

# owner's manual

Quality. Uncompromised

## ROTEL

## RTC-850

AM/FM STEREO TUNER PRE-AMPLIFIER

## RTC-850L

LW/MW/FM STEREO TUNER PRE-AMPLIFIER

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**WARNING**  
**TO PREVENT FIRE OR SHOCK HAZARD,**  
**DO NOT EXPOSE THIS APPLIANCE TO**  
**RAIN OR MOISTURE**

Write your SERIAL NUMBER here.

The number is located near the name plate on the rear panel.

# SAFETY INSTRUCTIONS

**Warning:** To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**\*\*Note to CATV system installer:**

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical."

- 1. Read Instructions** — All the safety and operating instructions should be read before the appliance is operated.
- 2. Retain Instructions** — The safety and operating instructions should be retained for future reference.
- 3. Heed Warnings** — All warnings on the appliance and in the operating instructions should be adhered to.
- 4. Follow Instructions** — All operating and use instructions should be followed.
- 5. Water and Moisture** — The appliance should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
- 6. Carts and Stands** — The appliance should be used only with a cart or stand that is recommended by the manufacturer.
- 6A.** An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
- 10. Power Sources** — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
- 11. Grounding or Polarization** — The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
- 12. Power-Cord Protection** — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
- 13. Cleaning** — The appliance should be cleaned only as recommended by the manufacturer.
- 14. Nonuse Periods** — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
- 15. Object and Liquid Entry** — Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
- 16. Damage Requiring Service** — The appliance should be serviced by qualified factory authorized service personnel when:
  - A. The power-supply cord or the plug has been damaged; or
  - B. Objects have fallen, or liquid has been spilled into the appliance; or
  - C. The appliance has been exposed to rain; or
  - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
  - E. The appliance has been dropped, or the enclosure damaged.
- 17. Servicing** — The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified factory authorized service personnel.

**PORTABLE CART WARNING**



S3125A

- 7. Wall or Ceiling Mounting** — The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 8. Ventilation** — The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
- 9. Heat** — The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.

**Power Lines** — An outdoor antenna should be located away from power lines.

**Outdoor Antenna Grounding** — If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70—1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure.

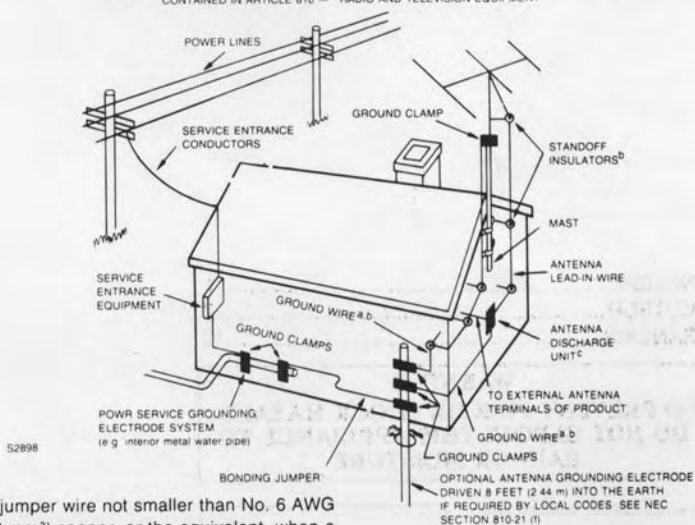
<sup>a</sup>Use No. 10 AWG (5.3 mm<sup>2</sup>) copper, No. 8 AWG (8.4 mm<sup>2</sup>) aluminum, No. 17 AWG (1.0 mm<sup>2</sup>) copper-clad steel or bronze wire, or larger, as a ground wire.

<sup>b</sup>Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4—6 feet (1.22—1.83 m) apart.

<sup>c</sup>Mount antenna discharge unit as close as possible to where lead-in enters house.

<sup>d</sup>Use jumper wire not smaller than No. 6 AWG (13.3 mm<sup>2</sup>) copper, or the equivalent, when a separate antenna-grounding electrode is used. See NEC Section 810-21 (j).

FIGURE  
EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE INSTRUCTIONS  
CONTAINED IN ARTICLE 810 — RADIO AND TELEVISION EQUIPMENT



FOR U.S.A. ONLY

# ENGLISH

AM/FM STEREO TUNER PRE-AMPLIFIER RTC-850  
MW/LW/FM STEREO TUNER PRE-AMPLIFIER RTC-850L

## INTRODUCTION

We at Rotel want to thank you for purchasing our audio product.

Rotel audio products are designed to use the latest electronic technology, and they incorporate our long experience as a specialist manufacturer of audio equipment. We are confident that you will find satisfaction in the high quality sound and top performance, and that you will find pleasure in the functional beauty achieved through human-engineering concept. Before starting operation, please read this instruction manual thoroughly and acquaint yourself with the proper mode of using the unit and all its connections. We hope you will enjoy top-notch performance for many years to come.

## INSTALLATION

Be sure to place the unit in a level and flat place where it is free from humidity, vibration, high temperature and not to place the unit in a highly enclosed place such as near a wall or on a bookshelf. A poor ventilation will cause undesirable effects to the unit.

## POWER SUPPLY CONNECTION

For power the unit requires the normal house electrical current (AC). You may simply plug the unit into a wall outlet, or into your amplifier's (or receiver's) convenience AC outlet. **CAUTION:** Do not apply power without first making sure the proper connections are completed. If you live in U.K. and your unit comes with 2-core cord without a plug, be sure to read the exclusive caution for U.K.

### EXCLUSIVE NOTE FOR U.K.

If your unit comes with a 2-core cable without a plug, make certain live and neutral leads are connected to the proper terminals. Check that the terminals are screwed down firmly and no loose strands of wire are present.

**IMPORTANT:** The wires in this mains lead are coloured in accordance with the following code:

BLUE: NEUTRAL

BROWN: LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows. The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLUE or BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured BROWN or RED.

### CAUTION:

To prevent electric shock do not use this (polarized) outlet unless the blades can be fully inserted to prevent blade exposure.

## ANTENNA INSTALLATION AND CONNECTION

### ■ FM Antenna

Proper installation of antenna is the key to smooth signal reception. To install the attached T-shape indoor antenna, stretch it taut and secure horizontally along a wall or the like in a location where signal reception is optimal. Securely connect the antenna to FM antenna terminals marked "300Ω" on the rear panel if outdoor type FM antenna is installed, the T-shape antenna is not necessary. For proper use of your outdoor FM antenna, follow the instructions below.

1. Be sure to select the most appropriate type of antenna for the signal reception conditions in your area.

2. A 75-ohm coaxial cable is recommended in connecting the antenna to the unit.

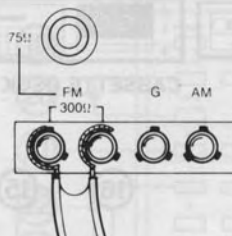
3. Set the antenna in a position as high as possible if buildings, mountains or other obstructions nearby affect reception.

4. The 75-ohm coaxial antenna cable should be properly hooked up to the designated antenna terminals on the rear panel: Locate the terminals labeled "75Ω"

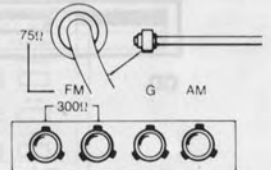
### ■ AM Antenna

The loop antenna is provided for optimum AM reception. Attach the loop antenna onto the antenna holder on the rear panel, and connect the lead wires to the antenna screw terminals marked "G" and "AM". If an outdoor antenna is desired for better reception due to difficult reception area, connect such antenna to the same screw terminals as the loop antenna. Please note that the loop antenna should be left connected to the terminals even when the external antenna is connected.

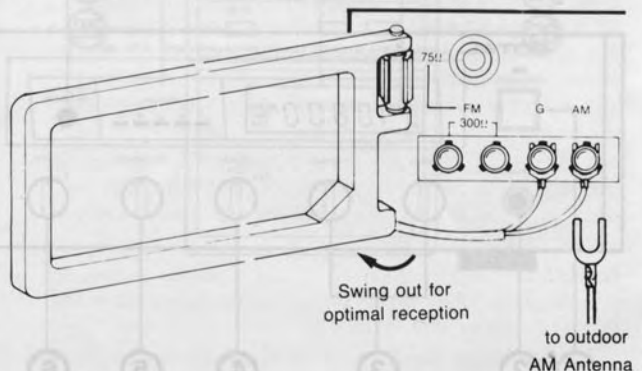
### 300Ω T-SHAPE FM ANTENNA



### 75Ω COAXIAL FM ANTENNA



### LOOP AM ANTENNA



## CONNECTING COMPONENTS

Connect all necessary audio components to the rear panel of the unit, using RCA pin cords. See the illustration for properly completed connections. When connecting RCA pin cords, be sure that L (left) and R (right) markings on each component are matched correctly. Connect the grounding wire of the turntable to the terminal marked GND on the rear panel.

## PHONO MM/MC SELECTOR

The unit has a built-in MC head amplifier. This selector is used receive MM (moving magnet) or MC (moving coil) phono cartridge signal with an appropriate gain. In MC position, the built-in MC head amplifier is activated. When your turntable uses an MC cartridge, set the selector to MC position. When MM cartridge is used, set the selector to MM position.

## OUTPUT 1, 2

Connect your power amplifier to the OUTPUT 1 jacks. If you wish to use an integrated amplifier with pre-out/main-in connectors, instead of a power amplifier, connect to the OUTPUT 1 jacks from the integrated amplifier's Main-in jacks with connecting cords.

The OUTPUT 2 is for a connection to another power amplifier, in case you wish to drive your speaker systems with bi-amplification, i.e., use one amplifier to drive woofers and another amplifier to drive tweeters simultaneously (your speaker systems should have separate connecting terminals for the woofers and tweeters).

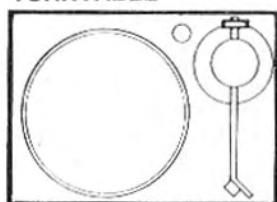
Even if not for the bi-amplification, you could connect two power amplifiers to OUTPUT 1 and OUTPUT 2. However, please ensure to turn the power off on one of the amplifiers not being used.

## REMOTE CONTROL SOCKET

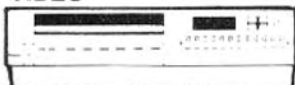
This connector is to be used only for the connection to Rotel's RD-865 or RD-855 stereo cassette deck.

It will allow you to remote control the main function of either of these decks.

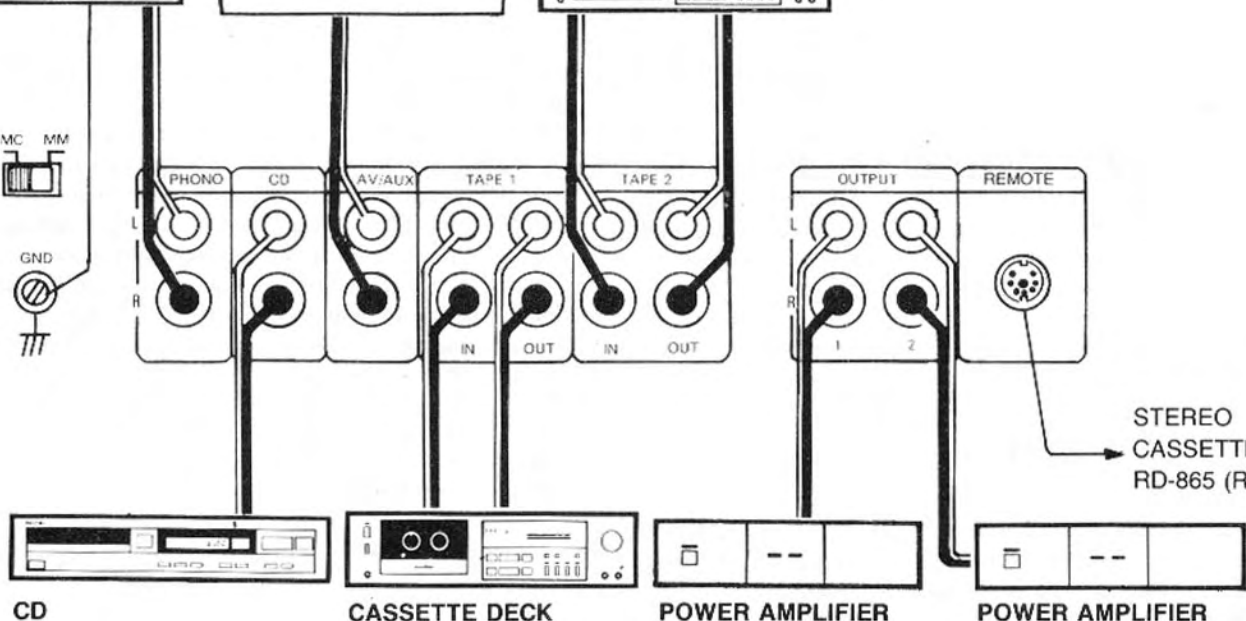
### TURNTABLE



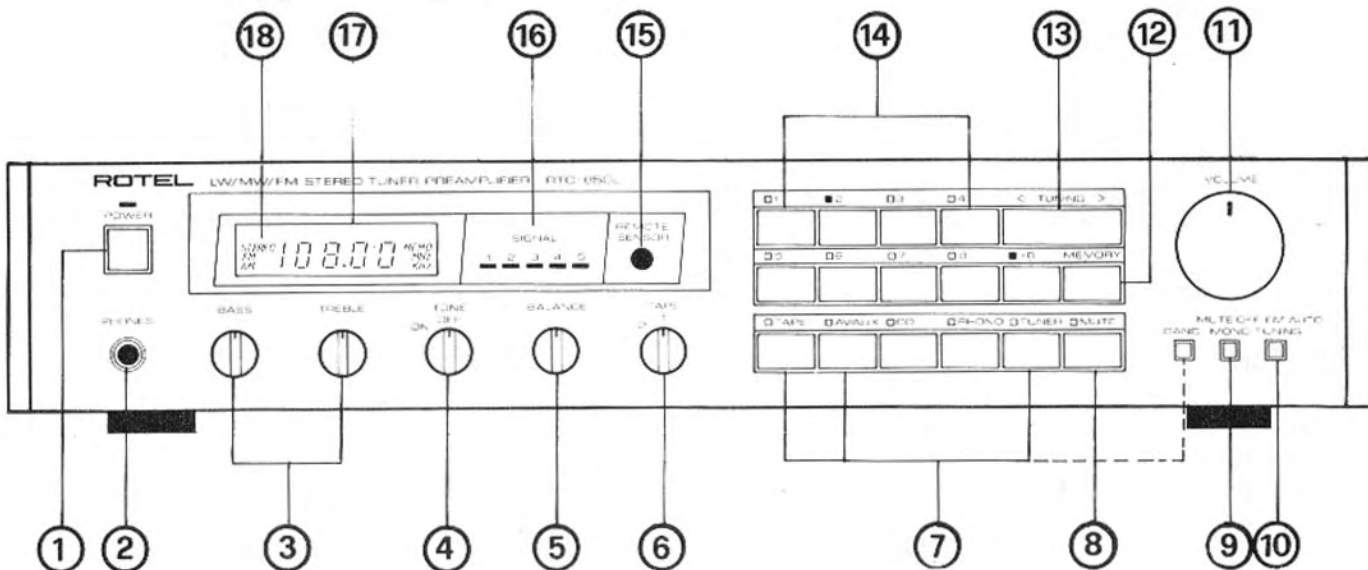
### VIDEO



### CASSETTE DECK



STEREO CASSETTE DECK RD-865 (RD-855)



## SWITCHES AND CONTROLS

### (1) Power Button

This button turns on the unit. The LED indicator above it will glow when the power is on. Press the button a second time to turn off the power.

#### CAUTION

As long as the power cord is plugged into an AC outlet, power is supplied to the unit regardless of the setting of the Power Button.

### (2) Headphone Jack

For monitoring plug your headphones into this jack. The volume of the headphone sound can be regulated with the volume control.

### (3) Bass and Treble Controls

These knobs allow you to regulate frequency response. Use them to tailor your favorite sound. The knob labeled BASS is used for low frequency range, and the knob labeled TREBLE is high frequency range. Rotate each knob clockwise to boost the response, and counterclockwise to reduce it.

### (4) Tone Selector

With the selector at OFF, the signals do not pass through the tone control circuit (in order to prevent deterioration of the tone quality). Therefore the tone controls do not function, but this unit provides superior tone quality. If the listening room acoustics are extremely lively or dead and no adjustment is possible by rearranging the furnitures or the speakers, set this selector to ON. You can then adjust the tone with the tone controls.

### (5) Balance Control

In the central position, sound is produced in equal level from both speakers, while turning it to the right decreases the sound from the left speaker, and turning it to left decreases the sound from the right speaker.

### (6) Tape Selector

Select the tape position 1 or 2 on the selector control, depending on the cassette tape deck you wish to play is connected on the TAPE1 or TAPE 2 terminals on the rear panel.

### (7) Function Selector

The buttons are used to select program sources you wish to listen to. Press PHONO button when playing the turntable; CD button for sound from compact disc player; TUNER when listening to AM or FM broadcast (select by BAND button); TAPE when playing cassette deck (select TAPE 1 or 2 by the tape selector); AV/AUX button for signal from video cassette recorder or video disc player connected to the unit.

### (8) Audio Muting Button

Pressing this button will immediately cause a large reduction in volume level of the sound, and pressing it a second time will restore the previous volume. This button is most useful when you wish a temporary period of quieter sound. When the audio muting is in operation, the LED indicator above the button glows.

### (9) FM Mute Off/Mono Button

When this button is pressed to ON, any FM broadcast is received monaurally. Be sure to leave the button in the released (OFF) position during normal stereo FM reception. In the OFF position, interstation noise generated when tuning in an FM station will be reduced.

### (10) FM Auto Tuning Button

Depressing this button changes FM tuning mode from manual to automatic. This button has no effect on AM tuning, which can be done in manual mode only.

### (11) Volume Control

Used to regulate the volume level. Turn clockwise to increase the level, and counterclockwise to reduce it. The control has a built-in motor drive, which allows a remote control operation from the portable transmitter handunit. The LED indicator on the knob shows the position of the level set.

### (12) Memory Button

To enter a given station frequency into the unit's memory circuit, press this button first, and then tap the desired station button.

### (13) Tuning Up/Down Button

Used to tune in a desired broadcasting station. Press the left part of the button (marked <) to tune in lower frequencies than the reading on the frequency display, or press the right part (marked >) to tune in higher frequencies.

### (14) Station Buttons

These buttons are used to tune in to desired preset stations, or to preset given station frequencies in unit's memory. Each station selected will be indicated by LED.

### (15) Remote Sensor

Receives operating commands in the form of infrared beams emitted from the remote transmitter unit.

### (16) Signal Indicator

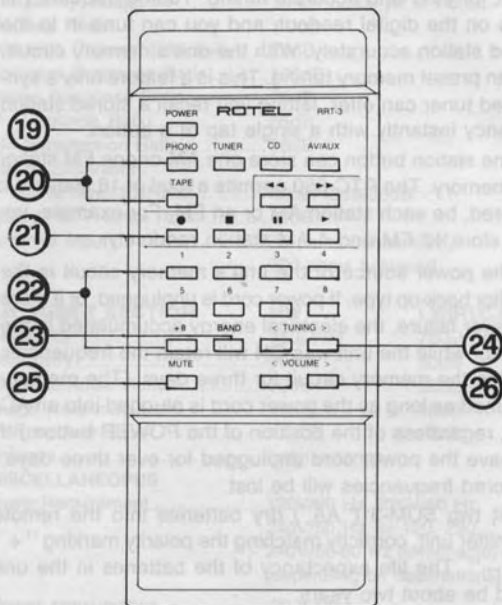
The 5 LEDs show incoming signal strength; the receiving condition is optimal when all LEDs are illuminated.

### (17) Frequency Display

Indicates frequency currently tuned in, along with notation "FM" and "MHZ" in FM reception, or "AM" and "KHZ" in AM reception. The word "MEMO" will appear when Memory Program button is pressed.

### (18) Stereo Indicator

Glowes when stereo broadcasting signal is tuned in. Note that when stereo signal is very weak, the unit will not give stereo reproduction, and the indicator will not light up.



## Remote Control Function

(19) Power Button for on/off.

(20) Function Selector Buttons (same as item 6, 7)

(21) Cassette Control Buttons

Permit you to remote control Rotel RD-865 or RD-855 cassette deck connected to the REMOTE socket on the control.

Press ◀◀ button to rewind tape.

Press ▶ button to play back tape.

Press ▶▶ button to advance tape rapidly forward.

Press ■■ button for temporary suspension of tape motion during recording or playback. Pressing the button a second time will restart the tape, returning the tape deck section to mode before interruption.

Use ● button when you wish to record. However, please follow the proper recording procedure as below;

1. press Pause ■■ button first for standby.

2. Then, press record ● button. Recording still will not be started and still in the standby mode.

3. Press Play ▶ button to start recording.

4. Press Pause ■■ button to stop recording temporarily, yet still remain in recording ready mode. Press Play ▶ button to resume recording.

5. Press Stop ■ button to end recording.

Press ■ button to disengage any control mode, be it playback, record, fast forward, or rewind.

(22) Present Station Buttons (same as item 14)

(23) Band Selector Button (saem as item 7)

(24) Tuning Buttons (same as item 13)

(25) Audio Muting Button (same as item 8)

(26) Volume Button (same as item 11)

The volume control (rotary) on the main unit will turn automatically by means of a built-in motor drive when the volume control buttons on the remote control are pressed.

## OPERATION

• The RTC-850 (RTC-850L) employs a quartz PLL synthesier for easy and accurate tuning. Tuning frequency is visible on the digital readout, and you can tune in to the desired station accurately. With the unit's memory circuit, you can preset memory tuning. This is a feature only a synthesized tuner can offer, letting you recall a stored station frequency instantly with a single tap of a button.

• One station button can store one AM or one FM station in its memory. The RTC-850 permits a total of 16 stations to be stored, be each station AM or an FM. For example, you could store 12 FM and 4 AM station randomly.

• The power source of the unit's memory citcuit is the capacitor back-up type. If power cord is unplugged, or if there is a power failure, the electrical energy accumulated in the capacitor while the unit was ON will retain the frequencies stored in the memory circuit for three days. (The memory is retained as long as the power cord is plugged into an AC outlet, regardless of the position of the POWER button.) If you leave the power cord unplugged for over three days, the stored frequencies will be lost.

• Fit two SUM-3 ("AA") dry batteries into the remote transmitter unit, correctly matching the polarity marking "+" and "-". The life expectancy of the batteries in the unit should be about two years.

### Radio Listening

1. Depress TUNER Function button ON. Select AM or FM by BAND button.

2. Tune in to the desired station by means of tuning or stations buttons. (See section on "TUNING".)

3. Raise the volume to the desired level.

### TUNING

The unit is designed to permit three modes of tuning: FM Auto tuning, manual tuning, and preset memory tuning.

#### • FM Auto Tuning (for FM Reception Only)

Set FM Auto Tuning button to the depressed position. Press DOWN or Up Tuning button. Automatic scanning of FM band begins. Scanning stops when it reaches a point where the input signal exceeds a certain acceptable level. The receiving frequency is held on the readout. To tune in to another station, press DOWN or UP button according to the frequency of the desired station.

#### • Manual Tuning

Set FM Auto tuning button to the released position. A touch of the tuning button, on DOWN or up, will shift the tuning frequency in specified increments. If you keep the button pressed down, the frequency will change continuously. Release the button to stop frequency change.

#### • Preset Memory Tuning

Tune in to the desired station in either auto or manual tuning mode. Press the Memory Program button. The word "MEMO" will appear on the frequency display. then, press any station button, 1 through 16, to enter the frequency into the memory circuit. Thereafter, you may recall the same frequency any time simply by pressing the same button. Note that the word "MEMO" remains on the display panel for several seconds only; you should tap the appropriate station button to enter the station frequency during that time. If the word "MEMO" disappears before you press the station button, entry cannot be made. In that case start again, following the above procedures. The above procedures should also be following to change the station preset for a given station button.

Note: If you have turned off the unit, and turn it on again, the unit will tune in to the station frequency to which it was tuned immediately before turn-off.

### Turntable Listening

1. Depress PHONO function button ON.
2. Start the play, then raise the volume.

### Listening from Compact Disc Player

1. Depress CD function button ON.
2. Put the compact disc player in the play mode according to instructions given for the equipment.
3. Raise the volume to the desired level.

### Listening from Video Disc Player of Video Cassette: Recorder

1. Depress AV/AUX function button ON.
2. Put the video cassette recorder or video disc player in the play mode according to instructions given for the equipment.
3. Raise the volume to the desired level.

### Tape Deck Playback

1. Turn the Tape Selector to 1 or 2, according to the tape deck you wish to use.
2. Start playback.
3. Raise the volume.

## Recording Program Source

Play the desired program source according to the procedures mentioned above (except TAPE). The signal from the source will be sent through the TAPE OUT terminals (both TAPE 1 and TAPE 2). Put the tape deck in the record mode to record the signal. During recording, operation of Volume Control, and Tone Control will have no effect on the signal being sent through TAPE OUT terminals.

## Tape Dubbing

Two tape decks are used to perform tape-to-tape (dubbing). The unit allows dubbing from TAPE 1 to TAPE 2, or TAPE 2 to TAPE 1.

1. Set TAPE button ON.
2. Set Tape Selector to TAPE 1 or 2, depending on the tape deck for playback.
3. Commence recording with the other tape deck (if the Tape Selector is set at 1, play TAPE 1 and record with TAPE 2, and vice versa).

## HUM AND NOISE

Hum often accompanies activation of power supply. If hum is generated, try unplugging the power cord into the wall outlet, reversing the plug this time. Other possible cause of hum include improper routing of connecting cords (try changing cord position), or incorrect pin-plug insertion. Check all connections if hum persists.

If noise is introduced, it is usually caused by improper positioning of antenna cable or improper antenna installation. Use a 75-ohm cable for outdoor FM antenna and minimize multipath to obtain optimal signal reception. Note that during signal reception the unit may pick up noise from other household electric appliances (as when switching power on or off). In that case, check the relative location of the appliances and keep them away from the unit, or vice versa, as necessary.

**Note 1:** In a location near a broadcasting station, very strong signals may cause noise or distortion, depending on the type of antenna used. In that case, install an attenuator between the antenna and the tuner.

**Note 2:** Inside a concrete building, FM signals are weakened and satisfactory reception may be difficult. An outdoor FM antenna will best remedy such a situation.

## VOLTAGE SELECTION

**Not available for U.K., Canada and Scandinavia**

The unit is a variable voltage equipment that can run on 120V, 220V or 240V power supply. Your unit should already be preset at the proper voltage for use in your area. However, if your move to an area where the power supply voltage is different, consult your dealer.

## SPECIFICATIONS

### AMPLIFIER SECTION

Total Harmonic Distortion (20 to 20,000Hz) CD, AV/AUX.....	No more than 0.004%(rated output)
Intermodulation Distortion..... (60Hz; 7kHz = 4:1)	No more than 0.004% (rated output)
Output Sensitivity/Impedance.....	1.0V/100 ohms
Input Sensitivity/Impedance:	
PHONO (MC).....	250 $\mu$ V/180 ohms
PHONO (MM).....	2.5mV/47kohms
DC, AV/AUX.....	150mV/20kohms
TAPE 1, 2.....	150mV/20kohms
Overload Level (T.H.D.0.5%, 1 kHz)	
PHONO (MC).....	20mV
PHONO (MM).....	180mV
CD, AV/AUX.....	5V
TAPE 1, 2.....	5V
Frequency Response:	
PHONO .....	20 to 20,000Hz + 0.2dB, - 0.2dB (RIAA STD)
CD, AV/AUX.....	4 to 100,000Hz, + 0dB, - 3.0dB
TAPE 1, 2.....	4 to 100,000Hz + 0dB, - 3.0dB
Tone Control:	
BASS.....	$\pm$ 3.5dB (100Hz)
TREBLE.....	$\pm$ 3.5dB (10kHz)
Signal-to-Noise Ratio:	
(IHF, A network)	
PHONO (MC).....	70 dB
PHONO (MM).....	80 dB
DC, AV/AUX.....	100dB
TAPE 1, 2.....	100dB

### FM TUNER SECTION

Usable Sensitivity.....	10.8dBf/0.95 $\mu$ V(75 ohms)
50dB Quieting Sensitivity:	
Mono .....	14.8dBf/1.5 $\mu$ V(75 ohms)
Stereo.....	37.2dBf/20 $\mu$ V(75 ohms)
Signal-to-Noise Ratio(at 65dBf):	
Mono .....	80dB
Stereo .....	75dB
Harmonic Distortion(at 65dBf):	
1 kHz.....	0.07%(mono), 0.25%(stereo)
Frequency Response.....	30 to 15,000 Hz, + 1.0dB, - 1.0dB
Capture Ratio.....	1.0dB
Alternate Channel Selectivity.....	70dB
Spurious Response Ratio.....	100dB
Image Response Ratio.....	70dB
IF Response Ratio.....	85dB
AM Suppression Ratio.....	58dB
Stereo Separation:	
100Hz/1kHz/10kHz .....	42dB/48dB/35dB
Subcarrier Product Ratio.....	40dB
Antenna Input.....	75 ohms unbalanced, 300 ohms balanced

### AM TUNER SECTION

	MW	LW(RTC-850L)
Sensitivity.....	350 $\mu$ V/m	750 $\mu$ V/m
Selectivity.....	30dB	30dB
Signal-to-Noise Ratio.....	50dB	50dB
Image Response Ratio.....	40dB	40dB
IF Response Ratio.....	4.0 dB	40dB
Antenna.....	Loop antenna	

### MISCELLANEOUS

Power Requirement.....	120V/60 Hz, 220V/50 Hz, 240V/50 Hz, or 120, 220, 240V/50-60 Hz (switchable) (depending on destinations)
Power consumption.....	20 watts
Dimensions (overall).....	444W x 86H x 339D mm 17 $\frac{1}{2}$ " x 3 $\frac{1}{32}$ " x 13 $\frac{1}{32}$ "
Weight (net).....	5.5kg/12.1lbs

- Specifications and design subject to possible modification without notice.