



RadioShack®

User's Guide

PRO-649

Handheld Radio Scanner

Thank you for purchasing your Handheld Radio Scanner from **RadioShack**. Please read this user's guide before installing, setting up, and using your new scanner



Package Contents

Scanner

Antenna

Belt Clip

User's Guide

Quick Start Guide

Alkaline Battery Holder

Rechargeable Battery Holder

www.radioshack.com

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Features

Your new PRO-649 Handheld Scanner lets you scan conventional transmissions and is preprogrammed with search banks of the most common frequencies used by public service agencies. Service Banks are accessed by pressing a one-touch search key—no complicated programming required.

Your new scanner gives you direct access to over 25,000 frequencies, including those used by police and fire departments, ambulance services, aircraft, and amateur radio services.

Your PRO-649 scanner also has these special features:

Signal Stalker II – a powerful tool to rapidly detect, monitor, and store frequencies from nearby radio transmissions.

Service Banks – easily locate types of calls by searching preprogrammed frequencies in separate marine, fire/police, aircraft, ham, and weather banks.

Display Backlight – makes the display easy to read in low-light situations.

Lock-out Function – skip over specified channels or frequencies when scanning or searching.

Ten Channel-Storage Banks – group and store 20 channels in each bank (200 total channels).

Tune – tune to new and unlisted frequencies starting from a specified frequency.

SAME/FIPS Weather Alert – displays the weather event and sounds an alert for the specific cities or counties you choose.

Memory Backup – frequencies remain stored in memory for an extended time even without batteries.

Scan Delay – delays scanning for two seconds before moving to another channel in order to hear replies.

Priority Channel – set the scanner to check one channel every two seconds while scanning.

Data Cloning – transfer the programmed data to another PRO-649 scanner.

Key Lock – lock the scanner's keys to help prevent accidentally changing the scanner's programming.

Liquid-Crystal Display – easy to view and change programming information.

Flexible Antenna with BNC Connector – provides good reception of strong local signals. You can also connect an external antenna for improved reception of distant or weak signals.

Three Power Options – power the scanner using batteries (rechargeable or non-rechargeable), external AC power (using an AC adapter, not supplied), or DC power (using a DC adapter, not supplied).

Your PRO-649 scanner can receive these bands:

Frequency Range	Types of Transmissions
29–54 MHz	10-Meter Ham, VHF Lo, 6-Meter Ham
108–136.9875 MHz	Aircraft
137–174 MHz	Military Land Mobile, 2-Meter Ham, VHF Hi
380–512 MHz	UHF Aircraft, Federal Government, 70-cm Ham, UHF Standard, UHF "T"

Note: See “**Specifications**” on page 37 for more information about frequency steps.

Understanding Your Scanner

Once you understand a few simple terms used in this manual and familiarize yourself with your scanner's features, you can put the scanner to work for you. Simply determine the type of communications you want to receive, then set the scanner to scan them.

A **frequency** is the receiving signal location (expressed in kHz or MHz). To find active frequencies, use the **search** function or consult an online resource such as www.radioreference.com. You can also search the **Service Banks**, which are preset groups of frequencies categorized by type of service.

When you find a frequency, you can store it into a programmable memory location called a **channel**,

which is grouped with other channels in a **channel-storage bank**. You can then scan the channel-storage banks to see if there is activity on the frequencies stored there. Each time the scanner finds an active frequency, it stays on that channel until the transmission ends.

Channel Storage Banks

To make it easier to identify and select the channels you want to listen to, your scanner divides the channels into 10 banks (1 to 10) with 20 channels each, for a total of 200 channels. You can use each channel-storage bank to group frequencies, such as those used by the police department, fire department, ambulance services, or aircraft.

For example, you could program the frequencies used by your local police department starting with Channel 1 (the first channel in bank 1) and program the fire department frequencies starting with Channel 21 (the first channel in bank 2).

Service Banks

The scanner is preprogrammed with the frequencies allocated to marine, fire/police, aircraft, ham radio, and weather services. This is handy for quickly finding active frequencies instead of searching through an entire bank (see “**Service Bank Search**” on page 22).

Preprogrammed Service Bank Frequencies

Marine Service Bank

Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	156.0500	63	156.1750
02	156.2500	64	156.2250
06	156.3000		160.8250
07	156.3500	65	156.2750
08	156.4000	66	156.3250
09	156.4500	67	156.3750
10	156.5000	68	156.4250

Channel	Frequency (MHz)	Channel	Frequency (MHz)
11	156.5500	69	156.4750
12	156.6000	70	156.5250
13	156.6500	71	156.5750
14	156.7000	72	156.6250
15	156.7500	73	156.6750
16	156.8000	74	156.7250
17	156.8500	77	156.8750
18	156.9000	78	156.9250
19	156.9500	79	156.9750
20	157.0000	80	157.0250
	161.6000	81	157.0750
21	157.0500	82	157.1250
22	157.1000	83	157.1750
23	157.1500	84	157.2250
24	157.2000		161.8250
	161.8000	85	157.2750
25	157.2500		161.8750
	161.8500	86	157.3250
26	157.3000		161.9250
	161.9000	87	157.3750
27	157.3500		161.9750
	161.9500	88	157.4250
28	157.4000		
	162.0000		

 **Note:** Both frequencies (transmission and reception) are shown for marine channels used for duplex transmission.

Fire/Police Service Bank

Group	Frequency Range (MHz)	Step (kHz)
1	33.420-33.980	20
	37.020-37.420	20
	39.020-39.980	20
	42.020-42.940	20
	44.620-45.860	40
	45.880	-
	45.900-46.060	40
	46.080-46.500	20
2	153.770-154.130	60
	154.145-154.445	15
	154.650-154.950	15
	155.010-155.370	60
	155.415-155.700	15
	155.730-156.210	60
	158.730-159.210	60
	166.250	-
	170.150	-
3	453.0375-453.9625	12.5
	458.0375-458.9625	12.5
	460.0125-460.6375	12.5
	465.0125-465.6375	12.5

Aircraft Service Bank

Group	Frequency Range (MHz)	Step (kHz)
1	108.000-118.000	12.5
2	118.0125-136.9875	12.5

Ham Amateur Radio Service Bank

Group	Frequency Range (MHz)	Step (kHz)
1	29.000-29.700	5
2	50.000-54.000	5
3	144.000-148.000	5
4	420.000-450.000	12.5

Weather Channels

Channel	Frequency (MHz)
1	162.400
2	162.425
3	162.450
4	162.475
5	162.500
6	162.525
7	162.550

Understanding the Keypad

(Marine)

Search the preprogrammed marine bank.

(Fire Department/Police Department)

Search the preprogrammed fire/police bank.

(Aircraft)

Search the preprogrammed aircraft bank.

(HAM)

Search the preprogrammed amateur radio bank.

(Weather / Skywarn)

- Search the seven preprogrammed weather channels.
- Press and hold to jump to the Skywarn channel (channel 200). You must first program your local Skywarn frequency into channel 200 (see page 20).

SCAN / MAN (Manual)

- Enter Scan mode to scan programmed channels.
- Enter Manual mode to stop scanning, directly enter a channel number, or monitor a single channel.

PRI / ALERT

- Enable and disable the priority feature.
- Enable and disable SAME standby mode when monitoring a weather channel.

TUNE / CLEAR

- Enter Tune search.
- Clear an incorrect entry.

Select the direction for searching and scanning.

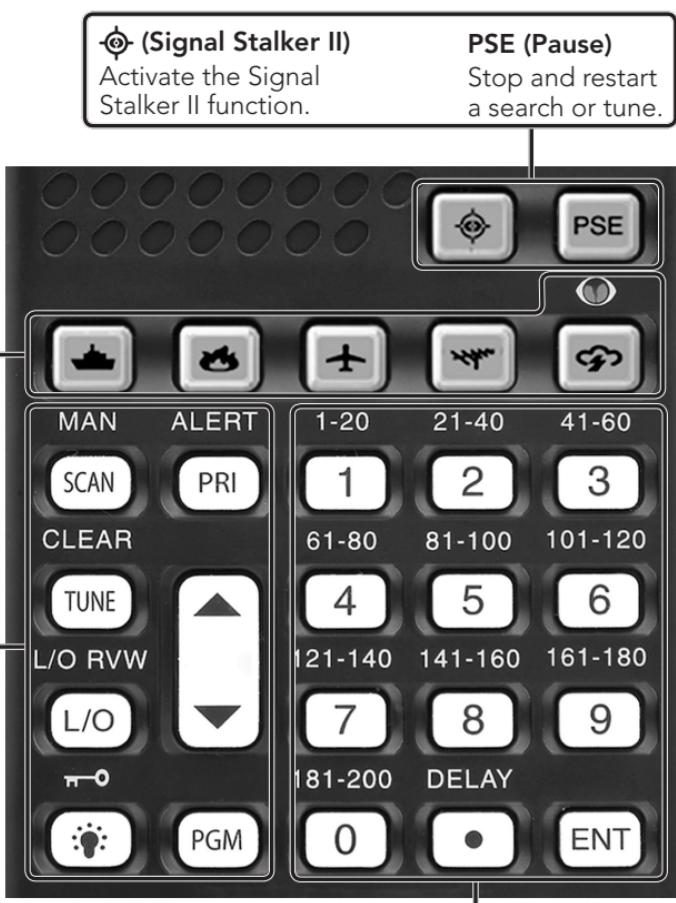
L/O / L/O RVW

- Lock-out selected channels or frequencies.
- Review locked-out frequencies.

- Turn the backlight on and off.
- Press and hold to lock and unlock the keypad.

PGM

Program frequencies into channels.

**0-9**

- Input a number when entering frequencies and selecting banks (0 selects bank 10).
- The range of numbers above the key (1-20, 21-40, 41-60, etc.) indicates the channels stored in that bank.

• / DELAY

- Input a decimal point when entering frequencies.
- Program a two-second delay for the selected channel.

ENT (Enter)

Complete the entry of frequencies.

Understanding the Display

Row 1

 – Signal Stalker II search is active.

BANK – Appears with numbers (1–10) to indicate the scan bank. The bar under the bank number shows banks that are turned on for scanning.

 – Keypad locked.

Row 2

WX – Searching weather channels.

MAR – Searching the marine bank.

FD/PD – Searching the fire/police bank.

AIR – Searching the aircraft bank.

HAM – Searching the amateur radio bank.

Row 3

 – Skywarn channel active.

000 – Channel number the scanner is tuned to.

CH – Appears with channel number (1–200) or **P** (priority channel).

000.000a – Frequency the scanner is tuned to.

 – Batteries are low.

L/O – A locked out channel/frequency is manually selected or reviewed.

Row 4

▲ ▼ (Up/Down) – Search or scan direction.

SRCH – Searching a service bank.

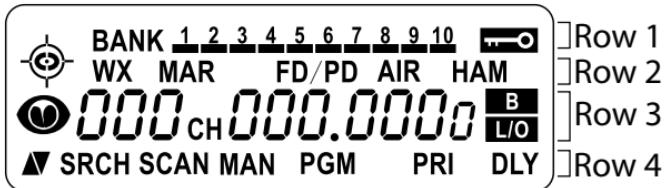
SCAN – Scan mode.

MAN – Manual mode.

PGM – Program mode.

PRI – Priority feature is active.

DLY – Two-second delay is active.



Additional Display Messages

ALL CH L-out – All channels locked out during scan or marine band search .

b X Ch-FULL – All displayed bank channels are full.

b X StorE – Frequency programmed into displayed bank's channel.

CLOnE – Clone mode.

-dUPL- – Frequency is already stored in another channel.

Error – Entry error.

FLo ALL-CL – All the locked-out frequencies removed during a FD/PD, AIRCRAFT, HAM, or Signal Stalker II search.

L-r – Review the locked-out frequencies.

L-O Fr-FULL – Maximum of 50 frequencies already locked out.

oFF tonE – Key tone deactivated.

On tonE – Key tone activated.

P – Scanner is tuned to the priority channel.

-t- – Tune mode.

Sub Bank Messages

Lo VHF – Sub-bank 1 of the fire/police bank.

Hi VHF – Sub-bank 2 of the fire/police bank.

UHF – Sub-bank 3 of the fire/police bank.

10 M – Sub-bank 1 of the HAM bank.

6 M – Sub-bank 2 of the HAM bank.

2 M – Sub-bank 3 of the HAM bank.

70CM – Sub-bank 4 of the HAM bank.

Setup

Power Sources

You can power your scanner from one of three sources:

- Rechargeable or non-rechargeable batteries (not supplied).
- Standard AC power using an optional AC adapter (not supplied).
- Vehicle power using an optional DC adapter (not supplied).

Using Batteries

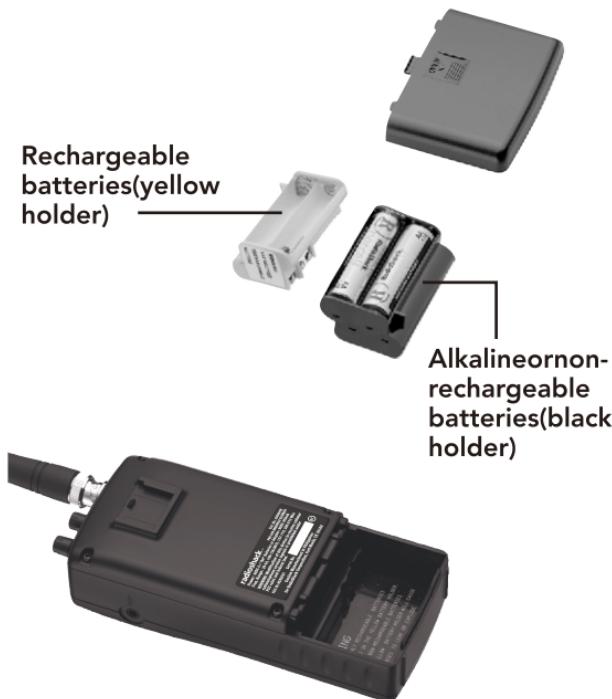
You can power the scanner with four AA batteries (not supplied). For the longest operation and best performance, we recommend alkaline batteries. If you use rechargeable batteries, we recommend nickel-metal hydride (Ni-MH) batteries.

Use the black battery holder for non-rechargeable batteries. Use the yellow holder for rechargeable batteries.

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

To install batteries

1. Slide open the battery compartment cover on the back of the scanner.
2. Place 4 AA batteries into the correct battery holder matching polarity symbols (+ / -):
Black – Alkaline (non-rechargeable)
Yellow – Rechargeable Ni-MH or Ni-Cd
3. Place the battery holder into the battery compartment. The battery holder fits only one way. Do not force it.
4. Replace the cover.



Battery Notes:

- When battery power is low, **B** appears and the scanner beeps continuously. When battery power is depleted, the scanner turns itself off.
- You must charge rechargeable batteries before you use them the first time.
- Do not allow any metal objects such as key rings, necklaces, etc. to touch the (+) and (-) terminals when the battery holder contains batteries. Do not carry or store the battery holder with metal objects.
- Use only fresh batteries of the required size and recommended type. Do not mix old and new batteries, different types (alkaline or rechargeable), or rechargeable batteries of different capacities. Doing so can damage the batteries, causing chemicals or lead leaks, fire, or explosions.
- Always turn off the scanner when not using it.

- Remove old or weak batteries. If you will not use the scanner with batteries for a month, remove the batteries. Batteries can leak chemicals that destroy electronic circuits.
- In the event that a battery leaks, shows transformation, discoloration, or abnormal generation of heat, stop operation and replace the batteries.
- Always dispose of old batteries promptly and properly. Do not bury or burn them.

Charging Rechargeable Batteries

1. Install rechargeable batteries using the yellow battery holder.
2. Connect an external power source to the **PWR DC 9V** jack using a 9V 400mA AC/DC adapter (not supplied). The average charging times are listed below.

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

☒ Recharging Notes:

- Do not overcharge batteries. Overcharging shortens battery life.
- Using the scanner while charging will increase charge time.
- Rechargeable batteries last longer and deliver more power if you let them fully discharge once a month. To do this, use the scanner until **B** appears.



Recycle Rechargeable Batteries

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

Using External Power

You can power your scanner using a power source that supplies 9V DC and delivers at least 400mA. Its center tip must be set to positive and its plug must fit the scanner's **PWR DC 9V** jack.

To use an external power source:

1. Connect the adapter (not supplied) to the scanner's **PWR DC 9V** jack.
2. Plug the adapter into the power source (standard AC power or your vehicle's power port).
3. To disconnect, unplug the adapter from the power source first.

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

Notes:

- Connecting an AC or DC adapter to the scanner disconnects internal batteries when you use the black non-rechargeable battery holder, but it does not disconnect internal batteries when you use the yellow rechargeable battery holder.
- If the scanner stops working properly after connecting it to power, try resetting it (see "**Initializing the Scanner**" on page 33).
- If you are powering from your vehicle's power port and your vehicle's engine is running, you might hear electrical noise from the engine while scanning. This is normal.

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



Setup

Connecting the Antenna

To attach the supplied flexible antenna:

1. Align the slots around the antenna's connector with the tabs on the antenna jack.
2. Press the antenna down over the jack.
3. Turn the antenna's base clockwise until it locks into place.

Connecting an Outdoor Antenna

To connect an external antenna, follow the installation instructions supplied with the antenna. Use 50-ohm coaxial cable to connect your scanner to the outdoor antenna. For lengths between 50 and 100 feet, use RG-8X low-loss dielectric coaxial cable. For lengths over 100 feet, use RG8. You also may need a BNC adapter (available at your local **RadioShack** 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, touching the antenna, mast, cable, or guy wires can cause electrocution and death. Call the power company to remove the antenna. **DO NOT** attempt to do so yourself.

Connecting Headphones

For private listening, you can plug an $\frac{1}{8}$ inch (3.5-mm) mini-plug earphone or headphones (not supplied), into the **HEADPHONE** jack on the top of the scanner. This automatically disconnects the internal speaker.





Listening Safely

Do not wear headphones, earphones, or earbuds while operating a motor vehicle or riding a bicycle. This can create a traffic hazard and could be illegal in some areas.

To protect your hearing, follow these guidelines:

- Do not listen at high volume levels. Extended high-volume listening can lead to permanent hearing loss.
- Set the volume to the lowest setting. Then turn on your audio device and adjust the volume to a comfortable level.
- Avoid increasing the volume. Your ears will adapt to the volume level, so a level that does not cause discomfort could still damage your hearing.

Connecting an Extension Speaker

In a noisy area, an amplified extension speaker (available from your local RadioShack store or www.RadioShack.com), might provide more comfortable listening. Plug the speaker cable's $\frac{1}{8}$ inch (3.5 mm) miniplug into your scanner's **HEADPHONE** jack.

 **Note:** Use an amplified speaker with this scanner. Non-amplified speakers do not provide sufficient volume for comfortable listening.

Attaching/Removing the Belt Clip

You can attach the belt clip to the back of the scanner for hands-free carrying.

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



Basic Operation

Turning on the Scanner and Setting Squelch

1. Turn **SQUELCH** counterclockwise until the indicator points to **MIN**.
2. Turn **VOLUME** clockwise to turn on the scanner. A welcome message appears. After about 3 seconds, you might hear a hissing sound. Then adjust **VOLUME** to a comfortable listening level.
3. Turn **SQUELCH** clockwise, just until the hissing sound stops.

To perform a quick check of scanner operation, press . If you are near a NOAA weather station, you should hear weather information.

Notes:

- Make sure the scanner's antenna is connected before you turn it on.
- To listen to a weak or distant station, turn **SQUELCH** counterclockwise.
- If reception is poor, turn **SQUELCH** clockwise to cut out weak transmissions.
- If **SQUELCH** is adjusted so you always hear a hissing sound, the scanner will not scan or search properly.

Programming Known Frequencies into Channels

1. Press **PGM**. **PGM** appears. Enter the channel number (1–200) where you want to store a frequency, then press **PGM** again.
2. Use the number keys and **•** to enter the frequency (including the decimal point).
3. Press **ENT** to store the frequency into the channel.
4. To program the next channel in sequence, press **PGM** and repeat Steps 2 and 3.

 **Notes:**

- If you made a mistake entering the frequency, **Error** appears and the scanner beeps three times when you press **ENT**. Start again from Step 2.
- Your scanner automatically rounds the entered frequency down to the closest valid frequency. For example, if you enter a frequency of 151.473, your scanner accepts it as 151.470.
- If you entered a frequency that is already stored in another channel, the scanner beeps three times and displays the lowest channel number where the frequency is already stored, while **-DUPL-** (duplicate) and the frequency flashes. Press **ENT** if you still want to store the frequency. Press **TUNE/CLEAR** to cancel.
- Press **•/DELAY** to set a two-second delay on this channel. The scanner stores this setting in the channel.

If you do not have a list of frequencies in your area, use a Tune search or a Service Bank search to find transmissions. Or refer to an online resource such as www.radioreference.com.

Searching for Active Frequencies

Tune Search

During a tune search, the scanner tunes up or down starting from a frequency you specify.

1. Press **TUNE**. **PSE** and the starting frequency appear.
2. If you want to change the starting frequency, enter a new frequency and press **ENT**.
3. Press **PSE** to start tune search. **-t-** appears on the display.
4. To change the tuning direction, press **▲** or **▼**.

 **Notes:**

- Press **•/Delay** to turn the two-second delay feature on and off.
- Press **L/O** to lock-out a frequency.
- Press **PSE** to pause searching. Press **PSE** again to resume.

Service Bank Search

Your scanner contains groups of preset frequencies called Service Banks. You can search for marine, fire/police, aircraft, ham, and weather transmissions even if you do not know the specific frequencies that are used in your area. Then you can store the frequencies you find into the scanner's channels (except for weather and marine banks, which are already stored as channels).

1. Press , , , , , or .
2. **MR, FIRE POLICE, AIR, HAM, or WEATHER** appears respectively. After about two seconds, the service search starts.

2. To search for another active frequency in the selected bank, press  or .

See “**Preprogrammed Service Bank Frequencies**” on page 6 for a list of the frequencies.

Notes:

- Press **•/Delay** to turn the two-second delay feature on and off.
- Press **L/O** to lock-out a frequency.
- Press **PSE** to pause searching. Press **PSE** again to resume.
- To reverse the search direction at any time, press  or .
- If necessary, you can select search groups using the number keys.
- The frequencies in the scanner's Service Banks are preset. You cannot change them.

Signal Stalker II Search

Signal Stalker II is a powerful tool to rapidly detect, monitor, store, or lock-out frequencies from nearby radio transmissions.

You can search for activity on all banks, Police/Fire, Aircraft, or Ham Service Banks.

- When the scanner is in manual, scan, or tune mode, press  to search for activity on all banks.



- When the scanner is in the Police/Fire, Aircraft, or Ham Service Bank, press  to search for activity on the corresponding bank.
- Activate and deactivate frequency sub-banks by pressing the corresponding number key while Signal Stalker II is searching.

Once an active frequency is found, the transmission is played and you can store it in the scanner's channel-storage banks.

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

Storing Found Frequencies into Channels

Once you find interesting frequencies during a Tune, Service Bank, or Signal Stalker II search, you can store them in the scanner's channel-storage banks.

1. Press **ENT** when you find a frequency. The bank number and **StorE** appear.
2. If you want to change banks, enter the new bank number.
3. Press **ENT** to store the frequency. The channel and frequency flash twice. To cancel the operation, press **TUNE/CLEAR**.

 **Notes:**

- The frequency is automatically stored in the first empty channel of the selected bank.
- If the scanner displays **-DUPL-**, the frequency is already stored in another channel. Press **ENT** if you want to continue storing the frequency. Press **TUNE/CLEAR** to cancel.
- If there are no empty channels in the bank, **Ch-FULL** appears. You can select another bank or clear some channels in the current bank (see “**Clearing a Stored Channel**” on page 25).

Scanning the Stored Channels

Press **SCAN/MAN** until **SCAN** appears to continuously scan through all channels with stored frequencies.

If the scanner finds an active frequency, it stops and displays that channel and frequency number, then it automatically begins scanning again when the transmission on that frequency ends.

Notes:

- Press **▲** or **▼** to reverse the scanning direction.
- Press **•/DELAY** to set the scanner to remain on the current channel for two seconds after the transmission ends.
- To set the scanner to remain on the current channel, even after the transmission stops, press **SCAN/MAN** at any time during the transmission so **MAN** appears and **SCAN** disappears (see “**Monitoring a Stored Channel**” below).
- Press **L/O** to lock-out a channel.

Turning Channel-Storage Banks On and Off

To turn a channel-storage bank on or off, press the bank's number key (**1-0**, using **0** for bank 10) during scanning. The channel-storage banks are on when they have a bar underneath them and off when no bar appears underneath them.

Notes:

- The scanner does not scan any of the channels within the banks you have turned off.
- You cannot turn off all banks; there must be at least one active bank.
- You can manually select any channel in a bank, even if the bank is turned off.
- When you turn on a bank during scanning, the scanner moves to the selected bank and scans it.
- If no transmission is found, the scanner continues to scan through all selected banks.



Monitoring a Stored Channel

You can continuously monitor a specific channel without scanning. This could be useful if you hear a transmission on a channel and do not want to miss any details, even though there might be periods of silence.

1. Press **SCAN/MAN** until **MAN** appears.
2. Enter the channel number (1–200).
3. Press **SCAN/MAN** again.

Clearing a Stored Channel

To remove a frequency stored in a channel.

1. Press **SCAN/MAN** to stop scanning.
2. Press the number keys to enter the channel number (1–200).
3. Press **PGM**. **PGM** appears.
4. Press **0** then **ENT**. The frequency number changes to **000.00000** to indicate the channel is cleared.
5. To clear another channel, use the number keys to enter that channel number then press **PGM** again. Or, repeatedly press **PGM** until the desired channel number appears. Repeat Step 4.

Listening to the Marine Bank

Press  to search the marine bank. **MR** appears about two seconds, then the scanner starts searching from marine channel 16. To change the search direction, press **▲** or **▼**.

Press **PSE** to stop searching. **SRCH** disappears and **MAN** appears.

- To change the channel manually, press **▲** or **▼**.
- To select a channel directly, enter the two-digit channel number. See “**Marine Service Bank**” on page 6 for a list of channels.
- To lock-out a frequency, press **L/O**.

Press **PSE** again to restart the marine bank search.



Weather Features

The FCC (Federal Communications Commission) has allocated channels for use by the National Oceanic and Atmospheric Administration (NOAA). Regulatory agencies in other countries have also allocated channels for use by their weather reporting agencies.

The NOAA and your local weather reporting agency broadcast the local forecast and regional weather information on one or more of these channels.

Listening to a Weather Channel

Press  to hear your local forecast and regional weather information. **WEAtheR** appears for about two seconds, then the scanner starts searching the weather bank.

Press **PSE** to stop searching the channels. **SRCH** disappears and **MAN** appears. To change the channel manually, press **▲** or **▼**.

 **Note:** Your scanner incorporates weather alert as one of its features and is an extremely sensitive high quality receiver on the weather frequencies. However, the included flex antenna is optimized for general purpose scanning. If you use this scanner as your only means for receiving weather alerts, please make sure you are receiving a clear signal on the flex antenna or switch to an external antenna that gives you clear reception of a local NOAA weather broadcast.

Weather Alerts

Receiving All Weather Alerts

To program the scanner to search for weather alerts every two seconds, set a weather channel as the priority channel.

1. Press .
2. Select the weather channel you want to set as the priority channel.
3. Press and hold **ENT** then **PRI/ALERT**. **P ChAnnEL** is displayed momentarily. Then **Pch** flashes and **000.000a** (or the previously-stored frequency) appears.

4. Press **ENT** to store the priority channel. The display flashes twice. Press **TUNE/CLEAR** to cancel.
5. Press **PRI/ALERT** during scanning or searching to turn on the priority feature. **PRI** appears.

If the scanner detects a 1050 Hz weather alert tone on the programmed channel, the scanner sounds the alert tone and **ALERT** flashes. Press any key to turn off the alarm.

Receiving Alerts for Specific Areas

About SAME Signals

The National Weather Service precedes each weather alert with a digitally encoded **SAME** (Specific Area Message Encoding) signal, then a 1050 Hz tone. The SAME signal includes a **FIPS** (Federal Information Processing Standard) code and an event code that corresponds with the type of alert being sent.

The FIPS code format is:

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

A current list of FIPS codes is located at www.NWS.NOAA.gov/NWR.

SAME Standby Mode

In SAME Standby mode, your scanner monitors weather channels for SAME alerts for up to seven areas you specify by entering the FIPS codes.

To program your scanner for SAME Standby mode:

1. Press **♂**.
2. Press **PGM** to access the FIPS code entry mode.
3. Use **▲** or **▼** to select the desired FIPS code storage location.
4. Use the number keys to enter the FIPS code, then press **ENT** to store the code.

5. Repeat steps 3-4 for all the FIPS codes that you wish to store.
6. Press  to exit FIPS code entry mode. The scanner displays **F** showing that FIPS codes are enabled.
7. Press **PRI/ALERT** to initiate SAME Standby mode. The scanner displays **F [1-7]ch StAndby**.

The scanner will monitor weather channels for alerts with matching FIPS codes. To exit SAME Standby mode, press **PRI/ALERT** again.

Notes:

- Press **L/O** during step 4 to lock-out FIPS entries; **L/O** appears in the display. Press **L/O** again to enable FIPS entries; **L/O** disappears.
- If you do not enter any FIPS codes, or if your FIPS codes are locked out, when you enter SAME Standby mode the scanner receives alerts and warning messages for all receivable areas.
- When a weather channel is set as the priority channel and priority operation is enabled (**PRI** shows in the display), all alerts are received and FIPS settings are ignored.
- The scanner sounds an alert when it receives the SAME code. To stop the alert and ready the scanner to receive a new alert signal, press any key except  / .
- If you do not stop the alert within five minutes, the alert stops and the scanner beeps every ten seconds. If the scanner receives a new weather alert after five minutes, it sounds the new alert.

Skywarn

Many areas of the country have amateur radio repeaters that have been designated as "Skywarn" repeaters. During times of severe weather, these repeaters are used to relay reports of severe weather directly to meteorologists at a local National Weather Service forecast office. Using the Skywarn feature in your scanner, you can easily jump to your local Skywarn frequency and monitor these reports, in many cases hearing about severe weather in your area instantly as it occurs.



1. Before using this feature, you must program the Skywarn frequency into channel 200 (see “**Programming Known Frequencies into Channels**” on page 20).
2. To activate Skywarn, press and hold / for about two seconds.
3. The scanner jumps to channel 200 and displays .

Note: Refer to www.radioreference.com to find the skywarn frequencies in your area.

Settings

Setting Delay

To avoid missing a reply in conversations, a two-second delay is automatically set for each channel. The scanner stops for two seconds after a transmission ends before it resumes scanning or searching. **DLY** appears in the display when the delay function is active.

To turn delay off, press /**DELAY** while the scanner is monitoring a channel or frequency. **DLY** disappears.



To turn delay on:

- If the scanner is scanning and stops on an active channel, quickly press /**DELAY** before it resumes.
- If the desired channel is not selected, manually select the channel, then press /**DELAY**.
- If the scanner is searching, press /**DELAY**. **DLY** appears and the scanner adds a two-second delay to every transmission it stops on in that bank.

Settings

Locking Out Channels and Frequencies

You can increase the scanning or search speed by locking out channels or frequencies that have a continuous transmission, such as control channels, weather channels, or birdie frequencies.

Press **L/O** when the scanner stops on a channel or frequency while scanning or searching. The scanner locks out the channel/frequency then continues scanning/searching.



To manually lock-out a channel, select the channel then press **L/O**. **L/O** appears in the display.

Notes:

- Your scanner automatically locks out empty channels.
- You can still manually select locked-out channels.
- You can lock-out a maximum of 50 frequencies during a search. If you try to lock-out more, **L-O Fr-FULL** appears.
- The scanner uses same lock-out list between the Service Banks and Signal Stalker II.

Reviewing and Removing Lock-outs

Stored Channels

Manually select the channel and press **L/O** until **L/O** disappears.

Marine Service Bank

1. Press **PSE** during the Marine Service Bank search.
2. Press **▲** or **▼** to select channels manually. **L/O** appears next to locked-out channels.
3. To remove the lock-out, press **L/O** until **L/O** disappears.

Other Service Banks and Signal Stalker II

1. Hold down **L/O/L/O RVW** for about two seconds during a Service Bank or Signal Stalker II search.
2. Press **▲** or **▼** repeatedly to scroll through the list of locked-out frequencies. **L-r** and **L/O** appear in the display.
3. Press **L/O** to remove the lock-out. The list scrolls to the next locked-out frequency.

Notes:

- When you reach the highest locked-out frequency, the scanner beeps twice and rolls to the lowest locked-out frequency.
- If the Service Bank has no locked-out frequencies, **EMPy** appears.



Removing Lock-outs from All Frequencies in a Service Bank

1. Hold down **L/O/L/O RVW** for about two seconds during a Service Bank or Signal Stalker II search. **L-r** appears.
2. While holding down **TUNE/CLEAR**, press **L/O**. **FLo ALL-CL** appears for about two seconds. Then the display alternates with **YES ---Ent** and **No --CLEAR**.
3. Press **ENT**. **L-r EMPTy** appears. The scanner clears lock-outs from all frequencies in the Service Bank.

Using Priority

The priority feature sets the scanner to check one channel every two seconds while scanning. You can program one frequency into the priority channel.

1. Press **PGM**, then press **PRI/ALERT**. **PCH** and **000.0000** or the previously stored frequency appear.
2. Enter the frequency you want stored in the priority channel, then press **ENT**. The display flashes twice.

To turn on the priority feature, press **PRI/ALERT** during scanning or searching. **PRI** appears. The scanner checks the priority channel every two seconds and stays on the channel if there is activity.

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

To program a weather channel as the priority channel (see “**Receiving All Weather Alerts**” on page 26).

Settings

Using the Display Backlight

To turn the display backlight on and off:

Press  /  to turn on the backlight for five seconds. To turn it off sooner, press  /  again.

Press and hold **PGM** then press  /  to turn on the display's backlight for an extended time. To turn it off, press  /  again.

Turning the Key Tone On and Off

The scanner is preset to sound a tone each time you press one of its keys (except  / ).

To turn the key tone on and off:

1. If the scanner is on, turn it off then back on again.
2. **WELCOME SCAnnInG rECEIVEr** appears.
3. While the welcome message is on the screen, press **1** to turn on the key tone or press **2** to turn it off.

Using the Key Lock

Use the key lock feature to protect your scanner from accidental program changes. When the keypad is locked, the only controls that operate are  / , **VOLUME**, and **SQUELCH**.

To turn on the key lock on and off:

Hold down  /  for about three seconds until the scanner beeps three times and  appears or disappears.

 **Note:** The key lock does not prevent the scanner from scanning channels or monitoring a single channel (whichever feature you last selected).



Additional Information

Cloning the Programmed Data

You can transfer the programmed data to and from a PRO-649 scanner using an optional connecting cable with $\frac{1}{8}$ -inch (3.5mm) stereo phone plugs on both ends (available from your local **RadioShack** store or www.RadioShack.com).

1. Turn on both scanners.
2. Connect the connecting cable to each scanner's PC/IF jack. **CLOnE** and **UP to SEnd** appears.
3. Press \blacktriangle on the host scanner.
4. **SENDInG** appears at the host scanner.

The scanner sends the data. To exit the clone mode, remove the cable.

CLOnE and **Error** may alternately appear when the scanner receives data from a scanner other than a PRO-649. If this happens when the scanner is receiving data from another PRO-649, turn off the scanner and turn it on again.



Programming with a Personal Computer

You can also upload or download programmed data to or from a PC using a USB cable available from your local **RadioShack** store or www.RadioShack.com.

The application software is available online. Use a search engine to find "scanner programming software." Follow instructions in the software package to upload and download data.

Initializing the Scanner

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

 **Important:** This procedure clears all information you stored in the scanner's memory. Only initialize the scanner when you are sure the scanner is not working properly.





1. Turn off the scanner, then turn it on again. **WELCOME SCAnnInG rECEIVEr** appears.
2. Press **0**, then press **1** while the welcome message is on the screen. **INITIAL** appears for about two seconds, then **YES --Ent** and **No --CLEAR** appear alternately.
3. Press **ENT**. **WAIT** appears for about two seconds.

 **Note:** Do not turn off the scanner until the initialization is complete. When the initialization is complete, **1CH 000.0000** appears on the display.

Troubleshooting

The scanner is not working at all.

- The AC or DC adapter might not be connected. Be sure the adapter's barrel plug is fully inserted into the **PWR DC 9V** jack. The center tip of the adapter's barrel plug must be set to positive.
- The batteries might be dead or need to be recharged. Recharge the rechargeable batteries or replace the alkaline batteries.

The scanner does not receive any stations or reception is poor.

- An antenna is not connected or is connected incorrectly. Be sure an antenna is properly connected to the scanner.

The scanner is on but does not scan.

- The squelch might not be adjusted correctly. Turn **SQUELCH** clockwise.
- Only one channel or no channels are stored. Store frequencies into more than one channel.

The keypad does not work.

- Keylock is turned on. Turn off keylock by holding down  /  for about three seconds
- The scanner might need to be reset or initialized. Turn the scanner off then on again, or initialize the scanner (see “**Initializing the Scanner**” on page 33).



While scanning, the scanner locks on frequencies that have an unclear transmission.

- Some frequencies programmed into the scanner might be the same as birdie frequencies. Avoid programming birdie frequencies or only listen to them manually.

Birdie Frequencies

Every scanner has birdie frequencies. Birdies are signals created inside the scanner's receiver, which may interfere with transmissions 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 omit the birdie.

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



FCC Notice

This equipment has been tested and found to comply with the limits for a scanning receiver, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

Additional Info





- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

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

Scanning Legally

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

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

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

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

In some areas, mobile use of this scanner is unlawful or requires a permit. Check the laws in your area. We encourage responsible, legal scanner use.



Care

Your scanner is not waterproof. Do not expose it to rain, moisture, or extremely high humidity. If the scanner gets wet, wipe it dry immediately. Use and store the scanner only in normal temperature environments. Handle the scanner carefully; do not drop it. Keep the scanner away from dust and dirt, and wipe it with a damp cloth occasionally to keep it looking new.

Service and Repair

If your scanner is not performing as it should, take it to your local **RadioShack** store for assistance. To locate your nearest **RadioShack**, use the store locator feature on **RadioShack's** website (www.radioshack.com), or call 1-800-The Shack (800-843-7422) and follow the menu options. Modifying or tampering with the scanner's internal components can cause a malfunction and might invalidate its warranty and void your FCC authorization to operate it.

Specifications

Frequency Coverage (MHz)

10 Meter Amateur Radio.....	29–30 (in 5 kHz steps)
VHF Lo	30–50 (in 5 kHz steps)
6 Meter Amateur Radio.....	50–54 (in 5 kHz steps)
Aircraft	108–136.9875 (in 12.5 kHz steps)
Government.....	137–144 (in 12.5 kHz steps)
2 Meter Amateur Radio.....	144–148 (in 5 kHz steps)
VHF Hi.....	148–150.8 (in 12.5 kHz steps)
VHF Hi.....	150.8–162 (in 5 kHz steps)
VHF Hi.....	162–174 (in 12.5 kHz steps)
Amateur Radio/Government	380–450 (in 12.5 kHz steps)
UHF Standard.....	450–470 (in 12.5 kHz steps)
UHF "T".....	470–512 (in 12.5 kHz steps)
Channels of Operation.....	200 channels

Sensitivity (S+N)/N 20 dB

29–54 MHz.....	0.5 uV
108–136.9875 MHz.....	1.0 uV
137–174 MHz.....	0.5 uV
380–512 MHz.....	0.7 uV
Spurious Rejection (FM @154 MHz)	50 dB

Additional Info



Selectivity

±8 kHz.....	-6 dB
±17 kHz.....	-50 dB
Search Speed.....	Up to 80 Steps/Sec
Scan Speed.....	Up to 40 Channels/Sec
Delay Time	2 Seconds

IF Frequencies

1st IF	10.7 MHz
2nd IF	455 kHz
IF Interference Ratio (10.7 MHz)	70 dB at 154 MHz

Squelch Sensitivity

Threshold.....	Less than 0.5 uV
Tight (FM)	(S + N)/N 25 dB
Tight (AM)	(S + N)/N 20 dB

Antenna Impedance.....	50 Ohms
Audio Output Power (10% THD)	180 mW Nominal
Built-In Speaker.....	1 3/8 Inches (36 mm), 8 Ohms
Operating Temperature	14° to 140°F (-10° to 60°C)
Power Requirements	4 AA Batteries
.....	9V AC Adapter (not supplied)
.....	9V DC Adapter (not supplied)
Current Drain (Squelched)	45 mA
Dimensions (HWD)	5 1/16 x 2 3/8 x 1 1/16 In (145 x 63 x 40 mm)
Weight (without antenna).....	approx. 7.8 oz (220 g)

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



Limited Warranty

RadioShack warrants this product against defects in materials and workmanship under normal use by the original purchaser for **one (1) year** after the date of purchase from a **RadioShack**-owned store or an authorized **RadioShack** franchisee or dealer. **RADIOSHACK MAKES NO OTHER EXPRESS WARRANTIES.**

This warranty does not cover: (a) damage or failure caused by or attributable to abuse, misuse, failure to follow instructions, improper installation or maintenance, alteration, accident, Acts of God (such as floods or lightning), or excess voltage or current; (b) improper or incorrectly performed repairs by persons who are not a **RadioShack** Authorized Service Facility; (c) consumables such as fuses or batteries; (d) ordinary wear and tear or cosmetic damage; (e) transportation, shipping or insurance costs; (f) costs of product removal, installation, set-up service, adjustment or reinstallation; and (g) claims by persons other than the original purchaser.

Should a problem occur that is covered by this warranty, take the product and the **RadioShack** sales receipt as proof of purchase date to any **RadioShack** store in the U.S. **RadioShack** will, at its option, unless otherwise provided by law: (a) repair the product without charge for parts and labor; (b) replace the product with the same or a comparable product; 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.

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EXCEPT AS DESCRIBED ABOVE, **RADIOSHACK** SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO THE PURCHASER OF THE PRODUCT OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS OR DAMAGE CAUSED DIRECTLY OR INDIRECTLY BY USE OR PERFORMANCE OF THE PRODUCT OR ARISING OUT OF ANY BREACH OF THIS WARRANTY, INCLUDING, BUT NOT LIMITED TO, ANY DAMAGES RESULTING FROM INCONVENIENCE AND ANY LOSS OF TIME, DATA, PROPERTY, REVENUE, OR PROFIT AND ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, EVEN IF **RADIOSHACK** HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some States do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from State to State. You may contact **RadioShack** at:

RadioShack Customer Relations
300 RadioShack Circle, Fort Worth, TX 76102

04/08

Additional Info



Protect the environment by recycling your used electronics. Go to E-CyclingCentral.com to find an electronic recycling center near you.

