CS3010 AND CS3011 USERS MANUAL

FM HANDHELD TRANCEIVER

CONNECT SYSTEMS INCORPORATED
1802 Eastman Ave., Suite 116
Ventura CA 93003

VERSION 1.00

GUIDE FOR THOSE THAT DO NOT LIKE TO READ MANUALS

You have six items in your box as follows:

Radio
Battery
Antenna
Power supply (wall wart)
Charger
Strap

<u>SETTING UP THE RADIO</u>
1. Attach the antenna to the radio.
2. Insert the battery into the radio.
3. Insert the cord from the power supply into the charger.
4. Plug the power supply into the wall.
5. Insert the radio into the charger.
6. Let charge for up to five hours until the green light on charger turns on.

<u>USING THE RADIO</u>
Press the PTT switch on the side of the radio to talk and release to listen. Change
channels as necessary.

Wasn't that easy!

**NOW PLEASE READ THE REST OF THE MANUAL SO YOU WON'T KILL
YOURSELF OR A CO-WORKER AND DAMAGE THE RADIO.**

Thank You

We are very grateful for you purchasing the Connect Systems Inc. brand professional two-way radio. This radio incorporates the latest technology and can bring great convenience to your life and work. The quality and function of this radio will meet your demands for reliable communication.

Models Covered By This Manual

- CS3010 UHF FM Transceiver
- CS3011 VHF FM Transceiver

Notices To The User

- Government laws under the FCC regulations prohibits radio communication with this radio without being licensed.
- Unlicensed use is illegal and subjects the user to punishment by fines and/or imprisonment.
- If this radio needs service, contact a qualified technician.

General Warnings

Do not use your radios under the following circumstances:

- In the presence of potentially explosive atmospheres such as gas stations.
- While being in any location where there is gasoline or other types of fuels.
- In or near a site using explosives.
- In a location where there is a potential for explosion because of the environment such as grain elevators.

Warning on Danger of Radio Frequency and Magnetic Energy

The Model CS3010 and CS3011 generates both radio frequency energy and magnetic energy while transmitting. Any transmitter has the potential to cause heating and other thermal effects in your body. The amount of heating and other thermal effects is determined by the power out from the radio and the distance from the body. To minimize exposure the radio frequency energy and magnetic energy the user should use the radio the minimum time required to achieve satisfactory communication, use minimum power, and keep the radio as far away as possible.

This radio is classified as "Occupational Use Only". That means the user of the radio is aware of the potential hazards of using radios and is in a position to and familiar with ways to minimize the hazards. This radio should not be used by the general public because the general public has no knowledge of the hazards of two way radios and how to minimize risk and might not be in a position to minimize those risks.

To minimize exposure to radio frequency energy and magnetic energy, the following list should be observed:

- When the PTT (push to talk) switch is pressed and you are transmitting, keep the antenna at least 1.25 inches away from any part of your body or the body of any bystanders.
- Keep the transmission time to a minimum. Normal operation of a radio of this type is five percent transmitting, five percent receiving, and the rest of the time in standby mode. Any amount in excess of fifty percent of the available time in transmit mode is considered excessive and should be avoided.
- Use only the antenna supplied in the package or another antenna sold by Connect Systems Inc. for this radio.

Other Warnings on Operation of the Radio

- Do not expose the radio to long periods of direct sunlight or place the radio too close to a heating appliance.
- Do not place the radio in excessively dusty areas, humid areas, or on an unstable surface.
- Do not modify this radio for any reason.
- Have this radio serviced only by a qualified technician.
- Do not transmit with this radio more than one minute out of every four minutes or else the radio might get warm.
- If the radio emits smoke or strange odors, immediately turn off the radio and then remove the battery. Contact your local authorized service dealer.

FCC Warnings

This equipment generates or uses radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

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 generate 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 the 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 to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer for technical assistance.

Other Warnings

Electronic devices such as pacemakers, medical equipment, and navigation equipment on an airplane are susceptible to the energy generated from radios such as the CS3010 and CS3011 if they are not adequately shielded.
- If there are signs posted in a hospital or some other health facility that says not to use radios or cell phones, turn off your radio because they might interfere with the sensitive medical equipment.
- If you are on board an aircraft it is recommended you not use this product because of the potential to interfere with the aircraft navigation systems and other electronics on board. Failure to do so without the express permission of the crew could cause you to be detained by the FBI when you disembark from the plane. It also has the potential to cause the plane to crash.

CHARGING THE BATTERY

Insert the cable of the power supply into the power jack at the back of the charger. You can determine it is the power jack because it is the only hole in the charger that will accommodate the cable from the power supply.

Insert the power adapter into the applicable AC 110 Volt power outlet. The three LED lights will flash for about one second and then the green light will stay on indicating everything is normal.

Turn off the radio and insert the radio into the charger. It is assumed the battery is already attached to the radio. Make sure that the terminals on the battery and the terminals in the charger are reliably in contact with each other. When that happens the red LED will be turned on and the radio is being charged.

After about five hours of charging, the red LED will be off and the green LED will be on, indicating the battery is fully charged.

When the green LED is on you can remove the radio from the charger and unplug the power supply from the AC 110 Volt power outlet.

If the yellow light is flashing, there is a problem with either abnormal charging temperature or some circuit problem. The radio should be removed from the charger and the power supply going to the charger should be unplugged.

This radio can accommodate either part number KB-70A or KB-70B. The KB-70A is a nickel-hydrogen battery and the KB-70B is a Li-polymer battery.

When the radio is first bought, or being left unused for at least two months, the battery might be discharged and the battery should be charged. It might take a few times of charging to reach an optimum charge. The battery should be charged at least once every three months.

When the battery is fully charged it is best to remove the battery from the charger for optimum life of the battery. The battery should not be recharged if it is fully charged. Charging should not begin until the status on the radio shows low battery.

If using the nickel-hydrogen battery, when the radio enters the low battery alarm status, the battery should be recharged before continuing to use the radio. Using the radio excessively after the radio enters the low battery alarm status will affect the life of the battery.

The Li-polymer battery has an internal protective circuit that will cut off the battery power when the radio is in the low battery alarm status mode. When the radio is first placed in the charger, the red LED will not turn on for about one to five minutes. After that delay the charging indicators will turn normal.

INSTALLING THE BATTERY

Align the two protrusions at the lower end of the battery to the slot at the lower part of the shell of the radio and insert in.

Press the upper end of the battery down until the push button on the radio is completely bounced out and locked.

REMOVING THE BATTERY

To remove the battery, slightly press the battery and pull the push button upward, and then remove the battery from the radio.

DANGER: THINGS NOT TO DO WITH YOUR BATTERY

Do Not Take Apart Or Reconstruct Battery Pack
The Battery Pack has various safety features and protection circuits to avoid damage to the battery and the user. If these safety features are compromised, the battery may burst in flame, get hot, rupture, or generate smoke.

Do Not Short-Circuit Battery Pack Terminals
The terminals on the Battery Pack are not designed to be shorted. This can happen if you somehow join the two terminals on the battery back together using some type of metal. This can happen with a paper clip or wire, or carrying the battery in a compartment having conductive material. If the battery pack is short circuited, the battery may burst in flame, get hot, rupture, or generate smoke.

Do Not Throw The Battery Pack In A Fire
If the Battery Pack gets hot, some of the built in safety features might get compromised and it may burst in flame, get hot, rupture, or generate smoke.

Do Not Leave The Battery Pack Near Heat Generating Sources
If the battery pack gets too hot (over 176° F) it may burst in flame, rupture, or generate smoke. Some of the possible heat generating sources is a fire, such as from a stove, or the sun.

Do Not Put The Battery Pack In Water
Putting the Battery Pack in water might damage some of the safety features and it may burst in flame, get hot, rupture, or generate smoke.

Do Not Put The Battery Pack In A Different Charger
This Battery Pack was designed to be charged in the charger supplied with the radio. If you try charging the Battery Pack in a different charger, it may burst in flame, get hot, rupture, or generate smoke.

Do Not Physically Damage The Battery Pack
Physically damaging the Battery Pack might cause deformation and it may burst in flame, get hot, rupture, or generate smoke. Some of the ways the Battery Pack can be damaged is by striking it, piercing it, stepping on it, throwing it, or shooting it.

Do Not Solder On The Battery Pack
Soldering on the Battery Pack will increase its temperature over its specified temperature range and it may burst in flame, rupture, or generate smoke.

Do Not Reverse Charge The Battery Pack
Reverse charging the Battery Pack will cause an unwanted chemical reaction and it may burst in flame, get hot, rupture, or generate smoke.

Do Not Touch A Ruptured or Leaking Battery
The battery contains some chemicals that if it gets in your eyes can cause permanent eye damage or even blindness. If the liquid from the battery gets in your eyes, wash out your eyes as soon as possible without rubbing your eyes. Go to the Emergency Hospital as soon as possible.

WARNING: THINGS NOT TO DO WITH YOUR BATTERY

Do Not Charge The Battery Longer Than Necessary
If the Battery Pack is kept charging too long, it may burst in flame, get hot, rupture, or generate smoke. Even if the Battery Pack is not destroyed, its useful life is diminished.

Do Not Place Battery Pack In Microwave
There is no reason to cook a Battery Pack and in doing so it may burst in flame, get hot, rupture, or generate smoke. If you need to cook something try popcorn.

Do Not Use A Defective Battery Pack
If the Battery Pack seems abnormal for any reason, do not use it or charge it. An abnormal battery pack if it is used or charged, may burst in flame, get hot, rupture, or generate smoke.

RADIO OVERVIEW
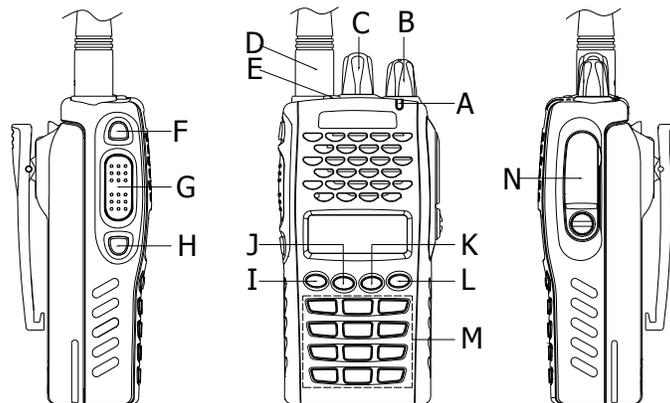
The functions of the components are as follows:

A. LED Indicator

Lights red while transmitting.

Lights green while receiving.

B. Power/Volume Switch（Knob）

Turn clockwise till a click is heard to switch on the radio.

Turn counterclockwise till a click is heard to switch off the radio.

Rotate to adjust the volume after turning on the radio.

C. Channel Selector

Rotate to select the channel. There are up to 128 channels.

D. Antenna

E. Top Button (programmable button). This can be programmed by the dealer for many different possible functions. It is recommended to be set as the emergency warning button.

F. Side Button 1 (programmable button). This can be programmed by the dealer for many different possible functions.

G. PTT（PUSH-TO-TALK）:

To make a call, press and hold the PTT button, then speak into the microphone with normal voice. Release the PTT button to receive signals.

H. Side Button 2 (programmable button). This can be programmed by the dealer for many different possible functions.

I. Button P1✖

Return and delete button in the menu.

J. Button P2

Select Button.

K. Button P3
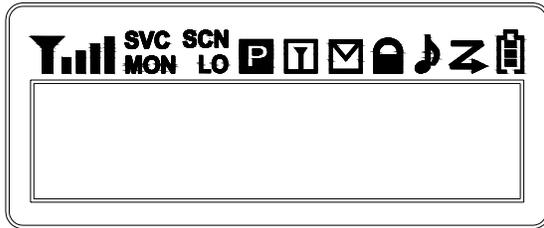
Select Button.

L. Button ✔P4

Enter and Confirm Button.

M. Numeric keypad

N. Microphone/speaker jacks

For connecting microphone/speaker.

EXPLANATION OF SCREEN

Icon	Description
Signal intensity icon	Signal intensity
SVC	Lone Worker
P	Compandor
T	Scrambler
envelope	Busy channel lockout
Z	Scanning
lock	Key lockout
note	Signal reminder is programmed
battery	Battery capacity, flashes when the battery power goes too low
SCN	Scan Enabled for Channel
LO	Transmitting Power
MON	Monitor Mode

BASIC OPERATION

Light Emitting Diodes

Your radio has two light emitting diodes, normally called LEDS. The meaning of the colors and if it is on solid or flashing is described below. If both the green LED and the red LED are on, then an orange light appears as a mixture of those two LEDS.

Red LED Solid: The radio is transmitting. This can be caused by you pressing the PTT switch on the side of the radio or automatically from an emergency alarm mode.

Red LED Flashing Fast: The radio is in an emergency alarm condition but not transmitting. The rate for fast flashing is 200 milliseconds on and 200 milliseconds off.

Red LED Flashing Slow: The battery voltage is low and the radio should be recharged. The rate for slow flashing is 500 milliseconds on and 500 milliseconds off.

Green LED Solid: The radio is detecting carrier on the current channel. When the squelch conditions matches (carrier or CTCSS/DCS) the radio will unmute.

Orange LED Solid: Channel is not programmed or "lend time" is timed out.

Orange LED Flashing Fast: An individual call is being received.

Orange LED Flashing Slow: A group call is being received.

Speaker

Your radio has a speaker that is not only used for voice conversations, it is also used to give status of the radio. The meaning of the various sounds are described below.

Power Turn On: When the power is first applied, a single beep of 740 Hz for 50 milliseconds will be generated.

Emergency Alert: During an emergency, the radio will generate a loud emergency sound.

Option Key Enable: A single beep of 1800 Hz for 50 milliseconds indicates the function is enabled.

Option Key Disable: A double beep of 740 Hz for 50 milliseconds each separated by 100 milliseconds indicates the function is disabled.

Low Battery Alert: A single beep will be generated every 30 seconds if the battery has low voltage. This beep will be 440 Hz lasting for 50 milliseconds.

EEPROM Check Error: A continuous sound of 740 Hz will be generated if there is some problem with the EEPROM. If this happens the radio should be reprogrammed or else sent back to the factory for servicing.

TX Power Adjustment: If one of the programmable keys are set for power adjustment, then a single beep will mean high power, a double beep will mean medium power, and a triple beep will mean low power. These beeps will be at 1800 Hz with 70 milliseconds on and 70 milliseconds off.

Lone Worker Pre-alert: If the user has not pressed a key in awhile, then a pre-alert will be sent as a double beep every 500 milliseconds. This double beep will be 740 Hz for 50 milliseconds each separated by 100 milliseconds. At this time the user should press a key to prevent a full blown emergency mode from occurring.

TOT Pre-alert: A short time before the radio will turn off because the user kept pressing the PTT, a single beep will be generated. This beep will be 900 Hz lasting for 120 milliseconds.

Scan Start Alert: When the scan first starts, four beeps will be generated. These beeps will be 1800 Hz at 70 milliseconds duration separated by 70 milliseconds.

Scan Stop Alert: When the scan stops, four beeps will be generated. These beeps will be 900 Hz at 70 milliseconds duration separated by 70 milliseconds.

Priority Channel Lock: When the radio lands on a priority channel, a double beep will be generated. These beeps will be 1800 Hz with 90 milliseconds on and 90 milliseconds off.

Key Error Alert: If a wrong key is pressed, then a single beep of 1200 Hz lasting 100 milliseconds will be generated.

PLL Unlock Alert: If the dealer tries to program the radio out of its normal tuning range, a 1440 Hz beep will be generated every 50 milliseconds when the channel selector knob is set to that erroneously programmed frequency.

Tx Inhibit Alert: If the PTT is pressed and there is a reason why the radio will not let you transmit, then a continuously generated tone of 740 Hz will be generated.

Startup
Turn the Power/Volume knob to the right (clockwise) to turn on the radio. If the radio has been programmed for a prompt sound when the radio is turned on, then a beep sound will be heard followed by a voice announcement of the channel number the channel selector is positioned on. To turn off the radio turn the Power/Volume knob to the left (counter-clockwise). If the voice announcement is in Chinese and you do not speak Chinese, tell your dealer who sold you the radio to set the voice announcement in English.

Volume Control
Turning the Power/Volume knob to the right (clockwise) increases the volume and turning the Power/Volume knob to the left (counter-clockwise) decreases the volume.

Channel
Turn the channel selector knob to select the desired channel. The LCD will tell you what channel you are on. If you are on the correct channel and that channel is set to receive CTCSS tone or DCS code and there is a radio transmitting on that channel and that transmitting radio has the proper CTCSS tone or DCS code, then you will hear sounds from the speaker. If the channel you selected is not programmed, then there will be a continuous tone from that channel.

Transmitting
To transmit, press the PTT switch on the side of the radio and speak into the microphone in a normal voice. Your mouth should be about one to two inches from the microphone. To stop transmitting, release the PTT switch.

Receiving
If you are not pressing the PTT switch then the radio is in the receive mode. If the channel the radio is set to is set for some CTCSS tone or DCS code, then you can only hear a call from another radio with the same CTCSS tone or DCS code.

CHANGING THE PARAMETERS FROM THE KEYPAD

To start programming, press ✔P4

Now use P2, P3, or the channel selector switch to select the following options: Zone Edit, Channel Edit, Radio Info, Lone Worker, Speaker Mode, Clone Mode, MDC Status, MDC Message, Program List, Rptr/Talkarnd, Radio Call, Utilities

Zone Edit

The radio can be set up by the PC program to assign a set of channels to a specific zone. Once the zones have been set up then the manual entry from the radio keypad can be used to force the radio in using a certain zone.

From the Zone Edit prompt of the LCD display, press ✔P4. The display will now show the current zone. Use P2, P3, or the channel selector switch to select the desired zone and them press ✔P4 to lock it into the system.

Channel Edit

The channel edit is a two step process. First you select a Channel Number from 1 to 128 and then you select a specific function to program. The available functions from the Channel Edit is Channel Alias, RX Frequency, TX Frequency, Rx Code, Tx Code, and Channel Band. A more detailed description of each of the parameters will be given below.

To select the Channel Number, from the Channel Edit prompt on the LCD display press ✔P4. Then use the Use P2, P3, or the channel selector switch to select the desired channel and them press ✔P4 to lock it into the system. Once the Channel is locked in the system, the display will show Channel Alias. Then use P2, P3, or the channel selector switch to select the desired function and them press ✔P4 to lock it into the system.

Channel Edit – Channel Alias

The Channel Alias is used to show on the LCD the function of the channel instead of the channel number. As an example, Channel 1 might show "Medical" and Channel 2 might show "Police". The characters available are the letters in upper case and lower case, the numbers, and a large set of special characters.

At this time the LCD will show the existing Alias on the second line. The top line will show either "Channel Alias" or "Channel Alias?". If the question mark is there after the "Channel Alias" it means you are in the edit mode. If not in the edit mode then you can go to other functions.

There are special rules for the use of editing the line that is not used in other functions as will be explained. (P2) or (P3) is used to move the cursor to the left or to the right. Once you position the cursor, you can then edit the character at that cursor position. (P1X) is used to clear the current character and move the cursor back one position. The "#" key is used to restore the display to what you had before in case you made a mistake. The "*" key will bring up the special characters. Use (P2), (P3), or channel selector switch to select the special character and use (✓P4) to transfer it to the LCD at the current cursor position.

Once you position the cursor, to enter the standard numbers and letters, use the table below.

(1 = 1)
(2 = 2, A,B,C,a,b,c)
(3 = 3, D,E,F,d,e,f)
(4 = 4, G,H,I,g,h,i)
(5 = 5, J,K,L,j,k,l)
(6 = 6, M,N,O,m,n,o)
(7 = 7, P,Q,R,S,p,q,r,s)
(8 = 8, T,U,V,t,u,v)
(9 = 9, W,X,Y,Z,w,x,y,z)
(0 = 0, space)

As an example, lets assume you want to enter "a" at the current cursor position. Press the "2" key about 5 times until you see the "a" on the LCD. Use (P2), (P3), or the channel selector switch to select the next position to edit. When the entire line is edited, then press (✓P4) to lock it the entire alias. The display will now show "Channel Alias" without the question mark. Use (P2), (P3), or the channel selector switch to select the next function. Use (P1X) to back up one level or to exit the programming function.

Channel Edit - Rx Frequency
This parameter allows the user to enter the receive frequency for the selected channel from the radio's keypad. The allowable frequency range for the radio is either 400.00000 MHz to 470.00000 MHz for UHF or 136.00000 MHz to 174.00000 MHz for VHF. To enter the frequency enter the first three digits of the frequency followed by the "*" key for the decimal point followed by the remaining five digits followed by the (✓P4) to lock the frequency into the radio for the selected channel.

Channel Edit - Tx Frequency
This parameter allows the user to enter the transmit frequency for the selected channel from the radio's keypad. The allowable frequency range for the radio is either 400.00000 MHz to 470.00000 MHz for UHF or 136.00000 MHz to 174.00000 MHz for VHF. To enter the frequency enter the first three digits of the frequency followed by the

"*" key for the decimal point followed by the remaining five digits followed by the ⌴P4⌴ to lock the frequency into the radio for the selected channel.

Channel Edit – Tx Code

The radio is set to encode CTCSS or DCS When this feature is first accessed the display will show Tx Dcsn (DCS normal), Tx Dcsi (DCS inverted) or Tx Ctcss (CTCSS), Use the "#" key to select the type of code you would like to transmit. Once the code type is selected, press ⌴P4⌴. The bottom line will blank and the new code can be entered. The "*" key can be used to enter a decimal point if needed. The following are the acceptable ranges for the different types of formats:

CTCSS: 67.0 to 254.1
DCS: 023-745

Once the code is entered press ⌴P4⌴ to lock it into the radio for the channel already selected.

Channel Edit – Rx Code

The radio is set to decode CTCSS and DCS. When this feature is first accessed the display will show Rx Dcsn (DCS normal), Rx Dcsi (DCS inverted) or Rx Ctcss (CTCSS). Use the "#" key to select the type of code you would like to transmit. Once the code type is selected, press ⌴P4⌴. The bottom line will blank and the new code can be entered. The "*" key can be used to enter a decimal point if needed. The following are the acceptable ranges for the different types of formats:

CTCSS: 67.0 to 254.1
DCS: 023-745

Once the code is entered press ⌴P4⌴ to lock it into the radio for the channel already selected.

Channel Edit – Channel Band

The channel band is used to set the bandwidth of your radio to the bandwidth of your system. The available choices is Wide (25 KHz), Narrow (12.5 KHz) or Mid (20 KHz). Only the first two is commonly used in the United States. Once this feature is selected use ⌴P2⌴, ⌴P3⌴, or the channel selector switch to select the desired bandwidth and use ⌴P4⌴ to lock the choice into the radio for the channel already selected.

Radio Info

This parameter is used to determine the frequency range of the radio and the software revision number of the microprocessor. Once this feature is selected use ⌴P2⌴ or ⌴P3⌴ or the channel selector switch to select either FrequencyRange or MCU Version. Then press ⌴P4⌴ to read the value. As an example, the FrequencyRange might show 400 ~ 470MHz and the MCU Version might show V03.08.

Lone Worker

This feature is used to alert someone if you are working alone and an emergency happens and you cannot respond to the emergency. If the user does not press a key periodically, then the system will go into an alarm mode and alert the appropriate people. The key pad on the radio will be used to enable or disable the feature that was already set up by the PC program.

Once this feature is selected use (P2), (P3), or the channel selector switch to select either "Lone Worker On" or "Lone Worker Off". Then press (P4) to lock the desired mode into the radio.

Speaker Mode

This parameter is used to determine when the speaker will pass voice. There are four choices that can be used as follows:

Code: The speaker will pass voice when the CTCSS tone or DCS code for that channel matches the CTCSS tone or DCS code being transmitted by the radio you are trying to hear.

Tone: The paging tone received from the radio you are trying to hear matches the paging tone that was programmed by the PC program for your radio.

Code & Tone: Requires both a matching paging tone and a matching CTCSS tone or DCS Code for the speaker to pass the voice from the sending radio.

Carrier: Any voice from the sending radio will be heard.

Once this speaker mode feature is selected use (P2), (P3), or the channel selector switch to select the desired choice and use (P4) to lock that choice into the radio.

Clone Mode

This parameter determines how the radio will be cloned. If you select the wired clone mode then a special clone cable will have to be obtained to clone the radios.

Once this feature is selected use (P2), (P3), or the channel selector switch to select either "Wireless Clone" or "Wired Clone". Then press (P4) to lock the desired mode into the radio.

MDC Status

This parameter is used for sending MDC Status information. Once this feature is selected, press (P4). Then use (P2), (P3), or the channel selector switch to select one of the preprogrammed status messages to be sent. Then press the PTT switch to send the message. When finished, press (P1) to exit from the MDC Status mode.

MDC Message

This parameter is used for sending MDC Message information. Once this feature is selected, press ✔P4. Then use P2, P3, or the channel selector switch to select one of the preprogrammed messages to be sent. Then press the PTT switch to send the message. When finished, press P1✖ to exit from the MDC Message mode.

Program List

This parameter is used for changing either the Scan List or the Phone List. Once this feature is selected, use P2, P3, or the channel selector switch to select one of the list. When the list is selected, press ✔P4 to lock in the list.

Program List: Scan List

This function is used to enable or disable channels on the scan list. Press the "Scan List" Edit key and the display will show "View List". The channel selector switch, P2, or P3 can now be used to select "Add Entry", "Delete Entry", "Edit Priority", or "View List". When the appropriate function is selected, press the ✔P4 key to lock in your function.

If "View List" is selected, the channel selector switch, P2, or P3 can be used to view all the active channels in the scan list.

If "Add Entry" is selected, press the ✔P4 key to lock in this function. The channel selector switch, P2, or P3 can select the appropriate channel. Once the channel is selected, press ✔P4 and the display will now show "Entry Saved". Use the P1✖ to back out of the function when completed or turn off and on the radio.

If "Delete Entry" is selected, press the ✔P4 key to lock in this function. The channel selector switch, P2, or P3 can select the appropriate channel. Once the channel is selected, press ✔P4 and the display will now show "Entry Deleted". Use the P1✖ to back out of the function when completed or turn off and on the radio.

If "Edit Priority" is selected, press the ✔P4 key to lock in this function. Then select either "Priority #1" or "Priority #2" and then press the ✔P4 key to lock in this function. Then select "Disable", "Designated", or "Selected" and press the ✔P4 key to enable or disable this channel for the priority channel. This display will show "Prio#1 Saved" or "Prio#2 Saved".

Program List: Phone List

This function is used to edit the phone list. Use P2, P3, or the channel selector switch to select one of following: "Add Entry", "Delete Entry", "Edit Entry", or "Edit Code". See section "Channel Edit – Channel Alias" on details of editing.

Rptr/Talkarnd

Normal operation of these types of products is through repeaters to extend the range of transmission. If you set the mode to talk around, you talk around the repeater and start communicating directly with another radio. This is useful when the two handheld radios are reasonably close to each other or you do not want everyone to hear you. In talk around, the transmitter frequency is set to the receiver frequency. In repeater mode the transmitter frequency and the receiver frequency is different.

Once this feature is selected use (P2), (P3), or the channel selector switch to select either "Repeater Mode" or "Talk around Mode". Then press (✔P4) to lock the desired mode into the radio.

Radio Call

The Radio Call function has the ability to generate Selective Calls, Call Alerts, Radio Check, Kill, and Active. The exact function(s) allowed is determined by the dealer. Once this feature is selected, press (✔P4) and the display will show "Selective Call". The channel selector switch, (P2), or (P3) can then be used to select the mode desired. When the mode desired is found, press (✔P4) to lock it in. Then use The channel selector switch, (P2), or (P3) to select the transmission mode desired. The choices are "DTMF", "Two Tone", or "MDC". After the transmission mode is selected, press the PTT switch to transmit the message. "Radio Check", "Kill", and "Active" only use the MDC transmission mode.

Utilities

From the Utilities, you can select the following parameters by using (P2), (P3), or the channel selector switch: "Squelch Level", "Save", "Scan", "Companding", "Whisper", "LCD Backlight", "Vox Level", or "Power Level". A more detailed description of each of the parameters will be given below.

Utilities – Squelch Level

The squelch has ten levels numbered 9 (tight) through 0 (open). The higher the number the stronger the signal that is required to hear the voice.

Once this feature is selected use (P2) or (P3) or the channel selector switch to select the desired squelch level and then press (✔P4) to lock the desired squelch level into the radio.

Utilities – Save

So the battery will last longer, this radio has a special battery save feature. If there is no activity in the radio and the "Battery Save" option is not set for off, the radio will periodically remove power from most of the circuitry. This function does not work in the scan mode. A battery save of 1:1 turn off the radio 50% of the time. A battery save of 1:2 will turn off the radio 33% of the time. A battery save of 1:4 will turn off the radio 20% of the time.

Once this feature is selected use ⊙P2 or ⊙P3 or the channel selector switch to select the desired battery save mode and then press ✓P4 to lock the desired battery save mode into the radio.

Utilities – Scan

This feature allows the user to manually enable or disabling scanning.

Once this feature is selected use ⊙P2 or ⊙P3 or the channel selector switch to select either Scan On or Scan Off and then press ✓P4 to lock the desired scan mode into the radio.

Utilities – Companding

The purpose of the compander is to make the voice more intelligible when operating in the Narrow Band mode. The disadvantage of the function is it slightly distorts the voice.

Once this feature is selected use ⊙P2, ⊙P3, or the channel selector switch to select "Comander Off" or "Compander On" and then press ✓P4 to lock the desired Companding state into the radio.

Utilities - Whisper

The purpose of this function is to allow the user to whisper in the radio's microphone instead of speaking normally.

Once this feature is selected use ⊙P2, ⊙P3, or the channel selector switch to select "Whisper Off" or "Whisper On" and then press ✓P4 to lock the desired Whisper state into the radio.

Utilities – LCD Back Light

The purpose of this function is to determine how the backlight of the LCD behaves. Because the back light takes power to illuminate the LCD, having it off will save power and extend the life of the battery. The Auto mode turns on the display only when there is a change that should be observed.

Once this feature is selected use ⊙P2, ⊙P3, or the channel selector switch to select "Auto", "On", or "Off" and then press ✓P4 to lock the desired LCD Back Light state into the radio.

Utilities – Vox Level

This parameter determines the sensitivity of the VOX. A value of 1 is the lowest sensitivity and a value of 10 is the highest sensitivity.

Once this feature is selected use ⊙P2, ⊙P3, or the channel selector switch to select the VOX level desired and then press ✓P4 to lock the desired VOX level into the radio.

Utilities – Power Level   Power Low Power High Power Mid

This parameter determines the output power of the transmitter. Typically, Low power is about one watt, High power is 4 watts UHF and 5 watts VHF, and Medium power is 2 watts.

Once this feature is selected use (P2), (P3), or the channel selector switch to select the Power level desired and then press (✔P4) to lock the desired Power level into the radio.

PROGRAMMABLE FUNCTION KEYS

There are three buttons on the radio that are programmable for different functions. Each button has the capability of having two separate functions, determined by how long the button is pressed. The length of time the button has to be pressed for the second feature is determined by the dealer. The list below gives the possible features and the reasons for the features. The user must be informed by the dealer the function of each key.

1.   Zone Up
This key will allow the radio-user to navigate up thru the radio's zones while not in the Menu Mode. The purpose of zones is so different radio channels can be grouped together and then when you are using the channel selector to pick a channel you are only looking at channels related to your zone. The Zone number or alias will be near the top left of the display in small characters and the channel number or alias will be below in much larger characters. Every time the key is pressed the next zone is accessed. Zone 0 allows all channels to be accessed. The other zones can access up to 16 channels.

2.   Zone Down
This key will allow the radio-user to navigate down thru the radio's zones while not in the Menu Mode. The purpose of zones is so different radio channels can be grouped together and then when you are using the channel selector to pick a channel you are only looking at channels related to your zone. The Zone number or alias will be near the top left of the display in small characters and the channel number or alias will be below in much larger characters. Every time the key is pressed the previous zone is accessed. Zone 0 allows all channels to be accessed. The other zones can access up to 16 channels.

3.   Display CH Frequency
This is an alternate action key that will change the mode of display between channel frequency and channel alias

4.   Display CH Alias
When this key is pressed, it will change the mode of display to the channel alias.

5.   Display Mode Switch
This is an alternate action key that switches the mode on the display between "Channel Number", "Channel Alias", and "Channel Frequency".

7.   Power
This is an alternate action key allows the user to select the power output of the radio from "High Power" to "Mid Power" to "Low Power". This allows the radio-user to adjust the Transmit Power setting radio-wide unless a particular channel is set to ignore this key. When the radio is in the low power mode, the display on the top line will display "LO". When the radio is in the mid power mode, the display on the top line will blink the "LO". When the radio is in the high power mode, the display will be blank where in the other modes there was the "LO".

By selecting "low power" you minimize the radio frequency energy and the magnetic energy from the radio. It also helps in battery life and it prevents people far away from hearing you.

7.   Squelch Level
Pressing this key gets you into the squelch adjust mode. When this key is pressed the display will say "Squelch Level n" where n is a value between "0 and 9". Use the channel selector knob to change the squelch level and then use to save the results.

8.   Key Lock
This is an alternate action key. When the key is first pressed the LCD display will show a picture of a lock near the top right of the display. When the key is pressed again the picture of the lock will disappear. When this feature is active, the programmable keys are locked out as well as the manual programming keys. The channel selector switch still works.

9.   Scan
This allows the radio-user to enter or exit scan mode. The key is only available for Scan Lists where the User Programmable field has been enabled. When the scan mode is enabled the display will say "SCAN" in large characters in the bottom middle of the display

The purpose of the scan function is to allow the user to monitor multiple channels and stop at the channel that is active. This would be useful for a supervisor who needs to monitor the activity among different groups of users.

10.   Nuisance Delete
When the radio lands on an unwanted channel during scanning, pressing this key will delete this channel temporarily from the scan list. It is possible to delete all the scanning channels except the priority channel. When the scan mode is exited and later entered again, the temporarily deleted channels will be restored.

The purpose of this key is to delete scan channels that have noise on them or other erroneous transmissions. This prevents the scanning from always stopping at a channel that has no meaning.

11.   Voice X-Pander
This is an alternate action key that enables or disables the X-pander option. X-pander is a new standard feature in the cellular phone industry and is supported industry-wide. The purpose of X-pander is to reduce radio and airway noise, thus enhancing audio clarity. When the X-pander option is enabled, a small "p" will appear on the top of the display.

12.   Scrambler

This is an alternate action key that enables or disables the Scrambler function. The scrambler makes the voice unintelligible to most people who do not have a compatible radio. This prevents a third party from listening in. When the radio is in the scrambler mode, the display will show a small box with a "T" inside in the top middle of the screen.

13.   Home Channel

This function selects a channel the dealer has preprogrammed. The dealer can preprogram either one channel or two channels. If a single channel has been preprogrammed, then pressing the key will select the preprogrammed channel. If the dealer has preprogrammed two channels, then pressing the key will alternate between the two preprogrammed channels. The display will show the channel selected.

14.   Talk Around

This is an alternate action key that selects between talkaround mode and repeater mode. In repeater mode, the radios talk directly to another radio. In repeater mode, the radios talk to the repeater and the repeater in turn talks to another radio. Repeater mode extends the range of the radios. Talkaround mode is useful when the repeater is out of range or the signal strength of the repeater is not sufficient to penetrate inside a building such as when you have a firefighting incident.

For this key to work, the transmit and receive frequencies must be different and the key must not be disabled for the channel you are using. When the key is pressed and it goes in the talk around mode, the display will show "Talkarnd Mode" for a few seconds. When the key is pressed and it goes in the repeater mode, the display will show "Repeater Mode" for a few seconds.

15.   VOX

This is an alternative action key that enables or disables VOX. When VOX is enabled, the user only has to speak to transmit. The PTT switch in this mode does not have to be pressed. VOX is useful when the operator of the radio cannot free his hands to use the radio as what might happen if you are driving. When the VOX mode is enabled, the second line of the display will show "Vox".

16.   Monitor Momentary/Call Cancel

Pressing the Monitor Momentary/Call Cancel key allows monitoring the channel for any voice traffic. The incoming signal has to have the required squelch level before anything can be heard. Releasing the switch puts in back in the normal mode. While the key is pressed, the display will show MON on the second line of the display. This key will also cancel the current incoming call.

Normally the user will only hear messages with the proper CTCSS or DCS codes. This is to prevent the user from fatigue by hearing all messages sent to everybody. This switch bypasses that protection and allows the user to hear all traffic on that channel as long as the key is pressed.

17.   Monitor/Call Cancel

This is an alternative action key that enables or disables the monitor mode. While in the monitor mode, any voice traffic which has the required squelch level will be heard. While in the monitor mode, the display will show "MON" on the second line of the display. This key will also cancel the current incoming call.

Normally the user will only hear messages with the proper CTCSS or DCS codes. This is to prevent the user from fatigue by hearing all messages sent to everybody. This switch bypasses that protection and allows the user to hear all traffic on that channel as long as the radio is in the monitor mode.

18.   Squelch Off Momentary/Call Cancel

Pressing the "Squelch Off Momentary/Call Cancel" key allows monitoring the channel for any voice traffic. The incoming signal does not to have any signal before anything can be heard. That means if there is no signal you will hear squelch noise. Releasing the key puts it back in the normal mode. While the key is pressed, the display will show MON on the second line of the display. This key will also cancel the current incoming call.

By turning off the squelch, the user can hear a weaker signal than if the squelch was already enabled. This is both a diagnostic tool and a feature. If the transmitter from the originating user is weak and does not get past the squelch, then disabling the squelch will allow the user to hear weak signals.

19.   Squelch Off/Call Cancel

This is an alternative action key that enables or disables the squelch mode. While in the squelch mode, any voice traffic will be heard no matter what the squelch level. That means if there is no signal you will hear squelch noise. While the key is pressed, the display will show "MON" on the second line of the display. This key will also cancel the current incoming call.

By turning off the squelch, the user can hear a weaker signal than if the squelch was already enabled. This is both a diagnostic tool and a feature. If the transmitter from the originating user is weak and does not get past the squelch, then disabling the squelch will allow the user to hear weak signals.

20.   Emergency

Pressing the "Emergency" key will cause the radio to transmit an emergency message. The display will show in large letters "EMERGENCY".

Pressing the key designated as "emergency alarm" will cause the radio will go into an emergency mode and depending on the dealer programming, will either generate a local alarm or transmit an alarm to another radio or both.

This has a similar function as the Lone Worker mode. The biggest difference is the user must press a key to start this function verses the Lone Worker where not doing something

starts the function. This could be used in situations where you want someone to know there is an emergency but talking over the radio might jeopardize the safety of the user.

21.   Cancel Emergency

Pressing the "Cancel Emergency" key will cancel the emergency transmission, generate two beeps, and the cause the "EMERGENCY" on the display to disappear. This key would normally be pressed if the emergency alarm condition is resolved or the emergency alarm key has been pressed by accident.

22.   Radio Call

The Radio Call key is a multifunction key that has the ability to generate Selective Calls, Call Alerts, Radio Check, Kill, and Active. The exact function(s) allowed is determined by the dealer. When the Radio Call key is pressed, the display will show "Selective Call". The channel selector switch, (P2), or (P3) can then be used to select the mode desired. When the mode desired is found, press (P4) to lock it in. Then use the channel selector switch, (P2), or (P3) to select the transmission mode desired. The choices are "DTMF", "Two Tone", or "MDC". After the transmission mode is selected, press the PTT switch to transmit the message. Radio Check, Kill, and Active only use the MDC transmission mode.

23.   Call 1

When the "Call 1" key is pressed, a preprogrammed two tone or DTMF page will be sent. If the dealer programmed the radio for side tone, the two tone or DTMF page will be heard as it is being transmitted.

This is a paging feature that is used to contact individual radio or sometimes to set off certain types of alarming features. When you set it for a DTMF code or a two tone code the other radio has to be able to receive that DTMF code or two tone code. Not all radios have the ability to respond to paging.

24.   Call 2

When the "Call 2" key is pressed, a preprogrammed two tone or DTMF page will be sent. If the dealer programmed the radio for side tone, the two tone or DTMF page will be heard as it is being transmitted.

This is a paging feature that is used to contact individual radio or sometimes to set off certain types of alarming features. When you set it for a DTMF code or a two tone code the other radio has to be able to receive that DTMF code or two tone code. Not all radios have the ability to respond to paging.

25.   Call 3

When the "Call 3" key is pressed, a preprogrammed two tone or DTMF page will be sent. If the dealer programmed the radio for side tone, the two tone or DTMF page will be heard as it is being transmitted.

This is a paging feature that is used to contact individual radio or sometimes to set off certain types of alarming features. When you set it for a DTMF code or a two tone code the other radio has to be able to receive that DTMF code or two tone code. Not all radios have the ability to respond to paging.

26.   Call 4
When the "Call 4" key is pressed, a preprogrammed two tone or DTMF page will be sent. If the dealer programmed the radio for side tone, the two tone or DTMF page will be heard as it is being transmitted.

This is a paging feature that is used to contact individual radio or sometimes to set off certain types of alarming features. When you set it for a DTMF code or a two tone code the other radio has to be able to receive that DTMF code or two tone code. Not all radios have the ability to respond to paging.

27.   Lend Remain Time Display
When the "Lend Remaining Time Display" key is pressed, the remaining time the radio can be used will be displayed. The radio will show the number of days, the number of hours, and the number of minutes. Pressing any other key will erase the remaining time from the display.

28.   Lone Worker
This is an alternative key that enables or disables the Lone Work mode. When the Lone Work mode is enabled, a single beep will be heard and the top line of the display will show "SVC". When the lone work mode is disabled, a double beep will be heard and the "SVC" will be erased from the display. When the radio goes into the emergency mode, the display will show in large letters, "EMERGENCY". The only way to get out of the emergency mode is to turn off the power.

The purpose of this function is to call for help if the person holding this radio does not press a key on the radio every so often. Once the radio is set for the Lone Worker mode, a timeout timer is started. At the end of this time an alarm on the radio will sound telling the user to press either the Lone Worker reset key or any key, depending how the unit is preprogrammed. If the user does not press the appropriate key soon after the radio starts to alarm, the radio will go into an emergency mode and depending on the dealer programming, will either generate a local alarm or transmit an alarm to another radio or both.

29.   Scan List Edit
This key is used to enable or disable channels on the scan list. Press the "Scan List Edit" key and the display will show "View List". The channel selector switch, P2, or P3 can now be used to select "Add Entry", "Delete Entry", "Edit Priority", or "View List". When the appropriate function is selected, press the P4 key to lock in your function.

If "View List" is selected, the channel selector switch, P2, or P3 can be used to view all the active channels in the scan list.

If "Add Entry" is selected, press the ✔P4 key to lock in this function. The channel selector switch, P2, or P3 can select the appropriate channel. Once the channel is selected, press ✔P4 and the display will now show "Entry Saved". Use the P1✘ to back out of the function when completed or turn off and on the radio.

If "Delete Entry" is selected, press the ✔P4 key to lock in this function. The channel selector switch, P2, or P3 can select the appropriate channel. Once the channel is selected, press ✔P4 and the display will now show "Entry Deleted". Use the P1✘ to back out of the function when completed or turn off and on the radio.

If "Edit Priority" is selected, press the ✔P4 key to lock in this function. Then select either "Priority #1" or "Priority #2" and then press the ✔P4 key to lock in this function. Then select "Disable", "Designated", or "Selected" and press the ✔P4 key to enable or disable this channel for the priority channel. This display will show "Prio#1" Saved or "Prio#2" Saved.

30.   Vox Level
This key is used to adjust the level of the VOX. Level 1 is the least sensitive and Level 10 is the most sensitive. When the display shows "VOX Level", use the channel selector switch to select the desired VOX level and then use the ✔P4 key to save it.

31.   Battery Voltage Display
When the "Battery Voltage Display" key is pressed, the display will show Battery x.xxV where x.xx is the battery voltage. The display will disappear after a few seconds.

32.   Lamp
This key, when pressed, is used to illuminate the LCD backlight for a few seconds.

33.   Channel Lock
This is an alternative key that when first pressed will display "Ch Locked On" for a few seconds. When pressed again, will display "Ch Locked Off". When this function is enabled, the channel switch is disabled. When a user tries to change channels while this function is enabled, the channel will stay the same and the display will display "Channel Locked" for a few seconds.

34.   LCD Contrast
The "LCD Contrast" key is used to adjust the contrast of the LCD. When this key is pressed, the display will say "Contrast n" where "n" is between "0" and "9". The contrast can now be adjusted by the channel switch and save by the ✔P4 key.

35.   Whisper

This is an alternative action key that enables or disables the Whisper mode. When first pressed, the display will show "Whisper On" and the radio will generate a single beep. When pressed again the display will show "Whisper Off" and the radio will generate a double beep. The purpose of this function is to allow the user to whisper in the radio's microphone instead of speaking normally.

36.   Channel Edit

When the Channel Edit key is pressed, the display will show User PGMING. The channel selector switch, (P2), or (P3) can then be used to select "User PGMING" or "AdvancedPGMING". Once the selection is made, the (P4) key is pressed and a Channel Number is displayed. The channel selector switch, (P2), or (P3) can then be used to select the channel that needs to be edited. Once the selection is made, the (P4) key is pressed and the following items can be edited for "User PGMING":

Channel Alias
Rx Ctcss/Dcsn/Dcsi
Tx Ctcss/Dcsn/Dcsi

For "AdvancedPGMING", the following additional parameters can he edited:

Rx FRQ
Tx FRQ
Channel Band

37.   Phone Mode

When the "Phone Mode" key is pressed, a backwards "c" will appear on the second line of the display. The channel selector switch, (P2), or (P3) can then be used to select the DTMF code to be sent. After the code is selected, press the PTT switch and the preprogrammed DTMF will be generated and sent out over the air. If after the key is pressed and you decide you do not want to generate the DTMF, press the phone mode key again and it will return to the normal mode.

This function can be used for turning on or off phone patches or other devices that need DTMF signaling functions.

38.   Auto Dial

When the "Auto Dial" key is pressed, a backwards "c" will appear on the second line of the display. The channel selector switch, (P2), or (P3) can then be used to select the DTMF code to be sent. After the code is selected, press the PTT switch and the preprogrammed DTMF will be generated and sent out over the air. If after the Auto Dial key is pressed and you decide you do not want to generate the DTMF, press the [P1✗] key and it will return to the normal mode.

This function can be used for turning on or off phone patches or other devices that need DTMF signaling functions.

39.   Zone 0 Scan Add/Del
This key is used to add or delete channels from the scan list for Zone 0. To use it set the channel selector key to the appropriate channel and then press the "Zone 0 Scan Add/Del" key. If the display for that channel shows "SCN" on the top line, then the channel is enabled for scanning purposes. If the display is blank in that location, then the channel is disabled for scanning purposes. To change it back press the same key again.

40.   OST
This key could allow radio users to change the PL or DPL setting of current channel by a pre-programmed OST list. Press the "OST" key and then the designated PL/DPL can be selected by up and down key. Once the appropriate code is selected, press the "OST" key again and a "-" appears on the second line of the display indicating the code was selected. Pressing the key again will deselect the code and the "-" will be removed from the display.

41.   Sel Call
This allows the radio-user to enter the selective call mode directly. Press the "Sel Call" key and then use the channel selector switch, ⊙P2, or ⊙P3 to select the selective call type. The choices are DTMF, Two Tone, or MDC. Then press PTT switch and the selected selective call type will be sent out over the air.