

IMPORTANT SAFETY INSTRUCTIONS

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1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet. Consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged. liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

- 15. To Reduce the Risk of Fire or Electric Shock, Do not Expose This Appliance To Rain or Moisture.
- 16. The Shock Hazard Marking and Associated Graphical Symbol is provided on the rear of unit.
- 17. Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, shall be placed on the apparatus.
- 18. Excessive sound pressure on ear-and headphones could impair the hearing ability. Higher setting that idle on the equalizer leads to higher signal voltages on the output for ear and headphones.
- 19. The power plug should be close to the radio, and easy to be approached that during the emergency, to disconnect the power from the radio, just unplug the power plug from the AC power slot.
- 20. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnected device shall remain readily operable.

21. The batteries shall not be exposed to excessive heat such as sunshine, fire or the like.

IMPORTANT NOTE:

To comply with the FCC RF exposure compliance requirements, no change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device.

CAUTION:

These servicing instructions are for use by qualified service personnel only. To reduce the risk of the electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to so.

Introduction

The Sangean ATS-405 world band digital tuning receiver provides the following range of features:

Professional digital multi-band world receiver

Full shortwave 14 meter bands

Five tuning methods-direct frequency access, auto scan, manual tuning, memory recall and rotary tuning

ATS (Auto Tuning System)-auto scan and preset stations

Shortwave meter band selection

148 station presets

2 alarm timers by buzzer and radio

Real time clock

Adjustable sleep timer

Tone control (Music/Normal/News)

1 kHz fine tuning

Squelch function adjusts the receiving threshold and eliminate weak transmissions

Easy to read LCD display with backlight

Eco-friendly recharging function with LED indicator

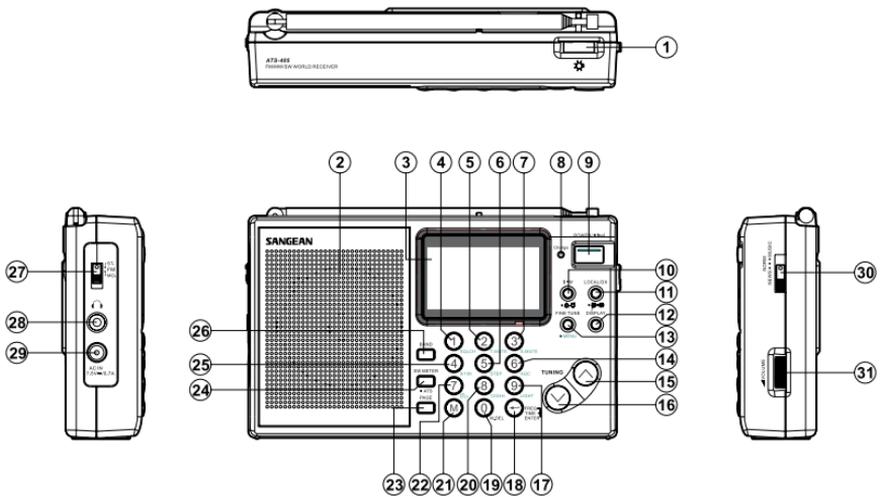
Stereo/mono switch

Lock switch

Controls

- ① Display backlight illumination
- ② Loudspeaker
- ③ LCD display
- ④ Preset 1 and Squelch button
- ⑤ Preset 2 and Tuning mute button
- ⑥ Preset 5 and tuning step selection button
- ⑦ Preset 3 and software mute button
- ⑧ Charging indicator
- ⑨ Power and sleep timer button
- ⑩ Band width adjustment and buzzer alarm setting button
- ⑪ Local/DX selection and radio alarm setting button
- ⑫ Display button
- ⑬ Menu and Fine tune button
- ⑭ Preset 6 and AGC control button
- ⑮ ⑯ Tuning Up/Down control button
- ⑰ Preset 9 and display illumination time adjustment
- ⑱ Frequency input, time set and enter button
- ⑲ Preset delete button
- ⑳ Preset 8 and 12/24 hour format selection button
- ㉑ Memory button
- ㉒ Preset 7 and RDS CT function button
- ㉓ Memory page
- ㉔ Shortwave meter band selection and ATS (Auto Tune System) execution button

- ⑫ Preset 4 and MW tuning step selection
- ⑬ Radio button selection
- ⑭ FM stereo/mono selection
- ⑮ Headphone socket
- ⑯ AC IN socket of supplied power adapter
- ⑰ Tone control (News/Normal/Music)
- ⑱ Volume control

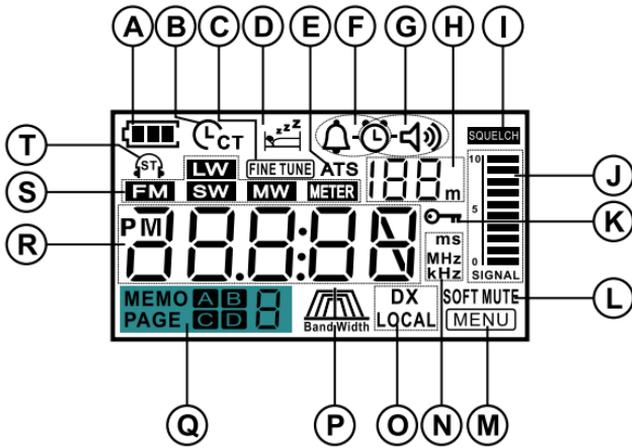
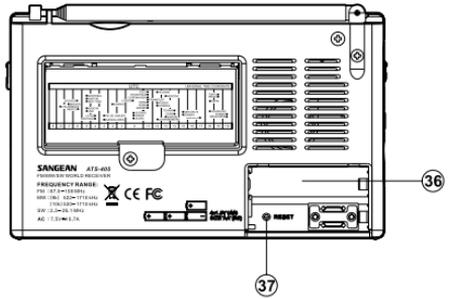
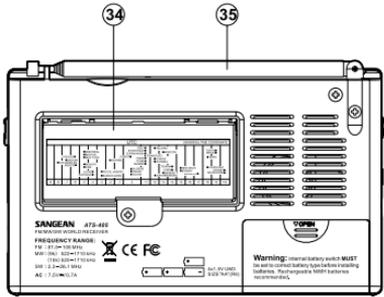
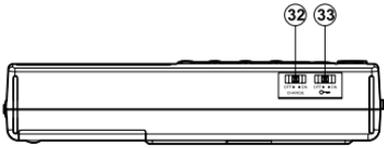


Controls

- ③② Charge On/Off selection
- ③③ Lock switch
- ③④ Foldable stand
- ③⑤ Telescopic antenna
- ③⑥ Battery compartment
- ③⑦ RESET

LCD display Icons

- Ⓐ Battery power indicator
- Ⓑ RDS clock time
- Ⓒ Fine tune status
- Ⓓ Sleep timer and snooze
- Ⓔ Auto Tuning System (ATS) execution
- Ⓕ HWS Buzzer wake up
- Ⓖ Radio wake up
- Ⓗ Shortwave meter band
- Ⓘ Squelch ON
- Ⓙ Signal level
- Ⓚ Key locked
- Ⓛ Soft Mute status
- Ⓜ Menu
- Ⓝ Frequency unit
- Ⓞ DX/Local status
- Ⓟ Band width
- Ⓠ Memory page selection
- Ⓡ Frequency and Time display
- Ⓢ Radio band
- Ⓣ FM stereo indicator



Power Supply

The ATS-405 operates on 4 x UM-3 (AA Size, LR6) batteries also powered by external AC power adapter of 7.5V/0.75A (supplied) or external DC power adapter of 7.5V/0.75A with center pin positive for China and Taiwan (supplied).

Press and remove battery cover in the direction indicated by the arrow on the cover. Insert 4 x UM-3 (AA size, LR6) batteries with polarity shown on the radio cabinet. Slide battery cover back into place in direction of arrow until case snaps into place.

Batteries is to be replaced when battery power level indicator drops or display flashes empty battery level.

Replace the batteries as soon as possible though the receiver equips with a super capacitor for memory and time back up.

Battery operation using rechargeable batteries

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1. Remove the battery cover on the back of the unit by sliding the cover in the direction of the arrow.
 2. Slide the CHARGE switch located in the bottom side of radio to ON position.
 3. Insert four Rechargeable UM-3 (AA size, LR6) batteries into the battery compartment. Take care to ensure all batteries are inserted with the correct polarity as shown on the back of the radio. The radio is designed to be used with Nickel Metal Hydride (NiMH) rechargeable batteries.
 4. Plug the mains adaptor into your radio and then plug the adaptor into the mains.
 5. The battery charging LED will flash red indicating batteries are charging. Batteries will be fully charged in around 7 hours depending on battery capacity. The charge LED shows a steady red when the battery charging is completed.
- ***Important:***
when using rechargeable batteries the battery switch must be placed in the ON position.

Batteries will only be charged when the radio is switched off and connected to the AC adaptor.

IF the radio is not to be used for any extended period of time it is recommended that the batteries are removed from the radio.

The batteries should not be exposed to excessive heat such as sunshine, fire or the like. After use, disposable batteries should if possible be taken to a suitable recycling centre. On no account should batteries be disposed of by incineration

Note:

Do not use a mix of old and new rechargeable batteries.
Do not use a mix of full and empty rechargeable batteries.

Do not use batteries that have a different mAh capacity

Do not use damaged or leaking batteries

Note:

Duration for charging your battery fully can be varied according to the battery capacity. Higher capacity batteries requires longer charging time.

Battery operation using non-rechargeable batteries

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If you use non-rechargeable batteries, before replacing the batteries make sure the CHARGE switch located in the bottom side of radio to OFF position and follow above instructions to install and replace batteries.

Setting clock time

1. When the radio is switched off, press and release Time set button 18, display will show -:--, Use numbered button 0-9 to enter clock time then press Time set button again to complete time setting. Second will start on the display.

Setting the alarm timer

ATS-405 equips with two alarm timers-alarm by radio and alarm by buzzer.

The alarm can be set when the radio is power on or off. If the radio is on, press DISPLAY button to display time mode for alarm setting.

a. alarm by buzzer

Press and release buzzer alarm button, display will flash the last alarm time set and buzzer alarm icon. Press the numeric buttons to set the alarm time then press ENTER button to complete buzzer alarm time setting. Display will show buzzer alarm icon and back to the real time status after a few seconds.

To cancel the buzzer alarm setting, press and hold buzzer alarm button until a beep sounds. Display buzzer alarm icon will disappear and buzzer alarm setting is then cancelled.

When the alarm is on, press POWER button to turn off the alarm for 24 hours. The buzzer alarm will last for one hour if not turned off pressing the POWER button.

You can enable the buzzer alarm again by pressing and holding buzzer alarm button until a beep sounds, display will appear buzzer alarm icon indicating buzzer alarm is set.

b. alarm by radio

Tune the radio to the required radio station before setting the radio alarm. Adjust the volume control to make sure the volume level is big enough to wake you up.

Press and release radio alarm button then follow the procedures of setting buzzer alarm to set and cancel the radio alarm.

Snooze

When the alarm is on, press any buttons except **POWER** button to be in Snooze function for an interval of 5 minutes before pressing **POWER** button to turn it off. Display will flash Snooze and alarm icons. **GB**

Setting the sleep timer

Sleep timer allows the listener to set radio auto-shut off time from 120 to 15 minutes. Press and hold Power/sleep timer button, display will flash sleep timer icon and cycle through 120 to 15 minutes. Release the button when desired shut off time is reached. Radio will remain on for selected length of time.

To cancel the sleep timer, simply press Power/sleep timer button again.

Radio operation

There are three waveband selection by pressing **BAND** button

Waveband	Frequency coverage	Aerial type
FM	87.50-108 MHz 76-108 MHz 64-108 MHz	Telescopic Fully extend the aerial, angle and rotate for best reception

Note:

FM frequency coverage varies from different market.

MW (AM)	520-1710 kHz 522-1710 kHz	Internal bar antenna Rotate for best reception
SW	2.3-26.10 MHz	Telescopic Fully extend the aerial for best reception

Tune the radio

There are five tuning methods for this radio.

1. ATS-Auto Tuning System

This system automatically scan and preset the received stations in the order of signal strength,.i.e. best reception station will be preset at Preset 1 of PAGE A and so on. ATS function is only available in the FM and MW bands, shortwave band is not available for ATS function.

To start ATS, turn on the radio, selected required MW or FM band by pressing BAND button. Press and hold ATS button for more than 2 seconds until a beep sounds, radio will automatically scan and preset the received stations in the order of signal strength.

There are 4 pages of preset memory each FM and MW band and each page covers 9 preset stations. When the ATS is completed, a beep will sound and radio will stop at strongest station within your area, To recall the preset station, press the PAGE button to allocate Page A to D, then press the preset numeric button.

2. Direct Tuning using the numerical key pad (0-9)

If you know the radio station frequency, select required MW, FM or SW band by pressing BAND button then press FREQ button, display will show--.-and flash selected wave band, using the numerical key pad 0-9 to enter the station frequency. Press the ENTER button to select the frequency.

Example, for FM band 103.30 MHz, first select FM band, then press FREQ then the numerical button 1, 0, 3, 3. Press ENTER button to select the frequency.

3. Manual tuning using Tuning Up and Down button

Turn on the radio, select a waveband by pressing BAND button. A single press on either the Tuning UP or Down button will change the frequency Up or down.

4. Scan tuning

Press and hold the Tuning UP or Down button will automatically scan station frequency and stop when a station is found.

Turn on the radio and select a waveband by pressing BAND button. Press and hold either the Tuning UP or Down buttons for more than half a second to commence scan tuning. The radio will scan the station frequency and stop automatically each time if finds an active station. When the waveband end is reached, the radio will beep and continue tuning from the opposite waveband end.

5. Memory recall stations

You can store up to 108 preset station, 36 preset each on MW/FM/SW band. To store a station in preset memory, proceed as below.

- a. Turn on by radio by pressing Power button
- b. Tune to desired station using one of the previously described tuning methods.
- c. Press the Memory button M, the memory symbol together with suggested memory page and preset number will flash for a few seconds.
- d. Selected the required preset page A to D by pressing PAGE button and preferred preset number (1-9). Display will flash the page and memory you select. Display will show----, if the selected preset is empty. Display will show previous stored station if preset has been used.
Press the ENTER button to complete preset setting.

Note:

the original memory preset will be overwritten by the new station if the selected preset already stored a station.

e. To recall a station in memory, turn on the radio and select a waveband by pressing BAND button. Press PAGE button to select stored page then the numeric button 1-9 corresponding to the preset memory. The radio will instantly tune to the station and display will show its frequency and memory location.

f. To delete station in memory

Recall the station you like to delete, press the memory button M, display will flash memory page and preset number. Press M. DEL button 0, radio will beep and display will appear dEL indicating the selected preset station has been deleted.

g. To exchange station positions in memory

To move a preset station to another preset station. Press Memo button M, preset position will flash. Press the new desired station by selecting page and preset number. A beep will sound indicating memory position has been swapped.

Select Shortwave meter band-shortwave scan tuning

In order to shorten shortwave scan tuning time, you can select shortwave meter band. You can refer to below shortwave meter band range.

SHORT WAVE BAND	FREQUENCY (MHz)
120m	2.300 – 2.495
90 m	3.200 – 3.400
75 m	3.900 – 4.000
60 m	4.750 – 5.060
49 m	5.900 – 6.200
41 m	7.100 – 7.350
31 m	9.400 – 9.990
25 m	11.600 – 12.100
21 m	13.500 – 13.870
19 m	15.100 – 15.800
16 m	17.480 – 17.900
15 m	18.900 – 19.020
13 m	21.450 – 21.750
11 m	25.600 – 26.100

Turn on the radio and select shortwave band by pressing BAND button. Press and release SW meter band button to cycle through meter band until required meter band is located or press and hold SW meter band button until display flashed METER, Press Tuning UP/Down button to allocate required meter band. Follow the manual tuning and scan tuning methods as described above to tuning and store the stations.

Menu operation

Through the Menu setting, you can adjust tuning settings to achieve tuning ways that you like under different circumstances for best performance. **GB**

Squelch

This is normal that background noise or static presents to some degree at different locations. It is best to set the squelch level as low as possible in order not to miss the weak transmissions.

Squelch can be set either radio is on or off. To adjust the squelch level, press and hold Menu button until a beep sounds and display Menu icon appears. Press Squelch button, display SQUELCH will flash. Using the tuning UP/Down buttons to select required squelch level, then press ENTER button to complete the Squelch level setting. The radio will tune and stop at the signals above the squelch threshold only. For example, if you select squelch level at 6, when you tune the radio, it will stop at the stations which signal level are above 6.

Initial setting is at OFF.

Squelch level setting should be adjusted separately in different wavebands.

Tuning Mute (T. MUTE)

If you prefer to mute the scan noise, you can select Tuning Mute. The initial Tuning Mute is ON for all bands. However for listeners who prefer not to miss any weak transmissions during the tuning, you can disable tuning mute function.

Tuning Mute can be set either radio is ON or OFF. Press and hold Menu button until a beep sounds and display Menu icon appears. Press Tuning Mute button 2, display will first shows ON. Using the tuning UP/Down button to select Tuning Mute ON or OFF, then press ENTER button to complete the setting.

Soft Mute (S-MUTE)

Soft Mute is to reduce background noise during weak signal, however it will also reduce radio reception. The initial setting for Soft Mute is OFF.

Soft Mute can be set either radio is ON or OFF. Press and hold Menu button until a beep sounds and display Menu icon appears. Pressing Soft Mute button, display will appear OFF. Using the tuning UP/Down button to select Soft Tuning ON or OFF, then press ENTER button to complete the setting.

Change MW (AM) tuning step-9K/10K

In Europe and most other parts of the world, MW (AM) tuning step is 9kHz. In Northern and Latin America, MW (AM) tuning step is 10 kHz. **GB**

MW (AM) tuning step can be set either radio is ON or OFF. Press and hold Menu button until a beep sounds and display Menu icon appears. Press 9k/10k button, display will appear MW and flash 9 (kHz) or 10 (kHz) for Northern American version. Using the tuning UP/Down button to select 9 or 10, then press ENTER button to complete the setting.

Change FM tuning step-STEP

FM tuning step varies in different countries. FM tuning step can be set either radio is ON or OFF. Press and hold Menu button until a beep sounds and display Menu icon appears. Press Step button 5, display will appear FM and flash 100 (kHz). Using the tuning UP/Down button to cycle through 100/200/50 (kHz), then press ENTER button to complete FM tuning step setting.

Set the AGC (auto gain control)

In AM band (MW and SW), if the volume level changes too rapidly during listening, you can delay the responding by setting AGC IF (intermediate frequency) gain

1. AGC is for AM (MW/SW) only
2. AGC function is set the IF(intermediate frequency) gain, it has 3 selection by 50db/auto/30db

2-1 "Auto" selection is the defaulted AGC level which has a balanced gain for reception, recommended set on auto for general purpose.

2-2 select 50 db to have a higher IF gain than the "auto", it can amplitude weak signal 10dB more than auto, the background noise will be enlarged, but easy to make the signal saturate under a stronger signal. In addition the soft mute may not be active because of more background noise.

2-3 choose 30db to have a lower IF gain then the "auto", once if you prefer to receive the stronger signal only, reducing the IF gain is able to reject the weak signal and background noise.

Auto clock time adjustment by RDS-CT

You can enable auto clock time adjustment by RDS (Radio Data System) CT function. Clock time can be automatically adjusted by FM RDS station. **GB**

Note:

RDS function is mostly available in European countries and part of Northern America area.

To enable or disable RDS-CT function, Either radio is ON or OFF, press and hold Menu button until a beep sounds and display Menu icon appears. Press CT button 7, display will show OFF (disable CT function). Using the tuning UP/Down button to cycle through ON and Off, then press ENTER button to complete CT enable or disable setting.

Note:

- 1) If the clock time was not auto adjusted within 24 hours, the CT icon will disappear.
- 2) If clock time from local RDS station is not always correct, you should consider to disable RDS-CT function.

12/24 hour format

To set 12/24 hour format, either radio is ON or Off, press and hold Menu button until a beep sound and display Menu icon appears. Press 12/24H button to cycle through 12 and 24 Hour format, press ENTER button to complete 12 or 24 hour format setting.

Display illumination time

Press LIGHT button to switch on and off display illumination.

The radio can set display illumination time after last operation for convenience and battery power saving.

Either radio is ON or OFF, press and hold Menu button until a beep sounds and display Menu icon appears. Press LIGHT button, display will flash OFF. Press tuning UP and Down button to cycle through OFF/10 SEC/20 SEC/ON. Press ENTER button to complete display illumination time button.

Check software version

Either radio is ON or Off, press and hold Menu button until a beep sounds and display Menu icon appears. Press button 0 to check software version e.g. 1.53. It is for factory production purpose only.

Bandwidth selection (B-W)

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1. Narrow bandwidth can get lower noise and higher sensitivity while wide bandwidth can bet better frequency response under stronger RF signal.
2. The filtering bandwidths are listed on below table. While receiving FM RDS station, the bandwidth will be automatically adjusted to wide bandwidth

Bandwidth	FM	SW	MW (AM)
Wide	110k	4k	6k
Normal	x	2k	3k
Narrow	85k	1k	1.8k

3. While radio is on, select required waveband, press B-W button to cycle through Bandwidth from wide, normal (for SW and MW wavebands only) and narrow. On display, bandwidth icons will change accordingly and you can fell the difference on the noise and reception while changing the bandwidth.

Local/DX

When listening to AM/SW/FM broadcasting, this switch adjusts the receiver's sensitivity.

When you listen to a strong station and the signal is slightly distorted, set the switch to the LOCAL position for best reception. For normal or weak stations, set the switch to the DX position for maximum sensitivity.

Fine Tune

When radio is on, waveband is selected. Press FINE TUNE button to allow 1 kHz tuning step for MW/SW wavebands and 10 kHz for FM band, display will appear FINE TUNE. Press FINE TUNE button again to cancel fine tune setting, display FINE TUNE will disappear and radio will be back to normal tuning step.

Tone control (News/Normal/Music)

You may adjust tone performance according to radio program you are listening. Switch News/Normal/Music knob to NEWS for listening to news program or AM band to reduce hiss noise from the background. Switch to MUSIC for listening to music program. For normal listening, set the switch to Normal mode.

FM Stereo/Mono switch

To listen to FM stereo broadcasts, tune to the required station, plug in headphones and set the FM ST. MO switch located on the left hand side of the radio to the ST. (stereo) position. If the station being received is weak and some hiss may be audible, to reduce the hiss, set the switch to the MO. (mono) position to mono reception.

Note:

FM stereo is only available via earphones.

Headphones

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Headphones for use with this radio should be stereo and fitted with a 3.5mm stereo jack plug. Insert the headphone plug into the socket marked on the left hand side of the radio. When the headphones are plugged in, the loudspeaker is automatically disconnected.

Note:

before inserting the headphone, make sure radio volume is set to minimum to avoid damage to the ears.

IMPORTANT:

Excessive sound pressure from earphones and headphones can cause hearing loss.

Lock Switch

The lock switch is used to prevent unintentional operation of the radio.

Set the LOCK switch located on the bottom side of the radio to the ON position. The Lock symbol will appear in the display with a beep. The power and all other buttons will be disabled. This will prevent accidental operation when the radio is packed in a suitcase or carrying pouch. To release the LOCK, move the LOCK switch to OFF position, the LOCK symbol will be removed from the display.

RESET/Trouble shooting

If the radio fails to operate correctly or some digits on the display are missing or incomplete, carry out the following procedures.

1. Remove the batteries from battery compartment.
2. With the aid of a suitable implement (e.g. the end of a paper clip or pen), press and hold the reset button located in the battery compartment for a few seconds.

Specification

Frequency coverage

FM: 87.50-108 MHz or 76-108 MHz or 76-90 MHz or 64-108 MHz varies from market.

MW (AM):

520-1710 kHz (for countries using 10 kHz tuning step)

522-1710 kHz

SW: 2.3-26.10 MHz

Power:

Battery:UM-3 (AA, LR6) x 4 alkaline batteries or NiMH rechargeable batteries of equivalent

DC-IN:

AC 7.5V 0.7A (EU)

DC 7.5 V 0.7A (USA)

Speaker: 2.5 inches 3 Watt, 8 ohm

Output power:

Speaker: DC-IN-1.5 Watt

Battery: 1 Watt

Headphone: 3 mW + 3 mW, stereo**Charging current:** 500 mA +/-100 mA**Dimension (W x H x D):** 165 x 100 x 34 in mm.**Weight:** approx. 375 g.

The company reserves the right to amend the specification without notice.



If at any time in the future you should need to dispose of this product please note that: Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your Local Authority or retailer for recycling advice. (Waste Electrical and Electronic Equipment Directive)