

20-162

PRO-162 2,000-Channel Handheld Trunking Scanner

Contents

Thank you for purchasing your RadioShack 2000-Channel Handheld Trunking Scanner from **RadioShack**.

Your handheld scanner is one of a new generation of scanners designed to track Motorola® Type I, Type II, hybrid analog systems, (such as Smartnet® and Privacy Plus®) plus M/A-COM EDACS® and EF Johnson LTR. Those systems are extensively used in many 800 MHz, 900 MHz, and UHF communication systems.

- scanner
- antenna
- belt clip (2) screws
- user's guide
- quick start guide
- preprogrammed frequency guide

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LTR is a registered trademark of EF Johnson.

The Basics

your scanner's features

SCAN /  — scans the stored channels and scans an active ID while trunking, or turn Signal Stalker on and off.

MAN(Manual)/**MENU** — manually enter a channel; enter the menu mode.

SRCH(Search)/**TUNE**— start a chain search, start a service search. search a specified frequency range; enter the fine tune mode.

TRUNK/MODE — enter the Talk Group ID program mode; select the modulation for trunking system.

WX /  — starts weather search; activates Skywarn function.

PSE(Pause)/**TEXT** — stops and resumes searching; change from Program mode to Program Text Tag mode.

BANK — enter the select bank menu.

▲▼—Search and scan up and down a selected frequency range; selects options during programming; changes the ID location number while trunking.

FUNC(Function)/**A/a** — let you use to various functions by pressing this key in combination with other keys; let you use to switch the small letter and capital letter.

PRI (Priority)/**ALERT**— sets and turns the priority function on or off; SAME weather alert on and off.

L/O — lockout selected channels or skip specified frequencies during a search; lock out a selected ID while trunking.

CL/CTCSS/DCS — Press **CL** to clear an entry; let use to turn on and off the CTCSS/DCS.

ENT/PGM (Program) — programs frequencies into channels.

1-9/WXYZ, 0 — input a number or characters.

•/DELAY — enter a decimal point, space, or programs delay time for the selected channel/search bank, or enters a hyphen (in trunking ID setting). Programs a 2-second delay for a selected channel or service; programs a 2-second delay while trunking.

OPEN/CLOSE — let you use to change the open mode and close mode.

➔/KEYLOCK — locks the keypad to prevent changes; turns the display and key backlight on.

POWER DC 9V — connect an external power source here (not included).

PC/IF — connect an optional PC interface cable here to use the scanner with your computer.

VOLUME — turn the scanner on or off and adjust the volume.

 — connect an earphone or headphone here.

SQUELCH — adjust the squelch.

supplying power to your scanner

You can power your scanner with batteries, DC adapter, or an AC adapter.

Warning: Only set the **ALKALINE ◀ JACK ▶ Ni-MH** switch to **Ni-MH** for use with nickel metal hydride (Ni-MH) rechargeable batteries. Never use non-rechargeable batteries when the switch is set to **Ni-MH**.


1. Set the **ALKALINE ◀ JACK ▶ Ni-MH** switch inside the battery compartment to the appropriate setting.

- **ALKALINE** when using alkaline batteries (not included).

Caution: You must use a Class 2 power source that supplies 9V DC and delivers at least 300mA. Its center tip must be set to positive and its plug must fit the scanner's DC 9V 300mA jack. You can use an "Adaptaplug B" of optional AC adaptors. Using an adapter that does not meet these specifications could damage the scanner or the adapter.

- **Ni-MH** when using rechargeable (Ni-MH) AA batteries (not included). The scanner stops charging automatically after 14 hours when the DC jack is connected to power.

battery cautions

- Use only fresh batteries of the required size and recommended type.
- Always remove old or weak batteries. Batteries can leak chemicals that damage electronic circuits.
- Do not mix old and new batteries, different types of batteries (standard, alkaline, or rechargeable), or rechargeable batteries of different capacities.
- When the battery icon  flashes and the scanner beeps every 15 seconds, replace all four batteries.
- Always dispose of old batteries promptly and properly. Do not bury or burn them.

Warning: Do not connect a charging adapter to the scanner if non-rechargeable batteries (such as alkaline batteries) are installed in the scanner and **ALKALINE ◀ JACK ▶**

Ni-MH is set to Ni-MH, or if you are unsure of the switch's position. Non-rechargeable batteries will get hot and can even explode if you try to recharge them.

- Always connect the AC adapter to the scanner before you connect it to AC power.

When you finish, disconnect the adapter from AC power before you disconnect it from the scanner.

connecting the antenna

Attach the supplied antenna to the scanner by align the slots around its base with the tabs on the scanner, and then slide into place.

When using an external antenna, always use 50-ohm, RG-58, or RG-8, coaxial cable to connect to it. If the antenna is over 50 feet from the scanner, use RG-8 low-loss dielectric coaxial cable. If your antenna's cable does not have a BNC connector, your local RadioShack store carries a variety of BNC adapters.

connecting an earphone/headphone

For private listening, you can plug headphones (not included) into the headphone jack on top of your scanner. This automatically disconnects the internal speaker. Note that the sound is "mono" and not stereo.

listening safely

To protect your hearing, follow these guidelines when you use an earphone or headphones.

- 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. If you use an earphone or headphones with your scanner, be very careful. Do not listen to a continuous broadcast. Even though some earphones/headphones let you hear some outside sounds when listening at normal volume levels, they still can present a traffic hazard.

attaching the belt clip

Use a Phillips-head screwdriver and the supplied screws to attach the clip to the scanner.

transferring data to or from another scanner or pc

You can transfer the programmed data to and from another PRO-162 scanner using a connecting cable which has 1/8-inch phone plugs on both ends (not supplied). Connect the cable between each scanner's PC/IF jacks. See "cloning your scanner". You can also upload or download the programmed data to or from a PC using an optional PC interface cable and software available through your local RadioShack store. See "wired programming."

about your scanner

We use a few simple terms in this manual to explain the features of the scanner. Familiarize yourself with these terms and the scanner's features, and you can put the scanner to work for you right away. Simply determine the type of communications you want to receive, and then set the scanner to scan those communications.

The scanner scans conventional frequencies and trunked systems. For more information about trunked transmissions (see "trunking operation").

A frequency, expressed in kHz or MHz, is the tuning location of a station. To find active frequencies, you use the search function.

Besides searching within a selected frequency range, you can also search your scanner's service banks. Service banks are preset groups of frequencies categorized by the type of services that use those frequencies. For example, many amateur radio frequencies are located in the HAM service bank.

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. The scanner has 40 channel-storage banks. Each bank contains 50-channel sets. So the scanner has 2,000 channels. You can scan the channel-storage banks to see if there is activity on the frequencies stored there.

Note: *You search frequencies when you want to find your local frequencies and scan channels after you programmed your found frequencies.*

understanding banks

service banks

The scanner is preprogrammed with all the frequencies allocated to the ham, marine, aircraft, and police (fire/emergency) services. This helps you quickly find active frequencies instead of doing a chain search (see "service bank search").

channel storage banks

To make it easier to identify and select the channels you want to listen to, all the channels are divided into 40 banks of 50 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 51 (the first channel in bank 2).

turning on the scanner and setting squelch

Note: *Make sure the scanner's antenna is connected before you turn it on.*

1. Turn **SQUELCH** fully counterclockwise.
2. Turn **VOLUME/OFF** clockwise until it clicks and you hear a hissing sound.
3. Turn **SQUELCH** clockwise until the hissing stops.

storing known frequencies into channels

You can locate and store specific frequencies into channels for later use.

Note: *To store trunked system frequencies, see "programming trunked frequencies."*

Follow these steps to store frequencies into channels.

1. Press **ENT/PGM** to put the scanner in programming mode. PGM appears.
2. Use the number keys to enter the channel number you want to assign to a frequency.

3. Press **MAN**.
4. Press **FUNC**, then press **▲/BANK** or (Press **FUNC**, then press **▼**) to advance the channel with 0 MHz in next bank (or previous bank).
 - If the channel with 0MHz is not, the first channel of the bank is selected.
 - If you entered an in valid channel number, "Invalid Channel." Appear. appears and the scanner beeps error tones. Enter a valid channel.
5. Use the number keys and **•/DELAY** to enter the frequency, including the decimal point you want to store.
6. Press **ENT/PGM** to store the frequency into the channel.

Notes:

- *If you entered an invalid frequency in Step 5, "Invalid Freq." appears and the scanner beeps error tones. Enter a valid frequency.*
 - If you entered a frequency in Step 5, which already exists on another channel, the scanner beeps an error tone and displays that channel. Press **CL** to clear the display, or press **ENT/PGM** to store the frequency in both channels.
 - The 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.
 - After a transmission, the scanner automatically pauses for 2 seconds on this channel before proceeding to the next active transmission. Press **•/DELAY** to turn the delay function off or on. See "delay"). The scanner stores this setting in the channel.

7. To program the next channel in sequence, press **▲** or **▼** and repeat Steps 5 and 6.

Programming channels text tag

You can customize your scanner by storing text tags (up to 16 characters) for easy identification of channel.

1. Press **ENT/PGM** to put the scanner in programming mode.
2. Enter the channel number where you want to store a text tag. If you make a mistake, press **CL** repeatedly until the display is cleared.
3. Press **MAN** to advance the channel.
4. Press **TEXT** to put the scanner in program channel text tag edit mode. The cursor appears.
5. Press **?** or **?** to move the cursor in the right or the left. Press the number key and decimal key to enter the letter. (See "text input chart").
6. Input the word (Public Ch) and press **ENT/PGM** to store.

Programming bank text tag

You can customize your scanner by storing text tags (up to 16 characters) for easy identification of bank.

1. Press **ENT/PGM** to put the scanner in programming channel mode.
2. Enter the channel number where you want to store a text tag. If you make a mistake, press **CL** repeatedly until the display is cleared.
3. Press **MAN** to advance the channel.
4. Press **FUNC**, and then press **TEXT** to put the scanner in program bank text tag edit mode. The cursor appears.

5. You can store same as channel text tag.

text input chart

User can use the number keypad on scanner to enter text by referring to the alphabet printed on each number key. When user presses the number key in the text entry field, the scanner displays the first alphabet printed on the number key. Press the number key twice to display the second alphabet and three times to display the third. When user wants to input the small letter, press [A/a] to switch the capital letter and small letter.

For example, to enter "Scanner":

1. Press [7/PQRS] 4 times to enter "S".
2. Press [A/a] to switch the capital letter and small letter.
3. Then press [2/ABC] 3 times to enter "c".
4. Press [?] to move cursor.
5. Press [2/ABC] 1 times to enter "a".
6. Press [6/MNO] 2 times to enter "n".
7. Press [?] to move cursor.
8. Press [6/MNO] 2 times to enter "n".
9. Press [3/DEF] 2 times to enter "e".
10. Press [7/PQRS] 3 times to enter "r".
11. Press [ENT] to end your text entry.

Keys	Number of times key is pressed									
	0	1	2	3	4	5	6	7	8	9
1	.	()	-	+	*	/	@	^	&
2/ABC	A	B	C	2						
3/DEF	D	E	F	3						
4/GHI	G	H	I	4						
5/JKL	J	K	L	5						
6/MNO	M	N	O	6						
7/PQRS	P	Q	R	S	7					
8/TUV	T	U	V	8						
9/WXYZ	W	X	Y	Z	9					
0	Space	#	?	_	,	\$	%	!	~	'

Press **A/a** to choose the input mode. (Capital letter, Small letter, Numeric)

programming channel CTCSS/DCS code

Your scanner can monitor systems using a Continuous Tone Coded Squelch System (CTCSS) and Digital Coded Squelch (DCS) system, which allow squelch to open only when the tone you have programmed with a specific frequency is received along with a transmission.

1. Press **ENT/PGM** to put the scanner in programming mode.
2. Enter the channel number where you want to store a CTCSS/DCS code. If you make a mistake, press **CL** repeatedly until the display is cleared.
3. Press **MAN** to advance the channel.

4. Press **FUNC**, and then press **CL/CTCSS/DCS** to put the scanner in program CTCSS/DCS mode.
5. Press **?** or **?** to select a CTCSS/DCS code. CTCSS/DCS code flashes.
The CTCSS/DCS code is changed below:
NO TONE -> CT 67.0 -> ... -> CT 254.1 -> DCS 023 -> ... -> DCS 754 -> CODE SRCH
-> OFF -> CT 67.0 -> ...
6. Press **ENT/PGM** to store the CTCSS/DCS code.

about CTCSS/DCS

CTCSS and DCS are subaudible tone signaling systems sometimes referred to as PL or DPL (Motorola's trademarked terms for Private Line and Digital Private Line respectively). CTCSS and DCS are used only for FM signals and are usually associated with both amateur and commercial two-way frequencies. These systems make use of a special subaudible tone that accompanies a transmitted signal.

CTCSS and DCS are used for many purposes. In many cases, CTCSS and DCS are used to restrict access to a commercial repeater, so that only those units which transmit the correct tone along with their signal can "talk" to the repeater.

CTCSS and DCS are also used in areas that receive interference where there are several stations with output frequencies close to each other. When this occurs, you might hear multiple communications on the same frequency. The stations might even interfere with each other to the point where it is impossible to clearly receive any of the stations. A scanner equipped with CTCSS and DCS (like your scanner) can code each received frequency with a specific CTCSS or DCS frequency. Then, when you receive multiple signals, you only hear the transmission with the CTCSS or DCS tone you programmed. If you do not receive the correct tone with a signal, the scanner's squelch remains closed and you hear nothing.

You can search for the following CTCSS frequencies and DCS codes.

CTCSS Frequencies (Hz)

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

DCS Codes (Octal)

023	025	026	031	032	036	043	047
051	053	054	065	071	072	073	074
114	115	116	122	125	131	132	134
143	145	152	155	156	162	165	172

174	205	212	223	225	226	243	244
245	246	251	252	255	261	263	265
266	271	274	306	311	315	325	331
332	343	346	351	356	364	365	371
411	412	413	423	431	432	445	446
452	454	455	462	464	465	466	503
506	516	523	526	532	546	565	606
612	624	627	631	632	654	662	664
703	712	723	731	732	734	743	754

copying/moving a frequency

If you want to copy/move a frequency to a channel, follow the steps below:

1. Press **ENT/PGM** to put the scanner in programming mode. Enter the channel which contains the frequency you want to copy or move.
2. Press **MAN** to advance the channel.
3. Press and hold **ENT/PGM** during program mode.
4. Select the bank where you want to copy or move the frequency.
5. Press **ENT/PGM**. The smallest empty channel number and "000.0000" appear. If there is no empty channel, the scanner automatically selects the first channel of the bank.
6. Press **ENT/PGM** to enter the frequency, "Delete Source Channel?" appears.
7. To moving a frequency, press **ENT/PGM**. Or to copying a frequency, press **CL**.

searching for and temporarily storing active frequencies

If you do not have a reference to frequencies in your area, use a chain, fine tune, or service search (except weather search) to find a transmission.

Beyond the Basics

Notes:

- While doing a chain, fine tune, or service bank search, press **•/DELAY** if you want to turn the delay on or off (see "delay").
- While doing a chain, fine tune, or service bank search, press **FUNC**, then **MENU** if you want the scanner to skip data signals (such as fax or modem signals) and search only for audio (voice) signals to enter the menu mode and turn Data Skip Option to off (see "skipping data signals").

chain search

This feature lets you search through preset frequency ranges. You can also preset a range. There are three modes within this feature: chain search mode, chain search pause mode, and program band select mode.

The preset frequency ranges are:

Bank No.	Frequency (MHz)	Step (kHz)
0	25.0000-27.9950	5
1	28.0000-54.0000	5
2	137.0000-174.0000	5

3	216.0000-224.9950	5
4	225.0000-399.9875	12.5
5	400.0000-512.0000	6.25
6	764.0000-775.9875	12.5
7	794.0000-805.9875	12.5
8	806.0000-956.0000	12.5
9	1240.0000-1300.0000	12.5

starting chain search

1. Press **SRCH**. **SRCH** appears.
2. Press **0 – 9** to enable or disable the search bank number being searched.
Note: At least one bank needs to be entered. If you disable all the banks, the error tone beeps.
3. Press **▼** to search down or **▲** to search up.
4. When the scanner stops on a transmission, quickly press **PSE** to stop searching to listen to the transmission. "SRCH PAUSE" appears.
5. To release the hold and continue searching, press **PAUSE**.
Note: To step through the frequencies while "SRCH PAUSE" appears, press **▼** or **▲**.

storing found frequencies during chain search

- You can store frequencies you find in chain search mode or chain search pause mode.
1. Press **ENT/PGM** when you find a frequency.
 2. Press **▲** or **▼** to select a bank.
 3. Press **ENT/PGM** the smallest empty channel number and "000.0000" and the frequency you want to store are displayed..
 3. Press **ENT/PGM** to enter the frequency. After programming, the scanner returns to the previous mode.

programming search ranges

- You can define the search range during a chain search in each search bank.
1. Press **ENT/PGM** to go to program mode.
 2. Press **SRCH** to go to programming search bank mode.
 3. Press **▲** or **▼** to select the bank number that you want. Press **ENT/PGM**.
 4. Using the number keys, enter the lower limit frequency, and then press **ENT/PGM**.
 5. Press **▲** or **▼** to move the cursor from lower to upper.
 6. Using the number keys, enter the upper limit frequency, and then press **ENT/PGM**.

programming search bank text tag

You can customize your scanner by storing text tags (up to 16 characters) for easy identification of search bank.

1. Press **ENT/PGM** to go to program mode.
2. Press **SRCH** to go to programming search bank mode.
3. Press **?** or **?** to select the desired bank number, and then press **ENT/PGM**.
4. Press **TEXT** to go to programming search bank text tag mode.
5. Press the number key and decimal key to edit desired search bank text tag. (See "text

input chart”).

6. Press **ENT/PGM** to store the search bank text tag.

fine tune

You can search up or down from the currently displayed frequency using fine tune. TUNE appears during searching.

Press **FUNC**, and then press **SRCH** when the frequency you want to start from appears. Or, enter the frequency you want to start from using the number keys in search pause mode, then press **FUNC**, and then **SRCH**.

Note: *If you enter an invalid frequency, the scanner displays Error. Press **CL**.*

service bank search

You can search for ham, marine, aircraft, or police (fire/emergency) transmissions without knowing the specific frequencies used in your area. The scanner is preprogrammed with all the frequencies allocated to these services. To select the service search bank, press **SRCH**. The current service symbol appears and the scanner starts searching. To select a different service bank, press **SRCH**.

The newly selected service symbol appears. To search, Press **▲** or **▼**. Or automatically start searching after two seconds.

Note: *Because there are many different frequencies allocated to fire and police departments, it can take several minutes to search all the service frequencies.*

weather search

You can also search for weather transmissions. To start weather search:

1. Press **WX/☉**. **WX** appears. You can change the search direction by using **▲** or **▼**.
2. If you want to stop the search, press **PSE**. **PAUSE** appears.

search skip memory

You can skip up to 200 specified frequencies during a chain, fine tune and service search and Signal Stalker I. This lets you avoid unwanted frequencies or those already stored in a channel.

Note: *You cannot skip frequencies during WX service search.*

To skip a frequency, press **L/O** when the scanner stops on the frequency during a chain, fine tune and service search and Signal Stalker I. The scanner stores the frequency in memory and automatically resumes the search.

To clear a single frequency from skip memory so the scanner stops on it during a chain, fine tune and service search and Signal Stalker I:

1. Press **PSE** to stop the search.
2. Press **▲** or **▼** to select the frequency. **L/O** appears.
3. Press **L/O**. **L/O** disappears.

To clear all the skip frequencies at once while searching, press **PSE**, and then hold down **L/O** until the scanner beeps twice.


Notes:

- *If you selected all frequencies to be skipped within the search range, the scanner beeps 3*

times and does not search.

- If you select more than 200 frequencies to skip, “L/O List Full!” appears.
- Press ▲ or ▼ select a skipped frequency while **PAUSE** appears. **L/O** appears when you select a skipped frequency.

scanning the stored channels


To begin scanning channels, press **SCAN/** . The scanner scans through all non-locked channels in the activated banks. (See “locking out channels” and “turning channel-storage banks on and off”). When the scanner finds a transmission, it stops on it. When the transmission ends, the scanner resumes scanning.

Notes:

- If you have not stored frequencies into any channels, the scanner does not scan.
- If the scanner picks up unwanted partial, or very weak transmissions, turn **SQUELCH** clockwise to decrease the scanner’s sensitivity to these signals.
- To listen to a weak or distant station, turn **SQUELCH** counterclockwise.
- To ensure proper scanning, adjust **SQUELCH** until the audio mutes
- To scan in the trunk scanning mode, see “trunking operation.”

manually selecting a channel

You can continuously monitor a single channel without scanning. This is useful if you hear an emergency broadcast on a channel and do not want to miss any details—even though there might be periods of silence—or if you want to monitor a specific channel.

Press **MAN** to stop scanning, enter the channel number, and then press **SCAN/** . The selected channel appears.

Or, during scanning, if the radio stops at a desired channel, press **PSE**. During pausing scan mode, you can’t select the channel by ▲ or ▼. Press **PSE** to resume automatic scanning.

special features

delay

Sometimes a user might pause before replying to a transmission. To avoid missing a reply on a specific channel, the scanner automatically programs a 2-second delay into any channel or frequency. You can monitor the channel frequency for an additional 2 seconds after the transmission stops before resuming scanning or searching.

Depending on the scanner operation, follow one of these steps to turn off or on a delay.

- To turn off the 2-second delay, press **•/DELAY** while the scanner is monitoring a channel, scanning, or searching. **DLY** disappears.
- To turn on the 2-second delay to a channel again, select the channel and press **•/DELAY**. **DLY** appears.
- To turn on the 2-second delay to search again, press **•/DELAY** while the scanner is searching.

DLY appears and the scanner automatically adds a 2-second delay to every frequency it stops on in that band.

Signal Stalker I also has a delay feature. It's delay time is 10 seconds.

turning channel-storage banks on and off

You can turn each channel-storage bank on and off. When you turn off a bank, the scanner does not scan any of the 50 channels in that bank.

While scanning, press the number key that corresponds to the bank you want to turn on or off. The scanner scans all the channels within the displayed banks that are not locked out (see "locking out channels").

1. Press **FUNC**, then press **▲/BANK** in scan mode.
2. Press **▲** or **▼** to move the cursor in the up or the down.
3. To turn banks on or off while scanning, press the number key (**1 - 9, 0**) that corresponds to the bank you want to turn on or off.
4. To exit from menu mode, press **MAN**.

Notes:

- *You can manually select any channel within a bank, even if that bank is turned off.*
- *One bank must always be active. If you try to turn off all banks, the last bank remains.*

programming scan bank list

You can create the scan list (up to 20 lists) that you want to scan bank. And you can scan the scan list that you want to use it.

Press **FUNC**, and then press **MENU** to go to menu. Then press **▲** or **▼** and **ENT/PGM** to select the scan list menu. And set the following items.

Edit Text : You can program the scan list text tag that you want.

Save scan list : You can save the scan list (up to 20 scan list) that unlocked bank now.

Load scan list : You can load the scan list (up to 20 scan list) that you want.

locking out channels

You can increase the scanning speed by locking out channels that have a continuous transmission, such as a weather channel. To lock out a channel, manually select the channel, and then press **L/O**. **L/O** appear.

Note: *You can still manually select locked-out channels.*

To remove the lockout from a channel, manually select the channel, then press **L/O**. **L/O** disappears.

To unlock all channels in the selected banks and all signal stalker log channels for scan that are turned on, press **MAN** to stop scanning, then hold down **L/O** until the scanner beeps twice.

priority

The priority feature lets you scan through the channels and still not miss important or

interesting calls on specific channels. You can program one stored channel in each bank as a priority channel. If the priority feature is turned on, as the scanner scans the bank, it checks that bank's priority channel for activity every 2 seconds.

The scanner automatically designates each bank's first channel as its priority channel. Follow these steps to select a different channel in a bank as the priority channel.

1. Press **ENT/PGM**.
2. Enter the channel number you want to select as the priority channel, and then press **PRI/ALERT**. **P** appears to the left of the selected channel frequency.
3. Repeat Steps 1 and 2 for the channel in each bank you want to program as a priority channel.

To review all priority channels (in ascending order only), repeatedly press **PRI** to see the numbers of the priority channels.

To turn on the priority feature, press **PRI** during scanning. **PRI** appears.


Then the scanner checks the designated priority channel every 2 seconds in each bank. The bank number appears at the top of the display.



To turn off the priority feature, press **PRI**. **PRI** disappears.

Note: *If you have locked out all priority channels, "Priority Scan No Channel" appears when you activate the priority feature. To unlock any desired priority channels, see "locking out channels."*

using the keylock

To protect the scanner from accidental program changes, turn on the keylock feature.

When the scanner is locked, the only controls that operate are /KEYLOCK.

To turn on the keylock, hold down /KEYLOCK until  appears.

To turn it off, hold down /KEYLOCK until  disappears.

wired programming

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

1. Make sure your scanner is turned off.
2. Connect the interface cable to your computer and then connect the other end of the cable to **PC/IF** on the side 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-162 (if necessary).
5. Turn the scanner on. The scanner automatically goes into the wired programming mode. Then send the data from the PC, and then "Wire Programming" appears.
6. When the scanner has successfully received all data, Turn the scanner off, and then remove the cable
7. Turn the scanner on again.


cloning your scanner

You can clone all the frequencies, trunking talk groups, and fleet maps programmed in your

PRO-162 to another PRO-162 or PRO-433 using an optional interface cable and software.

1. Make sure the scanners are turned off and then plug the cable into each scanner's **PC/IF** jack.
2. Turn on both scanners. "Clone Mode [ENT] to send" appears.
3. Press **ENT**. Then "Confirm Send Data? [1] to Yes [CL] to No" appears.
4. Press **1** to send the data to the other unit or press **CL** key to cancel the operation.
5. When the data transfer is completed, "Clone Mode Finished" appears. If the data transfer is not successful, "Clone Mode Error" appears.
6. After the clone operation is complete, remove the cable, turn both unit off and then on again.

using the display backlight







To turn on the display light for easy viewing at night, press . The display lights for 15 seconds.

using the auto backlight display

You can set the scanner so the auto backlight turns on for about 5 seconds when the scanner receives signals.

If you press a key (except) within 5 seconds, the display remains lighted for more than 15 seconds.





To turn auto backlight display on or off:

1. Press **FUNC**, and then press **MAN/MENU**.
2. Repeatedly press  or  to select **Back Light**, then press **ENT/PGM**.
3. Repeatedly press  or  to select **Auto Light**, then press **ENT/PGM**.
3. Repeatedly press  or  to select **ON** or **OFF**, then press **ENT/PGM**.
4. Press **L/O** to exit the menu mode, or press **CL** to back to a previous menu.

using LCD contrast

You can change LCD Contrast you want.

To change LCD Contrast on your scanner:

1. Press **FUNC**, and then press **MAN/MENU**.
2. Repeatedly press  or  to select **LCD Contrast**, then press **ENT/PGM**.
3. Repeatedly press  or  to select contrast level you want. There are 8 steps as **Contrast 1-8**.
4. Press **MAN** to exit the menu mode.

search speeds

Note: *Hypersearch applies only to the 5 kHz step bands (25–54 MHz, 137–174 MHz, and 216–224.9950 MHz).*

The scanner has two search speeds.

Normal Search (90 steps/second)

Hypersearch (270 steps/second)

turning the keytone off/on

Each time you press any of the scanner's keys, the scanner sounds a tone. To turn the

scanner's key tone off or on:

1. Press **FUNC**, and then press **MENU**.
2. Repeatedly press ▲ or ▼ to display **Key Tone**, then press **ENT/PGM**.
3. Repeatedly press ▲ or ▼ to select **OFF** or **ON**, then press **ENT/PGM**.
4. Press **L/O** to exit the menu mode, or press **CL** to back to a previous menu.

turning the battery save function off/on

When the scanner is set to receive (monitor) a manually selected channel and it is not actively scanning, using the battery save feature conserves energy.

To turn the battery save function off or back on:

1. Press **FUNC**, and then press **MENU**.
2. Repeatedly press ▲ or ▼ to display **Battery Save**, then press **ENT/PGM**.
3. Repeatedly press ▲ or ▼ to select **OFF** or **ON**, then press **ENT/PGM**.
4. Press **L/O** to exit the menu mode, or press **CL** to back to a previous menu. When the battery save feature is active, the scanner repeatedly turns off the internal power for 1 second, and then turns it back on for about 1/2 second to check for a transmission.

setting CTCSS/DCS

Turning this option on lets the scanner search for CTCSS/DCS tones. If the scanner detects the tone, it displays the tone's frequency and DCS code. Select your setting, and then press the scroll control.

To turn on or off CTCSS/DCS feature, press **FUNC** then **CL/CTCSS/DCS**. On the scanner's displays, "CTCSS/DCS ON" or "CTCSS/DCS OFF" appear for 1 second.

Note: When CTCSS/DCS is ON in Scan Mode or Manual Mode, the scanner works according to setting of channel. Or when CTCSS/DCS is ON in Chain Search or Fine Tune or Signal Stalker, the scanner searches CTCSS/DCS code. This feature does not apply to the AIR band or Weather Service Search.

skipping data signals

To prevent the scanner from stopping on channels that consist of non-modulated or data signals (such as fax or modem transmissions) during a search or scan, turn on the data skip feature. When the radio receives a data signal and data skip is selected, the signal is ignored.

To turn on the data skip feature;

1. Turn off the priority feature if it is on (see "priority").
2. Press **FUNC**, and then press **MENU**.
3. Repeatedly press ▲ or ▼ to display **Data Skip**, then press **ENT/PGM**.
4. Repeatedly press ▲ or ▼ to select **OFF** or **ON**, then press **ENT/PGM**.
5. Press **L/O** to exit the menu mode, or press **CL** to back to a previous menu.

Note: *This feature does not apply to the AM band and weather search mode as data signals are not generally found in these services. If "AM" appear, the scanner has selected AM band.*

receiving nwr-same and weather alert signals

In 1994, the National Oceanic and Aerospace Administration (NOAA) began broadcasting alerts that include digitally encoded data. Specific Area Message Encoding (SAME) includes information which identifies the severity of the alert. While this scanner does not encode specific geographical data, it does detect SAME signals and decode the alert level. The scanner displays this data as codes corresponding to the levels of severity (Warning, Watch, and Advisory).

turning on the digital weather alert feature

1. Press **WX/** and start weather search.

See "weather search."

2. Press **PRI/ALERT**. **ALT** appears. This mutes the audio until the scanner receives a SAME-coded signal. When the scanner receives a SAME-coded signal, **ALT** flashes and SAME event code name (which indicates the severity of the alert) appears. The scanner remains on the weather channel and the audio turns on so you can hear the weather broadcast.

testing digital weather alert tone

To hear and test the tones for the three alert levels, press **WX/** to select the weather service, then hold down **ALERT** for about 1 second. The tones sound in the order **Advisory level**, **Watch level**, then **Warning level**, and **WX ALERT TEST** flashes. Each alert code appears as its tone sounds. Press any key to end the test sequence.

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 weather channels 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

1. Press **WX** to go to programming FIPS code menu in program mode. 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 programmed, **1** of the FEPS memory number and FIPS code appears.

2. Press ▲ or ▼ to change the displayed FIPS code from **0** to **14**. If a FIPS code is not programmed, ----- appears.

3. Use the keypad to enter the FIPS code. Press **CL** to cancel an inputted FIPS code.

4. Press **ENT/PGM** to store the FIPS code. Press **0** then **ENT/PGM** to clear a FIPS code. ----- appears. If an invalid value has been inputted, the FIPS code is cleared.

5. To set the scanner so it alerts you when you receive any FIPS code, press ▲ or ▼ to move **ALLFIPS**. Then press **ENT/PGM**. Then go to Program Mode.

6. To set to alert only for the area you have programmed, press ▲ or ▼ to move **0** to **14**, then press **ENT/PGM**. Then go to Program Mode.

Skywarn

The Skywarn function lets you jump directly to the last channel in memory (Bank39#49) from any mode by press and holding **WX/Ⓜ**. The scanner goes into manual mode and starts receiving transmissions in the last channel when **WX/Ⓜ** is entered. Before using this feature, enter the local Skywarn frequency for your area into Bank39#49. If no frequency is programmed in the last channel, "Skywarn Freq. is not stored" appears and the scanner sounds an error tone.

The scanner has 10 channels for skywarn (bank39ch#40-49). Press ▲ or ▼ to select the skywarn channel only, then press **MAN** to exit skywarn.

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 of 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

Listen to NOAA for weather alerts 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.

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.*

Signal Stalker I

Your scanner's Signal Stalker I 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 I works "in the background" while you are scanning other frequencies; turn off normal scanning while Signal Stalker I works; or turn off Signal Stalker I and use the scanner normally. You can set the scanner so it alerts you when Signal Stalker I 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.

Note: *Signal Stalker I 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. You can screen unwanted transmissions by pressing **L/O** to lock them out. See "search skip memory" for more information. 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 the same time in the same area, or if the transmitter is a broadcast television station.*

setting the Signal Stalker I options

1. Press **FUNC**, and then press **MENU**.
2. Repeatedly press **▲** or **▼** to select **Signal Stalker I.**, then press **ENT/PGM**. One of the following Signal Stalker I options appears:
 - **Band Switch:** Lets you select the Signal Stalker I band.
 - **Alert Beep:** Lets you select the Signal Stalker I alert settings.
 - **Alert Light:** Lets you select the Signal Stalker I back light settings.
 - **Pager Screen:** Lets you select the pager screen settings.
 - **Only Mode:** Lets you select the Signal Stalker I mode settings.
 - **Voice Interrupt:** Lets you select the Signal Stalker I voice interrupt settings.

While the Signal Stalker I is on and the scanner is receiving an audio signal (voice) in normal scanning, the scanner checks the Signal Stalker I every 2-seconds and the audio signal breaks at that moment. If you do not want the break, set this function to **OFF**. The scanner does not check signals while receiving an audio signal. The scanner resumes checking signals when the audio signal ends. If you want to keep the Signal Stalker I active despite the interruption, set this function to **ON**.

- **Logging:** Lets you select the Signal Stalker I logging setting.

When the scanner finds a strong signal, it automatically saves the signal to one of 10 log channels. If the scanner finds a new frequency after the 10 log channels are fully stored with frequencies, the oldest memory is deleted and the new frequency is stored in that channel. You can scan the log channels along with the normal 2000 channels.

- The 10 log channels are located after Channel 2000 and you can manually access them by selecting channels as Channel 2001(Bank40#00), Channel 2002(Bank40#01), ... Channel 2010(Bank40#09). "**SS-0**", "**SS-1**", ... "**SS-9**" appear as channel numbers.

You cannot program frequencies in the log channels.

You can lock out the log channels like normal channels.

Set **Logging** to **ON** to scan the log channels along with the normal channels. If you do not want to scan the channels, set it to **OFF**.

The scanner stores signals found by the Signal Stalker I even the **Logging** function is **OFF**.

The frequencies in the log channels are deleted when the scanner is turned off.

3. Repeatedly press ▲ or ▼ to select the option you want, then press **ENT/PGM**.

• **Band Switch:** If you selected Band Switch, one of the following band names appears:

25-54 : VHF Low Band

108-137: AIR Band

137-174: VHF High Band 1

216-320: VHF High Band 2

400-512: UHF Band

764-956: 800MHz Band

Repeatedly press ▲ or ▼ to select the band you want to set, then press **ENT/PGM**.

4. Repeatedly press ▲ or ▼ to select **ON** or **OFF**, then press **ENT/PGM**.

5. When you select the option, press **CL** to exit the option mode.

6. Press **MENU** to exit the menu mode.

band meter for Signal Stalker



This meter allows you to see which band Signal Stalker is searching for. When a strong and consistent signal is detected, this meter will rise up to Max. And the scanner is tuned to the signal and shows up the band where the signal is detected.

However, there is a case that the scanner might not be able to catch the signal even if this meter rises to MAX. It is because the signal might be out of range, it might be a locked out frequency, or it might be a signal screened common pager frequency as the pager signal. If you want to improve the performance when signal stalker is On (not in "ONLY Mode"), disable the band (see xx).


Note: This feature is different from so-called SIGNAL STRENGTH METER using RSSI.

using Signal Stalker I

Note: Turn off the data skip feature if it is on.

To turn on Signal Stalker I, turn **SQUELCH** fully clockwise, and then press  except in WX search, program search range, or program mode.  appears. Every 2 seconds, the scanner searches for frequencies in the range you specified in "Setting the Signal Stalker I Options."

When the scanner finds a frequency, it sounds the alert you specified in “Setting the Signal Stalker I Options”, and **Signal found!** appears. Press any key to confirm the displayed frequency. Press ▲ or ▼ to resume scanning.

To turn on Signal Stalker I and turn off normal scanning, turn Only Mode of Signal Stalker I options to on.  flashes. See “setting the Signal Stalker I options.”

To turn off Signal Stalker I and turn on normal scanning, press  and  disappears.

trunking operation

The scanner tracks transmissions that use the Motorola Type I, Type II, hybrid, and EDACS and LTR analog trunking systems.

setting the scanner to the trunking mode

simultaneous trunking

The scanner allows you to track up to 40 systems at a time. You can trunk scan or search and scan conventional frequencies at the same time. You can also program conventional frequencies in the same bank as trunking systems.

After the scanner is finished checking activity in the trunked system, it scans other conventional frequencies in the bank. (Only trunking frequencies are programmed in trunk mode.)

If a system is inactive for 1 second and there are no conventional channels in the bank, the scanner starts scanning the next selected trunk bank. If you turned DELAY on, the scanner starts scanning the next trunk bank after about 2 seconds.

setting squelch for the trunking mode

For trunked reception, a good squelch setting is in the center of the range with the white marker pointing to the rear of the scanner. If it is set 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 trunked frequencies

Follow these steps to select, program, and store trunked frequencies.

1. Press **ENT/PGM** in conventional mode to set the scanner in programming mode.
2. Use the number key and decimal key to enter a valid frequency within the trunk system, then press **ENT/PGM**.
3. Press **FUNC**, and then press **TRUNK/MODE** to change the receiving mode.

Note: *You can select from the following three systems:*

FM (or **AM**) -> **MO** -> **ED** -> **LT** -> **FM** (or **AM**) ->...

MO : Motorola Trunk System

ED : EDACS Trunk System

LT : LTR Trunk System

4. Press ▲ or ▼ to select the next channel in the bank.
5. Repeat from step 2 until you enter all the desired frequencies in that bank.

Notes:

- If you enter an invalid frequency (outside the selected range), the scanner beeps, then **Invalid Freq.** appears. If this happens, press **CL** to clear the frequency, and then repeat the entry.
- For **EDACS (Ed)** and **LTR** systems, you must enter the frequencies in logical channel number (LCN) order.
- If you try to enter a duplicate frequency, the scanner beeps and the channel which was previously stored appears

6. Press **SCAN** to begin scanning for the trunk's data channel and scan conventional frequencies at the same time. As the scanner looks through the frequencies, you see them on the display. When the scanner finds the controlling data channel, the scanner begins trunking.

programming trunked banks

Follow these steps to select and program trunk bank mode.

1. Press **TRUNK** in conventional programming mode to go to Program Trunk Bank Mode
2. Press ▲ or ▼ to select the desired trunked system.

Note: List of trunked systems as follows:

You See	Trunk System
MOT 800	Motorola Type I, Type II and Hybrid 800 MHz frequencies
MOT 800 CUSTOM	Motorola Type I, Type II and Hybrid 800 MHz frequencies Custom
MOT 900	Motorola Type II, 900 MHz frequencies
MOT VHF	Motorola Type II, VHF(136-174 MHz) frequencies
MOT UHF	Motorola Type II, UHF (406-512 MHz) frequencies
EDCS	EDACS Wide Band: 9600 baud
EDCS SCT	EDACS Scat
LT	LTR
NON TRUNK	No Trunk

Notes:

- MOT 800 CUSTOM, MOT VHF, MOT UHF require programming of a Base, Spacing

frequency and Offset channel.

- MOT 800, MOT 800 CUSTOM require programming of fleet map.
 - EDCS, LT require programming of frequencies in exact order and location.
3. Press **ENT/PGM** to go to Program Talk Group ID Mode.

searching a trunked bank

Once the data channel is acquired, the scanner begins a trunk scan. With the open mode function, you will be able to find all the active talk groups within the trunked system.

Press **FUNC**, then **•/DELAY/OPEN/CLOSE**. You can switch to the trunk close mode from the trunk open mode. See “scanning the talk group ID lists”.

While scanning conventional frequencies, follow the steps below to switch to the trunk mode after the scanner finds the data channel.

1. Press **FUNC**, then **▲/BANK** to go to select bank menu in scan mode.
2. Press **TRUNK** in select bank menu to go to select open/close menu. **Set Open/Close** menu appear.
3. Press **▲** or **▼** to move the cursor up or down. To set Open/Close mode, press the number key that corresponds to the desired bank.
4. Press **TRUNK** in select open/close menu to go to select Bank Menu.
5. To exit from menu mode, press **MAN/MENU**.

Hint: While scanning in open mode, you may not know exactly to whom the talk group IDs are assigned until you listen awhile. To locate talk group ID lists for your local police, fire, and other agencies, refer to frequency guides available at your local RadioShack store or on internet sites such as www.trunkscanner.com. You can also determine the type of agency you are listening to after a short while, be it a police, fire, or emergency medical 2-way radio user. Once you have identified the type of service, note the associated talk group ID of that unit for future programming. See “identifying a trunked frequency”. Determining the service associated with a talk group ID might take awhile, but discovering the ID owner of each signal is half the fun of trunk scanning!

turning a trunked bank on or off

1. Press **FUNC**, then press **▲/BANK** in scan mode.
2. Press **▲** or **▼** to move the cursor in the up or the down.
3. To turn banks on or off while scanning, press the number key (**1 - 9, 0**) that corresponds to the bank you want to turn on or off.
4. To exit from menu mode, press **MAN**.

skipping a trunked bank

You can scan conventional frequencies programmed in the same bank by holding down **▲** for about 1 second. If there is no conventional frequency, the scanner scans the next bank.

using Motorola control channel only mode

To turn this function on:

1. Press **FUNC**, then press **MENU** to open menu mode.
2. Select the “Trunk Option” - “Select Bank” - “Select Trunk Sys”.
3. Repeatedly press **▲** or **▼** to select Motorola system, and press **ENT/PGM**.

4. Repeatedly press ▲ or ▼ to select **Set C-Ch only**, and press **ENT/PGM**.
5. Repeatedly press ▲ or ▼ to select **Standard** or **Splinter** before you begin to Control Channel Trunk.

OFF: Control channel only mode is deactivate.

Standard: The frequency plan in Standard is 851.0125 MHz.

Splinter: The frequency plan in Standard is 851.0000 MHz.

6. Press **ENT/PGM**.

NOTE: Motorola type2 900MHz, VHF, UHF, 800 MHz CUSTOM can select the Standard or Splinter.

turning the status bit ignore (s-bit) on or off

You can set how your scanner works with status bits (also called S-Bits), letting you control how the scanner interprets and displays talk group IDs. The last four bits of a Motorola Type II talk group ID (a binary 16-bit code) are the status bits. In some systems, status bits identify special situations (such as an emergency status).

Your scanner is preset to assume that the status bits in a talk group ID are set to 0 and ignores them(s-bit feature: Ignore). For example, when the scanner receives the talk group ID 010111001110 0011, it reads the ID as 010111001110 0000 and converts the first 12 bits of the ID to 23776 (the talk group ID). However, since the status bit value is 3 (0011 converted to decimal equals 3), the ID is actually 23779. If you are scanning a Motorola Type I system and do not have a fleet map for that system, you might have to turn off status bit ignore in order to determine the proper fleet map.

Important: *If you are scanning any system other than a Motorola Type I system, be sure status bit ignore is set to **YES** or you will miss some transmissions.*

Follow these steps to turn status bit ignore yes or ignore.

1. Press **FUNC**, then press **MENU** to open menu mode.
2. Select the "Trunk Option" - "Select Bank" - "Select Trunk Sys".
3. Repeatedly press ▲ or ▼ to select **Motorola system**, and press **ENT/PGM**.
4. Repeatedly press ▲ or ▼ to select **Set Status Bit**, and press **ENT/PGM**.
5. Repeatedly press ▲ or ▼ to select **Yes** or **Ignore**, and press **ENT/PGM**.

selecting the EDACS (Ed) talk group ID format

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

1. Press **FUNC**, then press **MENU** to open menu mode.
2. Select the "Trunk Option" - "Select Bank" - "Select Trunk Sys".
3. Repeatedly press ▲ or ▼ to select **EDCS**, and press **ENT/PGM**.
4. Repeatedly press ▲ or ▼ to select **EDCS ID Format**, and press **ENT/PGM**.
3. Repeatedly press ▲ or ▼ to select **AFS Format** or **Decimal Format**, and press **ENT/PGM**.

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 (Ed) talk group ID range search

When your scanner searches EDACS (Ed) 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 trunking pause mode press **0, 1, •/DELAY** then **SCAN**. "01----" appears during scan. Or if you want to search within the 01 agency and 01 fleet, while trunking pause mode press **0, 1, •/ DELAY, 0, 1**, then **SCAN**. To stop the ID range search, press **SCAN**.

using HOLD to monitor an active talk group ID

Follow these steps to stop scanning and searching and keep the scanner tuned to a desired ID.

1. Press **PAUSE**. **PAUSE** appears and the scanner stays on the current ID.
2. If you want to listen to (and hold) a different ID, use the number keys to enter that ID.
3. Press **PSE**. **ID Hold** appears, and then the scanner monitor the ID.
4. Press **PAUSE** to resume scanning or searching for a data channel.

locking out talk group IDs

Many municipal and commercial services use trunk systems to transmit signals from such devices as water meter transmitters, door alarms, and traffic signals. Some signals are encrypted, as well, and most are not voice signals. Since all these are assigned IDs just like other users, you may want to lock out reception of these ID signals. The scanner allows that you lock out up to 50 IDs for each trunk scanning bank. If you use all the banks as trunking banks, you can lock out up to 2000 IDs at one time.

Note:

•If you lock out an ID while searching, it is also locked out of the scan list(s). See "using talk group ID lists."

To lock out an ID, press **L/O** when the ID appears. The ID is locked out, and the next active ID appears.

- The Talk Group ID is Locked out, and the next active Talk Group ID display.
- When you try to register more than 50 Talk Group ID, **ID L/O List Full** appears.

unlocking a single talk group ID

You can check all IDs already locked out.

1. Press **FUNC**, then press **MENU** to open menu mode.
2. Select the "Trunk Option" - "Select Bank" - "Select Trunk Sys".
3. Repeatedly press **▲** or **▼** to select **ID L/O review**, and press **ENT/PGM**. Then the locked out Talk Group ID appears.
4. If you unlocked a Talk Group ID, press **ENT/PGM**. Select **Yes** and press **ENT/PGM** to delete it.

Note: When you press and hold **L/O** for 2 seconds in trunking, you can also check all Talk Group IDs locked out.

Or press **FUNC**, and then press **L/O** to open ID Lockout review in trunking mode.

unlocking all talk group IDs

Hold down **L/O** while searching until you hear two short beeps. You can check all locked out IDs. Hold down **L/O** while you are reviewing all locked out IDs. The scanner beeps twice. All locked out IDs in a bank are unlocked. Press **SCAN** to resume the search.

Or follow these steps to unlocking all Talk Group IDs.

1. Press **FUNC**, then press **MENU** to open menu mode.
2. Select the “Trunk Option” - “Select Bank” - “Select Trunk Sys”.
3. Repeatedly press **▲** or **▼** to select **Unlock All**, and press **ENT/PGM**.
4. Repeatedly press **▲** or **▼** to select **Yes** or **No**, and press **ENT/PGM**.

using trunk scanning Scan Delay

Sometimes a user might pause before replying to a transmission. You can set the scanner to hold on an ID for 2 seconds to wait for a reply. That way, the scanner continues to monitor the ID for 2 seconds after the transmission stops before resuming scanning.

Press **•/DELAY** to turn trunk scanning scan delay on or off. **DLY** appears when the scan delay is set to on.

Note: *If you consistently miss responses even with scan delay turned on, change the default system type or the fleet map being used. See “scanning type I and hybrid trunked systems”.*

monitoring talk group IDs

If the channel modulation is trunk type in Manual Mode, all active Talk Group IDs begin to display for each for 500 ms. You won’t hear conversations in this mode, but this is an excellent way to determine which Talk Group IDs are the most active.

Note: *When you monitor IDs, any IDs you have locked out also appear.*

using talk group ID lists

When you program trunked frequencies into a bank (see “programming trunked frequencies”), your scanner sets up ten scan lists for that one bank in which you can store your favorite IDs. Each list can contain up to 10 IDs, for a total of 100 IDs for each trunk scanning bank. If you use all the banks as trunking banks, you can store 4000 IDs.

Talk group ID lists help you organize trunking system users into categories. For example, you might use List 1 for police IDs, List 2 for fire department IDs, List 3 for emergency medical service IDs, and so on. Once you store all the IDs in a list, you can scan them just as you scan conventional channels. You can program IDs into talk group ID lists manually, during a search, or automatically.

manually storing talk group IDs in talk group ID lists

1. Press **ENT/PGM** to go to the program frequency mode.
2. Press **TRUNK** to select the program trunk bank mode and the bank you want to change.
3. Use **▲** or **▼** to choose **trunk system**, then press **ENT/PGM**.
3. Press **▲** or **▼** and choose desired **ID memory**. Or enter the ID memory number where you want to store a Talk Group ID, and then press **MAN**.
4. Enter the talk group IDs for each trunk system.

Note: If one or more of the IDs you stored are incorrect, **Invalid ID** appears and the scanner beeps several times. To correct the entry, delete at least one of the incorrect IDs.

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 **ENT/PGM**.

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.

1. Enter the ID you want to store by using the keypad (ID = Block number + Fleet number + **•/DELAY** + Subfleet number).
2. Press **ENT/PGM**.

EDACS (Ed) talk groups

AFS ('Agency-Fleet-Sub fleet') is the numbering format used in the scanner to display and enter EDACS talk groups. The scanner shows EDACS talk groups in AFS format and can also work in decimal format. (See "selecting the EDACS(Ed) talk group ID format"). AFS allows you to enter full or partial EDACS Talk Group IDs.

To enter a full EDACS ID:

1. Enter the Agency number.
2. Press **•/DELAY** to enter the dash.
3. Enter the fleet number and subfleet number.
4. Press **ENT/PGM**.

entering EDACS partial talk groups

You can enter partial group numbers in an EDACS talk group. By entering only the desired portion of a group, you can select either 128, 8, or 1 talk group. For example, you might program every talk group in a police department by pressing just four keys.

Note: You cannot use partial talk groups in decimal mode. (See "selecting the EDACS talk group ID format").

You can program a specific talk group such as 01-011 into the scan list memory. In AFS mode, you can program the talk groups for an entire agency by pressing corresponding keys.

For example:

You Press	To Scan
0 1 . ENT	all 01 groups
0 1 . 0 1 ENT	all 01 talk groups within the 01 agency

To enter a Partial EDACS ID:

1. Enter the agency number you want to store. Press **•/DELAY** to enter the dash.
2. Press **ENT/PGM**. Or you can program all the talk group numbers for one fleet of an agency.
3. Enter the agency number.
4. Press **•/DELAY** to enter the dash.
5. Enter the fleet number.
6. Press **ENT/PGM**. Remember the AFS format allows you to enter full or partial EDACS IDs for powerful flexibility in all modes. The scanner defaults to AFS talk group displays for EDACS only.

LTR talk groups

Users on an LTR system are assigned to specific talk groups, which are identified by the radio as a six-digit number. The number is in the form AHHUUU, where:

A = Area code (0 to 1)

H = Home repeater (01 through 20)

U = User ID (000 through 254)

To enter an LTR ID:

1. Enter the area code.
2. Enter the home repeater number.
3. Enter the Use ID you want to store.
4. Press **ENT/PGM**.

Note: To clear a stored ID while entering an ID, press **0** and **ENT/PGM** successively, then start over.

scanning the talk group ID lists

Press **SCAN** to begin scanning the lists you have stored.

To remove a scan list from active scanning, use the number keys to enter the scan list's number. The scan list number turns off, and the IDs in that list are not scanned.

Note: One of the ten scan lists must always be active. You cannot remove all of them.

To restore a scan list to active scanning, use the number keys to enter the number of the list again.

priority talk group ID scanning

You can assign a priority to a favorite ID so during scanning the scanner checks that ID more frequently than the others in the list. Each of the ten memory locations reserved for storing lists (see "using talk group ID lists") can have only one priority ID, and the ID assigned that priority in List 1 has the highest priority of all.

To assign a priority to an ID, press and hold **PRI** for 2 second in Program Talk Group ID mode. **P** appears.

To turn priority ID scanning on or off, repeatedly press **PRI** during ID scanning in close mode operation. See "searching a trunked bank".

PRI appears when priority scanning is turned on.

Note: Priority ID scanning does not operate when priority IDs are locked out. See "locking

out talk group IDs”.

scanning type I and hybrid trunked systems

Your scanner is preset to scan Type II system IDs. When you scan trunked frequencies, each Type II user ID you see appears as an even number without a dash (example 2160). Your scanner can also scan Type I trunked systems. Each Type I ID appears as a three- or four-digit number, followed by a hyphen, followed by a one- or two-digit number (example 200-14).

If you notice a mix of odd- and even-user IDs (examples 6477, 2160, 6481, 6144, and 1167), then you are probably monitoring either a Type I or hybrid (a combination of Type I and Type II user IDs) system with the S-Bit function turned off (see “turning the status bit ignore (S-Bit) on or off”).

Subfleet information is included with the frequency list for a Type I system. To enter the provided map, see “programming a fleet map”.

Note: *To locate suitable fleet map information, review the contents of website www.trunkscanner.com.*

If you do not already know the size codes used, you will have to guess. Since you do not have to figure out all the blocks at one time, this is not as hard as it might seem. Select a size code for a block, then press **SCAN** and listen to the conversations. If you are receiving most of the replies, then you have probably selected the right size code and can program the next block of the map. There are 16 preset fleet maps to choose from, and it is best to start with these when setting up a Type I or hybrid trunk scanning bank.

If none of the following preset fleet maps allow you to follow complete conversations, then you probably need to program your own fleet map (see “Programming a Fleet Map”).

preset fleet maps table

Block	Size Code							
	E1P1	E1P 2	E1P 3	E1P 4	E1P 5	E1P 6	E1P 7	E1P 8
0	S11	S4	S4	S12	S4	S3	S10	S1
1	S11	S4	S4	(S12)	S4	S10	S10	S1
2	S11	S4	S4	S4	S12	S4	S11	S2
3	S11	S4	S4	S4	(S12)	S4	S4	S2
4	S11	S4	S4	S4	S4	S12	S4	S3
5	S11	S4	S4	S4	S4	(S12)	S4	S3
6	S11	S4	S12	S4	S4	S12	S4	S4
7	S11	S4	(S12)	S4	S4	(S12)	S4	S4

Block	Size Code							
	E1P 9	E1P 10	E1P 11	E1P 12	E1P 13	E1P 14	E1P 15	E1P 16

0	S4	S0	S4	S0	S3	S4	S4	S3
1	S4	S0	S0	S0	S3	S3	S4	S10
2	S0	S0	S0	S0	S11	S10	S4	S10
3	S0	S0	S0	S0	S4	S4	S11	S11
4	S0	S0	S0	S0	S4	S4	S11	S0
5	S0	S0	S0	S0	S0	S4	S0	S0
6	S0	S4	S0	S0	S0	S12	S12	S12
7	S0	S4	S0	S4	S0	(S12)	(S12)	(S12)

selecting a preset fleet map

1. Press **FUNC**, then press **MENU** to open menu mode.
2. Select the "Trunk Option" - "Select Bank" - "Select Trunk Sys".
3. Repeatedly press ▲ or ▼ to select **MOT 800** or **MOT 800 CUSTOM** system, and press **ENT/PGM**.
4. Repeatedly press ▲ or ▼ to select **Edit Fleet Map**, and press **ENT/PGM**.
5. Repeatedly press ▲ or ▼ to select the **preset** map, and press **ENT/PGM**.
6. Repeatedly press ▲ or ▼ to select the name of the desired map (example E1P7), and press **ENT/PGM**. Then the scanner returns to previous screen.

Note: When the scanner searches for transmissions, Type I fleet and subfleet IDs such as 100-12, 100-9, 000-12, or 400-8 display.

If you are still unable to listen to a complete conversation, then try another preset map.

programming a fleet map

1. Press **FUNC**, then press **MENU** to open menu mode.
2. Select the "Trunk Option" - "Select Bank" - "Select Trunk Sys".
3. Repeatedly press ▲ or ▼ to select **MOT 800** or **MOT 800 CUSTOM** system, and press **ENT/PGM**.
4. Repeatedly press ▲ or ▼ to select **Edit Fleet Map**, and press **ENT/PGM**.
5. Repeatedly press ▲ or ▼ to select the **custom** map, and press **ENT/PGM**.
6. Repeatedly press ▲ or ▼ to select the size code for first block, and press **ENT/PGM**. Then the next available block appear. For specifics about each size code, see preset fleet maps table.
7. Press **SCAN** in open mode. If the scanner's setting is close mode, press **FUNC**, then **•/DELAY/OPEN/CLOSE** to switch open mode from close mode. The scanner exits the trunking programming mode, tunes the data channel, and then searches using the map you programmed.

Note: If you select size code S-12, S-13, or S-14, these restrictions apply:

- S-12 can only be assigned to Blocks 0, 2, 4, or 6
- S-13 can only be assigned to Blocks 0 and 4
- S-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 you program a fleet map. For example, if you assign Block 0 as S-12, the scanner prompts you for b2, the next block available, instead of b1. If you assign Block 0 as

S-14, you would not see another prompt because S-14 uses all available blocks.

programming a hybrid system

A hybrid system is simply a Type I system with some of its blocks designated as Type II blocks. To program a hybrid system, follow the steps listed in “Programming a Fleet Map.” However, if you want a block to be Type II, instead of pressing ▲ or ▼ to select the size block (Step 6), enter size code S-0 instead.

programming the Base and Offset frequencies

To properly track Motorola VHF and UHF trunked systems, you must program the applicable base and offset frequencies for each system. For a list of these frequencies and other scanner information, go to www.trunkscanner.com and other similar frequency resources.

1. Press **FUNC**, then press **MENU** to open menu mode.
2. Select the “Trunk Option” - “Select Bank” - “Select Trunk Sys”.
3. Repeatedly press ▲ or ▼ to select **MOT 800 CUSTOM**, **MOT VHF** or **MOT UHF** and press **ENT/PGM**.
4. Repeatedly press ▲ or ▼ to select **Edit Band Plan**, and press **ENT/PGM**.
5. Repeatedly press ▲ or ▼ to select desired **Band Plan**, and press **ENT/PGM**.
6. Repeatedly press ▲ or ▼ to select **Base Frequency**, and press **ENT/PGM**.
7. Use [1] through [9], [0], [.] to enter a Base Frequency, and then press **ENT/PGM**.
8. Repeatedly press ▲ or ▼ to select **Spacing**, and press **ENT/PGM**.
9. Repeatedly press ▲ or ▼ to select desired spacing frequency, and press **ENT/PGM**.
 - For MOT 800 CUSTOM (Motorola Type I, Type II and Hybrid 800 MHz), use 12.5 kHz or 25kHz steps.
 - For MOT VHF (Motorola Type II VHF), use 5 kHz steps between 5 kHz – 100 kHz.
 - For MOT UHF (Motorola Type II UHF), use 12.5 kHz steps between 12.5 kHz – 100 kHz.
10. Repeatedly press ▲ or ▼ to select **Offset**, and press **ENT/PGM**.
11. Use [1] through [9], [0] to enter an Offset Channel, then press **ENT/PGM**.

Note: *You can only input a frequency between 380 – 759 for VHF and UHF trunked system. You can only input within a range of 0 – 1023 for Custom trunked system.*

12. Press **CL**. The scanner returns to the previous screen. Repeat steps 5 through 10 to program additional configurations.

turning the Motorola disconnect tone detect function On/Off

When the Motorola disconnect tone detect function is disabled, the scanner 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.

1. Press **FUNC**, then press **MENU** to open menu mode.
2. Select the “Trunk Option” - “Select Bank” - “Select Trunk Sys”.
3. Repeatedly press ▲ or ▼ to select Motorola system, and press **ENT/PGM**.

4. Repeatedly press ▲ or ▼ to select **Set End Code**, and press **ENT/PGM**.
5. Repeatedly press ▲ or ▼ to select **Yes** or **Ignore**, and press **ENT/PGM**.

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.*

frequently asked questions

These suggestions might help you locate the problem.



My scanner is on but will not scan, why?

- **SQUELCH** is not adjusted correctly; adjust **SQUELCH**.
- Only one channel or no channels are stored.
- Store frequencies into more than one channel.

Why won't my scanner work at all?

- Check the batteries or make sure the AC adapter or DC adapter is connected properly.
- Recharge the rechargeable batteries or replace the non-rechargeable batteries.
- The AC adapter or DC adapter is not connected.
- Be sure the adapter's barrel plug is fully plugged into the **9V 300 mA jack**.

Why doesn't my keypad work?

The keylock function is activated. To turn off the keylock, press  / **KEYLOCK** until  disappears.

Why is flashing?

Recharge the rechargeable batteries or replace the alkaline batteries.

Why am I getting poor or no reception?

Batteries are weak or completely discharged.

Check the batteries or make sure the AC adapter or DC adapter is connected properly.

Make sure an antenna is connected to the scanner.

Why does Error appear?

Programming error: re-enter the frequency correctly, including the decimal point.

Why won't my scanner track a trunked system?

The transmission might not use a system that can be tracked by your scanner.

Scan another transmission.

The data frequency is missing: see "programming trunked frequencies."

The system you are trying to track is a Type I system, and the scanner is set to scan Type II systems. Set the scanner to receive Type I trunked frequencies. See "scanning type I and hybrid trunked systems".

Scanner is set to receive Type I trunked frequencies, but does not scan them. The fleet map you have selected or entered might be incorrect.

Check the fleet map and correct it if necessary (see "scanning type I and hybrid trunked

systems” and “programming a fleet map”).

Why isn't my scanner acquiring a data channel?

SQUELCH is not correctly adjusted for trunk scanning. Adjust squelch for trunk scanning. See “setting squelch for the trunking mode”.

Why is the frequency used for the data channel missing?

Press **SCAN** to search for the data channel (see “programming trunked frequencies”).

Why am I missing replies to conversations?

The system you are trying to track is a Type I system, and the scanner is set to scan Type II systems. Set the scanner to receive Type I trunked frequencies. See “scanning type I and hybrid trunked systems”.

The selected fleet map is incorrect. Try another preset fleet map or program your own fleet map (see “scanning type I and hybrid trunked systems”).

Enter all of the trunk's frequencies: see “programming trunked frequencies”.

How do I reset my scanner?

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

Caution: 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. Turn off the scanner.
2. While holding down **2, 9** and **PSE**, turn on the scanner. “Initializing... Please wait” for about 5 seconds as the scanner clears its memory.

Note: *Do not turn off the scanner again until “Initializing... Please wait” disappears. Otherwise, the scanner might not clear its memory properly.*

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

1. Make sure your scanner is turned off.
2. Press **3** and **ENT/PGM** simultaneously while turning on the scanner. After several seconds, the scanner restores the frequencies.

FCC notice

Your scanner might cause radio or TV interference even when it is operating properly. To determine whether your scanner is causing the interference, turn off your scanner. If the interference goes away, your scanner is causing it. Try the following methods to eliminate the interference:

- move your scanner away from the receiver
- connect your scanner to an outlet that is on a different electrical circuit from the receiver
- contact your local RadioShack store for help

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

scanning legally

Your scanner covers frequencies used by many different groups including police and fire departments, ambulance services, government agencies, private companies, amateur radio services, military operations, pager services, and wireline (telephone and telegraph) service providers. It is legal to listen to almost every transmission your scanner can receive. However, there are some transmissions you should never intentionally listen to. These include:

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

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

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

We encourage responsible, legal scanner use.

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.

specifications

Frequency Coverage:

- 25.0000-54.0000 (in 5 kHz steps)
- 108.0000-136.9875 (in 12.5 kHz steps)
- 137.0000-174.0000 (in 5 kHz steps)
- 216.0000-224.9950 (in 5 kHz steps)
- 225.0000-399.9875 (in 12.5 kHz steps)
- 400.0000-512.0000 (in 6.25 kHz steps)
- 764.0000-775.9875 (in 12.5 kHz steps)
- 794.0000-823.9875 (in 12.5 kHz steps)
- 849.0125-868.9875 (in 12.5 kHz steps)

894.0125-956.0000 (in 12.5 kHz steps)
1240.0000-1300.0000 (in 12.5 kHz steps)
Number of Banks 40
Sensitivity (AM/FM):
FM 20 dB S/N at 3 kHz deviation
28.0000-54.00000.4µV
137.0000-174.00000.5µV
216.0000-224.99500.5µV
400.0000-512.00000.5µV
764.0000-775.98750.5µV
794.0000-823.98750.5µV
849.0125-868.98750.5µV
894.0125-956.00000.5µV
1240.0000-1300.00000.6µV
AM20 dB S/N at 60% modulation
25.0000-27.99501.3µV
108.0000-136.98751.5µV
225.0000-319.98751.5µV
320.0000-399.98751.3µV
IF Rejection (at 162.40 MHz)80 dB
(at 453.25 MHz)44 dB
Channels 2000

Operating Temperature:

Normal-4° to 140°F (-20° to 60°C)
Signal Stalker I ...14° to 140°F (-10° to 60°C)
Scan Speed 97 Channels/Second

Search Speed:

Normal 90 Steps/Second
Hypersearch260 Steps/Second
IF Frequencies 380.75 MHz, 265.55MHz, 10.85 MHz, 450 kHz
Antenna Impedance 50Ω
Audio Output270 mW maximum
Built-in Speaker1¼ Inches (32 mm) 8Ω Dynamic Type

Power:

4 AA Alkaline Batteries (6.0 VDC), or 4 AA Rechargeable Ni-MH Batteries (4.8 VDC) or
Optional AC Adapter

Current Drain:

Squelched90 mA
Full Output180 mA

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

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.

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