Note: *When a SAME location/event code storage location is set for* Entry ON *and* Lockout ON*, the radio will process the SAME location/event code that is stored there, and will lock out the specified event code. A SAME location/event code storage location set for* Entry: OFF *and* Lockout: ON *will not be processed, because Entry is set to OFF. In case of a conflict (i.e., two identical codes and events are entered, and one is locked out), the locked out entry will take precedence.*

To reset SAME code to the default setting:

1. Press **WX.**
2. Press SAME softkey.
3. Press ▲ or ▼ to select SAME code location.
4. Press **SEL**.
5. Press ▼ to select code, then press Dflt softkey.
6. Press Save softkey to save the code.
7. Press Save softkey again to save changes.

Activating SAME Standby Mode

After you have entered your desired SAME codes, you can activate the SAME Standby Mode to begin standby operation. The radio will remain silent until a SAME transmission is received with a code that matches one that you have stored. When a matching SAME message is received, your radio will sound a siren alarm, then will play the audio message that follows the Warning Alert Tone (WAT).

To activate SAME standby mode:

1. Press **WX**.

2. Press ▲ or ▼ to find the best weather radio transmitter for your location, then press the stby softkey.

   The softkey will change to STBY to indicate that SAME Standby Mode is active, and the scanner will alert when a matching SAME message is received.

3. Press the STBY softkey again to exit SAME Standby Mode, or press **MAN, SCAN,** or **PGM.**

When your local NWS office activates a SAME warning that matches a FIPS code stored in your scanner, you will first hear a siren alarm and see the LED flash to alert you to the incoming alarm. The LED flashes RED for warnings, YELLOW for watches, and BLUE for tests and administrative messages.

The scanner sounds the siren until the NWS transmission of the 1050 Hz Warning Alert Tone (WAT) begins. Once the WAT begins, the scanner's speaker will unmute, and you will hear the WAT play as an alert that the voice portion of the SAME warning is about to begin. You will then hear the voice portion of the SAME warning.

Your scanner will resume SAME Standby operation 90 seconds after the SAME warning starts. You may reset standby mode by pressing the STBY softkey twice at any time.

V-Scanner Storage

Your PRO-651 features two types of memory storage:

- Main memory is used to store programming that is used for everyday monitoring and scanning.
- Virtual Scanner (V-Scanner) memory is used to store complete copies of your scanner's main memory for later recall. V-Scanner includes objects, global settings, and dedicated search configurations. Your scanner has 21 V-Scanner storage locations, each capable of storing a copy of your scanner's main memory, including all of your object and global settings.

You can custom-tailor a main memory configuration to suit your needs for the type of scanning you do in different situations, then store that configuration for later use. If you travel frequently, you may want to create V-Scanners for the areas where you travel.

V-Scanners are also useful for backing up your configurations. Once you have main memory configured the way you like it, you can save it to a V-Scanner where it will remain untouched until you delete, overwrite or recall it. Then, if you happen to make a mistake while using your main memory that you cannot fix, you can recall the backup data and start again.

Your PRO-651 Scanner comes preprogrammed with the frequencies, talkgroups, and configuration data for approximately 350 trunked radio systems in the United States. The preprogrammed data is stored in V-Scanner folder storage locations (01-20). The scanner's working memory and V-Scanner folder "00" are not preprogrammed with any data. See the included **"V-Scanner Preprogrammed Data"** booklet for more information.

Using V-Scanners

You can save active scanner configurations (called "working" or "main" memory) to a V-Scanner storage folder for later use. Then recall the stored scanner configurations from a V-Scanner storage folder to main memory when you want to use them.

When you recall a configuration from a V-Scanner storage folder and use it in main memory, any changes you make while using the configuration will not automatically be transferred to the configuration data stored in the V-Scanner storage folder. You must save your changes back to that folder location if you want to preserve them for later use.

When you load a new configuration into main memory, the contents of main memory are overwritten and lost, unless you save your main memory to a V-Scanner storage folder first. Once the configuration data in main memory has been overwritten, it cannot be recovered—there is no "Undo" function.

Saving Main Memory to a V-Scanner Folder

1. Press **FUNC**, then **PGM** to enter V-Scanner mode.
2. Press the Stor softkey.
3. Press ▲ or ▼ to scroll to the desired V-Scanner folder, then press the Stor softkey.
4. If the selected V-Scanner folder already contains data, you will be asked if you wish to overwrite the existing data with new data from your current version of main memory. Press the YES softkey to proceed, or the NO softkey to cancel.

5. The scanner will prompt you to enter a name for the stored V-Scanner. Use the standard text entry method to type the name you wish to use, then press the OK softkey.
6. The scanner will write the contents of main memory to the V-Scanner folder. This will take approximately four seconds to complete.

Loading a V-Scanner Folder to Main Memory

1. Press **FUNC**, then **PGM** to enter V-Scanner mode.
2. Press the Load softkey.
3. Press ▲ or ▼ to scroll to the desired V-Scanner folder, then press the Load softkey.
4. The scanner will ask you to confirm that you wish to overwrite the current contents of main memory. Press the YES softkey to proceed, or the NO softkey to abort.

   The data transfer takes approximately 4 seconds to complete.

Erasing V-Scanner Folders

1. Press **FUNC**, then **PGM** to enter V-Scanner mode.
2. Press the Eras softkey.
3. Press ▲ or ▼ to scroll to the desired V-Scanner folder, then press the Eras softkey.
4. Press the YES softkey to delete current contents, or press the NO softkey to abort.

Cloning

You can transfer the programmed data to and from another PRO-651 (or PRO-652) scanner using a connecting cable which has 1/8-inch stereo phone plugs on both ends (not supplied).

To clone the scanner data:

1. Turn on both scanners.
2. Connect the connecting cable to each scanner's **PC/IF** jack.
3. Press **PGM**, then the GLOB softkey to enter the Global Settings menu.
4. On the SOURCE radio, scroll to Clone Send: then press **SEL** when you are ready to send data from your SOURCE radio to the TARGET radio.

   Both working memory and global settings are transferred.

Note: *The contents of working memory on the TARGET radio will be overwritten immediately when* ***SEL*** *is pressed on the SOURCE radio.*

Memory Report

To display the memory usage report:

1. Press PGM.
2. Press GLOB softkey to access the Global menu.
3. Press ▲ or ▼ to scroll to Memory Info:.
4. Press **SEL** to view the memory usage report.
5. Press ▲ or ▼ to scroll the display.

Advanced Settings

Priority Scan

Priority Scan operation is available for CONV and TGRP objects. When Priority Scan is active, increased priority is given to objects that have their Priority mode set to ON.

Turning Object Priority On or Off

When the scanner stops on the object while active, press **PRI** to select Object Priority on or off.

or

Browse to an object in Manual Mode or Program Mode. Press **PRI** to select Object Priority on or off.

or

1. Browse to an object in Program Mode.
2. Press EDIT, then CURR softkeys.
3. Press ▼ to scroll to Priority.
4. Press ◀ or ▶ to select Priority On or Off.

The PID indicator in the object display will show lower case "P" for Object Priority Off, and upper case "P" for Object Priority On.

Turning Priority Scan Mode On or Off

1. While the radio is scanning, press **FUNC**.
2. Press **PRI** to toggle Priority Scan On or Off.

Priority Scan status is shown in the main Scanning status display. PRI indicates that Priority Scan mode is on, and pri indicates that Priority Scan mode is off.

CONV Priority Scan

When Object Priority is set to Yes for one or more CONV objects, the scanner will sample the CONV objects for activity periodically while scanning and monitoring other objects. This sampling will cause a brief muting of received audio when it occurs while another object is active. The more CONV objects that are set for Priority, the longer this audio muting will be, since it takes a certain amount of time to sample each Priority CONV object for activity.

TGRP Priority Scan

When Object Priority is set to Yes for one or more TGRP objects, the scanner will give those TGRPs priority over other TGRPs while checking a particular trunking system for activity. TGRPs configured for Priority are checked for activity before any other TGRPs are checked, and during the reply delay time after non-priority TGRP calls.

Additionally, your PRO-651 decodes the subaudible priority data that is present on analog Motorola talkgroup calls (3600 baud control channel systems only), and will switch to a priority talkgroup when the data for that talkgroup is found in the subaudible priority data.

Hit Counters

The Hit Counter feature that keeps track of how many transmissions are received for each object type. The Hit Counter for an object is incremented each time a transmission is received on an object, making it possible for you to determine the objects that are the least and most active. By default, the Hit Counter feature is turned off.

To turn the Hit Counter on:

1. Press **PGM**.
2. Press GLOB softkey.
3. Press ▼ to scroll to Hit Counts.
4. Press ◀ or ▶ to select Yes or No.
5. When finished, press the SAVE softkey to save your changes to the radio's configuration memory.

To view Hit Counts:

1. Press **PGM.**
2. Press ▲, ▼, ◀ or ▶ to navigate to the desired object, if necessary.
3. Press EDIT softkey, then CURR softkey.
4. Scroll to Hit Count in the object menu to view the hit counter.

To reset for a single object:

1. Press the Dflt softkey while the Hit Count item is selected in the object's menu.

To clear all hit counters:

1. Press the **PGM** to enter Program Mode.
2. Press GLOB softkey.
3. Press ▼ to scroll to Clear Hits.
4. Press **SEL**.
5. Press the SAVE softkey to save your changes and exit the Global settings menu.

Audible Alarms and the Alert LED

Your PRO-651 features an Alert LED with audible alarm capability that allows you to set different visual and audible notifications for the different types of objects you create.

The menus for each type of object include various settings for LED, Backlight and Alarm. You can use these settings to design custom visual and/or audible alarms that are triggered when activity is detected on the specified Scannable Object.

Notes:

- *The Alert LED utilizes a special tri-color Light Emitting Diode module that mixes light from red, green and blue LED elements to produce thousands of different colors. Eight pre-defined color settings are available for use in object menus. LED COLOR: 0 is normally used for "all colors off" or no Alert LED display.*
- *Slight variations to LED colors are a normal part of the manufacturing process. You may notice these variations when using the White LED color setting (LED COLOR: 7), or when comparing one PRO-651 to another. You can compensate for these slight variations by fine-tuning the Red/Green/Blue (RGB) LED settings for each color. See the COLOR settings in the GLOB menu in* **"Appendix B: Detailed Menu Reference: GLOB Menu"** *on page 102.*

To set the Audible Alarm and Alert LED:

In any object menu:

1. Press ▼ to scroll to any of the following settings.
   - LED Mode: Solid or Flash controls whether the LED remains on solid or flashes when the object is active.
   - LED Color: 0-7 sets the color of the LED. By default, color 0 is used for LED off. You can change the preprogrammed LED colors in the Global Settings menu.
   - Latch LED: Keeps the LED on after activity on the object is finished. This is useful when you need to know if an object was active while you were away from the scanner.
   - Backlight: Off, On, Flash controls whether the backlight remains off, comes on solid or flashes when the object is active.
   - Alarm: None, Chirp, Hi-Lo, Alert, Ring, 2-Chirp, Fast Hi-Lo, DTMF # are used to set audible alarms that play each time activity is found on the object.
2. Press ◀ or ▶ to select the desired option.
3. When finished, press SAVE softkey to save your changes to the radio's configuration memory.

Multi-Site Mode On Networked Systems

Some Motorola and P25 systems include a large number of sites that are networked together to provide radio coverage to a large geographical area. These types of trunked radio systems are more commonly used for large statewide

systems, and for some systems that are used in large, rural counties.

As a system user moves around, or "roams," in the coverage area of the network, their radio will automatically find and use the nearest tower site. Each tower site includes a number of channels. One of these channels is used for control channel data, and the remaining channels are used for voice traffic. As a user moves away from the coverage of one site, the radio will search other control channel frequencies for a better site to use.

Multi-site can be enabled by editing the trunking system (TSYS) parameters for a Motorola or P25 system. Multi-site can be set to Off, Stat (Stationary) or Roam. By default, Multi-site is set to Off.

The ROAM setting is ideal for those times when you are driving around in the service area of a networked trunked radio system, as it allows the radio to find and use the best tower sites as you move in and out of the coverage footprints of different sites.

The STAT (stationary) setting is ideal for those times when you are not moving and are within range of more than one tower site, as it will allow you to monitor traffic from any tower that you are within range of.

To activate Multi-site mode on a Motorola or P25 networked system:

1. Press **PGM** to enter Program Mode.
2. Press ▲, ▼, ◀ or ▶ to navigate to a talkgroup on the networked multi-site system.
3. Press EDIT softkey, then CURR softkey.

4. Press ▲, ▼ to scroll to the TSYS item and press the **SEL** key to edit the TSYS parameters.
5. Press ◀ or ▶ to scroll to Multi-Site.
6. Press ◀ or ▶ to select `Off`, `Stat` or `Roam`.

   `Off`: the scanner will find the first usable control channel in the control channel list and use it until it is no longer usable.

   `Stat` (Stationary): the scanner will track the system using any control channel in the list that is usable.

   `Roam`: the scanner will attempt to locate and use the best possible control channel and ignore others, until the control channel is no longer usable, then it will locate a new "best control channel" to use. The scanner will always attempt to lock on to control channels where the decoding quality is greater than the Threshold Hi setting, and will search for new control channels when the decoding quality of a control channel drops below Threshold Lo setting. If no new control channels are available that meet the Threshold Hi criteria, the scanner will seek the best control channel to use, and continue checking periodically for a new control channel that meets the Threshold Hi criteria.
7. Press `SAVE` softkey to save your changes to the TSYS parameters.
8. Press `SAVE` softkey again to use the scanner.

You should experiment with the different Multi-site modes and the threshold settings to find a combination that works best for your location.

Notes:

- *Multi-site functionality is not available in EDACS or LTR trunking.*
- *Threshold settings are only available when Multi-Site Roam is selected.*
- *It may be necessary to change the values used for Threshold Hi and Threshold Low in the TSYS object to optimize Multi-site Roam performance.*

LTR Home Repeater AutoMove

LTR Home Repeater AutoMove (AutoMove HRs) takes the guesswork out of programming LTR trunking systems when the home repeater order is not known.

By default, AutoMove HRs is turned off and is controlled in the individual TSYS objects. When AutoMove HRs is turned on, you may enter the LTR system frequencies in any order. Your scanner will automatically move the frequencies to the proper home repeater slots as transmissions are received on the system.

To enable LTR Home Repeater AutoMove:

1. Access the menu for the desired TSYS.
2. Press ▼ to scroll to `AutoMove HRs`.
3. Press ◀ or ▶ to toggle `on` or `off` for the selected LTR TSYS.
4. Press `Save` softkey to save your changes.

Power-On Configuration Key Sequences

Power-on keypress sequences are used as shortcuts to configuration items, like attenuator settings, backlight settings and memory information. Power-on key sequences are also used to place your scanner into firmware upgrade mode for CPU and DSP firmware upgrades.

The following table lists the power-on key sequences available in the PRO-651. Unless otherwise specified, each sequence is invoked by pressing and releasing each key in sequence, one at a time. The first key must be pressed while the Welcome/Owner screen is being displayed:

Key Sequence	Function
1	Shortcut to PGM>GLOB>Sound Mode
2	Shortcut to PGM>GLOB>Key Beeps
3	Displays Boot, CPU and DSP versions
LIGHT	Shortcut to PGM>GLOB>Light Mode
ATT	Shortcut to PGM>GLOB>Atten Mode
0, 0	Shortcut to PGM>GLOB>Memory Info
0, 1	Destructive, clears working memory and resets all Global settings to factory defaults. Does not affect V-Scanners.
0, 2	Destructive, resets all Global settings to factory defaults. Does not affect working memory or V-Scanners.
0, 5	Destructive, executes EEPROM memory test, then clears working memory and resets all Global settings to factory defaults. Does not affect V-Scanners.
0, CL	Erases DSP APP Upgrade code, restores factory DSP version
0, PGM	Places radio in DSP APP firmware upgrade mode
Hold PGM while powering on radio	Places radio in CPU firmware upgrade mode

Power-On Password

Setting a power-on password can prevent anyone other than you from using this scanner.

To set the power-on password

1. Press **PGM** to enter Program Mode.
2. Press GLOB softkey.
3. Scroll to Set. password, then press **SEL** key.
4. The confirmation menu for the power-on password setting appears. Press YES softkey.
5. Enter the four-character (four-digit) password. You can enter the characters using alphanumeric text entry method. When you have finished entering characters, press OK softkey to save the entry.

Note: *You can cancel the entry by pressing* Cancl *softkey.*

To operate your scanner with power-on password:

1. Turn **VOLUME** clockwise to turn power on.
2. After the Welcome message is displayed, the scanner prompts you to enter the password.
3. Enter your password.
4. If you entered the correct password, you will be able to operate your scanner. If you have entered the wrong password, the scanner will generate error beep. Try entering your password again.

To disable the power-on password

1. Press **PGM** to enter Program Mode.
2. Press GLOB softkey.

3. Scroll to Set password, then press **SEL** key.
4. The confirmation menu for the power-on password setting appears. Press NO softkey.
5. Enter 0000 in the password setting menu and press OK softkey.

Note: *In the initial password setting menu characters "0000" are always displayed. Enter 0000 while these characters "0000" are displayed.*

If you forget the password:

If you forget your password, you must initialize the scanner to be able to operate it. This operation will result in the clearing of your programmed data and the loss of any custom changes you have made to the radio's global parameters. See **"Initializing the Scanner to Factory Defaults"** on page 98.

Birdie Frequencies

Every scanner has birdie frequencies. Birdies are signals created inside the scanner's receiver, which may interfere with transmissions on the same frequencies. If you program one of these frequencies, you hear only noise on that frequency. If the interference is not severe, you might be able to turn Squelch clockwise to omit the birdie.

To find the birdies in your scanner, disconnect the antenna and moving it away from the scanner. Make sure that no other nearby radio or TV sets are turned on near the scanner. Use the **Tune** function and scan every frequency range from its lowest frequency to the highest. Occasionally, the searching will stop as if it had found a signal, often without any sound. This is a birdie. Make a list of all the birdies in your scanner for future reference.

FCC Notice

This equipment has been tested and found to comply with the limits for a scanning receiver, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Scanning Legally

Your scanner covers frequencies used by many different groups including police and fire departments, ambulance services, government agencies, private companies, amateur radio

services, military operations, pager services, and wireline (telephone and telegraph) service providers. It is legal to listen to almost every transmission your scanner can receive. However, there are some transmissions you should never intentionally listen to. These include:

- Telephone conversations (cellular, cordless, or other private means of telephone signal transmission)
- Pager transmissions
- Any scrambled or encrypted transmissions

According to the Electronic Communications Privacy Act (ECPA), as amended, you are subject to fines and possible imprisonment for intentionally listening to, using, or divulging the contents of such a transmission unless you have the consent of a party to the communication (unless such activity is otherwise illegal).

This scanner is designed to prevent reception of illegal transmissions, in compliance with the law which requires that scanners be manufactured in such a way as to not be easily modifiable to pick up those transmissions. Do not open your scanner's case to make any modifications that could allow it to pick up transmissions that are not legal to listen to. Doing so could subject you to legal penalties.

In some areas, mobile use of this scanner is unlawful or requires a permit. Check the laws in your area. We encourage responsible, legal scanner use.

Care

Your scanner is not waterproof. Do not expose it to rain, moisture, or extreme high humidity. If the scanner gets wet, wipe it dry immediately. Use

and store the scanner only in normal temperature environments. Handle the scanner carefully; do not drop it. Keep the scanner away from dust and dirt, and wipe it with a damp cloth occasionally to keep it looking new.

Service and Repair

If your scanner is not performing as it should, take it to your local RadioShack store for assistance. To locate your nearest RadioShack, use the store locator feature on RadioShack's website (www.radioshack.com), or call 1-800-The Shack (800-843-7422) and follow the menu options. Modifying or tampering with the scanner's internal components can cause a malfunction and might invalidate its warranty and void your FCC authorization to operate it.

Specifications

Frequency Coverage

25.000-26.960 MHz..... (in 10 kHz steps/AM)
26.965-27.405 MHz..... (in 10 kHz steps/AM)
27.410-29.505 MHz..... (in 5 kHz steps/AM)
29.510-29.700 MHz.....(in 5 kHz steps/FM)
29.710-49.830 MHz.....(in 10 kHz steps/FM)
49.835-54.000 MHz.....(in 5 kHz steps/FM)
108.000-136.9916 MHz..... (in 8.33 kHz steps/AM)
137.000-137.995 MHz.....(in 5 kHz steps/FM)
138.000-143.9875 MHz.....(in 12.5 kHz steps/FM)
144.000-147.995 MHz.....(in 5 kHz steps/FM)
148.000-150.7875 MHz.....(in 12.5 kHz steps/FM)
150.800-150.845 MHz.....(in 5 kHz steps/FM)
150.8525-154.4975 MHz.....(in 7.5 kHz steps/FM)
154.515-154.640 MHz.....(in 5 kHz steps/FM)
154.6500-156.0450 MHz.....(in 7.5 kHz steps/FM)
156.0500 MHz .....(FM)
156.0525 - 156.1725 MHz.....(in 7.5 kHz steps/FM)

156.1750 MHz .....(FM)
156.1800 - 156.2475 MHz.....(in 7.5 kHz steps/FM)
156.2500 - 156.2550 MHz.....(in 5 kHz steps/FM)
156.275-157.450 MHz.....(in 25 kHz steps/FM)
157.4700-160.8225 MHz.....(in 7.5 kHz steps/FM)
160.8250 MHz .....(FM)
160.8300 - 161.5725.....(in 7.5 kHz steps/FM)
161.600-161.975 MHz.....(in 5 kHz steps/FM)
162.000-174.000 MHz.....(in 12.5 kHz steps/FM)
216.0025-219.9975 MHz.....(in 5 kHz steps/FM)
220.000-224.995 MHz.....(in 5 kHz steps/FM)
225.000-379.99375 MHz..... (in 6.25 kHz steps/AM)
380.000-419.9875 MHz.....(in 12.5 kHz steps/FM)
420.000-450.000 MHz.....(in 5 kHz steps/FM)
450.00625-512.000 MHz.....(in 6.25 kHz steps/FM)
764.000-781.996875 MHz.....(in 3.125 kHz steps/FM)
791.000 -796.996875 MHz.....(in 3.125 kHz steps/FM)
806.000-823.9875 MHz.....(in 12.5 kHz steps/FM)
849.000-868.9875 MHz.....(in 12.5 kHz steps/FM)
894.000-939.9875 MHz.....(in 12.5 kHz steps/FM)
940.000-960.000 MHz.....(in 6.25 kHz steps/FM)
1240.000-1300.000 MHz.....(in 6.25 kHz steps/FM)

*Excludes frequencies utilized by the Cellular Mobile Radiotelephone Service: 824-848.9875 MHz and 869-893.9875 MHz

Working Memory

1800 programmed objects using flexible "Scannable Object" system. Program and scan conventional channels, trunking talkgroups, limit searches, service searches, and Signal Stalker II configurations as "Scannable Objects" that are created, edited, grouped and scanned using common user interface conventions.

Virtual Scanners

21 Virtual Scanner (V-Scanner) folders, each capable of holding the entire contents of working memory, for a total storage capacity of over 37,800 objects.

Searches

Seven preprogrammed dedicated service searches, one dedicated limit search. Any service or limit search can be programmed and scanned as an object alongside conventional channels and trunking talkgroups.

Priority

Talkgroup and conventional channel priority, selectable priority sample rate and priority sample during trunking talkgroup call.

Conventional Receiver Modes

AM, FM, NFM, CTCSS, DCS, P25 NAC

Trunking Receiver Modes

Motorola Type I/II/III Analog and Digital, GE/ Ericsson/MA-COM EDACS Narrowband and Wideband, EF Johnson LTR

Receiver System

Triple conversion PLL super-heterodyne

1st IF..... 380.8 MHz

(The 1st LO uses high side of receive frequency range for VHF and UHF Low/T, and low side of receive frequency range for >512 MHz)

2nd IF ..... 21.4 MHz

The second LO uses low side of 1st IF)

3rd IF.....455 kHz

(The 3rd LO uses the low side of the 2nd IF)

Frequency Range

VHF Low.....25.00000 - 54.00000 MHz
VHF Aircraft .....108.00000 - 136.99166 MHz
VHF High.....137.00000 - 174.00000 MHz
.....216.00250 - 224.9950 MHz
.....225.00000 - 299.93750 MHz
UHF Low/T.....300.00000 - 512.00000 MHz
UHF High .....796.00000 - 960.00000 MHz*
.....1240 .00000 - 1300.0000 MHz

*Excludes frequencies utilized by the Cellular Mobile Radiotelephone Service

Preprogrammed Service Searches

Marine, Aircraft, CB, FRS/GMRS/MURS/DOT-STAR, Public Safety, Amateur Radio, Railroad

Weather frequencies

162.400, 162.425,b162.450, 162.475, 162.500, 162.525, 162.550 MHz

Scanning Rate .....Approx. 55 channels per second

Search Rate .....Approx. 90 steps per second

Display

LCD with amber LEDbbacklight, 4 lines of 16 characters each, plus 13 display icons

Zeromatic

Automatically zeroes receiver on correct frequency during searches

Audio Output ..... 250 mW

Internal Speaker .....36 mm 8 ohms dynamic

Operating Voltage

6 VDC (4 AA alkalibe, Ni-Cd, or Ni-MH)

External Power and Charge Voltage

9 VDC 400 mA regulated power supply

Dimensions (WxDxH) .....2.56 x 1.65 x 5.71 inches

..... 65 x 42 x 145 mm

Weight (not including batteries and antenna)

Approx. 8.5 ounces, 240 grams

Memory backup

No backup battery required, utilizes non-volatile EEPROM memory

Power

4 AA Alkaline Batter 21es (6.0 VDC), or 4 AA Rechargeable Ni-MH or Ni-Cd Batteries (4.8 VDC) or Optional AC Ada 24ter (Class 2; 9V DC; 400mA; center tip set to positive).

Specifications are typical; individu 35l units might var. Specifications and depictions are subject to change and improvement without notice.

Troubleshooting

Problem	Cause	Solution
Scanner won't power on.	Scanner is not receiving power.	Recharge the rechargeable batteries or replace the non-rechargeable batteries.
	The AC adapter or DC adapter is not connected.	Be sure the adapter's barrel plug is fully plugged into the DC 9V jack.
 is flashing.	Batteries are low.	Recharge the rechargeable batteries or replace the alkaline batteries.
Poor or no reception.	Batteries are weak or discharged completely.	Check the batteries or make sure the AC adapter or DC adapter is connected properly.
	Weak signals from distant stations.	Reposition radio for best reception.
	Attenuator in use on weak signals.	Check performance with and without attenuator activated, use setting with best reception.
	Strong signal overload from nearby transmitter.	Check performance with and without attenuator activated, use setting with best reception.
	Loose or defective antenna.	Inspect antenna and connectors and correct any problems found.
	Incorrect modulation mode selected.	Ensure that proper modulation mode is selected for the type of system being monitored.

Problem	Cause	Solution
The keypad does not work.	The keypad may be locked.	Press FUNC KEY/ LIGHT key to unlock.
	The scanner may need to be initialized.	Follow steps in "Initializing the Scanner to Factory Defaults" below.
The scanner does not receive digital transmission on digital frequencies or trunking systems.	The digital channel or talkgroup is not using APCO-25 digital modulation.	The scanner can only receive APCO-25 C4FM/CQPSK IMBE digital signals.
	The digital channel or talkgroup is encrypted.	The scanner will not receive encrypted traffic.
	The digital channel or talkgroup is being transmitted from a distant location.	Reposition the scanner or use an outdoor antenna to improve reception.
Scanner scans slowly or stops on noise or silence.	SQUELCH control is not set properly.	Set SQUELCH per "**Turning on the Scanner and Setting Squelch**" on page 23.
	Subaudible squelch mode not set for conventional objects.	Set the correct subaudible squelch mode. See **"Appendix B: Detailed Menu Reference: Conv Menu"** on page 108.
Error message appears when trying to upload or download from a computer.	Your computer is using Windows XP and does not have the necessary USB cable driver.	Download and install the file: "Windows XP Driver to resolve PC connection error" from your scanner's Product Support page or the Software Download page on www.RadioShack.com. Then make your connection and try again. Be sure the correct COM port is selected in device manager.

Reset Global Parameters to Factory Defaults

If your scanner does not appear to be functioning properly, you can reset the global radio parameters to their factory state without losing any of your programmed data. Any custom changes you have made to the radio's global parameters will be lost.

Note: *This procedure preserves the information you stored in the scanner's working memory, while resetting all global radio parameters to factory defaults. V-Scanner memory is not affected by this operation.*

1. Turn off the scanner, then turn it on again.

   The scanner briefly displays the DSP boot version, and then the Welcome/Owner screen is displayed.

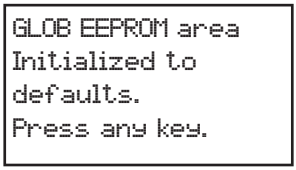
2. Press **0** while the scanner is displaying the Welcome/Owner screen. The scanner displays:

```
System Tests:
Select a Test…
Exits if no key
is pressed
```

3. Press **2**. The scanner displays:

```
Init GLOB data
To factory state
ENTER if APPROVE
CLEAR to EXIT
```

4. Press **ENT**. The scanner displays:



5. Press any key on the keypad to proceed. The scanner will reboot with file system and global parameters reset to factory defaults.

Initializing the Scanner to Factory Defaults

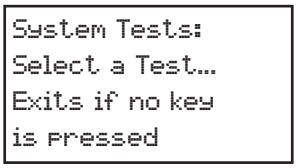
If initializing the global parameters to factory defaults does not resolve your problem, you may wish to initialize the entire scanner to factory defaults. This operation will result in the clearing of your programmed data and the loss of any custom changes you have made to the radio's global parameters. Use this option as a last resort, and, if possible, save your working memory to a V-Scanner folder prior to performing this operation.

Note: *This procedure clears all information you stored in the scanner's working memory, AND resets the global parameters to factory defaults. Initialize the scanner only when you are sure the scanner is not working properly. V-Scanner memory is not affected when the scanner is initialized.*

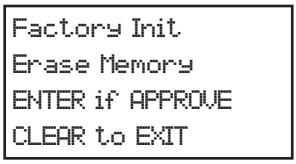
1. Turn off the scanner, then turn it on again.

   The scanner briefly displays the DSP boot version, and then the Welcome/Owner screen is displayed.

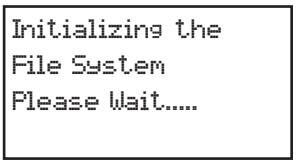
2. Press **0** while the scanner is displaying the Welcome/Owner screen. The scanner displays:

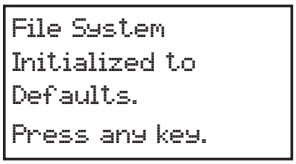


3. Press **1**. The scanner displays:

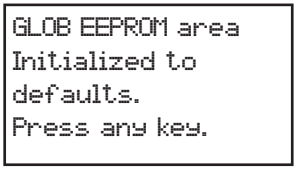


4. Press **ENT**. The scanner displays:





5. Press any key on the keypad to proceed. The scanner displays:



6. Press any key on the keypad to proceed. The scanner will reboot with file system and global parameters reset to factory defaults.

Appendix A: Search Bands

All Sub Bands

Group.	Freq. (MHz)	Band
0	25-54	VHF Low
1	108-137	VHF Aircraft
2	137-174	VHF High
3	216-300	220 MHz Commercial/ Amateur
4	300-406	UHF Military Air
5	406-470	UHF
6	470-512	UHF-T
7	764-797	700 MHz
8	806-869	800 MHz
9	894-1300	900 MHz Band, 23 cm Amateur

PubSafety Band

Searches commonly used public safety frequencies. Groups are as follows:

Group	Freq. (MHz)	Band
0	30.8-47.6	VHF Low
1	151-173	VHF High
2	453-468	UHF
3	764-797	700 MHz
4	851-869	800 MHz

Aircraft Band

Searches civilian and military air frequencies.

Group.	Freq. (MHz)	Band
0	108-118	Navigation
1	118-137	Civilian Voice
2	138-150	Military Voice (excludes 2m Amateur)
3	225-400	Military Voice

Ham Bands

Searches amateur radio frequencies.

Group.	Freq. (MHz)	Band
0	28.0-29.7	10m
1	50-54	6m
2	144-148	2m
3	222-225	1.25cm
4	420-450	70cm
5	902-928	33cm
6	1240-1300	23cm

Appendix B: Detailed Menu Reference

- Context sensitive help is available for every menu parameter. Press **FUNC SEL** to view help for the selected parameter. Press **SEL** to exit help.
- Each menu parameter includes a Dflt softkey, which restores the factory default setting for that parameter.

GLOB Menu

The GLOB menu stores all of the radio-wide settings used by the scanner. The active parameter is always the middle parameter and is indicated by a flashing colon (**:**).

Notes:

- *Some GLOB parameter changes do not take effect until the GLOB menu is saved.*
- *You can restore all GLOB settings to their defaults without affecting your programmed objects or V-Scanners. Power cycle the radio, then press* **0**, *then* **2** *during the welcome message display. Press* **ENT** *to confirm the GLOB parameter reset.*
- *The Special Global menu* **(FUNC GLOB)** *includes parameter settings that may adversely affect the performance of your radio if not set properly. We recommend that users not change the settings found in the* **FUNC GLOB** *menu without specific instructions. Should you experience difficulties after changing any of these settings, you can restore them to factory defaults by pressing the* Dflt *softkey associated with each menu line, or follow the global reset procedure described above. See the product support page for this scanner on www.RadioShack.com for detailed information on the* **FUNC GLOB** *menu.*

GLOB Parameter	Options	Description
Contrast	1-7	Sets LCD contrast. Use ◀ ▶ keys on 5-way pushbutton pad.
Owner	SEL	Enters sub menu to set Welcome Message text display.
Clone Send	SEL	Press **SEL** to send data using clone mode.
Alert Mode	Both, Tone, Light, Off	Controls the Alert LED and Audible Alarm behavior. ***Both*** allows the LED and Tone. ***Tone*** allows the audible alarm only. ***Light*** allows the LED only. ***Off*** deactivates the Alert LED and Audible Alarm feature.
Sound Mode	Key or Stlth	Controls all radio beeps.
Key Beeps	On or Off	Controls key beeps.
Light Mode	Norml, Key, Ignre, On, Stlth	Controls the backlight operation. ***Norml*** (Normal) uses the backlight key on the keypad. ***Key*** activates the backlight when any key is pressed. ***Ignre*** activates the backlight when a key is pressed, and that key's normal function is ignored if the backlight is off when it is pressed. ***On*** causes the backlight to remain on all the time. ***Stlth*** (Stealth) disables the backlight.
Light Area	Both, LCD, Keybd	Controls what area is illuminated when the backlight is on. ***Both*** illuminates the LCD and the keypad. ***LCD*** illuminates the display only. ***Keybd*** (Keyboard) illuminates the keypad only.
Light Secs	1-99 seconds	Controls the amount of time the backlight remains on for Normal, Key and Ignore light modes.

GLOB Parameter	Options	Description
Battery	Ni-MH, Alkaline or Ni-Cd	Loads low battery profile for each different battery type.
Lo Batt Alert	0-60 seconds	Controls critical battery audible alert. ***0***=off.
Battery Info	SEL	Displays current battery voltage, DAC value and charge time remaining if battery is charging.
Charge Time	0-99	Battery charge time in hours. ***0***=charger off. The battery charger is timer based and charges at a current rate of 150 mA. The charger is disabled when BATTERY is set to Alkaline. The default charge time (99) will charge 9 hours for Ni-Cd batteries and 16 hours for Ni-MH batteries.
Atten Mode	Global or Normal	The attenuator reduces the amount of signal at the receiver input. This helps reduce interference from strong nearby transmitters. ***Global*** attenuator mode applies attenuation radio-wide, regardless of individual object settings. In ***Normal*** attenuator mode, the attenuator follows the individual object attenuator setting.
Global Atten	On or Off	When the Atten mode is set to Global, this controls whether the Global attenuator is on or off.
Clear Hits	SEL	Press **SEL** to clear all hit counters.
Hit Counts	Yes or No	Turns the hit counter feature on or off.