RadioShack

20-164

Triple Trunking Handheld Radio Scanner

Thank you for purchasing your Triple Trunking Handheld Radio Scanner from RadioShack. *Your scanner scans conventional frequencies and trunked systems. Please read this user's guide before installing, setting up and using your new scanner.*

What's Included

Scanner

Antenna

Belt Clip

Non-rechargeable Battery Holder

Rechargeable Battery Holder

Preprogrammed Frequency Addendum

User's Guide

www.RadioShack.com

Contents

Scanner Features 5
Scanner Display 6
Connecting the Antenna 8
Attaching the Belt Clip 8
Powering Your Scanner 9
Batteries 9
External Power 11
Headphones and Speakers 12
Keytones and Keylock 13
Backlight and Contrast 13
Delay 15
Squelch and Attenuator 15
Scanner Setup 17
Defining a Channel 18
Copying a Frequency 19
Deleting Saved Frequencies 20
CTCSS and DCS 20
Scanner Cloning 21
Searching 23
Seek Search 23
Search Banks 23
Zeromatic 25
Programming a Search Range 26
Signal Stalker II 26
Special Signal Stalker 27
Locking Out Frequencies 28
Saving Found Frequencies 29
Scanning 30
Locking Out Channels 30
Priority Scanning 31
Weather Alerts 32
SAME Standby Mode 33
Skywarn 36
Monitoring 37
Trunking Setup 38
Defining a Trunking Bank 38
Trunking Modes 38
Motorola Trunking Setup 39
Fleet Maps 40
Base and Offset Frequencies 41
EDACS Trunking Setup 43
LTR Trunking Setup 43
Searching for Talk Group IDs 44
Saving a Talk Group ID 45
Deleting Talk Group IDs 46
Saving Trunking Channels 47
Trunk Scanning 48
Trunking Delay 49
Locking Out Talk Group IDs 49
Turning Off Sub-Banks 50
Talk Group ID Hold 51
Additional Information 52
Scanner Maintenance 52
Text Tags 52
Troubleshooting 54
Birdie Frequencies 55
Initializing the Scanner 56

Service and Repair 57
Scanning Legally 57
FCC Notice 58
References 60
Appendix A: Glossary 60
Appendix B: Search Banks 60
Appendix C: CTCSS / DCS Codes 66
Appendix D: Signal Stalker II 67
Appendix E: Talk Group Format 69
Appendix F: Specifications 70
Index 73
Limited Warranty 76

— Signal Stalker.

SCAN — Starts a scan.

FUNC — Function

MAN — Manually select a channel or enter a channel number.

TRUNK — Accesses trunking functions.

WX/ — Weather search and Skywarn.

PRI – Priority

TEXT – Activates text buttons.

PSE – Pause

MODE – Changes receive mode.

KEY/LIGHT – Keypad lock and backlight.

TUNE – Enters Tune mode.

ATT – Attenuator.

▲▼ **–** Navigates functions.

SRCH – Search.

1-9 / A-Z– Numbers and letters. Zero enters special characters.

./DELAY – Decimal point, space, delay functions.

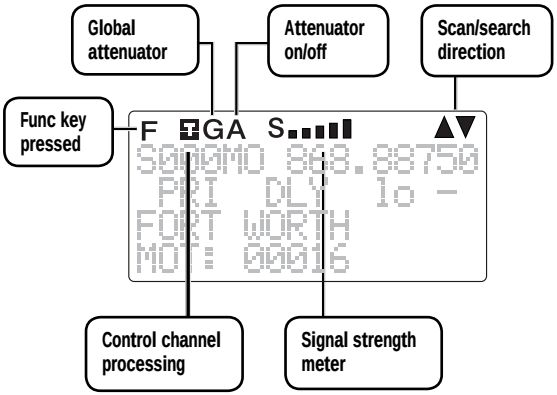
CL – Clear.

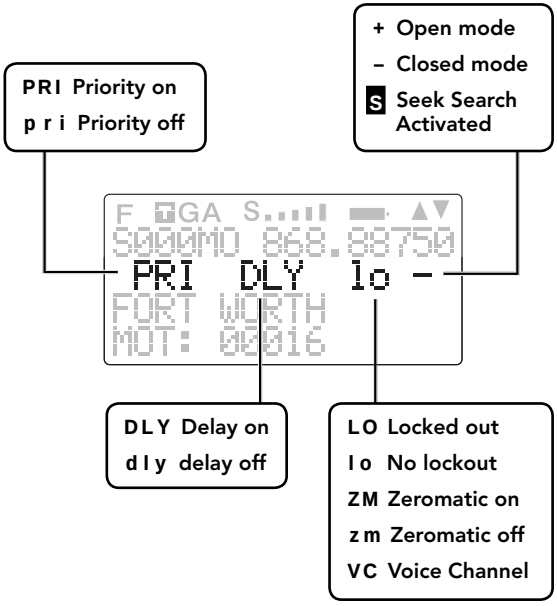
L/OUT – Locks out channels, frequencies, or Talk Group IDs.

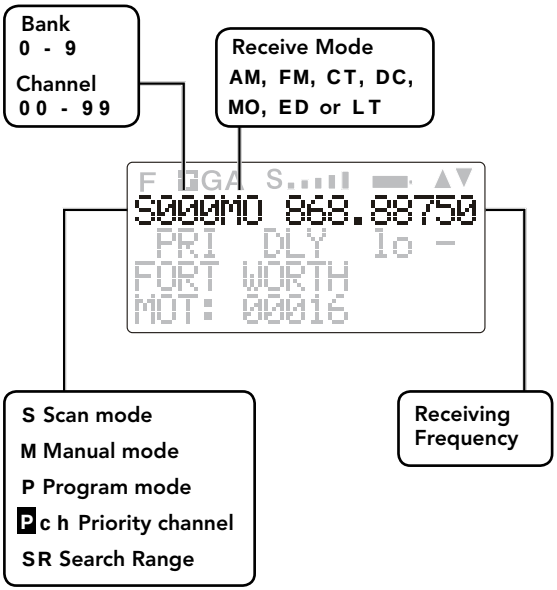
PGM – Program.

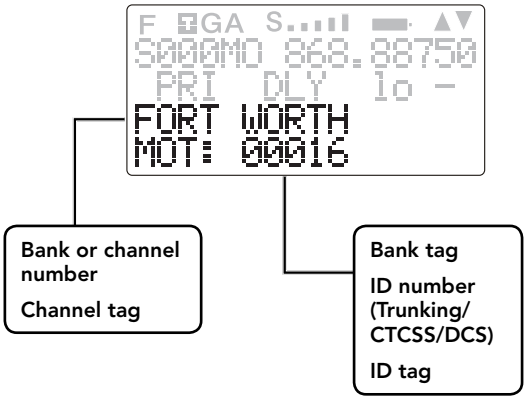
ENT – Enter.

Scanner Display









Connecting the Antenna

To connect an external antenna, always follow the installation instructions supplied with the antenna. Use 50-ohm coaxial cable, such as RG-58 or RG-8X, to connect an outdoor antenna. For lengths between 50 and 100 feet, use RG-8X low-loss dielectric coaxial cable. For lengths over 100 feet, use RG8. You also may need a BNC adapter (not supplied).

To attach the supplied antenna:

1. Align the antenna slots with the tabs on the scanner, and slide the antenna into place.
2. Turn while pushing down until the antenna locks into place.

Warning: Use extreme caution when installing or removing an outdoor antenna. If the antenna starts to fall, let it go! It could contact overhead power lines. If the antenna touches a power line, touching the antenna, mast, cable, or guy wires can cause electrocution and death. Call the power company to remove the antenna. DO NOT attempt to do so yourself.

Attaching the Belt Clip

To carry your scanner, slide the supplied belt clip down on the back of the scanner. To remove the belt clip, pull the tab out and slide the clip upward.

Powering Your Scanner

You can power your scanner with four AA batteries (not supplied), or an external power source.

Batteries

When battery power is low, battery symbol flashes and the scanner beeps every 30 seconds. When battery power is depleted, the scanner turns itself off.

For the longest operation and best performance, use alkaline batteries, available at your local *RadioShack* store, or use *RadioShack* 1600 mAh nickel-metal hydride (Ni-MH) rechargeable batteries.

Rechargeable batteries last longer and deliver more power if you let them fully discharge once a month. To do this, use the scanner until battery symbol flashes.

Warning: Never install non-rechargeable batteries in the yellow rechargeable battery holder. Non-rechargeable batteries can get hot or explode if you try to recharge them.

To install batteries:

1. Slide open the battery compartment cover on the back of the scanner.
2. Place 4 AA batteries into the correct battery holder matching polarity symbols (+ / –):

- Black – Alkaline (non-rechargeable)
- Yellow – Rechargeable.

3. Place the battery holder into the battery compartment and replace the cover.

To charge batteries:

1. Install rechargeable batteries.
2. Connect an external power source to the **PWR DC 9V** jack. Using the scanner while charging will increase charge time.

Battery	Current	Charge Time
Ni-MH	1600 mAh	16 hours
Ni-Cd	600 mAh	6 hours
Ni-Cd	850 mAh	8 hours

Do not overcharge batteries. Overcharging shortens battery life.

Battery Notes:

- Each battery holder fits only one way. Do not force it.
- *Use only fresh batteries of the required size and recommended type. Do not mix old and new batteries, different types (alkaline or rechargeable), or rechargeable batteries of different capacities.*
- *Remove old or weak batteries. If you will not use the scanner with batteries for a month, remove the batteries. Batteries can leak chemicals that destroy electronic circuits.*
- *Always dispose of old batteries promptly and properly. Do not bury or burn them.*

Recycle Rechargeable Batteries

Placing rechargeable batteries in the trash can be harmful to the environment. Instead, recycle old rechargeable batteries at your local RadioShack store free of charge. RadioShack participates in the RBRC© battery recycling program, and is committed to preserving the environment and conserving natural resources. Call 1-800-THE-SHACK (1-800-843-7422) for more information.

External Power

You can power your scanner using a 9V, 400mA AC/DC adaptor and size C adaptaplug™ (neither supplied).

To use an external power source:

1. Always connect the adapter (not supplied) to the scanner first.
2. Plug the adapter into the power source.
3. To disconnect, unplug the adapter from the power source first.

POWER DC 9V — External power source (not included).

If you use an external power source for regular operation, install alkaline batteries for emergencies. Rechargeable batteries will self-discharge, even when not used, and could have no usable power.

Caution: You must use a Class 2 power source that supplies 9V DC and delivers at least 400 mA. Its center tip must be set to positive and its plug must fit the scanner's **PWR DC 9V** jack. Using an adaptor that does not meet these specifications could damage the scanner or the adaptor.

Headphones and Speakers

You can plug headphones or an amplified speaker (neither included) into your scanner's headphone jack. This automatically mutes the scanner's speaker.

Even though some earphones/headphones let you hear some outside sounds when listening at normal volume levels, they still can present a traffic hazard.

To protect your hearing, follow these earphone or headphones guidelines:

- *Do not listen at extremely high volume levels. Extended high-volume listening can lead to permanent hearing loss.*
- *Set the volume to the lowest setting before listening. Turn on the scanner, and adjust the volume to a comfortable level.*
- *After you set the volume, do not increase it. Over time, your ears adapt to the volume level, so a volume level that does not cause discomfort might still damage your hearing.*

Installation

Keytones and Keylock

The scanner sounds a tone each time you press a key. To prevent accidental changes, you can lock the keypad.

To set the keytone:

1. Turn on the scanner. **"Multi-system Trunking Scanner"** appears.
2. While **"Multi-system Trunking Scanner"** appears, press **1** to turn on the keytone or **2** to turn it off.

To lock the keypad:

1. Press **FUNC** then **KEY/LIGHT**. **"Key locked"** appears briefly and the keypad is locked. When locked, the only controls that operate are **FUNC**, **KEY/LIGHT**, **SQ**, and **VOL**.
2. To unlock the keypad, press **FUNC** then **KEY/LIGHT** again. **"Key unlocked"** appears.

Backlight and Contrast

Your scanner features a backlit keypad and display for easy viewing. You can select from three backlight modes:

Normal – Press **LIGHT** to activate the backlight.

Keypress – Press any key on the keypad to activate the backlight.

Ignore – Keypress mode, but the scanner ignores the function of the first key pressed to activate the backlight.

Installation

Note: *The light remains on for a set time after the last button is pressed.*

To turn on the backlight:

1. Hold down **LIGHT** until the light turns on.
2. To turn off the backlight, press **LIGHT**.

To change the backlight mode:

1. Turn on the scanner. **"Multi-system Trunking Scanner"** appears.
2. While **"Multi-system Trunking Scanner"** appears, press **LIGHT**.
3. Press ▲ or ▼ to select a backlight mode and duration (seconds).

Normal	Keypress	Ignore
3	K3	I3
5	K5	I5
10	K10	I10
20	K20	I20

4. Press **ENT**.

To change the display contrast:

1. Press **MAN**.
2. Press **FUNC** then **9**.
3. Press ▲ or ▼ to select the contrast.
4. Press **ENT**.

Delay

Sometimes several seconds can pass between transmissions. To avoid missing a reply, a delay is automatically set for each channel. The scanner pauses for 2 seconds after a transmission stops before it resumes scanning or searching.

To turn the delay on and off:

1. Press **•/DELAY.** **"DLY"** appears if the delay is on.
2. To turn on the delay, press **•/DELAY** again. **"dly"** appears if the delay is off.

Squelch and Attenuator

The squelch and attenuator control the scanner sensitivity. If you hear a hissing noise, the scanner will remain on the current channel.

To set squelch:

1. Turn **SQUELCH** down (counterclockwise) until you hear noise.
2. Turn **SQUELCH** up (clockwise) a little past where the noise stops. The higher the squelch is set, the stronger the signal required to break the squelch.
3. If noise starts breaking the squelch, turn **SQUELCH** up to decrease the scanner's sensitivity. To hear weaker signals, turn **SQUELCH** down to increase its sensitivity.

With the attenuator on, the scanner might not receive weak signals, but immunity to adjacent strong signals is improved.

You can reduce interference using two attenuator modes:

- Global – (Default) The attenuator setting is applied to all channels, bands, or groups.
- Normal – Lets you set the attenuator in each channel, band, or group.

Note: *You cannot set the attenuator while scanning.*

To set the attenuator mode:

1. To set Global mode, press **FUNC** and then **ATT**. On the display "**G**" appears."
2. To set Normal mode, press **FUNC** and then **ATT.** On the display "**G**" disappears.

Then for each channel:

- On – Press **ATT**. "**A**" appears.
- Off – Press **ATT** again. "**A**" disappears."

Note: *You cannot set the attenuator while scanning.*

Scanner Setup

A ***frequency***, expressed in kHz or MHz, is the tuning location of a station.

Your scanner saves frequencies to ***channels*** and groups the channels into banks. The scanner's 10 ***banks*** each hold 100 channels (1,000 channels total).

The scanner is preset to the most common AM or FM receive modes for each frequency range. However, some amateur transmissions may operate in a different mode. If the transmission sounds weak or distorted, you may have the channel set to the wrong ***receive mode***:

AM – Amplitude Modulation, primarily used for aircraft, military, some amateur and government transmissions.

FM – Frequency Modulation, used for most public safety transmissions, broadcast, business, and most amateur radio transmissions.

CT – FM transmissions with Continuous Tone Coded Squelch System (CTCSS)

DC – FM transmissions with Digital Coded Squelch (DCS)

MO – Motorola Trunking System

ED – EDACS Trunking System

LT – LTR Trunking System

Setup

Note: *If you change the receive mode using* ***MODE*** *key, the scanner shows the receive mode for small caps (ex.* **fm, am, ct, or dc***). If you want to change the default setting, press* ***FUNC*** *then press* ***MODE****.*

Defining a Channel

Go to www.radioreference.com for the latest frequency references.

To define a channel:

1. Press **MAN**.
2. Enter the bank (0-9) and channel number (00-99) where you want to store the frequency (Example: 101 for Bank 1, Channel 1).
3. Press **MAN** again. "**M**" and the bank and channel number appear.
4. Press **PROG**. "**M**" changes to "**P**".
5. Use the number keys to enter the frequency (including the decimal point). If you make a mistake, press **CLEAR** to delete a single digit or hold **CLEAR** about 2 seconds to start over.

   Note: *Your scanner automatically rounds to the nearest valid frequency. For example, if you enter 151.553, your scanner rounds to 151.550.*
6. If necessary, press **MODE** to change the receiving mode.
7. Press **ENT.**

   If the frequency is already stored in the bank, "**Dupl.Freq. ChXXX**" appears. To copy the duplicate frequency anyway, press **ENT** or press **CLEAR** to cancel.

   If you made a mistake in Step 5, "**Invalid Freq.**" briefly appears and the scanner beeps when you press **ENT.** Go back to step 5 again.
8. Press **MAN** again. "**M**" and the bank and channel number appear.

   Note: *For information about adding text tags to a channel or bank, see* **"Text Tags"** *on Page 52.*

Copying a Frequency

When you copy a frequency, all the channel conditions, including mode, are also copied.

To copy a frequency:

1. Press **TUNE.**
2. Tune the frequency you want to copy.
3. If necessary, press **MODE** to change the receiving mode.
4. Press **FUNC** then **ENT.** "**Bank 9 Store?**" appears.
5. To select a new bank, press the bank number.
6. Press **ENT.** "**Channel Stored!**" appears briefly.

   If the frequency is already stored in the bank, "**Dupl.Freq. ChXXX**" appears. To copy the duplicate frequency anyway, press **ENT** or press **CLEAR** to cancel.
7. Press **MAN.**

Setup

Deleting Saved Frequencies

To delete a saved frequency:

1. Press **MAN.**
2. Use the number keys to enter the frequency's channel number.
3. Press **MAN.**
4. Press **PROG.** "**M**" changes to "**P**".
5. Press **FUNC.**
6. Press **CLEAR.** "**0.0000**" appears.

To delete all saved frequencies in a bank:

1. Press **PROG.** "**M**" changes to "**P**".
2. Press **FUNC.**
3. Use the number keys to enter the bank number. "**Bank ## selected. Fn + CLR to delete all frequencies.**" appears.
4. Press **FUNC** then **CLEAR.** "**Clear entire bank?**" appears.
5. Press **1** to clear all. Pressing any other key aborts.

CTCSS and DCS

CTCSS and DCS allow multiple users to share a single radio frequency without hearing each other's transmissions. Your scanner features an advanced, CTCSS and DCS decoder that displays CTCSS or DCS codes when available.

> ***Note:*** *CTCSS, DCS, and digital voice transmissions operate independently of each other. Your scanner will not decode digital voice transmissions for CTCSS or DCS channels. Use FM mode for mixed analog and digital voice transmissions.*

To define a channel's CTCSS or DCS code:

1. Press **PROG.** "**M**" changes to "**P**".
2. Navigate to the channel.
3. Enter a conventional frequency.
4. Press **MODE** until the desired mode (**CT** or **DC**) appears with the default search code value.
5. Press **FUNC,** then **MODE.**
6. Use the ▲ or ▼ to select the desired CTCSS or DCS code.

   > ***Note:*** *You can enter the code manually. The scanner automatically fills in the code. See* **"Appendix C"** *on page 65 for a list of codes.*

7. Press **ENT.**

To save a CTCSS or DCS code, press **ENT** while the code appears.

Scanner Cloning

You can transfer the programmed data to and from another PRO-164 or PRO-163 scanner using a connecting cable which has 1/8-inch (3.5mm) stereo (TRS) phone plugs on both ends (not supplied).

You can also upload or download programmed data to or from a PC using a USB cable available through your local ***RadioShack*** store. The application software is available online at www.starrsoft.com and www.scancat.com, or use a search engine to find "scanner programming software."

To clone the scanner data:

1. Turn on both scanners.
2. Connect the connecting cable to each scanner's **PC/IF** jack. **** CLONE MODE **** appears.
3. Press ▲. **"Confirm to send data?"** appears.
4. Press **1** to send the data to the other unit or press any other key to cancel.
5. To exit the clone mode, remove the cable.

Note: **"CLONE MODE Incorrect Model"** *appears if you connect a scanner other than a PRO-164 or PRO-163.*

Searching

You can search for transmissions using the preprogrammed search bank, which is divided into eight search bands.

Seek Search

When Seek Search is active, the scanner stops on active frequencies for five seconds and then resumes searching automatically.

To activate Seek Search:

1. Press **FUNC** then **7.** **"Seek Search ON"** appears briefly and **S** appears on the display.
2. To turn off Seek Search, press **FUNC** then **7** again. **"Seek Search OFF"** appears briefly.

Search Banks

To search preprogrammed search banks:

1. Press **SRCH** repeatedly to select a bank.

Bank	Band	Freq. Chart
SR0	Marine	Page 61
SR1	CB	Page 62
SR2	FRS/GMRS/MURS	Page 62
SR3	Public Safety	Page 63
SR4	Aircraft	Page 65
SR5	Amateur Bands	Page 65
SR6	Railroad	Page 65
SR7	Limit search (User change-able)	

- For SR0-SR2, you can directly select a channel or search through the band.
- SR3 to SR5 banks contain several groups. To turn off a group, press the group number; the group number disappears. To turn the group back on, press the group number again.

2. Adjust the Squelch. After the set delay, the scanner starts searching. When the scanner finds an active frequency, it stops searching.
3. To pause while searching, press **PSE.** The scanner stops searching and ***** PAUSED ***** appears. To resume, press **PSE** again.
4. If the scanner stops on an unwanted frequency, you can press **L/OUT** to lock out the frequency.

To search banks SR0-SR2:

1. Press **SRCH** repeatedly to select SR0, SR1, or SR2.
2. To search the entire band, press **FUNC** then **SRCH.** **"MAN"** (Manual select) or **"SRCH"** (searches through the band) appears.

   The scanner starts searching while **"SRCH"** appears on the display. When the scanner finds an active frequency, it stops searching.

   Press **FUNC** then **SRCH** again to return to the previous mode.
3. To select a channel while **"MAN"** appears on the display, press a channel number or use ▲ or ▼.

4. Adjust the Squelch.
5. If the scanner stops on an unwanted frequency, you can press **L/OUT** to lock out the frequency. For more information, see **Locking Out Frequencies** on Page 28.
6. To pause while searching, press **PSE**. The scanner stops searching and ***** PAUSED ***** appears. To resume, press **PSE** again.

Zeromatic

While searching, the scanner stops if a transmission triggers the squelch setting. A narrow-band FM transmission can have a deviation of +/- 5 KHz, and the actual total bandwidth, including the tails of the sidebands, can be even greater. However, search intervals smaller than that can stop your scanner short of the correct (center) frequency.

The Zeromatic function allows the scanner to find the correct center frequency for search banks SR3, SR4, SR5, SR6 and SR7. Zeromatic automatically tunes the step-increment frequency closest to the center frequency.

To activate Zeromatic:

1. Press **FUNC** then **0.** **"Zeromatic ON."** appears briefly, then **"ZM"** appears.
2. To turn Zeromatic off, press **FUNC** then **0** again. **"ZM"** changes to **"zm."**

Programming a Search Range

To program the search range of Bank SR7:

1. Repeatedly press **SRCH** to select SR7.
2. Press **PROG** then **SRCH.** "**Enter SR7 Search Range Limits**" appears. **L** blinks for the lower-limit of the range.
3. Use the number keys to enter the lower-limit frequency (including the decimal point).
4. Press **ENT.** **U** blinks for the upper-limit of the range.
5. Use the number keys to enter the upper-limit frequency (including the decimal point), then press **ENT.**

   Note: *If either entered frequency is incorrect,* "**Invalid Freq**" *appears briefly.*
6. Press **SRCH** to start searching.
7. Adjust the squelch. After the set delay, the scanner starts searching. When the scanner finds an active frequency, it stops searching.

Signal Stalker II

Signal Stalker II provides a powerful tool to rapidly detect, monitor and save frequencies of nearby or high-power transmissions. Signal Stalker II resembles more expensive portable frequency counters, but provides many advantages over typical portable frequency counters.

Signal Stalker II is more sensitive than portable frequency counters and will detect transmissions at a greater distance. Signal Stalker II rapidly searches the RF spectrum in 1 MHz segments. If it detects a signal, Signal Stalker II searches in finer steps until the signal source is found.

Signal Stalker II can search all frequencies, or you can define frequency ranges, to avoid ranges with constant activity, such as paging or broadcast transmitters.

To use Signal Stalker II:

1. Hold the Signal Stalker button ( ) for approximately 1 second.
2. To change the scanned band (All Band or PubSafety Band), press **FUNC** then Signal Stalker ( ).

   For a list of Signal Stalker bands, see **"Appendix D"** on page 67.
3. To turn off a bank, press the bank or group number while Signal Stalker II is active.
4. To turn off Signal Stalker, hold the Signal Stalker button ( ) again.

   Note: *Priority mode is not available while using the Signal Stalker II.*

Special Signal Stalker

Special Signal Stalker II divides the frequency range by 1 MHz segments. If you lock out 5 frequencies within 1 MHz segment, the scanner will skip that segment in subsequent sweeps.

To use Special Signal Stalker II:

1. Press **FUNC** while Signal Stalker II is active.

2. Press ▲ or ▼. "**Sp. Stalker**" appears for Special Signal Stalker II.
3. To turn off Special Signal Stalker II, press **FUNC** and then ▲ or ▼ again.

Locking Out Frequencies

When you lock out frequencies during a search, the scanner continues searching, but ignores the locked out frequencies. You can lock out up to 50 frequencies in each bank. If you try to lock out more, "**L/O Memory Full!**" appears.

While using Signal Stalker II, you can lock out 150 frequencies if searching All Bands and 50 frequencies while searching PubSafety frequencies. If you lock out 5 frequencies within a 1 MHz segment, the scanner will skip that segment in subsequent sweeps.

Notes:

- *If you lock out all the frequencies in a search bank and only that search bank is activated, "**All ranges Locked out!**" appears and the scanner does not search.*
- *Signal Stalker II still performs a fine step search for locked out signals. Signal Stalker II will not stop on the signal, but scan may take longer.*

To lock out a frequency:

When the scanner stops on a frequency, press **L/OUT.**

To review and unlock frequencies:

1. Press **SRCH** to enter search mode.
2. Press **FUNC** then **L/OUT.** The first locked-out frequency and lockout list appear.

   If the search bank has no locked-out frequencies, "**No Lockout**" appears.
3. Press ▲ or ▼ to review the list. The current position and the total locked-out number also appear as "**Lockout XX of YY.**" (Example: Lockout 10 of 30.)
4. (Optional) To unlock a frequency, select the frequency then press **CLEAR.**
5. Press **FUNC** then **L/OUT** again to exit.

To unlock all frequencies in a search bank:

1. Press **SRCH.**
2. Select the search bank.
3. Press **FUNC** then press **L/OUT.** The Lockout list appears.
4. Press **FUNC** then **6.** "**Clear entire list?**" appears.
5. Press **1.** "**List cleared**" appears. Pressing any other key cancels the clearing.

Saving Found Frequencies

To save a frequency found during a search:

1. When the scanner stops on a frequency, press **FUNC** then **PROG.** "**Store in ChXXX?**" appears and the frequency flashes.
2. To change the target channel, enter the bank and channel number.
3. Press **ENT.** "**Channel Stored!**" appears briefly, then the search resumes.

Scanning

Scanning sequentially checks all saved channels for activity. You must save frequencies into channels to scan. The scanner does not scan empty channels or unsaved frequencies.

You can increase the scanning speed by locking out channels with continuous transmissions, such as a weather channel, or turning off entire banks. Turning off a bank prevents the scanner from scanning any channels within the bank. You cannot turn off all banks. There must be at least one active bank to scan.

To scan:

1. Press **SCAN.** The scanner checks all unlocked channels in the active banks. To change the scan direction, press ▲ or ▼.
2. To stop on a channel, press **PSE.**
3. To lock out a channel, when the scanner stops on the channel, press **L/OUT.**
4. To turn off a bank, press the bank's number so the bank's number disappears. To turn on a bank, press the number key so the bank's number appears.

Locking Out Channels

You can increase the scanning speed by locking out channels with continuous transmissions.

To lock out a channel:

1. Press **MAN.**
2. Enter the bank and channel number or use ▲ or ▼ to select the channel.
3. Press **L/OUT.** "**LO**" changes to "**LO.**"
4. To unlock a locked-out channel, press **L/OUT** again.

To review all locked out channels:

1. Press **MAN.**
2. Repeatedly pressing **FUNC** and then **L/OUT** to view each locked-out channel.
3. To unlock a channel, press **L/OUT.** "**LO**" changes to "**LO.**"
4. When you finish reviewing locked-out channels, press **MAN.**

Note: *You can manually select any channel in a bank, even in turned-off banks.*

Priority Scanning

In addition to the 1,000 programmable memory channels, your scanner has one Priority channel. When Priority is turned on, the scanner checks the Priority channel every 2 seconds. This lets you scan without missing a transmission on the Priority channel.

Note: *Priority scanning does not operate for trunking transmissions. Priority check can seem random during peak hours.*

To turn on the priority feature:

1. Press **PRI** so "**p r i**" changes "**PRI**" on the display during scanning.
2. To turn off Priority, press **PRI** again.

To make an existing channel a Priority channel:

1. Press **MAN.**
2. Use the number keys to enter the bank and channel number.

   Note: *The Priority channel cannot be a trunking channel (MOT, ED, or LTR).*
3. Press **MAN.**
4. Press **FUNC,** then hold **PRI** until the display blinks.

To modify the Priority channel:

1. Press **PROG.**
2. Press **PRI.**
3. Use the number keys to enter the frequency.
4. Press **ENT.**

   Note: *If the frequency is incorrect,* "**I n v a l i d F r e q**" *appears briefly.*

Weather Alerts

The Federal Communications Commission (FCC) has allocated channels for use by the National Oceanic and Atmospheric Administration (NOAA). NOAA broadcasts Specific Area Message Encoding (SAME) alerts that include digitally encoded data about the severity of the alert.

Note: *Regulatory agencies in other countries have also allocated channels for use by their weather reporting authorities.*

If you program a weather channel as the Priority channel, your scanner can detect the 1050 Hz weather alert tone. All alerts are received (FIPS settings are ignored), and the scanner stays on the Priority channel only if the scanner detects a weather alert.

To perform a weather scan:

Press **WX.** Your scanner scans through the weather bands then stops on the next available weather broadcast.

To program a weather channel into priority channel:

1. Press **WX.**
2. Select the weather channel.
3. Press **FUNC** and then **PRI.**

SAME Standby Mode

SAME alerts include FIPS codes to identify areas, established by the US Census bureau. You can set your scanner to alert for all areas or limit weather alerts to up to 10 specific areas by FIPS code.

Note: *The National Weather Service maintains a current list of FIPS codes at www.nws.noaa.gov/nwr.*

Scanning

To program a FIPS code:

1. Press **WX** and listen to identify the weather station with the strongest signal.
2. Press **FUNC,** and then **PROG** to access the FIPS code entry table.
3. Use ▲ or ▼ to select the desired FIPS code storage location.
4. Use the number keys to enter the FIPS code. The format of a FIPS code is:

Subdivisions	State Code	County Code
0-9 (0=entire area)	01-50 (00=all states)	XXX (000=all counties)
Example: 048439 (0=All; 48=Texas; 439=Tarrant County)		

5. (Optional) To label the code, press **TEXT** and use the letter buttons to enter text.
6. Press **ENT** to store the code. Repeat this process to program additional FIPS codes.
7. Press **L/OUT** to lock out or enable specific FIPS entries.
8. Press **WX** to exit the FIPS code entry table.

To review stored FIPS codes:

1. Press **WX** then a number key.
2. Press **L/OUT** to change the lockout status.

Note: *For information about adding text tags to a FIPS code, see* **"Text Tags"** *on Page 52.*

To enter SAME standby:

1. Press **FUNC** and then **WX.** The scanner will monitor the selected weather radio station for alerts with FIPS codes that match the codes you entered in the FIPS entry table.
2. To exit SAME standby, press **FUNC** and then **WX.**

Notes:

- *The scanner searches the weather frequencies while in SAME standby mode when squelch is off.*
- *The scanner sounds an alert or beep when it receives the SAME code. After five minutes, the alert stops and the scanner beeps every ten seconds.*

3. Press any key except **KEY/LIGHT** to reset the scanner.

To test the weather alert:

1. Press **WX.** Your scanner scans through the weather bands.
2. Set the Squelch to the lowest setting so that you hear static.
3. Press **FUNC and** then **WX.** "**SAME Standby**" appears.
4. Hold **ENT** for about 2 seconds. The display indicates the type of message, and the scanner sounds an alert or series of beeps.
5. Press any key except **KEY/LIGHT** to stop testing.

Skywarn

Skywarn is an organized group of trained weather observers. Using Skywarn, you can hear trained observers in your area call in official reports to a control station that relays those reports to NOAA and other emergency agencies.

Before using this feature, save local Skywarn frequencies for your area into Channel 999.

To use Skywarn:

Hold the Skywarn button ( ). "**SKY**" appears. If the skywarn channel is empty, "**Not programmed**" appears.

Monitoring

When monitoring, the scanner remains on a single channel.

> ***Note:*** *Your scanner features a power save circuit that allows the scanner to "sleep" briefly while waiting for a call on a monitored channel.*

To monitor a channel:

1. Press **MAN.**
2. Use the number keys to enter the channel number and press **MAN.**

To find a frequency to monitor:

1. Press **TUNE.** The currently-tuned frequency and ***** PAUSED ***** appear.
2. (Optional) Use the number keys to change the frequency and press **ENT.**
3. Press **PSE.** The scanner searches for a frequency. To change the tune direction, press ▲ or ▼. When the scanner finds an active frequency, it stops.
4. Press **PSE** to monitor the frequency.

To set a default tuning frequency:

1. Press **MAN.**
2. (Optional) Use the number keys to enter the frequency number.
3. Press **FUNC,** then **TUNE.** The scanner saves the frequency. For example, if you save 145.31000 MHz, when you press **TUNE,** the scanner starts tuning at 145.31000 MHz.

Trunking Setup

Trunking Setup

Instead of transmitting on a specific frequency, trunking systems choose one of several frequencies during a 2-way radio transmission and simultaneously transmit a Talk Group ID that identifies the 2-way radio user. This allows trunking systems to allocate fewer frequencies to multiple 2-way radio users.

Defining a Trunking Bank

You can define any of the 10 banks as a trunking bank, but each bank can only scan for one system: Motorola, EDACS (GE/Ericsson), or LTR (EF Johnson).

> ***Note:*** *Trunking banks can contain both trunking and non-trunking channels. For information about saving frequencies into channels, refer to* **"Defining a Channel"** *on page 18.*

To define a Trunking Bank:

1. Press **PROG,** then press **TRUNK** to enter the ID program mode.
2. Press **FUNC,** then use ▲ or ▼ to select a bank.
3. Repeatedly press **MODE** to select a trunking mode (Motorola, EDACS, or LTR).
4. Press **PROG.**

Trunking Modes

In ***Closed*** mode, the scanner stops only on transmissions with saved and unlocked Talk Group IDs. This lets you focus a scan on the frequencies you have identified, ignoring other transmissions.

In ***Open*** mode, the scanner stops for transmissions on any unlocked channel. This lets you search for Talk Group IDs that you can then save.

While scanning, "**–**" appears for Closed mode and "**+**" appears for Open mode under the channel storage bank's number. When the scanner stops on a channel, "**OPEN**" or "**CLOSED**" appears.

To set Open or Closed mode for a bank:

1. Press **MAN.**
2. Use ▲ or ▼ to select a bank.
3. Press **FUNC** then **•/DELAY**. "**Bank OPEN**" or "**Bank CLOSED**" appears.

Motorola Trunking Setup

Motorola systems can allocate as few as five frequencies or up to several thousand groups of users in three categories:

- **Type I –** User groups are assigned to fleets. To scan, you must program a fleet map into the scanner.
- **Type II –** The Talk Group ID contains 4 or 5 digit numbers.
- **Hybrid –** Combines Type I and Type II formats.

> ***Note:*** *For information about saving frequencies into channels, refer to* **"Defining a Channel"** *on page 18.*

Trunking Setup

Fleet Maps

For Motorola Type I and hybrid systems, you must program a fleet map before saving Talk Group IDs.

To program a fleet map:

1. Press **PROG** then **TRUNK.**
2. Press **FUNC,** then press ▲ or ▼ to select the bank.
3. If necessary, repeatedly press **MODE** to select "Motorola."
4. Press **FUNC,** then press **8.** "**Size Code Setting**" appears, with Block 0 selected.
5. Enter the size code for Block 0, supplied with the Type I system information, or try one of the following common fleet maps.

Size Codes	BLOCKS							
	0	1	2	3	4	5	6	7
1	S11	S11	S11	S11	S11	S11	S11	S11
2	S4	S4	S4	S4	S4	S4	S4	S4
3	S4	S4	S4	S4	S4	S4	S12	—
4	S12	—	S4	S4	S4	S4	S4	S4
5	S4	S4	S12	—	S4	S4	S4	S4
6	S3	S10	S4	S4	S12	—	S12	—
7	S10	S10	S11	S4	S4	S4	S4	S4
8	S1	S1	S2	S2	S3	S3	S4	S4
9	S4	S4	SO	SO	SO	SO	SO	SO
10	SO	SO	SO	SO	SO	SO	S4	S4
11	S4	SO	SO	SO	SO	SO	SO	SO
12	SO	SO	SO	SO	SO	SO	SO	S4
13	S3	S3	S11	S4	S4	SO	SO	SO
14	S4	S3	S10	S4	S4	S4	S12	—
15	S4	S4	S4	S11	S11	SO	S12	—
16	S3	S10	S10	S11	SO	SO	S12	—

Note: *For Motorola Type II, enter 15.*

6. Press **ENT.** The next block appears.
7. Repeat steps 5-6 for each block. If you make a mistake, press **CLEAR** and enter the correct size code.

Base and Offset Frequencies

To receive Motorola VHF and UHF system transmissions, you must program applicable ***base*** and ***offset*** frequencies. In the 800 MHz trunking band, you can select a base frequency (normal or offset), but in the 900 MHz trunking band, you do not need to set the base frequency.

You can find information about base and offset frequencies on www.radioreference.com.

UHF-Lo (406-512 MHz)
To program Motorola base and offset frequencies:

1. Press **PROG** then **TRUNK** to enter the ID program mode.
2. Press **FUNC,** then press ▲ or ▼. The bank number increases or decreases by one. If you hold down ▲ or ▼, the bank number increases or decreases continuously.
3. If necessary, repeatedly press **MODE** to select "**Motorola.**"

Trunking Setup

4. Press **FUNC** then **2.** The screen displays the Base, Offset, and Step with the **B** in Base blinking.
5. If necessary, use the number keys to enter a new Base frequency and press **ENT.** The **O** in Offset blinks.
6. If necessary, use the number keys to enter a new Offset frequency and press **ENT.** The **S** in Step blinks.

   Note: *If you try to program an offset frequency in the UHF-Hi bands (806-960 MHz), the scanner ignores the entry.*
7. While the **S** in Step blinks, repeatedly press ▲ or ▼ to select the step number: 5.0, 6.25, 10.0, 12.5, 15.0, 18.75, 20.0, 25.0, 30.0, 31.25, 35.0, 37.5, 40.0, 43.75, or 50.0 kHz, then press **ENT.**
8. Press **PROG.**

UHF-Hi (806-960 MHz)
To program 800 MHz Motorola trunking:

1. Press **PROG** then **TRUNK** to enter the ID program mode.
2. Press **FUNC,** then press ▲ or ▼. The bank number increases or decreases by one. If you hold down ▲ or ▼, the bank number increases or decreases continuously.
3. If necessary, repeatedly press **MODE** to select **"MOTOROLA."**
4. Press **FUNC** then **3.** **"NORMAL"** appears.
5. Press ▲ or ▼ to select **NORMAL** or **SPLINTER** and press **ENT.** If you are uncertain about the base frequency, use NORMAL.

   The base frequency in NORMAL is 851.0125 MHz. The base frequency in SPLINTER is 851.0000 MHz. . If you cannot receive with the NORMAL setting, change to SPLINTER.

EDACS Trunking Setup

EDACS (GE/Ericsson) systems transmit Talk Group ID data on a dedicated control channel. Scanning requires clear reception of the control channel at all times, so EDACS systems generally have a smaller usable area. You can manually select the data channel, but an external antenna can greatly improve EDACS scanning.

If you are programming frequencies for an EDACS system, you must store them in the Logical Channel Number order (usually listed as LCN#).

> ***Note:*** *For information about saving frequencies into channels, refer to* **"Defining a Channel"** *on page 18.*

LTR Trunking Setup

LTR systems assign each frequency a Home Repeater (HR) number and are frequently programmed with unique ID codes for each radio. LTR Talk Group IDs are organized in a specific order, and to scan, you must program the frequencies in HR order. LTR systems are used primarily by businesses, such as taxicabs, delivery trucks, and repair services.

Trunking Setup

LTR systems use a Home Repeater as part of their Talk Group ID.

> ***Note:*** *For information about saving frequencies into channels, refer to* **"Defining a Channel"** *on page 18.*

To save a correct Home Repeater:

1. Save the LTR channels in any order.
2. Set the bank to Open mode.
3. Manually select LT channels and watch the LTR data on the display.

   Your scanner displays the LTR Talk Group ID and a number preceded by **"R."** The **"R"** number is the Home Repeater number for the transmission.
4. The assigned Home Repeater channel must equal the Home Repeater number. For example, R12 must be programmed into Channel 12.

Searching for Talk Group IDs

If you tune the scanner to an active Motorola control channel, the Motorola System ID and the approximate control channel message decode success rate appears. This helps you identify the system and the reception quality. When the scanner decodes control channel data from a Motorola system, COTRL appears on the display.

To search for Talk Group IDs:

1. Set the bank to Open mode.
2. Press **SCAN.** The scanner scans through all unlocked channels in the active banks.
3. When the scanner stops on a transmission, press **TRUNK.** The scanner displays the ID location:

Sub-bank.	ID Location
0-4	00-29
Example: 2-01	

> ***Note:*** *If the ID has already been saved,* **"ID was saved"** *appears. If you try to store more than 150 talk group IDs in a bank,* **"Memory Full!"** *appears.*

Saving a Talk Group ID

Each of the 10 banks contains 5 ***sub-banks*** that each hold 30 Talk Group IDs. (You can save up to 1,500 Talk Group IDs.) When the scanner receives a trunked transmission, it searches the associated sub-bank for the Talk Group ID to decode data for Motorola, EDACS, and LTR systems.

To define a Talk Group ID:

1. Press **PROG,** then press **TRUNK** to enter the ID program mode.
2. Press **FUNC,** then use ▲ or ▼ to select a bank.
3. Repeatedly press **MODE** to select a trunking mode (Motorola, EDACS, or LTR).
4. Repeatedly press **TRUNK** to select the sub-bank.
5. Press ▲ or ▼ to select the location where to store the Talk Group ID.
6. Use the number and decimal point keys to enter the Talk Group ID:

For ED Talk Group IDs, you can enter either a decimal or AFS code. The default setting is decimal ID entry.

To use the AFS code, press **FUNC** then **2,** "AFS Format" appears for about 2 seconds. You can then enter the AFS code.

7. Press **ENT.**

Notes:

- *If you make a mistake,* "Invalid ID value" *appears when you press* **ENT.** *Go back to Step 3.*
- *If you entered an ID that is already stored in same bank,* "Dupl. ID of X-XX appears." *To store the ID code, press* **ENT.** *To cancel, press* **CLEAR**.
- *For information about adding text tags to a Talk Group ID, see* **"Text Tags"** *on Page 52.*

Deleting Talk Group IDs

You can delete an individual Talk Group ID or all Talk Group IDs in a bank.

To delete a Talk Group ID:

1. Press **PROG** then **TRUNK.**
2. Press **FUNC,** ▲ or ▼ to select ID memory.
3. Press **FUNC** then **CLEAR.**

To delete ALL talk group IDs in a bank:

1. Press **PROG.**
2. Press **TRUNK** to enter a Talk Group ID memory mode.
3. Select a Talk Group ID bank using **FUNC,** ▲ or ▼.
4. Press **FUNC** then **6.** "Clear entire list? Press 1 to clear all, any other key aborts" appears.
5. To clear the Talk Group IDs, Press **1.** To cancel the deletion, press any key except **1.**

Saving Trunking Channels

Trunking channels are defined using the same procedure for non-trunking channels. In each bank, you can mix channel modes, including conventional, but you can scan only one trunking mode at a time, either EDACS, Motorola, or LTR.

Because Motorola control frequencies change daily, you should save all the control frequencies in the same bank. If you do not know the control frequency, save all the Motorola frequencies in the same bank.

EDACS frequencies are assigned Logical Channel Numbers (LCN) and organized in a specific order. To scan correctly, you must program the frequencies in LCN order, starting with Memory 01.

Notes:

- *Trunked modes (MO, ED, and LT) can only be selected for frequencies above 137 MHz that use trunking operations.*
- *For information about adding text tags to a channel, see* **"Text Tags"** *on Page 52.*

Trunk Scanning

Trunk Scanning

In each bank, you can mix conventional channels and frequencies in a bank. However, you can scan only one trunking mode at a time, either EDACS, Motorola, or LTR.

Press **SCAN**. The scanner scans through unlocked channels in active banks. To focus on trunk scanning, you can turn off banks that contain only conventional channels. To change the scanning direction, press ▲ or ▼.

For Motorola channels, your scanner displays the Talk Group ID memory location, received frequency, voice channel (VC), and the Motorola ID number.

Notes:

- *Your scanner automatically mutes the audio while it decodes control channel data. However, we recommend you turn SQ clockwise and leave it set to a point just after the hiss stops. This lets the scanner quickly acquire the data channel.*
- *For Motorola trunking systems, more than one talk group can transmit at a time. If you manually tune the scanner, you will hear the talk group on that channel, but the display will alternate between all active Talk Group IDs.*
- *For EDACS and Motorola (above 406 MHz range), the scanner monitors the control channel between each transmission to identify talk groups. For some Motorola (under 512 MHz range) and LTR systems, the scanner uses the subaudible data sent with each transmission to identify talk groups.*

Trunking Delay

You can set a Talk Group ID delay separately from the channel delay. When active, the scanner checks the Talk Group ID for the delay time when a transmission ends.

To set a Talk Group ID delay:

1. Press **FUNC** then **•/DELAY** while you are programming the Trunk Group ID. "**ENTER key saves. 2.0 seconds**" appears.
2. Use ▲ or ▼ to set ID Delay: None, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, or 4.0 seconds.
3. Press **ENT.**

Locking Out Talk Group IDs

You can only lock out Talk Group IDs when the scanner is in the Closed mode.

To lock out Talk Group IDs:

1. Press **PROG** then **TRUNK.**
2. Press **FUNC,** ▲ or ▼ to move to the desired bank.
3. Press ▲ or ▼ to select the ID.
4. Press **L/OUT** to lock out the ID. "**lo**" changes to "**LO.**"
5. To remove the lockout from a trunking ID, manually select the ID memory, and press **L/OUT.** "**LO**" changes to "**lo.**"

   Note: *You cannot clear all lockouts from a talk group at the same time.*

Trunk Scanning

To review locked-out Talk Group IDs:

1. Press **PROG** then **TRUNK.**
2. Press **FUNC** then **L/OUT.** The first locked out ID appears. If the ID memory bank has no locked-out ID, you hear the low beep tone.
3. Press ▲ or ▼ to scroll through the list.
4. Press **PROG** to exit.

Turning Off Sub-Banks

To turn off a sub-bank:

1. Press **TRUNK** repeatedly to select the desired sub-bank.
2. Press **FUNC** then **1** to turn the sub-bank on or off.

To turn off a sub-bank while scanning:

1. When the scanner stops on a transmission, press **FUNC.**
2. Press **TRUNK.** The display indicates which sub-bank is turned on or off. The active sub-bank number appears.
3. Press **FUNC** and the number of the sub-bank you desire to turn on or off. For example to turn sub-bank 4 on or off, press **FUNC.** Then press **4.**

   Note: *This function activates when the receiving channel bank is Closed mode.*

Talk Group ID Hold

You can set your scanner to follow a trunking signal that you want to track during scanning.

To set Talk Group ID Hold:

1. While the scanner is stopped on a voice channel ("**VC**" appears), hold down **TRUNK** until "**ID hold ON**" appears.

   When the scanner receives a transmission, the "**S**" on the display changes to "**H.**"
2. To release ID hold, press **SCAN** or **TRUNK.**

Additional Information

Additional Information

Scanner Maintenance

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

Text Tags

While scanning, if the scanner stops on a channel with a saved text tag, the text appears on the display. Otherwise, the Talk Group ID appears on the display.

You can define text tags to identify channels, Talk Group IDs, banks or FIPS Codes.

To define a Text Tag:

1. To define a text tag for a channel:
   - Press **MAN.**
   - Enter the bank and channel number.
   - Press **PROG.** **M** changes to **P**.
   - Go to step 5.
2. To define a text tag for a Talk Group ID:
   - Press **PROG.**
   - Press **TRUNK.**
   - Press **FUNC** then ▲ or ▼ to select the desired bank.
   - Press **TRUNK** to select the desired sub-bank.
   - Press or hold down ▲ or ▼ to select the desired group ID.
   - Go to step 5.
3. To define a text tag for a bank:
   - Press PROG.
   - Press FUNC then press bank number. **"Bank X (0 through 9) selected"** appears.
   - Go to step 5.
4. To define a text tag for a FIPS code, first access the FIPS code definition. See **"SAME Standby Mode"** on page 33.
5. Press **TEXT.**
6. Enter the text using the text keys (up to 16 characters).

   When you press a key, the associated letters appear on the screen. Press the corresponding number. For example, when you press **ABC,** **A**, **B,** and **C** appear on the display. To select **A,** press **1.** To select **B,** press **2.** To select **C,** press **3.**

   To enter a number, press **1,** then press the number key.

   To enter lowercase character or second-set character for the 0 key, press the text key and then press **FUNC.**
7. If you make a mistake, press ▲ or ▼ to move to the character you want to change.
8. Press **ENT** to save the text.

Additional Information

To display the Talk Group ID:

1. If the scanner displays the text tag for a transmission, press **TEXT.** The ID code appears.
2. Press **TEXT** again to cancel.

Troubleshooting

Issue	Solution
The scanner is not working at all. ***Cause:*** The AC or DC adaptor might not be connected. The batteries might be dead or need to be recharged. If the scanner does not operate when you connect a DC adaptor, the DC adaptor socket might be dirty.	Be sure the adaptor's barrel plug is fully inserted into the PWR DC 9V jack. The center tip of the adaptor's barrel plug must be set to positive. Recharge the rechargeable batteries or replace the standard batteries. Unplug the DC adaptor from the power source and clean the socket, or check the adaptor's internal fuse.
The scanner does not receive any stations or reception is poor. ***Cause:*** Antenna might not be connected correctly. Squelch setting might be too sensitive causing it to pick up unwanted, partial or weak transmissions. Antenuator might be on so your scanner might not receive weak signals. The scanner might need to be initialized.	Check the antenna. Check the squelch. Check the Attenuator. Turn the scanner off then on again, or initialize the scanner.
The scanner is on but does not scan. ***Cause:*** The squelch might not be adjusted correctly. There might only be one channel or no channels stored in the scanner. The keylock might be turned on.	Turn SQ clockwise. Save more frequencies into channels. Turn off keylock.
Error message appears when trying to upload or download from a computer. ***Cause:*** Your computer is using Windows XP and does not have the necessary USB cable driver.	Download and install the "Windows XP Driver to resolve PC connection error" file 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.

Birdie Frequencies

All scanners have signals created inside the scanner's receiver. These birdie frequencies can interfere with transmissions on the same frequencies. If the interference is not severe, you might be able to turn SQ clockwise to omit the birdie.

To find the birdies:

1. Disconnect the antenna and move it away from the scanner. Make sure that no other

Additional Information

nearby radio or TV sets are turned on near the scanner.

2. Start a search of every frequency range from its lowest frequency to the highest. When the search stops, often without any sound, this is a birdie.
3. Make a list of all the birdies in your scanner for future reference.

Initializing the Scanner

If the scanner's display locks up or does not work properly after you connect a power source or install batteries, you might need to initialize it.

> **Caution:** *This procedure clears the scanner's memory. Initialize the scanner only after trying all other methods to correct issues.*

To initialize the scanner:

1. Turn off the scanner, then turn it on again. **"Multi-system Trunking Scanner"** appears.
2. While **"Multi-system Trunking Scanner"** appears, press **0.**
3. Press **1.**
4. Press **ENT.** **"Initializing please stand by"** appears for about 5 seconds. When the initialization is complete, M000 appears on the second line of the display. **"Bank 0 Ch 00"** appears.

> ***Note:*** *Do not turn off the scanner until the initialization is complete.*

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 web site (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.

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 it is 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. It is also illegal in many areas to interfere with the duties of public safety officials by traveling to the scene of an incident without authorization.

We encourage responsible, legal scanner use.

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

Additional Information

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.

References

Appendix A: Glossary

Frequency – The signal (expressed in MHz) used by broadcasting radios. To find active frequencies, you can use frequency guides available from your local RadioShack store, frequency lists posted on the Internet, or your scanner's search function.

Bank – A storage unit for a group of channels. A channel contains one frequency, and a bank can hold up to 100 channels.

Channel – A programmable memory locations for a single frequency.

Talk Group ID – A simultaneous trunking transmission that identifies 2-way radio users. This allows trunking systems to allocate a few frequencies to multiple 2-way radio users.

Sub-bank – Each bank has an associated Talk Group ID sub-bank. In Closed mode, the scanner only stops if a transmission has a Talk Group ID saved in the associated Talk Group ID sub-bank. In Open Mode, the scanner stops on all transmissions, except those you lock out.

Appendix B: Search Banks

All scanners tune by steps. Your RadioShack scanner uses steps consistent with the latest US or worldwide standards. If you enter a non-valid step frequency, any scanner will tune to the next step. Some scanner designs do this without showing the correct step in the display. This scanner will show the actual tuned frequency in the display. Because steps are so close together, the audio quality will not be affected by the offset.

Search Bank: ***SR0 Marine Band;***
Receive Mode: ***FM***

Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)
01	156.0500	21	157.0500	72	156.6250
05	156.2500	22	157.1000	73	156.6750
06	156.3000	23	157.1500	74	156.7250
07	156.3500	24	157.2000 161.8000	77	156.8750
08	156.4000	25	157.2500 161.8500	78	156.9250
09	156.4500	26	157.3000 161.9000	79	156.9750
10	156.5000	27	157.3500 161.9500	80	157.0250
11	156.5500	28	157.4000 162.0000	81	157.0750
12	156.6000	63	156.1750	82	157.1250
13	156.6500	64	156.2250 160.8250	83	157.1750
14	156.7000	65	156.2750	84	157.2250 161.8250
15	156.7500	66	156.3250	85	157.2750 161.8750
16	156.8000	67	156.3750	86	157.3250 161.9250
17	156.8500	68	156.4250	87	157.3750 161.9750
18	156.9000	69	156.4750	88	157.4250
19	156.9500	70	156.5250		
20	157.0000 161.6000	71	156.5750		

Note: *Some Marine frequencies assign two frequencies to one channel. For example, 157.000 and 161.600 are assigned in Channel 20.*

Search Bank: *SR1 CB Band;*
Receive Mode: *AM*

Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)
01	26.9650	15	27.1350	29	27.2950
02	26.9750	16	27.1550	30	27.3050
03	26.9850	17	27.1650	31	27.3150
04	27.0050	18	27.1750	32	27.3250
05	27.0150	19	27.1850	33	27.3350
06	27.0250	20	27.2050	34	27.3450
07	27.0350	21	27.2150	35	27.3550
08	27.0550	22	27.2250	36	27.3650
09	27.0650	23	27.2550	37	27.3750
10	27.0750	24	27.2350	38	27.3850
11	27.0850	25	27.2450	39	27.3950
12	27.1050	26	27.2650	40	27.4050
13	27.1150	27	27.2750		
14	27.1250	28	27.2850		

Search Bank: *SR2 FRS/GMRS/MURS Band*
Receive Mode: *FM, CT, or DC*

Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)
01	462.56250	13	467.68750	25	151.94000
02	462.58750	14	467.71250	26	154.57000
03	462.61250	15	462.55000	27	154.60000
04	462.63750	16	462.57500	28	154.62500
05	462.66250	17	462.60000	29	464.50000
06	462.68750	18	462.62500	30	464.55000
07	462.71250	19	462.65000	31	467.85000
08	467.56250	20	462.67500	32	467.87500
09	467.58750	21	462.70000	33	467.90000
10	467.61250	22	462.72500	34	467.92500
11	467.63750	23	151.82000		
12	467.66250	24	151.88000		

Search bank: SR3 Public Safety band
Receive Mode: FM, CT, or DC

Freq. (MHz)	Step (kHz)
Group 0	
33.420-33.980	10
37.020-37.420	10
39.020-39.980	10
42.020-42.940	10
44.620-45.860	10
45.880	
45.900	
45.940-46.060	10
46.080-46.500	10
Group 1	
151.820-151.940	7.5
153.770-154.130	7.5
154.145-154.445	7.5
154.570	
154.600	
154.650-154.770	7.5
154.785-154.950	7.5
155.010-155.370	7.5

References

Freq. (MHz)	Step (kHz)
155.415-155.700	7.5
155.730-156.210	7.5
158.730-159.210	7.5
166.250	
170.150	
Group 2	
453.0375-453.9625	6.25
458.0375-458.9625	6.25
460.0125-460.6375	6.25
462.5500-462.7250	6.25
465.0125-465.6375	6.25
467.5625-467.7125	6.25
Group 3	
764.003125-766.996875	3.125
773.003125-775.996875	3.125
794.003125-796.996875	3.125
803.003125-805.996875	3.125
Group 4	
851.0125-852.0125	12.5
852.0375-853.0375	12.5
853.0625-854.0625	12.5
854.0875-855.0875	12.5
855.1125-856.1125	12.5
856.1375-857.1375	12.5
857.1625-858.1625	12.5
858.1875-859.1875	12.5
859.2125-860.2125	12.5
860.2375-860.9875	12.5
866.0125-868.9875	12.5

Search bank: SR4 Aircraft
Receive mode: AM, FM

Group	Frequency (MHz)	Step (kHz)
0	108.000-117.99166	8.33
1	118.000-136.99166	8.33
2	138.000-143.9875	12.5
	148.000-150.7875	12.5
3	225.000-379.975	25
	380.000-400.000	12.5

Search bank: SR5 Amateur band
Receive mode: FM, CT, or DC

Group	Frequency (MHz)	Step (kHz)
0	28.0000-29.7000	5
1	50.0000-54.0000	5
2	144.0000-148.0000	5
3	222.0000-224.9950	5
4	420.0000-450.0000	5
5	902.000-927.9875	12.5
6	1240.0000-1300.0000	6.25

Search bank: SR6 Railroad
Receive mode: FM, CT, or DC

Frequency (MHz)	Step (kHz)
159.810-161.5650	7.5

References

Appendix C: CTCSS / DCS Codes

You can program any of the following codes:

CTCSS Codes:

67.0 Hz	94.8 Hz	131.8 Hz	171.3 Hz	203.5 Hz
69.3 Hz	97.4 Hz	136.5 Hz	173.8 Hz	206.5 Hz
71.9 Hz	100.0 Hz	141.3 Hz	177.3 Hz	210.7 Hz
74.4 Hz	103.5 Hz	146.2 Hz	179.9 Hz	218.1 Hz
77.0 Hz	107.2 Hz	151.4 Hz	183.5 Hz	225.7 Hz
79.7 Hz	110.9 Hz	156.7 Hz	186.2 Hz	229.1 Hz
82.5 Hz	114.8 Hz	159.8 Hz	189.9 Hz	233.6 Hz
85.4 Hz	118.8 Hz	162.2 Hz	192.8 Hz	241.8 Hz
88.5 Hz	123.0 Hz	165.5 Hz	196.6 Hz	250.3 Hz
91.5 Hz	127.3 Hz	167.9 Hz	199.5 Hz	254.1 Hz

DCS Codes:

006	050	125	174	255	343	445	526	703
007	051	131	205	261	346	446	532	712
015	053	132	212	263	351	452	546	723
017	054	134	214	265	356	454	565	731
021	065	141	223	266	364	455	606	732
023	071	143	225	271	365	462	612	734
025	072	145	226	274	371	464	624	743
026	073	152	243	306	411	465	627	754
031	074	155	244	311	412	466	631	
032	114	156	245	315	413	503	632	
036	115	162	246	325	423	506	654	
043	116	165	251	331	431	516	662	
047	122	172	252	332	432	523	664	

Appendix D: Signal Stalker II

Signal Stalker II can search the following bands:

All Band

Bank	Freq. (MHz)
0	25.000-54.000
1	108.000-136.99166
2	137.000-174.000
3	216.0025-299.975
4	300.000-405.9875
5	406.000-470.000
6	470.0125-512.000
7	764.000-805.996875
8	806.000-868.9875
9	894.000-960, 1240-1300.000

PubSafety Band

Freq. (MHz)	Step (kHz)
Group 0	
33.420-33.980	10
37.020-37.420	10
39.020-39.980	10
42.020-42.940	10
44.620-45.860	10
45.880	
45.900	
45.940-46.060	10
46.080-46.500	10

References

Freq. (MHz)	Step (kHz)
Group 1	
151.820-151.940	7.5
153.770-154.130	7.5
154.145-154.445	7.5
154.570	
154.600	
154.650-154.770	7.5
154.785-154.950	7.5
155.010-155.370	7.5
155.415-155.700	7.5
155.730-156.210	7.5
158.730-159.210	7.5
166.250	
170.150	
Group 2	
453.0375-453.9625	6.25
458.0375-458.9625	6.25
460.0125-460.6375	6.25
462.5500-462.7250	6.25
465.0125-465.6375	6.25
467.5625-467.7125	6.25
Group 3	
764.003125-766.996875	3.125
773.003125-775.996875	3.125
794.003125-796.996875	3.125
803.003125-805.996875	3.125
Group 4	
851.0125-852.0125	12.5
852.0375-853.0375	12.5
853.0625-854.0625	12.5
854.0875-855.0875	12.5
855.1125-856.1125	12.5
856.1375-857.1375	12.5
857.1625-858.1625	12.5
858.1875-859.1875	12.5
859.2125-860.2125	12.5
860.2375-860.9875	12.5
866.0125-868.9875	12.5

Appendix E: Talk Group Format

Motorola

For *Motorola Type I*, enter the block number, fleet number and subfleet number.

Fleet No.	Subfleet No.
XXX	XX
Example: XXX-XX	

Motorola Type II talk group IDs are 4- or 5-digit numbers, divisible by 16.

EDACS

Enter either a four-digit ***decimal*** number from 0001 to 2047.

Agency Fleet Subfleet (AFS) numbers range from 00-001 to 15-157. The default EDACS setting is decimal.

To use AFS format:

1. Press **FUNC** then **2**. **"AFS Format"** appears briefly.
2. Enter the AFS number:

Agency No.	Fleet No.	Subfleet No.
XX	XXXX	XXXX
Example: XXXXXX-XXXX		

LTR

Enter the area code, home repeater and user ID.

Area Code	Home Repeater	User ID
0-1	01-20	000-254
Example: 010123		

Appendix F: 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)
154.650-156.255 MHz .....(in 7.5 kHz steps/FM)
156.275-157.450 MHz .....(in 25 kHz steps/FM)
157.470-161.5725 MHz .....(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)
225.000-379.975 MHz ..... (in 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)
450.00625-469.99375 MHz .....(in 6.25 kHz steps/FM)
470.000-512.000 MHz .....(in 12.5 kHz steps/FM)
764.000-766.996875 MHz .....(in 3.125 kHz steps/FM)
773.000-775.996875 MHz .....(in 3.125 kHz steps/FM)
794.000-796.996875 MHz .....(in 3.125 kHz steps/FM)
803.000-805.996875 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)

Memory Channels / Banks .....1000 / 10
Talk group ID memories 1,500
ID memory banks / Sub-banks .....10 / 5
Number of memory IDs per sub-bank 30

Sensitivity (20 dB S/N):

FM:

25–54 MHz .....0.3 uV
108–136.99166 MHz .....0.3 uV
137–174 MHz .....0.5 uV
216.0025–224.975MHz .....0.5 uV
225-299.975 MHz .....0.5 uV
300-405.975 MHz .....0.8 uV
406–512 MHz .....0.5 uV
764–960 MHz .....0.7 uV
1240–1300 MHz .....0.7 uV

AM:

25–54 MHz .....1 uV
108–136.99166 MHz .....1 uV
137–174 MHz .....1.5 uV
216.0025–224.975MHz .....1.5 uV
225-299.975 MHz .....2 uV
300-405.975 MHz .....3 uV
406–512 MHz .....2 uV
764–960 MHz .....2 uV
1240–1300 MHz .....3 uV

Selectivity:
- All AM and FM (except AM 25 – 27.995 MHz) ..... 6 dB +/–8 kHz
- ..... –50 dB +/–17 kHz
- AM 25 – 27.995 MHz ..... –6 dB +/–4 kHz
- ..... –50 dB +/–6 kHz

Spurious Rejection (at 154.1 MHz FM) ..... 40 dB
Scanning Rate ..... Up to 60 Channels per Second
Search Rate ..... Up to 78 Steps per Second
Delay Time ..... 2 seconds

Intermediate Frequencies (IF):
- 1st ..... 380.8 MHz
- 2nd ..... 21.4 MHz
- 3rd ..... 455 kHz

Priority Sampling ..... 2 seconds
Operating Temperature ..... -14 to 140° F (-20 to 60° C)

IF Rejection
- 380.8 MHz at 154.1 MHz ..... 60 dB
- 21.4 MHz at 154.1 MHz ..... 100 dB

Squelch Sensitivity:
- Threshold (FM and AM) ..... 0.5 uV
- Tight (FM) ..... 25 dB
- Tight (AM) ..... 20 dB

Antenna Impedance ..... 50 Ohms
Audio Output Power (10% THD) 170mW
Built-in Speaker ..... 1 3/8 Inches (36 mm)
..... (8-ohm, Dynamic Type)

Power Requirements:
- Batteries ..... 4 AA
- External Power ..... 9V DC
- Current Drain (Squelched) ..... 90 mA
- Battery Charge Current ..... 150 mA

Dimensions (HWD) ..... $5\ 3/4 \times 2\ 9/16 \times 1\ 5/8$ Inches
..... (145 x 65 x 42 mm)

Weight (without antenna and batteries) ..... 8.5 oz (240 g)

Specifications and depictions are subject to change and improvement without notice. Actual product may vary from the images found in this document.

Index

A
Alerts 32
Antenna 8, 43, 72
Attenuator 15

B
Backlight 13
Banks 17, 60, 71
- Scanning 30, 48
- Search Banks 23, 60
- Trunking Banks 38
- Turning Off 30, 50

Base Frequencies 41
Batteries 9
- Charging 10

Belt Clip 8
Birdie Frequencies 55

C
Channels 17, 60
- Defining 18
- Locking Out 30
- Monitoring 37
- Priority Channe 31
- Saving 30
- Saving Trunking Channels 47
- Scanning 30, 48
- Weather Channels 32

Cloning 21
Contrast 13
CTCSS 17
CTCSS Codes 20, 66

D
DCS 17
DCS Codes 20, 66
Default Tuning Frequency 37
Delay 15, 49
Delete 20

E
EDACS 17, 38, 43, 47, 48, 69

F
FCC Notice 58
FIPS Code 53

Index

FIPS code 34
Fleet Maps 40
Frequencies 17, 60
  Center (Zeromatic) 25
  Copying 19
  Deleting 20
  Locking Out 28
  Monitoring 37
  Saving 29
  Searching 23, 26

G
Glossary 60

I
Initializing 56

K
Keylock 13
Keytones 13

L
Legal Scanning 57
Locking Out
  Channels 30
  Frequencies 28
  Talk Group IDs 49
LTR 17, 38, 43, 48, 70

M
Monitoring 37
Motorola 17, 38, 39, 44, 48, 69

O
Offset Frequencies 41

P
Power 9
  External Power 11
Power Save 37
Priority Scanning 31
  Weather Channel 33

S
SAME 32, 33
  SAME Standby 35
Scanning 30
See also Trunk Scanning; *See also* Weather
  Locking Out Channels 30
  Priority Scanning 31
Searching 23
  Locking Out Frequencies 28
  Programming a Range 26
  Saving Frequencies 29
  Search Banks 23, 60
  Seek Search 23
  Talk Group IDs 44
  Zeromatic 25
Service and Repair 57
Signal Stalker II 26, 67
Skywarn 36
Specifications 70
Squelch 15, 25
Sub-Banks 45, 50, 60

T
Talk Group IDs 38, 44, 60
  Delay 49
  Deleting 46
  Hold 51
  Locking Out 49
  Saving 45
  Searching 44
  Text Tags 54
Troubleshooting 54
Trunking
  Base and Offset Frequencies 41
  Defining a Trunking Bank 38
  Delay 49
  EDACS 43
  Fleet Maps 40
  LTR 43
  Modes 38
  Motorola 39
  Saving Channels 47
  Setup 38
  Talk Group IDs 44
  Trunk Scanning 48

W
Weather
  Alerts 32
  FIPS code 34
  SAME 33
  Skywarn 36
  Testing the Weather Alert 35

Z
Zeromatic 25

Limited Warranty

This product is warranted by ***RadioShack*** against manufacturing defects in material and workmanship under normal use for one (1) year from the date of purchase from ***RadioShack*** company-owned stores and authorized ***RadioShack*** franchisees and dealers. EXCEPT AS PROVIDED HEREIN, ***RadioShack*** MAKES NO EXPRESS WARRANTIES AND ANY IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE DURATION OF THE WRITTEN LIMITED WARRANTIES CONTAINED HEREIN. EXCEPT AS PROVIDED HEREIN, ***RadioShack*** SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO CUSTOMER OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS OR DAMAGE CAUSED DIRECTLY OR INDIRECTLY BY USE OR PERFORMANCE OF THE PRODUCT OR ARISING OUT OF ANY BREACH OF THIS WARRANTY, INCLUDING, BUT NOT LIMITED TO, ANY DAMAGES RESULTING FROM INCONVENIENCE, LOSS OF TIME, DATA, PROPERTY, REVENUE, OR PROFIT OR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, EVEN IF ***RadioShack*** HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

In the event of a product defect during the warranty period, take the product and the ***RadioShack*** sales receipt as proof of purchase date to any ***RadioShack*** store. ***RadioShack*** will, at its option, unless otherwise provided by law: (a) correct the defect by product repair without charge for parts and labor; (b) replace the product with one of the same or similar design; or (c) refund the purchase price. All replaced parts and products, and products on which a refund is made, become the property of ***RadioShack***. New or reconditioned parts and products may be used in the performance of warranty service. Repaired or replaced parts and products are warranted for the remainder of the original warranty period. You will be charged for repair or replacement of the product made after the expiration of the warranty period.

This warranty does not cover: (a) damage or failure caused by or attributable to acts of God, abuse, accident, misuse, improper or abnormal usage, failure to follow instructions, improper installation or maintenance, alteration, lightning or other incidence of excess voltage or current; (b) any repairs other than those provided by a ***RadioShack*** Authorized Service Facility; (c) consumables such as fuses or batteries; (d) cosmetic damage; (e) transportation, shipping or insurance costs; or (f) costs of product removal, installation, set-up service adjustment or reinstallation.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

RadioShack Customer Relations
300 RadioShack Circle, Fort Worth, TX 76102 12/99

Notes

Notes

Protect the environment by recycling used electronics. Go to www.ecyclingcentral.com to find a recycling location near you.

Motorola, Smartnet, ASTRO and Privacy Plus are registered trademarks of Motorola Inc.
EDACS is a registered trademark of M/A-COM Inc.
LTR is a registered trademark of EF Johnson.

©2008. ***RadioShack*** Corporation.
All rights reserved. ***RadioShack*** and ***RadioShack.com*** are trademarks used by ***RadioShack*** Corporation.

20-164
Printed in China
GE-07D-0910
04A08