



OPERATING INSTRUCTIONS

AM/FM SYNTHESIZER TUNER

DT-930 UL

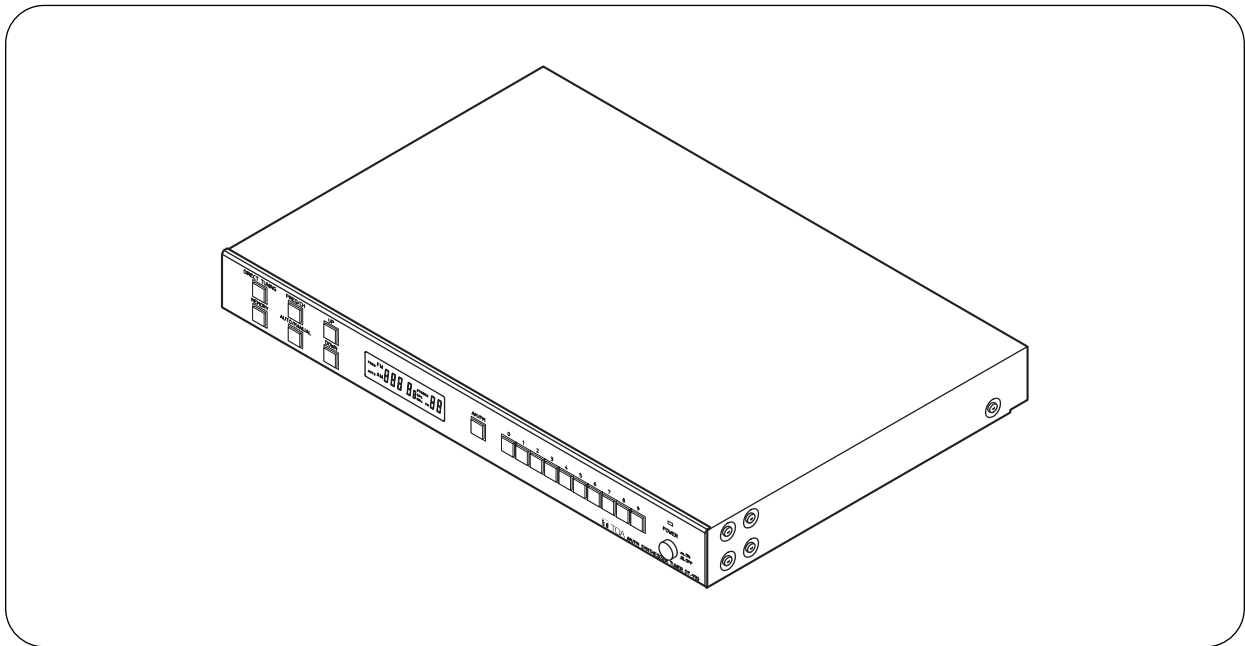


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Thank you for purchasing TOA's AM/FM Synthesizer Tuner.
Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

1. IMPORTANT SAFETY INSTRUCTIONS

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Only use attachments/accessories specified by the manufacturer.

2. SAFETY PRECAUTIONS

- Before installation or use, be sure to carefully read all the instructions in this section for correct and safe operation.
- Be sure to follow all the precautionary instructions in this section, which contain important warnings and/or cautions regarding safety.
- After reading, keep this manual handy for future reference.

Safety Symbol and Message Conventions

Safety symbols and messages described below are used in this manual to prevent bodily injury and property damage which could result from mishandling. Before operating your product, read this manual first and understand the safety symbols and messages so you are thoroughly aware of the potential safety hazards.



WARNING

Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.

When Installing the Unit

- Do not expose the unit to rain or an environment where it may be splashed by water or other liquids, as doing so may result in fire or electric shock.
- Use the unit only with the voltage specified on the unit. Using a voltage higher than that which is specified may result in fire or electric shock.
- Do not cut, kink, otherwise damage nor modify the power supply cord. In addition, avoid using the power cord in close proximity to heaters, and never place heavy objects -- including the unit itself -- on the power cord, as doing so may result in fire or electric shock.
- Avoid installing or mounting the unit in unstable locations, such as on a rickety table or a slanted surface. Doing so may result in the unit falling down and causing personal injury and/or property damage.
- To prevent lightning strikes, install the unit at least five meters away from a lightning rod, and yet within the protective range (angle of 45°) of the lightning conductor. Lightning strikes may cause a fire, electric shock or personal injury.
- Since the unit is designed for in-door use, do not install it outdoors. If installed outdoors, the aging of parts causes the unit to fall off, resulting in personal injury. Also, when it gets wet with rain, there is a danger of electric shock.

When the Unit is in Use

- Should the following irregularity be found during use, immediately switch off the power, disconnect the power supply plug from the AC outlet and contact your nearest TOA dealer. Make no further attempt to operate the unit in this condition as this may cause fire or electric shock.
 - If you detect smoke or a strange smell coming from the unit.
 - If water or any metallic object gets into the unit.
 - If the unit falls, or the unit case breaks.
 - If the power supply cord is damaged (exposure of the core, disconnection, etc.)
 - If it is malfunctioning (no tone sounds.)
- To prevent a fire or electric shock, never open nor remove the unit case as there are high voltage components inside the unit. Refer all servicing to your nearest TOA dealer.
- Do not place cups, bowls, or other containers of liquid or metallic objects on top of the unit. If they accidentally spill into the unit, this may cause a fire or electric shock.
- Do not touch a plug or antenna during thunder and lightning, as this may result in electric shock.



CAUTION

Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.

When Installing the Unit

- Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.
- When unplugging the power supply cord, be sure to grasp the power supply plug; never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.
- When moving the unit, be sure to remove its power supply cord from the wall outlet. Moving the unit with the power cord connected to the outlet may cause damage to the power cord, resulting in fire or electric shock. When removing the power cord, be sure to hold its plug to pull.
- Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, near the heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.
- Leave the installation of an antenna to your TOA dealer because the installation requires expert knowledge. Improper installation may cause the antenna to fall, resulting in personal injury or electric shock.
- Be sure to follow the instructions below when rack-mounting the unit. Failure to do so may cause a fire or personal injury.
 - Install the equipment rack on a stable, hard floor. Fix it with anchor bolts or take other arrangements to prevent it from falling down.
 - Use the screws supplied with the optional rack-mounting bracket.
 - When connecting the unit's power cord to an AC outlet, use the AC outlet with current capacity allowable to the unit.

When the Unit is in Use

- Do not place heavy objects on the unit as this may cause it to fall or break which may result in personal injury and/or property damage. In addition, the object itself may fall off and cause injury and/or damage.
- Use the dedicated AC adapter for the unit. Note that the use of other adapter may cause a fire.
- Contact your TOA dealer as to the cleaning. If dust is allowed to accumulate in the unit over a long period of time, a fire or damage to the unit may result.
- If dust accumulates on the power supply plug or in the wall AC outlet, a fire may result. Clean it periodically. In addition, insert the plug in the wall outlet securely.
- Switch off the power, and unplug the power supply plug from the AC outlet for safety purposes when cleaning or leaving the unit unused for 10 days or more. Doing otherwise may cause a fire or electric shock.

3. INFORMATION TO THE USER

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

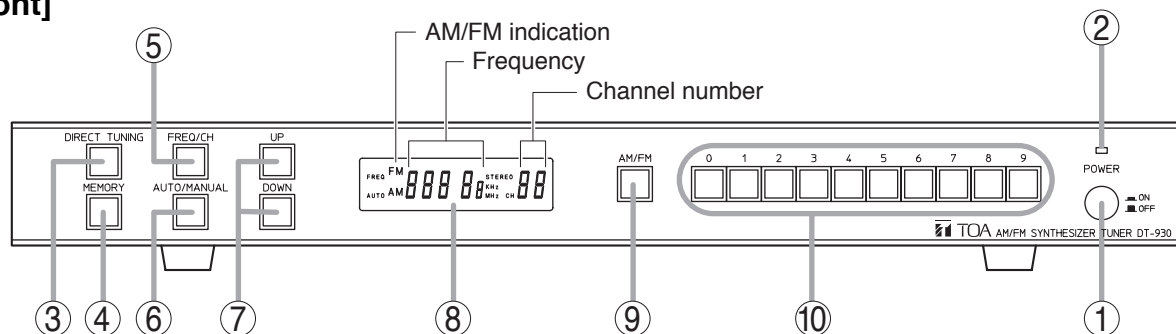
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

4. GENERAL DESCRIPTION

The DT-930 is an AM/FM radio tuner capable of storing up to 40 receiving channels, each of which can be recalled by one-touch operation. The unit can be mounted on an EIA equipment rack using the optional Rack Mounting Bracket MB-15B.

5. NOMENCLATURE AND FUNCTIONS

[Front]



1. Power switch

Pressing this switch switches on the power, and pressing the switch again switches off the power.

Note

The receiving frequencies stored in memory are retained even when the power is turned off.

2. Power indicator

Lights when the power is switched on. (Green)

3. Direct tuning key

Pressing this key selects direct tuning mode. (Refer to p. 6.)

4. Memory key

Stores the receiving frequency in memory.

5. Frequency/Channel selector key

Selects either the receiving frequency or the preset channel.

6. Auto/Manual mode selector key

Selects either auto or manual tuning mode. (Refer to p. 5.)

7. Tuning keys (UP/DOWN)

Used to change the receiving frequency or preset channel.

8. LCD indicator

Displays the AM or FM indication, receiving frequency, and channel number.

9. AM/FM band selector key

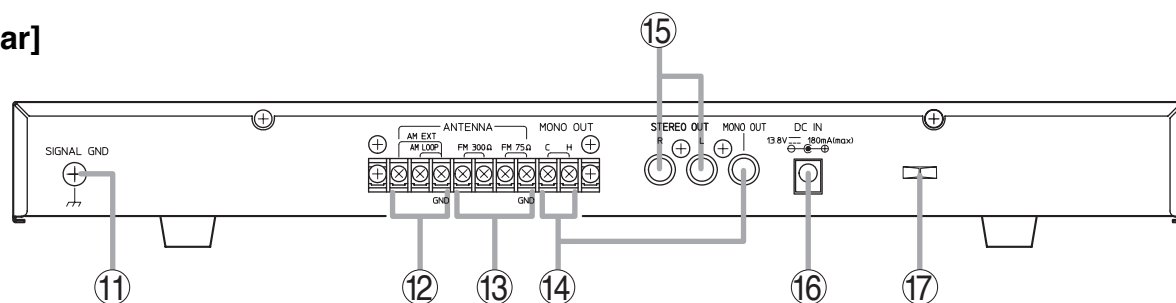
Selects the desired band.

The indication alternates between AM and FM with each depression of this key.

10. Preset memory enter keys

Used to enter numerals when storing or recalling preset radio programs in memory, or when setting a receiving frequency in direct tuning mode.

[Rear]



11. Functional earth terminal

Hum noise may be generated when external equipment is connected to the unit. Connecting this terminal to the functional earth terminal of the external equipment may reduce the hum noise.

Note: This terminal is not for protective earth.

12. AM antenna terminals

Connect to an AM antenna (loop antenna or external antenna).

13. FM antenna terminals

Connect to an FM antenna. (300 Ω / 75Ω)

14. Monaural output terminals

Provide monaural audio output of received radio programs. (RCA jack, screw terminals / -15 dB, 10 kΩ load)

15. Stereo output terminals

Provide stereo audio output of received radio programs. (RCA jack / -15 dB, 10 kΩ load)

16. AC adapter input terminal

Connect the supplied AC adapter.

17. Cable holder

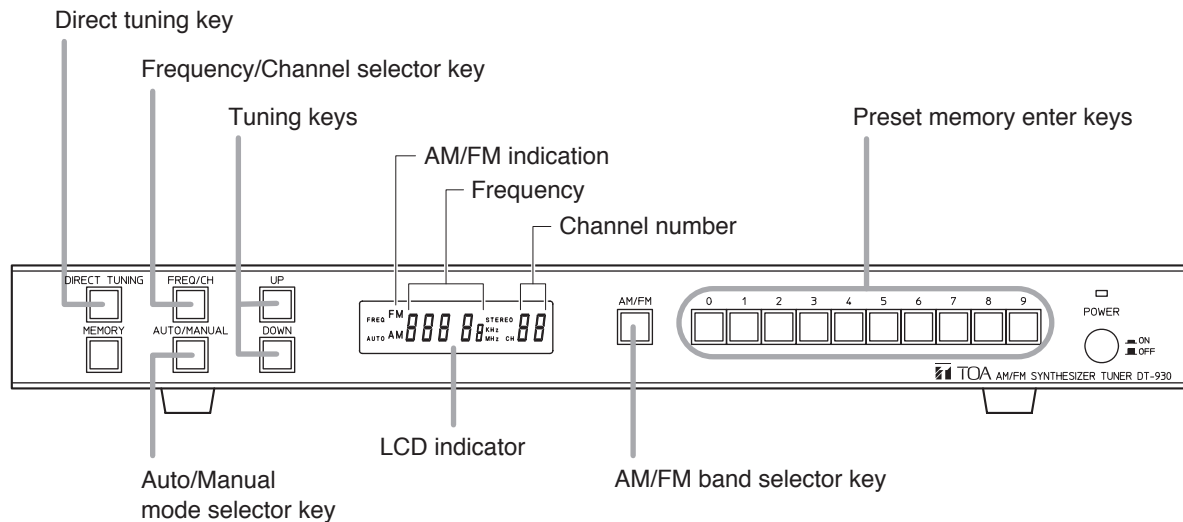
Insert the AC adapter cord near its plug into the cable holder to prevent the plug from coming off.

6. RADIO RECEPTION

The following three modes are available for receiving the desired frequency.

- (1) Auto tuning mode: Automatically detects and selects the frequency.
- (2) Manual tuning mode: The frequency is changed in specified steps, or recalled by changing the preset channel, and selected manually.
- (3) Direct tuning mode: The frequency is directly entered.

[Keys used for operation]



6.1. Auto Tuning Mode

- Step 1.** Press the AM/FM Band selector key to select either AM or FM broadcast. The selected band is displayed on the screen.
- Step 2.** Press the Auto/Manual Mode selector key to select the Auto tuning mode. Display the "AUTO" indication on the screen.
- Step 3.** Press the Frequency/Channel selector key to select the frequency. Display the "FREQ" indication on the screen.
- Step 4.** Press the Tuning key (UP or DOWN) to select the receiving frequency. Each time the Tuning key is pressed, the frequency varies and stops when tuned. If the tuned frequency has been stored in memory, the memory channel number is displayed on the screen.

6.2. Manual Tuning Mode

- Step 1.** Press the AM/FM Band selector key to select either AM or FM broadcast.
The selected band is displayed on the screen.
- Step 2.** Press the Auto/Manual Mode selector key to select the Manual tuning mode.
Extinguish the "AUTO" indication on the screen.
- Step 3.** Press the Frequency/Channel selector key to select either the frequency or channel.
When selecting the frequency, the "FREQ" indication is displayed on the screen.
When selecting the channel, the "FREQ" indication extinguishes.
- Step 4.** Press the Tuning key (UP or DOWN) to select either the receiving frequency or channel.

[Frequency setting mode]

Each time the UP key is pressed, the frequency increases by 10 kHz for AM broadcasts or by 200 kHz for FM broadcasts.

Each time the DOWN key is pressed, the frequency decreases by 10 kHz for AM broadcasts or by 200 kHz for FM broadcasts.

[Channel setting mode]

Each time the UP key is pressed, the channel number increases. While DOWN key is pressed, the channel number decreases.

Note

Selecting an idle channel restores the unit to the former status in 5 seconds.

6.3. Direct Tuning Mode

- Step 1.** Press the AM/FM Band selector key to select either AM or FM broadcast.
The selected band is displayed on the screen.
- Step 2.** Press the Direct Tuning key to select the Direct tuning mode.
The frequency indication on the screen flashes.
- Step 3.** Press the Preset Memory Enter keys (0 – 9) to set the receiving frequency.
If an incorrect frequency is entered, it is not displayed on the screen.

(Example)

- Entering AM 530 kHz: Press [5], [3], and [0] keys in order.
- Entering AM 1620 kHz: Press [1], [6], [2], and [0] keys in order.
- Entering FM 87.9 MHz: Press [8], [7], and [9] keys in order.
- Entering FM 107.9 MHz: Press [1], [0], [7], and [9] keys in order.

Notes

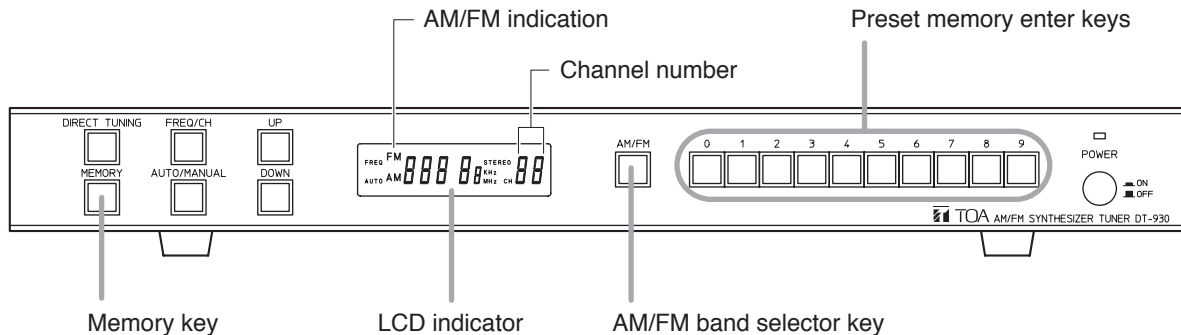
- The frequency indication stops flashing when the receiving frequency entry is completed, indicating termination of Direct tuning mode.
- When 5 seconds has passed without key entry for receiving frequency, the Direct tuning mode is automatically terminated and the unit reverts to the former status.

7. RECEIVING FREQUENCY MEMORY SETTINGS

There are two methods for storing the receiving frequency in memory: manual memory preset and auto memory preset.

The number of memory channels is 40 in total for AM and FM broadcasts.

[Keys used for operation]



7.1. Manual Memory Preset

Up to 40 AM and/or FM broadcasts can be freely assigned to CH01 through CH40 for preset memory.

Step 1. Tune in the desired frequency.

Use Auto tuning, Manual tuning, or Direct tuning method for broadcast reception. (Refer to p. 5.)

Step 2. Press the Memory key.

The "--" indication flashes in the channel display section of the screen.

Step 3. Press the Preset Memory Enter keys (0 – 9) to designate the channel number in which the frequency is to be stored.

(Example)

- CH01: Press [0] and [1].
- CH10: Press [1] and [0].

Notes

- Memory preset programming is completed when the screen channel indication changes from flashing to steady ON.
- When 5 seconds has passed without key entry for the channel number, the unit reverts to the former status.

7.2. Auto Memory Preset

Preset frequencies can be automatically assigned to CH01 - CH20 for AM broadcasts and to CH21 - CH40 for FM broadcasts, both in order of low to high frequencies.

Step 1. Press the AM/FM Band selector key to select either AM or FM broadcast.

The selected band is displayed on the screen.

Step 2. Hold down the Memory key for 3 seconds or more.

The "AUTO" and "CH" indications on the screen flash.

Step 3. Release the Memory key.

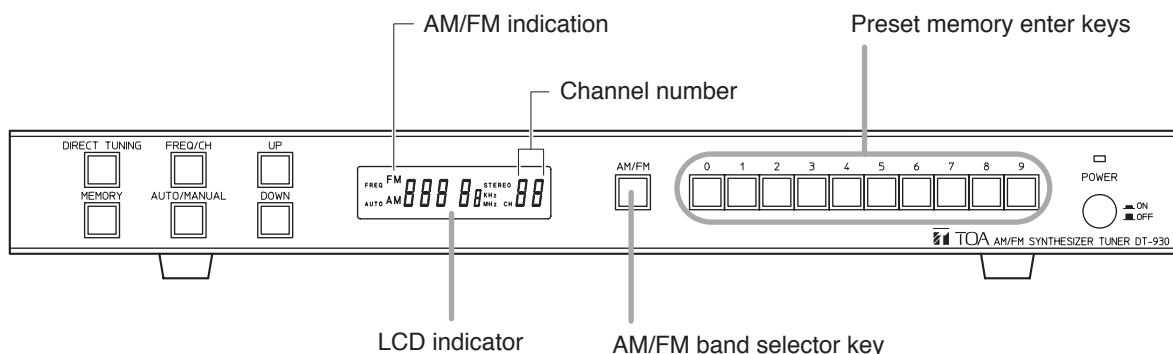
Frequencies that can be tuned automatically are stored in memory in sequence.

Note

Preset frequencies for both AM and FM broadcasts are automatically assigned to channels CH-01-CH20 in order of frequency band, from low to high.

8. RECALLING THE PRESET FREQUENCY

[Keys used for operation]



Step 1. Press the AM/FM Band selector key to select either AM or FM broadcast.
The selected band is displayed on the screen.

Step 2. Press the Preset Memory Enter keys (0 – 9) to designate the desired receiving channel.

(Example)

- Selecting CH01: Press [0] and [1].
- Selecting CH10: Press [1] and [0].

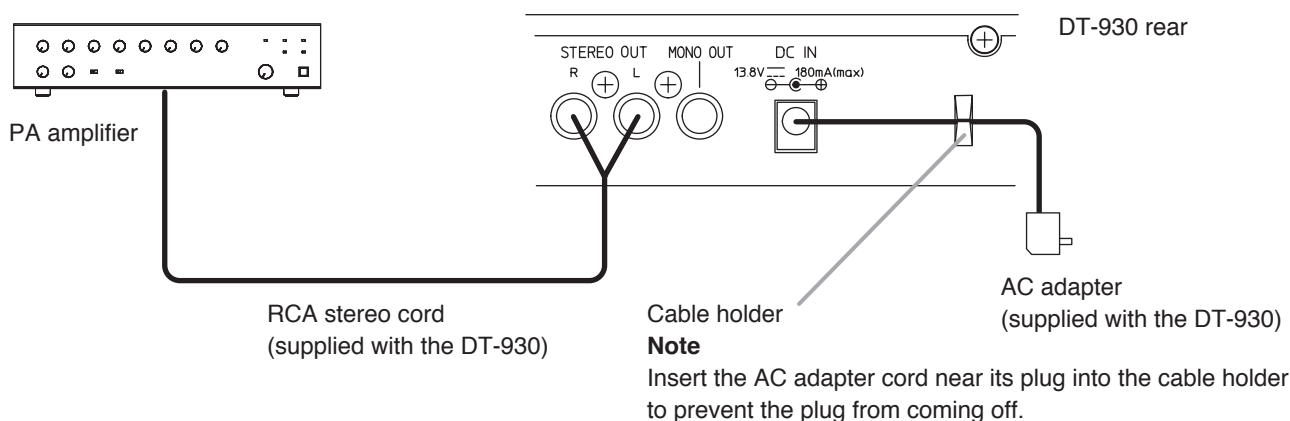
9. CONNECTIONS

9.1. Power Supply and Amplifier Connections

When connecting an external amplifier to the unit, use the supplied RCA stereo cord.

Note

When using the unit in combination with an amplifier, place the unit below the amplifier taking care not to obstruct heat radiation from the amplifier.



9.2. AM Antenna Connections

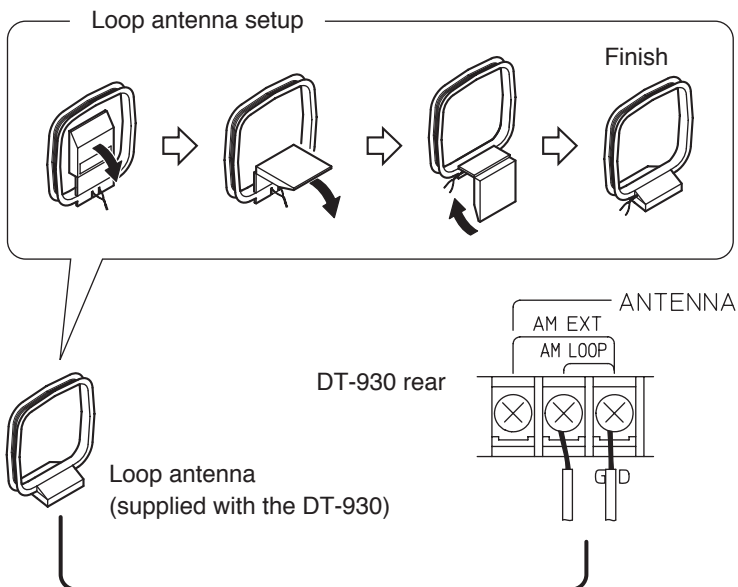
9.2.1. Loop antenna

Use the supplied loop antenna to receive broadcasts if satisfactory reception can be obtained.

When using the loop antenna, adjust its position for the best possible reception while listening to AM broadcasts.

Note

When using the supplied loop antenna, keep it as far away as possible from speaker cables, audio cables and power cables.



9.2.2. External antenna

Use the optional AM Radio Antenna YA-410A as external antenna if satisfactory reception cannot be obtained.

It is highly recommended that a long-wire antenna be installed outdoor when the unit is used in weak signal areas or inside ferroconcrete buildings. The long-wire antenna is capable of receiving weak radio signals that the supplied loop antenna cannot receive.

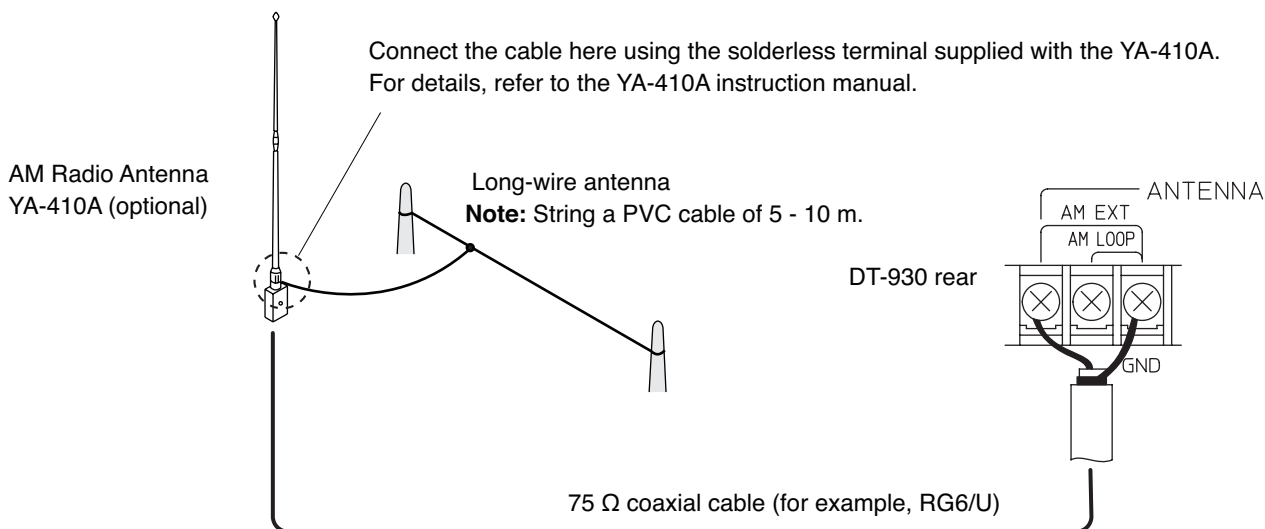
Installing a long-wire antenna

Connect the optional AM Radio Antenna YA-410A to the long-wire antenna using a PVC cable as illustrated below.

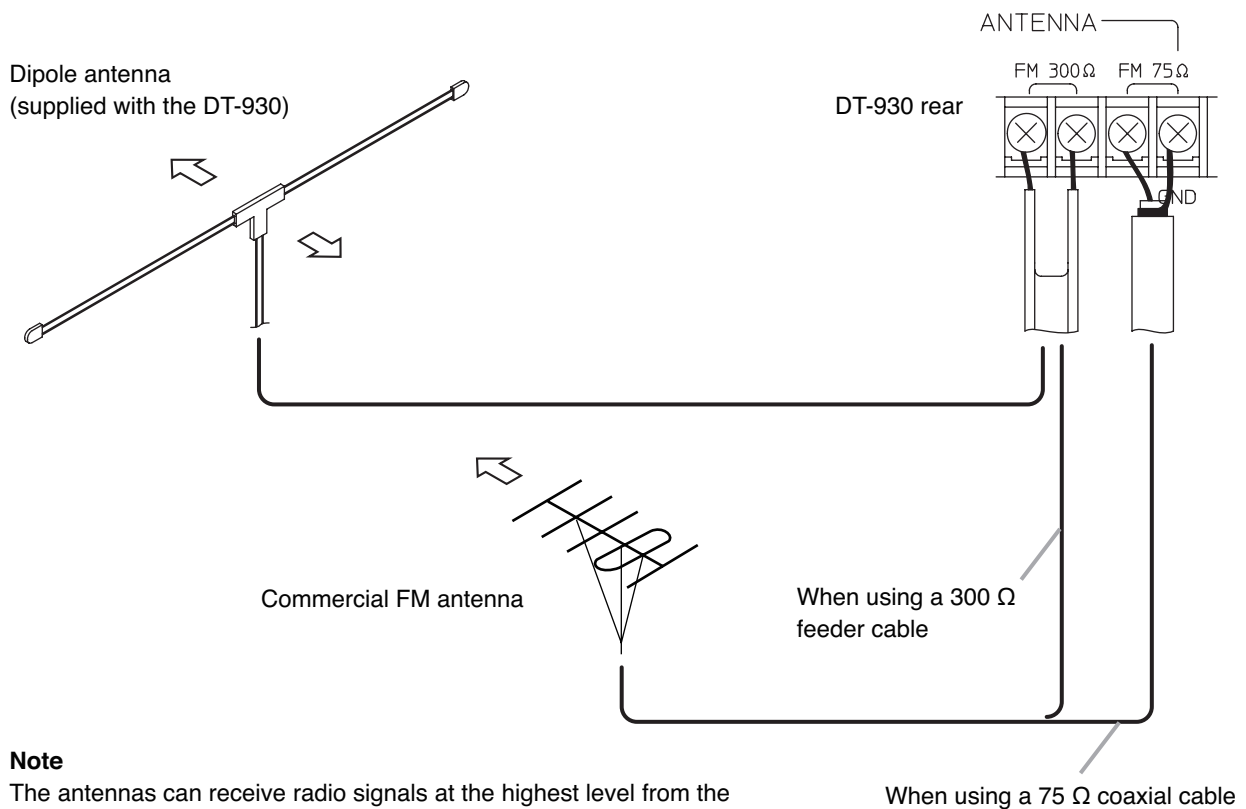
The long-wire antenna can be installed by stringing a PVC cable of about 5 - 10 m.

Notes

- Install the external antenna on the roof or in other open areas. Note that sufficient sensitivity cannot be obtained if the antenna wire is set up between buildings.
- Keep the antenna at least 30 cm away from walls or metal objects that can interfere with radio signals.
- Install the YA-410A vertically.



9.3. FM Antenna Connections



Note

The antennas can receive radio signals at the highest level from the direction indicated by the arrows. Position the antenna so that the arrow(s) can face toward broadcast stations, or orient the antenna for the best reception by actually receiving broadcasts.

9.3.1. Dipole antenna

Connect the supplied dipole antenna to the rear panel-mounted "FM 300 Ω" terminals.

Note

Stretch the antenna straight. Install it away from metal objects that can interfere with radio signals.

9.3.2. External antenna

Connect an external antenna when the supplied dipole antenna cannot obtain good reception. When using a 300 Ω feeder cable for an external antenna, connect it to the "FM 300 Ω" terminals on the rear panel. Likewise, connect it to the "FM 75 Ω" terminals when using a 75 Ω coaxial cable.

Tip

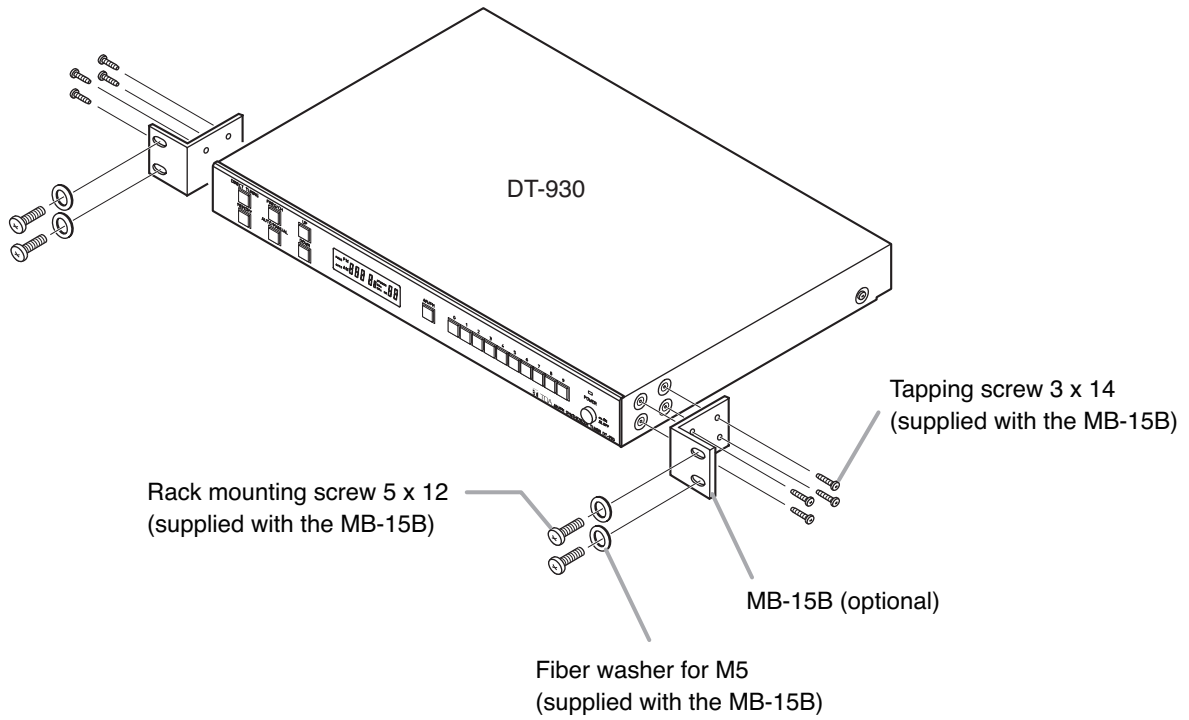
Be sure to use a 75 Ω coaxial cable when installing the tuner in areas where radio signals are weak or where signal reception is unsatisfactory due to noise interference from motor vehicles or high-voltage cables.

10. RACK MOUNTING

When mounting the unit on an equipment rack, use the optional Rack Mounting Bracket MB-15B. Before mounting, remove 4 plastic feet on the unit bottom.

Note

Be sure to place the unit below heat generating equipment such as power supply units or amplifiers. Put a perforated panel between the unit and the heat generating equipment as required.



Note

The rack mounting screws (5 x 12) are dedicated for the TOA equipment racks. Do not use them for other racks.

11. SPECIFICATIONS

Power Source	120 V AC, 60 Hz (use of the supplied AC adapter)
Power Consumption	180 mA (when AC adapter is used)
Receiving Frequency	AM: 520 – 1710 kHz (10 kHz step) FM: 87.9 – 107.9 MHz (200 kHz step)
Antenna Input	AM: Loop antenna (balanced), external antenna (unbalanced) FM: 300Ω (balanced), 75Ω (unbalanced)
Audio Output	Stereo: –15 dB*, 10 kΩ, unbalanced, RCA jack Monaural: –15 dB*, 10 kΩ, unbalanced, M3 screw terminal, distance between barriers: 6.4 mm, RCA jack
Channels of memory	40 channels in total for AM and FM broadcasts
Operating Temperature	0°C to 40°C
Finish	Panel: Aluminum (hair-line finish), black Case : Pre-coated steel plate, black
Dimensions	420 (w) x 53 (h) x 295 (d) mm (projections excluded)
Weight	2.8 kg

* 0 dB = 1 V

Note: The design and specifications are subject to change without notice for improvement.

• Accessories

AC adapter	1
AM loop antenna	1
FM dipole antenna	1
RCA stereo cord (1 m)	1

• Optional products

AM radio antenna:	YA-410A
Rack mounting bracket:	MB-15B