

TSC-100RA



MULTIBAND SCANNING RECEIVER INSTRUCTION MANUAL

Manufactured by **tti**
www.ttikorea.co.kr

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CAUTIONS

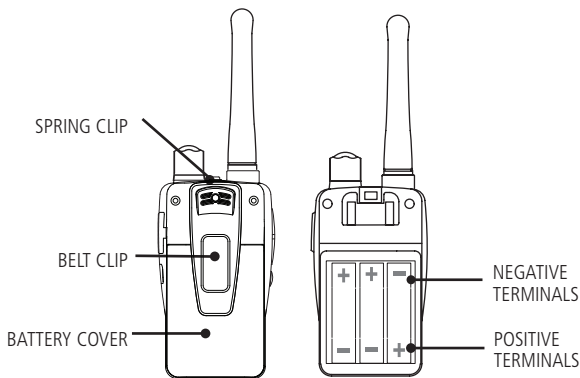
- Please read these instructions carefully before operating your receiver. Your scanner is a complex and powerful unit with many functions. Please retain this manual for future reference. Any illegal use offending the national law is not allowed.
- Never connect the receiver to the power source other than the specified battery. Otherwise the damage to your receiver may occur.
- Never use the receiver in or near the mining area, near explosives or where signs indicate 'Blasting Area'. Never use or charge the receiver in a potentially explosive atmosphere.
- Do Not place the receiver in front of the vehicle air bag.
- Do Not operate the receiver on board the aircraft.
- Always charge the receiver at normal room temperature.
- Always replace the accessory jack cover when the jack is not in use.
- Do Not expose the receiver to water. It is not waterproof.
- Avoid storing or charging the receiver in direct sunlight.
- Avoid storing the receiver in temperatures below -10°C to +60°C
- Never try to charge Alkaline batteries or any dry cells.

SUPPLIED EQUIPMENT

- Scanner Receiver
- Antenna
- Belt Clip
- Antenna Adaptor(SMA to BNC)

INSTALLING THE BATTERIES

Battery installation is made more convenient when the belt clip is removed. To do this, release the spring clip securing the belt clip to radio and slide the belt clip downward and away from the radio body. Next, press down with the thumb at the arrow, slide the battery cover down and lift off the battery cover. Insert four **AA** batteries (alternate positive ends (+) toward the bottom of the transceiver (starting right to left).



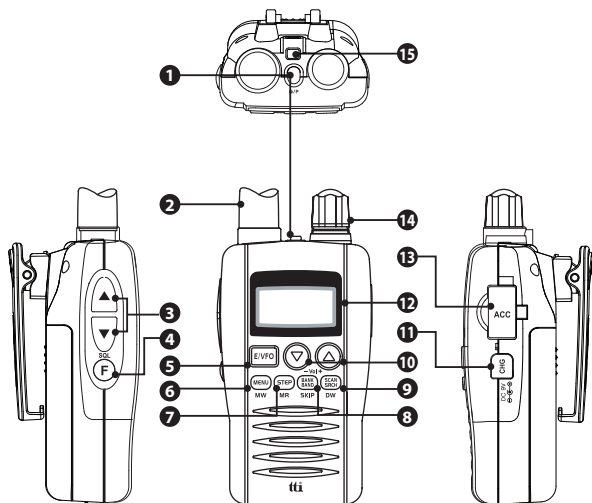
1. Using thumb, press down on battery cover at arrow and slide cover down to open.
2. Slide the cover down and then lift cover at bottom to open. Remove cover.
3. Insert four **AA** batteries (positive(+)) end toward the bottom beginning at right side and alternating positive terminals as shown).

NOTE:

Alkaline batteries (recommended) will give you approximately 7 hours constant receive.

If rechargeable batteries are used these will give you up to 3 hours use, so spare sets of recharged batteries should be available.

CONTROLS



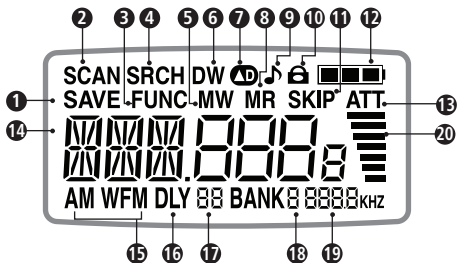
- | | |
|----------------------------|-------------------------|
| 1 Power On/Off Lock Button | 9 Scan / Search&DW Keys |
| 2 Antenna | 10 Up / Down Keys |
| 3 Squelch Up/Down Keys | 11 Charger Jack |
| 4 Function Key | 12 LCD Display |
| 5 Enter/VFO Keys | 13 Accessory Jack |
| 6 Menu/MW Keys | 14 Control Knob |
| 7 Step/MR Keys | 15 Lanyard Slot |
| 8 Bank/Band&Skip Keys | |

- 1 Power On/Off Lock Button**
Turns the receiver on and off. Also locks the keypad.
- 2 Antenna**
Provides reception of signals.
- 3 Squelch Up/Down Keys**
Opens and closes the squelch.
- 4 Function Key**
Enables extended keypad control functions.
- 5 Enter/VFO Keys**
Confirms selections and selects the VFO mode.
- 6 Menu/MW Key**
Provides access to setup menus and also access to write memories.
- 7 Step/MR Key**
Provides access to setup frequency steps and also access to read memories.
- 8 Bank/Band&Skip Key**
Used to change Memory Banks or Frequency Bands, and also Used to skip channels or frequencies.
- 9 Scan/Search&DW Key**
Used to activate or deactivate the Scan function in memory read mode or the Search function in VFO mode. Also used to activate or deactivate Dual Watch function.
- 10 Up/Down Keys**
Adjust the Volume and selects Menu items and frequency steps.
- 11 Charger Jack**
Provides Charging connection. (Optional accessories are required.)
- 12 LCD Display**
Shows frequencies and selected functions.
- 13 Accessory Jack**
Provides earphone connection.
- 14 Control Knob**
Selects frequencies and channels and selects values from menus.
- 15 Lanyard Slot**
Allows connection of the Lanyard to protect the receiver from being accidentally dropped.(Optional accessory required.)

EXTENDED KEYPAD CONTROLS

KEY	FUNCTION	DESCRIPTION
F + MENU MW	Manual Write	Allows storage of frequencies into the Memory storage area.
F + STEP MR	Memory Read	Allows reading of the frequencies in the stored memories.
F + BANK BAND SKIP	Skip	Used to Skip channels when Scanning or Skip frequencies when Searching.
F + SCAN SRCH DW	Dual Watch	Activates or Deactivates the Dual Watch function.

LCD DISPLAY



- | | | |
|-----------------------|---------------------------------|-----------------------------|
| 1 Power Save | 8 Memory Read | 15 AM/FM WFM Mode |
| 2 Scan | 9 Key Tone | 16 Scan Delay Timer |
| 3 Function | 10 Keypad Lock | 17 Channel Indicator |
| 4 Search | 11 Skip | 18 Bank Number |
| 5 Memory Write | 12 Battery Balance Level | 19 Frequency Step |
| 6 Dual Watch | 13 Attenuator | 20 Signal Meter |
| 7 Delta | 14 Frequency Display | |

Turning the unit On or Off

Press and hold the RED Button on the top of the unit to turn the unit ON.

Press and hold the RED Button again to turn the unit OFF.

Key Lock

Briefly press the RED Button on the top of the unit to turn the Key Lock ON.

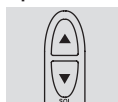
Briefly press the RED Button again to turn the Key Lock OFF again.

Volume

Press the ▲ key to increase the volume.

Press the ▼ key to decrease the volume.

The volume level will be displayed from 00 to 32.

Squelch

Press the ▲ key on the side of the radio to increase the Squelch setting and the ▼ key on to decrease the Squelch setting. The Squelch level will be displayed from 00 to 09. 00 is open status and 09 is near the closed squelch. At maximum Squelch setting, 'AT' is selected which represents an automatic (preset) level setting.

Func Key

The **Function** key provides access to secondary (extended) keypad-functions associated with the front panel keys. The secondary function labels are printed below respective keys.

Menu Key

The **Menu** key provides access to the radio settings.

E/VFO Key[Enter/VFO]

Press the **E/VFO** key to select the VFO mode or confirm any selections.

Note: The receiver always selects the VFO mode each time it is turned on.

Control Knob

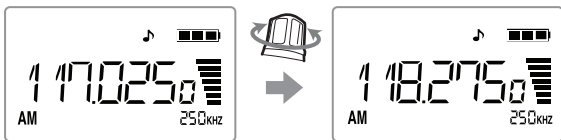


The **Control** knob is used to change the current display option. In VFO mode, rotate the **Control** knob to change the displayed frequency at the selected frequency steps. Rotate clockwise to increase the frequency and counter clockwise to decrease the frequency. In Menu mode, rotate the **Control** knob to change the selected setting. In Channel memory mode, rotate the **Control** knob to step up or down through the memories.

SELECTING FREQUENCIES

The receiver always selects the VFO mode when it is turned on. You can select frequencies using the Control Knob.

Rotate the Control knob to step up or down in frequency from the starting point. The frequency will change in the selected frequency step.



- To change frequency in 1 MHz step, press the **Func** key, then use the Control knob to change the frequency. **FUNC** is displayed while the Function mode is activate).



Note : Then **Func** mode clears a few seconds after the last key press or control knob change.

■ Mode (AM,FM,WFM) Selection

By default, the receiver automatically selects the modulation Mode used for each band (see the Frequency Band chart for the default modes for each band). It is not permitted to manually change the mode.

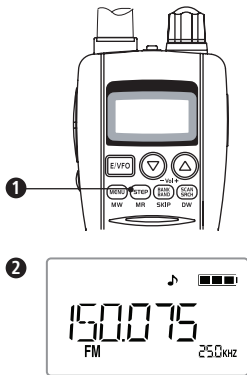
■ Frequency Step Selection

By default, the receiver automatically selects the frequency Steps most commonly used for each band (see the Frequency Band chart for the default Steps for each band).

To select a different step :

- 1) In VFO mode press STEP.
- 2) The following frequency steps are available for your selection.

5 kHz
6.25 kHz (6.2 displayed)
8.33 kHz (8.3 displayed)
10 kHz
12.5 kHz
15 kHz
20 kHz
25 kHz
30 kHz
50 kHz
100 kHz
500 kHz
Auto



If Auto is selected the receiver will automatically select the appropriate default frequency Step for each band.

Note : 8.33 KHz step is available only with specific band. (108.0083 - 135.99 MHz)

FREQUENCY BANDS

The Scanner supports the following Frequency Bands.

To select a band, repeat momentarily pressing the BANK BAND key until the preferred band is selected.

Frequency Band	Start up Frequency	Default Mode	Default Step
66 MHz to 87.475 MHz	66 MHz	FM	25kHz
87.5 MHz to 108 MHz	87.5 MHz	WFM	100kHz
108.025MHz to 135.975MHz	118 MHz	AM	25kHz
136 MHz to 174.000 MHz	150 MHz	FM	25kHz

FREQUENCY SEARCH

■ Selected Band Search

Use the Search function to locate active frequencies in one or more bands

1) Press the E/VFO key to select VFO Mode.
(Note: the receiver automatically selects the VFO mode when it is turned on).

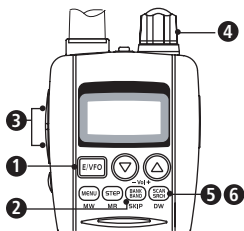
2) Press the BAND key to select the required Band. There are 4 factory preset Bands to choose from (see Frequency Band Table).

3) Set the Squelch level using the Squelch ▲ or ▼ keys so that the noise just disappears.

4) Select a start frequency to Search from.

5) Press the **SCAN SRCH** key briefly. The 'SRCH' icon will be displayed and the receiver will search the selected Band starting from the start frequency. Once the end of the band is reached the Search continues at the beginning of the selected Band.

6) To stop the Search, press the **SCAN SRCH** key again.



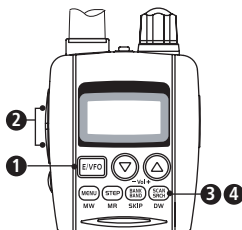
Note:

- 1) During the Search, press the **BANK BAND** key to move to the next Band.
- 2) To change the Search direction rotate the Control knob clockwise or counter clockwise.
- 3) The receiver will stay on an active channel according to the Busy Timer settings in the VFO Menu. If the Busy Timer is set to '5 Seconds', the receiver will continue Searching after 5 seconds even if the channel is still busy. If the Busy Timer is set to 'Busy', the receiver will remain on the busy frequency for as long as it stays busy, then resume searching when the signal disappears.

■ Full Band Search

The Full Search function searches the entire scanner frequency range for signals.

- 1) Press the **E/VFO** key to select VFO Mode.
(Note: the receiver automatically selects the VFO mode when it is turned on).
- 2) Set the Squelch level using the Squelch ▲ or ▼ keys so that the noise just disappears.
- 3) Press and hold the **SCAN SRCH** key for 2 seconds. The 'SRCH' icon will be displayed and the receiver will Search the entire frequency range of the receiver.
- 4) To stop the Search, press the **SCAN SRCH** key again.



Note:

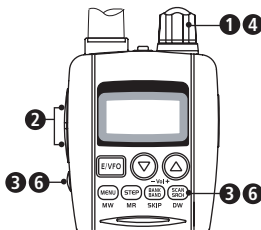
- 1) During the Search, press the **BANK BAND** key to move to the next Band.
- 2) To change the Search direction rotate the Control knob clockwise or counter clockwise.
- 3) The receiver will stay on an active channel according to the Busy Timer settings in the VFO Menu. If the Busy Timer is set to '5 seconds', the receiver will continue Searching after 5 seconds even if the channel is still busy. If the Busy Timer is set to 'Busy', the receiver remain on the busy frequency for as long as it stays busy, then resume searching when the signal disappears.

■ Dual Watch

The Dual Watch function lets you constantly monitor two frequencies for activity.

To set the Dual Watch function:

- 1) Enter one of the required frequencies using the Control knob,
- 2) Adjust the squelch so that the receiver is muted.
- 3) Press **Func DW**.



- 4) Enter the second frequency using the Control knob.
- 5) The Dual watch begins automatically. If a signal is received, the receiver will remain on the active frequency for the duration of the 'Busy Timer' setting in the Menu setup. If the 'Busy Timer' is set to Busy the receiver will stay on the active frequency.
- 6) To stay on an active frequency indefinitely or to stop the Dual Watch function press **Func DW** again. The receiver will exit the Dual Watch function.

MEMORY BANKS

The scanner memory storage area has a capacity of 200 locations. These are split and stored into 10 banks. Each bank has 20 channel storage capability.

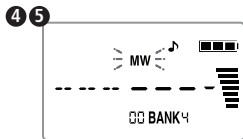
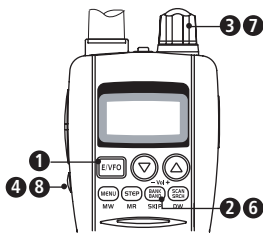
■ How to Memorize Frequencies

The Memory area allows the user to manually store up to 200 individual frequencies. The default memory banks are labelled 0 to 9.

STORING FREQUENCIES INTO THE MEMORIES

To store a frequency into one of the memories:

- 1) Press the **E/VFO** key to select VFO Mode.
- 2) Press the **BANK BAND** key to select the required Band.
- 3) Select the frequency that you want to store using the control knob.
- 4) Press **Func MW** to enter the Memory Write mode.
- 5) The receiver will find and display an empty memory bank and memory location automatically.
- 6) If required, use the **BANK BAND** key to select a new memory bank.
- 7) To change the memory location, rotate the control knob.
- 8) Press **Func MW** again to store the frequency.



RECALLING FREQUENCIES FROM THE MEMORIES

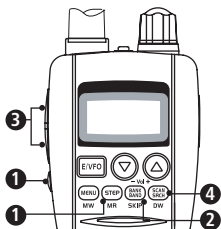
- 1) Press the **E/VFO** key to select VFO Mode.
- 2) Press **Func MR**. The receiver will enter the Memory Read mode.
- 3) To step through the memory banks press the **BANK BAND** key.
Memory banks are numbered 0 to 9.
- 4) Select the required channel using the control knob.

CHANNEL SCAN

■ Selected Bank Scan

Use the Scan function to locate active channels among the memorized channels in one bank.

- 1) Press **Func MR** to select the Memory Read mode.
- 2) Press **Bank/Band** to select the preferred memory bank.
- 3) Set the squelch level to a point where the receiver is just quiet.
- 4) Press **SCAN/SRCH**. The receiver will begin scanning the selected Band.



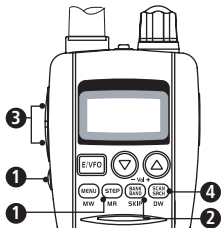
Note:

- 1) If a signal is received, the receiver will remain on the active channel for the duration of the 'Busy Timer' setting in the Menu setup. If the 'Busy timer' is set to Busy the receiver will stay on the active channel for as long as the signal is present.
- 2) To change the bank while scanning, briefly press BANK/BAND key.
- 3) To change the scan direction while scanning, rotate the control knob clockwise or counter clockwise.

■ Full Bank Scan

The Full Bank Scan function scans the entire memorized channel range for signals.

- 1) Press Func MR to select the Memory Read mode.
- 2) Press Bank/Band to select the preferred memory bank.
- 3) Set the squelch level to a point where the receiver is just quiet.
- 4) Press and hold Scan/Srch for 2 seconds.
The receiver will begin scanning the entire full Bands.



Note:

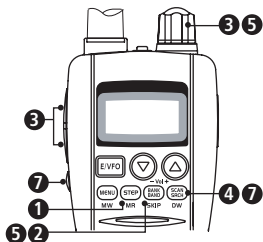
- 1) If a signal is received, the receiver will remain on the active channel for the duration of the 'Busy Timer' setting in the Menu setup. If the 'Busy timer' is set to Busy the receiver will stay on the active channel for as long as the signal is present.
- 2) To change the bank while scanning, briefly press **BANK/BAND** key.
- 3) To change the scan direction while scanning, rotate the control knob clockwise or counter clockwise.

■ Dual Watch

The Dual Watch function lets you constantly monitor two channels.

To set the Dual Watch function:

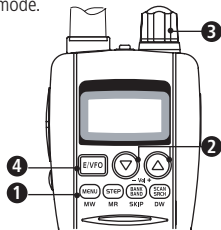
- 1) Press **Func MR** to enter the Memory Read Mode.
- 2) Press Bank/Band to select the preferred memory bank.
- 3) Select one of the required channels using the control knob, and adjust the squelch level.
- 4) Press **Func DW**.
- 5) Enter the second frequency using the BANK/BAND and Control knob.
- 6) The Dual watch begins automatically. If a signal is received, the receiver will remain on the active channel for the duration of the 'Busy Timer' setting in the Menu setup. If the 'Busy Timer' is set to Busy the receiver will stay on the active channel.
- 7) To stay on an active frequency indefinitely or to stop the Dual Watch function press **Func DW** again. The receiver will exit the Dual Watch function.

**MENU SETTINGS**

The Menu settings will vary depending on the selected mode. (VFO Mode or Memory Read Mode)

To access the VFO Mode Menu(default)

- 1) Press the **MENU** Key to access the Menu settings.
- 2) Press the volume **▲▼** keys to step through the Menu items.
- 3) Rotate the Control knob to change the values of each Menu item.
- 4) Press the E/VFO key to confirm the change.



■ VFO Mode

FUNCTION	DESCRIPTION	VALUES
Busy Timer BUSY	Determines how long the receiver will wait on a busy channel while Scanning or Searching. When 'Busy' is selected, the receiver will stay on the busy channel as long as it remains busy.	Busy, 5 Seconds
Beep BEEP	Activates or deactivates the key-press beeps.	ON, OFF
Delay DELAY	Determines how long the radio will wait on a frequency after a signal has disappeared while scanning or Searching.	1-10 Seconds
Attenuation ATT	Reduces the receive sensitivity by -10dB.	ON, OFF
Delta DELTA	Shifts frequencies.	-5kHz, -10kHz, -15kHz, OFF

■ Memory Read Mode (and Memory Clear Function)

To access the Memory Read Mode.

- 1) Press Function MR.
- 2) Press Menu, then use the Control knob or Volume keys to step through the menu items.
- 3) Press E/VFO and selected item shown is confirmed./VFO.

FUNCTION	MEANING	DESCRIPTION
CH CLR	Channel Clear	Erases the selected channel.
BK CLR	Bank Clear	Erases all the channels in the selected Bank.
MEM CLR	All Memory Clear	Erases all memories in the receiver.

NOTES for MEM CLEAR :

To erase ALL data from the memories

- 1) Press Menu, then use the Control Knob or the volume ▲▼keys to select 'MEM CLR.'
- 2) Press **E/VFO**. 'dEF yES' will be displayed.
- 3) To continue with the MEM Clear, press **E/VFO** again.
- 4) To cancel the MEM Clear, use the **Control** knob to select 'dEF NO' then press **E/VFO**.

TROUBLE SHOOTING

If you experience problem with your TSC-100RA, first check the battery power level as low battery can cause problems such as weak reception and reduced sound quality. Then check the manual and receiver display to ensure that a function such as Lock or Scan has not been activated by accident.

If these steps do not solve the problem, reset your unit as follows.

1. Partial Reset

- 1) Turn off your unit.
- 2) Press and hold the **MENU** and the **STEP** keys together.
- 3) Turn on your unit.
- 4) Memory Clear(MEM CLR) appears.

This will erase all the memory data from the channel memory banks.



If you find problems not solved by this partial reset, try all reset as follows.

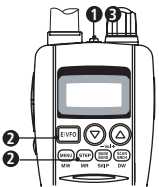
2. All Reset

- 1) Turn off your unit.
- 2) Press and hold the **E/VFO** and the **STEP** keys together.
- 3) Turn on your unit.
- 4) All clear (ALL CLR) appears.

This will not only erase all the memory data but also reset all the basic operation data to the original factory default settings. This should resolve most problems.

In case of further difficulties,

please consult your dealer or visit our website at www.ttikorea.co.kr



SPECIFICATIONS

■ General

- Frequency coverage: 66-174 MHz
 - Number of memory channels : 200 Units
 - Frequency resolution : 5, 6.25, 8.33 *, 10, 12.5, 15, 20, 25, 30, 50, 100, 500KHz & Auto.
*8.33kHz step works in 108.0083-135.99MHz range only.
 - Operation temperature range : -10°C to +60°C
 - Reference frequency stability : 6 ppm °C (-10°C to +60°C)
 - Power supply requirement : **AA x 3 Ni-MH or ALKALINE**
 - Current drain
 - Standby (power saved) : 50mA typical
 - max. audio : 320mA typical
 - charging(at 9V DC) : 300mA typical
 - Antenna connector : SMA (50 Ω)
 - Dimensions (proj. not included) : **56(W) x 116.5(H) x 48(D)mm**
 - Weight(w/o Battery) : 160g
- *Specifications are subject to change without prior notice or obligation.*

■ Receiver

- Receive system : Double superheterodyne.
- Intermediate frequencies
 - 1st : 19.65 MHz, 2nd : 450 KHz
- Sensitivity and squelch sensitivity (except spurious points):
 - FM (1 kHz/3.5 kHz Dev. 12dB SINAD)
 - 66-87.495MHz
 - 0.25uV
 - 136-174MHz
 - 0.25uV
 - WFM (1 kHz/52.5 kHz Dev. 12dB SINAD)
 - 87.5-108 MHz : 0.5uV
 - AM (1 kHz/30% MOD. 10dB SINAD)
 - 108.005-135.995MHz
 - 0.56uV
- Selectivity
 - AM/FM : More than 15 kHz/-9dB
 - Less than 150 kHz/-60dB
 - WFM : More than 150 kHz/-6dB
- AF output power : 500mW typical at 40% distortion with
an **8 Ω** load
- Ext. speaker connector : 3-conductor 3.5(d) mm (1/5") **8 Ω**

DECLARATION OF CONFORMITY

TTI TECH CO.,LTD. head quartered in 163-4 Gaepo-dong, Kangnam-ku, Seoul, Korea, 135-960 hereby declares under its own responsibility that this receiver equipment named **TSC-100RA** is in compliance with the basic requirements **and** all the related provisions of the EMC, R&TTE and LVD Council Directive of the EU.