WS1080/WS1088
User Guide

EZ SCAN DIGITAL HANDHELD RADIO SCANNER

All Hazards NOAA Weather Radio

SKYWARN

WHISTLER

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Introduction

Scanning technology has changed dramatically over the years. The WS1080 / WS1088 scanner with Object Oriented User Interface is designed to help the hobbyist build a collection of channels to scan:

- Start small and expand
- Organize channels and talkgroups
- Remove unwanted channels and talkgroups

What is Object Oriented Scanning?

Programming scanning receivers can be challenging, but object-oriented programming simplifies the process by using common conventions for scanning concepts that have common characteristics.

A **Scannable Object** is any defined item that can be scanned or monitored, including:

- Conventional, non-trunked radio frequencies
- Talkgroups used on a trunked radio system
- Radio services
- Defined searches

Because scannable objects are defined by the same basic elements, the **Object Oriented User Interface (OOUI)** is designed to simplify scanning by managing all scannable objects similarly. When you learn how to program one type of object, you can program other types of scannable objects as well.

Features

- Functional keypad and backlit LCD display
- USA/Canada Radio Reference database on SD Card
- Quick Location based Programming (City, Zip, County)
- Detects and masks encrypted voice audio
- Decodes Radio ID/Talkgroup ID data
- Upgradeable CPU Firmware, DSP Firmware and Database Library
- USB Interface 2.0 or earlier
- Improved P25 Functionality (Phase II, X2-TDMA)
- PC Software to customize your settings
- Signal Strength Meter
- 200 Scanlists
- Weather Radio Functions
- Multi–system Trunking
- Spectrum Sweeper
- Headphone Jack
- Programmable Alert LED
- Programmable Audio Alarms
- V-Scanner II Storage System
- Audio Recording
- Built-in Clock/Calendar
- Built-in Services Searches
- Built-in Discriminator output

Package Contents

- Handheld Scanner
- Antenna
- USB Cable
- Micro SD Card (Installed in the Scanner)
- PC Software included on SD Card
- Swivel Belt Clip
- User Guide
- Quick Start Guide

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.

Even where not permitted, mobile use of a scanner is typically permitted if you are a licensed Amateur Radio operator capable of emergency radio communications. If interested, see **www.arrl.org** for information on becoming a ham radio operator.

FCC Statement

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. (2) This device must accept any interference received, including interference that may cause undesired operation.

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.

Setup

Antenna

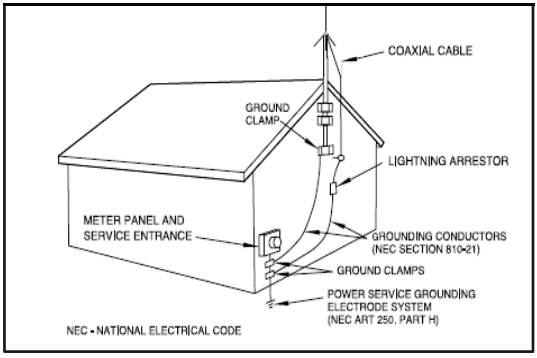
To connect the included antenna:

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

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

You can use a variety of antennas. To connect and external antenna, follow the installation instructions supplied with the antenna. Always use 50-ohm coaxial cable, such as RG-58 or RG-8 low-loss dielectric coaxial cable. You may also need a BNC adapter.

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.



WARNING: Outdoor antennas must be properly grounded to prevent static buildup and lightning damage. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information about proper grounding of the antenna mast, connection of coaxial cable to an lightning arrestor, size of grounding conductors, location of the lightning arrestor and connection of grounding conductors to grounding electrodes.

Disconnect your radio from the outdoor antenna during electrical storm activity to prevent damage.

Headphones and Speakers

You can plug headphones (not supplied) or an amplified speaker (not supplied) with a 1/8 inch (3.5mm) stereo mini-plug in the headphone jack on top of your scanner. This automatically disconnects the internal speaker.

NOTE: Use an amplified speaker; a non-amplified speakers may not provide sufficient volume for comfortable listening.

Listening Safely

To protect your hearing, follow these guidelines when you use headphones:

Set the volume to zero before putting on headphones. With the headphones on, adjust the volume to a comfortable level.

Avoid increasing the volume after you set it. Over time, your sensitivity to a volume level 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!

Batteries

A low battery warning sounds every 30 seconds (default setting) when the batteries are low.

1. *Be sure to turn the scanner off!*

2. Slide open the battery compartment cover.

Battery Type Selector

3. Set the Battery Type Selector:

- ALKA – Alkaline
- NI-MH – Rechargeable NI-MH

4. Install four AA batteries, matching the polarity symbols (+ and –).

5. Replace the cover.

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

Recycle Rechargeable Batteries

Recycle your old 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.

Battery Notes:

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 long-term storage (a month or longer), remove the batteries. Batteries can leak chemicals that can damage electronic parts.

Do not overcharge rechargeable batteries.

Overcharging shortens battery life.

External Power

Always turn the scanner off before connecting or disconnecting power sources. Use the supplied USB cable to connect the scanner to a USB power source (not included).

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

NOTE: If your vehicle's engine is running, you might hear electrical noise from the engine while scanning. This is normal.

Swivel Belt Clip

Swivel clip allows the scanner to move with you and easily move it out of the way without unclipping it from your belt. To attach the Swivel clip to the scanner; align the belt clip grooves to the slots on the back of the scanner. Slide the clip down until it clicks in place. To remove the belt clip, pull back on the small tab and slide the clip upward.

Understanding the Keypad

Your scanner features an easy-to understand backlit keypad.

WS1080

WS1088

POWER – press and hold ⏻ for one second to turn on and off. Press briefly to confirm the backlight level

MENU – provides access to additional functions related to the current operating mode of the scanner, and provides access to the Main Menu where the main functions are controlled.

WX – provides instant access to NOAA Weather Radio broadcasts and SAME Weather Alert Receiver mode. Press twice to select SKYWARN® Scanlist. (SKYWARN® requires one-time programming)

ATT – controls the attenuator function and cycles between per object attenuation mode, Global attenuation mode, and Global attenuation on.

PRI – toggles the Priority setting for selected or active object, Fn PRI toggles Priority Mode on or off while scanning.

SKIP – if pressed while monitoring or paused on an Object will temporarily disable reception on the Object. Pressing **SKIP** again while the Object is selected will resume normal monitoring. The **SKIP** key can also be programmed to permanently lockout an object if selected in the settings menu. When editing text, pressing the **SKIP** key clears all text at and to the right of the cursor. When in Playback mode, the **SKIP** key stops playback of the current recording, and when playing multiple recordings, advances to the next recording. When in Weather mode, the **SKIP** key toggles between Normal weather radio mode and SAME Standby mode. In many Menu functions, the **SKIP** key is used to cancel or abort a pending change.

Fn – activates alternate key functions.

▶/II/SEL – controls the Scan, Pause, and Playback modes, and is used in menus to select, enable, or disable options.

Four Way Push button Pad – ▲▼, ◀ ▶ keys are used for navigation while browsing objects and menus.

Alphanumeric Keypad (WS1088) – quick data entry of frequencies, talkgroup ID's and labels. While scanning, pressing 1 thru 200 will toggle the selected scanlist on or off. Each button must be pressed within 2 second of the last. If more than 1 scanlist will be toggled on or off, press the decimal once as a separator. Pressing the decimal twice will end the sequence.

Example: If you wish to toggle scanlist 9 you press 9 If you wish to toggle scanlist 9, 11, and 22 simply press the following 9 . 11 . 22 or 9 . 11 . 22 . or 9 . 11 . 22.

Turn on Scanner and Set Squelch

Preset squelch between 10 and 12 o'clock position. While scanning, turn the knob down (counterclockwise) until you hear noise then up (clockwise) a little past where the noise stops. The higher the squelch is set, the stronger the signal required to break the squelch.

Squelch

Power

Press and hold to turn ON/OFF.

Press briefly to toggle the backlight.

Setting Bandplan and Clock

When you first power up your scanner it will prompt you to set the bandplan, date and time.

Press the ◀ or ▶ key to select the USA or Canada bandplan, then press ▶/II/SEL.

The scanner will then prompt you to enter the current date and time. Press the ◀ or ▶ key to select the desired digit, then press the ▲ key. Press the ◀ or ▶ key to change the value, then press **▶/II/SEL**. You can skip this process by pressing the **SKIP** key. You can set the clock at any time using the EZ Scan Software.

-Set Clock-

2014-06-03 Sat

11:00:25

Press SEL to Set or SKIP to Exit

The Bandplan and Date/Time prompts appear only once on initial power-up. You can change the Date and Time from the Main Menu and the Bandplan from the Setting menu.

Program Methods

There are two methods to program your scanner. To get started quickly, you can use "**Set Location**." The set location method stores objects in your area automatically and puts them in Scanlists 151 and higher. These Scanlists are already named, "**Multi Dispatch**," "**Law Tac**," "**Interop**" "**Fire Talk**," and so forth. This method gets you scanning in minutes, but you cannot monitor a single police or a single fire department – they will all be together in the same Scanlist. Also, if you use set location, and wish to add a new location, be sure to "**Clear Channels**" to erase old objects before storing the new location. If you store more than one ZIP code, the scanner will spend a great deal of time searching for objects that are out of range. That will cause the scanner to miss some local transmissions you want to hear.

Although it takes longer, experienced users will want to program Scanlists on their own using the "**Preferred**" method. Use "**Browse Library**" to select your state and county and look for agencies of interest. Check the boxes of objects you wish to import, select the Scanlist you want to put them in and perform the import (see **Preferred Programming**). Once you save objects to a Scanlist, rename the Scanlist so you don't forget what you stored there. Then import more objects into a different Scanlist and rename that one. In this way, you can create Scanlists such as Bethel Police, Hurst Police, Bethel Fire, Shenango EMS, etc. Individual scanlists allow you to decide exactly what you want to scan.

Setting Location

Your scanner can select services to scan based on your location. Press MENU and scroll to "Set Location" and press the ▶ key.

You can specify your location by City, County or ZIP Code. Scroll to the desired method and press the ▶ key. If you select City or County, the scanner will prompt you for your State. Use the ▲or▼ key to select the first letter of your State, then press the **▶/II/SEL** key. Scroll to your state and press the ▶ key. Use the ▲or▼ key to select the first letter of your City or county, then press the **▶/II/SEL** key. Scroll to your City or County, then press the ▶ key.

Select County:

First letter: A

SEL = Done

If you select ZIP Code, the scanner will prompt you to enter your five-digit ZIP Code. Use the ▲or▼ key to adjust each digit, then use the ◀ or ▶ key to select each digit. When you are done, press the **▶/II/SEL** key.

ZIP Code

00000

◀ ▶ moves cursor

SEL=OK **MENU**=BACK

NOTE: Although you can program multiple locations, to get maximum scanner performance its best to program only 1 location or ZIP code. Scanning multiple locations will cause missed transmissions due to the scanner searching for out of range frequencies.

You can accept a preselected set of Default Types for your location, or you can specify Custom Types (see next section). To select the Default Service Types, press the ▶ key, then the **▶/II/SEL** key to import the Default Set of Service Types for that City or County. Wait for the Import process to end, then press the **▶/II/SEL**.

-Confirmation-

Really do import operation?

SEL=Yes **SKIP**=No

To perform additional imports, press the **▶/II/SEL** key and proceed as before. Press the **SKIP** key to return to the Main Menu.

To select Custom Types, press the ▶ key. Scroll through the list of Services and press the **▶/II/SEL** key to select Services you wish to import. A check mark appears next to each selected Service.

Services:

SEL = Toggle

Multi Dispatch

Law Dispatch ☐

Fire Dispatch ☐

EMS Dispatch ☐

When you are done, press the ▶ key, then the **▶/ II/SEL** key to import the selected services. Press the **SKIP** key to return to the Service list without importing. To perform additional imports, press the **▶/II/SEL** key and wait for import process to end. Press the **SKIP** key to return to the Main Menu.

Services selected through Set Location are automatically assigned to Scanlists beginning at number 151; each selected Service is assigned to a separate Scanlist, which is given the name of the service.

These Scanlists are automatically selected for Scanning. You can select or deselect Scanlists as desired through the Scanlist item on the Main Menu.

NOTE: Press ◀ or **MENU** to return to main menu.

To clear all data from the current Folder on the Set Location menu scroll to Clear Channels and press the ▶ key. On the Confirmation screen press the **▶/II/SEL** key to clear the data, or press the **SKIP** key to return to the Set Location menu without clearing.

-Confirmation-

Really clear ALL programmed data from the current folder?

SEL=Yes, **SKIP**=No

NOTE: The Clear Channels function erases all of your current scanning data; all Scanlists in this Folder will be empty. Use this function carefully, as it cannot be undone. Does not affect V-Scanner folders content.

Power up Password

Set a user defined power-on password to restrict access to the radio.

1. Press **MENU**.

2. Scroll to Set Password and press ▶.

3. Use the arrows to set the password.

4. Use the **▶/II/SEL** key to accept the updated settings, or the **MENU** key to exit without saving changes.

NOTE: Power-on password can be reset by anyone using the EZ Scan software. Password provides only limited protection from immediate unauthorized use.

Understanding the Display

Your scanner features a high contrast, backlit Liquid Crystal Display (LCD) to provide you with information about the status of the scanner while you are using it. A menu-driven user interface provides access to the settings that control what the scanner monitors.

Below are examples of the scanners menu.

-MainMenu-

Scan ▶

Scanlists

Set Location

Browse Library

Browse Objects

A "Scan" display shows a scrolling list of enabled Scanlists while scanning, and displays attenuator and trunking control channel status. Below provides an example of the Scanning display.

Scan T G ▶

Fire

County Police

Sheriff

City Police

State Police

Individual Object displays are shown when the scanner is monitoring activity on an enabled Object. The LCD includes a row of icons at the top that provides information about the status of the scanner while monitoring an Object. The amount of information displayed is configured using the Simple Display option in the Settings menu. For example, with Simple Display set to "on", the following data is displayed for trunking talkgroups:

- Icons
- Scanlist
- Object type and "psDr" status
- Trunking system
- Scanlist

Below is an example of an individual Object display with Simple Display set to "on".

Display showing reception of a trunking talkgroup with Simple Display set to "on". With Simple Display set to "off ", additional data is displayed on the screen. The amount and type of data displayed can be customized using the Show options in the Settings menu. For example, below is the same Object displayed with Simple Display set to "off" and Show Radio ID set to "on":

- Icons
- Scanlist
- Object type and "psDr" status
- Object name
- Trunking system
- Radio ID

County Police

TGRP psDR

Police North

Public Safety

Radio ID: 18249

Display showing reception of a trunking talkgroup with Simple Display set to “on” and Show Radio ID enabled.

There are many combinations of data that can be shown on the Object display using the Show options in the Settings menu. You can learn more about these options in the Settings Menu section of the guide.

“psDr” Indicators

In the Individual Object displays there are four characters on the right hand side of the display that indicate the status of priority, skip/lockout, delay and recording for the selected or active object. The following indicators are possible:

p= priority off, **P**= priority on

s= skip off, **S**= skip on, **L**=lockout on

d= delay off, **D**=delay on

r= recording off, **R**=recording on

Display Icons

A row of icons at the top of the display provides status information about the scanner. These icons are defined as follows:

S Squelch circuit (or "gate") is open

G When present, the attenuator is set for Global mode

A When present, the attenuator is active

GA When present, Global attenuator is on, and the attenuator is active

AM AM mode is active

FM FM mode is active

NF Narrow FM mode is active

DG The radio is receiving P25 digital audio with AGC

Dg The radio is receiving P25 digital audio without AGC

D2 The radio is receiving P25 Phase II digital audio, with or without AGC

Fn Function key is active

▶ Scan mode (scanning)

❚❚ Pause mode (monitoring a single Object)

● Being recorded on the active or selected Object

Ⓕ Recording is enabled but recording is suspended. The SD card is almost out of space.

Signal meter indicating strength

T Currently receiving trunking control channel data

E Encrypted digital traffic detected

IF The radio's IF (discriminator) output mode is active.

P/p Priority On/Priority Off

S/s Skip On/Skip Off

D/d Delay On/Delay Off

L/- Lock Out On/Lock Out Off

Battery status Indicator

External power connected

EZ Scan Library

Your scanner comes with an installed Micro SD card that contains the entire USA/Canadian Radio Reference database as well as the EZ Scan software.

NOTE: Make a copy of the EZ Scan software files in case the SD card is lost or damaged.

To remove the Micro SD card from the scanner:

WARNING: To prevent corrupted data on the Micro SD Card, always turn the scanner off using the front panel power key before opening the battery compartment cover.

1. Turn off scanner, unplug external power, and remove the batteries.

2. Press and release the Micro SD card.

3. To reinsert the Micro SD card, with the label facing the front of the radio press it in until it clicks in place.

NOTE: Always use the EZ Scan software "Prepare Scanner Memory/SD Card For Use" option under the "Scanner/ SD Card"menu to format the Micro SD Card if the card is not performing as expected or if the scanner does not power up with the Micro SD Card.

The Micro SD card comes formatted for the standard FAT file system with a cluster size of 32k.

To format additional cards (2GB or smaller), use only the EZ Scan software to format the Micro SD card.

- Format using the FAT file system with 32k clusters.
- If you use Micro SD cards larger than 2GB, format using FAT32 with 32k clusters.
- Formatting the Micro SD card for other file system types may cause EZ Scan to malfunction.

Connecting the scanner to a computer with the supplied USB cable allows you to access the card with the EZ Scan software and update the Library, edit the configuration and stored objects, optimize the card, and reformat the card if necessary. You can also connect the SD Card to an external reader, which may provide faster data transfer rates when compared to accessing the card while it is in the radio.

For reference, below is the directory structure for the Micro SD Card. You may wish to make a copy of the CDAT folder on your computer as a backup. The CDAT folder contains your EZ Scan programming. Modifying these directories or their contents outside of the scanner or the EZ Scan software is not recommended, and may cause the scanner to malfunction.

BTMP Contains various temporary files used by the scanner

CDAT Contains your programming

CDAT_VS.nnn Contains programming for V-Scanner folder number nnn,where nnn may range from 001 to 200

DB Contains the Library

MTMP Contains various temporary files used by the scanner

STMP Contains various temporary files used by the scanner

CURVS.DAT Configuration information CONFIG.BIN Configuration information REC Audio recordings

SOFTWARE EZ Scan Software

WARNING: Modifying these files, directories or contents of directories is not recommended, and may cause the scanner to malfunction, and may result in loss of programming data.

Maximum Card Size

You can purchase additional cards to store different configurations or backups for your EZ Scan data. Up to a 32GB SD card may be used. We recommend SanDisk Micro SD cards

Installing EZ Scan Software

A method for programming a new scanner is using the supplied USB cable and the included software. Also www.RadioReference.com provides a range of resources to help improve your overall scanning experience.

EZ Scan easy-to-use software helps you:

- Make changes to EZ Scan's programming and configuration
- Update the Library to the most current version
- Update EZ Scan's firmware for enhancements and bug fixes
- Format and maintain the Micro SD card

To install, connect the scanner to your computer's USB port. Using windows explorer, open the SD Card to view files, select software, then select setup.exe and follow the on-screen instructions.

Accept all prompts when asked. User's can also insert the SD Card into your computer via a card reader, open the SD Card, find and open the "Software" folder and click on "setup.exe", then follow the on-screen instructions.

You can import, configure, and update the library directly with your scanner or with the EZ Scan software.

Library Updates

Your EZ Scan comes with the most current library data available from www.RadioReference.com. However, you can use the EZ Scan Software to check for updates to the library data.

NOTE: Updating the Radio Reference library requires an internet connection.

To check for library updates:

1. Select Check for Library Update in the update menu. Select Check for Updates to start.
2. If updates are available, click Download Updates.
3. When the update is complete, click Done.

Preferred Programming - from Library

1. From the Main Menu, select Browse Library.

2. Select country.

3. Select first letter of State/Province.

4. Select State/Province.

5. Select Counties/Cites.

6. Select first letter of County.

7. Select County.

8. Select Data Type NOTE: Police/Fire and Emergency services will be in “Categories” for smaller towns, “Systems” for larger ones.

9. Select desired agency, category or system available for the county.

10. Select desired subcategory. Investigate listings by pressing ▶ to go deeper into that selection. When the cursor switches from the right side of the screen to the left, you are at the bottom of a category. **NOTE:** When selecting a System, check at least one of the “Sites” within your range, then go further into Categories to find objects.

11. Use the **SEL** button to check boxes for services you wish to monitor. Press **SEL** to un-check a selected service and at anytime press ◀ to go back. Once all desired objects have been checked, press MENU.

12. Select Import Selected.

13. Select desired scanlist location for selected objects and press ◀ to save. Note that Scanlist 001 is already selected, so no need to select another scanlist the first time. For the next scanlist, uncheck the first scanlist and check the box for the desired scanlist, otherwise, you will be adding every object to the first scanlist.

14. Press **SEL** to continue to main menu.

15. Select Scanlists from main menu. Use the ▲/▼/◀/▶ to rename the scanlist if desired. Confirm box beside desired scanlist is checked.

16. Repeat steps to add additional scanlists, or select Scan from the Main Menu to begin scanning.

17. Once you are happy with your programming, Use the EZ Scan PC application to save data from the scanner. Of course you can use any combination of programming from the Scanner Keyboard or the PC app, just keep track of which has the most updated list.

NOTE: When traveling or for quick programming, refer to location based, ZIP code programming.

Backup into the first V-Scanner folder

PC Objects can be backed up to the first available V-Scanner folder from the Set Location menu (See V-Scanner II section for a discussion of Folders).

We recommend you back up your data to guard against accidental changes or deletions.

From the Set Location menu scroll to Backup Data and press the ▶ key.

-Set Location-

By City

By County

By ZIP Code

Backup Data

Clear Channels

Press the **▶/II/SEL** key to back up your data, or press the SKIP key to return to the Set Location menu without backing up.

-Confirmation-

Really backup to first available VScanner folder?
SEL=Yes, **SKIP**=No

Updating the Library (EZ Scan)

To update the EZ Scan library:

In the Main Menu, select Update from Lib and press ▶.

The scanner asks if you want to use new Alpha Tag (names) from the library.

Press **SEL** for yes or **SKIP** for no.

NOTE: Unit must be connected to an external power source.

Library Structure

Each State contains three data types:

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

Each County contains three data types:

- Agencies – Local conventional frequencies
- Categories – Public Service conventional frequencies
- Systems – Public Service Trunked systems, control frequencies (sites) and talkgroups.

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

WARNING: Modifying these directories or their contents is not recommended and may cause EZ Scan to malfunction.

EZ Scan Library Notes

- A "D" indicates that the item uses an unsupported digital modulation and cannot be monitored.
- An "S" indicates a trunked system that is not supported by the scanner.

A gray box (▣) indicates that some frequencies in a grouping are selected, but not all.

Manual Programming - Enter Conventional Frequency

1. Press **MENU** to access Main Menu.

2. Scroll to and select "**Program Menu**" then "**Add Conv Freq**".

3. Simply write over the existing frequency or press "**SKIP**" to clear. Using the alphanumeric keypad (WS1088) or the ▲▼, ◀ ▶ buttons, enter the desired conventional frequency. Press **SEL** when finished.

4. Scroll to "**Save Changes**" then press **SEL**.

5. Press **MENU** returns to Main menu.

Standard Text Entry Method

Your scanner features a high-contrast, backlit alphanumeric display that provides constant feedback about what the radio is doing while scanning and monitoring your "Scannable Objects". To get the most out of your scanner and this display, you will want to name your objects as you program them into the radio.

This allows for easy identification of active objects while the radio is scanning, and makes it easier than ever to find objects that you wish to monitor, edit or delete using the powerful FIND feature.

Your scanner uses a simple text entry method that allows entry of all uppercase and lowercase letters of the alphabet, numbers, and punctuation symbols.

Entering and Editing Alphanumeric Information

(WS1088) A Standard Text Entry Method is used for entering alphanumeric information into the radio. This method allows easy access to each letter in the alphabet by pressing two keys that represent the letter.

Take a moment to study the numeric keys on the keypad and you will notice that keys 2-9 each have three or four letters silk screened on the front panel just above each key. To enter a letter in an alphanumeric text field, simply press the number key below the letter you wish to type first, then press the number key that corresponds with the position of the letter in the silk screen group. For example, the number 2 is used to access the letters A, B and C. To type the letter A, press 2 to select the ABC group, then 1 to select the first letter in the group, A. Likewise, to type the letter B, press 2 to select the ABC group, then press 2 again to select the second letter in the group. And, to type the letter C, simply press 2, then 3 to select the third letter in the "ABC" group.

To enter numbers in alphanumeric text fields, press 1 first, then the number you wish to type.

To enter punctuation, press 0 first to see the first set of punctuation, then press the number key that corresponds with the position of the desired punctuation mark in the set.

Press the . (period) key to enter a space.

While using Standard Text Entry, the Fn key serves as a shift key. For letters, uppercase text is typed by default, and you can shift to lowercase by pressing the Fn key before entering a character. For punctuation, the Fn key accesses a second set of punctuation marks. The shift action of the Fn key remains active until it is pressed again.

Use the ◀ ▶keys to move the cursor to the desired location in edit fields. Press Fn ◀ or Fn ▶ to move the cursor to the beginning or end of an edit field, respectively.

The character set and corresponding entry codes are provided below for reference. Pressing Fn to toggle the shift lock status will produce lower case characters for letters, and a second set of punctuation marks for special characters. For brevity, lower case letters are not shown in the table below.

Char	Code	Char	Code	Char	Code	Char	Code
A	21	O	63	3	13	&	07
B	22	P	71	4	14	*	08
C	23	Q	72	5	15	(	09
D	31	R	73	6	16	)	00
E	32	S	74	7	17	-	(F)01
F	33	T	81	8	18	_	(F)02
G	41	U	82	9	19	+	(F)03
H	42	V	83	0	10	/	(F)04
I	43	W	91	!	01	?	(F)05
J	51	X	92	@	02	‘	(F)06
K	52	Y	93	#	03	<	(F)07
L	53	Z	94	$	04	>	(F)08
M	61	1	11	%	05	.	(F)09
N	62	2	12	^	06	,	(F)00

Creating Your First New Ojects-Object Edit

When you enter Program Menu, the scanner will provide the following Programming Menu options and is ready for you to enter the first Objects into the memory:

Global Settings

Edit System

Add System

Add Conv Freq

When an Object is displayed, press **SEL** or **MENU** to customize your Object and Set Scanlist.

Essential Conventional Channel parameters

By default, your new CONV object will be tagged "Channel". If you'd like to change this, just scroll the screen down one click until the flashing cursor highlights the Tag: field, then press **SEL** to edit the tag. You can move the cursor around using the ◀ ▶keys on the 4-way push button pad, use the (.) key to clear the old character, or press **SKIP** to erase the entire field. To enter text, use the ▲▼ or find the letter you want to enter on the front panel of the radio, press the numeric key beneath it, then press 1, 2, 3, or 4 depending on the position of the letter in the group for that number.

For example, to enter FIRE, press:

3 3 F

4 3 I

7 3 R

3 2 E

Press the **SEL** key to store the new tag information for your CONV object.

Now you are ready to store your first CONV object. There are other parameters that you can change, and we invite you to scroll through the CONV menu to see the other settings that are available.

When you're ready, scroll to save changes, press the **SEL** key to save your new conventional object. Once the object is saved, you can continue to enter other new objects, or press **SEL** to start scanning! The cursor to the beginning or end of an edit field, respectively.

Essential Trunking Talkgroup parameters

As a standalone object, a TRGP object is really no more complicated than a CONV object. The trunking system (TSYS) that the TGRP is a member of must be specified. Each talkgroup has a digital "address" on the trunking system, which is called the talkgroup ID, and this must be provided. We also recommend that you label your TGRP object by giving it a name in the TAG field. This will make it easier for you to find the TGRP object later, and identify it when the scanner stops to monitor activity.

Setting up and using a Trunking System (TSYS) object

We just mentioned that the TSYS is an essential parameter needed in order for a TGRP object to function properly and receive radio traffic. The TSYS object has its own set of essential parameters, and these parameters vary depending on the type of trunked radio system you plan to monitor. If you are a reasonably experienced user you probably already know what the essential parameters are for the system you wish to monitor. For example, each TSYS must correctly specify the type of system being monitored, the control channel or LCN frequencies used by the system, and so on. A detailed description of each type of system supported by this radio and the essential parameters required to make the different types of trunked radio systems work properly is provided in the Detailed Menu Reference. So, if all of this makes sense to you then you should proceed and enter the required data for the system you wish to monitor to make a new TSYS as you create your TGRP. If not, please refer to the TGRP section of the Detailed Menu Reference so that you will understand which TSYS parameters are required for the type of trunked radio system you wish to monitor.

The first time you make a TGRP for a particular trunked radio system, you must also create a TSYS that contains the system parameters associated with that trunked radio system. Once you create a TSYS object for the trunked radio system, you can use the TSYS object over and over again without having to re-enter all of the system data.

Adding a New Trunk System

From the Program Menu, Select Add System, Select System type.

< Motorola > < EDACS > < LTR > <P25>

Press **SEL** will enter the -Add System- menu.

Scroll to Edit Sites, Press **SEL** to enter –Edit Sites- menu.

Scroll to 0001: New site, press **SEL** to enter -Edit Site- menu.

Edit Frequencies and Alpha Tag using text method described earlier.

Press **SEL** after making your edits, scroll to Save Changes, press **SEL** returns to –Edit Sites-.

From here you can select Add New, Delete Current, or Back to system. Selecting Back to system will take you to the –Add System- menu where you can Cancel Changes, Save Changes, Edit Sites, Add Talkgroup, and Alpha Tag.

When done, scroll to Save Changes, press **SEL** returns to the –Program Menu-. Press MENU returns you to the –Main Menu-.

Next you need to enter control channel frequencies for Motorola and P25 systems or all system frequencies for other system types. Select the 01: position and using the number keys, and ◀ ▶ enter the first frequency and press **SEL**. Continue entering frequencies until done. Press Menu and **SEL** to save.

If the system is narrow band FM, select NFM. Normally, no other input is needed. Scroll up proceed to Save Changes. Press Menu to return to the Add System menu.

Adding the first Talk Group to a New Trunk System

Under Main Menu, Program Menu, Edit System:

Scroll the display ◀ ▶ if necessary to select the system where you will add the new talkgroup. Press Select.

Scroll the display by pressing the down arrow until you get to Add Talkgroup and press Select.

Your radio's display should appear as follows:

-Add TGRP-

▶Cancel Changes

Save Changes

TGID Wildcard

☐Radio ID

Alpha Tag

In the following step you will store a Wildcard talkgroup with the number 65535. If you would rather store a TGRP object for a specific talkgroup ID, just press the number keys to enter the talkgroup ID of the desired talkgroup, then press the **SEL** key to store the ID.

HINT: TGRP objects are also used to receive Private/ Individual Calls on trunking systems that support these call types. Simply check the Radio ID check box. A Wildcard TGRP object with Radio ID box checked will monitor all Private/Individual Calls seen on the system, or you can specify a radio ID to watch for in the ID: field.

Scroll down to Save Changes and perform the save.

The Wildcard talkgroup allows you to hear everything on the system.

If you entered an actual talk group, be sure to name this TID by changing Wildcard to the talkgroup's actual name. You'll want to scroll down two more clicks to the Tag: field and enter an easy to remember name for your talkgroup that corresponds with its purpose on the trunked radio system. For this example, lets assume that this is a police dispatch talkgroup, and we would like to use the name "POLICE DISPATCH" for the tag. Scroll to the Tag: field and press the SEL key. Using the text entry methods that you have previously employed for naming your CONV and TSYS objects, name your new talkgroup "POLICE DISPATCH":

7 1 P

6 3 O

5 3 L

4 3 I

2 3 C

3 2 E

. <space>

3 1 D

4 3 I

7 4 S

7 1 P

2 1 A

8 1 T

2 3 C

4 2 H

Press **SEL** to store the name, then press **SEL** to store the TGRP as a new object. As with the other object types, there are many other parameters you can edit for the TGRP, but for now, that's all you have to do to start monitoring traffic on that TGRP! To add more TGRPs on the same system, follow the same steps above, this time specifying the TSYS that you just created. To create TGRPs on a different system, follow the steps above, specify a NEW system, and provide the correct parameters for that system, as shown above. With regard to trunked radio systems, it is important to note that a "system" cannot be scanned. If one wishes to monitor radio traffic on a trunked radio system, one must create a TGRP object. A TGRP object includes the parameters for a trunked radio system so that it will operate properly. Trunking system(TSYS) parameters are stored as a separate "configuration object", and can be used over and over again in other talkgroup objects on the same trunked radio system.

Also with regard to trunked radio systems, it is important to note that a talkgroup object may be configured in one of four different ways to monitor traffic on a trunked radio system. They are as follows:

- **Wildcard Talkgroup:** will monitor all talkgroup call radio traffic on the desired trunked radio system
- **Talkgroup with TGID:** will only monitor talkgroup call radio traffic on the specified TGID (enter the desired talkgroup in the ID: field of the TGRP object to scan a specified ID)

- **Wildcard Private Call:** will monitor all private call radio traffic on the desired trunked radio system (in the TGID field, and set the Type field to Private)
- **Private Call with ID:** will only monitor private call radio traffic on the specified TGID (enter the desired Radio ID in the TGID field, and set the Type field to Private)

NOTE: For now, just let your new objects go to the default Scan List. Later in this section we will show you how you can group your objects into Scan Lists.

Talkgroup Object (TGRP)

A Trunking Talkgroup Object (TGRP) is a record that stores the parameters for a trunked talkgroup on a trunked radio system. When you create a TGRP object, you are creating an object that will allow you to scan and monitor a talkgroup on a particular trunked radio system.