



OPERATING INSTRUCTIONS

DIVERSITY WIRELESS TUNER

WT-870



Please follow the instructions in this manual to obtain the optimum results from this unit.
We also recommend that you keep this manual handy for future reference.

■ GENERAL DESCRIPTION

Designed for virtual elimination of problem "null spots" or "dropouts" (momentary loss of radio signal reception), the TOA WT-870 is a diversity tuner that permits simultaneous use of up to two optional wireless tuner modules WTU-870 and WTU-871. To ensure its reliability, the WT-870 employs a compressor/expander system noise reduction circuit to minimize the influence of high-frequency noise generated from digital equipment such as personal computers and word processors as well as a combined noise/tone squelch circuit.

■ HANDLING PRECAUTIONS

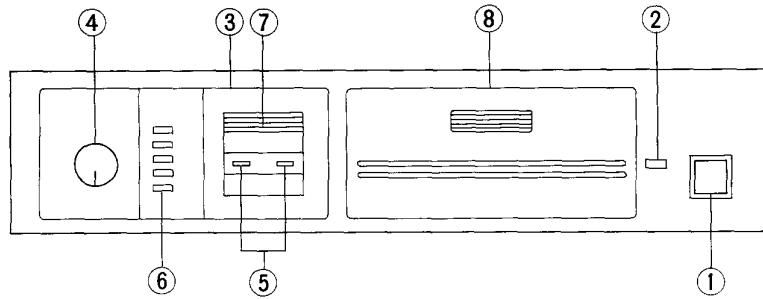
- Check for proper operating voltage of your tuner before use.
The model WT-870 "L" is intended for operation on 120V AC/60 Hz, and the WT-870 "H" for 220-240V AC/50 Hz.
- When using a component rack, avoid installing the unit above heat generating equipment, such as a power amplifier.
- To avoid severe electrical shocks and possible catastrophic damage, never open the unit nor touch its internal components.
- To clean the unit's exterior, wipe with a soft dry cloth. Never use benzine, thinner, or other solvents, which may damage the painted parts of the unit.

■ FEATURES

- Diversity reception system minimizes the effects of fading during reception of a radio signal.
- A tone squelch prevents disturbing radio signals from producing noise when the wireless microphone is not in use.
- Modular construction facilitates channel expansion and frequency changes.
- Space-saving design and simultaneous dual channel operation.
- Rack mountable. (Optional brackets required.)
- Wide dynamic range and less susceptibility to high frequency noise in space thanks to a compressor/expander circuit.

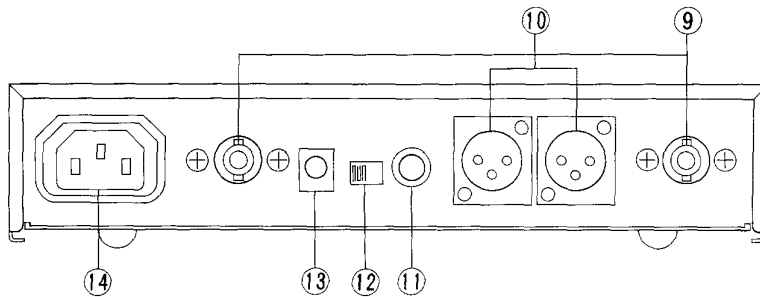
■ NOMENCLATURE

[Front Panel]



- ① **Power Switch**
Press this switch to turn power on. To turn power off, press this switch again. Power Indicator lights when the power is switched on.
- ② **Power Indicator**
- ③ **Tuner Receptacle**
Insert an optional tuner module WTU-870 or WTU-871.
- ④ **Volume Control**
Adjusts the output volume.
- ⑤ **Reception Indicator**
The left lamp lights when antenna A receives a signal. The right lamp lights when antenna B receives a signal.
- ⑥ **Level Indicator**
Lights in proportion to the intensity of input into a wireless microphone.
- ⑦ **Frequency Label**
Attach the label (supplied with the WTU-870 and WTU-871) to the unit.
- ⑧ **Blank Panel**

[Rear Panel]



- ⑨ **Antenna Connector**
(BNC, 75Ω, Phantom Power Output: 9V DC)
Connects to an optional wireless antenna, and supplies DC power to the YW-620 having a built-in booster amplifier.
- ⑩ **Audio Output XLR Connector**
(-60 dBV, Output Impedance : 600Ω, Balanced)
Provides individual outputs of built-in tuner modules.
- ⑪ **Mixing Output**
Line Output : 0 dBV, Output Impedance : 10kΩ, Unbalanced
Mic Output: -60 dBV, output impedance : 600Ω, unbalanced.
Mixes built-in tuner module outputs.
- ⑫ **Mixing Output Level Selector**
Switches mixing output levels.
Line Output : Connects to the line (AUX) input terminal of connected component.
Mic Output : Connects to the mic input terminal of connected component.
- ⑬ **DC IN (12V DC)**
Power input terminal for external DC power supply.
- ⑭ **AC Inlet (3 pins)**
Power input terminal for AC power supply. Use the supplied power cord.

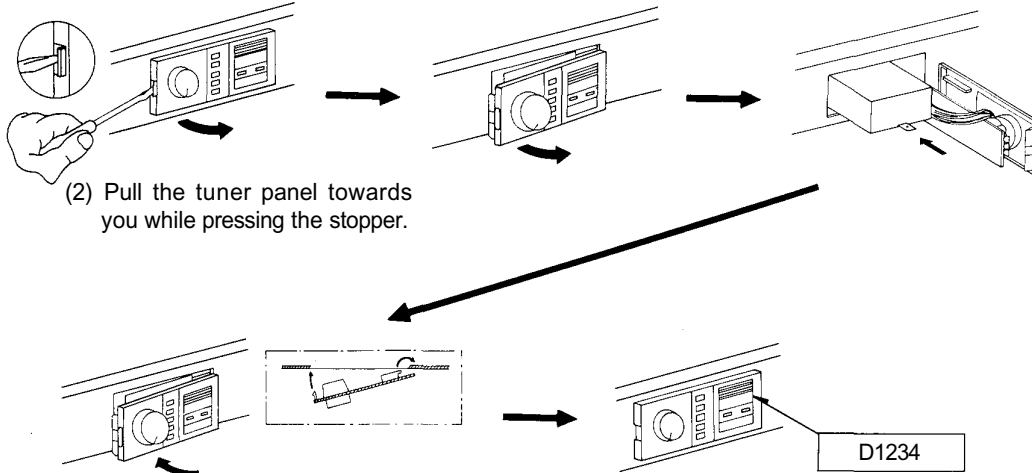
■ TUNER MODULE INSTALLATION AND REPLACEMENT

CAUTION

These servicing instructions are for use by qualified personnel only. To avoid electric shock do not perform any servicing other than that contained in the Operating Instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

1. New Installation

- (1) Press the stopper of the tuner panel with a screw driver. (3) Open the tuner panel. (4) Insert a tuner module,



- (2) Pull the tuner panel towards you while pressing the stopper.

- (5) After checking to confirm the tight connection of the tuner panel connector, fit the tuner panel in place.

- (6) Attach the frequency label supplied with the tuner module to the assigned space. After the frequency label has been attached, make sure to attach a color identification label on it.

*Color Identification Label

Attach one of the supplied labels of different colors to the tuner's panel. (Both the tuner and its corresponding hand-held microphone have to be marked with the same color for easy association with their frequencies.)

2. Installation (Expansion)

The tuner module WTU-870 or WTU-871 and the tuner panel WP-860 are required.

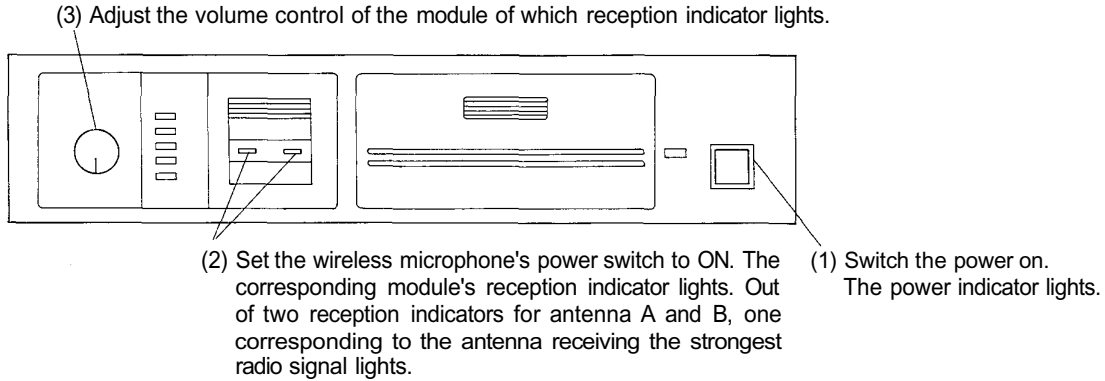
- (1) Remove the blank panel of the unit.
- (2) Attach the unit's connector to the tuner panel connector.
- (3) Insert a tuner module (WTU-870 or WTU-871)
- (4) Fit the tuner panel in place.
- (5) Attach the frequency label supplied with the tuner module.

3. Replacement

Pull out the tuner module with long nose radio pliers.

[Note] Be sure to refer the installation and replacement to qualified service personnel.

OPERATIONS



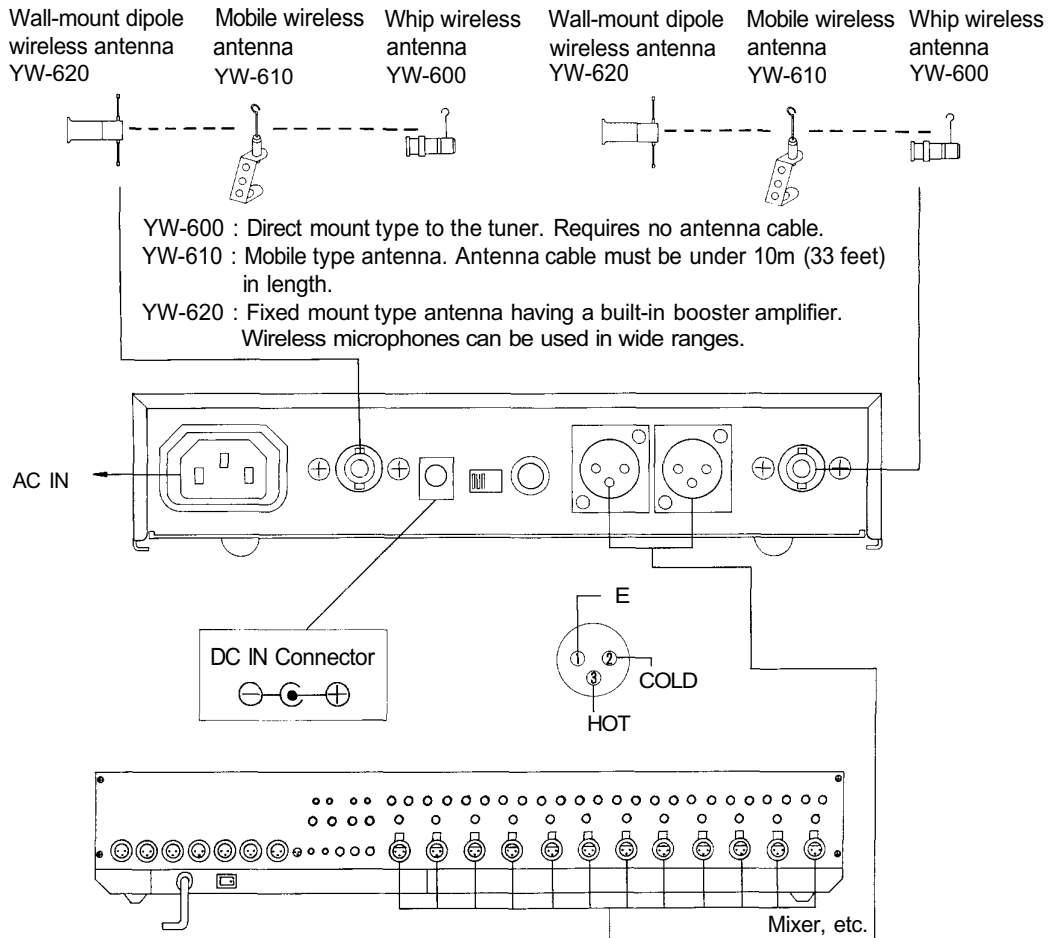
*Note on level indicator

The level indicator lights depending on the intensity of input into the wireless microphone, regardless of the volume control setting. When the indicator lights red frequently, your voice can be distorted at a microphone circuit. In such cases, move your mouth away from the microphone so that the indicator lights yellow at a maximum level. This is not needed if the indicator lights red only occasionally.

If the microphone is equipped with a sensitivity control, adjust the control so that the level indicator lights yellow when spoken loud.

CONNECTIONS

When using with the mixing console, connect the output of WT-870 to XLR-type input connectors of the the mixing console.



■ INSTALLATION PRECAUTIONS

- Install the tuner, antennas, and antenna cable away from high frequency noise generating equipment, such as fluorescent lamps and personal computers, whenever possible.
- Avoid installing receiving antennas in close proximity to metal stuff, such as steel frames and lockers. Install receiving antennas at least 30cm (1 foot) away from the wall.
- The distance between two antennas must be over 3m (10 feet). If both are installed in the same location, the diversity reception is not effective.
- Coaxial cable's high frequency loss increases as frequencies become higher. Keep the connection cable between antenna and tuner as short as possible.

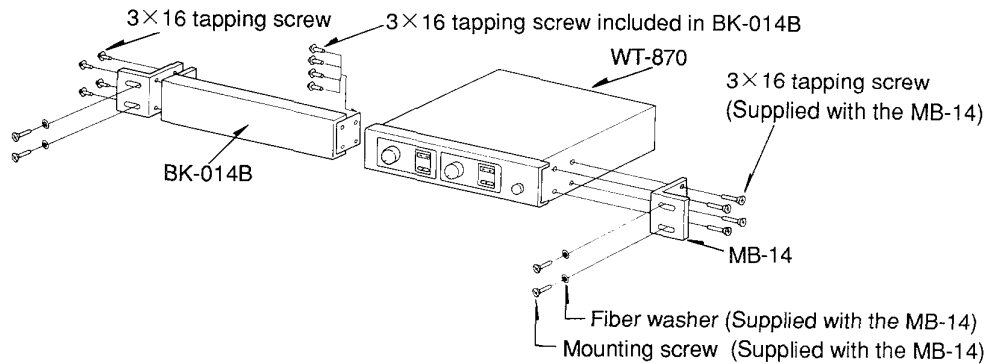
Maximum Antenna Cable Length

Cable type	External diameter	Max. length (when YW-620 is used.)
RG-59/U	6.1 mm (0.24")	48m (160ft.)
RG-6U	7.4 mm (0.29")	48~70m (160-230 ft.)

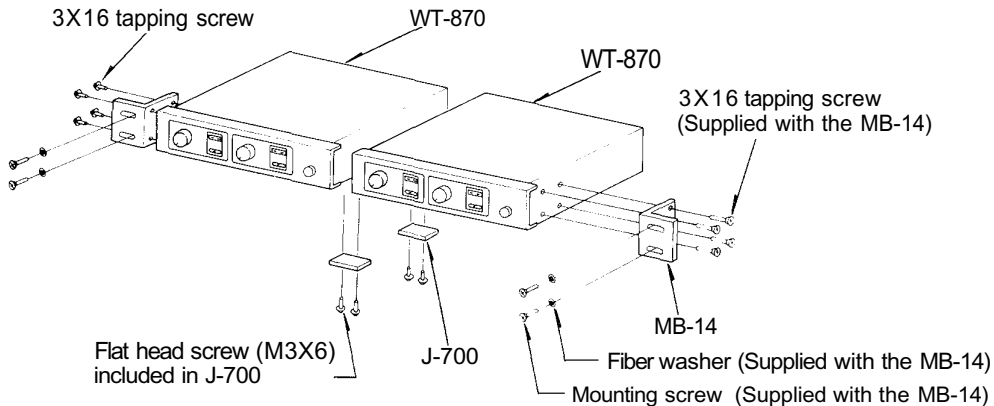
■ RACK MOUNTING

Optional mounting kit is required for rack mounting. Remove rubber supporters from the equipment.

1. Mounting one unit in a rack. (Optional mounting kits MB-14 and BK-014B are to be used.)



2. Mounting two units in a rack. (Optional mounting kits MB-14 and J-700 are to be used.)



■ ADDITIONAL EXPLANATIONS

1. Diversity Reception

Conventional single-antenna system receivers have often produced "null spots" where a radio signal is suddenly lost during its reception. The diversity reception method enables stable signal reception all the time.

2. Squelch Circuit

In a receiver employing only a noise or carrier squelch, the squelch circuit is actuated and provides the output whenever the receiver receives the same RF carrier as a receiving frequency. This causes even a disturbing radio signal to be received provided its frequency is the same as the receiving frequency. As a result, it can happen that sound is suddenly heard from the speaker due to disturbing radio signal even when the wireless microphone's power switch is left OFF.

The squelch circuit of TOA's wireless systems consists of both the tone and noise squelches, and is not actuated if only same RF carrier as the receiving frequency is received. It is so designed as to be actuated and output a signal only when the received RF carrier contains a very exact pre-determined tone frequency component. Therefore, disturbing radio signals are rejected and the speaker can be kept completely quiet when the wireless microphone's power switch is set to OFF, ensuring reliable use in every application.

3. Frequency Indicators

Component frequency ratings are expressed in combinations of alphabetic and numeric characters, with letters substituted for all numbers to the left of the 1 MHz digit.

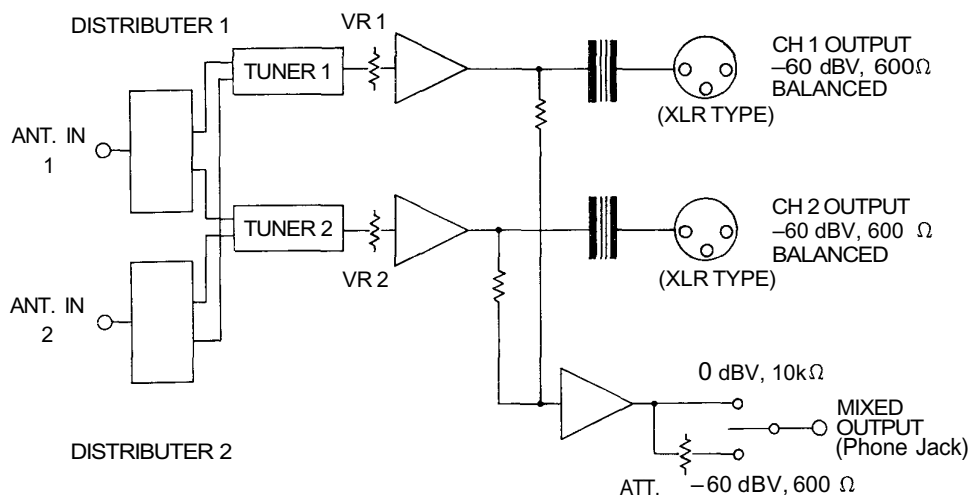
For example: C = 160 MHz F = 190 MHz
 D = 170 MHz G = 200 MHz
 E = 180 MHz H = 210 MHz

All numbers to the right of the 10 MHz digit are still expressed as numerals.

Therefore : D5432 = 175.432 MHz

G7654 = 207.654 MHz

■ BLOCK DIAGRAM



■ SPECIFICATIONS

WT-870

Power Requirements	120V AC, 60 Hz ("L" version) 220~240V AC, 50 Hz ("H" version)
Power Consumption	10W (when 2 WTU-870's or WTU-871's are mounted)
DC Input	12-18V DC, 400mA max.
Antenna Input	75 Ω , BNC Power supplied to antenna : 9V DC, 30mA max.
Audio Output	-60 dBV, 600 Ω , balanced
Mixing Output	LINE : 0 dBV, 10k Ω , unbalanced MIC : -60 dBV, 600 Ω , unbalanced
Operating Temperature	-10°C~50°C (14°F~122°F)
Dimensions	210X47.5X280mm (8.3"X1.9"X1.0")
Weight	Approx. 2.3kg (5.07lb.)
Finish	Panel: black Module and blank panel: resin (black)

WT-870 equipped with WTU-870 or WTU-871

Receiving Frequency	169.445 MHz~171.905 MHz (FCC Part 90/USA) 174.250 MHz~215.250 MHz (FCC Part 74/USA,D.O.C/CANADA) 173.8 MHz~175.0 MHz (MPT1345/UK) 202.1 MHz~203.7 MHz (DOC 60/AUSTRALIA)
Receiving Sensitivity	Under 20 dB μ V (S/N : 75 dB/Deviation : 15 kHz) (S/N : 80 dB/Deviation : 40 kHz)
Squelch Sensitivity	Approx. 14 dB μ V
Frequency Response	100 Hz~12kHz \pm 2dB
Residual Noise	Less than 30 μ V (8 μ V : A-weight)

Overall System Performance (WT-870,WTU-870/WTU-871,WM-280/WM-281/ WM-290/WM-291)

Transmission Distance	30~100m (100~330 feet)
Dynamic Range (SNR)	Better than 90 dB (102 dB : A-weight)(60 dB μ V, 15 kHz Deviation) Better than 95 dB (102 dB : A-weight)(60 dB μ V, 40 kHz Deviation)
Distortion	Under 1 %

*Specifications are subject to change without notice.

● Accessories

Power cable	1
DC input connector.....	1
Color identification labels.....	1
Operating instructions.....	1
Warranty card	1 (only "L" version)

