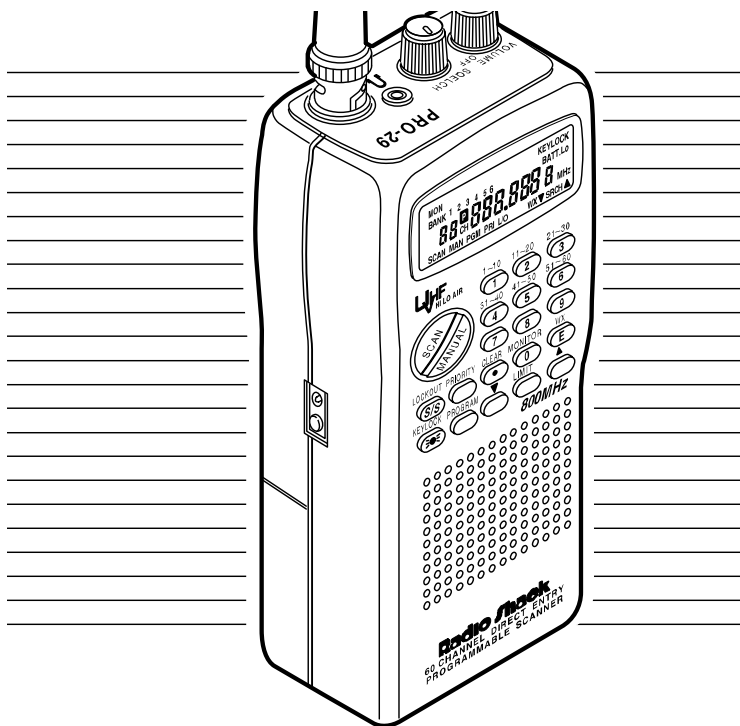


OWNER'S MANUAL

PRO-29 60-Channel Direct Entry Programmable Scanner

Please read before using this equipment.



Radio Shack

FEATURES

Your new Radio Shack PRO-29 60-Channel Direct Entry Programmable Scanner lets you in on all the action! This scanner gives you direct access to 30,000 exciting frequencies that include police department, fire department, ambulance, amateur radio, and transportation services. You can select up to 60 channels for your scanner to scan and you can change your selection at any time.

The secret to your scanner's ability to scan so many frequencies is its custom-designed microprocessor — a tiny, built-in computer. Your scanner also has these special features:

Frequency Search — scans through every available frequency.

Six Channel-Storage Banks — let you store 10 channels in each of six banks to group frequencies. This helps you identify calls.

Monitor Memories — let you temporarily save up to six channels you locate during a frequency search.

Two-Second Automatic Scan Delay — delays scanning for 2 seconds before moving to another channel, so you can hear more replies.

Memory Backup — keeps the channel frequencies stored in memory for up to 1 hour during a power loss.

Lock-Out Function — keeps channels you select from being scanned.

Priority Channel — checks your most important channel every 2 seconds so you don't miss important calls on a channel you specify.

Weather Band Key — scans seven preprogrammed weather frequencies so you can hear about current weather conditions.

Display Backlight — makes the scanner easy to read in low light situations.

Search Skip — lets you select up to 30 frequencies for the scanner to skip during a limit or direct search to avoid unwanted frequencies.

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Your scanner can receive all of these bands:

- 29–29.7 MHz (10-Meter Amateur Radio)
- 29.7–50 MHz (VHF Lo)
- 50–54 MHz (6-Meter Amateur Radio)
- 108–136.975 MHz (Aircraft)
- 137–144 MHz (Government)
- 144–148 MHz (2-Meter Amateur Radio)
- 148–174 MHz (VHF Hi)
- 406–420 MHz (Government)
- 420–450 (70-cm Amateur Radio)
- 450–470 MHz (UHF Standard)
- 470–512 MHz (UHF “T” Band)
- 806–823.9375 MHz (Public Service)
- 851–868.9375 MHz (UHF Hi)
- 896.1125–956 MHz (UHF Hi)

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

- 162.400 MHz (NFM)
- 162.425 MHz (NFM)
- 162.450 MHz (NFM)
- 162.475 MHz (NFM)
- 162.500 MHz (NFM)
- 162.525 MHz (NFM)
- 162.550 MHz (NFM)

This owner’s manual also includes the section “A Guide to the Action Bands,” which lets you target services in your area by giving you frequency ranges to search. You can then store any of these frequencies into memory for easy scanning.

For your records, we recommend you record your scanner’s serial number in the space provided. The serial number is on the scanner’s back panel.

Serial Number _____

FCC NOTICE

Your scanner might cause TV or radio 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 the interference. 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 Radio Shack store for help

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

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 (either 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), 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 conversation (unless such activity is otherwise illegal). Radio Shack encourages responsible, legal scanner use.

CONTENTS

Preparation	6
Power Sources	6
Using Internal Batteries	6
Important Information About the External Power Jacks	7
Using Standard AC Power	8
Using Vehicle Battery Power	9
Charging Nickel-Cadmium Batteries	10
Connecting the Antenna	11
Connecting an Earphone/Headphones	12
Connecting an Extension Speaker	13
Using the Belt Clip	13
Understanding Your Scanner	14
A Look at the Keypad	14
A Look at the Display	15
Banks and Memories	17
Channel-Storage Banks	17
Monitor Memories	17
Operation	18
Turning on the Scanner and Setting Squelch	18
Storing Frequencies	18
Searching For and Temporarily Storing Active Frequencies ..	19
Listening to Monitor Memories	22
Moving a Frequency from a Monitor Memory to a Channel ..	22
Manually Selecting a Channel	23
Special Features	24
Using the Keylock	24
Locking Out Channels	24
Turning Channel-Storage Banks On and Off	25
Search Skip Memory	25
Priority	26
Using the Display Backlight	27
Listening to the Weather Band	27
A General Guide to Scanning	28
Guide to Frequencies	28
Guide to the Action Bands	30
Band Allocation	32
Avoiding Image Frequencies	36
Frequency Conversion	36
Troubleshooting	37
Resetting the Scanner	37
Care and Maintenance	38
Specifications	39

PREPARATION

POWER SOURCES

You can power your scanner from any of three sources:

- Internal batteries
- Standard AC power (using an optional AC adapter)
- Vehicle battery power (using an optional DC adapter)

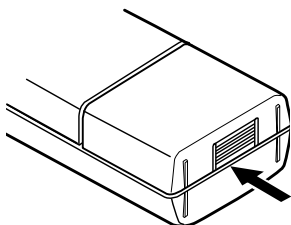
USING INTERNAL BATTERIES

You can power your scanner with four AA batteries. For the longest operation and best performance, we recommend alkaline batteries (Radio Shack Cat. No. 23-552). Or, you can use rechargeable nickel-cadmium batteries (Cat. No. 23-125).

Warning: The scanner has a built-in circuit that lets you recharge nickel-cadmium batteries inside the battery compartment. However, you must never use this circuit when you have installed non-rechargeable batteries in the scanner. Be sure to read “Important Information about the External Power Jacks” and “Charging Nickel-Cadmium Batteries.”

Follow these steps to install or replace batteries.

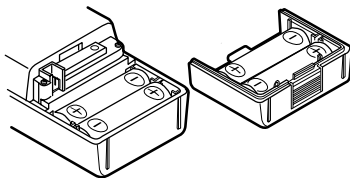
1. Press down the tab on the battery compartment cover, and lift open the compartment.



2. Remove any old batteries from the compartment and cover.

Caution: Always dispose of old non-rechargeable batteries promptly and properly. Do not bury or burn them.

-
-
3. Install two batteries in the compartment and two in the cover as indicated by the polarity symbols (+ and -) marked inside.



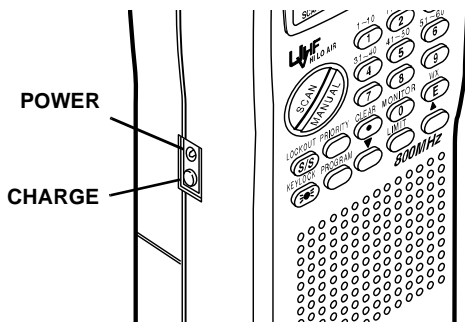
Caution: Use only fresh, AA alkaline, nickel-cadmium, or general purpose batteries of the required size. Never mix fresh and old batteries or different types of batteries.

4. Replace the cover.

If **BATT. Lo** flashes on the display and the scanner beeps every 15 seconds, immediately replace or recharge all four batteries.

IMPORTANT INFORMATION ABOUT THE EXTERNAL POWER JACKS

The scanner has two external power jacks — **POWER** and **CHARGE**. It is important that you understand the purpose of each jack before you connect any adapter to the scanner.



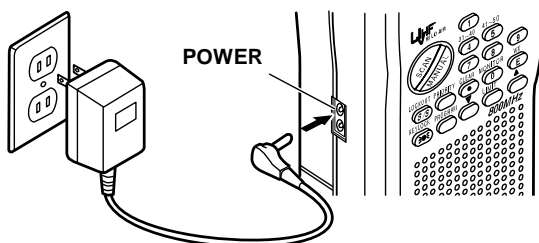
The **POWER** jack powers the scanner and disconnects the internal batteries. You can use this jack to connect an external power source (AC or DC adapter) regardless of the type of batteries you install.

The **CHARGE** jack supplies power to operate the scanner and also charges the internal batteries. Use the **CHARGE** jack only when you install rechargeable nickel-cadmium batteries.

Warning: Never use the **CHARGE** jack with non-rechargeable batteries. If you try to recharge non-rechargeable batteries, they become very hot and could explode.

USING STANDARD AC POWER

To power the scanner from AC power, you need an AC adapter such as Radio Shack Cat. No. 20-188. Plug the adapter's barrel plug into the scanner's **DC 9V POWER** jack. Then plug the adapter's power module into a standard AC outlet.



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

Cautions:

- You must use an AC adapter that supplies 9 volts and delivers at least 300 milliamps. Its center tip must be set to negative, and its plug must correctly fit the scanner's **DC 9V POWER** jack. The recommended adapter meets these specifications. Using an adapter that does not meet these specifications could seriously damage the scanner or the adapter.
- When you finish using the AC adapter, disconnect it from the AC outlet first. Then disconnect it from the scanner.

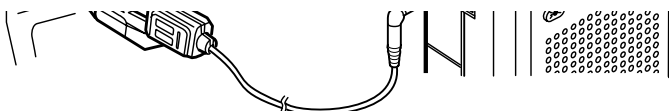
Note: If you installed rechargeable nickel-cadmium batteries in the scanner, remove the cap from the **CHARGE** jack and connect the AC adapter to it. This powers the scanner and recharges the batteries at the same time. See "Charging Nickel-Cadmium Batteries."

USING VEHICLE BATTERY POWER

You can power the scanner from your vehicle's battery power, if the vehicle has a 12-volt, negative ground electrical system. To do so, you need a Radio Shack DC Universal Adapter, Cat. No. 270-1560.

Cautions:

- You must use a DC adapter that supplies (regulated) 9-volt power and delivers at least 300 milliamps. Its center tip must be set to negative, and its plug must correctly fit the scanner's **DC 9V POWER** jack. The recommended adapter meets these specifications. Using an adapter that does not meet these specifications could seriously damage your scanner or the adapter.
- To protect your vehicle's electrical system, always plug the adapter into the scanner before you plug it into your vehicle's cigarette-lighter socket. Always unplug the adapter from the vehicle's cigarette-lighter socket before you unplug it from the scanner.



1. Connect the DC adapter's orange barrel-plug to the adapter's cable, with the tip set to -.
2. Set the adapter's voltage switch to 9V.
3. Insert the barrel plug into the scanner's **DC 9V POWER** jack.
4. Plug the other end of the adapter into your vehicle's cigarette-lighter socket.

Notes:

- If you installed rechargeable nickel-cadmium batteries in the scanner, remove the cap from the **CHARGE** jack and connect the AC adapter to it. This powers the scanner and recharges the batteries at the same time. See "Charging Nickel-Cadmium Batteries."

-
- If the scanner does not operate properly when you use a DC adapter, unplug the adapter from the cigarette-lighter socket and clean the socket to remove ashes and other debris.

CHARGING NICKEL-CADMIUM BATTERIES

The scanner has a built-in charging circuit that lets you recharge nickel-cadmium batteries while they are in the scanner. To charge the batteries, remove the plug from the scanner's **CHARGE** jack and simply connect an AC adapter or a DC Universal Adapter to the jack (see "Using Standard AC Power" or "Using Vehicle Battery Power").

Warning: Do not connect either adapter to the scanner's **CHARGE** jack if you installed non-rechargeable batteries (standard, extra-life, or alkaline). Non-rechargeable batteries become hot and can even explode if you try to recharge them.

It takes about 14 to 16 hours to recharge batteries that are fully discharged. You can operate the scanner while recharging the nickel-cadmium batteries, but the charging time is lengthened.

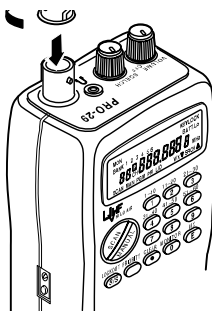
Note: Nickel-cadmium batteries last longer and deliver more power if you occasionally let them fully discharge. To do this, simply use the scanner until it begins beeping every 15 seconds and **BATT . LO** appears on the display. Then fully charge the batteries.

Important! At the end of a rechargeable battery's useful life, it must be recycled or disposed of properly. Contact your local, county, or state hazardous waste management authorities for information on recycling or disposal programs in your area. Some options that might be available are: municipal curb-side collection, drop-off boxes at retailers, recycling collection centers, and mail-back programs.

CONNECTING THE ANTENNA

Follow these steps to attach the supplied flexible antenna to the connector on the top of your scanner.

1. Align the slots around the antenna's connector with the tabs on the jack.



2. Press the antenna down over the jack and rotate the antenna's base clockwise until it locks into place.

Connecting an Optional Antenna

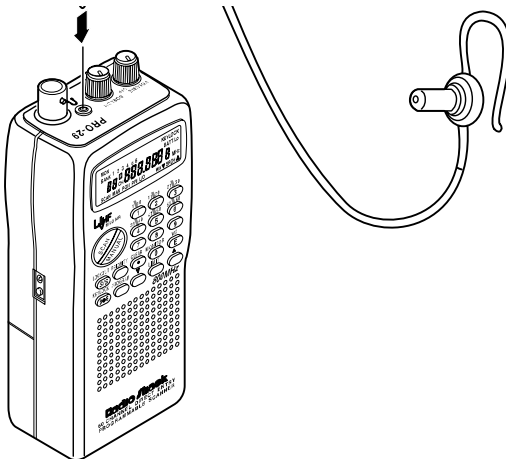
The antenna connector on your scanner makes it easy to use the scanner with a variety of antennas. Instead of the supplied antenna, you can attach a different one, such as an external mobile antenna or outdoor base antenna. Your local Radio Shack store sells a variety of antennas.

Always use 50-ohm coaxial cable, such as RG-58 or RG-8, to connect an outdoor antenna. For lengths over 50 feet, use RG-8 low-loss dielectric coaxial cable. If your antenna's cable does not have a BNC connector, you will also need a BNC adapter (available at your local Radio Shack store).

Warning: Use extreme caution when installing or removing an outdoor antenna. If the antenna starts to fall, let it go! It could contact overhead power lines. If the antenna touches a power line, 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 AN EARPHONE/ HEADPHONES

For private listening, you can plug an earphone or mono headphones (such as Radio Shack Cat. No. 33-175 or 20-210) into the Ω jack on top of your scanner. This automatically disconnects the internal speaker.



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.

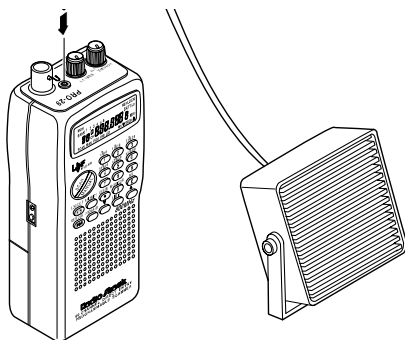
Traffic Safety

Do not wear an earphone or headphones while you drive a vehicle or ride a bicycle. This can create a traffic hazard and is illegal in some areas.

Even though some earphones and headphones are designed to let you hear some outside sounds when you listen at normal levels, they still present a traffic hazard.

CONNECTING AN EXTENSION SPEAKER

In a noisy area, an extension speaker (such as Radio Shack Cat. No. 21-549) or an amplified speaker (such as Radio Shack Cat. No. 21-541), positioned in the right place, might provide more comfortable listening. Plug the speaker cable's $\frac{1}{8}$ -inch mini-plug into your scanner's Ω jack.



USING THE BELT CLIP

You can attach the supplied belt clip to make the scanner easier to use when you are on the go. Use the two supplied screws to attach the belt clip to the scanner. Then slide the belt clip over your belt or waistband.

UNDERSTANDING YOUR SCANNER

A LOOK AT THE KEYPAD

Your scanner's keys might seem confusing at first, but this information should help you understand each key's function.



SCAN — scans through the programmed channels.

MANUAL — stops scanning and lets you directly enter a channel number.

LOCKOUT/S/S — lets you lock out a selected channel. Skips a specified frequency during limit or direct search.

PRIORITY — sets and turns on and off priority for a particular channel.

CLEAR/. — clears an incorrect entry or enters the decimal point necessary when programming frequencies.

MONITOR/0 — accesses the six monitor memories. See “Moving a Frequency from a Monitor Memory to a Channel.”

WX/E (enter) — scans through the preprogrammed weather channels or enters frequencies into channels.

KEYLOCK/⊗ — locks/unlocks the keypad to prevent accidental entries or turns on the display light for 15 seconds. See “Using the Keylock” and “Using the Display Backlight.”

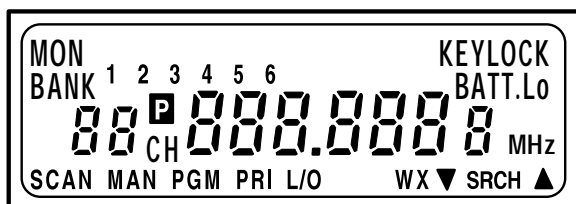
PROGRAM — programs frequencies into channels.

t, LIMIT, and s — search for active frequencies. See “Searching For and Temporarily Storing Active Frequencies.”

Number Keys — each key has a single-digit label, and keys 1-6 have a range of numbers printed above them. The single digits refer to the number of a channel or frequency entered. The number range (21-30, for example) show the channels that make up a memory bank. In addition, the keypad has different functions in manual mode, scan mode, and program mode. See “Banks and Memories.”

A LOOK AT THE DISPLAY

The display has several indicators that show the scanner's current operating mode. A quick look at the display will help you understand how to operate your scanner.



MON — appears when you listen to a monitor memory. A number (1–6) appears to the right of **MON** indicating which monitor memory you are listening to.

BANK — shows which channel-storage banks are turned on for the scan mode. See “Banks and Memories.”

KEYLOCK — appears when you lock the keypad.

BATT.Lo — appears when the batteries are low.

CH — digits that precede this indicator show which of the 60 channels the scanner is tuned to.

P — appears when you listen to the priority channel.

MHz — digits that precede this indicator show which frequency the scanner is tuned to.

SCAN — appears when you scan channels.

MAN — appears when you manually select a channel.

PGM — appears while you program frequencies into the scanner's channels.

PRI — appears when you select the priority feature.

L/O — appears when you manually select a locked-out channel, or during a search hold when the frequency is stored in search skip memory.

WX — appears when you scan the preprogrammed weather channels.

t and s — indicate the search direction.

SRCH — appears during a limit search, a direct search, and a weather band search. See "Searching For and Temporarily Storing Active Frequencies."

-L- — appears instead of the channel number during a limit search.

-d- — appears instead of the channel number during a direct search.

Hi — appears with a frequency to show the upper limit of the frequency range to search.

Lo — appears with a frequency to show the lower limit of the frequency range to search.

-H- — appears during a limit search hold.

-h- — appears during a direct search hold.

Error — appears when you make an entry error.

BANKS AND MEMORIES

Your scanner can store up to 66 frequencies. You store each frequency in either a memory called a channel, or a temporary memory called a monitor. This scanner has 60 channels and six monitor memories.

CHANNEL-STORAGE BANKS

To make it easier to identify and select the channels you want to listen to, channels are divided into six channel-storage banks of 10 channels each. Use each channel-storage bank to group frequencies, such as the police department, fire department, ambulance services, or aircraft band (see “Guide to the Action Bands”).

For example, the police might use four frequencies, one for each area of town. You could program the police frequencies starting with Channel 1 (Bank 1) and then program the fire department frequencies starting with Channel 11 (the first channel in Bank 2).

MONITOR MEMORIES

The scanner also has six monitor memories. Use these memories to temporarily store frequencies while you decide whether or not to save them into channels. This is handy for quickly storing an active frequency when you are searching through an entire band.

When you are in the search mode, **MON** appears and the flashing number at the top of the display indicates the currently selected monitor memory. Once you have stored a frequency into that monitor memory, press **t** or **s**. The scanner shifts to the next monitor memory and restarts the search mode.

Note: To store frequencies into a monitor memory, you must first perform a limit or direct search. See “Searching For and Temporarily Storing Active Frequencies.”

OPERATION

TURNING ON THE SCANNER AND SETTING SQUELCH

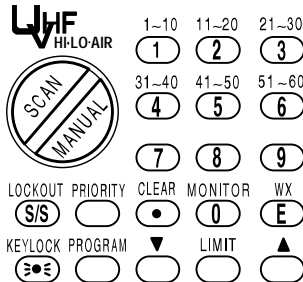
1. Make sure that **SQUELCH** is turned fully counterclockwise before you turn on the scanner.
2. Turn **VOLUME** clockwise until you hear a hissing sound.
3. Turn **SQUELCH** clockwise, just until the hissing sound stops.

Note: If you want to listen to a weak or distant station, turn **SQUELCH** counterclockwise. If reception is poor, turn **SQUELCH** clockwise.

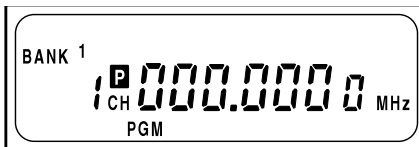
STORING FREQUENCIES

Follow these steps to store frequencies into channels.

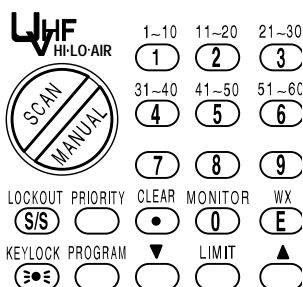
1. Press **MANUAL**. Enter the channel number where you want to store a frequency.



2. Press **PROGRAM**. **PGM** appears on the display to indicate the scanner is in the programming mode.



3. Use the number keys and **CLEAR/** to enter the frequency (including the decimal point) you want to store.



4. Press **WX/E** to store the frequency.

Notes:

- If you made a mistake in Step 3, **Error** appears on the display and the scanner sounds three beeps. Simply start again from Step 3.
 - Your scanner automatically rounds the entered frequency to the nearest valid frequency. For example, if you try to enter a frequency of 151.473, your scanner accepts it as 151.475.
5. Repeat Steps 1-4 to program more channels. Or, if you want to program the next channel in sequence, repeat Steps 2-4.

To listen to a frequency you have stored, press **MANUAL**, the channel number, then **MANUAL** again.

SEARCHING FOR AND TEMPORARILY STORING ACTIVE FREQUENCIES

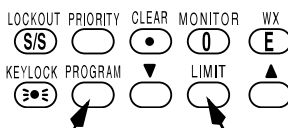
Good references for active frequencies are Radio Shack's "Police Call Radio Guide Including Fire and Emergency Services," "Aeronautical Frequency Directory," and "Maritime Frequency Directory." We update these directories every year, so be sure to get a current copy.

If you do not have a reference to frequencies in your area, or if you want to search for unlisted frequencies, use a limit search or direct search. See also "Guide to the Action Bands" in this manual.

Limit Search

A limit search lets you search for active frequencies between upper and lower limits that you set. **-L-** appears on the display during a limit search.

1. Press **PROGRAM**, then **LIMIT**. **Lo** appears on the display.



2. Enter the lower limit of the frequency range you want to search.
3. Press **WX/E**, then **LIMIT**. **Hi** appears on the display.

Note: If the frequency you entered is not a valid frequency, **Error** appears. To enter a different frequency, start again from Step 2.

4. Enter the upper limit of the frequency range.
5. Press **WX/E**, then **LIMIT**. **Lo** and the lower limit frequency appear on the display.
6. Press **t** to search from the upper to the lower limit, or **s** to search from the lower to the upper limit. The current monitor memory number starts flashing at the top of the display.
7. When the scanner stops on a transmission you want to save, press **MONITOR** to store the frequency in the current monitor memory. The monitor number then stops flashing.
8. Press either **t** or **s** to continue the search. If you saved a frequency in a monitor memory, then the monitor memory number on the display advances by one and starts flashing again. (If the last monitor memory was 6, the scanner returns to monitor memory 1.)
9. To hold the frequency, press **LIMIT**. **-H-** appears on the display.

To exit the hold mode and resume the limit search, press **LIMIT** again.

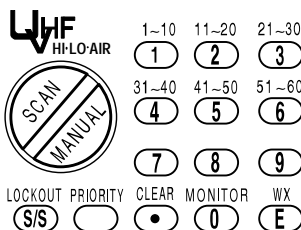
Notes:

- You can press **t** or **s** during the hold mode to step through the frequencies toward the upper or lower limits.
- If you tune to a search skip frequency, the display shows **L/O** (see "Search Skip Memory").

Direct Search

When you listen to a channel, you can search up or down from the currently displayed frequency. **-d-** appears on the display during a direct search.

1. Press **MANUAL**, the channel number, then **MANUAL** to select a frequency stored in a channel.



2. Press **t** or **s** to search up or down from the selected frequency.
3. When the scanner stops on a transmission, press **MONITOR** to store that frequency in the current monitor memory. Or, press **t** or **s** to continue the search.
4. To hold the frequency, press **LIMIT**. **-h-** appears on the display.

To exit the hold mode and resume the direct search, press **LIMIT** again.

Notes:

- You can press **t** or **s** during the hold mode to step through the frequencies toward the upper or lower limits.
- If you tune to a search skip frequency, the display shows **L/O** (see "Search Skip Memory").

LISTENING TO MONITOR MEMORIES

Once you have stored frequencies into monitor memories using a direct or limit search, you can listen to the monitor memories by pressing **MANUAL**, **MONITOR**, and then the number for the monitor memory you want to listen to.

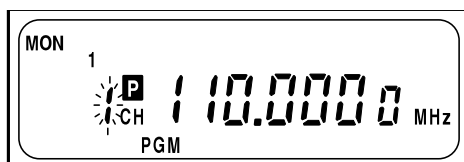
MOVING A FREQUENCY FROM A MONITOR MEMORY TO A CHANNEL

Follow these steps to move a frequency stored in a monitor memory to a permanent channel.

1. Press **MANUAL**.
2. Enter the number for the channel where you want to store the monitor frequency. The channel number appears.



3. Press **PROGRAM**.
4. Press **MONITOR** and the number of the monitor memory number that has the frequency you want to store. The channel number starts flashing.



5. Press **WX/E**. The scanner stores the frequency in the selected channel, and the channel number stops flashing.

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 do not want to miss any details — even though there might be periods of silence — or if you want to monitor a specific channel.

Follow these steps to manually select a channel.


1. Press **MANUAL**.
2. Enter the channel number.
3. Press **MANUAL** again.

Or, if your scanner is scanning and stops at the desired channel, press **MANUAL** one time. (Pressing **MANUAL** additional times causes your scanner to step through the channels.)



To resume automatic scanning after manually selecting a channel, press **SCAN**. Your scanner then scans through all non-locked channels in the activated banks.

SPECIAL FEATURES

USING THE KEYLOCK

Once you program your scanner, you can protect it from accidental program changes by turning on the keylock feature. In this mode, the only controls that operate are **SCAN**, **MANUAL**, **KEYLOCK/**, **VOLUME**, and **SQUELCH**.

Note: The keylock does not prevent the scanner from scanning channels.

To turn on the keylock, press and hold **KEYLOCK/** until the scanner beeps and **KEYLOCK** appears on the display. To turn it off, press and hold **KEYLOCK/** until the scanner beeps and **KEYLOCK** disappears from the display.

LOCKING OUT CHANNELS

You can increase the effective scanning speed by locking out individual channels that have a continuous transmission, such as a weather channel. To lock out a channel, manually select the channel and press **LOCKOUT/S/S** so **L/O** appears on the display.

To remove the lock-out from a channel, manually select the channel and press **LOCKOUT/S/S** so **L/O** disappears from the display.

Note: You can manually select locked-out channels.

To remove the lock-out from all channels in a memory bank, follow this procedure.

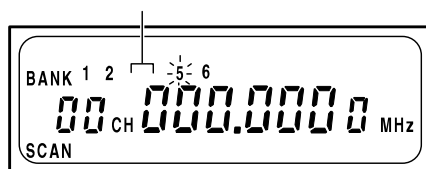
1. While scanning, press the number key corresponding to the memory bank you want to unlock.
2. Press **MANUAL** to enter the manual mode.
3. Press and hold **LOCKOUT** for more than 3 seconds. The scanner beeps twice, and all locked out memory channels in the selected bank are unlocked.

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 10 channels in that bank.

While scanning, press the number key corresponding to the bank you want to turn on or off. If the memory bank indicator is on, the bank is turned on and the scanner scans all channels within that bank that are not locked out. If the indicator is off, the scanner does not scan any of the channels within that bank.

Memory Banks 3 & 4 are Turned Off



Notes:

- You can manually select any channel in a bank, even if the bank is turned off.
- You cannot turn off all banks. One bank is always active.

SEARCH SKIP MEMORY

You can skip specified frequencies during a limit or direct search. This lets you avoid unwanted frequencies or ones you have already stored in a channel. You can program up to 30 skip frequencies into the scanner's memory.

To skip a frequency, press **LOCKOUT/S/S** when the scanner stops on the frequency during a limit or direct search.

To clear a single frequency from skip memory so the scanner can stop on it during a limit or direct search, press **LIMIT** to hold the search, press **t** or **s** to select the frequency, then press **LOCKOUT/S/S** until **L/O** disappears from the display.

To clear all the skip frequencies at once, while in the search mode, press and hold **LOCKOUT/S/S** until the scanner beeps twice.

Notes:

- If you program more than 30 skip frequencies, each new frequency replaces ones you stored earlier, starting from the first stored frequency.
- You can select the skipped frequency when the scanner is in the hold mode. The scanner displays **L/O** when you select a skipped frequency.

PRIORITY

You can scan through channels and still not miss an important or interesting call on a specific channel. When a channel is selected as the priority channel and the priority feature is turned on, the scanner checks that channel every 2 seconds, and stays on the channel if there is activity. **PRI** appears on the display whenever the scanner is set to the priority mode.

To program a channel as the priority channel, press **PROGRAM**, the desired channel number, then **PRIORITY**. **P** appears beside the channel number.

To turn on the priority feature, press **PRIORITY** while the scanner is in either manual or scan mode. To turn off the priority feature, press **PRIORITY** until **PRI** disappears from the display.

Notes:

- You can only select one channel at a time as the priority channel.
- Channel 1 is initially set as the priority channel.
- You cannot select a monitor memory when priority is turned on.

USING THE DISPLAY BACKLIGHT

You can turn on the display's backlight for easy viewing in the dark. Press **KEYLOCK** to turn on the display light for 15 seconds. To turn off the light before 15 seconds elapses, press **KEYLOCK** again.

Note: Do not hold down **KEYLOCK** or it will lock up the keypad. If this happens, press and hold **KEYLOCK** until the scanner beeps and **KEYLOCK** disappears from the display.

LISTENING TO THE WEATHER BAND

The FCC (Federal Communications Commission) has allocated 11 channels for use by the National Oceanic and Atmospheric Administration (NOAA). We have preprogrammed your scanner with the seven frequencies most commonly used by NOAA.

To hear your local forecast and regional weather information, simply press **WX/E**. Your scanner begins scanning through the weather band, and **WX** appears on the display.

Your scanner should stop within a few seconds, and then you hear the local weather broadcast. If the broadcast is weak, you can press **WX/E** again to scan through the rest of the weather band.

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.

GUIDE TO FREQUENCIES

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, but you can manually program them.

Ham Radio Frequencies

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

The following chart shows the frequencies this scanner receives that Hams normally use:

Wavelength (meters)	Frequency (MHz)
10-meter	28.000–29.700
6-meter	50.000–54.000
2-meter	144.000–148.000
70-cm	420.000–450.000
33-cm	902.000–928.000

Note: Your scanner cannot receive some types of transmissions on these bands.

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 unit to watch for are:

31.05

41.40

51.75

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

GUIDE TO THE ACTION BANDS

Typical Band Usage

HF Band (3.00–30.0 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
Aircraft	108.00–136.97 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	406.00–450.00 MHz
0.6-Meter Amateur	420.00–450.00 MHz
Low Range	450.00–470.00 MHz
FM-TV Audio Broadcast, Wide Band	470.00–512.00 MHz
Public Service	806.00–823.93 MHz
Conventional Systems	851.00–856.00 MHz
Conventional/Trunked Systems	856.00–861.00 MHz
Trunked Systems	861.00–866.00 MHz
Public Safety	866.00–868.93 MHz
High Range	896.11–902.00 MHz
33-Centimeter Amateur	902.00–928.00 MHz
Private Trunked	935.00–940.00 MHz
General Trunked	940.00–941.00 MHz
Fixed Services	941.00–944.00 MHz
Studio-to-Transmitter Broadcast Links	944.00–952.00 MHz
Private Fixed Services Paging	952.00–956.00 MHz

Primary Usage

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

VHF Band

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

UHF Band

Activities	Frequencies
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.

Specified Intervals

Frequencies in different bands are accessible only at specific intervals. For example:

Band Type	Specified Interval
VHF, HAM, and Government	5.0 kHz steps
All Others	12.5 kHz steps
Aircraft	25.0 kHz steps

Note: Your scanner rounds the entered frequency to the nearest valid frequency. For example, if you try to enter 151.473, the scanner accepts this as 151.475.

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 Radio Shack store.

Abbreviations

Services

AIR	Aircraft
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) Hi —(3 MHz–30 MHz)

10-Meter Amateur Band—(28.0—29.7 MHz)

29.000–29.700	HAM
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Very High Frequency (VHF)—(30 MHz–300 MHz)

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
36.250	Oil Spill Clean up
36.270–36.990	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
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Aircraft Band (108–136 MHz)

108.000–121.490	AIR
121.500	AIR Emergency
121.510–136.000	AIR

U.S. Government Band (138–144 MHz)

137.000–144.000	GOVT, MIL
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2-Meter Amateur Band (144–148 MHz)

144.000–148.000	HAM
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VHF-Hi BAND (148–174 MHz)

148.050–150.345	CAP, MAR, MIL
150.775–150.790	MED
150.815–150.965	TOW
150.980	Oil Spill Clean up

150.995–151.130	ROAD
151.145–151.475	POL
151.490–151.955	IND, BUS
151.985	TELM
152.0075	MED
152.030–152.240	TELB
152.270–152.465	IND, TAXI
152.480	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 Clean-Up
154.600–154.625	BUS
154.655–156.240	MED, ROAD, POL, PUB
156.255	OIL
156.275–157.425	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	OIL
161.600–162.000	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	Wireless Mikes
169.500	GOVT
169.505	Wireless Mikes
169.55–169.9875	GOVT, MIL, USXX
170.000	BIFC
170.025–170.150	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
173.225–173.375	MOV, NEWS, UTIL
173.3875–173.5375	MIL
173.5625–173.5875	MIL Medical/Crash Crews
173.60–173.9875	GOVT

U. S. Government Band (406–450 MHz)

406.125–419.975 GOVT, USXX

70-cm 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

453.0125–453.9875 PUB

454.000 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

462.550–462.725 GMR

462.750–462.925 BUS

462.9375–463.1875 MED

463.200–467.925 BUS

**FM-TV Audio Broadcast, UHF Wide Band (470–512 MHz)
(Channels 14 through 69 in 6 MHz steps)**

475.750 Channel 14

481.750 Channel 15

487.750 Channel 16

512.000 Channel 20

Note: Some cities use the 470–512 MHz band for land/mobile service.**Conventional Systems Band—Locally Assigned**

851.0125–855.9875 CSB

Conventional/Trunked Systems Band—Locally Assigned

856.0125–860.9875 CTSB

Trunked Systems Band—Locally Assigned

861.0125–865.9875 TSB

Public Safety Band—Locally Assigned

866.0125–868.9875 PSB

Common Carrier

869.010–894.000 CCA

Private Trunked

935.0125–939.9875 PTR

General Trunked

940.0125–940.9875 GTR

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 453.075 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 10.8 MHz (21.600) and subtract it from the new frequency.	<u>-21.600</u>
If the answer is the regular frequency, then you have tuned to an image.	453.075

Occasionally you might get interference on a weak or distant channel from a strong broadcast 21.6 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.

$$1 \text{ MHz (million)} = 1,000 \text{ kHz (thousand)}$$

To convert MHz to kHz, multiply by 1,000:

$$9.62 \text{ MHz} \times 1000 = 9620 \text{ kHz}$$

To convert from kHz to MHz, divide by 1,000.

$$2780 \text{ kHz} \div 1000 = 2.780 \text{ MHz}$$

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

$$300 \div 7.1 \text{ MHz} = 42.25 \text{ meters}$$

TROUBLESHOOTING

If you have problems, here are some suggestions which might help.

PROBLEM	POSSIBLE CAUSE	REMEDY
Scanner is totally inoperative.	No power.	Check the batteries, or make sure you plugged the scanner into a working outlet.
Scanner is on but will not scan.	SQUELCH is not correctly adjusted or channels are locked out.	Adjust SQUELCH clockwise or remove the lock-out.
In the scan mode, the scanner locks on frequencies that have an unclear transmission.	"Birdies."	Avoid programming frequencies listed under "Birdie Frequencies" on Page 29 or only listen to them manually.

If none of these suggestions help, take your scanner to your local Radio Shack store for assistance.

RESETTING THE SCANNER

If the scanner's display locks up or does not work properly after you connect a power source, you might have to reset the scanner.

Caution: This procedure clears all the information you have programmed into the scanner. Before you reset the scanner, try turning it off and on to see if it begins working properly. Use the following procedure only when you are sure your scanner is not working properly.

1. Turn off the scanner.
2. While you press and hold down the **2** and **9** keys, turn on the scanner.

CARE AND MAINTENANCE

Your Radio Shack PRO-29 60-Channel Direct Entry Programmable Scanner is an example of superior design and craftsmanship. The following suggestions will help you care for the PRO-29 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.



Use only fresh batteries of the recommended size and type. Always remove old and weak batteries. They can leak chemicals that destroy 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, damage batteries, 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 Radio Shack store for assistance.

SPECIFICATIONS

Frequency Coverage:

VHF Lo	29–54 MHz (in 5.0 kHz steps)
Aircraft	108–136.975 MHz (in 12.5 kHz steps)
VHF Hi	137–174 MHz (in 5.0 kHz steps)
UHF	406–512 MHz (in 12.5 kHz steps)
800 MHz	806.0000–823.9375 MHz (in 12.5 kHz steps) 851.0000–868.9375 MHz (in 12.5 kHz steps) 896.1125–956 MHz (in 12.5 kHz steps)

Channels of Operation Any 60 channels in any band combinations (10 channels x 6 banks) and 6 monitor channels

Sensitivity (20 dB S/N with 60% modulation for AM; 3 kHz deviation for FM):

29–54 MHz	0.4 μ V
108–136.975 MHz	1.4 μ V
137–174 MHz	0.6 μ V
406–512 MHz	0.5 μ V
806–956 MHz	0.7 μ V

Limit Search Speed/Direct Search Speed 20 Steps/Sec.

Scan Speed 15 Channels/Sec.

Priority Sampling 2 Seconds

Delay Time (Automatic) 2 Seconds

IF Frequencies 10.8 MHz and 450 kHz

Audio Power:

FM	230 mW Maximum
AM	250 mW Maximum

Built-in Speaker 1⁷/₁₆-inch (36mm) 8-Ohm, Dynamic Type

Power Requirement +6 VDC, 4 AA batteries
AC Adapter (Cat. No. 20-188)
DC Adapter (Cat. No. 270-1560)

Dimensions (HWD) 6¹/₈ × 2⁷/₁₆ × 1¹¹/₁₆ Inches
(155.6 × 61.9 × 42.9 mm)

Weight 8.11 oz (230 g)

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

RADIO SHACK LIMITED WARRANTY

This product is warranted against defects for 1 year from date of purchase from Radio Shack company-owned stores and authorized Radio Shack franchisees and dealers. Within this period, we will repair it without charge for parts and labor. Simply **bring your Radio Shack sales slip** as proof of purchase date to any Radio Shack store. Warranty does not cover transportation costs. Nor does it cover a product subjected to misuse or accidental damage.

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