

# owner's manual

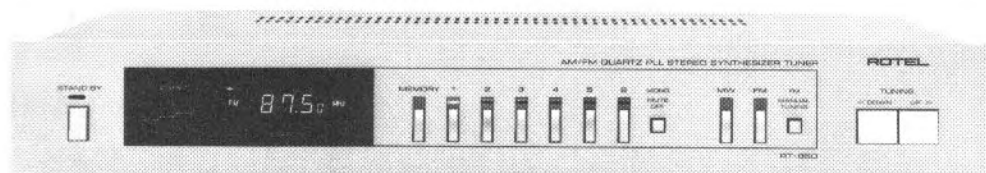


PHOTO: RT-860

Quality. Uncompromised.

# ROTEL

# RT-860

AM/FM STEREO SYNTHESIZER TUNER

# RT-860L

MW/LW/FM STEREO SYNTHESIZER TUNER

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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.



# ENGLISH

## AM/FM STEREO SYNTHESIZER TUNER RT-860 MW/LW/FM STEREO SYNTHESIZER TUNER RT-860L

### 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 Standby Button.

### 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 exposed to direct sunlight. Be careful 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 the AC outlet on the Rotel Remote Control Center RR-800.

Note that when you plug the power cord into a switched outlet on amplifier, the stored memory will be lost three days after switching off the amplifier.

**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.

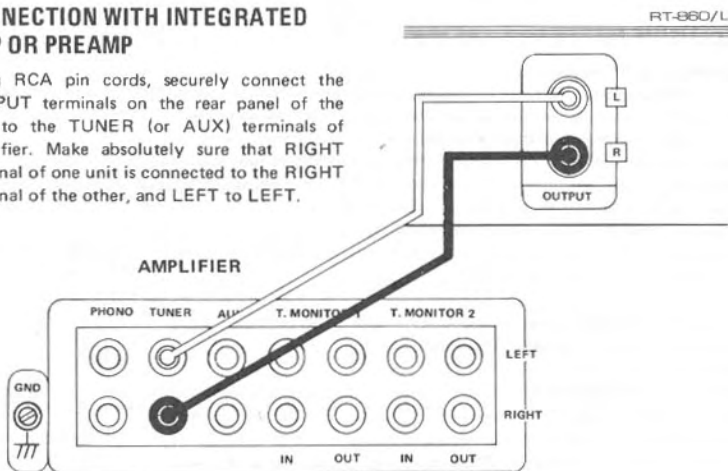
**IMPORTANT:** The wires in this mains lead are coloured in accordance with the following code:

- 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.

### CONNECTION WITH INTEGRATED AMP OR PREAMP

Using RCA pin cords, securely connect the OUTPUT terminals on the rear panel of the unit to the TUNER (or AUX) terminals of amplifier. Make absolutely sure that RIGHT terminal of one unit is connected to the RIGHT terminal of the other, and LEFT to LEFT.



### ANTENNA INSTALLATION AND CONNECTION

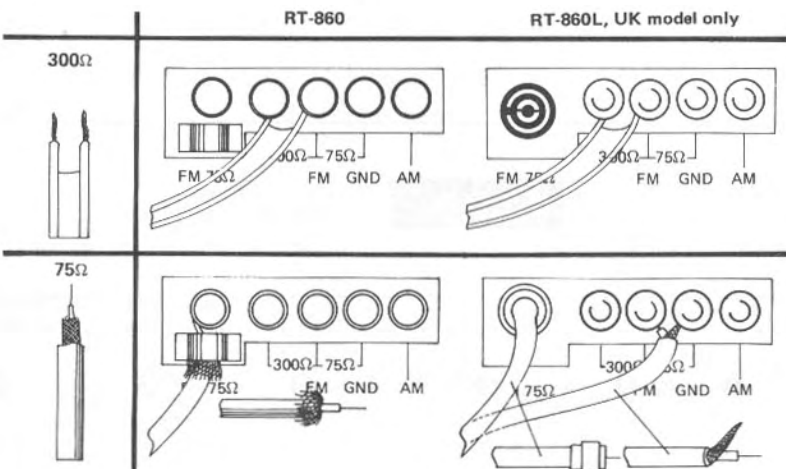
#### FM Antenna

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

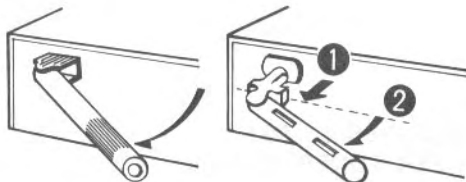
possible if buildings, mountains or other obstructions nearby affect reception.

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". Connect the center conductor of the cable to the left-hand terminal, and connect the outer braided conductor of the cable to the right-hand terminal (marked "GND").

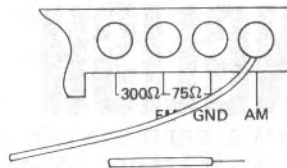


## ■ AM Antenna

Erect the AM ferrite bar antenna provided on the rear panel. If you install outdoor AM antenna, connect the antenna lead wire to the antenna terminal marked "AM."



BUILT-IN AM ANTENNA



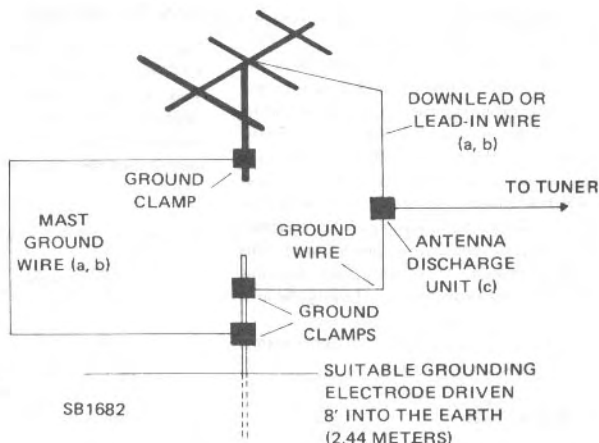
OUTDOOR AM ANTENNA

## EXCLUSIVE NOTES FOR THE U.S.A.

### Outdoor Antenna Grounding

If an outside antenna is connected to the receiver/tuner, 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. 70-1978, 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.

- Use No. 10 AWG copper or No. 8 AWG aluminum or No. 17 AWG copper-clad steel or bronze wire, or larger as ground wires for both mast and lead-in.
- Secure lead-in wire from antenna to antenna discharge unit and mast ground wire to house with stand-off insulators, spaced from 4 feet (1.22 meters) to 6 feet (1.83 meters) apart.
- Mount antenna discharge unit as closely as possible to where lead-in enters house.



## SWITCHES AND CONTROLS

### (1) STAND BY Button

Press this button to turn on the tuner. The LED indicator above the button glows. In the released position, the unit is in the standby state and power is supplied to the memory circuit from the AC mains.

### (2) Stereo Indicator

Glows 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.

### (3) Signal Indicator

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

### (4) Frequency Display

Indicates frequency currently tuned in, along with notations "FM" and "MHz" in FM re-

ception, or "AM" and "kHz" in AM reception. The word "MEMORY" will appear when Memory Program button is pressed.

### (5) Memory Program Button

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

### (6) Station Buttons

These buttons are used to tune in to desired preset stations, or to preset given station frequencies in unit's memory.

### (7) FM Mode/Muting 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.

### (8) AM/FM Selector

Press AM button for AM signal reception, and FM button for FM signal reception.

RT-860L gives AM reception in either MW or LW mode. Depress MW button for middle wave reception, and LW button for long wave reception.

### (9) FM Manual Tuning Button

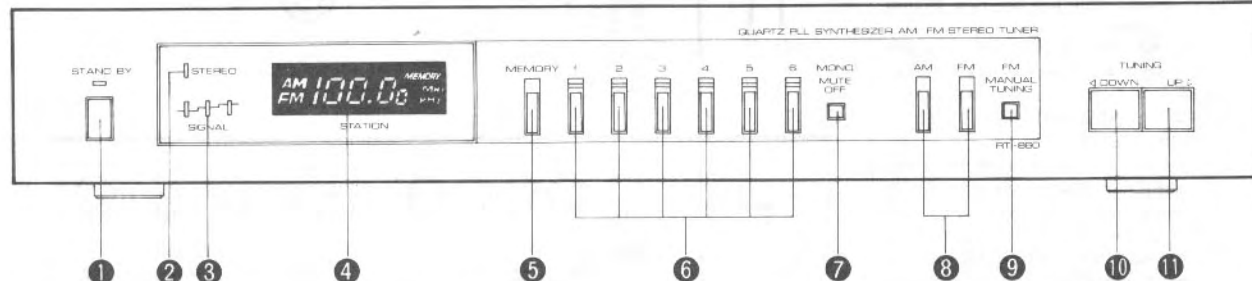
Depressing this button changes FM tuning mode from automatic to manual. This button has no effect on AM tuning, which can be done in manual mode only.

### (10) Tuning Button, DOWN

Used when tuning in a station whose frequency is lower than the reading on the frequency display.

### (11) Tuning Button, UP

Used when tuning in a station whose frequency is higher than the reading on the frequency display.



## OPERATION

• The RT-860 (RT-860L) employs a quartz PLL synthesizer for easy and accurate tuning. Tuning frequency is visible on the digital read-out, 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 and one FM station in its memory. With the six station buttons, a total of six AM and six FM stations can be stored.

The RT-860L memory stores six FM stations, and six MW/LW stations.

• The power source of the unit's memory circuit 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 STAND BY button.) If you leave the power cord unplugged for over three days, the stored frequencies will be lost.

• Before commencing operation, check to make sure all antenna, amplifier and power connections are properly made.

1. Set the volume control on the amplifier to minimum position, and amplifier function switch to TUNER position (or to AUX position if the tuner is connected to AUX terminal).

2. Turn on the amplifier and press the STAND BY button on the tuner.

3. Depress FM or AM button of the tuner AM/FM selector.

On RT-860L, select among FM, MW, and LW buttons.

4. Tune in to the desired station by means of tuning or station buttons. (See section on "Tuning".)

5. Raise the volume to the desired level, and enjoy listening.

## Tuning

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

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

Set FM Manual Tuning button to the released position. Press Tuning button, UP or DOWN. 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 Manual Tuning button to the depressed position. A tap of the tuning button, 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 "MEMORY" will appear on the frequency display. Then, press any station button, 1 through 6, 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 "MEMORY" remains on the display panel for several seconds only; you should press the appropriate station button to enter the station frequency during that time. If the word "MEMORY" 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 followed to change the station preset for a given station button.

**Note 1:** 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.

**Note 2:** To go directly into the manual tuning mode from the auto tuning mode, depress the FM Manual Tuning button, and then press the tuning button, UP or DOWN. Scanning stops and you are now in the manual tuning mode.

## HUM AND NOISE

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

## SPECIFICATIONS

### FM TUNER SECTION

Usable Sensitivity (mono) . . . . .11.2 dBf/2.0  $\mu$ V

DIN Sensitivity

(26 dB S/N, 75 ohms) . . . . .1.1  $\mu$ V

50 dB Quieting Sensitivity:

Mono . . . . .15.2 dBf/3.0  $\mu$ V

Stereo . . . . .37.2 dBf/40  $\mu$ V

Signal-to-Noise Ratio (at 65 dBf):

Mono . . . . .75 dB

Stereo . . . . .73 dB

Harmonic Distortion (at 65 dBf):

100 Hz . . . . .0.08% (mono), 0.1% (stereo)

1 kHz . . . . .0.08% (mono), 0.2% (stereo)

6 kHz . . . . .0.2% (mono), 0.3% (stereo)

Frequency Response . . . . .30 to 15,000 Hz, +0 dB, -2 dB

Capture Ratio . . . . .1.0 dB

Alternate Channel Selectivity

( $\pm$ 400 kHz) . . . . .60 dB

Spurious Response Ratio . . . . .90 dB

Image Response Ratio . . . . .70 dB

IF Response Ratio . . . . .110 dB

AM Suppression Ratio . . . . .58 dB

Muting Threshold . . . . .15  $\mu$ V

Stereo Separation . . . . .100 Hz/1 kHz/10 kHz,

45 dB/48 dB/40 dB

Subcarrier Product Ratio . . . . .40 dB

Antenna Input . . . . .300 ohms balanced,

75 ohms unbalanced

### AM TUNER SECTION

Sensitivity . . . . .300  $\mu$ V/m

Selectivity . . . . .40 dB

Signal-to-Noise Ratio . . . . .50 dB

Image Response Ratio . . . . .40 dB

IF Response Ratio . . . . .30 dB

Antenna . . . . .Built-in ferrite loopstick antenna

### MISCELLANEOUS

Power Requirement . . . . .120V/60 Hz, 220V/50 Hz, 240V/50 Hz  
or 120, 220, 240V/50-60 Hz  
(depending on destinations)

Power Consumption . . . . .9 watts

Dimensions (overall) . . . . .430 (W) x 91 (H) x 293 (D) mm  
16-15/16" x 4-3/8" x 11-1/2"

Weight (net) . . . . .3.9 kg/8.58 lbs.

• Specifications and design subject to possible modification without prior notice.

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 you move to an area where the power supply voltage is different, consult your dealer.