY	FREQ.
Alabama	Mobile	162.55	Maryland	Baltimore	162.40
Alaska	Anchorage	162.55	Massachusetts	Boston	162.40
	Seward	162.40		Hyannis	162.55
California	Eureka	162.55	Michigan	Detroit	162.55
	Los Angeles	162.55	Minnesota	Minneapolis	162.55
	Monterey	162.40		Minneapons	102.55
	Oxnard	162.40	Missouri	Kansas City	162.55
	Sacramento	162.40		St. Joseph	162.40
	San Diego	162.40		St. Louis	162.55
	San Francisco	162.55	New Jersey	Atlantic City	162.40
Colorado	Denver	162.55	New York	Buffalo	162.55
Connecticut	New London	162.40	non rea	New York	162.55
D.C.	Washington	162.55	North Carolina	Morehead City	162.40
Florida	Tacksonville	162.55		Wilmington	162.55
riorida	Miami	162.55	Ohio	Akron	162.55
	Pensacola	162.40	Ollio	Cleveland	162.55
	Tampa	162.55		Sandusky	162.40
	West Palm Beach	162.40			
Georgia	West Falli Deach		Oregon	Astoria	162.55
	Atlanta	162.55		Eugene	162.40
	Savannah	162.40		Portland	162.55
Hawaii	Hilo	162.55	Pennsylvania	Erie	162.40
	Honolulu	162.55	South Carolina	Charleston	162.55
	Mt. Huleakala	162.40	Soudi Caronna	Charleston	102.00
Illinois	Chicago	162.55	Texas	Brownsville	162.55
IIImois	Chicago	102.33		Corpus Christi	162.55
Indiana	Indianapolis	162.55		Dallas	162.40
Iowa	Des Moines	162.55		Fort Worth	162.55
IOWa	Des Moines			Galveston	162.55
Kansas	Wichita	162.55	Utah	Salt Lake City	162.55
Louisiana	Baton Rouge	162.45	Virgina	Norfolk	162.55
	Lake Charles	162.55			
	New Orleans	162.55	Washington	Seattle	162.55
Maine	Portland	162.55			
	Rockland	162.40			

THE LAW 10-41 Beginning tour of duty _concerning posses-10-42 Ending tour of duty sion and use of monitor recievers is embod-10-43 Information ied in Federal regulations based on Section 10-44 Request permission to leave patrol ... 605 of the Communications Act of 1934. 10-45 Animal carcass in . . . lane at This FCC regulation does not prohibit lis-10-46 Assist motorist tening to Public Service Band frequencies. 10-47 Emergency road repairs needed It does prohibit persons from making use 10-48 Traffic standard needs repairs of information heard broadcast on Public 10-49 Traffic light out Service Bands, for private gain. 10-50 Accident - F. Pl. PD 10-51 Wrecker needed Some States' law prohibits the use of mo-10-52 Ambulance needed bile monitors except by authorized vehicles. 10-53 Road blocked 10-54 Livestock on highway 10-55 Intoxicated driver 10-56 Intoxicated pedestrian OFFICIAL NATIONAL TEN CODE SIGNALS 10-57 Hit and run - F. Pl. PD 10-58 Direct traffic 10-0 Caution 10-59 Convoy or escort 10-1 Unable to copy - change location 10-60 Squad in vicinity 10-2 Signals good 10-61 Personnel in area 10-3 Stop transmitting 10-62 Reply to message 10-4 Acknowledgement 10-63 Prepare to make written copy 10-5 Relay 10-64 Message for local delivery 10-6 Busy - stand by unless urgent 10-65 Net message assignment Out of service (Give location and/or 10-66 Message cancellation telephone number) 10-67 Clear to read net message 10-8 In service 10-68 Dispatch information 10-9 Repeat 10-69 Message received 10-10 Fight in progress 10-70 Fire alarm 10-11 Dog case 10-71 Advise nature of fire (Size, type, and 10-12 Stand by (Stop) contents of building) 10-13 Weather and road report 10-72 Report progress on fire 10-14 Report of prowler 10-73 Smoke report 10-15 Civil disturbance 10-74 Negative 10-16 Domestic trouble 10-75 In contact with 10-17 Meet complainant 10-76 En Route 10-18 Complete assignment quickly 10-77 ETA (Estimated Time of Arrival) 10-19 Return to ... 10-78 Need assistance 10-20 Location 10-79 Notify coroner 10-21 Call . . . by telephone 10-80 Chase in progress 10-22 Disregard 10-81 Breathalyzer report 10-23 Arrived at scene 10-82 Reserve lodging 10-24 Assignment completed 10-83 Work school xing at ... 10-25 Report in person to (Meet) ... 10-84 If meeting . . . advise ETA 10-26 Detaining subject, expedite 10-85 Delayed due to ... 10-27 Drivers license information 10-86 Officer/operator on duty 10-28 Vehicle registration information 10-87 Pick up checks for distribution 10-29 Check records for wanted 10-88 Advise present telephone number of . . . 10-30 Illegal use of radio 10-89 Bomb threat 10-31 Crime in progress 10-90 Bank alarm at ... 10-32 Man with gun 10-91 Pick up prisoner/subject 10-33 Emergency 10-92 Improperly parked vehicle 10-34 Riot 10-93 Blockade 10-35 Major crime alert 10-94 Drag racing 10-36 Correct time 10-95 Prisoner/subject in custody

10-96 Mental subject

10-97 Check (Test) signal

10-98 Prison or jail break

10-99 Records indicate wanted or stolen

10-37 Investigate suspicious vehicle

10-39 Urgent - use light and siren 10-40 Silent run - no light or siren

10-38 Stopping suspicious vehicle (Give sta-

tion complete description before stop-