

RadioShack®



20-426

Pro-2051 1,000-Channel Triple Trunking Mobile/Base Scanner



Please read this user's guide before installing,
setting up and using your new product

www.radioshack.com

Contents

Thank you for purchasing your Pro-2051 1,000-channel, triple-trunking scanner from RadioShack. Signal stalker allows you to lock on frequencies within 1,000 feet, without programming. The PC interface lets you program your scanner using your computer. Support for Motorola, LTR and EDACS trunked systems permits you to access most any police, fire and emergency system. With built-in Skywarn, you will be able to stay up to date with the reports called in by storm spotters.

what's included

user's guide • quick start guide • preprogrammed frequency addendum



Scanner



Antenna



AC adapter



DC cable w/fuse



Mounting
bracket



Knob (2)



Lock washer (2)



Screw (2)

The Basics

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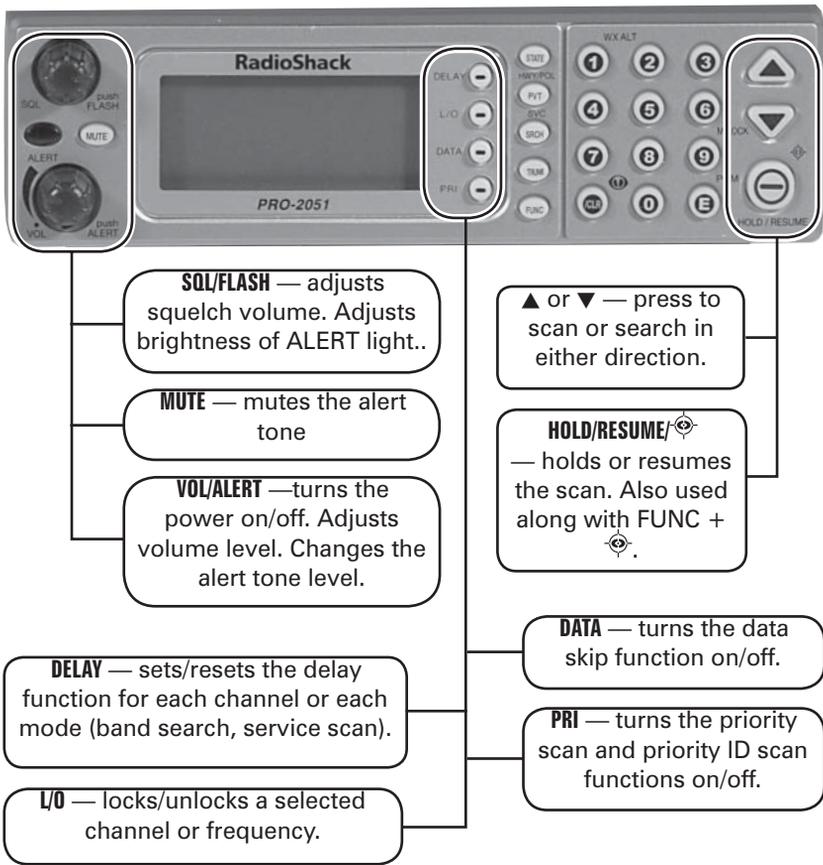
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your scanner's keypad

Your scanner's keys have various functions labeled on and around the keys.

To select the function labeled on a key, simply press the key.

To select the function labeled above or beside a key, first press FUNC, then release it. F appears on the display. Then quickly press the next key in the function key sequence while F appears. F appears or disappears each time you press FUNC.



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STATE — selects the state code.

PVT/HWY/POL — Scans the private scan bank; scans the private scan bank and highway frequencies (or local police) when pressed in highway scanning mode. Also, used with FUNC + HWY/POL.

SRCH/SVC — selects the search band. Starts ID search mode. Also, used with FUNC + SVC.

TRUNK — Turns on trunk tracking.

FUNC — Lets you use various functions by pressing this key in combination with other keys. Press and release FUNC. Then press the next key.

0-9/WX ALT — enter numbers for various functions. For weather alert, press FUNC + 1. For M-LOCK, press FUNC + 9.

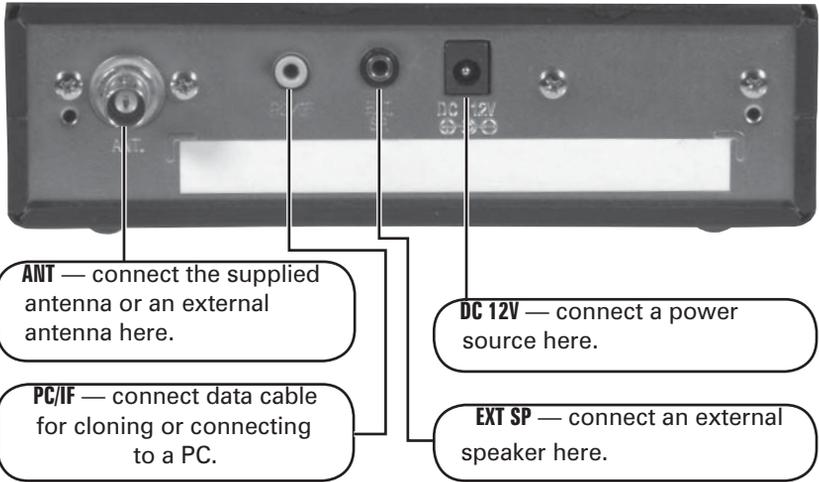
/CLR/⓪ — enter a decimal point or clear an incorrect entry. Also, used with FUNC + ⓪.

E/PGM — store the frequency. Also, used with FUNC + PGM.

| Press These Buttons | To Do This |
|---------------------|---|
| FUNC + SVC | Toggle service scan. |
| FUNC + PGM | Program frequencies into channels. |
| FUNC + M-LOCK | Lock or unlock the memory. |
| FUNC + ⓪ | Jump directly to the last channel in memory (Ch1000) from any mode. |
| FUNC + WX ALT | Turn the WX alert function on or off. |
| FUNC + Ⓜ | Switch between the three signal stalker modes. |
| FUNC + HWY/POL | Scan highway frequencies. Scan highway frequencies and local police bank in highway mode. |

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your scanner's rear view



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your scanner's display

| | |
|---|---|
| TRUNK | appears during trunk tracking mode |
| M | appears when a Motorola trunking channel is selected |
| E | appears when an EDACS trunking channel is selected |
| L | appears when an LTR trunking channel is selected |
| LIST | indicates a scan list |
| BANK | indicates a scan bank |
| 1 - 10 | indicates a bank's number and ID list number |
| PGM | indicates program mode |
| HIGHWAY | indicates highway patrol scan mode |
| PRIVATE | indicates private bank scan mode |
| POLICE | indicates police scan mode |
| SERVICE | indicates service scan (WX, fire/emergency, news, CB, air, railroad, marine) mode |
| M-LOCK | indicates the memory is locked |
| F | appears when function mode is on |
|  | indicates that signal stalker is active |
| P | appears when you select a priority channel and talk group |
| HOLD | indicates scan hold or search hold mode |
| ▲ or ▼ | indicate search direction |
| SRCH | indicates band search mode |
| PRI | appears when the priority feature is turned on |
| L/O | indicates lockout channel and talk group |
| DLY | appears when you select a delay |
| <u>DATA</u> | appears when the data skip feature is turned on |
| <u>FLASH</u> | appears while the ALERT light is off |

the FCC wants you to know

This equipment has been tested and found to comply with the limits for a Class B digital device, 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.
- Consult your local RadioShack store or an experienced radio/TV technician for help.

Note

Mobile use of this scanner is unlawful or requires a permit in some areas. Check the laws in your area before using.

The Basics

step 1: install your scanner

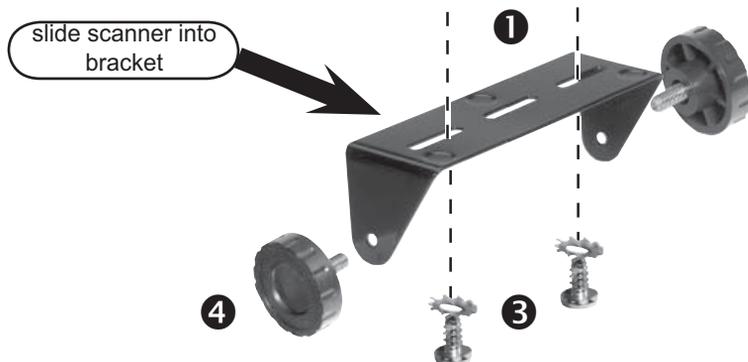
mounting the scanner in your vehicle

Before you mount the scanner, make sure you have all the necessary materials. Then confirm your vehicle has enough room to mount: 2.44" high by 7.06" wide by 6.10" deep (50.8 x 176.5 x 152 mm).

Note

Be sure to avoid obstructions behind the mounting surface.

Follow these steps to mount the scanner in your vehicle. To mount your scanner on top of the dashboard, rotate the bracket so the ears point up. To use on a flat surface, flip down the built-in stand underneath the scanner.

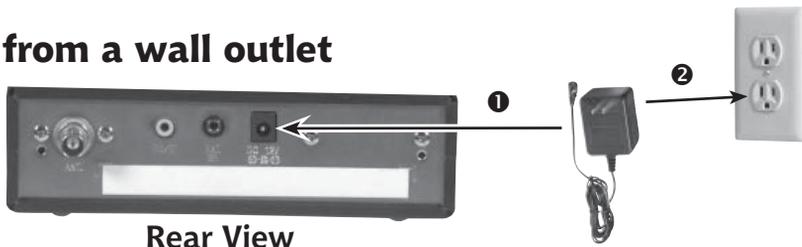


1. Choose a mounting location, then use the supplied mounting bracket as a template to mark the positions for the mounting holes.
2. In the marked positions, drill holes slightly smaller than the supplied screws.
3. Attach the mounting bracket to the mounting location using the supplied screws and lock washers.
4. Attach the scanner to the mounting bracket using the supplied mounting knobs.

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step 2: power your scanner

from a wall outlet



1. Connect the tip of the supplied AC adapter to the DC 12V jack at the rear of your scanner.
2. Plug the AC adapter into your wall outlet.

Notes

*You must use a Class 2 power source that supplies 12V DC and delivers at least 500mA. Its center tip must be set to positive and its plug must fit the scanner's **DC 12V** jack. Using an adapter that does not meet these specifications could damage the scanner or the adapter.*

To prevent electric shock, do not use the AC adapter's polarized plug with an extension cord, receptacle, or other outlet unless you can fully insert the blades to prevent blade exposure.

through your vehicle's ignition (negative ground only)

Note

If you are not experienced in connecting accessories to the vehicle fuse box, use a certified installer.

1. Disconnect the cable from the negative (-) terminal of your vehicle's battery.
2. Ground the black wire of the supplied DC power cord to your vehicle's chassis.



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Note

Be sure the grounding screw makes complete contact with the metal frame of your vehicle.

3. Connect the red wire of the supplied DC power cord to a voltage source that turns on and off with the ignition switch, such as a spare accessory terminal in your vehicle's fuse box.
4. Insert the power cord's barrel plug into the scanner's **DC 12V** jack.
5. Reconnect the cable to the negative (-) terminal of your vehicle's battery.



Rear View

from your vehicle's cigarette lighter

To power your scanner from a 12V power source in your vehicle, such as a cigarette-lighter socket, you need a 12V, 500 mA DC cigarette-lighter adapter (not supplied), available at your local RadioShack store.

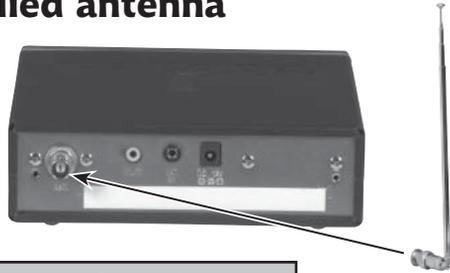
1. Insert the adapter's barrel plug into the scanner's **DC 12V** jack.
2. Plug the adapter's other end into your vehicle's cigarette lighter or power socket.

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step 3: connect your scanner

connecting the supplied antenna

Plug the telescoping antenna into the ANT connector. The antenna length should be as shown below.

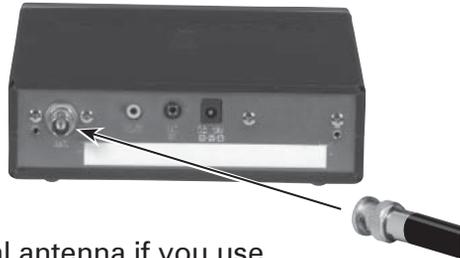


| Frequency | Antenna Length |
|--------------|----------------------------|
| 25-174 MHz | Extend fully (4 segments) |
| 400-512 MHz | Extend 2 segments |
| 806-1300 MHz | Collapse fully (1 segment) |

connecting an external antenna

The ANT jack on the back of the scanner makes it easy to use the scanner with a variety of antennas.

You will need to connect an external antenna when you mount your scanner in the dashboard of your vehicle. You may also want to connect an external antenna if you use your scanner as a base station.



Your local RadioShack store sells a variety of antennas. Always use 50-ohm coaxial cable, such as RG-58 or RG-8, to connect an outdoor antenna. For lengths exceeding 50 feet, use RG-8 low-loss dielectric coaxial cable. If your coaxial cable does not have a BNC connector, you will also need a BNC adapter (not supplied).

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When deciding on an antenna and its location, consider the following:

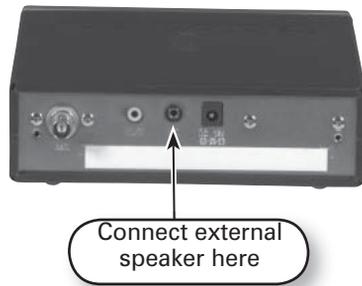
- The location of the antenna should be as high as possible.
- The antenna and antenna cable should be as far as possible from sources of electrical noise (appliances, other radios, and so on).
- The antenna should be vertical for the best performance.

Note

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.

connecting an external speaker

If you mount the scanner in your dashboard or if you use it in a noisy area, you may want to add an external speaker (available at your local RadioShack store) to improve your ability to hear. Plug the speaker cable's 1/8 inch (3.5 mm) plug into your scanner's EXT SP jack.



Note

Connecting an external speaker disconnects the scanner's internal speaker.

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Listening Safely

To protect your hearing, follow these guidelines:

- Do not connect an earphone or headphones to the scanner. The warning alert volume is not adjustable, and damage to your hearing might result if a warning alert sounds while an earphone or headphones is connected.
- 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 you begin listening. After you begin listening, adjust the volume to a comfortable level.
- Once 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.

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step 4: set up your scanner

turn on your scanner

Turn VOL clockwise. The scanner turns on and the ALERT indicator lights for a moment. Then the alert tone beeps and TEST appears. The last setting you selected before turning the scanner off appears.

Note

The alert tone depends on the currently selected setting (see “Setting the Alert Tone Volume”).

set the squelch

Think of squelch as a gate. If the gate is too low (squelch too low), everything (all noise as well as signals) gets through. If the gate is set too high (squelch too high), nothing gets through. If the gate is set just right (the squelch is set properly), just the desired signals get through.

1. To set the squelch, press HOLD/RESUME to stop scanning. HOLD appears. If needed, adjust VOL until you do not hear a signal.
2. Turn SQL fully counterclockwise until you hear a hissing sound. This lowers the “squelch gate,” allowing all signals and noise to get through.
3. Turn SQL clockwise just until the hiss stops. This raises the “squelch gate,” allowing only strong signals to get through. In a city, you may want to adjust the squelch even further clockwise to decrease the range of the highway warning alert signal. This prevents the alert from sounding unnecessarily due to farther, less important sources.

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listen to preprogrammed frequencies

Your scanner comes preprogrammed from the factory with 150 of the most frequently used frequencies stored in Channels 1 to 150 of the private bank. You can scan these frequencies as soon as you turn on the scanner.

common scanner terms

To find a station, you must tune to a **FREQUENCY** (expressed in kHz or MHz). To find active frequencies, use the search function or purchase a frequency reference.

In addition to searching a selected frequency range, you can also search your scanner's service banks. A **SERVICE BANK** is a preset groups of frequencies categorized by the type of services that use those frequencies. Your scanner comes preprogrammed with all the frequencies allocated to the weather, marine, aircraft, rail road, CB, news, and police/fire/emergency services.

When you search and find a desired frequency, you can store it into a **PROGRAMMABLE MEMORY LOCATION** called a **CHANNEL**. Channels are grouped into channel-storage banks called a private bank. Your scanner has 10 **CHANNEL STORAGE BANKS** and each bank has 100 channels. You can scan the channel-storage banks to see if there is activity on the frequencies stored in them.

scanning overview

You can scan in one of four ways:

1. **Highway Patrol/Local Police Scanning** -- when you select a state you want to scan in highway patrol/local police mode, you can scan preprogrammed highway patrol/local police frequencies.

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2. **Service Scanning** -- press FUNC + SVC to select one of the service banks to find an active frequency.
3. **Band Search** -- select a frequency band to search. The search function is different from scanning. It searches for any active frequency step by step within the lower and upper limits of the band. When an active frequency is found, the scanner will stop and stay on that frequency as long as that transmission lasts. If that frequency is interesting to you, press HOLD/RESUME to hold the frequency on the display. Then program it into the private bank you want to store. If you do not want to program that frequency, press HOLD/RESUME or just wait until the transmission ends. The search resumes automatically 2 seconds after the last transmission and looks for more active frequencies.
4. **Private Scanning** -- the private bank is where you program frequencies you want to store into channels. Press PVT to scan frequencies you have programmed in this bank.

To program frequencies, see "Storing Known Frequencies into Channels". When scanning stops on an active frequency, it remains on that channel as long as the transmission continues. When the transmission ends, the scanner will remain on the same channel for 2 more seconds, waiting for a responding transmission. If no responding transmission occurs within 2 seconds, the scanning cycle resumes.

advanced scanner features

In this section of the user's guide, you will discover the wide variety of features that make your scanner flexible and powerful. As you master these features, you will enhance the value and enjoyment of owning your scanner.

channel storage banks

To make it easier to identify and select the channels you want to listen to, you can assign channels to up to 10 channel-storage banks. Each bank has 100 channels. Use each channel-storage bank to group frequencies, such as those for the police department, fire department, ambulance services, or aircraft. For example, the police department might use four frequencies in your town while the fire department uses an additional four. You could program the four police frequencies starting with Channel 1 (the first channel in bank 1), and program the fire department frequencies starting with Channel 101 (the first channel in bank 2).

storing known frequencies into channels

You can locate and store specific frequencies into channels for later use. Frequencies are widely available on the Internet and from the FCC. To assist you in locating a desired frequency from the scanner's wide range, consider using a frequency guide. Excellent references for active frequencies are the RadioShack Police Call Guide, including Fire and Emergency Services, and the Official Aeronautical Frequency Directory. We update these directories every year, so be sure to get a current copy.

Follow these steps to store frequencies into channels.

1. Press FUNC + PGM. PRIVATE and PGM appear.

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2. Enter the channel number where you want to store a frequency and press HOLD/RESUME to select the channel.
3. Enter the frequency you want to store by using the keypad and ./CLR.
4. Press E to store the frequency into the channel.
5. To store the next channel in sequence, press ▲ and repeat Steps 3 and 4.

Notes

To clear a mistake while entering the frequency, repeatedly press ./CLR until the display is cleared.

If you enter an invalid frequency, an error tone sounds and Error appears. To clear the error message immediately, press ./CLR.

Your scanner automatically rounds the entered number to the nearest valid frequency. For example, if you enter 151.473 (MHz), your scanner accepts it as 151.475.

When you enter a frequency into a channel, your scanner automatically turns on the delay function and DLY appears on the display. When delay is turned on, the scanner automatically pauses scanning 2 seconds after the end of a transmission before scanning proceeds to the next channel. To turn delay off or on, press DELAY.

If you enter a frequency that has already been entered elsewhere, the scanner sounds an error tone and displays the channel that was duplicated. If you entered the frequency by mistake, press ./CLR, then enter the correct frequency. To enter the frequency anyway, press E to accept.

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deleting a stored frequency

To delete a stored frequency, select a channel, press 0, and then press E.

Note

Channels with no frequencies are automatically locked out.

locking out channels

You can lock out reception of any channel so it is not scanned during normal scanning. You can also restore the channel to scanning whenever you wish.

Like conventional scanning, you can lock out reception of unwanted traffic. You can lock out up to 100 IDs. Press L/O on the ID you want to lock out.

To restore all locked out IDs, hold down L/O for 2 seconds or change the state code. If you find an interesting ID you want to continue listening to, press HOLD/RESUME. Press HOLD/RESUME to resume scanning.

locking out a channel in hold mode

1. Press HOLD/RESUME and enter the channel number by using the keypad, then press HOLD/RESUME.
2. Press L/O to lock out the channel. L/O appears on the display.

locking out a channel in scanning mode

If the scanner keeps stopping on a particular channel due to noise or frequent transmissions, you may want to keep that channel from being received.

Wait until the scanner stops on the channel, then press L/O. The scanner immediately resumes scanning because the locked out channel is no longer in the scanning sequence.

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Note

Write down your locked-out channels and put them in a convenient place in case you need to restore them.

memory lock

To avoid accidentally programming frequencies and talk group IDs, you can lock the memory with **MEMORY LOCK**. Press FUNC + M-LOCK to activate this feature. M-LOCK appears on the display. If you press E to program memory, Prg-Loc appears. To deactivate memory lock, press FUNC + M-LOCK again.

restoring a locked-out channel in hold mode

1. Press HOLD/RESUME and enter the channel number you want to restore by using the keypad, then press HOLD/RESUME.
2. Press L/O to unlock the channel. L/O disappears.

restoring all locked-out channels

You can restore all locked-out channels in a bank only when a bank is selected for scan. If you have deselected a bank and you want to restore all of its locked-out channels using the steps below, you must repeatedly press PVT until PRIVATE appears and then enter the number of the bank on the keypad.

Note

Make sure the scanner is set to hold mode before restoring all locked-out channels.

1. Press HOLD/RESUME.
2. Hold down L/O for about 2 seconds. The scanner beeps twice when all channels have been restored.

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hold/resume

To stop on a channel during scanning or to resume scanning, press HOLD/RESUME.

direct channel access

To access a specific channel directly, press HOLD/RESUME, use the keypad to enter the channel number, then press HOLD/RESUME again.

Note

You can also press PVT, ▲, or ▼ instead of pressing HOLD/RESUME the second time.

scanning a private bank

You can program frequencies into channels of the private bank. There are 1000 channels in the bank. 150 of the most frequently used frequencies are preprogrammed into Channels 1 to 150. You can scan these frequencies as soon as you turn on the scanner.

- 1 After programming frequencies, press HOLD/RESUME to begin scanning. Or repeatedly press PVT until PRIVATE appears, if the scanner is in another mode. Your scanner scans all the channels upward.
2. The bank number indicators (1-10) selected for scanning appear on the display, and the bank being currently monitored flashes. You can deselect banks from active scanning by entering their numbers on your keypad. The indicator for each deselected bank disappears, and the bank's channels are not scanned.

Note

One bank must always be active. You cannot deactivate all ten banks at the same time. If you try to deselect all the banks, the first bank is automatically selected.

To restore a bank to active scanning, enter the bank's number on your keypad. The bank's indicator will display again.

During normal scanning the scanner skips unprogrammed or locked out channels. When a transmission is received, the scanner stops on that channel. When the transmission ends, scanning resumes automatically.

Notes

You can set the scanner to hold on a frequency for two seconds allowing time for a response. For more information on the delay feature, see "Delay".

During Signal Stalker operation, the delay time is 10 seconds. After 10 seconds have elapsed, or if you press ▲ or HOLD/RESUME, the scanner resumes search.

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priority scan

When priority scan is turned on, your scanner checks the priority channel in the banks you selected every two seconds for activity. If a signal is present on the priority channel, your scanner monitors the channel until the transmission ends, then resumes normal scanning. You can designate one channel in each bank as a priority channel. By default, the first channel in each bank is the priority channel, but you can change this.

To activate Priority Scan (in either the private scan mode or scan hold mode):

1. Press PRI. PRI appears.

Note

If you have locked out all the priority channels, an error message appears when you select priority mode.

2. Press PRI again to deactivate priority scan. PRI disappears.

changing the priority channel

You cannot eliminate the priority channel, but you can change it to any one of the 100 available channels in each bank.

1. Turn off the priority function if it is on.
2. Press HOLD/RESUME.
3. Select a new priority channel by entering the channel number using the keypad. Then, press HOLD/RESUME.
4. Press FUNC + PRI. When the priority channel has been changed, P appears on the display.

Note

Priority in trunking mode works just the same, except you set them for talk group IDs instead of setting priorities for

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channels. The scanner only checks priority talk groups between transmissions.

service scanning

The service scan feature allows you to rotate through the following seven service banks, in addition to the highway patrol and local police banks.

- 1 Weather
- 2 Fire and Emergency Medical Service
- 3 News Media
- 4 CB Band
- 5 Aircraft *
- 6 Railroads
- 7 Marine Band

* Except Aeronautic Radio Navigation (108-117.9875 MHz)

- 1 Press FUNC + SVC to select a service. The current service bank icon appears on the display.
2. Continue pressing FUNC + SVC until your desired service is displayed.
3. After a 3 second delay, scanning begins. If you want to start scanning immediately, press HOLD/ RESUME.

Notes

Press HOLD/RESUME at any time to hold the frequency. Press ▲ or ▼ to move up or down the frequency. If you find the frequency you want to store, while in hold mode you can store the frequency (see "Storing Search Frequencies into Channels").

If you want to remain on a frequency until a responding transmission is received, press DELAY to activate the delay feature (see "Delay").

To skip a frequency, press L/O. You can program up to 100 skip frequencies for services (see "Frequency Skip").

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band search

setting a search band

The scanner can search up to 14 separate frequency ranges to help you discover new stations in your area. To set up a search band, enter into the band search mode.

| Band | Frequency Range (MHz) | Mode | Step | Display |
|------|---|------|----------|-----------|
| 1 | 25.0000 - 27.9950 | AM | 5 kHz | 25-28 |
| 2 | 28.0000 - 29.7000 | FM | 5 kHz | 28-30 |
| 3 | 30.0000 - 49.9950 | FM | 5 kHz | 30-50 |
| 4 | 50.0000 - 54.0000 | FM | 5 kHz | 50-54 |
| 5 | 108.0000 - 136.9875 | AM | 12.5 kHz | 108-137 |
| 6 | 137.0000 - 143.9950 | FM | 5 kHz | 137-144 |
| 7 | 144.0000 - 147.9950 | FM | 5 kHz | 144-148 |
| 8 | 148.0000 - 174.0000 | FM | 5 kHz | 148-174 |
| 9 | 400.0000 - 419.9875 | FM | 12.5 kHz | 400-420 |
| 10 | 420.0000 - 449.9875 | FM | 12.5 kHz | 420-450 |
| 11 | 450.0000 - 469.9875 | FM | 12.5 kHz | 450-470 |
| 12 | 470.0000 - 512.0000 | FM | 12.5 kHz | 470-512 |
| 13 | 806.0000 - 823.9875 849.0125 - 868.9875 894.0125 - 956.0000 | FM | 12.5 kHz | 806-956 |
| 14 | 1240.000 - 1300.000 | FM | 12.5 kHz | 1240-1300 |

1. Press SRCH. The upper and lower limits of the bands currently selected appear.
2. Press ▲ or ▼ to select the band you want to search.

Notes

After about 2 seconds, the scanner will begin searching that band, or press HOLD/RESUME to begin immediately.

You must set the search bands prior to any searching.

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Notes

Your scanner automatically increases its search speed up to 300 steps per second for bands having 5 kHz steps (Hypersearch).

While searching, you can change the search direction by pressing ▲ or ▼.

While private scanning in the trunking banks, press SRCH to set the scanner to ID search mode.

search hold

1. Press HOLD/RESUME at any time to stop the search. To move up or down 1 frequency step, press ▲ or ▼.
2. Press HOLD/RESUME to resume searching.

data skip

A scanner will normally stop on any transmission it receives. This means the scanner will occasionally stop on data signals and unmodulated transmissions.

You can automatically skip many of these types of transmissions during search.

1. To activate the data skip feature, press DATA in scan or search mode. DATA appears on the display.
2. To deactivate the Data Skip feature, press DATA again. DATA disappears.

When data skip is active, your scanner may pause momentarily on an unwanted signal, but will resume searching in two or three seconds. The data skip feature is active, as well as scan mode and service search mode. Data skip does not function while scanning service bands (for AIR, CB, or Weather band), or while in priority scan and trunking modes.

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frequency skip

If a particular frequency continues to interrupt search scanning, it is possible to set the scanner to skip the frequency.

To skip over a frequency, press L/O when stopping on the frequency you want to skip or when in search hold mode.

Note

You can program up to 100 skip frequencies. The 101st skip frequency entered causes the first skipped frequency to unlock.

To restore a locked out/skipped channel.

1. Select the desired frequency by pressing ▲ or ▼ in search hold mode.
2. Press L/O then press HOLD/RESUME. To restore all skipped frequencies, press and hold L/O for 2 seconds in search hold mode.

storing search frequencies

You can quickly store any frequency you find during a search.

1. During search, press HOLD/RESUME. If you want to change the frequency, press ▲ or ▼ to move up or down one frequency step. Then press E. Or when the scanner stops on the frequency you want to store, press E.
2. Select a bank you want to store by using the keypad. The smallest empty channel number and the frequency alternately appear on the display. If necessary, you can also change the channel by pressing ▲ or ▼.
3. Press E.

Notes

If the frequency you want to store already exists in a bank, you will hear an error tone and the other channel location appears on the display.

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After storing the frequency, it moves to the search hold mode.

If there is no free channel, the frequency you want to store will automatically be stored in the first channel in the selected bank.

4. Press HOLD/RESUME to resume searching.

delay

To help prevent missing a reply on a specific channel or frequency, you can program a two second delay into any channel, frequency, service band or band search. When scan or search stops on a channel or frequency, there is a two-second pause before the scanning cycle resumes.

To activate the delay feature (in either scan mode or search mode):

Scan mode - For highway scan mode or private scan mode, when in hold mode, select the desired frequency or channel and then press DELAY. Or when the scanner stops on an active frequency or channel, quickly press DELAY before it continues scanning again.

Search mode - while searching press DELAY. DLY appears on the display.

highway patrol alerts

Most highway patrol vehicles today come equipped with a secondary radio system known as a **MOBILE EXTENDER** or **VEHICULAR REPEATER**. Whenever the dispatcher transmits to any vehicle in the district, the mobile extender in every car within the district is activated. Using a constant **PRIORITY CHECK** of specific frequencies in each state, your scanner recognizes and alerts you to transmissions from “mobile extender” radios, as well as from car-to-car, aircraft to-car and other special-purpose frequencies. You receive an audible tone and visual alert (flashing light) whenever you are within approximately three miles of highway patrol or state police units using a mobile extender unit.

highway patrol/local police scanning

Highway patrol and local police frequencies are preprogrammed on a state-by-state basis. When highway patrol scanning, the highway warning alert is activated.

selecting the state

1. Confirm if **HIWGHWAY**, **PRIVATE**, or **POLICE** appears on the display. If not, press **PVT**.
2. Press **STATE** to select the state you are operating in. See “State Code Order” table on the next page.
3. To step forward through the states (A - W), press **STATE** and then repeatedly press **▲** within 3 seconds. To step backward through the states (W - A), press **STATE** then repeatedly press **▼** within three seconds.
4. To scroll rapidly, hold down **▲** or **▼**. The scanner automatically scans the highway frequencies and **HIGHWAY** appears. The highway patrol priority function is turned on by default. The scanner beeps and the

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ALERT LED lights when it finds a priority frequency. See “Highway Patrol Priority Channels”.

State Code Order

| Number Code | State | Name | Number Code | State | Name |
|-------------|-------|----------------------|-------------|-------|----------------|
| 1 | AK | Alaska | 26 | MT | Montana |
| 2 | AL | Alabama | 27 | NC | North Carolina |
| 3 | AR | Arkansas | 28 | ND | North Dakota |
| 4 | AZ | Arizona | 29 | NE | Nebraska |
| 5 | CA | California | 30 | NH | New Hampshire |
| 6 | CO | Colorado | 31 | NJ | New Jersey |
| 7 | CT | Connecticut | 32 | NM | New Mexico |
| 8 | DC | District of Columbia | 33 | NV | Nevada |
| 9 | DE | Delaware | 34 | NY | New York |
| 10 | FL | Florida | 35 | OH | Ohio |
| 11 | GA | Georgia | 36 | OK | Oklahoma |
| 12 | IA | Iowa | 37 | OR | Oregon |
| 13 | ID | Idaho | 38 | PA | Pennsylvania |
| 14 | IL | Illinois | 39 | RI | Rhode Island |
| 15 | IN | Indiana | 40 | SC | South Carolina |
| 16 | KS | Kansas | 41 | SD | South Dakota |
| 17 | KY | Kentucky | 42 | TN | Tennessee |
| 18 | LA | Louisiana | 43 | TX | Texas |
| 19 | MA | Massachusetts | 44 | UT | Utah |
| 20 | MD | Maryland | 45 | VA | Virginia |
| 21 | ME | Maine | 46 | VT | Vermont |
| 22 | MI | Michigan | 47 | WA | Washington |
| 23 | MN | Minnesota | 48 | WI | Wisconsin |
| 24 | MO | Missouri | 49 | WV | West Virginia |
| 25 | MS | Mississippi | 50 | WY | Wyoming |

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scanning highway patrol, local police, and private frequencies

If the scanner is set to any mode other than the highway patrol, local police, or private mode, press PVT and then press STATE to display only HIGHWAY. Once HIGHWAY appears on the display, use the table below.

| Press these buttons | Action |
|---------------------|--------------------------------------|
| FUNC + HWY/POL (1x) | Scan highway patrol and local police |
| FUNC + HWY/POL (2x) | Scan only local police |
| FUNC + HWY/POL (3x) | Scan only highway patrol |

To scan highway patrol, local police and private frequencies, press PVT. Once both HIGHWAY and PRIVATE appear on the display, use the table below.

| Press these buttons | Action |
|---------------------|---|
| FUNC + HWY/POL (1x) | Scan highway patrol, local police and private frequencies |
| FUNC + HWY/POL (2x) | Scan local police and private frequencies |
| FUNC + HWY/POL (3x) | Scan only private frequencies |
| FUNC + HWY/POL (4x) | Scan highway patrol and private frequencies |

If your scanner is in a mode other than highway patrol, local police, or private, press PVT. The previously selected bank or banks appear. When the scanner receives a signal, scanning stops and the state code and frequency appear. When the transmission ends, the scanner holds for 2 seconds on that frequency for a response. For more information about the delay feature, see "Delay". If there is no response, scanning resumes.

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scan hold

1. When scanning stops on a desired frequency, press HOLD/RESUME to stay on that frequency. When in the hold mode, press ▲ or ▼ to change the frequency. To quickly change frequencies, hold down ▲ or ▼.

Note

If you select a frequency that is a control channel, the scanner might display the active ID (when trunk mode is active).

2. To resume scanning, press HOLD/RESUME.

Note

Highway warning alert does not work while in the hold mode.

highway warning alert

The scanner alerts you when highway patrol/state police units using mobile extenders are within about 3 miles. The ALERT light flashes and the alert tone beeps twice when a signal is received. If a highway warning alert signal is received, ALERT lights steadily for approximately three minutes. Then, if no other mobile extender transmissions are received, ALERT turns off. If more transmissions are received before three minutes have passed, ALERT flashes and the scanner sounds an alert tone.

setting the alert tone volume

Repeatedly press VOL to select loud, medium, or soft. The alert tone beeps and ALERT flashes.

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muting the alert tone

To temporarily mute the alert tone, press MUTE during a highway warning alert. The alert tone stops and MUTE flashes until the alarm cycle finishes (3 minutes). To mute all alerts, hold down MUTE for 2 seconds. The scanner beeps twice and MUTE lights. Mute automatically resets when you turn your scanner off.

adjusting alert

ALERT has three settings: Bright, Dim, and Off. Repeatedly press FLASH to select Bright, Dim or Off. ALERT flashes and the alert tone beeps. If you select Off, ~~FLASH~~ appears to remind you that ALERT is off.

Note

Turning off ALERT and muting the alert tone turns off the highway warning alert.

skip frequencies

To skip a frequency, press L/O. You can program up to 50 skip frequencies into the highway patrol priority frequency channel. You can also program up to 100 skip frequencies for other frequencies (see “Frequency Skip”). If you change the state code, skipped frequencies are cancelled as soon as scanning starts.

highway patrol priority channels

Each state preprogrammed in the scanner contains a number of highway patrol priority channels. Your scanner automatically checks a state’s priority channels every 2 seconds for activity. If there is activity on one of the priority channels, ALERT flashes and the alarm tone beeps (see “Highway Warning Alert”). You will experience a slight interruption in the conversations you hear as the scanner checks the priority channels. You can cancel the priority

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check and the interruptions in the conversations by pressing HOLD/RESUME to hold on the desired frequency.

Notes

The highway warning alert is inoperative while the scanner is on hold.

Be sure to press HOLD/RESUME to return to normal priority scan operation.

You cannot change priority channels, but you can lock out them out using L/O. You can select priority scanning mode by pressing PRI. PRI appears.

In normal Priority Scan mode, the scanner checks the priority frequency every two seconds. Priority only mode is recommended if you scan Arizona, Delaware, Florida, Michigan, Oklahoma, and Wisconsin. Hold down PRI to select priority only mode. PRI flashes.

In Priority off mode, the scanner does not check the priority frequency. PRI will not appear.

trunked highway frequencies

Trunked highway frequencies are preprogrammed for each state. When the scanner finds the control channel data, the scanner begins to find any active IDs. If the scanner finds an ID, it appears on the display and you hear it. If you press ▲ while monitoring an ID, the scanner will check to see if any other IDs are active. If none are active, scanning resumes. When the scanner finds a control channel, it will stay on that control channel until reception of the control channel is lost. To force the scanner off the trunking control channel, press DATA. If you press ▼ while a talk group ID is active, the frequency where the talk group is active flashes on the display. If you hold down ▼ for two seconds, the ID and the frequency alternately appears on the display. To return to the normal display, press ▼ again.

Skywarn

The Skywarn function lets you jump directly to the last channel in memory (Channel 1000) from any mode by pressing FUNC + . The scanner goes into scan hold mode and starts receiving transmissions in the last channel. If no frequency is programmed in the last channel, No Prog appears and the scanner sounds an error tone.

about Skywarn

Skywarn is an organized group of trained weather observers. A Skywarn group exists in virtually every US county with a significant population. During inclement weather, reports made by Skywarn observers include information about:

- pea-sized and larger hail
- wind and wind gusts 40 MPH and greater
- heavy rainfall
- lightning (cloud-to-cloud and especially cloud-to-ground)
- wall clouds seen in severe thunderstorms (which spawn tornadoes)
- severe lowering of a wall cloud
- turbulence in a wall cloud
- funnel clouds
- tornadoes
- high water areas
- downed power lines
- other emergency conditions that affect life or property

Listening to Skywarn broadcasts makes it easy to quickly find out about and prepare for inclement weather conditions in your immediate area, even before your local NOAA weather broadcast and local TV or radio station can announce them.

Enter the local Skywarn frequency for your area into Channel 1000 on your scanner. Then, listen to Skywarn first when severe weather threatens. Listen to NOAA: for weather alerts

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and warnings, watch box notices, and weather forecasts. Listen to Skywarn to hear trained observers in your vicinity call in official reports to a “net control” station which relays those reports to NOAA and other emergency agencies.

Most importantly, you get Skywarn reports directly from trained observers - that means you get them several minutes before they can be relayed for broadcast by NOAA and as much as 5 or 10 minutes sooner than you will hear them on local TV or radio! Those few minutes can be worth a lot when it comes to deciding if your family needs to take cover.

Note

If you tune to a Skywarn frequency when the Skywarn net is not active, you may hear nothing, or you may hear amateur radio operators talking on a local repeater system.

NWR SAME

During weather mode, press FUNC +WX ALT to enable NWR SAME alert. When WX alert is on, ALERT lights and the audio mute is set on.

Press FUNC + WX ALT to turn off the NWR SAME alert.

If the scanner receives a SAME event code from the local weather service, it sounds an alert and displays the description for any alert received. Then, audio mute turns off and ALERT blinks.

The scanner displays the following messages:

Warning : L1
Watch : L2
Advisory : L3
WX alert (1050 Hz): WXA

During an alert, press any key to stop the alert. If you do not press any key, the scanner continues sounding the alert beep.

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Although the alert beep (warning beep, watch beep, advisory beep) sounds at short intervals for 5 minutes. After that, the emergency beep will sound at intervals of 10 seconds.

programming a FIPS code

To specify a county, SAME uses a standard established by the US Census bureau, called FIPS.

The format of a FIPS code is:

PSSCCC, where...

P = area subdivision (0=entire area)

SS = State code (00=all states)

CCC = County code (000=all counties)

For example, the FIPS code for Tarrant County, Texas is:

048439 (48=Texas; 439=Tarrant County).

Some counties are further subdivided, in which cases, the first digit will be 0 for all subdivisions in the county and each subdivision will be labeled 1-9.

To program your scanner to alert you when the weather service issues an alert, you must set the scanner to the alert mode, and then leave the scanner monitoring the weather service. You cannot scan frequencies and monitor for weather alerts at the same time.

To limit weather alerts to a specific area, you must also program in the FIPS code(s) for the area(s) you want to receive alerts. The scanner can be set to either, alert for all areas, or only the areas you have programmed.

programming FIPS

During weather scan, hold mode, press FUNC + PGM. The scanner sends itself into FIPS programming mode. If the scanner is set to alert for all FIPS, ALLFIPS appears on the display. If the scanner is set to alert only the area you have

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programmed, F1 appears.

Press ▲ or ▼ to change the displayed FIPS code from F1 to F15. If a FIPS code is not programmed, ----- appears.

Use the keypad to enter the FIPS code. Press ./CLR to cancel an inputted FIPS code. Press E to store the FIPS code. Press 0 then E to clear a FIPS code. ----- appears. If an invalid value has been inputted, the FIPS code is cleared.

To set the scanner so it alerts you when you receive any FIPS code, press ▲ or ▼ to move ALLFIPS. Then press E. Then go to WX hold mode.

To set to alert only the area you have programmed, press ▲ or ▼ to move F1 to F15. Then press E. Then go to WX hold with WX alert.

Press FUNC + WX ALT to exit NWR SAME alert mode.

Signal Stalker

Your scanner's Signal Stalker feature lets you set the scanner so it detects and then displays the frequency of a nearby strong radio transmission. You can set the scanner so Signal Stalker works "in the background" while you are scanning other frequencies; turn off normal scanning while Signal Stalker works; or turn off Signal Stalker and use the scanner normally. You can set the scanner so it alerts you when Signal Stalker finds a frequency. You can also set the frequency band where you want the scanner to look for transmissions. You can also turn on the pager screening feature so the scanner ignores common pager frequencies.

Notes

Signal Stalker works well for locating the source of strong local transmissions, such as mobile and handheld two-way radios in areas with no other strong transmission sources; however, if you are in an area with many transmission sources (such as pager radio transmitters, multiuse radio towers, traffic control devices, etc.), Signal Stalker might not find the transmission you are searching for, or it might find a transmission other than the one you are searching for. You can screen unwanted transmissions by pressing L/O to lock them out. See "Frequency Skip" for more information.

Signal Stalker cannot detect satellite dishes or any transmitter with a frequency above or below the frequency ranges listed under "Setting the Signal Stalker Options".

Signal Stalker works better with some types of transmissions than others. It might not correctly display frequency information for transmitters using a highly directive antenna (such as an amateur radio beam antenna), if there are many transmitters operating at

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the same time in the same area, or if the transmitter is a broadcast television station.

setting the signal stalker options

1. Press FUNC then press and hold  for 2 seconds. One of the following signal stalker options appears:
 - S-S.bnd: Lets you select the signal stalker band.
 - S-S.Alt: Lets you select the signal stalker alert settings.
 - S-S.PS: Lets you select the pager screen settings.
2. Repeatedly press  or  to select the option you want, then press E. If you selected S-S.bnd, one of the following band names appears:
 - Bnd Lo: VHF Low Band (25.0000 - 54.0000 MHz)
 - Bnd Air: AIR Band (108.0000 - 136.9875 MHz)
 - Bnd Hi: VHF High Band (137.0000 - 174.0000 MHz)
 - Bnd UHF: UHF Band (400.0000 - 512.0000 MHz)
 - Bnd 800: 800MHz Band (806.0000 - 956.0000 MHz)If you selected S-S.Alt, skip to Step 5. If you selected S-S.PS, skip to Step 7.
3. Repeatedly press  or  until the band you want to search appears, then press E to select it. Otherwise, press ./CLR if you do not want to select it. The scanner displays the following options:
 - Lo On or Lo OFF
 - Air On or Air OFF

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- Hi On or Hi OFF
 - UHF On or UHF OFF
 - 800 On or 800 OFF
4. Repeatedly press ▲ or ▼ until the option you want appears, then press E to select it. Otherwise, press ./CLR if you do not want to select it. Then skip to Step 9.
 5. Press E while S-S.ALT appears. One of the following alert options appears:
 - ALT BEEP: The scanner beeps when a signal stalker signal is detected.
 - ALT OFF: The scanner does not provide any alert when a signal stalker signal is detected.
 6. Repeatedly press ▲ or ▼ until the option you want appears, then press E to select it. Otherwise, press ./CLR if you do not want to select it. Then skip to Step 9.
 7. Press E while S-S.PS appears. One of the following options appears:
 - PS On: The scanner ignores common pager frequencies.
 - PS OFF: The scanner does not screen common pager frequencies.
 8. Repeatedly press ▲ or ▼ until the option you want appears, then press E to select it. Otherwise, press ./CLR if you do not want to select it.
 9. When you select the option, press ./CLR to exit the option mode.

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using signal stalker

To turn on Signal Stalker, turn SQL fully clockwise, then press FUNC +  once except in WX search, band select, or program mode.  appears. Every 2 seconds, the scanner searches for frequencies in the range you specified in "Setting the Signal Stalker Options".

When the scanner finds a frequency, it sounds the alert you specified in "Setting the Signal Stalker Options", and Found flashes. Press any key to confirm the displayed frequency. Press HOLD/RESUME to resume scanning.

To turn on Signal Stalker and turn off normal scanning, press FUNC +  twice.  and - - - - - flash.

To turn off Signal Stalker and turn on normal scanning, press FUNC +  three times.  disappears.

trunk tracking

Your scanner tracks three major types of trunked radio systems. These systems are described here.

- MOTOROLA - Including Type I, Type II, Hybrid, SMARTNET, and Privacy Plus. Motorola systems are widely used by public safety and business users. Most are on the 800 MHz band. Recent systems appear on other bands. (See "Tracking Motorola Systems").
- EDACS - Including "Wideband" 9600 baud and SCAT. "Wideband" systems are mostly on the 800 MHz band, and are used by public safety, utilities, and business users. Some systems use VHF and UHF bands. (See "EDACS Tracking"). SCAT systems are single channel EDACS systems, and are mainly used in the midwestern United States.
- LTR - These systems are mostly for business users, and found on the UHF, 800 and 900 MHz bands. (See "Tracking LTR Systems").

When tracking these types of systems, remember these important points:

- Your scanner defaults to monitor Motorola Type II 800; however, you can change this if the system in your area is different. (The types of systems are discussed below.)
- If you have internet access, you can visit www.trunkscanner.com for additional information and for current news and frequency information about trunk tracking scanning.

setting the squelch

For trunked reception, a good squelch setting is in the center of the range with the color marker pointing up. If it is set

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too high, it could prevent your scanner from locking on the control channel reliably. If it is set too low, it will slightly delay finding the control channel. The best setting is the same as for conventional reception and is critical for monitoring trunked systems.

programming trunking frequencies

There are three steps for programming a trunked system:

1. Program the Trunk Type - enter the type of trunking system the scanner will track -- Motorola Type II, Type I, EDACS, LTR, etc.
2. Program the trunked frequencies - within a trunked system, the frequencies are shared among all users. These frequency groups are called talk groups.
3. Program the Talk Groups - Within a trunked system, each agency or department is assigned a talk group ID. This ID must be programmed into the scanner in order for it to monitor that specific agency or department.

Before you start programming your scanner to track a trunked system, consider the following:

- You can only program one type of trunking system in each bank of your scanner.
- Trunked frequencies must be entered while in the trunk programming mode.
- If you're in the trunk programming mode, you cannot select channels in other banks. For example, if you are programming Bank 4, you can only select channels 301-400 by pressing ▲ or ▼.

Note

If you are programming an EDACS trunked system, you must enter the frequencies in a specific order. Check www.trunkscanner.com for details.

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STEP 1: Selecting Trunking System Type

The first step in a trunk tracking system is storing the frequencies in one of the ten available banks in your scanner.

1. Press TRUNK in conventional programming mode. BANK and TRUNK will begin to flash on the display.
2. Select the bank in which you want to store the frequency by using the keypad.
3. Select the system you want to track by pressing ▲ or ▼, then press E.

List of trunking systems are as follows:

E2-800 (Motorola Type II 800 MHz)

E2-Hi (Motorola Type II VHF 136-174 MHz) *

E2-UHF (Motorola Type II UHF 406-512 MHz) *

E1 (Motorola Type I and Hybrid) **

Ed (EDACS Wide Band: 9600 band)***

Ed-SCt (EDACS Scat)

Lt (LTR)

** Requires programming of a base and spacing frequency offset channel (See "Setting the Base, Spacing Frequencies and Offset Channel for Motorola VHF/UHF Trunked Systems").*

*** Requires programming of a fleet map (See "Programming a User Fleet Map").*

**** Requires programming of frequencies in exact order and location.*

STEP 2: Programming Trunking Frequencies

1. Select Prog F and press E.
2. Use the keypad and ./CLR to enter a frequency for the trunked system. For example, enter 851.0125.

Note

To clear a mistake while entering a frequency, press ./CLR twice, and start over.

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3. Then, press E. E (EDACS), M (Motorola) or L (LTR) appears depending on the trunked system selected. If the frequency is out of the range of the system chosen in this step, you will hear an error tone, the channel number flashes and an error message appears on the display.
4. Use the ▲ or ▼ key to select the next channel in the bank.
5. Repeat Steps 2 through 4 until all frequencies have been entered.
6. Press SRCH to begin searching the bank you've programmed.

Then select the programmed bank by using the keypad.

Notes

To lock out the keypad to prevent reprogramming of talk groups, you can use memory lock (Refer to "Memory Lock").

If you want to return to the previous menu screen, press HOLD/RESUME in the trunk programming mode.

programming id scan lists manually

When you designate a bank as a trunking bank, your scanner sets up 10 scan lists, which are simply lists used to store your favorite talk group IDs. Each list can contain up to 10 IDs, so you can store a total of 100 IDs for each trunking bank. If you use all the banks for trunking, 1,000 IDs will be available.

Once IDs are stored in lists, you can scan them like you scan conventional frequencies.

1. Select the trunking programming mode and the bank you want to change.
2. Use ▲ or ▼ to choose trunk system, and press E.
3. Use ▲ or ▼ to choose Prog ID, and press E.

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4. Press ▲ or ▼ to select the scan list location.
5. Enter the talk group IDs for each trunk system.

Motorola talk groups

To enter a Type 2 Talk Group ID:

1. Enter the ID you want to store by using the keypad.
2. Press E.

To enter a Type 1 ID:

For a Type I ID, enter the block number, fleet number and subfleet number to form the talk group ID number. For more information, see "User Defined Fleet Maps".

1. Enter the ID you want to store by using the keypad (ID = Block number + Fleet number + ./CLR + Subfleet number).
2. Press E.

EDACS talk groups

To enter a Full EDACS ID:

1. Enter the Agency number.
2. Press ./CLR to enter the "dash".
3. Enter the fleet number and subfleet number.
4. Press E.

To enter a Partial EDACS ID:

1. Enter the agency number you want to store. Press ./CLR to enter the "dash".
2. Press E.

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Or you can program all the talk group numbers for one fleet of an agency.

1. Enter the agency number.
2. Press ./CLR to enter the “dash”.
3. Enter the fleet number.
4. Press E.

Notes

Remember the AFS format allows you to enter full or partial EDACS IDs for powerful flexibility in all modes. Be sure to read the section “An EDACS Trunked System” to learn how this works.

The scanner defaults to “AFS” talk group displays for EDACS only.

LTR talk groups

To enter an LTR ID:

For a LTR ID, the area code, home repeater number and ID make up the talk group ID. See “LTR Tracking” for more information.

1. Enter the area code.
2. Enter the home repeater number.
3. Enter the ID you want to store.
4. Press E.

Note

To clear a stored ID while entering an ID, press 0 and E successively, and start over.

receiving trunked systems

Before you start receiving trunked systems, you have to properly program all the frequencies for a trunked system.

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Press TRUNK to start receiving trunked system information. You can receive the trunked system using the ID Scan Mode. You can receive those talk groups that you store in a scan list using ID Search Mode.

You can hear all system talk group activity (except unit-to-unit calls). This mode lets you find unknown talk groups. Your scanner defaults to receive the talk groups in ID search mode. Press SRCH in the ID search mode and the scanner will move to the ID scan mode. If you press SRCH again, it will return to the ID search mode.

ID scan mode

When your scanner finds the control channel data, it begins trunking and ID SCAN scrolls on the display until the scanner finds an ID. If you have not programmed any IDs, the scanner cannot stop on an active conversation.

To remove a scan list from active scanning, press 1-9, 0 (the number of the scan list). The scan list indicator turns off, and the IDs in that list are not scanned.

To restore a scan list to active scanning, press its number again.

Note

One scan list must always be active. If you try and deactivate all the scan lists, scan list 1 will automatically be active.

ID scan hold mode

You can press HOLD/RESUME to hold an ID. HOLD and the ID will appear. To resume scanning, press HOLD/RESUME. To move the specific location, press ▲ or ▼ or, using 1 through 9, 0 and pressing HOLD/RESUME, you can directly access the specific location you want to which you want to move. The first number represents the scan list number and the second number represents the memory location number. To access the location number 10, use 0.

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direct entry id hold mode

Enter the ID you want to receive by using 1 through 9, 0 (or ./ CLR) and press ▼, and you can listen to a specific ID (without storing ID to the list).

ID search mode

Once you have programmed all the frequencies for a trunked system, search will let you immediately start hearing transmissions. When in the trunking mode, press SRCH and the scanner begins to find any active IDs. When the scanner finds the control channel data, the scanner begins trunking, and -- --- appears on the display until the scanner finds an ID. If the scanner does not find an ID in about 1 second, it moves on to conventional channels in the same bank or to the next active bank. This may happen a few times (if the signal is weak) when the scanner comes around to that bank again. The scanner will recognize the control channel was lost when no ID can be found, even if the scanner tries ten times.

The scanner will begin to search for the control data channel. If it finds any non-locked-out IDs, you will hear it. You will then hear any replies that follow within the specified periods.

After that, the scanner will move on and not continuously search the system for additional IDs (on busy systems you would never leave the system if this were the case). If you press ▲ while monitoring an ID, the radio will check if any other IDs are active (it will disregard the ID you just left), and none are active, the scanner resumes searching.

ID search hold mode

If you hear an interesting ID during search mode and want to continue listening to it, press HOLD/RESUME. HOLD and the ID appear.

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programming scan lists during search

To select a scan list location and store an ID during search mode, follow these steps:

1. When your scanner stops on an ID you want to store, press HOLD/RESUME.
2. You can change the scan list memory location by using the ▲ or ▼ key. Then press E.
3. Press SRCH to return to trunk tracking search mode.

deleting a stored ID

1. Press HOLD/RESUME in the ID scan mode.
2. Select the scan list location you want to delete by using the ▲ or ▼ key.
3. Press 0.
4. Then press E.

direct entry ID hold mode

In hold mode (ID scan hold or search hold), enter the ID you want to receive by using 1 through 9, 0 (or ./CLR) and press ▼, and you can listen to a specific ID (without storing that ID to a list).

ID monitor mode

If you press and hold SRCH for 2 seconds, until you hear two short beeps, you will select the ID monitor mode. SRCH begins flashing and all active talk group IDs appear. When you monitor IDs, any IDs you have locked out also appear. You will not hear conversations in this mode, but this is an excellent way to determine which talk groups are the most

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active. Press ▲ to continue searching the entire trunked system.

ID lockout

Like conventional scanning, it is possible to lock out unwanted traffic. This is particularly important in trunked systems because in many areas, water meters, door alarms, traffic signals, and other mechanical devices are assigned IDs just like other users. Also, some departments scramble or encrypt their communications, and you may want to lock out these unintelligible broadcasts.

To lock out an ID, press L/O on the ID you want to lock out. The ID is locked out. You can lock out up to 100 IDs. An error message (Full) appears when you try to register the 101st lock out.

reviewing ID lockout

You can check all IDs already locked out.

1. Select the trunking programming mode and the bank you want to review.
2. When the selected trunked system is displayed, press E.
3. Use ▲ or ▼ to choose Id Lout, and press E.
4. Press L/O, the ID is unlocked and the next locked ID displays.
5. If you unlocked all locked IDs, the scanner displays Lo Non.

restoring locked-out IDs

To restore a single ID, while in locked out review mode, select the locked out ID you want to restore and press L/O. The ID is restored and L/O disappears. To restore all locked out IDs in a

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bank once, while in locked out review mode, hold down L/O for 3 seconds. All locked out IDs in a bank are restored.

setting the delay mode for trunking mode

A default delay of 2 seconds is automatically set for each talk group for ID scan mode and ID search mode. To set the delay feature on or off, press DELAY while trunking. DLY will appear or disappear, depending on your setting.

trunking frequency confirmation

You can check the frequency while a talk group ID is active.

Press the ▼ key, and the active frequency on which the talk group is transmitting will flash on the display. Or press and hold the ▼ key for 2 seconds. The ID and the frequency alternately appear on the display. To cancel this mode, press the ▼ key again.

Note

This feature is applied to ID scan mode and ID search mode.

setting priority in trunking mode

You can set priority in your scan lists, just as you do in your conventional ones. The default setting for the priority ID is the first location in each scan list. You can set the priority by pressing and holding PRI for 2 seconds in ID scan hold mode. After you've set up your scan list, press PRI to activate it. It is very similar to conventional priority although there is no "interrupt" during the transmissions. Priorities are checked in between transmissions.

With priority on, you can hold on an ID in your scan list, such as scan list 3, memory location 7, and the scanner will check all the priorities in all the active scan lists in between any transmissions on the ID on which you're holding. The lowest numbered priority will be checked first. For example, the

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priority ID in List 1 will be checked before the priority in list 2, etc.

Note

This function does not work in LTR tracking.

Priority scan does not operate when priority IDs are locked out.

moving between scan list memories

There are two ways to move through your scan list memories.

1. Press HOLD/RESUME in the ID scan mode and press ▲ or ▼ to move up or down.
2. Press HOLD/RESUME in the ID scan mode, press 0-9 (scan list number), then press 0-9 (memory position). For example, to move to scan list 4, memory position 10, press: HOLD/RESUME, 4, 0, HOLD/RESUME.

multi-track

Your scanner allows you to track more than one trunking system at a time. Here are some highlights of this feature:

- You can actually track up to 10 trunking systems at one time.
- You can trunk scan, or search and scan conventional frequencies at the same time.
- You can program conventional frequencies in the same bank as trunking systems.

After the scanner finishes checking a trunked system for activity, it will conventionally scan the other frequencies in the bank (remember, only trunking frequencies are programmed in trunk mode).

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To scan a mix of trunking and conventional banks, select the banks you wish to be active, and then press TRUNK. The scanner will instantly begin scanning. You can switch to search mode and the scanner will search for any active IDs on the system.

Note

To switch ID scan or ID search, press SRCH in the trunked system.

about multi-track

When more than one trunk system is active (for example two or more trunked systems or a trunked system and one or more conventional frequencies), the scanner jumps between systems/frequencies as follows:

TRUNK SCAN: The scanner moves to a trunked system and looks for IDs in your scan list(s) for up to 1 second. If it finds no activity on your programmed talk groups, it moves on to conventional channels in the same bank or to the next active bank. If the scanner finds a talk group in one of your active scan lists, you will begin to hear that communication and the scanner will display the proper talk group number. When the communication ends, the scanner will wait for 2 seconds for any further replies and, if none, the scanner will move to the conventional channels in the same bank or to the next bank.

The scanner will not look for any other IDs within the same trunked system (as this would slow the scan process). If you press the ▲ key while you are listening to one ID, the scanner will check to see if another ID in your scan list is active. It will disregard the ID which you were just monitoring.

TRUNK SEARCH: This mode works similarly to trunk scan. If the scanner finds any (nonlocked-out) ID when it checks the control channel, you will hear it. You will then hear any replies that follow within 2 seconds. After that, the scanner moves on and does not continuously search the system for additional IDs (on busy systems you would never leave the

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system if this were the case). If you press the ▲ key while monitoring one ID, the radio will check if any other IDs are active (it will disregard the ID you just left), and if none are active, it will move on.

EDACS tracking

Your scanner is now able to track EDACS trunked systems. Until now, these widely used systems have been almost impossible to monitor with a conventional scanner. With your scanner, listening to EDACS is remarkably easy, and perhaps even easier than conventional scanning.

EDACS systems use “Transmission Trunking”, which means that each transmission is assigned a new frequency.

As the conversation moves through the system’s frequencies, your scanner automatically follows it. Your scanner can clearly and automatically follow this talk group, or any other, as you select. EDACS systems are organized in a logical way that keeps related talk groups together. Your scanner is designed to take maximum advantage of this organization to make your scanning easy. It lets you zero in on just the part of the system you want to hear, whether it is an individual channel, an entire department or city.

programming EDACS system frequencies

When you program EDACS frequencies, it is critical that you store each one in the correct location. By the nature of EDACS systems this is necessary for tracking. This often is not the frequency order, so you must be sure you have the right sequence. Sources for this information can be found at www.trunkscanner.com.

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an EDACS trunked system

Your scanner shows EDACS talk groups in AFS (Agency-Fleet-Subfleet) format. This helps you see, at a glance, who you are monitoring. And with the partial-entry feature, you can easily include nearby, related channels in the same fleet or agency. You can just as easily exclude entire unwanted fleets and agencies.

When in search mode, with the system frequencies programmed, and your scanner locked to the control channel, you can select a desired city by keying in the agency part of the AFS talk group. When you hear an interesting talk group, in hold mode capture it to your scan list by pressing E during the transmission. Or hold on it by pressing HOLD/RESUME.

Your scanner can also work in decimal format. Talk group 03-62 in decimal format is 402. But decimal format does not give you any information about the system hierarchy. Decimal is useful if you need to work from decimal talk group lists.

special EDACS features

AFS partial entry

AFS is a method of encoding EDACS talk groups. AFS stands for "Agency-Fleet-Subfleet". AFS talk groups are used in all EDACS reception -- in ID search, ID lockout and ID scan. The powerful AFS partial entry feature designed into the scanner lets you use either a complete talk group code, or just the most significant part.

This feature lets you expand or narrow searching and scanning to one of 4 levels. By entering only the desired part of an AFS talk group, you can select 2048 talk groups, 128 talk groups, or 8 talk groups. For example, you could program every talk group in a police department with just 4 key presses. You can use the AFS partial entry feature

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anywhere you need to specify EDACS talk groups.

Your scanner can also enter or display EDACS talk groups in decimal format (0-2047).

1. Select the trunking programming mode and the bank you want to change.
2. Press ▲ or ▼ to select EDACS, then press E.
3. Press ▲ or ▼ to select AFS, then press E.
4. Press ▲ or ▼ to select AFS ON or AFS OFF, then press E.

You can use this feature to translate decimal talk group lists to the much more powerful AFS format. It is very easy to use. Be sure to become familiar with AFS partial entry, and your scanning will become far more flexible and efficient.

EDACS ID range search

When your scanner searches EDACS talk group IDs, the scanner can search within a range you set for agency or fleet listings. For example, if you want to search within the 01 agency, while in hold mode press 0, 1, ./CLR then SRCH. Or if you want to search within the 01 agency and 01 fleet, while trunking press 0, 1, ./CLR, 0, 1, then SRCH.

To stop the ID range search, press ▲ while the talk group is deactivated.

EDACS ID blackout

EDACS blackout can be used only with AFS and EDACS systems. This feature lets you lock out entire Agencies or Fleets, not just individual talk groups. To use this, just enter the Agency-part, or the Agency-Fleet part, of the talk group code and press L/O. For example, to block out agency 04 in trunk search, press HOLD/RESUME, 0, 4, ./CLR, and then L/O.

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EDACS SCAT

With the EDACS SCAT feature, the data stream transmissions will be eliminated, allowing you to clearly monitor the voice communications on EDACS SCAT systems.

To monitor EDACS SCAT systems you only need to program the frequency in the trunk tracking programming mode. You do not need to enter group IDs.

tracking LTR systems

LTR (Logic Trunked Radio) systems are trunking systems used primarily by business or private communications service providers, such as taxicabs, delivery trucks, and repair services. These systems encode all trunking information as digital subaudible data that accompanies each transmission. Users on an LTR system are assigned to specific talk groups, which are identified by the radio as six digit numbers.

These numbers are in the form AHHUUU, where:

A= Area code (0 or 1)

H= Home repeater (01 through 20)

U= User ID (000 through 254)

When the scanner receives a transmission on a channel set to the LTR mode, it first decodes the LTR data included with the transmission. In the ID Search mode, the scanner stops on the transmission and displays the talk group ID on the display. In the ID Scan mode, the scanner only stops on the transmission if the LTR data matches a talk group ID that you have stored in the bank's talk group ID list and have not locked out.

LTR systems are frequently programmed so that each radio has a unique ID code.

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tracking Motorola systems

There are really two types of Motorola trunking systems. These are usually referred to as Type I and Type II systems. Type I only occurs on some 800 MHz systems. All VHF and UHF trunking systems use Type II. One important distinction between these two systems is the amount of data transmitted by each radio when its push-to-talk button (PTT) is pressed. Every radio in a trunked system is assigned a unique ID so the central site computer can identify it when it's used. Both Type I and Type II systems place radios (or radio users) into groups, called talk groups, and these talk groups are also assigned unique IDs. Some radios have access to only one talk group, while others have access to many talk groups. The talk group(s) each radio can access is called the radio's affiliation(s). In a Type II system, when someone uses their radio, only the radio ID is transmitted when PTT is pressed, whereas in a Type I system the radio ID and its current affiliation are both transmitted when PTT is pressed.

Why the difference? Type II systems are slightly more advanced because the central computer maintains a database which is used to determine each radio's affiliation(s).

Changes to a Type II system are easier than Type I because the system manager only needs to update the database instead of reprogramming individual radios.

Another difference between the systems is that Type I systems are arranged in a fleet-subfleet hierarchy. For example, it is possible for a city using a Type I system to designate 4 fleets, each with 8 subfleets. Their fleets might be the police department, the fire department, utilities, and administration. The police may decide to further divide their fleet into subfleets such as dispatch, tactical operations, detectives, north, south, east and west side patrols, and supervisors. All the available police radios would then be assigned to one of the police subfleets. Determining the

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exact fleet-subfleet hierarchy for a particular area is referred to as fleet map programming, which is discussed further in this manual.

The disadvantage of a Type I system is that when PTT is pressed, the brief burst of data must contain the radio's ID and its fleet and subfleet. This is three times the amount of data a Type II radio sends, and as a result Type I systems usually accommodate fewer users than Type II systems.

Even though there are many Type II systems, Type I systems are still in use. There are also Hybrid systems which are a combination of both Type I and Type II. Your scanner defaults to monitor Type II systems, but it is possible to select a preprogrammed fleet map or create a custom fleet map for your area. For VHF and UHF Type II trunking systems, you will need to know the base, spacing frequencies and offset channels. See "Setting the Base, Spacing Frequencies and Offset Channel for Motorola VHF/UHF Trunked Systems" for details.

fleet map programming

If you have programmed a trunk tracking bank for Motorola, press TRUNK to start multi-track, and you will see user IDs on the display. Since the scanner defaults to Type II systems, all the IDs will appear as numbers; however, if you notice a mix of odd and even user IDs, for example 6477, 2560, 6481, 6144, 1167, etc., then you are probably monitoring either a Type I or a Hybrid system.

You may also notice that you are missing responses when you hold on an active ID. Unlike Type II, Type I/Hybrid systems require a fleet map that sets specific fleet-subfleet parameters. It is easy to select a fleet map for your scanner; what is not always easy is selecting or programming a map that matches your particular area.

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There are 16 preset fleet maps from which you can choose, and these are usually a good place to start when setting up a Type I/Hybrid trunk tracking bank. If you choose a preset map and still have difficulty following complete conversations, then you'll have to program your own fleet map.

Preset Fleet Maps

E1P1

| Block | Size Code |
|-------|--------------|
| 0 | SIZE CODE 11 |
| 1 | SIZE CODE 11 |
| 2 | SIZE CODE 11 |
| 3 | SIZE CODE 11 |
| 4 | SIZE CODE 11 |
| 5 | SIZE CODE 11 |
| 6 | SIZE CODE 11 |
| 7 | SIZE CODE 11 |

E1P2

| Block | Size Code |
|-------|-------------|
| 0 | SIZE CODE 4 |
| 1 | SIZE CODE 4 |
| 2 | SIZE CODE 4 |
| 3 | SIZE CODE 4 |
| 4 | SIZE CODE 4 |
| 5 | SIZE CODE 4 |
| 6 | SIZE CODE 4 |
| 7 | SIZE CODE 4 |

E1P3

| Block | Size Code |
|-------|----------------|
| 0 | SIZE CODE 4 |
| 1 | SIZE CODE 4 |
| 2 | SIZE CODE 4 |
| 3 | SIZE CODE 4 |
| 4 | SIZE CODE 4 |
| 5 | SIZE CODE 4 |
| 6 | SIZE CODE 12 |
| 7 | (SIZE CODE 12) |

E1P4

| Block | Size Code |
|-------|----------------|
| 0 | SIZE CODE 12 |
| 1 | (SIZE CODE 12) |
| 2 | SIZE CODE 4 |
| 3 | SIZE CODE 4 |
| 4 | SIZE CODE 4 |
| 5 | SIZE CODE 4 |
| 6 | SIZE CODE 4 |
| 7 | SIZE CODE 4 |

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E1P5

| Block | Size Code |
|-------|----------------|
| 0 | SIZE CODE 4 |
| 1 | SIZE CODE 4 |
| 2 | SIZE CODE 12 |
| 3 | (SIZE CODE 12) |
| 4 | SIZE CODE 4 |
| 5 | SIZE CODE 4 |
| 6 | SIZE CODE 4 |
| 7 | SIZE CODE 4 |

E1P6

| Block | Size Code |
|-------|----------------|
| 0 | SIZE CODE 3 |
| 1 | SIZE CODE 10 |
| 2 | SIZE CODE 4 |
| 3 | SIZE CODE 4 |
| 4 | SIZE CODE 12 |
| 5 | (SIZE CODE 12) |
| 6 | SIZE CODE 12 |
| 7 | (SIZE CODE 12) |

E1P7

| Block | Size Code |
|-------|--------------|
| 0 | SIZE CODE 10 |
| 1 | SIZE CODE 10 |
| 2 | SIZE CODE 11 |
| 3 | SIZE CODE 4 |
| 4 | SIZE CODE 4 |
| 5 | SIZE CODE 4 |
| 6 | SIZE CODE 4 |
| 7 | SIZE CODE 4 |

E1P8

| Block | Size Code |
|-------|-------------|
| 0 | SIZE CODE 1 |
| 1 | SIZE CODE 1 |
| 2 | SIZE CODE 2 |
| 3 | SIZE CODE 2 |
| 4 | SIZE CODE 3 |
| 5 | SIZE CODE 3 |
| 6 | SIZE CODE 4 |
| 7 | SIZE CODE 4 |

E1P9

| Block | Size Code |
|-------|-------------|
| 0 | SIZE CODE 4 |
| 1 | SIZE CODE 4 |
| 2 | SIZE CODE 0 |
| 3 | SIZE CODE 0 |
| 4 | SIZE CODE 0 |
| 5 | SIZE CODE 0 |
| 6 | SIZE CODE 0 |
| 7 | SIZE CODE 0 |

E1P10

| Block | Size Code |
|-------|-------------|
| 0 | SIZE CODE 0 |
| 1 | SIZE CODE 0 |
| 2 | SIZE CODE 0 |
| 3 | SIZE CODE 0 |
| 4 | SIZE CODE 0 |
| 5 | SIZE CODE 0 |
| 6 | SIZE CODE 4 |
| 7 | SIZE CODE 4 |

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E1P11

| Block | Size Code |
|-------|-------------|
| 0 | SIZE CODE 4 |
| 1 | SIZE CODE 0 |
| 2 | SIZE CODE 0 |
| 3 | SIZE CODE 0 |
| 4 | SIZE CODE 0 |
| 5 | SIZE CODE 0 |
| 6 | SIZE CODE 0 |
| 7 | SIZE CODE 0 |

E1P12

| Block | Size Code |
|-------|-------------|
| 0 | SIZE CODE 0 |
| 1 | SIZE CODE 0 |
| 2 | SIZE CODE 0 |
| 3 | SIZE CODE 0 |
| 4 | SIZE CODE 0 |
| 5 | SIZE CODE 0 |
| 6 | SIZE CODE 0 |
| 7 | SIZE CODE 4 |

E1P13

| Block | Size Code |
|-------|--------------|
| 0 | SIZE CODE 3 |
| 1 | SIZE CODE 3 |
| 2 | SIZE CODE 11 |
| 3 | SIZE CODE 4 |
| 4 | SIZE CODE 4 |
| 5 | SIZE CODE 0 |
| 6 | SIZE CODE 0 |
| 7 | SIZE CODE 0 |

E1P14

| Block | Size Code |
|-------|----------------|
| 0 | SIZE CODE 4 |
| 1 | SIZE CODE 3 |
| 2 | SIZE CODE 10 |
| 3 | SIZE CODE 4 |
| 4 | SIZE CODE 4 |
| 5 | SIZE CODE 4 |
| 6 | SIZE CODE 12 |
| 7 | (SIZE CODE 12) |

E1P15

| Block | Size Code |
|-------|----------------|
| 0 | SIZE CODE 4 |
| 1 | SIZE CODE 4 |
| 2 | SIZE CODE 4 |
| 3 | SIZE CODE 11 |
| 4 | SIZE CODE 11 |
| 5 | SIZE CODE 0 |
| 6 | SIZE CODE 12 |
| 7 | (SIZE CODE 12) |

E1P16

| Block | Size Code |
|-------|----------------|
| 0 | SIZE CODE 3 |
| 1 | SIZE CODE 10 |
| 2 | SIZE CODE 10 |
| 3 | SIZE CODE 11 |
| 4 | SIZE CODE 0 |
| 5 | SIZE CODE 0 |
| 6 | SIZE CODE 12 |
| 7 | (SIZE CODE 12) |

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Selecting a Preset Fleet Map

1. Select the trunking programming mode and the bank you want to change.
2. Press ▲ or ▼ to select E1, then press E.
3. Press ▲ or ▼ to select FLEEt, then press E.
4. Press ▲ or ▼ to select the map you want, then press E. The scanner returns to fleet map list item.

Note

You will now begin to see Type I fleet-subfleet IDs. For example, 100-12, 100-9, 000-12, 400-8, etc. See “User-Defined Fleet Maps” for more information about Type I IDs.

How do you know if the preset map is correct? You will have to listen to see if you’re following complete conversations. If not, try another preset map.

user-defined fleet maps

When a Type I system is designed, the address information for all the IDs are divided into 8 equal sized blocks. When you program your scanner to track a Type I system, you must select a size code for each of these blocks. When you have assigned a size code to all 8 blocks, you have defined the fleet map for the system you’re tracking. Each size code determines the number of fleets, subfleets, and IDs each block will have. For example, a size code of “4” has one fleet, which is divided into 16 separate subfleets, and it has a total of 512 individual IDs.

When a block is assigned a size code, the fleet or fleets created within the block are assigned a Type I ID. The way these IDs display on your scanner depends on the block number and the blocks size code. When a Type I ID displays, the left most digit represents the block which contains the ID.

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The next two or three digits identify which fleet is active, and the last digit(s) identifies the subfleet.

Your task is to program your fleet map with the same size code assignments as the trunked system. If you do this accurately, you'll track all the fleet-subfleet combinations used by the system. In other words, you'll hear complete communications while monitoring a trunked system.

If you don't already know the size codes used, you'll have to guess at them. But since you don't have to figure out all the blocks at once, this isn't as hard as it seems. Select a size code for a block, and then press SRCH. Now listen to the communications. If you decide you are receiving most of the replies to the conversations with IDs assigned to the block you just programmed, then you've probably selected the right size code and can work on the next block of the map.

Finally, for most public safety systems there are some size codes which are more common. Size code 3 and size code 4 are probably the most common, followed by size codes 10, 11, and 12.

Fleet Map Size Codes

| Size | Fleets | Subfleets | IDs | Blocks Used |
|------|--------------------------------|-----------|------|-------------|
| 0 | Reserves block for Type II IDs | | | |
| 1 | 128 | 4 | 16 | 1 |
| 2 | 16 | 8 | 64 | 1 |
| 3 | 8 | 8 | 128 | 1 |
| 4 | 1 | 16 | 512 | 1 |
| 5 | 64 | 4 | 32 | 1 |
| 6 | 32 | 8 | 32 | 1 |
| 7 | 32 | 4 | 64 | 1 |
| 8 | 16 | 4 | 128 | 1 |
| 9 | 8 | 4 | 256 | 1 |
| 10 | 4 | 8 | 256 | 1 |
| 11 | 2 | 16 | 256 | 1 |
| 12 | 1 | 16 | 1024 | 2 |

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| | | | | |
|----|---|----|------|---|
| 13 | 1 | 16 | 2048 | 4 |
| 14 | 1 | 16 | 4096 | 8 |

size code restrictions

If you select size code 12, 13, or 14, there are some restrictions as to which blocks can be used for these codes.

- Size code 12 can only be assigned to blocks 0, 2, 4, or 6.
- Size code 13 can only be assigned to blocks 0 and 4.
- Size code 14 can only be assigned to block 0.

Since these size codes require multiple blocks, you will be prompted for the next available block when programming a fleet map. For example, if you assign block 0 as size code 12, you will be prompted for block 2, the next block available, instead of block 1. And if you assign block 0 as size code 14, you would not see another prompt because all available blocks have been used.

programming a user fleet map

1. Select the trunking programming mode and the bank you want to change.
2. Press ▲ or ▼ to select E1, then press E.
3. Press ▲ or ▼ to select FLEEt, then press E.
4. Press ▲ or ▼ to select USr, then press E.
5. Press ▲ or ▼ to select the size code for the first block, then press E. The next available block appears on the display. Then, repeat this step until you have selected a size code for each block.

programming a Hybrid system

A Hybrid system is simply a Type I system with some blocks designated as Type II blocks. To program a Hybrid system,

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follow the steps listed in “Programming a User Fleet Map” in the previous section; however, if you want a block to be Type II, select size code S-0.

When you begin searching a trunking bank with a Hybrid fleet map, you will see both types of system IDs. That is, Type II IDs usually appear as an even number without a dash; Type I IDs appear as a three or four digit number, followed by a hyphen, followed by a one or two digit number.

Setting the Base, Spacing Frequencies, and Offset Channel for Motorola VHF/UHF Trunked Systems

To properly track Motorola VHF and UHF trunked systems, you must enter what is known as the base, spacing frequencies and offset channels for each system.

To find these out, check the www.trunkscanner.com and other web sites and frequency resources.

Follow these steps to enter the base, spacing frequencies and offset channel. (You can set up to three sets of these, but almost all systems only use one set.)

1. Select the trunking programming mode and the bank you want to change.
2. Press ▲ or ▼ to select E2-Hi or E2-UHF, then press E.
3. Press ▲ or ▼ to select bASE, then press E.
4. Use the keypad to enter configuration block number (1-3). Then, use the keypad to enter a new base frequency, then press E.
5. Press ▲ select SPC to enter the spacing frequency. Then use the keypad to enter a new spacing frequency, then press E.

Note

You can only enter within a range of 5-100 kHz, and 5 or 12.5 kHz multiples.

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6. Press ▲ and select OFS for entering the offset channel. Then use the keypad to enter a new offset channel, then press E. Then press HOLD/RESUME. The scanner returns to the previous screen.

Notes

You can only input within a range of 380-759.

If the system is not tracking properly, you may need to try a new base frequency or offset channel, or you may be missing frequencies from the system.

You can set up to three base, spacing and offsets for Motorola VHF/UHF trunked systems.

tooggling the status bit

On Type II trunking systems, there is a method by which specialized types of communications use unique talk group numbers. An emergency call will occur on a unique talk group from its primary assignment, for example. Because the scanner defaults to status-bit on mode, you never need to worry about missing these transmissions. If you have programmed talk group 33264 into scan list memory, for example, and there is an emergency call within that group, you will hear it on 33264.

The only time you may wish to turn status bits off is if you're trying to figure out the proper fleet map of a Type I trunking system.

1. Select the trunking programming mode and the bank you want to change.
2. Press ▲ or ▼ to select E1, E2-800, E2-Hi or E2-UHF, then press E.
3. Press ▲ or ▼ to select S-bit, then press E.
4. Press ▲ or ▼ to select Sbt ON or Sbt OFF, then press E. The scanner returns to status bit list item.

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control channel only mode

When this function is activated, trunking is performed using control channel data only. Voice channel (also known as “DATA channel”) frequencies do not have to be programmed into memory. This feature only applies to Motorola 800 MHz systems.

1. Select the trunking programming mode and the bank you want to change.
2. Press ▲ or ▼ to select E2-800 or E1, then press E.
3. Press ▲ or ▼ to select CC OnLY, then press E.
4. Press ▲ or ▼ to select a frequency plan, then press E. The scanner returns to control channel only.

Note

You must choose a plan before you begin to control channel trunk (only when 800 MHz system is selected).

When you deselect control channel only mode, CC OFF appears on the display. Read the descriptions of the Plan 1~4 for details on which may apply for you.

PL1 (plan 1): This plan is the most common. Use Plan 1 if the last three digits of ALL the frequencies in use end in one of the following three digits: 125, 375, 625, or 875 (example: 856.1125, 860.7375, 859.6625, 855.8875).

PL2 (plan 2): If the last three digits of frequencies are less than 860.000 and end in one of the following three digits (125, 375, 625, or 875) and if ANY other frequencies end in (000, 250, 500, or 750) use Plan 2.

PL3 (plan 3): If the last three digits of ALL the frequencies in use end in one of the following three digits (000, 250, 500, or 750) use Plan 3.

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PL4 (plan 4): If the last three digits of frequencies are less than 866.0000 and end in one of the following three digits (000, 250, 500, or 750) and if ANY other frequencies end in (125, 375, 625, or 875) use Plan 4.

Of course you will know the control channel frequency itself so that will help you determine the proper plan. If you try one plan and you receive errors (such as the scanner jumping to channels that are obviously not part of the system), you should try an alternate Plan.

Notes

You can assign a fleet map to Type 1 or Hybrid systems scanned in control channel only mode by going into the trunk programming mode. You can also program IDs, set a delay, and all the other parameters for systems scanned in this mode. You can then either search the system to find new IDs or you can program IDs into memory and then scan them.

The control channel only feature is an extremely powerful tool. You can use it to determine if systems you are familiar with may have added new frequencies or you can use it to discover new systems by simply finding active control channels (using search), and then programming them for control channel operation only.

Remember that this feature only applies to Motorola 800 systems, that you do have to set the proper system type (800 MHz of Type 1 or Type 2) and you do have to program the control channel frequency into memory and identify the frequency as trunked in the trunk programming mode.

disconnect tone detect option (end code)

When this function is disabled, the radio looks for squelch before returning to the control channel instead of waiting for the disconnect tone. Only in rare instances will you need to adjust the default settings. The condition to return to control channels depends on whether the signal is present or not.

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1. Select the trunking programming mode and the bank you want to change.
2. Press ▲ or ▼ to select Motorola Type 2 or Motorola Type 1, then press E.
3. Press ▲ or ▼ to select Eot, then press E.
4. Press ▲ or ▼ to select Eot ON or Eot OFF, then press E.

Note

If you set the squelch so you hear a hissing sound, the scanner will remain on the voice channel, even when a disconnect tone is transmitted or there is no signal at all.

wired programming

You can transfer programming data to your scanner using your PC and an optional interface cable and software (available at your local RadioShack store or www.radioshack.com).

Note

If the scanner receives no data from the PC for more than 20 seconds, T-Err appears and wired programming stops.

1. Make sure your scanner is turned off.
2. Connect the interface cable to your computer. Then connect the other end of the cable to PC/IF at the rear of the scanner.
3. Install the software to your computer and run the program.
4. To set up the program, click on Tools, select Configuration, and select PRO-2051 (if necessary).
5. Turn on the scanner. The scanner automatically goes into the wired programming mode. PGM and WirEd appear. Then send the data from the PC. Data frame numbers being received appear.

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6. When the scanner has successfully received all data, End appears. If the scanner received an error while receiving data, End, d-Err, and its frame number appear. If the scanner received a communication error while receiving data, C-Err indicates the packet number where the error occurred. If the scanner received a checksum error while receiving data, S-Err indicates the packet number where the error occurred. If the scanner received a length field error while receiving data, L-Err indicates the packet number where the error occurred.

cloning your scanner

You can clone all the frequencies, trunking talk groups, and fleet maps programmed in your PRO-2051 to another PRO-2051 using an optional interface cable and software (available at your local RadioShack or www.radioshack.com).

1. Make sure the scanners are turned off and then plug the cable into each scanner's PC/IF jack.
2. While you press and hold E on both scanners, turn on both scanners.
3. Determine the scanner which has the frequency data that you want to transfer. This one must be set up as the "First Unit", and the other must be set as the "Clone Unit".
4. On the scanner that is the "Clone Unit", press ▲ or ▼ to select CLONE, then press HOLD/RESUME.
5. On the scanner that is the "First Unit", press ▲ or ▼ to select FirSt, then press HOLD/RESUME. The data transfer begins from the First Unit to the Clone Unit.

During data transfer, SNDFirSt appears when a scanner is sending data and REC CLONE appears when a scanner is receiving data. When the data transfer is complete, donE appears. If the data transfer is not successful, Error appears.

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Notes

To clear Error, press ./CLR.

Once you have finished cloning the scanners, reset them by turning them off then on again. This is important if you wish to clone another scanner right away.

birdies

All radios can receive birdies (undesired signals). If your scanner stops during scan mode and no sound is heard, it may be receiving a birdie. Birdies are internally generated signals inherent in the electronics of the receiver.

Press L/O to lockout the channel, and then press HOLD/RESUME to resume scanning.

replacing the fuse in the DC power cord

The fuse in the DC power cord helps protect your scanner from power surges and short circuits. If the fuse in the DC power cord has blown, replace it with a 1-amp, fast-acting glass fuse.

Notes

Before you begin, turn off the scanner and your vehicle's ignition.

Make sure you replace the fuse only with another fuse of the same type and rating.

1. To open the fuse holder, push the fuse holder ends together, and then turn either end counterclockwise and release it.
2. If the fuse is blown, replace it.
3. To close the fuse holder, push the fuse holder ends together, then turn either end clockwise.

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resetting your scanner

If the scanner's display locks up or stops operating properly, you might need to reset the scanner.

Note

This procedure clears all the information you have stored in the scanner. Before you reset the scanner, try turning it off and on to see if it begins working properly. Reset the scanner only when you are sure it is not working properly.

1. Make sure your scanner is turned off.
2. While holding down 2, 9, and HOLD, turn on the scanner. After about 2 seconds the scanner initializes and CLEAR appears.

Follow these steps to restore the 150 preprogrammed frequencies stored in the private bank.

1. Make sure your scanner is turned off.
2. While holding down 3 and E, turn on the scanner. After several seconds, the scanner restores the frequencies.

frequently asked questions (FAQs)

Q: *I drive by patrol cars but do not hear alarms?*

A: Make sure you are scanning in Highway Mode. Check your antenna connections. In some cases, the alarm might not go off depending on the proximity of the patrol car to your vehicle. Also, terrain or other factors might be involved. Police officers can turn off the mobile extender when off duty or when going to court; however, they normally leave them on when on traffic duty. If you monitor user-programmed frequencies, switch to one of the preprogrammed frequency banks. Make sure MUTE and FLASH are both turned off. Some priority frequencies may be locked out.

Q: *My scanner is on but won't scan or reception is weak. How do I get it to scan?*

A: Make sure the AC adapter is securely connected. If you are using an AC adapter and the wall socket it is plugged into is controlled by a wall switch, make sure the wall switch is turned on. If reception is poor, check the antenna connection or move the scanner. You might be in a remote area which could require an optional multi-band antenna. Check with your local RadioShack store.

Q: *My scanner is not receiving weather channels. How do I set it so I can receive weather channels?*

A: The scanner might be set to weather alert mode. If this happens, it cannot receive weather channels until it receives a weather alert. To hear a weather channel at any time, make sure weather alert is turned off. See "NWR SAME" for more information.

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Q: *Error appears on the display. What does it mean?*

A: If you were trying to enter a frequency, you might have made a programming error. Re-enter the frequency correctly, including the decimal point.

Q: *My scanner does not track EDACS systems properly. What's wrong?*

A: The logical channel numbers (frequencies) for the system might not be programmed in the correct order, or all the frequencies might not be programmed. Check the frequencies and reprogram them.

Q: *I do not hear all the replies to conversations. What's wrong?*

A: Change to a Type 1 scanner setup. See "Fleet Map Programming" for more information. Try another preset fleet map or program your own fleet map. Check to see that all the system's frequencies have been entered.

Q: *The scanner does not acquire the data channel. What's wrong?*

A: Adjust the squelch for trunking mode. See "Setting the Squelch". Also, the frequency used for the data channel might not have been programmed into the scanner.

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specifications

Frequency Coverage

25.0000-27.9950 MHz (in 5 kHz steps)
28.0000-29.9950 MHz (in 5 kHz steps)
30.0000-49.9950 MHz (in 5 kHz steps)
50.0000-54.0000 MHz (in 5 kHz steps)
108.0000-136.9875 MHz (in 12.5 kHz steps)
137.0000-143.9950 MHz (in 5 kHz steps)
144.0000-147.9950 MHz (in 5 kHz steps)
148.0000-174.0000 MHz (in 5 kHz steps)
400.0000-419.9875 MHz (in 12.5 kHz steps)
420.0000-449.9875 MHz (in 12.5 kHz steps)
450.0000-469.9875 MHz (in 12.5 kHz steps)
470.0000-512.0000 MHz (in 12.5 kHz steps)
806.0000-823.9875 MHz (in 12.5 kHz steps)
849.0125-868.9875 MHz (in 12.5 kHz steps)
894.0125-956.0000 MHz (in 12.5 kHz steps)
1240.000-1300.000 MHz (in 12.5 kHz steps)

Operating Temperature

Normal -4° to 140°F (-20° to 60°C)

Signal Stalker 14° to 122°F (-10° to 50°C)

IF Frequencies

1st (25-174 MHz) 380.6050-380.7000 MHz
1st (400-512 MHz) 380.6125-380.7000 MHz
1st (806-1300 MHz) 380.7000-380.7875 MHz
2nd 10.85 MHz
3rd 450 kHz

*Specifications are typical; individual units might vary.
Specifications and depctions are subject to change and
improvement without notice.*

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glossary

Channel - a programmable memory location. Channels are grouped into channel-storage banks. Your scanner has 10 channel-storage banks and each bank has 100 channels.

Channel-Storage Banks - Groups of channels, used for frequency storage.

Data Skip - allows your scanner to skip unwanted data transmissions and reduces birdies.

Highway Patrol/State Police Alert - warns you when you are within about 3 miles of highway patrol/state police units.

Hypersearch - increases the search speed to 300 steps per second for search ranges with 5 kHz steps.

Multi-Track - tracks more than one trunking system at a time. You can scan conventional and trunked systems at the same time.

PC Programmable - allows you to easily program all frequencies and trunking talk groups into your scanner through a software running on your PC.

SAME Weather Alert - automatically sounds the alarm tone to advice of the hazardous weather condition and indicate the event of the weather condition.

Service Banks - preset groups of frequencies categorized by the type of services that use those frequencies.

Signal Stalker - lets you set the scanner so it detects then displays the frequency of a nearby strong radio transmission.

Skywarn - lets you jump directly to the last channel in memory (Channel 1000) from any transmission. You can program this channel with the frequency of your local Skywarn broadcaster.

Trunk Tracking - lets you follow VHF high band, UHF 800MHz trunked public safety, and public service systems just as if conventional two-way communications were used.

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care

Keep the scanner dry; if it 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.

limited one-year 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. For complete warranty details and exclusions, check with your local RadioShack store.

RadioShack Customer Relations
200 Taylor Street, 6th Floor, Fort Worth, TX 76102

04/04

Printed in China
20-426
12A04
UBZZ01331ZZ



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