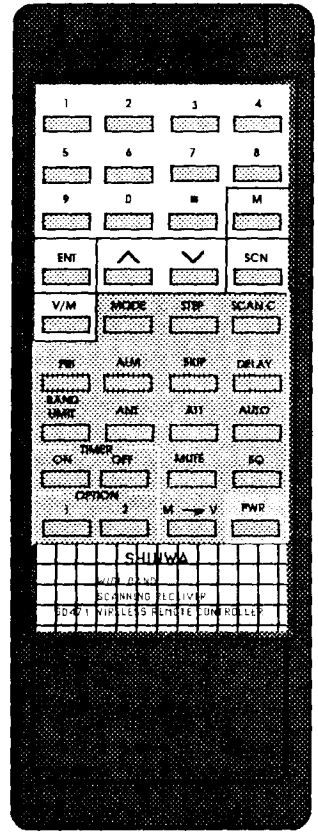
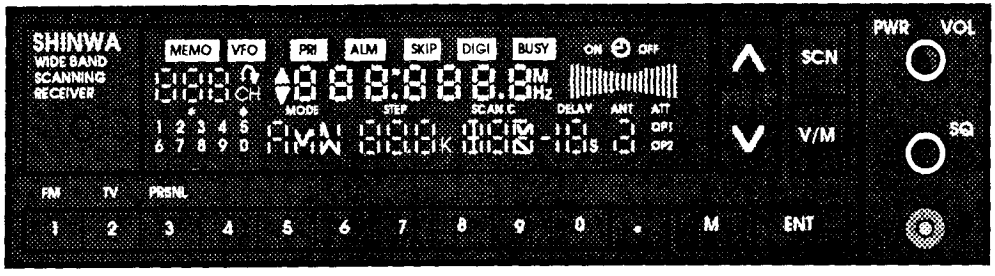
SHINWA



SR001

INSTRUCTION MANUAL



25.0 ~ 999.995 MHz

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INTRODUCTION

The Shinwa Model SR001 Wide Band Scanning Receiver is a state-of-the-art, synthesized receiver that is designed to provide you with years of dependable service and listening pleasure. The scanning receiver covers 25 through 999.995 MHz and provides 200 programmable memory channels (10 groups of 20 channels each). A full-featured wireless remote control is also included to operate the receiver from the relaxation of your easy chair. The following features provide for optimum performance of all received frequencies:

- Wide-Band Frequency Coverage
- High-Speed Scanning
  - 35-Ch / Sec in VFO Mode
  - 25-Ch / Sec in MEMO Mode
- 200 MEMO Channels (10 Groups of 20 Channels)
- Pre-Programmed Mode By Frequency Segment
- Programmable Scan for:
  - MEMO Channel Scanning
  - MEMO Group Scanning
  - MEMO Band Scanning
  - Resume Scan
- Timer (On or Off) Mode
- Alarm Priority Channel Monitoring
- Easy-To-Read Multi-Color LCD Display
- Wireless Remote Control
- Two Antenna Jacks for Optimum Antenna Selection
- Lithium Battery Memory Back-Up

These features combine to provide you with one of the finest scanning receivers available. Please read this manual thoroughly so that you will become familiar and comfortable with the operation and programming examples. This will help you achieve maximum performance and enjoyment while using the receiver.

THANK YOU FOR CHOOSING THE SR001 WIDE-BAND SCANNING RECEIVER!

Note: Any information monitored on this receiver is for your personal use only and is not intended for commercial purposes. Please follow all applicable government regulations that apply to radio frequency broadcasts and reception.

GETTING STARTED

UNPACKING

Carefully unpack the receiver, remote control, and all other accessories listed below. Check each item against the following parts list, and look for any shipping damage that may have occurred.

PART #	DESCRIPTION	QUANTITY
SR001	Scanning Receiver	1 ea.
SD471	Remote Controller	1 ea.
UM-4	Batteries for SD471 (AAA)	2 ea.
ZK82	Mounting Bracket	1 ea.
	Power Cable (DC)	1 ea.
	Hardware Package(s)	2 ea.
	Hook & Loop Tape	1 ea.
	2 Amp Fuse (extra)	1 ea.
	Label Set	1 ea.
	Warranty Card	1 ea.

MOUNTING BRACKET

HARDWARE PACKAGE #1

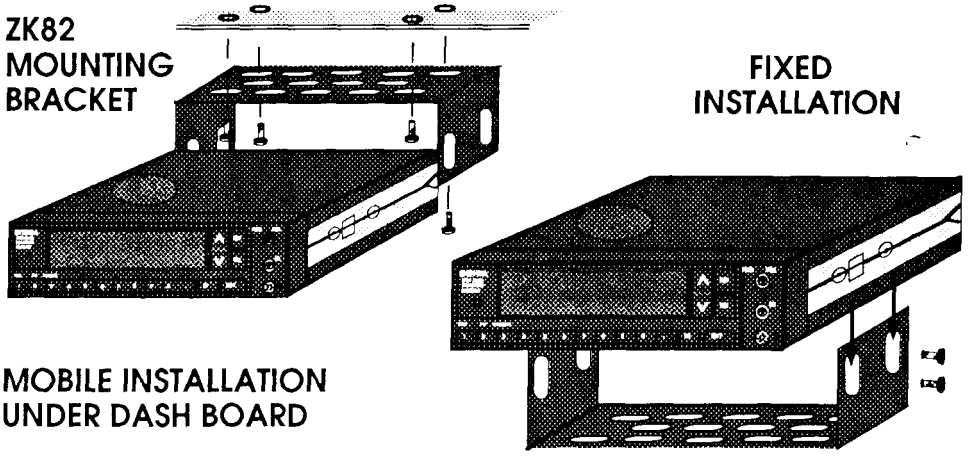
M4 X 10 mm	Hex Phillips Head Bolt (black)	4 ea.

HARDWARE PACKAGE #2

M5 x 16 mm	Hex Phillips Head Bolt	4 ea.
M5	Flat Washer	4 ea.
M5	Split Spring Washer	4 ea.
M5	Hex nut	4 Ea.
#5 x 25 mm	Pan Head Self Tapping Screw	4 ea.

INSTALLATION

The SR001 Receiver can be installed and used in any position without affecting its performance. It should be installed so the digital display and controls are easy to see and operate. However, it should have at least two inches (50 mm) of air space around the rear heat sink for ventilation and heat dissipation. If used in a vehicle, it should be mounted so that it does not interfere with the safe operation of the vehicle and is not in the direct air flow of a heater vent.



The mounting bracket can be installed on top of the receiver, or under the receiver as a stand. If you desire to permanently install the bracket, use the mounting bracket holes as a template for determining the best location to drill starting holes for the screws. Mount the bracket with your choice of supplied hardware. Then mount the receiver to the bracket with the four (4) black hex screws (M4 x 10 mm). Save the remaining hardware in case you wish to change the mounting location at a later time.

You may also wish to connect an optional external speaker which may allow you to place the speaker in a more convenient listening location. For best results, use an external speaker specified at 8Ω (ohms) such as the optional Shinwa Model ZP121 available at your authorized Shinwa Dealer.

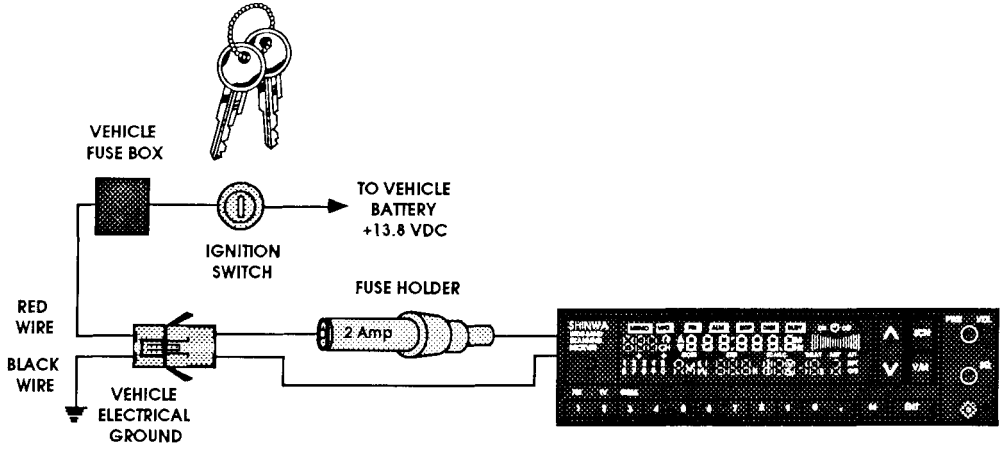
POWER CONNECTIONS

CAUTION: USE 13.5 VDC, ±10%, NEGATIVE GROUND ONLY OR SEVERE DAMAGE WILL RESULT! FAILURE TO OBSERVE THESE PRECAUTIONS WILL VOID THE WARRANTY.

MOBILE POWER CONNECTIONS

The SR001 requires a power source of 13.5 VDC ±10%, negative ground, and capable of providing 1.5 amps. The positive (+) red wire can be connected directly to the positive (+) battery terminal in your vehicle. This will allow the receiver to operate even though the ignition key is turned off. However, you must then remember to turn the receiver off when you leave the vehicle. Instead of the (+) battery terminal, you can connect the positive (+) red wire through the ignition switch so that the receiver will be turned off when the ignition is turned off. Do not connect the receiver to any power source except through the fused power cable that is supplied with the receiver.

The negative (-) black wire should be connected directly to the negative (-) battery terminal in your vehicle. Instead of the (-) battery terminal, you can connect the negative (-) black wire directly to the metal vehicle chassis if the chassis is actually the same as the negative (-) battery terminal.



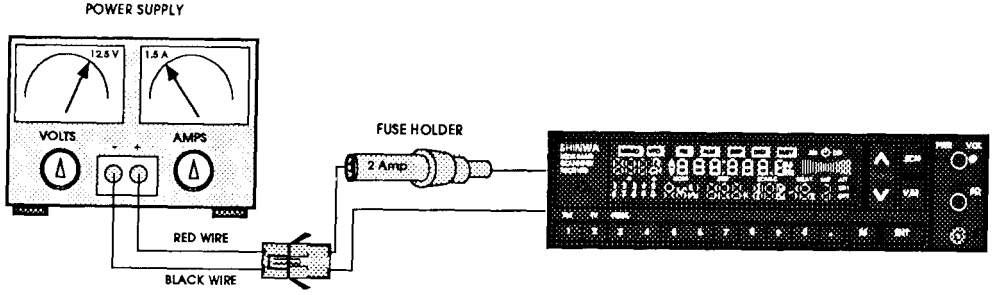
BASE POWER CONNECTIONS

The SR001 requires a power supply of 13.5 VDC ±10%, negative ground, and capable of providing 1.5 amps. Connect the positive (+) red wire to the positive (+) voltage connection, and the negative (-) black wire to the negative (-) voltage connection. If the output voltage of the power supply can be varied, set it for no more than 13.5 VDC. Do not connect the receiver to any power source except through the fused DC power cable that is supplied with the receiver.

The power supply can be turned On and Off each time the receiver is turned On and Off, but the receiver must be turned On after the power supply is turned On, and then the receiver must be turned Off before the power supply is turned Off. This procedure will not allow you to use the wireless remote control to turn On the receiver.

The power supply can be left On so that the receiver can then be turned On and Off by the front panel switch or with the wireless remote control. Be sure that the power supply is rated to be left On continuously.

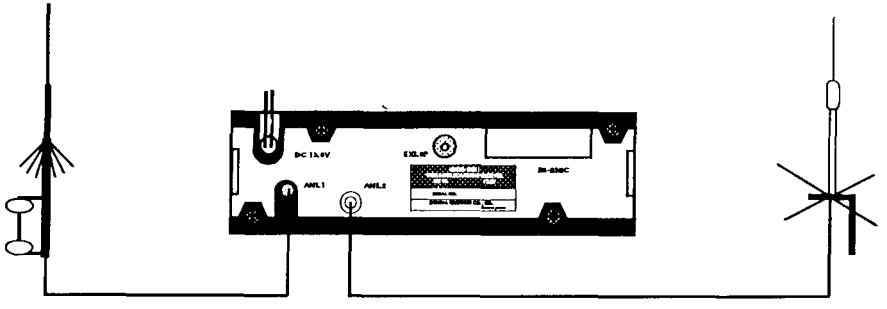
You may also wish to use the optional AC Adapter to power the receiver instead of a separate power supply. The AC Adapter provides the correct DC voltage and current to operate the receiver, and it is available from your Authorized Shinwa Dealer.



ANTENNA

All antennas are designed for use on specific frequency ranges. Antennas are also designed to be extremely narrow band to cover a very narrow frequency range, very broadband to cover a broad frequency range, or dual-band to cover two different narrow bands of frequency ranges. A narrow band antenna will typically provide greater received signal strength on the narrow frequency range it is designed for as compared to a broadband antenna that typically offers a lower received signal strength over a broader range of frequencies. Each antenna has its own specifications for gain, directional or omni-directional signal patterns, and mounting.

Your choice of antenna(s) will make a significant difference in the signal strength you receive. Ideally, you should consider one of the specially designed scanner antennas that are available in the market place. These antennas are manufactured by many different antenna companies, and are available for base station mounting and vehicle mounting. You may choice two different antennas so you receive maximum signal strength on the particular frequencies you are interested in monitoring.



Your SR001 Wide-Band Scanning Receiver provides two separate antenna jacks on the rear panel. The antenna input impedance of each jack is 50Ω. One jack is a "BNC" connector and the other jack is an "N" connector. A single antenna can be connected to either of the jacks, or separate antennas can be connected to each jack. Antenna switching is done by the "ANT" (antenna) button on the remote control. While programming the receiver for a particular frequency you wish to monitor, you will also program which antenna should be selected. This allows you to program the most sensitive antenna for each frequency monitor.

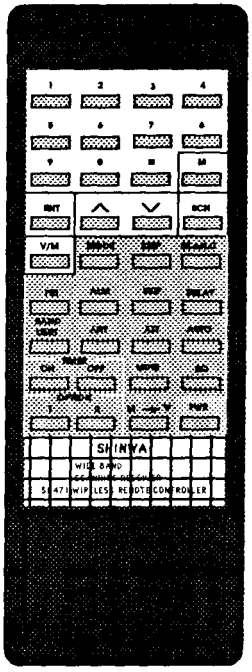
Your authorized Shinwa Dealer will be able assist you in selecting the best antenna(s) for your application and listening pleasure.

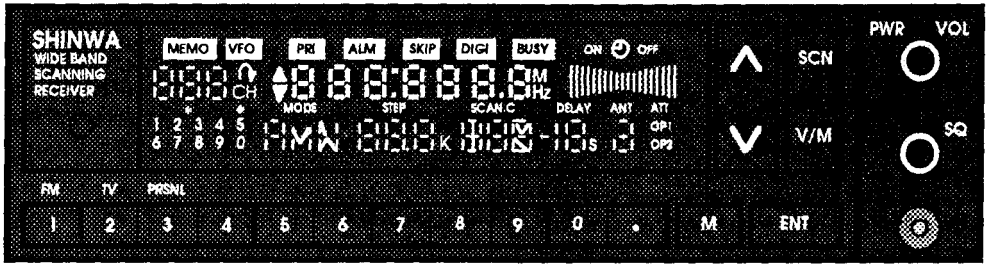
QUICK REFERENCE CHART

This chart is intended as a quick reference after you have become completely familiar with all features and functions of the receiver. Please read through all the control functions and perform all of the programming examples to help you achieve maximum performance and enjoyment while using the receiver. The chart is also repeated in the back of the manual in case you wish to cut-it-out and keep it with the receiver.

1. " " Indicates what mode or function is displayed on the LCD (Liquid Crystal Display) of the receiver.

2. [ ] Indicates what button on the front panel or remote control should be pressed.

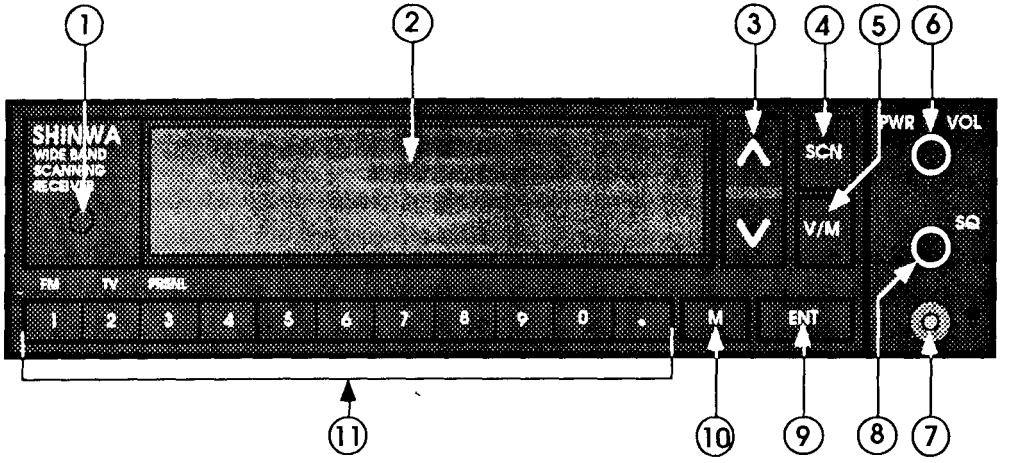




SR001 QUICK REFERENCE CHART

FUNCTION	OPERATION	MODE	REMARKS
ENTER A FREQ. INTO THE VFO	PRESS "ENT" ENTER THE FREQ. PRESS "ENT"	"VFO"	SCANNING NOT AVAILABLE WHEN ENTERING A FREQ.
CHANGE THE FUNCTION OF A PREVIOUSLY ENTERED FREQ.	PRESS "MODE", "STEP", OR "ANT" THEN CHANGE FUNCTION	"MODE", "STEP", OR "ANT"	NOT POSSIBLE WHEN THE "♦" IS DISPLAYED
ENTER A FREQ INTO A MEMORY "MEMO" CHANNEL	SELECT THE FREQ., PRESS "M", ENTER MEM CH #, PRESS "ENT"	"MEMO" OR "♦"	FUNCTION IS POSSIBLE WHEN THE "♦" IS FLASHING
RECALLING A MEMORY CHANNEL WHEN IN "VFO" MODE	PRESS "V/M", "ENT", ENTER MEM CH #, & PRESS "ENT"; OR "ENT" & "∧" OR "∨"	"VFO"	POSSIBLE IF THE "♦" IS NOT DISPLAYED
RECALLING A MEMORY CHANNEL WHEN IN "MEMO" MODE	PRESS "ENT" ENTER MEM CH #, & PRESS "ENT"; OR "ENT" & "∧" OR "∨"	"MEMO"	POSSIBLE IF THE "♦" IS NOT DISPLAYED
TO SCAN	PRESS "SCAN", PRESS "∧" OR PRESS "∨"	"▲" OR "▼"	PRESS "SCAN" AGAIN TO STOP THIS MODE
CHANGE THE SCAN FUNCTION OF THE RESUME SCAN MODE	PRESS "SCAN.C" TO SELECT "CAR", "AUD", OR "TIM" AS A SCAN MODE	"CAR", "AUD", OR "TIM"	THIS FUNCTION CAN BE CHANGED WHILE IN ANY MODE
SETTING THE "ON" OR "OFF" TIMER FUNCTION	PRESS TIMER "ON" OR "OFF" ENTER TIME, PRESS "ENT"	"◷"	MAXIMUM TIME IS 99 HRS & 59 MIN FROM THE PRESENT TIME

The Control Functions are divided into three sections that describe the receiver its self, and a fourth section that describes the remote control. It is suggested that you compare the description of each functions here with actual function on the receiver and remote control. For your convenience, the receiver is shown without its display functions, and the display is shown without the entire receiver. This is to emphasize the control functions of one particular area of the receiver at a time.



FRONT PANEL

(1) REMOTE CONTROL INFRARED RECEIVER SENSOR
Location of the infrared sensor that receives signals from the remote control. This sensor must always be in a direct line-of-sight when you use the remote control.

(2) DISPLAY (SEE DISPLAY SECTION)
Displays frequency, function, channels, timer function, memory channel groups, mode, channel steps, scan rate, delay, and antenna 1 or 2.

(3) "∧" AND "∨" UP AND DOWN BUTTONS
For stepping up or down through the displayed frequency or the memory channels, or to start scanning by pressing either button for more than one (1) second.

④ "SCN" SCAN BUTTON
For starting and stopping the scanning function.

⑤ "V/M" VFO/MEMORY BUTTON
For switching between the VFO mode (manually entered frequency) and the MEMO mode (memory channel).

⑥ "PWR/VOL" POWER/VOLUME CONTROL (PUSH/PUSH TYPE)
For turning the power On and Off, and controlling the volume level. Pushing the control once will make it pop out so it can be adjusted, and pushing it again will return it to its recessed position.

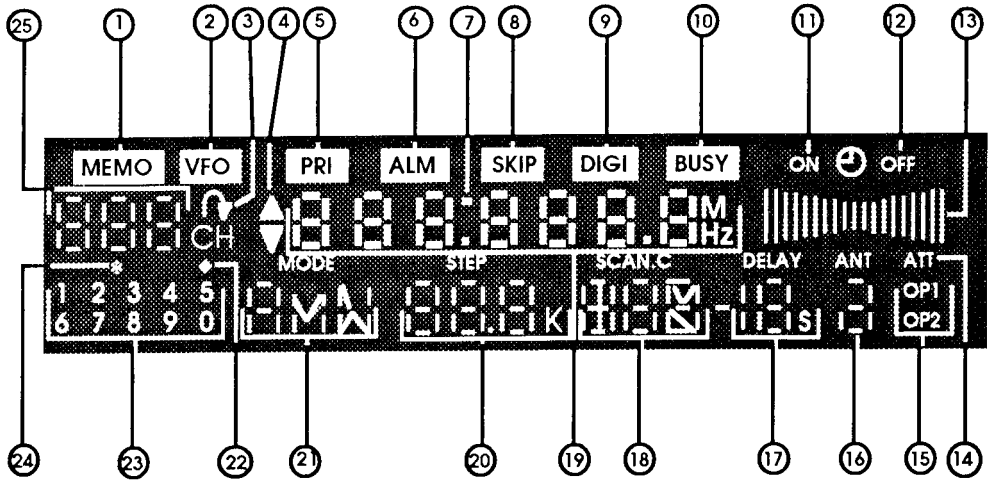
⑦ " 🎧 " EARPHONE JACK
For connecting an optional earphone for private listening when you do not wish to listen to the speaker. Use an earphone that has a 3.5 mm plug and 30~600 Ω of impedance. When the earphone is plugged in, the internal speaker is muted (turned off).

⑧ "SQ" SQUELCH CONTROL (PUSH/PUSH TYPE)
For controlling (quieting) the receiver audio output when no signal is being received. Rotate the control clockwise until the noise disappears. Pushing the control once will make it pop out so it can be adjusted, and pushing it again will return it to its recessed position.

⑨ "ENT" ENTER BUTTON
For setting VFO frequency, memory channel number, skip memory channel, band frequency setting, timer, alarm channel, and alarm.

⑩ "M" MEMORY BUTTON
For setting the memory frequencies, memory number, and alarm channel.

⑪ "FM, TV, AND PRSNL" AND OTHER NUMERIC BUTTONS
For programming frequency, and setting memory groups.



DISPLAY

① MEMO — (MEMORY MODE)
Lights up in the memory mode.

② VFO — (VFO MODE)
Lights up in the VFO mode.

③ — (SKIP MARK INDICATOR)
Lights up when a memory channel is programmed to be skipped while in the scan mode.

④ — (UP / DOWN SCANNING INDICATORS)
Indicates the VFO frequency or MEMO (memory) channel up or down scanning direction.

⑤ PRI — (PRI MODE)
Lights up in the priority mode.

⑥ ALM

(ALM MODE)
Lights up in the alarm mode.

⑦ :

(COLON INDICATOR)
Lights up when the timer ON / OFF mode is programmed.

⑧ SKIP

(SKIP MODE)
Lights up in the skip mode.

⑨ DIGI

(DIGI MODE)
Lights up when an external computer is connected to the optional RS-232C jack on the rear panel.

⑩ BUSY

(BUSY MODE)
Lights up when a signal is received with a strong enough signal strength to open the squelch.

⑪ ON

(ON TIMER MODE)
The ON lights up when you press the "ON" timer button on the remote control, and the "ON" goes out after approximately 2-seconds when you press the "ON" button again.

⑫ OFF

(OFF TIMER MODE)
The OFF lights up when you press the "OFF" timer button on the remote control, and the "OFF" goes out after appproxiamtely 2-seconds when you press the "OFF" button again.

⑬ 

(SIGNAL STRENGTH METER)
Lights up to show the signal strength of received signals.

⑭ ATT

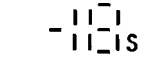
(ATT SELECTION INDICATOR)
Lights up when you press the "ATT" button on the remote control, and goes out when you press the "ATT" button again.

⑮ **OPT 1**
OPT 2

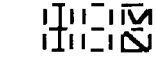
(OP1 & OPT2 SELECTION INDICATOR)
Lights up when you press either the "OPTION 1" or "OPTION 2" button on the remote control. Pressing either the "OPTION 1" or "OPTION 2" button again causes the indicator to go out.

⑯ **ANT**

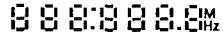
(ANT SELECTION INDICATOR)
Lights up to display which antenna jack (ANT.1 or ANT.2) the receiver is currently programmed to receive on.

⑰ 

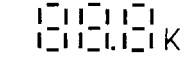
(RESUME SCAN DELAY TIME INDICATOR)
Lights up to show the delay time that resume scan is programmed for, when in the TIM (time) mode.

⑱ 

(RESUME SCAN INDICATOR)
Lights up to display one of the resume scan modes: CAR (carrier), AUD (audio), or TIM (time) that the receiver is currently programmed for.

⑲ 

(FREQUENCY DISPLAY)
Digital display that displays the received frequency in the VFO or MEMO modes, or the time when the timer mode is activated.

⑳ 

(FREQUENCY STEP INDICATOR)
Displays the frequency step (5.0, 10.0, 12.5, 20.0, 25.0, 50.0, or 100k) that the receiver is currently programmed for.

㉑ 

(MODE INDICATOR)
Lights up to show what mode (AM, FMN, OR FMW) the receiver is currently programmed for.

㉒ ◆

(FREQUENCY ENTERING INDICATOR)
Lights up when the "ENT" button is pressed to indicate when a frequency, memory channel, or alarm should be entered.

(23) 1 2 3 4 5
6 7 8 9 0

(MEMORY GROUP/BAND DISPLAY)
Lights up when a programmed memory group or frequency band is being received.

(24) *

(FACTORY-PROGRAMMED MODE INDICATOR)
Lights up in the VFO mode when the frequency being received is in a factory programmed mode instead of a user programmed mode. Refer to the "Factory Programmed Mode" chart

(25) CH

(MEMORY CHANNEL)
Displays the number of the memory channel when in the MEMO (memory) mode.

REAR PANEL

① "ANT.1" CONNECTOR
For an "N" type antenna connector.

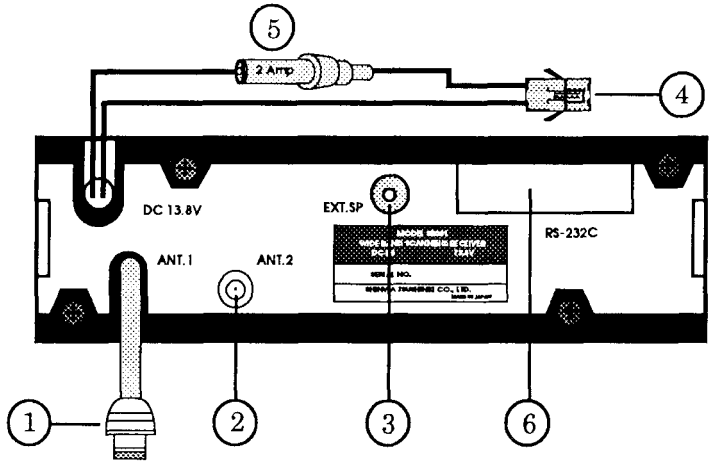
② "ANT.2" CONNECTOR
For a "BNC" type antenna connector.

③ "EXT.SP" CONNECTOR
For connecting an optional external speaker that has a 3.5 mm plug and is rated at 4~8 Ω. When the external speaker is plugged in, the internal speaker is muted (turned off).

④ DC VOLTAGE POWER CONNECTOR
For connecting 13.5 VDC ± 10% to power the receiver.

⑤ FUSEHOLDER (2A FUSE)
For a 2 amp fuse to protect the receiver circuitry.

⑥ RS-232C OPTIONAL CONNECTION
Location of optional RS-232C jack for computer control of receiver.

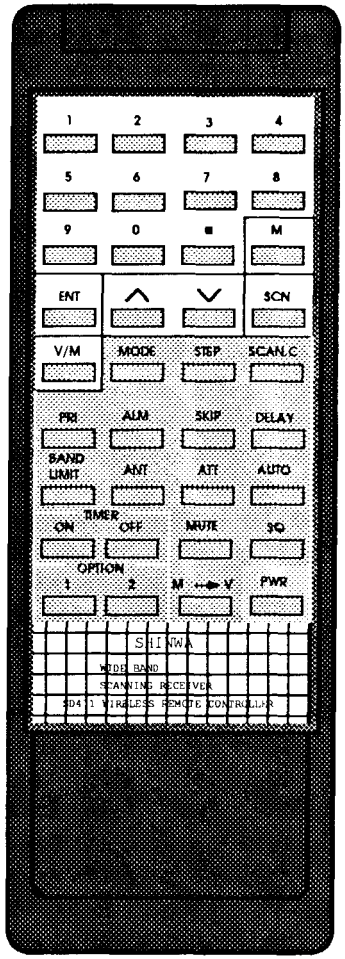


REMOTE CONTROL

BATTERIES

Before operating the Wireless Remote Controller, install two (2) AAA batteries.

Installing Batteries: Remove the battery cover on the back of the remote control by pressing down gently on the arrow and sliding off the battery cover. Note that the battery type and direction of each battery is marked inside the battery compartment. Install the two batteries with their positive (+) and minus (-) polarity as indicated. The polarity of the two batteries should be in opposite directions. Replace the battery cover.



Battery Life: The batteries will last approximately six (6) months depending upon the usage of the remote controller. When the remote controller will not operate the receiver, the batteries should be replaced. Always replace both batteries with new ones at the same time. If the remote controller will not be used for a long period of time, remove the batteries.

Care: If the remote controller becomes dirty, wipe it with a clean dry cloth. Do not use any chemicals for cleaning, or allow any water to come in contact with the remote controller as the buttons may stop functioning. Also, do not leave the remote controller in direct sunlight for extended periods or in temperatures over 120°F (49°C). The excessive heat may cause the remote controller to malfunction.

FUNCTIONS

1. NUMERIC BUTTONS
   For programming frequency, timer on-off, and setting memory groups.

2 "M" MEMORY BUTTON
   For setting the memory frequencies, memory number, and memory skip.

3. "ENT" ENTER BUTTON
   For setting VFO frequency, memory channel number, skip memory channel, and alarm channel.

4. "∧" AND "∨" UP AND DOWN BUTTONS
   For stepping up or down through the displayed frequency or the memory channels; or to start scanning by pressing either button for more than one (1) second.

5. "SCN" BUTTON
   For starting the scan function.

6. "V/M" VFO/MEMORY BUTTON
   For switching between the VFO mode (manually entered frequency) and the MEMO mode (memory channel).

7. "MODE" BUTTON
   For selecting the mode (AM, FMN, OR FMW) that you wish the receiver to operate on or be programmed for.

8. "STEP" BUTTON
   To change the frequency steps (5.0, 10.0, 12.5, 20.0, 25.0, 50.0, or 100k) that the receiver is currently programmed for.

9. "SCAN.C" BUTTON
   For selecting one of three different resume scan modes; CAR (carrrier), AUD (audio), or TIM (timer).

10. "PRI" BUTTON
For setting or cancelling the priority function.

11. "ALM" BUTTON
For setting or cancelling the alarm function.

12. "SKIP" BUTTON
For selecting a memory channel(s) that you want to be skipped while scanning, or cancelling the skip function.

13. "DELAY" BUTTON
For setting the amount delay time that a channel is monitored before the resume scan function starts scanning channels again.

14. "BAND LIMIT" BUTTON
For setting the lower band limit and the upper band limit for the band scanning function.

15. "ANT" BUTTON
For selection either "ANT 1" or "ANT 2" to receive on.

16. "ATT" BUTTON
For turning on or off the receiver attenuator (-10db) circuit.

17. "AUTO" BUTTON
For recalling the factory programmed mode that has the frequency range, mode (AM, FMN, or FMW), and channel step already programmed into memory. Refer to the "AUTO PROGRAMMED" list in this manual.

18. "TIMER ON / OFF" BUTTONS
The ON lights up when you press the "ON" timer button on the remote control, and the "ON" goes out when you press the "ON" button again. The OFF lights up when you press the "OFF" timer button on the remote control, and the "OFF" goes out when you press the "OFF" button again.

19. "MUTE" BUTTON
For muting the audio (greatly reduces the audio level until the mute button pressed again.

20. "SQ" BUTTON
For opening the receiver squelch setting that is set by the the front panel "SQ" (squelch) control. Used primarily for receiving very weak signals that do not completly break (open) squelch.

21. "OPTION 1 & 2" BUTTONS
For selecting "OPTION 1" or "OPTION 2" if these options are installed in the receiver.

22. "M → V" BUTTON
For switching between the MEMO mode (memory channel) and the VFO mode (manually entered frequency).

23. "PWR" BUTTON
For turning the receiver power On and Off. Note: The front panel "PWR / VOL" control must be turned On and power supply voltage must be applied before the remote "PWR" button will function.

FACTORY PROGRAMMED MODE

The Factory Programmed Mode Chart lists the entire frequency range of the receiver in segments. Each frequency segment is listed with the mode and frequency step that the segment has been programmed to operate on. This factory programming has been established for those modes and frequency combinations which are most common on a world-wide basis. You will find that you will wish to change some of the modes and frequency steps for certain frequencies in your area. Refer to the Factory Programmed Mode Chart in the Specification.

POWER ON, VOLUME CONTROL, AND SQUELCH CONTROL

There are two different ways of turning the SR001 ON and OFF. Be sure that the receiver is connected to a DC power source that is On. The receiver can then be turned On by either the PWR/VOL control located on the front panel, or by pressing the PWR button on the remote control.

1. Rotate the PWR/VOL control clockwise from the click position and adjust the volume for a comfortable listening level. Rotating the control counter-clockwise to the click position will turn Off the receiver.

2. The remote control can also be used to turn the receiver On and Off. However, the front panel PWR/VOL control must be turned On for the remote control to operate. First turn On the receiver with the front panel PWR/VOL control and adjust the volume for a comfortable listening level. The receiver can then be turned Off or On by pressing the PWR button on the remote control.

3. The SQ (squelch) control quiets (no audio noise can be heard) the receiver when the receiver is turned On, but no signal is being received. The proper way to set the squelch to its proper threshold level is to rotate the front panel (SQ) squelch control clockwise until audible noise disappears and the green BUSY light on the front panel goes out. There is also a SQ button on the remote control. Pressing this button will open (noise will be heard) the squelch or close (no noise will be heard) the squelch back to its preset level that was set by the front panel SQ (squelch) control.

VFO/MEMO MODE

Each frequency that you wish to listen to must be programmed into the VFO before that frequency can be stored in one of the 200 available memories (MEMO mode). For an example, the National Weather Service frequency of 162.550 MHz will first be programmed into the VFO, and then stored into memory (MEMO) channel 185. The receiver will then be switched from the VFO mode to the MEMO mode so the memory channel can be recalled.

NOTE: The National Weather Service frequency may be different in your area.

1. Set the receiver to the "VFO" mode if it is not already in that mode. The front panel should display either "VFO" or "MEMO". If it is in the "MEMO" mode, press the "V/M" button on the front panel and the function should change to "VFO". If the function still does not change, the receiver may be in the scan mode which is indicated by either an "▲" or "▼" on the front panel. Press the "SCN" button on the remote control, and the arrow should disappear. Then press the "V/M" button and the receiver should switch to the "VFO" mode.

2. Repeatedly pressing the "MODE" button will step through modes FmW, Am, and FmN, so you can select the mode you desire for the frequency you have programmed. Now select "FmN" which is the correct mode for the national weather frequency.

3. Repeatedly pressing the "STEP" button will step through frequency steps 5.0, 10.0, 12.5, 20.0, 25.0, 50.0, or 100 kHz, so you can select the correct frequency step for the frequency you have programmed. Now select "10.0 kHz" which is the correct frequency step for the national weather frequency.

4. Repeatedly press the "AUTO" button and note that the " ✻ " indicator will light and then goes out. When the " ✻ " indicator is on, the receiver is in the Factory Programmed Mode which is shown in the chart in the Specifications section. Now press the "AUTO" button and turn off the " ✻ " indicator.

5. Repeatedly press the "ANT" button which will alternately switch between "ANT.1" and "ANT.2". Now select the antenna that you will use for this frequency.

6. Press the "ENT" button which will cause the numeric frequency display to go blank and the "♦" indicator to light.

7. Enter the frequency **"162.55"** by pressing the numbered buttons (on the front panel or the remote control) exactly in order including the decimal point. Then press the "ENT" button. This will enter the frequency in the "VFO" and the "♦" will go out.

8. Now store the frequency into MEMO channel **"185"** by first pressing the "M" button. The frequency display may suddenly change and display a different frequency (the last frequency that was displayed) than the frequency you are storing in memory.

9. Select MEMO channel **"185"** by one of two ways. First, by pressing the numbered buttons and then "ENT". Second, by pressing either the "∧" or "∨" button to start scanning toward the MEMO channel number that you want to store the frequency in, and then the "SCN" button on the remote control to stop scanning. If you pass the MEMO channel you wish, momentarily press the "∧" or "∨" button to step to the actual channel you wish. Then press the "ENT" button.

VFO MODE

REPEATEDLY PRESSING THE "V/M" BUTTON SWITCHES BETWEEN THE VFO MODE AND THE MEMO MODE

MEMO MODE

SCAN MODE

NOTE: The receiver has 200 MEMO channels available which are grouped into ten (10) groups of twenty (20) channels each. A frequency can be stored into any one of the 200 channels. However, the receiver also has a Group Memory Scan function. It is possible to scan one or more specific groups of twenty (20) MEMO channels without scanning all ten (10) MEMO groups. Therefore, you may wish to assign specific frequencies into particular MEMO groups.

Frequencies can be classified into many different types of transmissions. They include the National Weather Service, commercial FM broadcast stations, government, business, aviation, and amateur radio, among others. Stations such as the National Weather Service and commercial FM stations transmit continuously so there is always a carrier frequency thatwill always stop the scanning function. Other stations only transmit when communications are necessary. Therefore, it may be desirable to program similar types of stations into the same MEMO channel group so you can more easily scan for particular frequencies.

VFO SCANNING

1. Repeat the VFO/MEMO programming steps to program other frequencies of your choice into the VFO, and then store them in MEMO channels that you may designate by MEMO groups.

2. Press the "V/M" button so the receiver is in the VFO mode and note the frequency shown on the display.

3. Press the "SCN" button to start and stop the scanning function. Note that the "▲" or the "▼" will be indicated on the display indicating the scanning direction is either up or down in frequency.

4. The scanning function may also be started by pressing either the "∧" button to scan up in frequency, or the "∨" button to scan down in frequency. Stop the scanning function by pressing "SCN" button.

MEMO SCANNING

1. Press the "V/M" button so the receiver is in the MEMO mode and note the MEMO channel shown on the display.

2. Press one of the buttons ("∧", "∨", or "SCN") to start scanning the memory channels. Note that scanning will always stop on a continuous carrier frequency such as the National Weather Service or a commercial FM broadcast station. The frequency and the MEMO channel of the received frequency will be displayed. The scanning function will continue on past any other frequency (MEMO channel) that is presently not transmitting.

3. Stop the scanning function by pressing "SCN" button.

RESUME SCANNING

The scanning mode can also be programmed for one of three different resume scan functions. Scanning for: "CAR" (carrier) which is to detect the presence of a transmitted carrier on the frequency being received; "AUD" (audio) which is to detect the presence of intermittent audio; and "TIM" (timer) which is the programmed time delay before scanning is resumed after stopping on a frequency. The resume scan mode is selected by repeatedly pressing the "SCAN.C" button on the remote control for "CAR", "AUD", or "TIM".

"CAR" (CARRIER) MODE

The carrier mode allows the receiver to resume scanning when a carrier is no longer present on the frequency you are receiving. In addition; the delay time, before scanning is resumed, is programmable up to a maximum of 19-seconds.

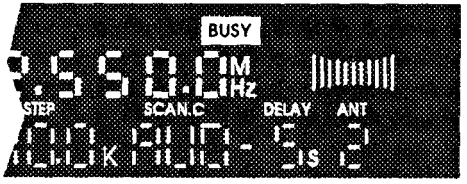
For example, to program a delay time of 2-seconds; press the "DELAY" button, the number "2" button, and then the "ENT" button. Now when the scan function stops on a frequency with a carrier present, the delay digits on the display will count down from "2" to "0", and then scanning will resume even though the carrier is still present.

"AUD" (AUDIO) MODE

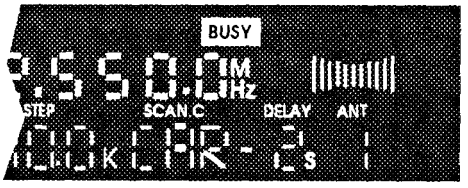
The audio mode allows the receiver to detect the presence of intermittent audio, and then to resume scanning when the audio is no longer present on the frequency you are receiving. In addition; the delay time, before scanning is resumed, is programmable up to a maximum of 19-seconds.

For example, to program a delay time of 5-seconds; press the "DELAY" button, the number "5" button, and then the "ENT" button. Now when the scan function stops on a frequency with audio present, the delay digits on the display will count down from "5" to "0", and then scanning will resume even though the carrier is still present.

AUDIO MODE
5-SEC DELAY



CARRIER MODE
2-SEC DELAY

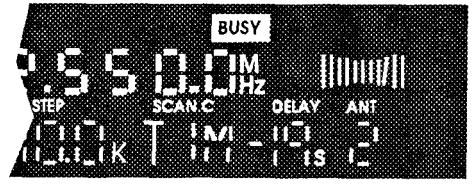


"TIM" (TIMER) MODE

The timer mode allows the receiver to resume scanning after a programmed delay time even though a carrier and audio may be present on the frequency you are receiving. The delay time, before scanning is resumed, is programmable up to a maximum of 19-seconds.

For example, to program a delay time of 19-seconds; press the "DELAY" button, the numeric buttons "1" and "9", and then the "ENT" button. Now when the scan function stops on a frequency with audio present, the delay digits on the display will count down from "19" to "0", and then scanning will resume even though the carrier and audio may still be present.

TIMER MODE
19-SEC DELAY



NOTE: Each frequency that is programmed into a MEMO channel can be programmed for a particular resume scan mode best suited for that particular frequency. After becoming familiar with the characteristics of each scan mode, you may wish to change the mode and delay or frequencies you already have programmed in the MEMO channels.

COPY MEMO CHANNEL

(ONE MEMO CHANNEL TO ANOTHER MEMO CHANNEL)

1. For example, transfer the National Weather Service frequency of 162.55 kHz that is stored in MEMO channel 185 to MEMO channel 100.

2. Press the "V/M" button to go to the MEMO mode.

3. Press the "ENT" button; numeric buttons "1", "8", and "5"; and then the "ENT" button. Note: Do not use the "∧" or "∨" buttons to select the MEMO channel as the MEMO channel will not copy properly.

4. Press the "M" button; numeric buttons "1", "0", "0"; and then the "ENT" button. MEMO channel 185 is now copied to MEMO channel 100, and is still in MEMO channel 185 as well.

5. Now use "∧" or "∨" buttons to select MEMO channels 100 and 185 to verify the 162.550 kHz copied from one MEMO channel to another.

SKIP MEMO CHANNEL

The "SKIP" memo function allows a particular MEMO frequency to be bypassed (SKIP) while scanning. This is important for frequencies such as the National Weather Service which transmits a carrier frequency with audio on a continuous basis. This is the same for commercial FM broadcast stations. You may wish to mark a particular frequency (MEMO channel) with the "SKIP" indicator so that during scan, you can choose to stop on this frequency or "SKIP" it.

> *NOTE: Only frequencies that are programmed into MEMO channels 180 through 199 can be "SKIPPED". Therefore, you may wise to use these memories for frequencies that you may wish to "SKIP" later during scanning.*

The National Weather Service frequency that is now in MEMO channel 100 will be programmed so it will be "SKIPPED" during scanning.

1. Press the "V/M" button to go to the MEMO mode.

2. Press the "ENT" button; numeric buttons "1", "8", and "5"; and then the "ENT" button. Note: Do not use the "∧" or "∨" buttons to select the MEMO channel as the MEMO channel will not "SKIP" properly. You have now recalled MEMO channel 185.

3. Press the "M" button, the "SKIP" button, and then the "ENT" button. The skip mark indicator (curved arrow) will now be indicated above the "CH" MEMO channels.

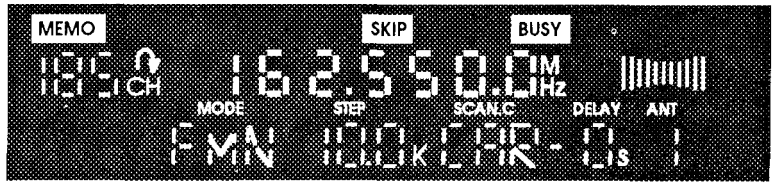
4. Press the "SKIP" button on the remote control and note that "SKIP" (word) lights on the display. When "SKIP" lights, the frequency will be skipped during scan. When "SKIP" is not lighted (curved arrow still showing), the frequency will not be skipped.

5. Press the "∧" or "∨" button and step through all MEMO channels that you have programmed. Note that MEMO channel 185 is skipped and no longer appears.

6. Press the "SKIP" button again and note that "SKIP" is no longer showing on the display.

7. Press the "∧" or "∨" button and step through all MEMO channels that you have programmed. Note that MEMO channel 185 now appears.

SKIP MEMORY CHANNEL



CLEAR (ERASE) MEMO CHANNEL

Now that MEMO channel 185 has been copied to MEMO channel 100, MEMO channel 185 will be cleared.

1. Press the "V/M" button to go to the MEMO mode.

2. Press the "ENT" button; numeric buttons "1", "8", and "5"; and then the "ENT" button. Note: Do not use the "∧" or "∨" buttons to select the MEMO channel as the MEMO channel will not clear properly.

3. Press the "M" button and then the "ENT" button.

4. Now use the "∧" or "∨" buttons to verify that MEMO channel 185 has been cleared and that frequency 162.550 kHz is still in MEMO channel 100.

MEMO GROUP SCAN

The two hundred (200) memories of the receiver are divided in ten (10) groups of twenty (20) MEMO channels each. Any frequency using any mode, frequency stepping, resume scan delay, or antenna selection can be programmed into any one of the MEMO channels. The only consideration are frequencies that you may wish to "SKIP" while scanning as discussed in the SKIP MEMORY CHANNEL section.

> *NOTE: Only frequencies that are programmed into MEMO channels 180 through 199 can be "SKIPPED". Therefore, you may wise to use these memories for frequencies that you may wish to "SKIP" later during scanning.*

The MEMO groups are divided into ten (10) groups as follows:

Group 0	000-019 MEMO Channels	Group 5	100-119 MEMO Channels
Group 1	020-039 MEMO Channels	Group 6	120-139 MEMO Channels
Group 2	040-059 MEMO Channels	Group 7	140-159 MEMO Channels
Group 3	060-079 MEMO Channels	Group 8	160-179 MEMO Channels
Group 4	080-099 MEMO Channels	Group 9	180-199 MEMO Channels

A MEMO group only has to have one frequency programmed into one of its twenty (20) MEMO channels to qualify as a MEMO group. Each MEMO group of ten (10) channels can be scanned as a separate group, all MEMO groups can be scanned, or a combination of some groups can be scanned while other groups are not scanned. Your choice of which MEMO groups will be scanned together, and which groups will not be scanned, can be changed at any time.

To realize the full capabilities of the MEMO group scan function, it will be necessary to program at least one frequency each into at least three different MEMO groups of your choice.

1. Press the "V/M" button to go to the MEMO mode.

2. Press the numeric button for each MEMO group that you have a frequency programmed into. Example: Press the "5" button because we previously copied the National Weather Service frequency of 162.550 kHz into MEMO channel 100. Note that a small number "5" lights up on the display under the MEMO channel numbers.

3. Press the numeric buttons for any MEMO groups that you have programmed frequencies into.

4. Press the "∧" or "∨" button and step through all MEMO channels that you have programmed. Note that every MEMO channel you have programmed should appear unless you again press "SKIP". Then the skipped MEMO channel will not appear.

5. Press the "SCN" button and note that scanning immediately starts in either an up or down direction. Press the "SCN" button again to continue the scanning.

   Note: You may have programmed particular resume scan modes on some frequencies that you have programmed into MEMO channels. Some of these modes are "AUD" or "TIM" delays, etc. When scanning stops on a MEMO channel where a resume scan mode has been programmed, that mode (example: 12-second "TIM" delay before resume scan) will take priority before scanning will continue to the next MEMO channel.

6. Note the MEMO channel and frequency that scanning has stopped on.

7. Note what MEMO group that MEMO channel is in.

8. Press one of the numeric buttons for a MEMO group other than the MEMO group that scanning has stopped on. (Example: If scanning has stopped on MEMO channel 100, that is MEMO group "5". Press the numeric "5" button and note that the MEMO group number "5" will not go out because scanning stopped in that MEMO group.)

9. Press a MEMO group number other than the MEMO group you are presently in. Note that the MEMO group number you pressed go out on the display indicating that you can no longer scan that MEMO group.

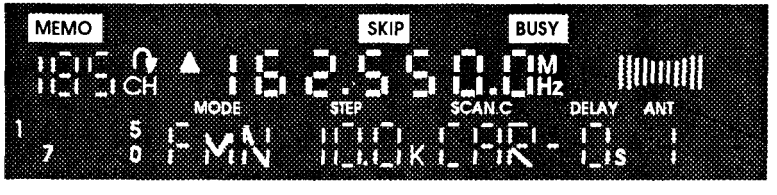
10. Press the "∧" or "∨" button and continue scanning through all MEMO channels that you have programmed.

11. Press the "SCN" button again to stop scanning.

12. Repeatedly press the "V/M" button to go to either the VFO or MEMO modes.

Following this procedure, you can add or delete what frequencies you wish programmed into MEMO channels, what particular resume scan modes (if any) you wish programmed for that frequency, what MEMO group you wish that frequency programmed into, and what MEMO groups you want included in your MEMO channel scanning.

MEMO GROUP SCAN



BAND SCAN

The Band Scan mode provides ten (10) MEMO bands that can be programmed for scanning with your specific band limits. You can program each MEMO band independently with your specific frequency ranges and modes. These MEMO bands are in addition to the 200 MEMO channels and 10 MEMO groups.

The front panel of the receiver already has buttons "1", "2", and "3" marked with "FM", "TV", and "PRSNL". The programming example that follows will program button "1" (front panel or remote control) for the commercial FM broadcast band in the United States. You may with to program the other MEMO bands with frequency ranges and modes that particularly interest you. Frequency band suggestions are aviation, amateur radio, public safety, TV, and commercial business radio.

> *Note: Before programming a particular MEMO band, you must determine the specific modes that will be used for all frequencies you will receive in that band. Modes include: AM, FmW, and FmN; frequency stepping; resume scan; and antenna selection.*

The commercial FM broadcast band, which is 88.1~107.9 MHz, will be programmed into MEMO band "1" as follows:

1. Press the "V/M" button to go to the VFO mode.

2. Press the "MODE" button and select "FmW".

3. Press the "STEP" button and select "100.0 kHz".

4. Press the "SCAN.C" button and select "TIM". Then press the "DELAY" button, the "3" button, and the "ENT" button. *Note: A resume scan delay time of three (3) seconds has been programmed. The "SCAN.C" modes of "CAR" and "AUD" cannot be used for the commercial FM broadcast band. These stations transmit both a carrier frequency and audio 100% of the time. Therefore, only the "TIM" mode will allow resume scan after a programmed time delay.*

5. Press the "ANT" button and select the antenna of your choice.

6. Press the "AUTO" button and be sure that the "✱" is off.

7. Press the "BAND LIMIT" button on the remote control. Note that the "▼" lights up to indicate the lower frequency limit will not be programmed.

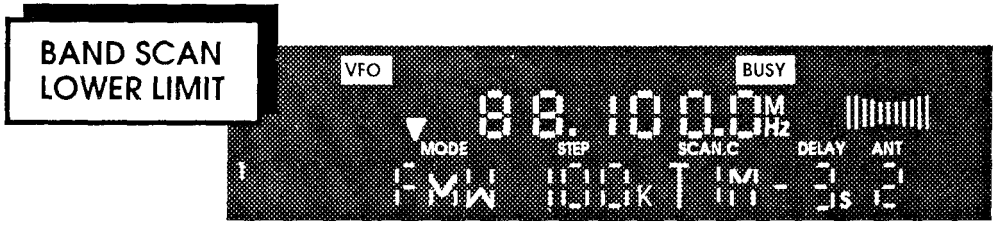
8. Press the "1" button. This is the number of the MEMO band that is being programmed.

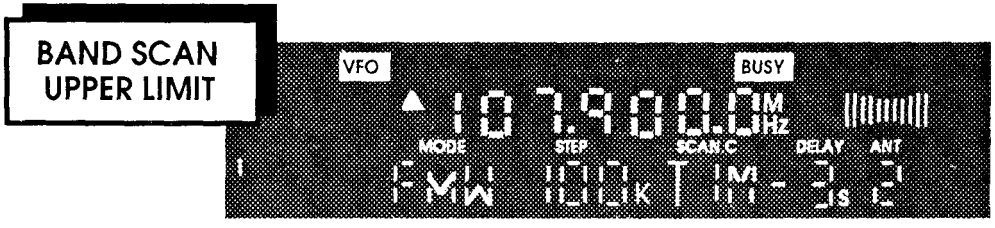
9. Press numeric buttons "8", "8", "." (decimal), and "1". This programs the lower limit frequency of 88.1 MHz.

10. Press the "ENT" button. Note that the "▼" goes out, and the "▲" lights up to indicate the upper frequency limit will now be programmed.

11. Press numeric buttons "1", "0", "7" "." (decimal), and "9". This programs the lower limit frequency of 107.9 MHz.

12. Press the "ENT" button. Note that the "▲" goes out, but the "1" stays light to indicate that you have programmed MEMO band "1".





Note: The programming for the commercial FM broadcast band is now complete when MEMO band "1" is recalled. Proceed with the following steps to recall this MEMO band and scan the frequencies.

13. Press the "1" button. Scanning may start as soon as you press the "1". If scanning does not start, press the "SCN" button.

14. Note that when the scanning stops and a frequency is displayed, the "TIM" "DELAY" digits count down from "3" to "1", and then the receiver scans until stopping on the next frequency.

15. Stop the scanning by pressing the "SCN" button. The receiver then returns to the "VFO" mode.

This same programming procedure can be followed to program the other MEMO bands with frequency ranges and modes that particularly interest you.

For quick reference, you may wish to install labels (supplied with the receiver) above the buttons on the front panel to personalize the MEMO bands or groups.

TIMER MODE

The "TIMER" mode has both a programmable "ON" timer and a programmable "OFF" timer. Each timer can be programmed independently of the other for a maximum time of 99-hours and 59-minutes. The timers also function independent of any mode that may be programmed in the receiver.

> *Note: The timers operate by elapsed time rather than time-of-day. Example: If the time is 8:00 P.M., and you wish the timer to turn "ON" the receiver at 6:30 A.M., you will program the timer for "10:30" hours and minutes of elapsed time rather than the actual time of 6:30 A.M.*

The "ON" timer will be programmed to turn "ON" the receiver two (2) minutes after you press the "ENT" button. Then the "OFF" timer will be programmed to turn "OFF" the receiver two minutes after you press the "ENT" button.

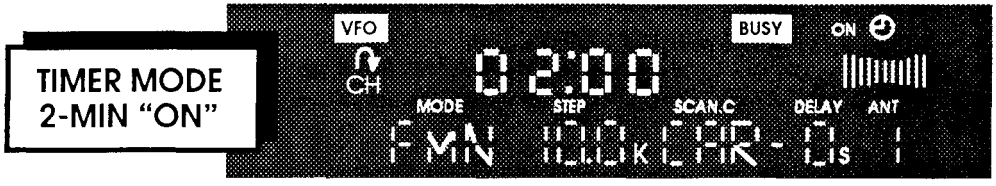
1. Select any "VFO" or "MEMO" frequency.

2. Press the "TIMER ON" button on the remote control. Note that the clock symbol and "ON" lights, and the display changes to a clock format with hours, minutes, and a colon displayed. All zeros are also displayed.

3. Press numeric button "2" This programs an "ON" time of 2 minutes from the time you press the "ENT" button.

4. Press the "ENT" button. Note that the receiver turns "OFF", but the clock symbol and the word "ON" stays light.

   Note: The timer is now counting the elapsed time from 2-minutes to zero. The receiver will then turn-on at the end of the 2-minutes.



Now that the receiver has turned-on, an "OFF" time will be similarly programmed.

5. Press the "TIMER OFF" button on the remote control. Note that the clock symbol and "OFF" lights; and the display changes to a clock format with hours, minutes, and a colon displayed. All zeros should be displayed.

6. Press numeric button "2" This programs an "OFF" time of 2 minutes from the time you press the "ENT" button.

4. Press the "ENT" button. Note that the clock symbol and the word "OFF" are still displayed, but the display changes back to the programmed frequency.

   Note: The clock is now counting down from 2-minutes to 0-minutes. The receiver will then turn-on at the end of the 2-minutes.

PRIORITY MODE

The pricrity feature provides for periodic checking of carrier and audio activity on one frequency while listening to another frequency. The priority channel is MEMO channel "000"; while the other frequency can be in the VFO mode, the MEMO mode, or frequencies being scanned. When a signal appears on the priority channel, the receiver automatically switches to the priority channel.

When the receiver checks the priority channel (approximately 5-second intervals) for activity, it is actually checking for the presence of a transmitted carrier with audio. If the carrier and audio is present, the priority channel is monitored until the instant the audio disappears. The receiver then continues monitoring whatever other frequency or mode you programmed.

During a normal radio conversation, the audio will disappear momentarily when a person stops talking. This will cause the receiver to instantly switch frequencies even if you wish to continue monitoring the priority channel. Therefore, it is suggested that you program a resume scan delay of 5-seconds using the "CAR" mode. This typically allows sufficient time for normal breaks in conversation.

1. Press the "V/M" button to go to the VFO mode.

2. Program a "CAR" scan resume delay time of 5-seconds.

2. Program the other modes for the priority frequency you will enter.

3. Press the "ENT" button, and program a priority frequency of your choice. Then press the "ENT" button again. *Note: Do not use the "∧" or "∨" buttons to select a VFO frequency as the priority mode will not function properly.*

4. Press "M", priority MEMO channel "000", and "ENT". This programs your frequency and modes into the priority MEMO channel.

5. Now select any other frequency in the VFO mode, MEMO mode, or scan mode that you wish to monitor.

6. Press the "PRI" button. Note that the display flashes momentarily about every 5-seconds as the receiver checks the priority channel.

7. To cancel the priority function, press the "PRI" button.

ALARM MODE

The alarm mode operates similarly to the priority mode, except that when activity is detected on the alarm channel, a LOUD audio beeping and FLASHING display occurs for 5-seconds. This is to alert you that a transmitted carrier with audio was detected. During the beeping, you will not be able to hear the received audio unless you press any button on the remote control to cancel the beeping.

1. Press the "V/M" button to go to the MEMO mode.

2. Press the "ENT" button.

3. Press the "ALARM" button.

4. Select the MEMO channel that you wish to designate the "ALARM" channel. You must the "∧" or "∨" to select the MEMO channel.

5. Press the "ENT" button.

6. Press the "ALARM" button to activate the alarm mode. Note that the display flashes momentarily about every 5-seconds as the receiver checks the alarm channel.

7. Now you can select any other MEMO channel, VFO channel, or scan other frequencies. When the alarm channel detects a carrier with audio, the alarm is activated.

8. Cancel the alarm mode by again pressing the "ALARM" button.

RESET MICROPROCESSOR

Resetting the microprocessor completely resets all frequencies, modes, and functions to original factory programming faults. This should only be necessary in case of a severe operational problem that may be caused by the microprocessor. Normally, only an unusual spark of static electricity or actual failure of the microprocessor would require the microprocessor to be reset.

If necessary, reset the microprocessor as follows:

1. Turn off the receiver.

2. Simultaneously press the "^" and "SCN" buttons and turn on the receiver.

The receiver is now reset and ready for your programming.

OPTIONAL RS-232C INTERFACE

The receiver has been designed for an optional RS-232C interface. The microprocessor based design of the receiver provides the capability to be programmed and/or operated by personal computer using an interface. At the present time, the interface and its interface parameters are not available. You may wish to contact Shinwa and express your interest and requirements for the interface.

FACTORY PROGRAMMED MODE

The Factory Programmed Mode Chart lists the entire frequency range of the receiver in segments. Each frequency segment is listed with the mode and frequency step that the segment has been programmed to operate on. This factory programming has been established for those modes and frequency combinations which are most common on a world-wide basis. You will find that you will wish to change some of the modes and frequency steps for certain frequencies in your area. Refer to the Factory Programmed Chart on the next page.

FACTORY PROGRAMMED CHART

FREQUENCY (MHz)	MODE	FREQ. STEP (kHz)
25.000.0 ~ 27.995.0	AM	5.0
28.000.0 ~ 39.000.0	FM-N	10.0
39.010.0 ~ 39.990.0	AM	10.0
40.000.0 ~ 49.990.0	FM-N	10.0
50.000.0 ~ 54.000.0	FM-N	20.0
54.020.0 ~ 75.995.0	FM-N	5.0
76.000.0 ~ 89.900.0	FM-W	100.0
90.000.0 ~ 95.700.0	FM-N	50.0
95.750.0 ~ 107.750.0	FM-N	100.0
108.000.0 ~ 117.900.0	AM	100.0
118.000.0 ~ 141.950.0	AM	50.0
141.960.0 ~ 154.690.0	FM-N	20.0
154.700.0 ~ 162.025.0	FM-N	25.0
162.030.0 ~ 175.740.0	FM-N	10.0
175.750.0 ~ 221.950.0	FM-W	100.0
222.000.0 ~ 253.850.0	AM	100.0
253.862.5 ~ 254.987.5	FM-N	12.5
255.200.0 ~ 262.100.0	AM	100.0
262.125.0 ~ 274.975.0	FM-N	25.0
275.800.0 ~ 335.000.0	AM	100.0
335.012.5 ~ 429.987.5	FM-N	12.5
430.000.0 ~ 439.990.0	FM-N	10.0
440.000.0 ~ 475.737.5	FM-N	12.5
475.750.0 ~ 769.750.0	FM-W	100.0
769.762.5 ~ 939.987.5	FM-N	12.5
940.500.0 ~ 967.000.0	FM-W	100.0
967.100.0 ~ 999.950.0	FM-N	100.0

SPECIFICATIONS

GENERAL

Frequency Ranges:	25.0 ~ 999.95 MHz (minimum 5 kHz steps)
Modulation Type:	A3 (AM) / F3 (FM) wide or narrow
Programmable Freq. Steps:	5.0, 10.0, 12.5, 20.0, 25.0, 50.0, or 100 kHz
Scanning Speed:	35-Ch / Sec in VFO mode 25-Ch / Sec in MEMO mode
Memory Channels:	200 Channels (10 groups of 20-Ch ea)
Antenna Impedance:	50 Ω (BNC and "N" antenna connectors)
Frequency Stability:	± 3 ppm (parts per million)
Temperature Range:	32 to 122 °F (0 to +50 °C)
Power Source:	13.5 VDC ±10%, negative ground
Power Consumption:	1.5 Amps (maximum)
Lithium Battery:	Type CR2032/1 (3V) memory back-up See your Authorized Shinwa Dealer for replacement.
Size:	7.0 (W) x 1.97 (H) x 5.9 (D) in 178 (W) x 50 (H) x 150 (D) mm DIN standard for vehicle applications
Weight:	3.09 lbs (1.4 Kg)

RECEIVER

Receiving Circuitry:	Triple-Conversion Super Heterodyne
Intermediate Frequencies:	1st. IF 999.5 MHz ±0.5 MHz 2nd IF 45 MHz 3rd IF 10.7 MHz (FM-W) 455 kHz (FM-N, AM)
Receiving Sensitivity:	FM-N below -4 dbμ (12db SINAD @ 150.1 MHz) FM-W below 12dbμ (12db SINAD @ 80.1 MHz) AM below 4 dbμ (12db S/N @ 120.5 MHz)
Squelch Sensitivity:	FM-N below -5 dbμ (150 MHz Band) AM below -5 dbμ (150 MHz Band)
External Speaker Jack:	Over 1 Watt to a speaker jack (3.5 mm) for the optional ZP121 external 8Ω speaker
Earphone Jack:	Optional ZP70D earphone (30 ~600Ω)

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION.

TROUBLESHOOTING

Symptom: Won't Scan When set up.

Remedy : Check Squelch on Remote

CUT ALONG DOTTED LINE

SR001 QUICK REFERENCE CHART

FUNCTION	OPERATION	MODE	REMARKS
ENTER A FREQ. INTO THE VFO	PRESS "ENT" ENTER THE FREQ. PRESS "ENT"	"VFO"	SCANNING NOT AVAILABLE WHEN ENTERING A FREQ.
CHANGE THE FUNCTION OF A PREVIOUSLY ENTERED FREQ.	PRESS "MODE", "STEP", OR "ANT" THEN CHANGE FUNCTION	"MODE", "STEP", OR "ANT"	NOT POSSIBLE WHEN THE "♦" IS DISPLAYED
ENTER A FREQ INTO A MEMORY "MEMO" CHANNEL	SELECT THE FREQ., PRESS "M", ENTER MEM CH #, PRESS "ENT"	"MEMO" OR "♦"	FUNCTION IS POSSIBLE WHEN THE "♦" IS FLASHING
RECALLING A MEMORY CHANNEL WHEN IN "VFO" MODE	PRESS "V/M", "ENT", ENTER MEM CH #, & PRESS "ENT"; OR "ENT" & "∧" OR "∨"	"VFO"	POSSIBLE IF THE "♦" IS NOT DISPLAYED
RECALLING A MEMORY CHANNEL WHEN IN "MEMO" MODE	PRESS "ENT" ENTER MEM CH #, & PRESS "ENT"; OR "ENT" & "∧" OR "∨"	"MEMO"	POSSIBLE IF THE "♦" IS NOT DISPLAYED
TO SCAN	PRESS "SCAN", PRESS "∧" OR PRESS "∨"	"▲" OR "▼"	PRESS "SCAN" AGAIN TO STOP THIS MODE
CHANGE THE SCAN FUNCTION OF THE RESUME SCAN MODE	PRESS "SCAN.C" TO SELECT "CAR", "AUD", OR "TIM" AS A SCAN MODE	"CAR", "AUD", OR "TIM"	THIS FUNCTION CAN BE CHANGED WHILE IN ANY MODE
SETTING THE "ON" OR "OFF" TIMER FUNCTION	PRESS TIMER "ON" OR "OFF" ENTER TIME, PRESS "ENT"	"◷"	MAXIMUM TIME IS 99 HRS & 59 MIN FROM THE PRESENT TIME

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