TECSUN

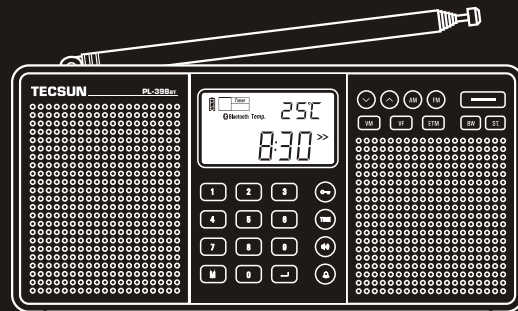# TECSUN

PL-398BT

FM stereo / SW / MW / LW DSP radio with Bluetooth wireless technology

OPERATION MANUAL

## TECSUN ELECTRONIC IND. LTD.

2013.12 VER.2

TECSUN ELECTRONIC IND. LTD.

PL-398BT Functional Block Diagram

PL-398BT is using DSP si4734 Microchips (from Silicon Labs in USA) to digitalize the analog AM/FM broadcasting signal base on the modern software technology and radio principles. It can highly improve on radio's sensitivity, selectivity, S/N ratio and anti-interference.
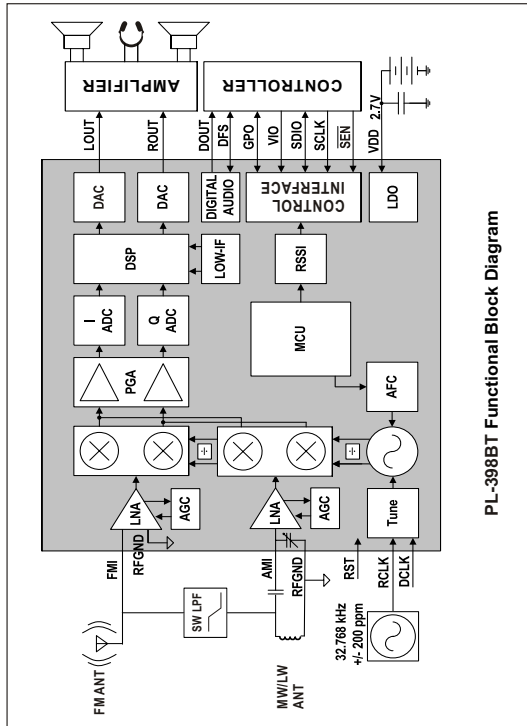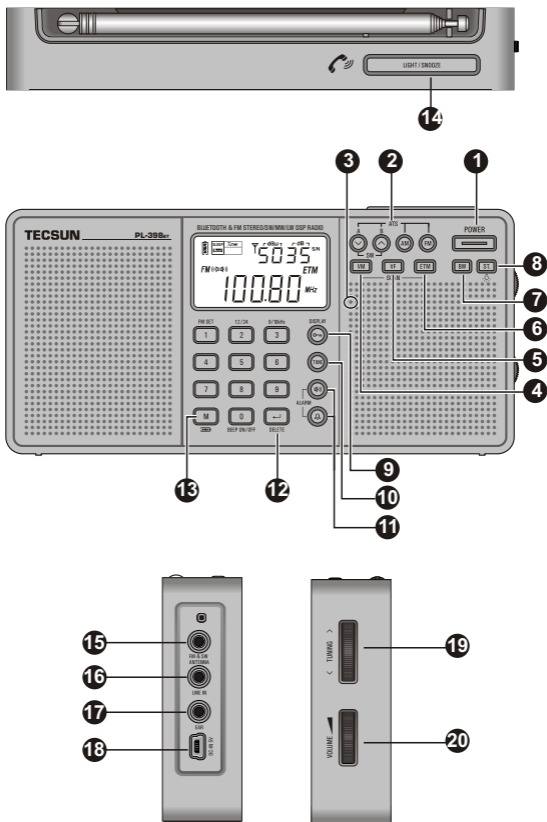

PL-398BT Functional Block Diagram

8. Bluetooth working frequency: 2.4G
9. Speaker (2 speakers): φ57mm, 250mW/8 Ohm
10.Earphone Jack: φ3.5mm, 8~32 Ohm, Stereo type
11. Dimensions Approx.: 187(W) X 90(H) X 30(D) mm
12. Weight: 365g (Batteries not included)

Note: The Bluetooth word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by **TECSUN** is under license.

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8 FM Stereo button

9 Display mode / key lock button

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11 Alarm Set

   (◉) : Alarm by Radio

   (◉) : Alarm by Buzzer

12 Delete / Confirm [←] button

13 Memory button

14 Light / Snooze button / ☏

15 FM & SW External Antenna Jack

16 Line in Jack

17 Earphone Jack

18 USB 5V DC-Jack

19 Multifunctional Tuning Knob

20 Volume Knob
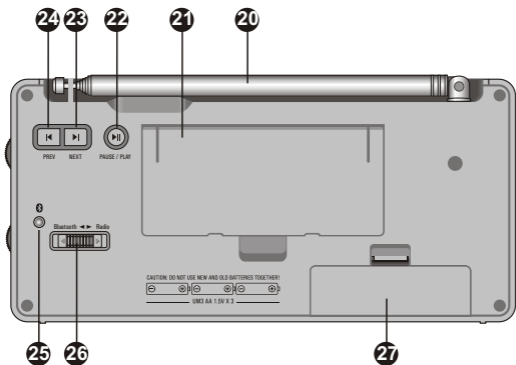
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25 Bluetooth LED indicator

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8. SW meter band indicator

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10. Tuning speed:
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11. kHz: frequency unit for MW, LW & SW
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12. Digital number display (4 Digits)
    With radio off: local time, alarm time, temperature
    With radio on: local time, signal strength / SNR, alarm time, temperature, memory address, meter band.

13. Preset memory address

14. Digital number display
    With radio off: local time
    With radio on: frequency display, band display

15. Key-lock indicator

16. FM stereo status indicator

17. Band indicator

18. Bluetooth indicator

19. Rechargeable batteries indicator

HOW TO TURN ON/OFF THE RADIO

1. Open the battery compartment located on the back of the unit, install 3 x AA alkaline batteries observing the battery polarity diagram on the back of the radio. Close the battery door.
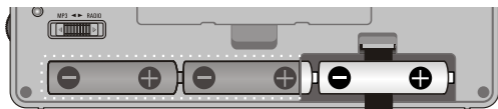
Installing batteries

2. Push the [Bluetooth ◄► Radio] switch to select either Bluetooth or radio mode.
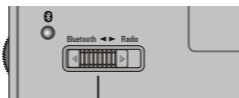
Wireless Bluetooth ⟷ Radio

3. Press the [POWER] button to turn on/off the radio.
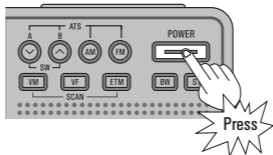
Press

Note:
If you are unable to turn on the radio, please check that the batteries were installed correctly, the battery capacity is sufficient and the lock function has not been turned on. If the radio is locked with " $\bullet_{\neg\neg}$ " displays on the screen, press and hold the [$\bullet_{\neg\neg}$] button to unlock.

HOW TO USE WIRELESS BLUETOOTH

1. Select Bluetooth function by pushing the [Bluetooth ◄► Radio] switch to the "Bluetooth" location.

Bluetooth Indicator

Wireless Bluetooth ◄—► Radio

Bluetooth Indicator

2. Press the [POWER] button, you will hear a beep sound while " » " flashes on the display. The blue LED located on the back of the unit flashes as well. Around 10 seconds later, you will hear a second beep sound. The Bluetooth mode is now activated.

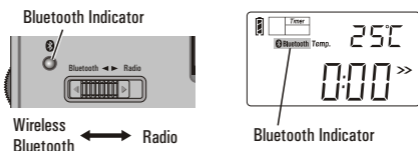3. While using the Bluetooth function, search for the radio named PL398BT via your mobile phone or portable computer and synchronize them. When hearing a beep sound and the blue LED located on the back of the radio flashes, the connection is done. Your mobile phone or computer will also indicate "connected".

   *Once the radio is detected via Bluetooth, some devices might prompt to enter a password, please enter "0000".

4. Now the unit can play any stored music or searched radio programs from your mobile phone or portable computer. You can directly press the [PAUSE / PLAY, PREV / NEXT] buttons located on the back to control the audio.

PREV   NEXT   PAUSE / PLAY
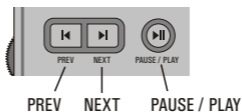
MANUAL BLUETOOTH CONNECTION
When there is more than one device to connect to by Bluetooth, PL-398BT will automatically connect to one of them. If the connection is not your desired one, you can follow the steps below to connect it manually.

1. Press and hold the [PAUSE / PLAY] button (about 3 to 5 seconds) until hearing a beep sound and the Bluetooth indicator turns bright.
2. Then follow the operation prompts of your mobile phone or other Bluetooth devices to select and connect with PL-398BT.
3. Sometimes, you can only connect to PL-398BT after deactivating the Bluetooth of other devices.

Hands-free for incoming/outgoing calls via Bluetooth
After successfully pairing your mobile phone through Bluetooth, you can use this device as a hands-free for both incoming / outgoing calls.

1. To answer an incoming phone call, press the [☏] button; press it again to hand up.
2. When the PL-398BT is playing music via Bluetooth, it will automatically enter pause mode when there is an incoming call. It will resume play mode after hanging up the phone call.

Notes:
1. When reactivating the Bluetooth function of your mobile phone which has been connected successfully to the radio before, the unit will connect to it automatically. If the automatic connection fails, please follow the prompts of the mobile phone to connect them manually.

2. Due to software compatibility issues of some mobile phones or computers, PL-398BT may not be able to control the function- PAUSE / PLAY, PREV and NEXT of the player.
3. If the computer does not have Bluetooth, you can use a USB Bluetooth adapter to connect to PL-398BT.
4. If there is no interference, the Bluetooth receiver usually works up to a distance of 10 meters.

USING THE ANTENNA

RECEIVING FM/SW BROADCASTING

In case of receiving FM/SW broadcasting, fully extend the telescopic antenna, and adjust its length and direction to get a better reception.
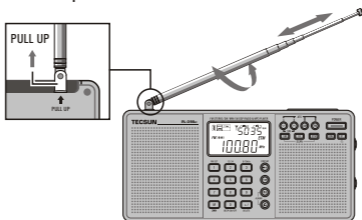
RECEIVING MW/ LW BROADCASTING

There is magnetic antenna inside the radio. When receiving MW and LW broadcasting, rotate the radio or change its location to achieve optimum reception.

TUNE INTO STATIONS

Press the [POWER] button to turn on your radio, then select your desired band by pressing the [FM], [AM]、SW [∨] or [∧] button. Now, you can turn into your favorite stations with any of the below tuning methods:

METHOD 1: ETM (EASY TUNING MODE)
ETM is a unique tuning method designed by Tecsun. It skillfully combines the reception circuitry & control procedure to pre-select the radio station and temporarily auto stores them into the ETM memory (not the regular 550 memories). This greatly enhances the efficiency when tuning into radio stations.

Please follow below steps to tune into your preferred frequencies employing ETM:

1. Press the [ETM] button and [ETM] will appear on the screen to enter Easy Tuning Mode.
2. Press & hold the [ETM] button until the frequency starts running to auto scan and store stations into ETM memory, within the present band.
3. When the frequency stops running, turn the [TUNING] knob to select those stored stations.

flashing

Frequency changing   Preset station number ETM

FM   ETM

107.50 MHz   041
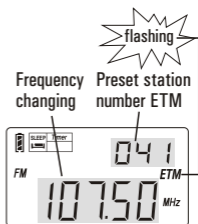
Notes: While operating ETM to search for stations, a few stations might be missed if there is interference in the surrounding. In this case, you can simply key-in the frequency, then press the [ETM] button to manually store it into the ETM memory.

Tips:
FM station: When you are in a different city or country, you should perform the ETM function again in stead of using ATS function, because this will not delete any of the stations already stored within the memory.

MW station: It is recommendable to perform the ETM function during night time, because there are usually many stations starting broadcasting at night.

SW station: It is recommendable to perform the ETM function in the morning, afternoon as well as night time, because the transmitting signal of SW is very unstable and usually there are more stations that start broadcasting in the late afternoon.

METHOD 2: MANUAL TUNING
Frequency searching: Press the [VF] button to switch into frequency mode, and then rotate the [TUNING] knob to select your desired station.

FAST/SLOW tuning is shown in the chart below for each band.

step band	> Slow tuning mode turning step	>> Fast tuning mode turning step
FM	0.01 MHz	0.1 MHz
MW	1 kHz	9 / 10kHz
LW	1 kHz	9 kHz
SW	1 kHz	5 kHz

Memory searching: Press the [VM] button to switch into memory mode, and then rotate the [TUNING] knob to select those stored stations.

METHOD 3: AUTO BROWSE STATIONS

1. Turn on the radio and press the [VF] button to switch into frequency mode.
2. Press & hold the [VF] button until [≫] advancing to scan from one station to another, staying on each station for about 5 seconds.
3. To stop the auto browse function, simply press the [VF] button.

Frequency changing ≫ advancing

Auto browse station
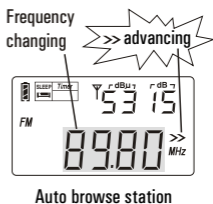
Note: While operating the "Auto-browse Station" function, you can press the [M] button anytime to store the station into memory, and the radio will keep on auto browsing the next available station.

METHOD 4: DIRECT KEYPAD ENTRY

To search for a frequency, turn on the radio and press the [VF] button to switch into frequency mode, press the numeric keys [0] - [9] to enter the station frequency directly.

To search for stations that are already stored within the memory, press the [VM] button to switch into memory mode, then press the numeric keys [0] - [9] to enter the preset memory number directly.

Notes:
1. Ignore the decimal point for FM band when inputting the frequency numbers.
   For example, FM 89.3 MHz, just enter 8 9 3.
2. If the entered frequency is not within the covering area, the display would display "Err" (error) symbol.

WORKING WITH STATION MEMORIES

There are in total 550 preset memories within the unit. 100 preset memories for each FM, MW, and LW band, and 250 for SW.

METHOD 1: ATS (Auto Tuning Storage)
FM ATS:

1. Fully extend the telescopic antenna and then press the [FM] button to select FM band.
2. Press & hold the [FM] button until "*PRESET*" flashing and the frequency advancing; now the unit starts scanning and storing all available stations into the memories.
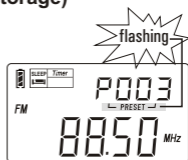
Auto Tuning storage (ATS) status

When the frequency stops advancing, it means the ATS operation is done completely. You can rotate the [TUNING] knob to search for those stored stations.

MW/LW ATS:

Press the [MW/LW] button to select MW/LW band, then follow step 2 of FM ATS.

SW ATS:

Fully extend the telescopic antenna and press the SW[$\vee$] or [$\wedge$] button to select SW band. There are two modes for SW ATS tuning:

Mode A: Press & hold the [$\vee$] button to ATS the stations within all meter bands
Mode B: Press & hold the [$\wedge$] button to ATS the stations within present meter band.

Notes:

1. During ATS process in FM, MW / LW or SW (mode A), pre-stored radio stations will be replaced automatically by the new searched stations.

2. With ATS in SW (mode B), those existing memories will not be replaced; all the newly found radio stations will be stored in the blank memory addresses.
3. If there is too many interference in your surrounding or many mirror/blank stations are being stored during ATS, you should contract the telescopic antenna (FM & SW) or rotate the radio for better reception (MW & LW).

METHOD 2: STORING STATON MANUALLY
1. Select band and tune to your desired station.
2. Press the [M] button with " *PRESET* " flashing
3. Press the [M] button again to store the station into memory.
   You can also wait for 3 seconds to auto store the station into memory.

METHOD 3: SEMI-AUTO STORING STATIONS
While operating the "Auto Browse Station" function, you can simply press on the [M] button to store the station into memory to avoid storing unwanted stations and interfering signals.
1. Press the [VF] button to switch into frequency mode.
2. Press & hold the [VF] button until " >> " advancing on the screen to auto browse from one station to another.
3. While tuning to your desired station, press the [M] button followed by " *PRESET* " flashing to directly store the station into the next available memory. The unit will keep on browsing until you deactivate it by pressing on the [VF] button again.

LISTENING TO STORED STATIONS

METHOD 1: MANUAL MEMORY TUNING

Press the [VM] button to enter the
memory mode, then rotate the
[TUNING] knob to tune into the
stored stations one by one.

Memory address

address state
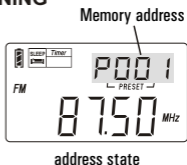
METHOD 2: AUTO BROWSE MEMORY

1. Press the [VM] button followed by
   "memory page" appearing in the
   upper right corner to enter the
   memory mode.
2. Press & hold the [VM] button until
   "*PRESET* " flashing to auto scan
   from one memory to another,
   staying on each station for about
   5 seconds.

flashing
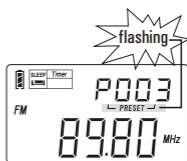
Auto browse preset station

To stop auto search memory,
simply press the [VM] button.

METHOD 3: DIRECT KEY IN MEMORY ADDRESS

1. Press the [VM] button to enter the memory mode.
2. Press the numeric keys [0] - [9] to enter the memory
   address directly, and then press the ⏎ button to
   confirm.

Note: If the display shows " - - - - "symbol after entering
   the number, it means the entered memory address
   does not exist.

DELETE MEMORY

Press the [VM] button, then you will see the "Memory address" flashing on the upper right corner of the display to enter the memory mode. Then follow one of the below methods to delete those unwanted stations:

### METHOD 1: DELETING A SINGLE MEMORY MANUALLY

Rotate the [TUNING] knob to select the memory that you want to delete, press & hold the [DELETE] button until " dEL" and "memory address" flashing; then immediately press the [DELETE] button to remove the unwanted memory address.

Delete a single station

METHOD 2: SEMI-AUTO DELETE MEMORY

Press and hold the [VM] button until "PRESET " flashing to auto browse those stored stations, press the [DELETE] button at anytime to direct delete the unwanted station; the radio will keep on auto browsing the next available station until you press any other button to stop this function.
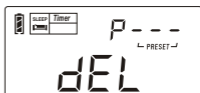
Delete memory

### METHOD 3: MANUAL DELETE ALL MEMORY WITHIN THE BAND

Press & hold the [DELETE] button for 3 seconds and notices " ALL " appears on the upper right corner of the display, then press the [DELETE] button to delete all memory within the selected band.
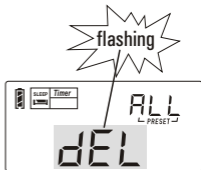
Delete all memories

SLEEP FUNCTION

1. Press & hold the [POWER] button until " $\frac{SLEEP}{}$ " and " On " or 1~120" show on the display.
2. Rotate the [TUNING] knob immediately to select sleep timer from 1 ~ 120 minutes or select permanently " On ", then wait until the radio automatically turns on to confirm the setting.
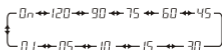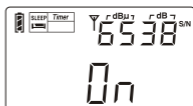
Sleep time range

CLOCK SETTING

1. Press & hold the [TIME] button until hours flashing, then rotate the [TUNING] knob to adjust the hour.
2. Press the [TIME] button, then rotate the [TUNING] knob to adjust the minutes while minutes is flashing.

flashing

3. Press the [TIME] button to confirm the setting.
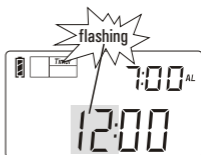
※ If the [TIME] button has not been pressed again within 3 seconds, the unit will automatically confirm the setting.

Note: You can also direct key-in the number to set the clock after pressing & holding the [TIME] button.

Example: To set the clock to 6:35, press the numeric key to enter $\boxed{0}\boxed{6}\boxed{3}\boxed{5}$; then you will hear a prolonged beep (B) sound suggesting that the time has been set.

WORKING WITH ALARM

It is recommended to set the alarm by buzzer if you are not familiar with the local radio frequency and air time.

SETTING THE ALARM (BY BUZZER)
1. Press & hold the [⏰] button until hours flashing in the upper right corner, then rotate the [TUNING] knob to adjust the hours.
2. Press the [⏰] button, then rotate the [TUNING] knob to adjust the minutes while minutes flashing.
3. Press the [⏰] button again to confirm the setting.

flashing

Setting the alarm by buzzer

※ If the [⏰] button has not been pressed again within 3 seconds, the unit will automatically confirm the alarm setting.

HOW TO SET THE ALARM BY RADIO

First preset the alarm station following below steps:
1. Turn on the radio, then tune into your favorite station for alarm by radio and adjust your desired alarm volume level.
2. Press the [M] button with " *PRESET* " flashing.
3. Press the [◁»] button immediately and " ◁» " shows on the display to confirm the preset alarm station.

Then set the alarm time:
1. Press & hold the [◁»] button until hours flashing in the upper right corner, then rotate the [TUNING] knob to adjust the hours.
2. Press the [◁»] button , then rotate the [TUNING] knob to adjust the minutes while minutes flashing.

3. Press the [🔊] button again and notice "30" shows on the display, then rotate the [TUNING] knob to select 1 ~ 90 minutes to set the Auto alarm off timer.

Auto sleep timer

4. Press the [🔊] button again to confirm.

※ If the [🔊] button has not been pressed again within 3 seconds; the unit will automatically confirm the setting.

The radio will turn on automatically playing the preset station when it reaches the alarm time. It will auto turn off as well when it reaches the preset alarm off timer.

HOW TO ACTIVATE / DEACTIVATE THE ALARM
You can press the [🔔] or [🔊] button repeatedly to activate/deactivate the alarm by buzzer / radio respectively.
- If " 🔔 " shows on the display, it means the alarm by buzzer is turned on.
- If " 🔊 " shows on the display, it means the alarm by radio is turned on.
- If " 🔔 " / " 🔊 " does not show on the display, it means the alarm by buzzer / radio is turned off.

HOW TO TURN OFF WHEN ALARMING
Buzzer alarm: Press the [POWER] button to turn off the alarm.
Radio alarm: Press the [POWER] button to continue listening to the radio, press twice to turn off the station alarm.

Note: If the preset alarm is activated when you are listening to the radio, it will auto switch to the preset radio station.

SNOOZE FUNCTION

When the preset alarm is activated, you can press the [LIGHT / SNOOZE] to temporarily turn off the alarm, the unit will start alarming again 5 minutes later.

HOW TO CHANGE THE DISPLAY MODE

With radio OFF: Repeat pressing the [DISPLAY] button to view temperature or alarm time display.

With radio ON: Press the [DISPLAY] button to view local time, alarm time, temperature or signal strength showing on the upper right corner of the display.
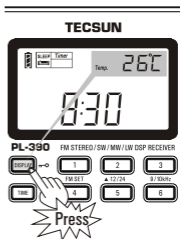
KEY-LOCK FUNCTION

Press & hold the [🔒] button with " 🔒 " symbol appears on the display to activate the key lock function.
Press & hold it again until " 🔒 " symbol disappears to deactivate the locking function.

WORKING WITH INTELLIGENT LIGHT

This radio has an intelligent lighting function with which the backlight would be on for 3 seconds when operating any keys or knobs.

You can use the following methods to turn on/off the backlight:

TEMPORARY ILLUMINATION:
Press the [LIGHT/SNOOZE] button with a "B" sound to illuminate the LCD for 3 seconds.

PERMANENT ILLUMINATION:
Press & hold the [LIGHT/SNOOZE] button until a prolonged double beep (BB) sound heard for permanently illumination. Press it again with a double beep (BB) sound to turn off the backlight.

Notes:
1. When the unit is powered by the batteries, please try to avoid setting the backlight to permanent illumination to reduce power consumption.
2. When the unit is turned off, the permanent illumination function will be turned off automatically as well.

HOW TO TURN ON/OFF THE INTELLIGENT LIGHTING
Press & hold the [🔅] key until "OFF" shows in the display to deactivate the lighting function; press & hold the [🔅] key again until "ON" shows to activate it.

Note:
After shutting off the intelligent lighting function, the [LIGHT/SNOOZE] key is still workable for turning on or off the backlight.

FM ST. (FM STEREO)

While listening to FM stereo stations, press the [FM ST.] button with " ⧉⧉ " appears in the display to activate the " *STEREO* " listening. If the received FM broadcast signal is too weak, it is recommendable to turn off the stereo function by pressing the [FM ST.] button again with " ⧉⧉ " disappears.

Note: The stereo function will not be activated if the FM station is not stereo broadcasting.

AM BW (BANDWIDTH)

Repeat pressing the [AM BW] button to select your desired 6, 4, 3, 2, 1 kHz bandwidth.

Wide band: It has better audio fidelity when receiving strong signals or local stations.

Narrow band: It is suitable to receive weak & long distant stations as narrow band is able to limit the interference from adjacent strong signal and reduce background noise.

SYSTEM SETTING

SETTING FM FREQUENCY RANGE: In radio off mode, press & hold the [FM SET] button until 87.5-108MHz, 64-108MHz, 76-108MHz, or 87-108MHz appears in the display. Quickly keep pressing on the [FM SET] button to select a suitable frequency range for your local FM.

SETTING MW(AM) TUNING STEP: With radio off, press & hold [9/10kHz] button until "9kHz" or "10kHz" appears on the display to select your desired AM tuning step.

TEMPERATUE:
When the AM tuning step is 10 kHz, the temperature displays will auto switch to Fahrenheit (℉)**.**
When the AM tuning step is 9 kHz, the temperature displays will auto switch to Centigrade (℃)**.**

TURN ON/OFF THE LW: With radio off, press & hold the [MW/LW] button until "LW ON" or "LW OFF" appears on the display to turn ON or OFF the LW respectively.

TURN ON/OFF THE CHARGING FUNCTION & EXCHANGE THE BATTERY CONSUMPTION DISPLAY:
With radio off, press & hold the [▭] key until " CHR On " & " $Ni-MH \atop Battery$ " show on the display to activate the consumption display of rechargeable batteries and the built-in charging system. Press & hold the [▭] key until " CHR OFF " showing and " $Ni-MH \atop Battery$ " disappears to activate the consumption display of regular batteries and turn off the built-in charging function.

Note: The default setting of this radio is to use regular batteries for power supply. In case of using rechargeable batteries, you should switch the radio system to rechargeable batteries mode in order to show the correct power capacity.

TURN ON/OFF THE "Beep (B) " SOUND:
With radio off, press & hold the [BEEP ON/OFF] button until "ON" or "OFF" appears in the display to activate or deactivate the "Beep (B) sound respectively.

INTELLIGENT CHARGING FUNCTION

With radio off, install 3 x UM3 (AA) rechargeable batteries
& then press & hold the [🔋] key until " $CHR \; On$ " and
" $Ni-MH \atop Battery$ " displaying to activate the built-in charging function.
Use the 5V external adaptor with USB plug to connect with
the radio. The symbol " 🔋 " will advance from the bottom to
the top during power charging. It stops when the batteries
are fully charged.

Connect 5V external adaptor with USB plug
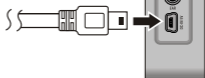
Notes:
1. Insist to use up all power of the rechargeable batteries
   before charging again. This could extend the life time of
   the battery and keep it in good conditions.
2. Three batteries should be used as a group and do not
   apply them for other usage. Also do not mix the batteries
   with different power capacity.
3. Do not charge any non-rechargeable batteries in the
   radio, this will cause a hazard or damage to your radio.

HOW TO IMPROVE FM / SW RECEPTION

Plug in the external wire antenna to the [FM & SW] antenna jack of this radio, and then hang its end outside the window for better reception of FM and SW.
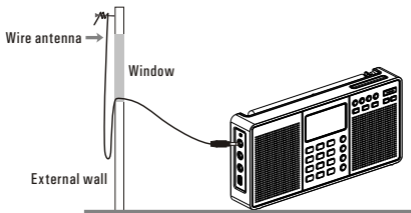

Caution: Do not install any external antenna at the area with thunder & lighting!

LINE-IN FUNCTION

This unit can be used as an active speaker for laptop computers, MP3 and other small audio players following below steps:
1. Connect the audio cable to the [LINE IN] jack; the display will show a " >> " symbol confirming that the plug has been connected with the radio.
2. Press the [POWER] button with the symbols " >> " flashing to play; then rotate the [VOLUME] button to adjust the volume.
3. Press the [POWER] button again to turn off the speaker of the radio.
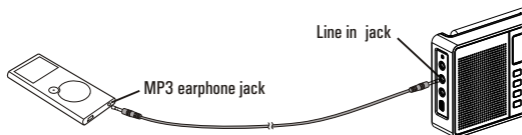
IMPORTANT MATTERS FOR USING BATTERIES

1. If no battery has been installed for a long time, the clock of the radio will stop to work. However, pre-stored frequencies are still kept. The clock will work again after new batteries are re-installed.
2. When the battery power is low, the " ▯ " symbol on the display will flash to alert you to change to new batteries. It will turns off automatically when the power is gone.
3. Mixing the used & new batteries may cause damage to the radio and also display the power capacity incorrectly.
4. In case of the radio will not be used for a long period, take out the batteries to prevent liquid leakage that may damage the radio.

TROUBLE SHOOTING

QUESTIONS	ANSWERS	SOLUTIONS
Can not turn on the radio.	-No power from the batteries. -Didn't install the batteries properly. -Power button is locked.	-Replace to new batteries. -According to "+" or "-" sign to install the batteries again. -Press the [o-π] button to unlocked.
Radio turns off when you are listening.	-No power from the batteries. -Sleep timer is activated.	-Replace the batteries. -Turn on the radio again.
Cannot store some stations using ATS. Some stations are being stored with noise using ATS.	-Frequency of stations are too weak. -There is interference nearby	-Search the station manually. - Low down the antenna or move to another location and try again.
Only limited FM stations can be received in Japan.	-FM frequency is 76~90MHz for Japan.	-Turn the radio off and press & hold the [FM SET] button, press [FM SET] button again to select 76~108MHz.
Receiving very poor AM in USA.	-USA uses 10kHz tuning step for AM.	-Turn off the radio press the [9/10kHz] button to select 10kHz.

QUESTIONS	ANSWERS	SOLUTIONS
When the alarm is activated by radio, there is only noise with the broadcast.	-Did not set the proper radio station for the alarm. -Or there is no broadcasting at that radio station. -Or you are in an area where there is no radio station for your preset frequency.	-Preset your alarm station properly (see the above setting). -Make sure there is a radio broadcast in your location. -Or set the alarm by buzzer.
No sound while connecting to external MP3.	Have not pressed the [POWER] button.	Press the [POWER] button until the " ≫ " flashes on the display.
radio malfunction.	This may be caused by interference, and the computer microchip does not function properly.	Remove the battery, then you can reload. If it is still not able to work, please contact your nearest dealer for customer service.

"BEEPING (B)" SOUND VIA FUNCTIONS

Function	Button	Status	Sound	Display
Radio on or off	POWER	Radio on	B	
		Radio off	BB	" OFF " displays
Adjust auto-off time	POWER & TUNING KNOB	Rotate at 30, 60, 90, 120 mins.	B	Display the time for auto-off
		Radio permanently	BB	" On " displays
FM STEREO	FM ST.	STEREO	B	" ((▷ ◁)) " displays
		MONO.	BB	" ((▷ ◁)) " disappears
FM	FM	FM	B	" FM " displays
MW (AM) or LW	AM	MW	BB	" MW " displays
		LW	B--(long)	" LW " displays
SW BAND METER BAND	∨ or ∧	SW	B	SW frequency displays
		METER BAND	B	Meter band shows on the right corner
ATS (Auto Tuning Storage)	FM MW/LW SW (∨ or ∧)	ATS on	B	Freq. & memory address are running
		ATS off	B--(long)	Display 01 memory address and Frequency
ETM	ETM	ETM On	B	" ETM " displays
Frequency Scanning	VF	Frequency mode	BB	Radio freq. numbers flashing.
Memory Scanning	VM	Memory mode	B	Memory address on the top right corner
Auto browsing (Scanning)	VF	Frequency mode	B	Radio freq. running
	VM	Memory mode	B	Memory address running
AM band width		1kHz, 2kHz, 3kHz, 4kHz, 6kHz	B	Display equivalent band width
Store memory	MEMORY	On	B	Memory address flashing on the top right corner
		Confirmed / Auto confirm	B--(long)	Stopped
Delete memory	DEL ETE	Delete single memory	B	Memory address and " dEL " are flashing
		Delete all memory	B	" ALL " flashing
		Confirmed	B--(long)	Back to Freq. display

Function	Button	Status	Sound	Display
BACKLIGHT	SNOOZE/ LIGHT	Illuminate short time	BB	Backlight on for 3 seconds
		Illuminate permanently	B-- (long)	Backlight on
		Turn off	B	Backlight off
SNOOZE	SNOOZE/ LIGHT	Temporary off	B	" ◁)) " or " ♫ " and the auto turn-on time are flashing
Lock	⊓-○	Lock	B-- (long)	" o-⊓ " displays
		Unlock	B	" o-⊓ " disappears
Time setting	TIME	Hour setting	B	"hours" flashing
		Minute setting	BB	"minutes" flashing
		Confirm or Auto confirm	B-- (long)	Flashing stop
Auto radio on / off function	◁))	Hour setting	B	"hours" flashing
		Minute setting	BB	"minutes" flashing
		Adjust the length of alarm	BB	1 ~ 90 minutes display, " ◁)) " and " ᴸᴱᴱᴾ " are flashing
	♫	confirmed	B-- (long)	Display time
		Select alarm by radio	B	" ◁)) " displays
		Select alarm by buzzer	BB	" ♫ " displays
		Select alarm off	B-- (long)	" ◁)) " and " ♫ " disappear
In/out SW meter band	TUNING	Inside SW meter band	B	Meter band appears on the top right corner
		Out of SW meter band	B	Meter band disappears
FM freq. range	FM SET	Select FM freq.	B	87.5-108MHz,64-108MHz, 76-108MHz or 87-108MHz
12/24 format	12/24	Select 12 format	B	" ¡2H " displays
		Select 24 format	BB	" 24H " displays
MW(AM) STEP	9/10kHz	Select 9kHz step	B	"9kHz" and "℃" displays
		Select 10kHz step	BB	"10kHz" and "℉" displays
Charge on/off	🔋	On	B	" CHA On " & " Ni-MH Battery " display
		Off	BB	" CHA OFF " displays " Ni-MH Battery " disappears

Function	Button	Status	Sound	Display
"Bi" sound on/off	BEEP ON/OFF	On	B	" On " displays
		Off	BB	" OFF " displays
Intelligent lighting on/off	☼	On	B	" On " displays
		Off	BB	" OFF " displays
LW on / off	MW/LW	Off	BB	"$LW\ OFF$" displays
		On	B	"$LW\ On$" displays

SPECIFICATIONS

1. Frequency range	
FM	87~108 MHz
Russia	64~108MHz
Japan	76~108 MHz
EU, USA	87.5~108 MHz
MW	522~1620 kHz
USA	520~1710 kHz
LW	153~513 kHz
SW	2300~21950 kHz
2. Sensitivity	
FM (S/N=30dB)	Less than 3 μV
MW (S/N=26dB)	Less than 1mV/m
LW (S/N=26dB)	Less than 10mV/m
SW (S/N=26dB)	Less than 20 μV
3. Selectivity	
FM	$>$60 dB ($\pm$150kHz)
MW	$>$60 dB (BW=3kHz, $\pm$9kHz)
LW	$>$60 dB (BW=3kHz, $\pm$9kHz)
SW	$>$60 dB (BW=3kHz, $\pm$5kHz)
4. FM Stereo crosstalk: Less than 35 dB	
5. Memory: 550	
6. Output (Distortion 10%): 180 mW X 2	
7. Power : UM3 or AA X 3 　　　　USB 5V DC	