RadioShack®

PRO-650
User's Guide

Desktop Radio Scanner

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

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Package Contents

- Scanner
- Antenna
- AC Adapter
- User's Guide
- Quick Start Guide

Features

Your new PRO-650 Desktop 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 26,000 frequencies, including those used by police and fire departments, FM broadcast, ambulance services, aircraft, and amateur radio services.

Your PRO-650 scanner also has these special features:

Service Banks – easily locate types of calls by searching preprogrammed frequencies in separate marine, fire/police, aircraft, ham, FM broadcast, 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 power.

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-650 scanner.

Real-time Signal Strength Indicator – shows relative strength of received signals.

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

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

Your PRO-650 scanner can receive these bands:

Frequency Range	Types of Transmissions
29–54 MHz	10-Meter Ham, VHF Lo, 6-Meter Ham
87.3–107.9 MHz	FM Broadcast
108–136.99166 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 32 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.

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, FM broadcast and weather services. This is handy for quickly finding active frequencies instead of searching through an entire bank (see **"Service Bank Search"** on page 17).

Preprogrammed Service Bank Frequencies

Marine

Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	156.0500	63	156.1750
05	156.2500	64	156.2250 / 160.8250
06	156.3000	65	156.2750
07	156.3500	66	156.3250
08	156.4000	67	156.3750
09	156.4500	68	156.4250
10	156.5000	69	156.4750
11	156.5500	70	156.5250
12	156.6000	71	156.5750
13	156.6500	72	156.6250
14	156.7000	73	156.6750
15	156.7500	74	156.7250
16	156.8000	77	156.8750
17	156.8500	78	156.9250
18	156.9000	79	156.9750
19	156.9500	80	157.0250
20	157.0000 / 161.6000	81	157.0750
21	157.0500	82	157.1250
22	157.1000	83	157.1750
23	157.1500	84	157.2250 / 161.8250
24	157.2000 / 161.8000	85	157.2750 / 161.8750
25	157.2500 / 161.8500	86	157.3250 / 161.9250
26	157.3000 / 161.9000	87	157.3750 / 161.9750
27	157.3500 / 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

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

Group	Frequency Range (MHz)	Step (kHz)
1	108.000-118.000	8.33
2	118.00833-136.99166	8.33

Ham Amateur Radio

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

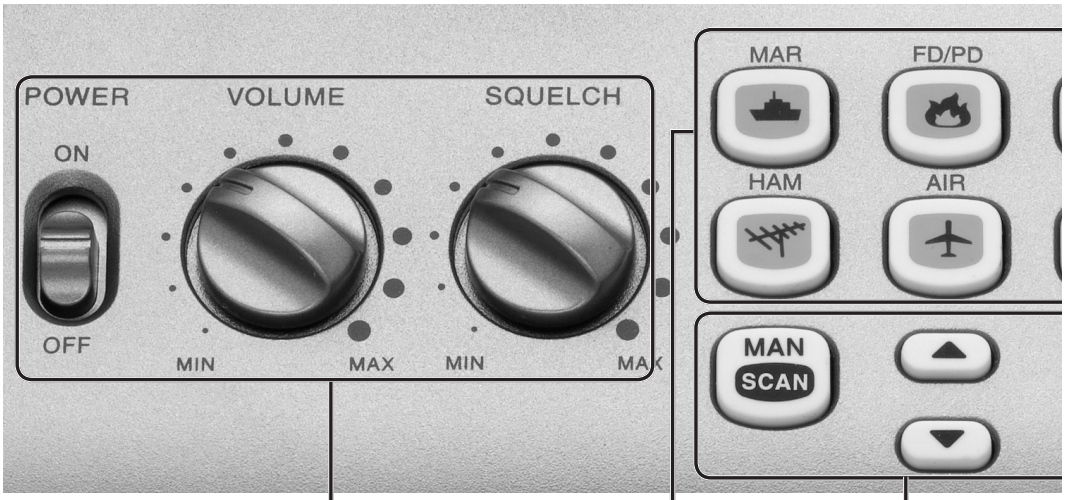
FM Broadcast

Frequency Range (MHz)	Step (kHz)
87.3–107.9	100

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



POWER
Turn scanner on and off.

VOLUME
Adjust volume.

SQUELCH
- Turn counterclockwise to listen to a weak or distant station.
- Turn clockwise to cut out weak transmissions.

MAR (Marine)
Search the preprogrammed marine bank.

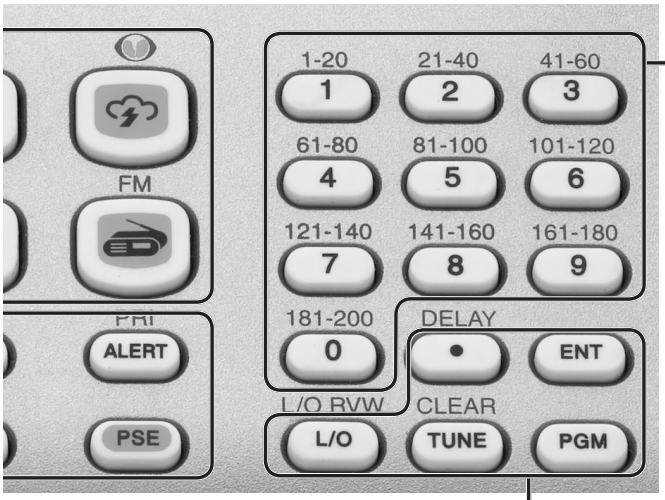
FD/PD (Fire Dept/Police Dept)
Search the preprogrammed fire/police bank.

/ (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 22).

HAM
Search the preprogrammed amateur radio bank.

AIR (Aircraft)
Search the preprogrammed aircraft bank.

FM Broadcast
Search FM radio stations.



0–9

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

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.

▲▼

Select the direction for searching and scanning.

PRI / ALERT

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

PSE (Pause)

Stop and restart a search or tune.

• / DELAY

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

ENT (Enter)

Complete the entry of frequencies.

L/O / L/O RVW

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

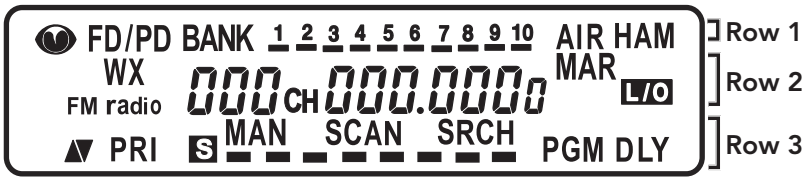
TUNE / CLEAR

- Enter Tune search.
- Clear an incorrect entry.

PGM

Program frequencies into channels.

Understanding the Display



Row 1

– Skywarn channel active.

FD/PD – Searching the fire/police bank.

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.

AIR – Searching the aircraft bank.

HAM – Searching the amateur radio bank.

Row 2

WX – Searching weather channels.

FM radio – Searching for FM radio stations.

000 **–** Channel number the scanner is tuned to.

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

000.0000 **–** Frequency the scanner is tuned to.

MAR – Searching the marine bank.

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

Row 3

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

PRI – Priority feature is active.

S **–** Signal meter; bars indicate strength of signal.

MAN – Manual mode.

SCAN – Scan mode.

SRCH – Searching a service bank.

PGM – Program mode.

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, or HAM bank 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.

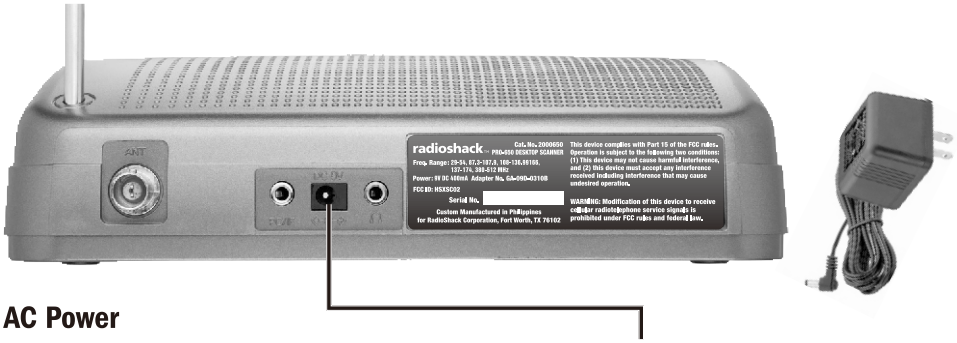
2 M – Sub-bank 3 of the HAM bank.

70CM – Sub-bank 4 of the HAM bank.

Setup

Powering Your Scanner

You can power your scanner using with AC power using the supplied AC adapter or from your vehicle using an optional DC adapter (not supplied).



AC Power

1. Connect the supplied adapter to the scanner's **DC 9V** jack.
2. Plug the adapter into a standard household power socket.
3. To disconnect, unplug the adapter from the power source first.

⚠ ***Caution:*** *To avoid injury, do not connect the adapter to a ceiling outlet.*

Vehicle Power

1. Connect a 9V, 400mA DC CLA adapter (not supplied), to the scanner's **DC 9V** jack.
2. Plug the adapter into your vehicle's power port.
3. To disconnect, unplug the adapter from the power source first.

Notes:

- *If the scanner does not work properly after connecting it to power, try resetting it (see* **"Initializing the Scanner"** *on page 26).*
- *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. This is normal when using a CLA adapter. The problem can be remedied by connecting directly to the vehicle fuse box.*

⚠ ***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* **DC 9V** *jack. Using an adapter that does not meet these specifications could damage the scanner or the adapter.*

Connecting the Antenna

To attach the supplied telescopic antenna:

1. Insert the antenna in the hole on the top of the scanner.
2. Turn the antenna clockwise to tighten.

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 ⅛ inch (3.5 mm) mini-plug earphones or headphones (not supplied), into the **HEADPHONE** jack on the back 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 ⅛ 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.*

Basic Operation

Turning on the Scanner and Setting Squelch

1. Turn **SQUELCH** counterclockwise until the indicator points to **MIN** before you turn on the scanner.
2. Slide **POWER** to **ON**. A welcome message appears. After about 3 seconds, you might hear a hissing sound. 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* -dUPL- *(duplicate) and the lowest channel number where the frequency is already stored. 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**. The display alternates between PSE and –t–.
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* **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, FM, 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 .
   MAr. FIrE POLICE, AIr, HAM. FM. 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 7 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 (except Weather band).*
- *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.*

Storing Found Frequencies into Channels

Once you find interesting frequencies during a Tune or Service Bank 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 19).*
- *If the scanner displays -dUPL- or CH-FULL, you can store another channel location by pressing* **PGM**. *The channel number flashes and 000.0000 (or previous frequency) appears. Press the desired channel number then press* **ENT.** *Repeat if needed. Press* **ENT** *again when an empty channel is found.*

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"** *on page 19).*
- *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 000.000 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

1. Press ⛴ to search the marine bank. MAr appears for about two seconds, then the scanner starts searching from marine channel 16. To change the search direction, press ▲ *or* ▼.
2. 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 7 for a list of channels.
- To lock-out a frequency, press **L/O**.

3. 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 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 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 displays momentarily. Then PCH flashes and 000.000 (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.*
- *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.*
- *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.*

Testing the Weather Alert and Beep Tone

1. To test the weather alert, press and hold **ENT** for more than 2 seconds while F [1-7]CH StAndby appears on the display.

   The display indicates the type of message, and the scanner sounds an alert or series of beeps. The beeps automatically change every 3 seconds.
2. Press any key to stop testing.

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 16).

2. To activate Skywarn, press and hold / for about two seconds.
3. The scanner jumps to channel 200 and displays .

Note:

- *If no frequency is programmed in the Skywarn channel, No ProG appears.*
- *Refer to www.radioreference.com to find Skywarn frequencies in your area.*

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 on the display when the delay function is active.

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.

To turn delay off:

Press **•/DELAY** while the scanner is monitoring a channel or frequency. DLY disappears.

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.*

Reviewing and Removing Lock-outs

Stored Channels

1. Hold down **L/O/L/O RVW** for about two seconds while in manual operation. The scanner pulls up a list of locked out channels.
2. Repeatedly press and hold **L/O/L/O RVW** to show the next locked out channel. If an error beep sounds, there are no locked out channels.
3. To remove the lock-out, press **L/O/L/O RVW** until L/O disappears.

Marine Service Bank

1. Press **PSE** during the Marine Service Bank search.
2. Hold down **L/O/L/O RVW** for about two seconds. The scanner pulls up a list of locked out channels.
3. Repeatedly press and hold **L/O/L/O RVW** to show the next locked out channel. If an error beep sounds, there are no locked out channels.
4. To remove the lock-out, press **L/O/L/O RVW** until L/O disappears.

Other Service Banks

1. Hold down **L/O/L/O RVW** for about two seconds during a Service Bank 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/L/O RVW** 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,* EMPty *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 search. L-r appears.
2. While holding down **TUNE/CLEAR,** press **L/O/L/O RVW**. 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.

Basic Operation

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 000.000 (or the previously stored frequency) appear.
2. Enter the frequency you want stored in the priority channel, then press **ENT**.
3. 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 21.

Turning the Key Tone On and Off

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

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.

Advanced Operation

Cloning the Programmed Data

You can transfer the programmed data to and from a PRO-650 scanner using an optional connecting cable with ⅛-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 ▲ on the host scanner.
4. SEndInG appears at the host scanner.

To exit clone mode after the data transfer is complete, remove the cable. No ConnEct appears if you try to connect to another model scanner. The PRO-650 does not clone with other scanner models.

Programming with a Personal Computer

You can 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 000.000 *appears on the display.*

Preprogrammed Frequencies

Your scanner has 153 preprogrammed frequencies in the ROM. You can load them into Channels 1 to 153.

1. Turn off the scanner and then turn it on again.
2. While WELCOME message appears, press **PGM.**
3. Load –Fr– appears, then YES—Ent and No—CLEAr appear alternately.
4. Press **ENT** to load frequencies or press **CLEAR** to cancel.

Preprogrammed Frequency Banks

Bank 1	
Channel	Frequency (MHz)
1	40.5000
2	52.5250
3	121.5000
4	122.0000
5	122.2000
6	122.7000
7	122.7500
8	122.8000
9	122.9000
10	122.9500
11	123.0000
12	123.1000
13	123.4500
14	131.4500
15	131.6750
16	146.5200
17	146.7600
18	146.8800
19	146.9400
20	148.1500

BANK 2	
Channel	Frequency (MHz)
21	151.6250
22	151.8200
23	151.8800
24	151.9400
25	151.9550
26	154.0100
27	154.0700
28	154.1300
29	154.1450
30	154.1600
31	154.1750
32	154.1900
33	154.2050
34	154.2200
35	154.2350
36	154.2500
37	154.2650
38	154.2800
39	154.2950
40	154.3100

Bank 3	
Channel	Frequency (MHz)
41	154.3250
42	154.3400
43	154.3550
44	154.3700
45	154.3850
46	154.4000
47	154.4150
48	154.4300
49	154.4450
50	154.5700
51	154.6000
52	155.1600
53	155.1750
54	155.2050
55	155.2200
56	155.2350
57	155.2650
58	155.2800
59	155.2950
60	155.3250

BANK 4	
Channel	Frequency (MHz)
61	155.3400
62	155.3550
63	155.3700
64	155.3850
65	155.4000
66	155.4750
67	156.4250
68	156.4500
69	156.4750
70	156.5750
71	156.6250
72	156.8000
73	156.9250
74	157.0500
75	157.1000
76	157.1250
77	157.4250
78	162.3000
79	163.2000
80	415.2000

BANK 5	
Channel	Frequency (MHz)
81	415.7000
82	446.0000
83	450.8000
84	454.0000
85	460.0250
86	460.0500
87	460.0750
88	460.1000
89	460.1250
90	460.1500
91	460.1750
92	460.2000
93	460.2250
94	460.2500
95	460.2750
96	460.3000
97	460.3250
98	460.3500
99	460.3750
100	460.4000

BANK 6	
Channel	Frequency (MHz)
101	460.4250
102	460.4500
103	460.4750
104	460.5000
105	460.5250
106	460.5500
107	460.5750
108	460.6000
109	460.6250
110	460.6500
111	460.7000
112	460.7500
113	460.8000
114	460.8500
115	460.9000
116	460.9250
117	460.9500
118	460.9750
119	462.5500
120	462.5625

BANK 7	
Channel	Frequency (MHz)
121	462.5750
122	462.5875
123	462.6000
124	462.6125
125	462.6250
126	462.6375
127	462.6500
128	462.6625
129	462.6750
130	462.6875
131	462.7000
132	462.7125
133	462.7250
134	462.9500
135	462.9750
136	464.5000
137	464.5500
138	464.8750
139	467.0625
140	467.5625

BANK 8	
Channel	Frequency (MHz)
141	467.5875
142	467.6125
143	467.6375
144	467.6625
145	467.6875
146	467.7125
147	467.7625
148	467.8125
149	467.8500
150	467.8750
151	467.9000
152	469.5000
153	469.5500

Additional Information

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 **DC 9V** jack. The center tip of the adapter's barrel plug must be set to positive.

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.
- Reception may be blocked by walls or other obstructions. Try moving to a different area.

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.

- 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 26).

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:

1. 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.
2. 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.
3. Make a list of all the birdies in your scanner for future reference.

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.

Specifications

Frequency Coverage

29-54 MHz ..... (5 kHz steps)/FM
87.3-107.9 MHz ..... (100 kHz steps)/WFM
108-136.99166 MHz ..... (8.33 kHz steps)/AM
137-143.9875 MHz ..... (12.5 kHz steps)/FM
144-148 MHz ..... (5 kHz steps)/FM

148.0125-150.7875 MHz ..... (12.5 kHz steps)/FM
150.8-161.995 MHz ..... (5 kHz steps)/FM
162-174 MHz ..... (12.5 kHz steps)/FM
380-512 MHz ..... (12.5 kHz steps)/FM

Sensitivity (S+N)/N 20 dB

29-54 MHz ..... 0.5 uV
87.3-107.9 MHz ((S+N)/N 30 dB)..... 1.0 uV
108-136.99166 MHz ..... 1.0 uV
137-174 MHz ..... 0.5 uV
380-512 MHz ..... 0.7 uV
Spurious Rejection (FM @154 MHz) ..... 50 dB

Selectivity

±8 kHz/±17kHz (FM/AM) ..... -6dB/-50dB
±80kHz/±180kHz (WFM) ..... -6dB/-50dB
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 (FM/AM) ..... Less than 0.5 uV
Threshold (WFM) ..... Less than 1.0 uV
Tight (FM)..... (S + N)/N 25 dB
Tight (WFM) ..... (S+N)/N 60 dB
Tight (AM) ..... (S+N)/N 20 dB
Antenna Impedance..... 50 Ohms
Audio Output Power (10% THD) ..... 0.7 W Nominal
Built-In Speaker..... 3 Inches (77 mm), 8 Ohms
Operating Temperature ..... 32° to 110°F (0° to 43°C)
Power Requirements ..... 9V AC Adapter (supplied)
..... 9V DC Adapter (not supplied)
Dimensions (HWD) ..... 8 ¼ x 6 ⅞ x 2 ⅜ In
..... (210 x 175 x 60 mm)
Weight (without antenna)..... 24.7 oz (700 g)

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

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.

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.
- 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.

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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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

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

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