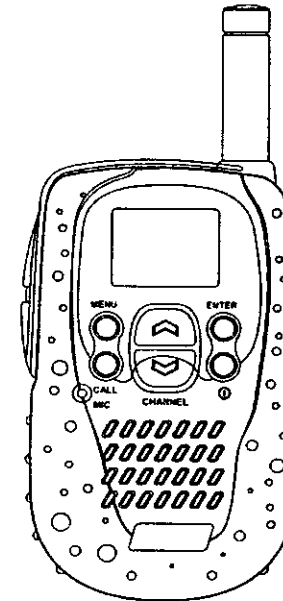


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Musical

FRS 220A 14 CHANNEL FAMILY RADIO SYSTEM WITH 38 CTCSS



**BEFORE OPERATING THIS PRODUCT PLEASE
READ THESE INSTRUCTIONS COMPLETELY**



Safety Information

Your wireless hand-held portable transceiver contains a low power transmitter. When the Push-to-Talk (PTT) button is pushed it sends out radio frequency (RF) signals. The device is authorized to operate at a duty factor not to exceed 50%. In August 1996, the Federal Communications Commissions (FCC) adopted RF exposure guidelines with safety levels for hand-held wireless devices.

IMPORTANT : To maintain compliance with the FCC's RF exposure guidelines hold the transmitter and antenna at least 1 inch (2.5 centimeters) from your face and speak in a normal voice, with the antenna pointed up and away from the face. If you wear the handset on your body while using the headset accessory, use only the supplied belt clip for this product and when transmitting, take it out of the belt to ensure that the antenna is at least 1 inch (2.5 centimeters) from your body.

Use only the supplied antenna. Unauthorized antennas, modifications, or attachments could damage the transmitter and may violate FCC regulations.

WARNING : Adjustment to this unit or replacement of any transmitter component (crystal, semiconductor, etc.) to this unit could result in a violation of the rules.

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

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

PRECAUTIONS

- Do not modify or attempt to adjust the transceiver for any reason.
- Avoid extremes in exposure to water, heat, and cold. This transceiver is weather resistant but not waterproof.
- Do not expose the transceiver to long period of direct sunlight, nor place the transceiver close to heating appliances.
- Do not place the transceiver in excessively dusty areas, humid areas, wet areas, nor on unstable surfaces.
- If an abnormal or smoke is detected coming from the transceiver, immediately switch OFF the power and remove the batteries from the transceiver. Contact your dealer.

FCC WARNINGS

This device complies with part 15 of the FCC rules, operation is subject to the condition that this device does not cause harmful interference.

Features

No Air Time Fees and No License Required
Up to 2 miles range and Out-of-range Warning
14 Main Channel and 38 CTCSS Sub-channel
Build-in VOX Function
Muti-function Back-lit LCD Display
Talk Confirmation Tone and Call / Ring Button
Auto Battery Saver and Auto Squelch
Monitor and Key Lock Button
External Power (DC 6V) and External Microphone Speaker Jacks
Detachable Belt Clip

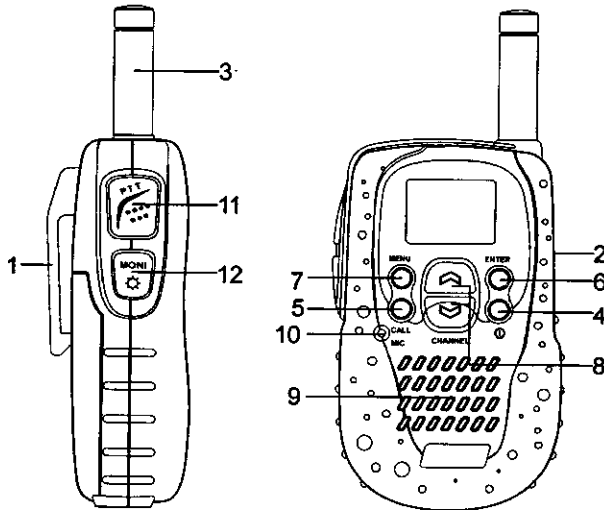
UNPACKING

Carefully unpack the transceiver. We recommend that you identify the items listed below before discarding the packing material.

- Transceiver1
- Belt Clip.....1
- Instruction Manual1

Controls and Indicators

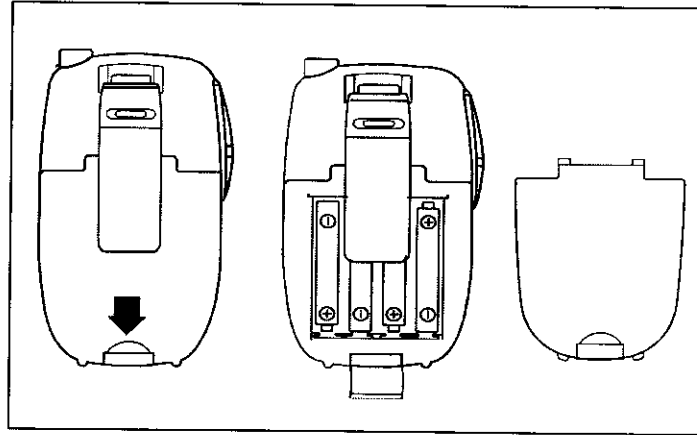
1. Belt Clip
2. Microphone Jack / Earphone Jack
3. Antenna
4. Power switch
5. Call key
6. Enter/Lock key
7. Menu key
8. Up/Down key
9. Speaker
10. Microphone
11. PTT (Push To Talk) Switch
12. Monitor /Lamp Switch




4

Operation

Install Batteries

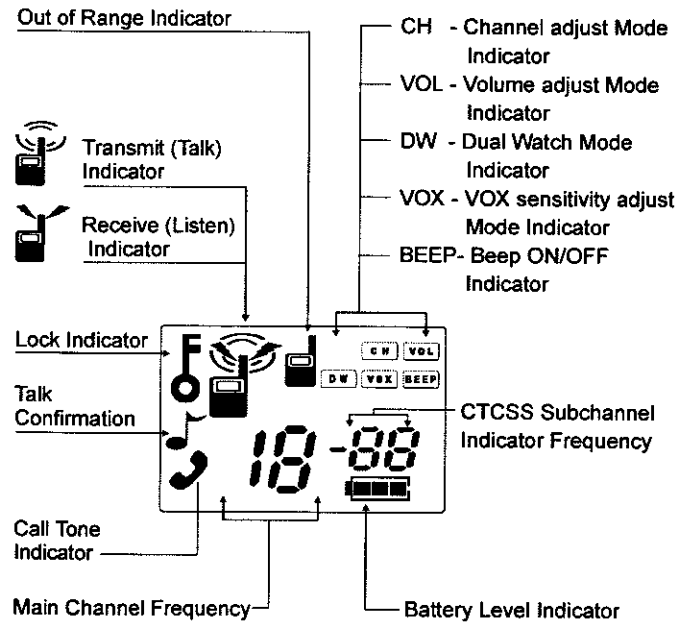


1. Pull lock tab down and lift door up (towards you) to remove battery cover.
2. Insert four "AAA" batteries. Position batteries according to polarity markings.

Note : When batteries are low or need charging the  BATT LOW indicator will blink. Replace alkaline batteries.

5

LCD Display



6

To Turn On The Unit or To Turn Off The Unit

Press the POWER switch for more than 1 second.

Auto Battery Power Saver

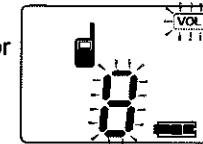
The unit has a special circuit designed to extend battery life. If there are no transmissions within 5 seconds, the unit will automatically switch to battery save mode.

To Transmit

Simply talk to the built-in microphone as VOX (Voice Activated Transmission) turns into transmission mode automatically, or press the PTT(Push-To-Talk) button.

To Adjust VOLUME control

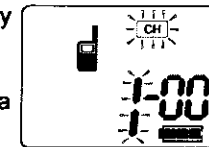
Press momentarily UP button to increase or DOWN button to decrease volume. The higher number, the higher volume level.



To Select Main Channel

1. Press the MENU button. The LCD display indicates as shown at right.

2. Press the UP or DOWN button to set a desired channel from 1 to 14.



3. Press the MENU button to continue other settings. To complete setting, press the ENTER button.

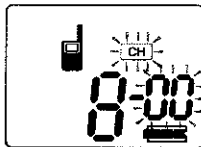
7

To Select Sub-Channel

1. Press the MENU button repeatedly until the LCD display indicates as shown at right.

2. Press the UP or DOWN button to set a desired sub-channel from 00(sub-channel Off) to 38.

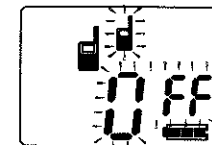
3. Press the MENU button to continue other settings.
To complete setting, press the ENTER button.



To Set Out-Of-Range Warning

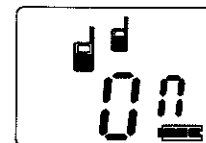
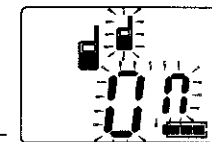
This feature enables two transceivers to exchange and measure signals automatically, then will alert you by a tone sound and flashing LCD display before two transceivers are located distant beyond communication range.

1. Press the MENU button repeatedly until the LCD display indicates as shown at right.



2. Press the UP or DOWN button to set On.

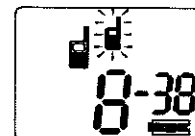
3. Press the MENU button to continue other settings.
To complete setting, press the ENTER button.



In case you have set a channel at 8-38, the display shows as above.

Beyond Small Area

Signals between two transceivers becomes weaker, the unit alerts you to contact the other party.



Beyond Large Area

Before two transceivers move out beyond communication range and it is unable to reach signals each other, the unit alerts you to contact the other party.



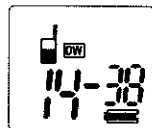
To Set Dual Watch Function

This feature enables you to monitor 2 channels simultaneously. Set Main and Sub channels you want to monitor prior to set Dual Watch Function.

Note: Dual Watch does not work with "Out-Of-Range function".



1. Press the MENU button repeatedly until the LCD display indicates as shown at right.
2. Press the UP or DOWN button to set a desired channel.
3. Press the MENU button to continue other settings.
To complete setting, press the ENTER button.



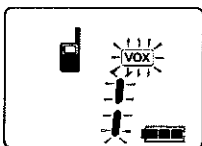
To Select VOX Level

This feature enables you to adjust VOX microphone sensitivity.

1. Press the MENU button repeatedly until the LCD display indicates as shown at right.
2. Press the UP or DOWN button to set a desired number from 1 to 3.
Number 1 – High Sensitivity
Number 2 – Middle Sensitivity
Number 3 – Low Sensitivity



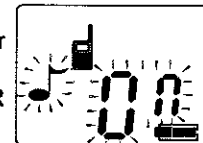
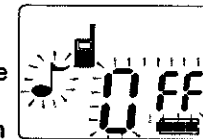
3. Press the MENU button to continue other settings.
To complete setting, press the ENTER button.



To Turn On or Off Roger (Talk Confirmation Tone)

This alerts the other party that you are finished talking and it's OK for them to begin talking.

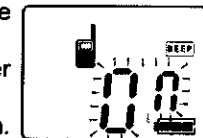
1. Press the MENU button repeatedly until the LCD display indicates as shown at right.
2. Press the UP or DOWN button to turn on the beep.
3. Press the MENU button to continue other settings.
To complete setting, press the ENTER button.



To Turn On or Off Beep Tone

This alerts the other party that you are finished talking and it's OK for them to begin talking.

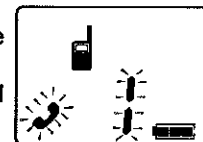
1. Press the MENU button repeatedly until the LCD display indicates as shown at right.
2. Press the UP or DOWN button to turn on the beep.
3. Press the MENU button to continue other settings.
To complete setting, press the ENTER button.



To Select Call Tone

This feature enables you to choose from 5 different Call Tone.


1. Press the MENU button repeatedly until the LCD display indicates as shown at right.
2. Press the UP or DOWN button to set a desired number from 1 to 5 for different Call Tone.
3. Press the MENU button to continue other settings.
To complete setting, press the ENTER button.



Automatic Channel Scan

Press and hold the UP or DOWN button to search signals. When the unit catches a strong signal, scan will stop for 5 seconds. If you want to stop at that channel, press the PTT or ENTER button.

To Lock Control Keys (UP/DOWN, MENU keys)

Press and hold the ENTER button for 2 seconds. Key icon  will appear on the display.

Frequency Range

The FRS 199 / FRS 200 unit represents one of the most advanced FM two-way radios used.

FRS Channel	Channel Frequency In MHz
1	462.5625
2	462.5875
3	462.6125
4	462.6375
5	462.6625
6	462.6875
7	462.7125
8	467.5625
9	467.5875
10	467.6125
11	467.6375
12	467.6625
13	467.6875
14	467.7125

General Specifications

A. Frequency

CH = 14 Channels within 462 -467 MHz.

B. Receiver

- | | |
|----------------------------------|---------|
| 1. Sensitivity | |
| For 12 dB signal | 0.25 mV |
| 2. Max. audio output @ 10% THD | 300 mW |
| 3. Max. S/N ratio @ 1mV RF input | 40 dB |
| 4. Squelch Sens | 0.2 mV |
| 5. Audio frequency resp. | |
| @ 300 Hz | ± 10 dB |
| @ 3000 Hz | ± 10 dB |
| 6. Signal displacement BW | ± 5 kHz |
| 7. Adjacent CH. rejection | 55 dB |
| 8. Intermodulation rejection | 55 dB |
| 9. Spurious response rejection | 55 dB |

C. Transmitter

- | | |
|-----------------------------|-----------|
| 1. Effective radiated power | 0.21W ERP |
| 2. Carrier freq. stability | 500 Hz |
| 3. Modulation limiting | 2.5 kHz |
| 4. Carrier attack time | 80 mS |
| 5. Audio frequency response | |
| @ 300 Hz | ± 10 dB |
| @ 3000 Hz | ± 10 dB |
| 6. Audio distortion | 3 % |
| 7. Hum and Noise | 40 dB |

D. Power Supply

- | | |
|-------------------------------------|-------|
| 1. Battery life (1 : 1 : 8 Ratio) | 30 Hr |
| 2. Battery, AAA x 4 | |