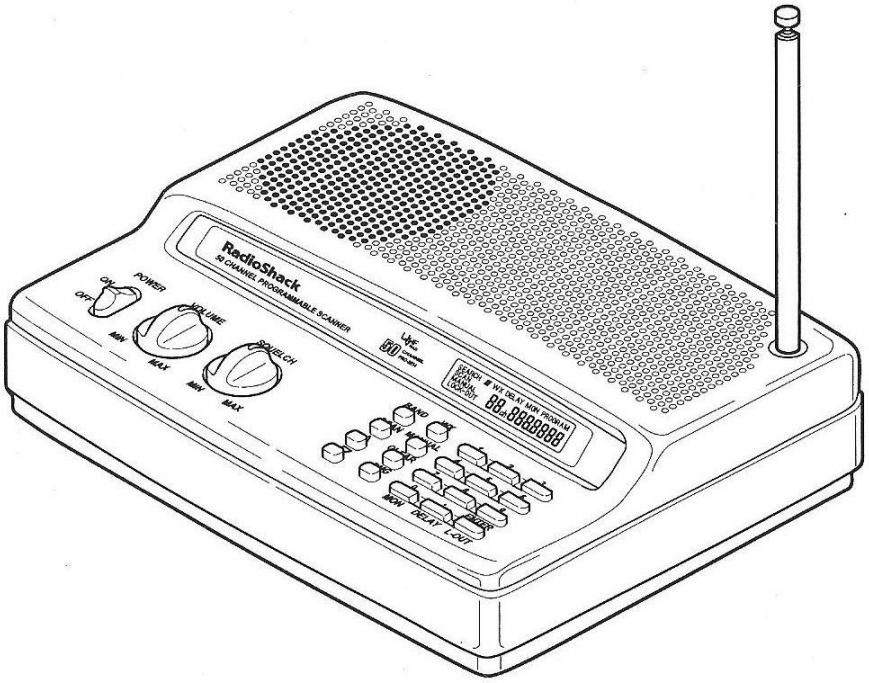
Cat. No. 20-420

OWNER'S MANUAL

PRO-2014
50-Channel Programmable Home Scanner

Please read before using this equipment.



RadioShack™

FEATURES

Your RadioShack PRO-2014 50-Channel Programmable Home Scanner lets you in on all the action! This scanner gives you direct access to over 22,000 exciting frequencies, including those used by police and fire departments, ambulance services, government agencies, and amateur radio services. The scanner's 10 preset frequency bands let you quickly and easily search predefined ranges of frequencies, so you can hear broadcasts of the same type.

Your scanner includes all these special features:

50 Channels — let you store up to 50 of your favorite frequencies for easy scanning and recall.

Two Frequency Search Options — you can search upward or downward through the preset frequency bands (band search) or start from a specified frequency (direct search).

Monitor Memory — lets you temporarily save a frequency located during a direct search, so you can decide if you want to move it to a channel.

Two-Second Delay — lets you set the scanner so it delays scanning or searching for 2 seconds before moving to another channel or frequency so you can hear more replies.

Weather Band Key — scans 10 preprogrammed weather frequencies to keep you informed about current weather conditions.

Memory Backup — keeps channel frequencies stored in memory for 1 hour or more during a power loss.

Lock-Out Function — keeps selected channels from being scanned, so you can skip over busy channels such as those with a continuous transmission.

Squelch Control — lets you adjust the scanner's sensitivity low enough to receive weak signals or high enough to eliminate receiver noise when not receiving a signal.

Liquid Crystal Display — makes it easy to view and change programming information at any time.

Supplied Telescoping Antenna — lets you receive strong local signals.

External Antenna Terminal — lets you connect an external antenna (not supplied) to the scanner.

Hyperscan™ — scans programmed channels at up to 25 channels per second.

Hypersearch™ — searches programmed channels at up to 50 steps per second.

We recommend you record your scanner's serial number here. The number is on the scanner's back panel.

Serial Number: _____

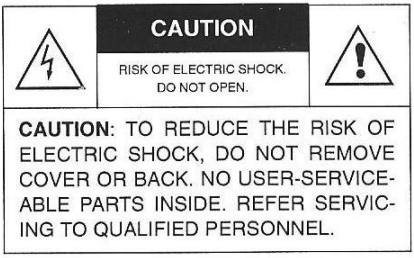
Your PRO-2014 scanner can receive all of these bands:

- 29-30 MHz (10-Meter Amateur Radio)
- 30-50 MHz (VHF Lo)
- 50-54 MHz (6-Meter Amateur Radio)
- 137-144 MHz (Government)
- 144-148 MHz (2-Meter Amateur Radio)
- 148-174 MHz (VHF Hi)
- 380-420 MHz (Government)
- 420-450 MHz (70-Centimeter Amateur Radio)
- 450-470 MHz (UHF Lo)
- 470-512 MHz (UHF "T" Band)

In addition, your scanner is preprogrammed with these weather service channels:

- 161.650 MHz
- 161.775 MHz
- 162.400 MHz
- 162.425 MHz
- 162.450 MHz
- 162.475 MHz
- 162.500 MHz
- 162.525 MHz
- 162.550 MHz
- 163.275 MHz

Warning: To prevent fire or shock hazard, do not expose this product to rain or moisture.



This symbol is intended to alert you to the presence of uninsulated dangerous voltage within the product's enclosure that might be of sufficient magnitude to constitute a risk of electric shock. Do not open the product's case.

This symbol is intended to inform you that important operating and maintenance instructions are included in the literature accompanying this product.

FCC NOTICE

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

- Moving your scanner away from the receiver
- Connecting your scanner to an outlet that is on a different electrical circuit from the receiver
- Contacting your local RadioShack store for help

If you cannot eliminate the interference, the FCC requires that you stop using your scanner.

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

SCANNING LEGALLY

Scanning is a fun and interesting hobby. You can hear police and fire departments, ambulance services, government agencies, private companies, amateur radio services, aircraft, and military operations. It is legal to listen to almost every transmission your scanner can receive. However, there are some electronic and wire communications that are illegal to intentionally intercept. These include:

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

According to the Federal Electronic Communications Privacy Act (ECPA), as amended, you could be fined and possibly imprisoned for intentionally listening to, using, or disclosing the contents of such a transmission unless you have the consent of a party to the communication (unless such activity is otherwise illegal). These laws change from time to time and there might be state or local laws that also affect legal scanner usage.

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PREPARATION

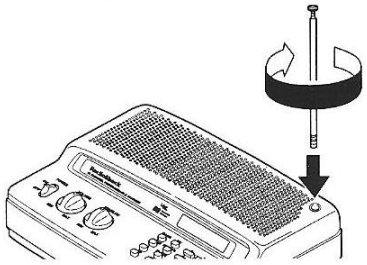
This scanner is primarily designed for use in the home as a base station. You can place it on a desk, shelf, or table.

CONNECTING AN ANTENNA

Connecting the Supplied Antenna

You must install an antenna before you can operate the scanner.

The supplied telescoping antenna helps your scanner receive strong local signals. To install the antenna, screw it clockwise into the hole on the scanner's top.



The scanner's sensitivity depends on the antenna's length and various environmental conditions. For the best reception of the transmissions you want to hear, adjust the antenna's length.

Frequency	Antenna Length
29-174 MHz	Extend fully
380-512 MHz	Extend 2 segments

Connecting an Outdoor Antenna

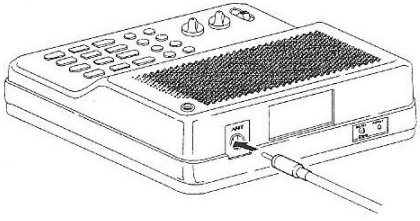
Instead of the supplied antenna, you can connect an outdoor base-station or mobile antenna (not supplied) to your scanner. Your local RadioShack store sells a variety of antennas. Choose the one that best meets your needs.

When deciding on an outdoor base-station or mobile antenna and its location, consider these points:

- 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.

To connect an optional base-station or mobile antenna, first remove the supplied antenna from the scanner. Always use 50-ohm coaxial cable, such as RG-58 or RG-8, to connect the base-station or mobile antenna. For lengths over 50 feet, use RG-8 low-loss dielectric coaxial cable. If the antenna cable's connector does not fit in the **ANT** jack on the back of the scanner, you might also need a PL-259-to-Motorola antenna plug adapter, such as RadioShack Cat. No. 278-208. Your local RadioShack store carries a wide variety of coaxial antenna cable and connectors.

Once you choose an antenna, follow the mounting instructions supplied with the antenna. Then route the antenna's cable to the scanner and connect the cable to the **ANT** jack.



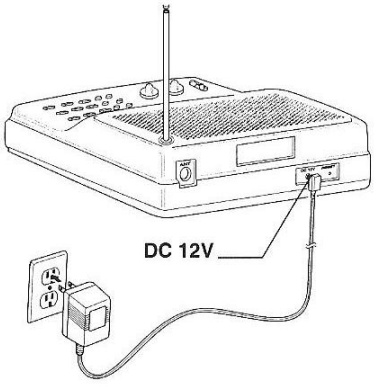
Caution: Do not run the cable over sharp edges or moving parts that might damage it.

Warning: Use extreme caution when you install or remove 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, contact with 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 POWER

Using AC Power

The scanner's supplied AC adapter lets you power the scanner from a standard AC outlet. To connect power to the scanner, insert the AC adapter's barrel plug into the **DC12V** jack on the back of the scanner, then plug the AC adapter into a standard AC outlet.



Warning: Do not use the AC adapter's polarized plug with an extension cord receptacle unless the blades can be fully inserted to prevent blade exposure.

Cautions:

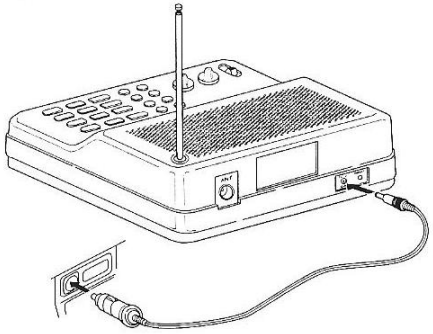
- Be sure to connect the AC adapter to the scanner before you connect it to an AC outlet, and disconnect the AC adapter from the AC outlet before you disconnect it from the scanner.

- The supplied AC adapter supplies 12 volts DC power and delivers 300 milliamps. Its center tip is set to positive, and its plug properly fits the scanner's **DC12V** jack. Using an adapter that does not meet these specifications could damage the scanner or the adapter.

Using Your Vehicle's Battery

If your AC power does not work in an emergency, you can power your scanner from your vehicle's cigarette lighter socket with an optional DC cigarette lighter power cable, such as Cat. No. 270-1533 (not supplied).

To connect an optional DC cigarette lighter power cable, insert its barrel plug into the **DC12V** jack on the back of the scanner, then plug the power cable into your vehicle's cigarette lighter socket.



Caution: If you use a DC cigarette lighter power cable with the scanner, it must supply 12 volts and deliver at least 300 milliamps. Its center tip must be set to positive, and its plug must properly fit the **DC12V** jack on the back of the scanner. The recommended power cable meets these specifications. Using a power cable that does not meet these specifications could seriously damage the scanner or the power cable.

Notes:

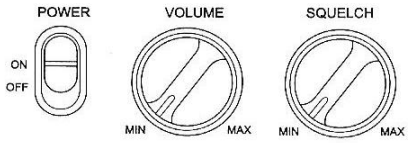
- If you use a DC cigarette lighter power cable and your vehicle's engine is running, you might hear electrical noise from the engine. This is normal.
- Mobile use of this scanner is unlawful or requires a permit in some areas. Check the laws in your area.

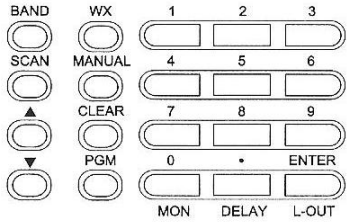
UNDERSTANDING YOUR SCANNER

A LOOK AT THE FRONT PANEL CONTROLS

Note: Some of the scanner's keys perform more than one function and are marked with more than one label. The steps in your owner's manual show only the label on the key appropriate to the action being performed.

A quick look at this section should help you understand each control's function.





POWER	Turns the scanner on and off.
VOLUME	Adjusts the volume.
SQUELCH	Adjusts the scanner's squelch.
BAND	Searches a band you select. See "Frequency Bands" on Page 12.
SCAN	Scans through the channels. See "Scanning Channels" on Page 19.
▲/▼	Enters the direction the scanner will search.
WX	Scans the preset weather frequencies.
MANUAL	Stops scanning to let you directly enter a channel number.
CLEAR	Clears an incorrect entry.
PGM	Programs frequencies into channels.
Number Keys	Some keys have a single-digit number above them. Use the digit above the key to enter the numbers for a channel or a frequency.
0/MON	Enters a 0 or accesses the monitor memory.
•/DELAY	Enters a decimal point, or programs a 2-second delay for the selected channel.
ENTER/L-OUT	Enters a frequency into a channel, or locks out selected channels during scanning. See "Locking Out Channels" on Page 21.

A LOOK AT THE DISPLAY

The display has indicators that show the scanner's current operating mode. A good look at the display will help you understand your scanner.

SEARCH	Appears during a band or direct search.
SCAN	Appears when you scan channels.
MANUAL	Appears when you manually select a channel.
LOCK-OUT	Appears when you manually select a channel you locked out while scanning.
▲/▼	Indicate the scan or search direction.
WX	Appears when you scan or manually select a channel in the weather band.
DELAY	Appears when scanning stops at a channel you have programmed for a 2-second delay.
MON	Appears when you listen to the monitor memory.
PROGRAM	Appears when you program the scanner.
ch	Appears with a number (1-50) to the left to show which of the scanner's 50 channels it is tuned to.
888.8888	These digits show which frequency your scanner is currently tuned to.
-d	Appears instead of the channel number during a direct search.

FREQUENCY BANDS

Your scanner has ten frequency bands, each of which covers a specific range of frequencies. You can search these bands for specific broadcasts using either a band search or a direct search.

This table shows the frequency band range displayed by the scanner and the typical usage and frequency coverage for each.

Displayed Frequency Band Range	Typical Usage	Frequency Coverage (MHz)
b0 29-30	10-Meter Amateur Radio	29.000 to 30.0000
b1 30-50	VHF Lo	30.000 to 50.0000
b2 50-54	6-Meter Amateur Radio	50.000 to 54.0000
b3 137-144	Government	137.000 to 144.0000
b4 144-148	2-Meter Amateur Radio	144.000 to 148.0000
b5 148-174	VHF Hi	148.000 to 174.0000
b6 380-420	Government	380.000 to 420.0000
b7 420-450	70-Centimeter Amateur Radio	420.000 to 450.0000
b8 450-470	UHF Lo	450.000 to 470.0000
b9 470-512	UHF "T" Band	470.000 to 512.0000

Notes:

- While searching through a frequency band, you might hear a frequency you want to store. You can store any frequency into a channel. See "Band Search" on Page 16.
- You cannot change or delete any of the frequencies in the frequency bands.

CHANNELS

You can store up to 50 frequencies into permanent memory locations called channels. Your scanner has 50 channels.

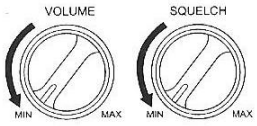
MONITOR MEMORY

Your scanner's monitor memory is a temporary storage area where you can store one frequency during a direct search while you decide whether or not to save it into a channel. You can manually select and listen to the monitor memory.

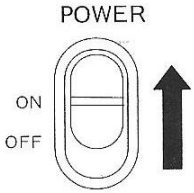
OPERATION

TURNING ON THE SCANNER/SETTING VOLUME AND SQUELCH

1. Turn **VOLUME** and **SQUELCH** fully counterclockwise.



2. Slide **POWER** to **ON** to turn on the scanner.



3. Turn **VOLUME** clockwise until you hear a hissing sound.
4. Turn **SQUELCH** clockwise, then leave it set to a point just after the hissing sound stops.

Notes:

- If the scanner picks up unwanted, partial, or very weak transmissions, turn **SQUELCH** clockwise to decrease the scanner's sensitivity to these signals.
- If you want to listen to a weak or distant station, turn **SQUELCH** counterclockwise.
- If the scanner will not scan, turn **SQUELCH** further clockwise.

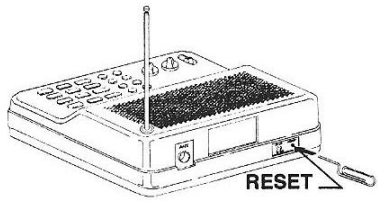
RESETTING/ REINITIALIZING THE SCANNER

You might need to reset or reinitialize the scanner if any of the following occur:

- The scanner's display locks up.
- The scanner does not work properly after you connect power.
- The scanner is dropped or subjected to a physical or electrical shock.

Resetting the scanner clears and resets the scanner's display, but does not erase any channel information stored in the scanner's memory. Follow these steps to reset the scanner.

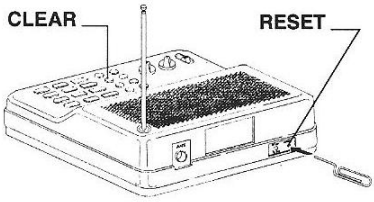
1. Turn off the scanner, then turn it on again.
2. Insert a pointed object such as a straightened paper clip into the **RESET** hole on the back of the scanner for about 2 seconds, then release it.



If the scanner still does not work properly, you might need to reinitialize it.

Caution: This procedure clears all the information you have programmed into the scanner! Use this procedure only when you are sure your scanner is not working properly.

1. Turn off the scanner, then turn it on again.
2. While pressing and holding down **CLEAR**, insert a pointed object such as a straightened paper clip into the **RESET** hole on the back of the scanner until information on the scanner's display disappears. Then release **RESET**.



3. When information reappears on the scanner's display, release **CLEAR**.

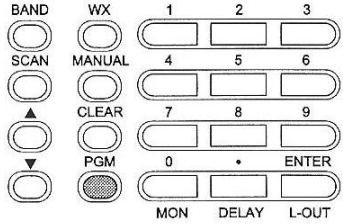
MANUALLY STORING FREQUENCIES INTO CHANNELS

If you know a frequency you want to store, you can manually store it into a channel. You can store up to 50 frequencies into your scanner's channels.

Good references for active frequencies are RadioShack's "Police Call Radio Guide Including Fire and Emergency Services," "Aeronautical Frequency Directory," and "Maritime Frequency Directory." RadioShack updates these directories every year, so be sure to get a current copy. See also "Guide to the Action Bands" on Page 25 in this manual.

If you do not have a reference to frequencies in your area, follow the steps in "Searching Frequency Bands" on Page 16 to search for transmissions.

1. Press **PGM**. **PROGRAM** appears on the display.



2. Using the number keys, enter the channel number where you want to store a frequency, then press **PGM**. Or, repeatedly press **PGM** until the desired channel number appears on the display.

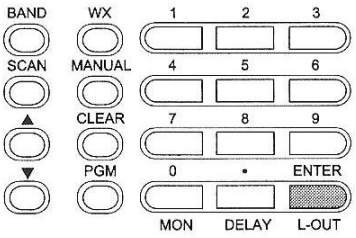
If a frequency is already stored in the channel you selected, the scanner displays the channel number and **ch**, and the frequency. If the channel is empty, the channel number flashes.

Note: If you enter an invalid channel number in Step 2, the scanner displays **Error**. Simply repeat Step 2.

3. Using the number keys, enter the frequency you want to store into the displayed channel. Press • to enter the decimal point.

   Note: Your scanner automatically rounds the entered frequency down to the closest valid frequency. For example, if you try to enter a frequency of 151.4830, your scanner accepts it as 151.4800.

4. Press **ENTER** to store the frequency.



Notes:

- If you entered a frequency in Step 3 that is already stored in another channel, the lowest-numbered channel containing the duplicated frequency and **dUPL** (duplicate) flash on the display for about 3 seconds. To store the duplicate frequency anyway, press **ENTER**. To store another frequency instead, repeat Steps 3 and 4, entering the new frequency in Step 3.
- If you enter an invalid frequency in Step 3, the scanner displays **Error**. Simply repeat Steps 3 and 4.

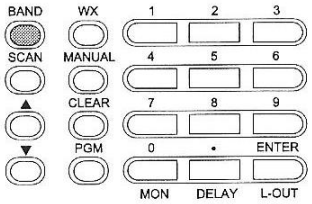
SEARCHING FREQUENCY BANDS

You can search for transmissions within any of the scanner's 10 frequency bands, then store them into the scanner's channels (during a band search) or temporarily store one into the scanner's monitor memory (during a direct search).

Band Search

You can select a frequency band and search for transmissions within that band.

1. Repeatedly press **BAND** until you see the frequency band you want to search.



The scanner displays **b**, the band number, and the range for the frequency band. Then, after about 2 seconds, the scanner displays **SEARCH** ▲, the current channel number flashes, and the scanner starts to search the frequencies in the band. When the scanner finds a transmission, it stops and displays the frequency's number until the transmission stops, then it starts searching again.

Notes:

- You can change the direction of a search by pressing ▲ or ▼.
- To manually step through the frequencies in the selected band, repeatedly press and release ▲ or ▼. To continue automatic search, press and hold down ▲ or ▼ for about 1 second.
- To select another frequency band to search, you can use the number keys to enter the band's number. The scanner displays **b**, the new band number, and the range for the new selected frequency band, then searches the band.

2. When the scanner finds an active frequency, you can do either of the following:
   - To store the frequency into the flashing channel, press **ENTER**. The scanner stores the frequency in the flashing channel, then the next available channel number flashes.
   - To continue searching, press and hold down ▲ or ▼ for about 1 second.

   Note: After you store a frequency into the last available channel, **--ch** appears instead of a channel number on the display. If you try to store another channel while **--ch** is displayed, **Ch FULL** appears. If this happens, you must delete some frequencies from channels before you can store any more. See "Deleting a Frequency from a Channel/Monitor Memory" on Page 19.

Direct Search

You can enter a frequency and search for transmissions above or below that frequency within the frequency bands. If you like, you can then store a frequency into the scanner's monitor memory.

1. Press **MANUAL** or **PGM**.
2. Use the number keys to enter the frequency you want to start the search from. Press • to enter a decimal point.

   Notes:

   - If you want to start the search from a frequency already stored in one of your scanner's channels, press **MANUAL** or **PGM**, use the number keys to enter the channel number, then press **MANUAL** or **PGM** again.
   - If you enter an invalid frequency, the scanner displays `Error`. Simply repeat Step 2.

3. Press and hold down ▲ or ▼ for about 1 second to search up or down from the selected frequency. `SEARCH` ▲ or ▼, `-d` (direct), and a frequency appear on the display.

   Note: If you entered an invalid frequency in Step 2 and the scanner displays `Error`, press **CLEAR** then repeat Steps 2 and 3.

4. When the scanner finds an active frequency, you can either:

   - Save the frequency into the monitor memory — press **MON**. `MON` appears on the display.
   - Continue searching — press and hold down ▲ or ▼ for about 1 second.

LISTENING TO THE MONITOR MEMORY

After you temporarily store a frequency into the scanner's monitor memory, you can listen to it by pressing **MANUAL** then **MON**. The scanner displays `MANUAL`, `MON`, and the frequency stored in the monitor memory.

MOVING A FREQUENCY FROM THE MONITOR MEMORY TO A CHANNEL

1. Press **MANUAL**, use the number keys to enter the channel number where you want to store the frequency, then press **PGM**. `PROGRAM` and the selected channel number appear on the display.

   Note: If the channel number you entered is empty, the channel number flashes.

2. Press **MON**. `MON` and the frequency stored in the monitor memory appear on the display.
3. Press **ENTER**. `MON` disappears and the scanner stores the frequency in the channel number.

SCANNING CHANNELS

Note: You cannot scan channels until you have stored frequencies in them.

To scan the stored channels, press **SCAN**. The display shows **SCAN** and ▲ and the scanner scans through all non-locked channels. When it finds an active frequency, the scanner stops on the frequency and the display shows the currently selected channel number and **ch**, and the currently selected frequency number.

When the transmission ends on the frequency, the scanner continues to scan through the channels.

Notes:

- While scanning, you can change the scan direction by pressing ▲ or ▼.
- You can stop scanning and listen to a frequency. See "Manually Selecting a Channel."
- While scanning, you can lock out a frequency so the scanner does not stop on it again. See "Locking Out Channels" on Page 21.

MANUALLY SELECTING A CHANNEL

You can continuously monitor a specific channel without scanning. This is useful if you hear an emergency broadcast on a channel and want to hear all the details (even though there might be periods of silence) or if you want to monitor only a specific channel or a locked-out channel (see "Locking Out Channels" on Page 21).

Follow these steps to manually select a channel.

1. Press **MANUAL**.
2. Use the number keys to enter the channel number you want to hear, then press **MANUAL** again.

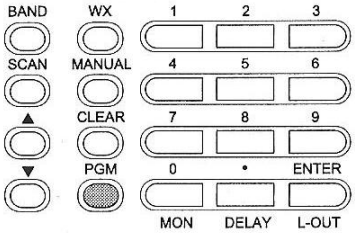
   Notes:

   - If your scanner is scanning and stops at the channel you want, simply press **MANUAL** to manually select the channel.
   - If you repeatedly press **MANUAL**, the scanner steps through the channels.

DELETING A FREQUENCY FROM A CHANNEL/MONITOR MEMORY

1. Press **PGM**.
2. Use the number keys to enter the channel number containing the frequency you want to delete.

3. Press **PGM**. PROGRAM appears on the display.



4. Press **CLEAR**. The frequency number flashes on the display.

5. Press **L-OUT**. LOCK-OUT appears on the display, the channel number flashes, and the frequency number changes to 000.0000 (to indicate that the frequency is deleted from the channel).

To delete a frequency from the monitor memory, simply store a new frequency in the monitor memory.

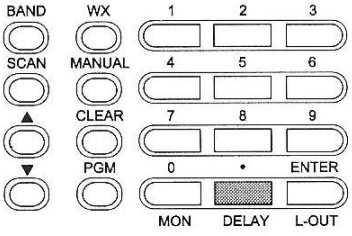
SPECIAL FEATURES

DELAY

Many agencies use a two-way radio system that might have a pause of several seconds between a query and a reply. To avoid missing a reply, you can program a 2-second delay into any channel or frequency. Then, when your scanner stops on a channel or frequency you programmed with a delay, **DELAY** appears on the display and the scanner continues to monitor that frequency for 2 seconds after the transmission stops before it resumes scanning.

You can program a 2-second delay using any of the following methods:

- If the scanner is scanning and stops on an active channel, quickly press **DELAY** before it continues scanning again.
- If the desired channel is not selected, manually select the channel, then press **DELAY**.
- If the scanner is searching, press **DELAY** during the search. **DELAY** appears on the display and the scanner automatically adds a 2-second delay to every transmission where it stops.



To turn off the delay on any channel or frequency, press **DELAY** while the scanner is monitoring the channel or frequency. **DELAY** disappears.

LOCKING OUT CHANNELS

You can scan channels faster by locking out ones that have a continuous transmission, such as a weather channel.

Note: Your scanner automatically locks out empty channels.

Follow these steps to lock out a channel.

1. Press **MANUAL**.
2. Use the number keys to enter the channel number you want to lock out, then press **MANUAL**.
3. Press **L-OUT**. **LOCK-OUT** appears on the display.

To remove the lockout from a channel, repeat Steps 1-3. **LOCK-OUT** disappears from the display.

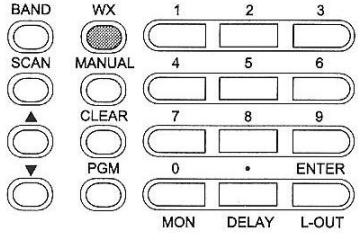
Note: You can manually select a locked-out channel. The scanner displays **LOCK-OUT** when you select a locked-out channel.

LISTENING TO THE WEATHER BAND

The FCC (Federal Communications Commission) has allocated 11 channels for use by the National Oceanic and Atmospheric Administration (NOAA). NOAA broadcasts your local forecast and regional weather information. We have preprogrammed your scanner with 10 of the U.S. frequencies available to NOAA.

Note: For a list of all 11 national weather frequencies, see "National Weather Frequencies" on Page 23.

To scan the preprogrammed weather channels, press **WX**. **WX** appears on the display, and the scanner searches through the weather band and stops on an active broadcast. If the broadcast is weak, press ▲ or ▼ to continue to search through the weather band.



Note: To manually step through the preprogrammed weather channels, repeatedly press **WX** until **MANUAL** appears on the display. Then repeatedly press ▲ or ▼ to move forward or backward through the channels.

A GENERAL GUIDE TO SCANNING

Reception of the frequencies covered by your scanner is mainly "line-of-sight." That means you usually cannot hear stations that are beyond the horizon.

HAM RADIO FREQUENCIES

Ham radio operators often broadcast emergency information when other means of communication break down.

The following chart shows the voice frequencies that you can monitor:

Wavelength (Meters)	Voice (MHz)
10-meter	29.000-29.700
6-meter	50.000-54.000
2-meter	144.000-148.000
70-cm	420.000-450.000

NATIONAL WEATHER FREQUENCIES

161.650	161.775	162.400	162.425
162.440*	162.450	162.475	162.500
162.525	162.550	163.275	

* Not preprogrammed in this scanner.

BIRDIE FREQUENCIES

Every scanner has birdie frequencies. Birdies are signals created inside the scanner's receiver. These operating frequencies might interfere with broadcasts on the same frequencies. If you program one of these frequencies, you hear only noise on that frequency. If the interference is not severe, you might be able to turn **SQUELCH** clockwise to cut out the birdie.

The birdie frequencies on this scanner to watch for are:

29.800 MHz	153.600 MHz
29.845 MHz	166.400 MHz
31.475–31.535 MHz	384.000 MHz
37.730–37.850 MHz	396.800 MHz
38.400 MHz	409.600 MHz
51.200 MHz	422.400 MHz
51.235 MHz	435.200 MHz
140.800 MHz	

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

UNITED STATES BROADCAST BAND

In the United States, there are several broadcast bands. The standard AM and FM bands are probably the most well known. There are also four television audio broadcast bands – the lower three transmit on the VHF band and the fourth transmits on the UHF band. You can use your scanner to monitor the 470-512 MHz portion of the UHF band.

GUIDE TO THE ACTION BANDS

Typical Band Usage

HF Band (3.00–30.00 MHz)	
10- Meter Amateur	29.00–29.70 MHz
High Range	29.70–29.90 MHz
VHF Band (30.00–300.0 MHz)	
Low Range	30.00–50.00 MHz
6-Meter Amateur	50.00–54.00 MHz
U.S. Government	137.00–144.00 MHz
2-Meter Amateur	144.00–148.00 MHz
High Range	148.00–174.00 MHz
UHF Band (300.00 MHz–3.0 GHz)	
U.S. Government	380.00–420.00 MHz
70-Centimeter Amateur	420.00–450.00 MHz
Low Range	450.00–470.00 MHz
FM-TV Audio Broadcast, Wide Band	470.00–512.00 MHz

Primary Usage

As a general rule, most of the radio activity is concentrated on the following frequencies:

VHF Band

Government, Police, and Fire	153.785–155.980 MHz
Emergency Services	158.730–159.460 MHz
Railroad	160.000–161.900 MHz

UHF Band

Land-Mobile "Paired" Frequencies	450.000–470.000 MHz
Base Stations	451.025–454.950 MHz
Mobile Units	456.025–459.950 MHz
Repeater Units	460.025–464.975 MHz
Control Stations	465.025–469.975 MHz

Note: Remote control stations and mobile units operate at 5 MHz higher than their associated base stations and relay repeater units.

BAND ALLOCATION

To help decide which frequency ranges to scan, use the following listing of the typical services that use the frequencies your scanner receives. These frequencies are subject to change, and might vary from area to area. For a more complete listing, refer to the "Police Call Radio Guide including Fire and Emergency Services," available at your local RadioShack store.

Abbreviations	Services
BIFC	Boise (ID) Interagency Fire Cache
BUS	Business
CAP	Civil Air Patrol
CB	Citizens Band
CCA	Common Carrier
CSB	Conventional Systems
CTSB	Conventional/Trunked Systems
FIRE	Fire Department
HAM	Amateur (Ham) Radio
GOVT	Federal Government
GMR	General Mobile Radio
GTR	General Trunked
IND	Industrial Services (Manufacturing, Construction, Farming, Forest Products)
MAR	Military Amateur Radio
MARI	Maritime Limited Coast (Coast Guard, Marine Telephone, Shipboard Radio, Private Stations)
MARS	Military Affiliate Radio System
MED	Emergency/Medical Services
MIL	U.S. Military
MOV	Motion Picture/Video Industry
NEW	New Mobile Narrow
NEWS	Relay Press (Newspaper Reporters)
OIL	Oil/Petroleum Industry
POL	Police Department
PUB	Public Services (Public Safety, Local Government, Forestry Conservation)
PSB	Public Safety
PTR	Private Trunked
ROAD	Road & Highway Maintenance
RTV	Radio/TV Remote Broadcast Pickup
TAXI	Taxi Services
TELB	Mobile Telephone (Aircraft, Radio Common Carrier, Landline Companies)
TELC	Cordless Phones
TELM	Telephone Maintenance
TOW	Tow Trucks
TRAN	Transportation Services (Trucks, Tow Trucks, Buses, Railroad, Other)
TSB	Trunked Systems

TVn ..... FM-TV Audio Broadcast
USXX ..... Government Classified
UTIL ..... Power & Water Utilities
WTHR ..... Weather

HIGH FREQUENCY (HF) — (3 MHz–30 MHz)

10-Meter Amateur Band (28.0–29.7 MHz)

29.000–29.700 ..... HAM

VERY HIGH FREQUENCY (VHF) — (30 MHz–300 MHz)

VHF Low Band (29.7–50 MHz—in 5 kHz steps)

29.700–29.790 ..... IND
29.900–30.550 ..... GOVT, MIL
30.580–31.980 ..... IND, PUB
32.000–32.990 ..... GOVT, MIL
33.020–33.980 ..... BUS, IND, PUB
34.010–34.990 ..... GOVT, MIL
35.020–35.980 ..... BUS, PUB, IND, TELM
36.000–36.230 ..... GOVT, MIL
36.230–36.990 ..... Oil Spill Cleanup, GOVT, MIL
37.020–37.980 ..... PUB, IND
38.000–39.000 ..... GOVT, MIL
39.020–39.980 ..... PUB
40.000–42.000 ..... GOVT, MIL, MARI
42.020–42.940 ..... POL
42.960–43.180 ..... IND
43.220–43.680 ..... TELM, IND, PUB
43.700–44.600 ..... TRAN
44.620–46.580 ..... POL, PUB
46.600–46.990 ..... GOVT, TELC
47.020–47.400 ..... PUB
47.420 ..... American Red Cross
47.440–49.580 ..... IND, PUB
49.610–49.990 ..... MIL, TELC

6-Meter Amateur Band (50–54 MHz)

50.00–54.00 ..... HAM

U.S. Government Band (138–144 MHz)

137.000–144.000 ..... GOVT, MIL

2-Meter Amateur Band (144–148 MHz)

144.000–148.000 ..... HAM

VHF High Band (148–174 MHz)

148.050–150.345 ..... CAP, MAR, MIL
150.775–150.790 ..... MED
150.815–150.980 ..... TOW, Oil Spill Cleanup
150.995–151.475 ..... ROAD, POL
151.490–151.955 ..... IND, BUS
151.985 ..... TELM
152.0075 ..... MED
152.030–152.240 ..... TELB
152.270–152.480 ..... IND, TAXI, BUS
152.510–152.840 ..... TELB
152.870–153.020 ..... IND, MOV
153.035–153.725 ..... IND, OIL, UTIL
153.740–154.445 ..... PUB, FIRE
154.490–154.570 ..... IND, BUS
154.585 ..... Oil Spill Cleanup
154.600–154.625 ..... BUS
154.655–156.240 ..... MED, ROAD, POL, PUB
156.255–157.425 ..... OIL, MARI
157.450 ..... MED
157.470–157.515 ..... TOW
157.530–157.725 ..... IND, TAXI
157.740 ..... BUS
157.770–158.100 ..... TELB
158.130–158.460 ..... BUS, IND, OIL, TELM, UTIL
158.490–158.700 ..... TELB
158.730–159.465 ..... POL, PUB, ROAD
159.480 ..... OIL
159.495–161.565 ..... TRAN
161.580–162.000 ..... OIL, MARI, RTV
162.0125–162.35 ..... GOVT, MIL, USXX
162.400–162.550 ..... WTHR
162.5625–162.6375 ..... GOVT, MIL, USXX
162.6625 ..... MED
162.6875–163.225 ..... GOVT, MIL, USXX
163.250 ..... MED
163.275–166.225 ..... GOVT, MIL, USXX
166.250 ..... GOVT, RTV, FIRE
166.275–169.400 ..... GOVT, BIFC
169.445–169.505 ..... Wireless Mikes, GOVT
169.55–169.9875 ..... GOVT, MIL, USXX
170.000–170.150 ..... BIFC, GOVT, RTV, FIRE
170.175–170.225 ..... GOVT
170.245–170.305 ..... Wireless Mikes
170.350–170.400 ..... GOVT, MIL
170.425–170.450 ..... BIFC
170.475 ..... PUB
170.4875–173.175 ..... GOVT, PUB, Wireless Mikes
173.225–173.5375 ..... MOV, NEWS, UTIL, MIL
173.5625–173.5875 ..... MIL Medical/Crash Crews
173.60–173.9875 ..... GOVT

ULTRA HIGH FREQUENCY (UHF) — (300 MHz–3 GHz)

381.800–383.900 ..... GOVT

U. S. Government Band (406–450 MHz)

406.125–419.975 ..... GOVT, USXX

70-Centimeter Amateur Band (420–450 MHz)

420.000–450.000 ..... HAM

Low Band (450–470 MHz)

450.050–450.925 ..... RTV
451.025–452.025 ..... IND, OIL, TELM, UTIL
452.0375–453.00 ..... IND, TAXI, TRAN TOW, NEWS
453.0125–454.000 ..... PUB, OIL
454.025–454.975 ..... TELB
455.050–455.925 ..... RTV
457.525–457.600 ..... BUS
458.025–458.175 ..... MED
460.0125–460.6375 ..... FIRE, POL, PUB
460.650–462.175 ..... BUS
462.1875–462.450 ..... BUS, IND
462.4625–462.525 ..... IND, OIL, TELM, UTIL
462.550–462.925 ..... GMR, BUS
462.9375–463.1875 ..... MED
463.200–467.925 ..... BUS

FM-TV Audio Broadcast, UHF Wide Band (470–512 MHz) (Channels 14 through 20 in 6 MHz steps)

475.750 ..... Channel 14
481.750 ..... Channel 15
487.750 ..... Channel 16
. .
. .
. .
511.750 ..... Channel 20

Note: Some cities use the 470–512 MHz band for land/mobile service.

AVOIDING IMAGE FREQUENCIES

You might discover one of your regular stations on another frequency that is not listed. It might be what is known as an image frequency. For example, you might find a service that regularly uses a frequency of 453.275 also on 474.675.

To see if it is an image, do a little math.

Note the new frequency.	474.675
Double the intermediate frequency of 10.7 MHz (21.400) and subtract it from the new frequency.	–21.400
If the answer is the regular frequency, then you have tuned to an image.	453.275

Occasionally, you might get interference on a weak or distant channel from a strong broadcast 21.4 MHz below the tuned frequency. This is rare, and the image signal is usually cleared whenever there is a broadcast on the actual frequency.

FREQUENCY CONVERSION

The tuning location of a station can be expressed in frequency (kHz or MHz) or in wavelength (meters). The following information can help you make the necessary conversions.

1 MHz (million) = 1,000 kHz (thousand)

To convert MHz to kHz, multiply the number of megahertz by 1,000:

30.62 (MHz) × 1000 = 30620 kHz

To convert from kHz to MHz, divide the number of kilohertz by 1,000:

141500 (kHz) ÷ 1000 = 141.5 MHz

To convert MHz to meters, divide 300 by the number of megahertz:

300 ÷ 171 MHz = 1.75 meters

TROUBLESHOOTING

If your scanner is not working as it should, these suggestions might help you eliminate the problem. If the scanner still does not operate properly, take it to your local RadioShack store for assistance.

PROBLEM	SUGGESTION
Scanner is on, but will not scan.	• Be sure **SQUELCH** is adjusted properly. See "Turning On the Scanner/Setting Volume and Squelch" on Page 14. • Be sure **MANUAL** is not displayed. If it is, press **SCAN**.
Scanner receives stations poorly or not at all.	• Check the antenna (indoor or outdoor). • Signals may be blocked from being received by the scanner due to metal frames or material in the building. Change the scanner's location and try again.
• The scanner's keys do not work. • The display shows random segments.	The scanner might be locked. Reset the scanner. If that does not work, reinitialize the scanner. See "Resetting/Reinitializing the Scanner" on Page 14.
Scanner does not work at all.	• Check that the power supply (AC adapter/AC outlet) is working. • The scanner might be locked. Reset the scanner. If that does not work, reinitialize the scanner. See "Resetting/Reinitializing the Scanner" on Page 14.
Scanner locks on frequencies that have an unclear transmission.	• Be sure **SQUELCH** is adjusted properly • Be sure birdie frequencies are not programmed, or listen to birdie frequencies manually. See "Birdie Frequencies" on Page 24.

CARE AND MAINTENANCE

Your RadioShack PRO-2014 50-Channel Programmable Home Scanner is an example of superior design and craftsmanship. The following suggestions will help you care for your scanner so you can enjoy it for years.

Keep the scanner dry. If it gets wet, wipe it dry immediately. Liquids can contain minerals that can corrode the electronic circuits.

Handle the scanner gently and carefully. Dropping it can damage circuit boards and cases, and can cause the scanner to work improperly.

Use and store the scanner only in normal temperature environments. Temperature extremes can shorten the life of electronic devices and distort or melt plastic parts.

Keep the scanner away from dust and dirt, which can cause premature wear of parts.

Wipe the scanner with a damp cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the scanner.

Modifying or tampering with the scanner's internal components can cause a malfunction and might invalidate the scanner's warranty and void your FCC authorization to operate it. If your scanner is not operating as it should, take it to your local RadioShack store for assistance.

SPECIFICATIONS

Frequency Coverage:

VHF Lo	30–50 MHz (in 5 kHz steps)
Amateur Radio	29–30 MHz (in 5 kHz steps)
	50–54 MHz (in 5 kHz steps)
	144–148 MHz (in 5 kHz steps)
Government	137–144 MHz (in 5 kHz steps)
Amateur Radio/Government	380–450 MHz (in 12.5 kHz steps)
VHF Hi	148–174 MHz (in 5 kHz steps)
UHF Lo	450–470 MHz (in 12.5 kHz steps)
UHF "T"	470–512 MHz (in 12.5 kHz steps)

Channels of Operation	50 channels and 1 monitor memory
Sensitivity (20 dB S/N)	1.0 μV

Selectivity:

±10 kHz	-6 dB
±20 kHz	-50 dB

Spurious Rejection:

29–54 MHz	50 dB at 40 MHz
137–174 MHz	50 dB at 154MHz

Search Speed	50 Steps/Sec.
Scan Speed	25 Channels/Sec.
Delay Time	2 Seconds
IF Frequencies	10.7 MHz and 455 kHz
IF Rejection (10.7 MHz)	70 dB at 154 MHz

Squelch Sensitivity:

Threshold	Less than 1.0μV
Tight ((S + N)/N)	25 dB

Antenna Impedance	50 Ohms
Audio Output Power (10% THD)	800 mW
Memory Backup	1 Hour
Built-in Speaker	3 Inch (77 mm) 8-Ohm, Dynamic Type

Power Requirements	120 VAC, 60 Hz, 8 W
Dimensions	$2^{1}/_{16} \times 8^{1}/_{4} \times 6^{7}/_{8}$ Inches (HWD) (52 × 210 × 175 mm)
Weight	24 oz. (680 g)
Supplied Accessories	Telescoping Antenna, AC Adapter

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

NOTES

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

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

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