RadioShack.

2000668 / PRO-668
User's Guide

HANDHELD DIGITAL TRUNKING SCANNER

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

Contents

Introduction

Many organizations, such as police and fire departments, emergency response teams, and airports, use radio communication extensively every day. Scanning these radio communications is a great way to listen to all the exciting events happening in your area.

- **Police**
- **Fire Departments**
- **Air Ports**

Radio communication is also used to coordinate large events, and spectators with radio scanners listen to behind-the-scenes action.

- **Auto Races**
- **Air Shows**
- **Sports**

One obstacle to scanning can be configuring your scanner. The iScan is designed to simplify this process and get you started as quickly and easily as possible.

- **Simple Controls**
- **Programming Software**
- **Programming by ZIP Code**

If you have a ZIP Code, you can program your iScan. This guide will help you set up and program your iScan, and then provide more detailed instructions for fine-tuning your scanning experience.

Features

- Simple programming by ZIP Code
- Multi-system trunking
- Audio recording
- Weather radio
- Signal Stalker II
- V-Scanner II
- USB Interface, with PC programming software
- RadioReference database (SD Card)
- Masks encrypted audio
- Decodes Radio ID and Talkgroup ID
- Improved P25 functionality
- Signal strength meter
- Programmable alert LED
- Discriminator output

Package Contents

- Handheld Scanner
- Antenna
- USB Cable
- microSD Card (PC software)
- Belt Clip
- User's Guide

Antenna

Your iScan's durable antenna provides excellent reception. Align its connector with the iScan antenna post tabs, press down and turn.

To connect a larger antenna, use a coax-to-BNC adapter and 50-ohm coaxial cable (RG-58, RG-8).*

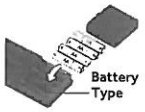
Disconnect any outdoor antenna during electrical storms to prevent damage.

External Power

Before starting, make sure the scanner is off. Use the supplied shielded USB cable.

Some USB power adapters can interfere with the scanner's reception. Using an incompatible USB cable may damage your scanner.

Batteries



Always set the Battery Type:

- **ALK** – Alkaline
- **NI-MH** – Rechargeable, Nickel-Metal Hydride

Warning: Never install alkaline batteries with the Battery Type switch set to NI-MH. Alkaline batteries can get hot or explode if you try to recharge them.

- Use only fresh batteries of the required size and type. Do not mix old and new batteries, different battery types (alkaline or rechargeable), or rechargeable batteries of different capacities.
- Dispose of batteries promptly and properly; do not burn or bury them.
- For storage of a month or longer, remove the batteries. Batteries can leak chemicals that can damage electronic parts.

Recycle Rechargeable Batteries

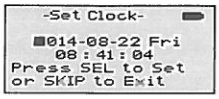
Recycle your used rechargeable batteries at one of the many collection sites in the U.S. and Canada. To find the site nearest you, visit www.call2recycle.org or call toll-free 1-877-2-RECYCLE.

*Always ensure safe and proper antenna installation. Follow instructions provided with your antenna. If none are provided, refer to article 810 of National Electrical Code (NEC) for installation and grounding instructions.

Setting Bandplan and Clock

To turn on your iScan, press the Power button.

When you turn on your iScan for the first time, use the four-direction pad and **SEL** to set your bandplan, date, and time.



Headphones* (not supplied)

Squelch
Higher for stronger signals. Lower for weaker signals.

Power
Press and hold.

Four-Direction Pad
The four-direction pad and **SEL** button navigate through menus and lists, and control volume.

Belt Clip
Align the belt clip and slide down until it clicks. To remove, pull back the tab and slide up.

*To protect your hearing:

- Set the volume to zero before putting on headphones. With the headphones on, adjust the volume to a comfortable level.
- Avoid increasing volume. Over time, your sensitivity decreases so volume levels that do not cause discomfort might damage your hearing.
- Avoid or limit listening at high-volume levels. Prolonged exposure to high-volume levels can cause permanent hearing loss.

Wearing headphones while operating a motor vehicle or riding a bicycle can create a traffic hazard and is illegal in most areas. Even though some headphones let you hear some outside sounds when listening at normal volume levels, they still can present a traffic hazard. Exercise extreme caution.

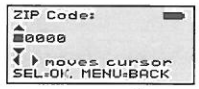
Programming by ZIP Code

All scannable items programmed into your iScan are considered objects. Your iScan automatically imports and organizes objects into playlists. **The simplest method for programming your new scanner is by ZIP code.**

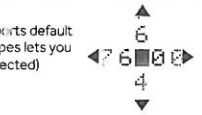
- **Conventional frequencies**
- **Trunked talkgroups**
- **Radio services**

To program your scanner by ZIP code:

1. Press **MENU** to access the main menu.
2. Select `Select Place` and press ▶.
3. Select `By ZIP Code` and press ▶.
4. Use the four-direction pad and **SEL** button to set your zip code.



5. Select `Default Types` or `Custom Types`. Default Types immediately imports default values, and Custom Types lets you select services. (✓ = selected)



6. Press **SEL**.

Playlists

Your iScan automatically imports and organizes objects into playlists, beginning at Playlist 151 named by service. To organize your iScan, you can rename your playlists.

To rename a playlist:

1. Press **MENU** to access the main menu.
2. Select `Playlists` and press **SEL**.
3. Select a playlist and press ▶. The playlist name appears.
4. Use the four-direction pad to change the name, then press **SEL**.
5. Press **MENU**.

To enable or disable playlists:

1. Press **MENU** to access the main menu.
2. Select `Playlists` and press **SEL**.
3. Use the four-direction pad to select a playlist and press **SEL**. (✓ = selected)
4. Press ◀.

Programming by City/County

To program your scanner by city or county:

1. Press **MENU** to access the main menu.
2. Select `Select Place` and press ▶.
3. Select `By City` or `By County` and press ▶.
4. Use the four-direction pad and **SEL** button to set your location.
5. Select `Default Types` or `Custom Types`. Default Types immediately imports default values, and Custom Types lets you select services. (✓ = selected)
6. Press **SEL**.

Note: Not all states have statewide trunked systems.

Manual Programming

You can program by browsing the library.

To program you scanner by browsing:

1. Press **MENU** to access the main menu.
2. Select `Browse Library`, then press ▶.
3. Use the four-direction pad and **SEL** button to select agencies to program. (✓ = selected)
4. Press **MENU**.
5. Select `Import Selected` and press **SEL**. A list of playlists appears.
6. Use the four-direction pad and **SEL** button to select a playlist. (✓ = selected)
7. Press ◀ to import the items.

Library Structure

Each **State** contains three data types:

- **Agencies** – Statewide non-trunked systems.
- **Counties/Cities** – County or independent city.
- **Systems** – Trunked systems, including control frequencies (sites) and talkgroups.

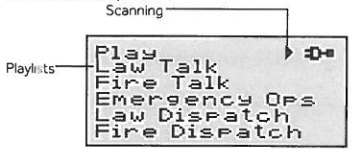
Note: Not all states have a statewide trunked radio system.

Scanning

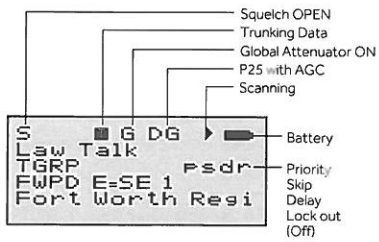
Your iScan checks all active objects sequentially for transmissions, stopping for transmissions.

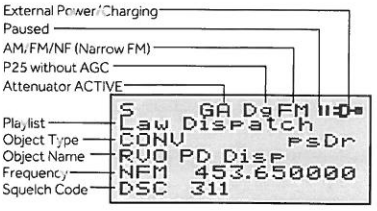
To scan:

1. Press **MENU** to access the main menu.
2. Select `Play` and press ▶.



Your iScan stops for transmissions plus a two-second delay. During the transmission, the iScan display provides information about the transmission source.

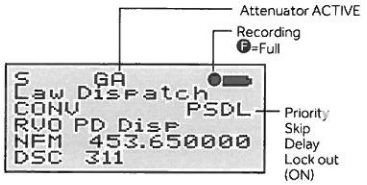




Attenuation

Attenuation can help prevent interference by reducing the strength of incoming signals. Attenuation can improve scanning in high-traffic areas, such as large urban areas. In rural areas, attenuation is used less frequently.

To activate global attenuation, press **ATT**. GA appears in the display.



Press **ATT** again to remove attenuation from the object. G remains on the display to indicate that global attenuation is still enabled but not active.

Press **ATT** again to disable global attentuation.

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 means of private telephone signal transmission)
- Paging transmissions
- Any intentionally decoded scrambled or encrypted transmissions

According to the Electronic Communications Privacy Act (ECPA), you are subject to fines and possible imprisonment for intentionally listening to, using, or divulging the contents of such a transmission unless you have the consent of a party to the communication (unless such activity is otherwise illegal). This scanner has been designed to prevent reception of illegal transmissions. This is done to comply with the legal requirement that scanners be manufactured so 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 illegal to monitor. Doing so could subject you to legal penalties. We encourage responsible, legal scanner use. In some areas, mobile use of this scanner is unlawful or requires a permit. Check the laws in your area. It is also illegal in many areas to interfere with the duties of public safety officials by traveling to the scene of an incident without authorization.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Shielded cables must be used with this unit to ensure compliance with the Class B FCC limits.

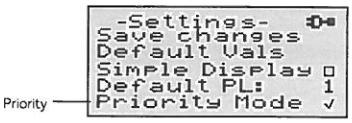
Priority Scanning

You may decide that a particular object should be checked more frequently during scans. Your iScan checks Priority objects more frequently than non-priority objects.

Note: To set priority, Priority Mode must be enabled.

To enable Priority Mode:

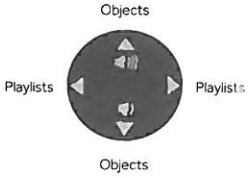
1. Press **MENU** to access the main menu.
2. Select `Settings` and press **SEL**.
3. Select `Priority Mode` and press **SEL**. A checkmark (✓) indicates Priority Mode is active.



4. Press **MENU**, and then press **SEL** to confirm.

To set priority objects:

1. Press **MENU** to access the main menu.
2. Select `Browse Objects` and press **SEL**.
3. Use the four-direction pad to select an object and press **MENU**.



4. Select `Priority` and press **SEL**. A checkmark (✓) indicates Priority.
5. Press **MENU**, and then press **SEL** to confirm.

Monitoring

Monitoring simply means keeping your iScan tuned to a single object, rather than scanning through a playlist.

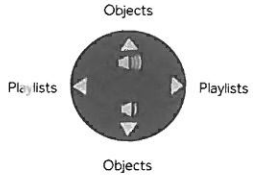
The most common form of monitoring is to simply press **▶/II** when the iScan stops on a transmission.

To return to scanning, press **▶/II** again.

You can also monitor a specific object by manually tuning your iScan to the object.

To manually tune an object:

1. Press **MENU** to access the main menu.
2. Select `Browse Objects` and press ▶. The first available playlist appears.
3. Use the direction keys to navigate through playlists and objects.



4. Press **SEL**.

Searching

Your iScan can locate active frequencies in your area that you can save to include in future scans.

- **Signal Stalker II**
- **Service Searches**
- **Limit Search**

TIP: While searching, you may want to ignore a frequency. Press **SKIP** and your iScan will ignore the frequency.*

Signal Stalker II

Signal Stalker II sweeps quickly through several frequency ranges in 1 MHz blocks.

To search using Signal Stalker II:

1. Press **MENU** to access the main menu.
2. Select *Search*, and press ▶.
3. Select *Signal Stalker* and press ▶.
4. Select *All Bands* or *Public Safety* and press ▶.
5. Your iScan stops for transmissions. To continue the search, press ▶.
6. To save a frequency, press **MENU**, select *Store Channel*, and press **SEL**. Your iScan adds the object to the default playlist, named by search type.

Service Search

Service Searches sweep through frequencies specifically used by common radio services.

To perform a Service Search:

1. Press **MENU** to access the main menu.
2. In the main menu, select *Search*, and press ▶.

- **Public Safety**
- **Aircraft**
- **Railroad**
- **Amateur (HAM)**
- **Citizen's Band (CB)**
- **Marine**
- **FRS/GMRS/MURS**

3. Select *Service Search* and press ▶.
4. Scroll through the available services, select a service, and press ▶.
5. Your iScan stops for transmissions. To continue the search, press ▶.
6. To save a frequency, press **MENU**, select *Store Channel*, and press **SEL**. Your iScan adds the object to the default playlist, named by search type.

*To restore all skipped objects, go to the main menu, select `Restore Skipped`, and press ▶.

Limit Search

Limit Searches focus your search to a defined range.

To perform a Limit Search:

1. Press **MENU** to access the main menu.
2. Select *Search*, and press ▶.
3. Select *Limit Search*, and press ▶. The search begins.
4. Press **MENU**.
5. Scroll to *Lo*, press ▶, and use the four-direction pad and **SEL** to set the value.
6. Scroll to *Hi*, press ▶, and use the four-direction pad and **SEL** to set the value.
7. Press ◀ to continue the search.
8. Your iScan stops for transmissions. To continue the search, press ▶.
9. To save a frequency, press **MENU**, select *Store Channel*, and press **SEL**. Your iScan adds the object to the default playlist, named by search type.

Search Settings

Each type of search includes settings that you can use to improve your experience.

Press **Menu** during a search.	Signal Stalker II	Service Search	Limit Search
Atten Attenuation	●	●	●
Zeromatic Locates frequencies quickly	●	●	●
Delay Pause before resuming search.	●	●	●
Special Mode Skips 1 MHz block where you have skipped five or more frequencies	●		
Frequency Ranges Limits the search range	●	●	
Rx Mode Automatic or forced AM/FM modes (Aircraft and Amateur bands)		●	
Lo Lowest frequency to search			●
Hi Highest frequency to search			●

Weather Radio

The NOAA Weather Radio All Hazards (NWR) network broadcasts official warnings, watches, forecasts, and other information from the National Weather Service (NWS).*

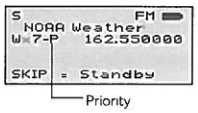
To monitor the strongest NWR frequency in your area, press 0.

Weather Priority

Weather Priority makes the strongest weather frequency a priorty object to be scanned more frequently. To receive severe weather broadcasts while scanning other channels, set the Weather Priority channel.

To activate Weather Priority:

1. Press 0. When the transmission starts, make note of the NWR channel number (1-7).
2. Press **MENU**.
3. Select *Priority* and press ◀ or ▶ to select the channel.
4. Scroll to *Save Changes* and press ▶.



Skywarn®

Skywarn® repeaters relay severe weather reports directly from amateur radio repeaters to local NWS offices.

NOTE: Some areas may not have available Skywarn® frequencies.

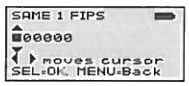
To importing Skywarn® Frequencies:

1. Browse for Skywarn® frequencies in the iScan library Browse Library ▶ United States ▶ (State) ▶ Counties/Cities ▶ (County) ▶ Categories ▶ Amateur Radio.
2. Select Skywarn and press **SEL**.
3. Press **Menu**. The Playlists appear.
4. Select the Skywarn playlist and press **SEL**.

To activate Skywarn®:

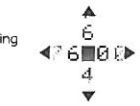
1. Press 0 once to enter Weather Mode.
2. Press 0 again to activate Skywarn®.

Note: Skywarn® temporarily disables all other playlists.



SAME Standby

Specific Area Message Encoding (SAME) identifies specific geographical areas using 6-digit Federal Information Processing Standards (FIPS) codes, which are mostly aligned along county lines.

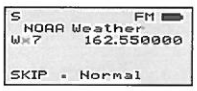


To use SAME Standby, you must program at least one FIPS code. You can obtain FIPS codes at: www.nws.noaa.gov. You can also call the NWS toll-free at 1-888-NWR-SAME (1-888-697-7263).

TIP: For advance notice, consider programming FIPS codes for adjacent counties.

To program FIPS Codes:

1. Look up your local FIPS code(s).
2. Press 0, then press **MENU**.
3. Scroll down to *SAME 1 FIPS* and press ▶.
4. Use the four-direction pad and **SEL** button to set your FIPS code.
5. Select *SAME 1 Enable* and press ▶.
6. To save additional FIPS codes, select *SAME 2 FIPS* and repeat steps 4-5.
7. Select *Save Changes* and press ▶.



To activate SAME Standby Mode:

1. Press 0, and then press ◀ or ▶ to select a NOAA channel.
2. Press **SKIP**. The speaker is muted and *SKIP = Normal* appears.
3. To return to Normal Weather Mode, press **SKIP** again.

Backing Up Your Scanner

As a mobile scanner, your iScan is desiged to simplify changing locations with minimal configuration. V-Scanner II stores up to 20 complete scanner configurations, including objects and playlists, so that you can restore your scanner programming any time, and you can save configurations for multiple locations.

For example, if you travel between Texas and Colorado, you can save your Texas programming in one V-Scanner II folder and your Colorado programming in another. When you travel, you can load the folder for your current location, and your programming is complete.

To save a V-Scanner II folder:

1. Press **MENU** to access the main menu.
2. Select Select Place and press ▶.
3. Select Backup Data and press ▶.
4. Press **SEL**.

To load a V-Scanner II folder:

1. Press **MENU** to access the main menu.
2. Select V-Scanner and press ▶.
3. Press ◀ or ▶ to select the V-Scanner folder.
4. Press **SEL**.

TIP: After you have completely set up your scanner, save a backup. A backup can save you a lot of work later.

Reprogramming Your iScan

To change your location by reprogramming, you must clear your current programming. Otherwise, your scanner will scan both locations.

NOTE: Clearing channels erases all current scanning data. If you want to re-use this data in the future, save the configuration in a V-Scanner II folder.

To clear your current location:

1. Press **MENU**.
2. Scroll to Set Place and press ▶.
3. Select Clear Channels and press ▶.
4. Press **SEL** to confirm.

Advanced Features

When you are able to scan, you can use advanced features to improve your scanning experience.

Setting Up a Password

You can set a password to restrict access to your iScan.

1. Press **MENU**.
2. Scroll to `Set Password` and press ▶
3. Use the arrows to set the password.
4. Press **SEL**.

Note: The password can be reset using the iScan software, if necessary.

Play Sets

If you have a large number of playlists configured, you can manage them using play sets. Your iScan provides 20 play sets that each contain a list of all 200 normal playlists and the Skywarn® playlist.

For example, you can define a play set for Texas and a play set for Colorado. In each play set, enable or disable playlists for that location. When you travel, you can enable and disable play sets to reconfigure your iScan.

To define a play set:

1. Press **MENU** to access the main menu.
2. Select `Play Sets` and press ▶.
3. Use the four-direction pad to select a play set and press **SEL**. Checkmarks (✓) indicate active play set.
4. Press **MENU**. The list of playlists appears.
5. Use the four-direction pad to select a playlist and press **SEL**. Checkmarks (✓) indicate included playlists.
6. Press ◀.

Configuring Settings

To access configuration settings, select `Settings` from the main menu, and press ▶.

Default Vals	Restores default settings.
Simple Display	Limits the information on the display during scanning or monitoring.
Default PL	The default playlist for scanning and for saving objects found during searches.
Priority Mode **Priority Time**	Enables Priority Mode, and sets the time between priority scans. See "Priority Scanning" on page 10.
Enable Record	Enables the record feature. See "Recording and Playback" on page 21.
Search Record	Records received search transmissions.
G Atten Mode **G Atten On**	Enables Global Attenuation and activates GA. See "Priority Scanning" on page 10.
Search Dg AGC	Applies Digital AGC to digital transmissions.
G AGC Mode **G AGC On**	Enables and activates Global AGC.
PlaySets Opt	Turns on the PlaySet Feature. See "Play Sets" on page 17.
Sounds **Alerts**	Sets iScan beeps and alert sounds. Sets alerts: Off, Audio, Visual, Both
Key Beeps **Beep Volume**	Enables or disables key tones and sets key tone volume.
Alert Volume	Object and low battery alert volume.
Contrast	Sets the LCD contrast.
LModeBAT **LModeEXT**	Sets the backlight mode with batteries and external power: Off, On, Stealth, Normal, Key, Ignore.
LiteArea **LiteTime** **LiteLevel**	Sets LCD and keypad lighting Backlight duration and brightness.
Welcome Text 1-5	Message when iScan is first turned on.
Blink Time 1-2	Controls the display time for each item.
Show Radio ID	Displays Radio ID (trunked systems).
Tag only	Displays only display name (trunked systems).
Use RID Alert	Displays an alert for transmissions with Radio ID.
Show VC/CC	Displays voice and control channel. Show Radio ID will override. **Simple Display** must be unchecked.

Show TGID	Displays talkgroup ID. **Simple Display** must be unchecked.
Show Site Name	Displays trunking site name, if two or more trunking system sites are programmed. **Simple Display** must be unchecked.
CONV TGID **CONV Radio ID**	Displays the talkgroup ID for P25 conventional talkgroup calls. Displays the Radio ID for P25 conventional calls. **Simple Display** must be unchecked.
PC/IF CCDump **To file** **Limit** **Trim Logs**	Streams ASCII Control Channel Dump data over the USB interface for trunking control channels, stores ASCII Control Channel Dump data to the microSD card, and sets a limit for the number of Trim Logs that are sent: 100, 200, 500, 1000.
Low Batt Time	Interval (seconds) between low-battery alerts.
Charge Time	Sets the radio charge time.
TG Disp	Display format for talkgroup IDs.
M36 Stat Bits	Uses status bits to track Motorola 3600 baud trunking talkgroup calls.
M36 ENC	Ignores encrypted bits on Motorola 3600 bps control channel systems.
EDAC Dig	Ignores encrypted bits on EDACS control channel systems.
BandPlan	Selects USA or Canada.
FlexStep	Allows smaller steps between frequencies.
EncMode	For encrypted transmissions: Noise, Silent, or Tone.
EncLevel	Sets the encrypted call tone level.
IF Out	Routes the IF Discriminator signal to the headphone jack.
DSPLevelAdapt	Controls how fast the DSP adjusts to varying P25 levels (default: 64). Higher = faster.
ADC Gain	Sets input signal to CODEC (default: +0dB).
DAC Gain	Sets output signal from CODEC, varying the decoded signal audio level (default: +0dB).
Auto Power On **At 00:00** **Mode:**	Turns on your iScan at a specified time, to a set function: Menu, Scan, Weather, or Monitor.
Place Select	Disables the **Set Place** option on the main menu.
Sig Bar 1-5	Sets the range for the Signal Strength indicator.

Editing Objects Manually

1. From the main menu, select `Browse Objects`.
2. Use the four-direction pad to select an object.

NOTE: Your iScan organizes imported objects beginning at Playlist 151, named by service. Playlist 1 may be empty.

3. Press **MENU** to enter the Object Edit menu:

Frequency	The frequency for the object.
Alpha Tag	The display name for the object.
Set Playlists	Assign the object to playlists.
Rx Mode	Receiving mode
Sq Mode	Squelch mode
Sq Search	Activates a search for the Squelch code
Sq Code	Squelch code
Sq Exclude	Excludes squelch
Locked Out	Locked objects are not scanned.
Skipped	Skipped objects are not scanned.
Priority	Priority object are checked more frequently.
Delay	Set a scan delay after a transmission ends.
Attenuate	Applies attenuation to the object
AGC	Reduces interference from strong local transmitters (conventional frequencies only)
Alarm	Select a sound used for alarms.
Light	On, Off, or Flash
Flash Pattern	Alert LED flash pattern.*
On Time / Off Time	Flash pattern step duration. (Percentage: 100 = 1 second, 50 = 1/2 second).
LED Enabled	Enables the Alert LED.
LED Flash	Enables Alert LED flash patterns.
Color Count	The number of Alert colors. 0 = off.
Color 1-4	Hexidecimal value for each color.
Record	Record received transmissions. (✓ = Record this object)
Delete Object	Deletes the programmed object; the frequency remains in the iScan library for later programming, if desired.

4. Use the four-direction pad and **SEL** button to change settings. (✓ = selected)
5. Select `Save Changes` and press **SEL**.

Recording and Playback

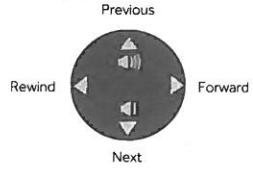
Your iScan contains a MicroSD card that can store over 50 hours of recording time. After you activate the recording feature, you can record all transmissions for specific objects and transmissions found during a search.

To enable the recording feature:

1. Press **MENU** to access the main menu.
2. Select `Settings` and press ▶.
3. Select `Enable Record` and press ▶.
4. To record during frequency searches, select `Search Record` and press ▶.
5. Select `Save Changes` and press ▶.
6. Edit the object and activate the `Record` setting. See "Editing Objects Manually" on page 20.

To playback recordings:

1. Press **MENU** to access the main menu.
2. Select `Playback` and press ▶.
3. Press **▶/II** to play the file.



4. You can press **MENU** for a list of playback options:
   - **Main Menu** – Returns to the main menu.
   - **Back** – Returns to the list of recorded files.
   - **Play From Here** – Plays the current recording and all recordings afterwards.
   - **Delete All** – Deletes all recorded audio files.
   - **Delete Earlier** – Deletes recorded audio files prior to the selected audio file.
   - **Delete Later** – Deletes the selected audio file and all recorded audio files after the selected file.
5. Press **SKIP** to stop playback.

Alert LED Settings

1. From the main menu, select `Browse Objects`.
2. Use the four-direction pad to select an object.
3. Press **MENU** to enter the Object Edit menu.

Flash Patterns

Each character defines a flash pattern step, and eight characters (steps) define the flash pattern.

Flash Pattern	☼=on	◎=off		
0	◎	◎	◎	◎
1	◎	◎	◎	☼
2	◎	◎	☼	◎
3	◎	◎	☼	☼
4	◎	☼	◎	◎
5	◎	☼	◎	☼
6	◎	☼	☼	◎
7	◎	☼	☼	☼
8	☼	◎	◎	◎
9	☼	◎	◎	☼
A	☼	◎	☼	◎
B	☼	◎	☼	☼
C	☼	☼	◎	◎
D	☼	☼	◎	☼
E	☼	☼	☼	◎
F	☼	☼	☼	☼

On Time / Off Time

`On Time` and `Off Time` determine the flash rate:

- 100 = 1 second, 50 = 1/2 second
- Lower Value = Faster Rate

Common Hexidecimal Color Codes

- FF0000 (red)
- FFFF00 (yellow)
- 0000FF (blue)
- 00FF00 (green)
- FFFFFF (white)
- FF00CC (purple)

Single-Color Solid (Red)

Flash Pattern: [Blank]
LED Enable: √
Color Count: 1
Color 1: FF0000

Single-Color Flashing

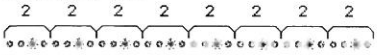
Flash Pattern: AAAAAAAA
On Time: 50
Off Time: 50
LED Enable: √
LED Flash: √
Color Count: 1
Color 1: FF0000 (Red)

Two-Color Strobe

Flash Pattern: A8A8A8A8
On Time: 10
Off Time: 10
LED Enable: √
LED Flash: √
Color Count: 2
Color 1: FF0000 (Red)
Color 2: 0000FF (Blue)

Three-Color Flashing (Slow)

Flash Pattern: 22222222
On Time: 50
Off Time: 50
LED Enable: √
LED Flash: √
Color Count: 3
Color 1: FF0000 (Red)
Color 2: FFFFFF (White)
Color 2: 0000FF (Blue)

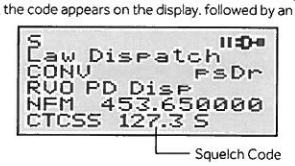


Saving Found CTCSS or DCS Codes

When importing objects from the Library, the squelch code is automatically imported. If this information is missing, your scanner can quickly identify the code during a search.

Note: In the Settings menu, `Simple Display` must be unchecked to display squelch codes.

If a conventional channel includes a CTCSS or DCS squelch code, the code appears on the display, followed by an "S."



To save the found code with the channel:

1. When the squelch code appears, press **MENU**. `Store sq code` appears.
2. Press **SEL**.

After the code is saved, the scanner will stop only on transmissions that have a matching CTCSS or DCS squelch code.

Using IF Output

If you use third party signal analysis and decoding software and hardware, your iScan can provide unsquelched and unfiltered IF/discriminator output to the headphone jack.

To activate IF Output mode:

1. Press **Menu**
2. Scroll to the `Settings` menu. Press ▶ to continue
3. Scroll past `Expert` to the `IF Out` setting.
4. Press ▶ to scroll through the available options:
   - Off – IF output disabled
   - HP – IF output to headphone jack only
   - HP/SP – IF output to headphone jack and speaker
5. Connect your equipment to the headphone jack.

Changing microSD Cards

You can purchase additional cards (up to a 32GB) to store backup configurations or recordings.

To remove the microSD card from the scanner:

1. Turn off and unplug your iScan, and remove the batteries.
2. Press and release the microSD card.
3. To insert a microSD card, turn the card with the label facing the front of the radio and press in until it clicks.

To format additional cards:

1. Open the iScan software on your PC.
2. Select **Scanner/ SD Card** from the menu bar, and then **Prepare Scanner Memory/SD Card For Use.**
   - Use only the iSCAN software to format the SD card. Formatting the microSD card for other file system types may cause iSCAN to malfunction.
   - Use the FAT file system with 32k clusters.
   - For microSD cards larger than 2GB, use FAT32 with 32k clusters.

Tip: You can use an external reader, which may provide faster data transfer rates.

iScan Directory Folders

- **BTMP** – Contains temporary files used by your iScan.
- **CDAT** – Contains your current iScan data. Save a backup copy of this folder.
- **CDAT_VS.nnn** – Contains V-Scanner data. Folder number nnn, where nnn may range from 001 to 200
- **DB** – Contains the Library
- **MTMP** – Contains temporary files used by your iScan.
- **STMP** – Contains temporary files used by your iScan.
- **CURVS.DAT** – Configuration information
- **CONFIG__.BIN** – Configuration information
- **REC** – Audio recordings

WARNING: Modifying these directories or their contents outside of the iScan software is not recommended and may cause the PRO-668 to malfunction.

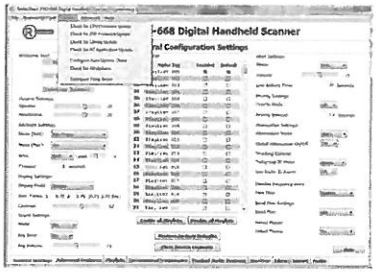
PC Scanner Software

Your scanner comes with an installed microSD card that contains the entire U.S.A/Canada RadioReference database as well as the iScan software.

The simplest way to program your iScan is ZIP code, but for more advanced programming, the provided software lets you quickly customize your scanner from your computer.

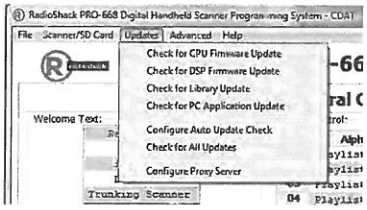
To install your iScan Software:

1. Connect the iScan to your PC using the supplied USB cable. An installation wizard should appear, or you can navigate to the microSD card and open setup.exe.
2. Follow the on-screen instructions to complete the installation.
3. When the software is installed, open the software and use the tabs to modify your settings and upload to your iScan. Refer to the online help for current information.



Updating DSP Firmware

1. Turn off the iScan.
2. Connect the iScan to your computer using the supplied USB cable.
3. Select **Update** from the menu bar, and then **Check for DSP Firmware Update.**



4. Click **Check for Updates.**
5. If updates are available, click **Update My Scanner.**
6. When complete, click **Done.**

Updating CPU Firmware

1. Turn off the iScan. Disconnect the USB cable from the scanner, but keep the USB cable connected to your computer.
2. While pressing **Menu**, connect the USB cable to the iScan. The current boot and CPU versions appear on the display, followed by the CPU SW Upgrade prompt.
3. Select **Check for CPU Firmware Updates** in the update menu.
4. Click **Check for Updates** on the update screen.
5. If there are available updates, click **Update My Scanner.**
6. When complete, click **Done.**

Updating the Software Database

RadioReference frequently updates their databases, which you can use to upload your local database.

Note: Updating the RadioReference database requires an Internet connection.

To update your database:

1. Open the iScan software on your PC.
2. Select **Update** from the menu bar, and then **Check for Library Update.**
3. Click **Check for Updates.**
4. If updates are available, click **Download Updates** and click **Done** when the update is complete.

Updating Your iScan Library

After you update the database on your PC, you can update your iScan library.

To update your iScan library:

1. Access the **Library Import** tab in the iScan software.
2. Select **Standard** from the **Select Import Type** list. A second Import screen appears.
   - **D** – Unsupported digital modulation.
   - **S** – Unsupported trunked system.
   - ■ – Some frequencies are selected, but not all.
3. Click **Update Channels**. The Library Import screen appears.
4. Click **Update Channels.**

To update all objects and playlists:

1. Press **MENU** to access the main menu.
2. Select *Update From Lib* and press ▶.
3. To use new Alpha Tag (names) from the library, Press **SEL** for yes or **SKIP** for no.

Note: To update your programming, your iScan must be connected to an external power source.

Maintenance

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.

- Handle the scanner carefully; do not drop it.
- Keep the scanner dry; if it gets wet, wipe it dry immediately.
- Use and store the scanner only in normal temperature environments.
- Keep the scanner free from dust and dirt, and wipe it with a damp cloth occasionally to keep it looking new.

Birdie Frequencies

Birdies are internal operating frequencies that can cause interference. All scanners have birdies, but if the interference is not severe, adjusting the squelch might avoid the birdie, but if you program one of these frequencies during a search, you will hear only noise on that frequency.

If you suspect that a programmed frequency is being affected by a birdie, try removing the antenna. If the noise stops, it is most likely coming from an external source, and moving the scanner may reduce the noise or solve the issue. If the noise on a frequency continues when you remove the antenna, it is almost certainly the result of a birdie.

Troubleshooting

Should you experience difficulty, please refer to the following troubleshooting guide for assistance.

The scanner does not function

- Ensure that the scanner is equipped with fresh batteries. If powering the scanner from external power, make certain that the USB power plug is fully inserted into the scanners USB jack.

Low battery warning beeps and message on LCD display

Recharge rechargeable batteries or replace alkaline batteries. Ensure that the battery type selection switch in the battery compartment is set to the correct battery type.

Poor or no reception

- Weak signals from distant stations. Reposition for best reception
- Attenuator in use on weak signals. Check performance with and without attenuator activated, use setting with best reception.
- Strong signal overload from nearby transmitter. Check performance with and without attenuator activated, use setting with best reception.
- Loose or defective antenna. Inspect antenna and connectors and correct any problems found
- Incorrect modulation mode selected. Ensure that proper modulation mode is selected for the type of system being monitored. If necessary, use the PC Application to change modulation mode.

"Scanning not available" shown in display

- The batteries are low and all functions that write data to the MicroSD Card (including scanning) are disabled to prevent data corruption. Recharge or replace the batteries.

The scanner is on but does not scan

- The squelch may not be adjusted correctly. Turn the squelch control counterclockwise.

The scanner does not recognize the MicroSD Card

- The MicroSD Card is not properly formatted. Use the PC Application to reformat the card. If using Windows to format the card, the card format must be FAT or FAT32 with 32kB clusters.
- The MicroSD Card may not be inserted fully. Press the MicroSD Card into the slot until a click is heard and the card is fully inserted in the slot.
- The MicroSD Card may be defective. Replace with a new MicroSD Card

"Init uSD Card" appears when the scanner is turned on

- The MicroSD Card is not properly formatted. Use the PC Application to reformat the card.
- The MicroSD Card may not be inserted fully. Press the MicroSD Card into the slot until a click is heard and the card is fully inserted in the slot.

MicroSD Card error messages

The scanners MicroSD Card must be formatted correctly for proper operation. If the MicroSD Card is corrupted, defective, improperly formatted or missing or if essential files or directories are not present on the card, the scanner displays an error message. If you experience an error message while using your scanner in the field, take a moment to ensure that the MicroSD card is fully inserted in the slot. If this does not correct the problem, refer to the following table for the meanings of the various error codes and steps you can take to correct the problem.

Code	Meaning	Corrective Action
01-00	General heap error	Shut off scanner and turn on. Use PC Application to copy configuration to scanner memory SD card.
01-01	Unable to allocate from heap	Shut off scanner and turn on. Use PC Application to copy configuration to scanner memory SD card.
02-00	Unknown object type in data	Use PC Application to delete any corrupted objects or create a new configuration
02-01	Unknown TSYS type in data	Use PC Application to delete any corrupted TSYS objects or create a new configuration

Code	Meaning	Corrective Action
03-00	No MicroSD Card inserted	Ensure that a properly formatted MicroSD card is fully inserted and locked in MicroSD slot.
03-01	General error initializing file system	Reinsert the MicroSD card to ensure it is fully inserted and locked in the MicroSD slot. If necessary, reformat the MicroSD card using the PC Application "Prepare SD card for use" option. Replace the MicroSD card if the problem persists
03-02	Cluster size bad	Reinsert the MicroSD card to ensure it is fully inserted and locked in the MicroSD slot. If necessary, reformat the MicroSD card using the PC Application "Prepare SD card for use" option. Replace the MicroSD card if the problem persists
03-03	Error reading MicroSD card	Reinsert the MicroSD card to ensure it is fully inserted and locked in the MicroSD slot. If necessary, reformat the MicroSD card using the PC Application "Prepare SD card for use" option. Replace the MicroSD card if the problem persists
03-04	Error writing MicroSD card	Reinsert the MicroSD card to ensure it is fully inserted and locked in the MicroSD slot. If necessary, reformat the MicroSD card using the PC Application "Prepare SD card for use" option. Replace the MicroSD card if the problem persists
03-05	MicroSD card is full	Reduce size of configuration by removing unnecessary audio recordings or switch to a MicroSD card with more capacity
03-06	MicroSD card is write protected	Reinsert the MicroSD card to ensure it is fully inserted and locked in the MicroSD slot. If necessary, reformat the MicroSD card using the PC Application "Prepare SD card for use" option. Replace the MicroSD card if the problem persists
03-07	Mass storage mode is active	Under normal conditions this error should not appear. Mass storage device mode is disabled when the scanner is connected to a computer and scanning. Disconnect the radio from the computer, wait a few seconds, then reconnect. Contact Support if the problem persists.
03-08	Unknown MicroSD card read/write error	Reinsert the MicroSD card to ensure it is fully inserted and locked in the MicroSD slot. If necessary, reformat the MicroSD card using the PC Application "Prepare SD card for use" option. Replace the MicroSD card if the problem persists.

Code	Meaning	Corrective Action
04-00	Initialization error	Remove all sources of power. Wait 15 minutes, reapply power
04-01	Initialization error	Remove all sources of power. Wait 15 minutes, reapply power
04-02	Firmware load error	Remove all sources of power. Wait 15 minutes, reapply power
05-00	Unable to load CONFIG_.BIN	Reformat the MicroSD card using the PC Application "Prepare SD Card for use" option. Replace the MicroSD card if the problem persists.
05-01	CONFIG_.BIN file error	Reformat the MicroSD card using the PC Application "Prepare SD Card for use" option. Replace the MicroSD card if the problem persists.
05-02	CONFIG_.BIN file error	Reformat the MicroSD card using the PC Application "Prepare SD Card for use" option. Replace the MicroSD card if the problem persists.
05-03	MicroSD card is write protected	Reformat the MicroSD card using the PC Application "Prepare SD Card for use" option. Replace the MicroSD card if the problem persists.

Specifications

Receiving modes ..... AM, FM, ... FM-MOT (Motorola), LTR (EF Johnson), ... CTCSS, DCS, NAC on P25, ... EDACS wide/narrow (GE/Ericsson/I-ARRIS), ... P25-Phase I, X2-TDMA, P25-Phase II

Receiving system .... Triple conversion PLL super heterodyne

WX frequencies ..... 162.400, 162.425, 162.450, ... 162.475, 162.500, 162.525, 162.550 MHz

Display ..... Full dot matrix bitmap LCD (132X65 dots)

Sensitivity ..... (FM 12 dB SINAD ..... quieting unless otherwise noted)

VHF Low	0.2 µV
VHF Aircraft (20 dBq AM)	0.4 µV
VHF High 137–174 MHz	0.3 µV
VHF High 216–300 MHz	0.4 µV
UHF Low 300–406MHz	0.8 µV
UHF/UHF-T 406–512 MHz	0.4 µV
UHF High 764–900 MHz	0.5 µV
1240–1300 MHz	0.5 µV

Squelch sensitivity (band center)

Threshold	AM/FM 0.5 µV
Tight	(S+N)/N: AM 20 dB, FM 25 dB
Spurious rejection	VHF High at 154.1 MHz: 40 dB (Except Primary image)
Signal to noise ratio	35–40 dB typical (100 µV input signal)

Scanning rate (non-trunking) ..... 138–147.3 MHz 70ch/second (in 100 kHz intervals)

Search rate ..... 162.25 – 167.25 MHz: 80 steps/sec.

Scan and Search delay time ..... 2 seconds

Audio max. power RF input 100 µV at 154.1 MHz (DEV 3kHz at 1kHz)
8 ohms Resistor Load at speaker terminal (BTL): 500 m Watts

Intermediate frequency

1st	380.8 MHz
2nd	21.4 MHz
3rd	455 kHz

Current drain ..... 8 Ohm internal speaker at 154.1 MHz, 5V Ext Power, Squelched: 170 mA (Back light off/without charging)

Antenna impedance ..... 50 Ohms

Temperature range (optimal) ..... 14°F to 140°F (–10°C to 60°C)

Speaker ..... Built-in 36 mm 8 ohms dynamic speaker

Operating voltage ..... DC 4.8 Volts (4 AA Ni-MH batteries) ..... DC 6 Volts (4 AA alkaline batteries)

External power and charge voltage ..... USB Power (DC 5V 500mA)

Dimensions (HWD) ..... 5.31 X 2.12 X 1.06 in. (135 X 67 X 28mm)

Weight ..... 7.4 oz. (210g) Without antenna and batteries

Frequency Coverage

25.000–26.960 MHz	(in 10 kHz steps/AM)
26.965–27.405 MHz	(in 10 kHz steps/AM)
27.410–29.505 MHz	(in 5 kHz steps/AM)
29.510–29.700 MHz	(in 5 kHz steps/FM)
29.710–49.830 MHz	(in 10 kHz steps/FM)
49.835–54.000 MHz	(in 5 kHz steps/FM)
108.000–136.9916 MHz	(in 8.33 kHz steps/AM)
137.000–137.995 MHz	(in 5 kHz steps/FM)
138.000–143.9875 MHz	(in 12.5 kHz steps/AM)
144.000–147.995 MHz	(in 5 kHz steps/FM)
148.000–150.7875 MHz	(in 12.5 kHz steps/FM)
150.800–150.845 MHz	(in 5 kHz steps/FM)
150.8525–154.4975 MHz	(in 7.5 kHz steps/FM)
154.515–154.640 MHz	(in 5 kHz steps/FM)
154.650–156.0450 MHz	(in 7.5 kHz steps/FM)
156.0500 MHz	(FM)
156.0525–156.1725 MHz	(in 7.5 kHz steps/FM)
156.1750 MHz	(FM)
156.1800–156.2475 MHz	(in 7.5 kHz steps/FM)
156.2500–156.2550 MHz	(in 5 kHz steps/FM)
156.275–157.450 MHz	(in 25 kHz steps/FM)
157.470–160.8225 MHz	(in 7.5 kHz steps/FM)
160.8250 MHz	(FM)
160.830–161.5725 MHz	(in 7.5 kHz steps/FM)
161.600–161.975 MHz	(in 5 kHz steps/FM)
162.000–174.000 MHz	(in 12.5 kHz steps/FM)
216.0025–219.9975 MHz	(in 5 kHz steps/FM)
220.000–224.995 MHz	(in 5 kHz steps/FM)
225.000–379.99375 MHz	(in 6.25 kHz steps/AM)
380.000–419.9875 MHz	(in 12.5 kHz steps/FM)
420.000–450.000 MHz	(in 5 kHz steps/FM)
450.00625–512.000 MHz	(in 6.25 kHz steps/FM)
764.000–781.996875 MHz	(in 3.125 kHz steps/FM)
791.000–796.996875 MHz	(in 3.125 kHz steps/FM)
806.000–823.9875 MHz	(in 12.5 kHz steps/FM)
849.000–868.9875 MHz	(in 12.5 kHz steps/FM)
894.000–939.9875 MHz	(in 12.5 kHz steps/FM)
940.000–960.000 MHz	(in 6.25 kHz steps/FM)
1240.000–1300.000 MHz	(in 6.25 kHz steps/FM)
137.000–174.000 MHz	(in 5 kHz steps/FM) Canada
380.000–512.000 MHz	(in 12 kHz steps/FM) Canada

*Excludes frequencies utilized by the Cellular Mobile Radiotelephone Service: 824–848.9875 MHz and 869–893.9875 MHz

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FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, 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.
- Consult the dealer or an experienced radio/TV technician for help.

NOTE: THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER' S AUTHORITY TO OPERATE THE EQUIPMENT.

Limited Warranty

General Wireless Operations Inc., doing business as RadioShack (hereafter "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) replace the product with the same product; or (b) replace the product with a comparable product (as determined by RadioShack). All replaced products become the property of RadioShack. RADIOSHACK EXPRESSLY DISCLAIMS ALL WARRANTIES AND CONDITIONS NOT STATED IN THIS LIMITED WARRANTY. ANY IMPLIED WARRANTIES THAT MAY BE IMPOSED BY LAW, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND, IF APPLICABLE, THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, SHALL EXPIRE ON THE EXPIRATION OF THE STATED 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.

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