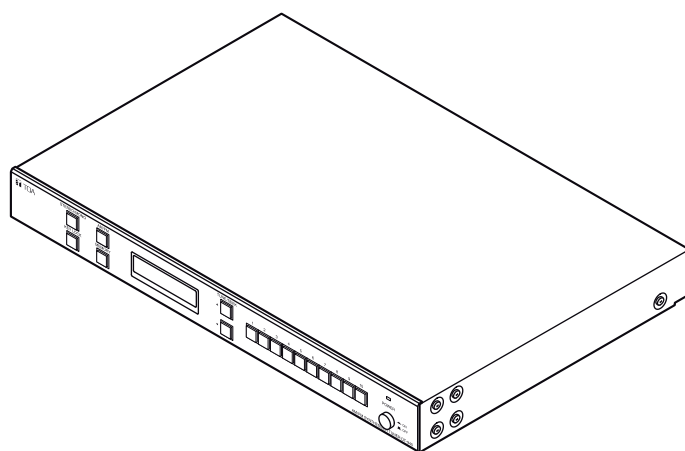




OPERATING INSTRUCTIONS

AM/FM TUNER

DT-940



Thank you for purchasing TOA's AM/FM Tuner.

Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

TABLE OF CONTENTS

1. IMPORTANT SAFETY INSTRUCTIONS	3
2. SAFETY PRECAUTIONS	3
3. INFORMATION TO THE USER	4
4. GENERAL DESCRIPTION	5
5. NOMENCLATURE AND FUNCTIONS	5
Front	5
Rear	6
6. RADIO RECEPTION	7
6.1. Auto Tuning Mode	7
6.2. Manual Tuning Mode	8
7. RECEIVING FREQUENCY MEMORY SETTINGS	8
7.1. Manual Memory Preset	9
7.2. Auto Memory Preset	9
8. RECALLING THE PRESET FREQUENCY	10
9. KEY LOCKING	11
9.1. When Enabling the Key Lock	11
9.2. When Releasing the Key Lock	11
10. CONNECTIONS	11
10.1. Power Supply and Amplifier Connections	11
10.2. AM Antenna Connections	12
10.3. FM Antenna Connections	14
11. RACK MOUNTING	15
12. SPECIFICATIONS	16
Accessories	16
Optional product	16

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.
 - When connecting the unit's power cord to an AC outlet, use the AC outlet with current capacity allowable to the unit.
 - The rack-mounting screws supplied with the optional rack-mounting bracket can be used for the TOA equipment rack only. Do not use them for other racks.

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

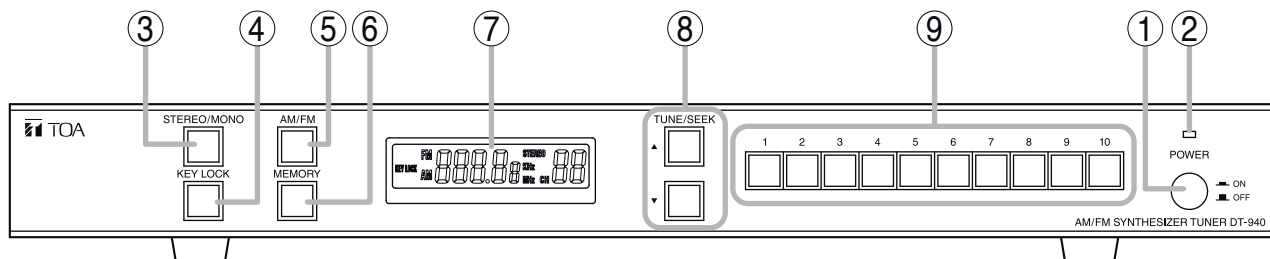
The DT-940 is an AM/FM radio tuner.

20 receiving channels each of AM and FM broadcasts can be stored in memory, which can be recalled by one-touch key operation.

The unit can be mounted on an EIA equipment rack using the optional MB-15B Rack Mounting Bracket.

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 (Green)

Lights when the power is switched on.

3. Stereo/Monaural selector key

While receiving Stereo broadcast, the mode alternates between Stereo and Monaural with each depression of this key.

(See "RADIO RECEPTION" on p. 7.)

Note

When receiving the broadcast with preset frequency, pressing this key deletes the presetting from memory, turning off the preset channel indication.

4. Key lock key

Disables all key operations except the Power switch and the Key lock key.

The operation alternates between Key lock on and off with each long-depression of this key.

When key-locked, the KEY LOCK indication will be displayed on the LCD indicator.

(See "KEY LOCKING" on p. 11.)

5. AM/FM band selector key

Selects the desired band.

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

(See "RADIO RECEPTION" on p. 7.)

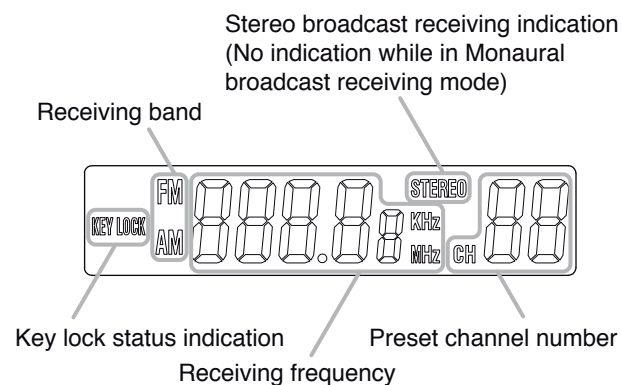
6. Memory key

Stores the receiving frequency in memory.

(See "RECEIVING FREQUENCY MEMORY SETTINGS" on p. 8.)

7. LCD indicator

Displays the receiving band, receiving frequency, and preset channel number.



8. Tuning keys

Used to change the receiving frequency.

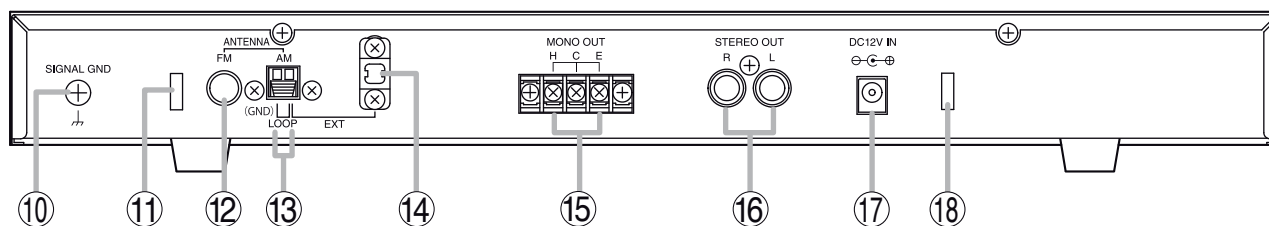
(See "RADIO RECEPTION" on p. 7.)

9. Preset memory enter keys

Used to store and recall preset radio programs in memory.

(See "RECEIVING FREQUENCY MEMORY SETTINGS" on p. 8 and "RECALLING THE PRESET FREQUENCY" on p. 10.)

[Rear]



10. Functional ground terminal

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

Note: This terminal is not for protective ground.

11. Cord clamp

Used to wrap the antenna cable around this cord clamp to prevent the FM antenna connector from coming off by being pulled when the supplied FM wire antenna is connected.

(See "FM Antenna Connections" on p. 14.)

12. FM antenna terminals

F-type connector, 75 Ω , unbalanced

Connect to an FM antenna.

(See "FM Antenna Connections" on p. 14.)

13. AM antenna terminals

Push type terminal, balanced

Connect to an AM antenna.

(See "AM Antenna Connections" on p. 12.)

14. Coaxial cable clamp

Used to fix the coaxial cable.

(See "When using a coaxial cable" on p. 13.)

15. Monaural output terminals

Provide monaural audio output of received radio programs.

Connect the output cable to the "H" and "C" terminals.

If the noise is superimposed on the output signal, use a 2-core shielded cable and connect the shielded wire to the "E" terminal.

16. Stereo output terminals

Provide stereo audio output of received radio programs. (RCA jack)

17. AC adapter input terminal

Connect the supplied AC adapter.

(See "Power Supply and Amplifier Connections" on p. 11.)

18. Cord clamp

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

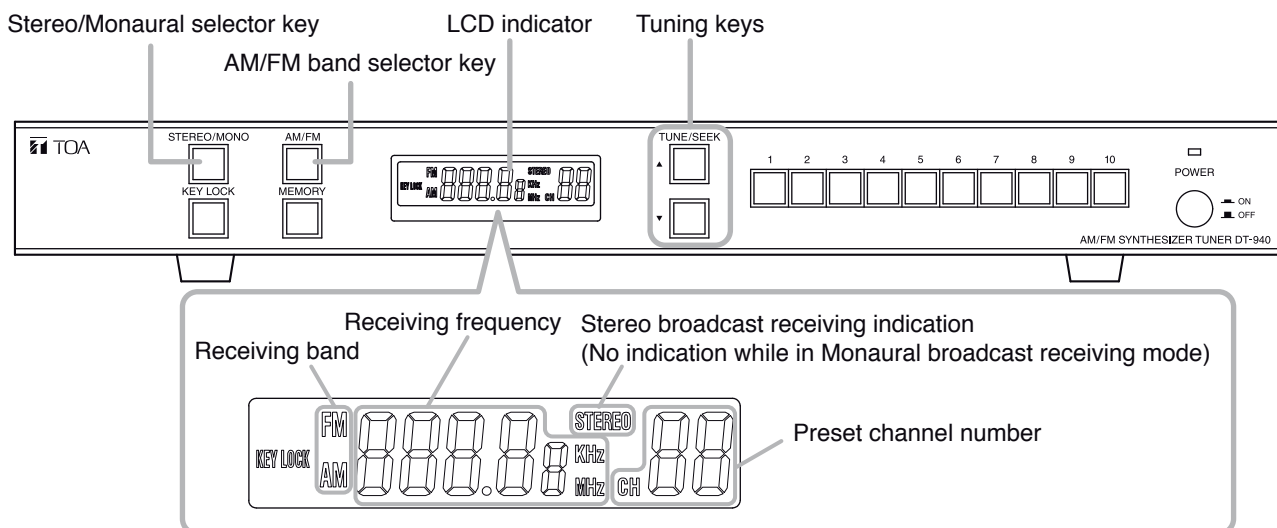
(See "Power Supply and Amplifier Connections" on p. 11.)

6. RADIO RECEPTION

The following 2 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, and selected manually.

[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. Select the desired receiving frequency by holding down (approx. 2 seconds) the Tuning key (▲ or ▼) several times repeatedly.
Holding down the Tuning key for 2 seconds or more automatically changes frequency and stops if tuned.
If the tuned frequency has been stored in memory, the preset channel number is displayed on the LCD indicator.
When the frequency change comes to a stop, holding down the Tuning key for 2 seconds or more once again searches the next receiving frequency.
Repeat this process until the desired frequency can be selected.

Step 3. Press the Stereo/Monaural selector key to select the receiving mode.
When Stereo broadcast is being received, the STEREO indication on the LCD indicator alternates between on and off each time this key is pressed.
If the stereo broadcast receiving signal level is low, the broadcast is received in monaural mode, and the STEREO indication remains off.

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 Tuning Key (▲ or ▼) several times to select the desired receiving frequency.
Each time the ▲ key is pressed, the frequency increases by 10 kHz for AM broadcasts or by 100 kHz for FM broadcasts.
Each time the ▼ key is pressed, the frequency decreases by 10 kHz for AM broadcasts or by 100 kHz for FM broadcasts.
- Step 3.** Press the Stereo/Monaural selector key to select the receiving mode.
When Stereo broadcast is being received, the STEREO indication on the LCD indicator alternates between on and off each time this key is pressed.
If the stereo broadcast receiving sensitivity is low, the broadcast is received in monaural mode, and the STEREO indication remains off.

7. RECEIVING FREQUENCY MEMORY SETTINGS

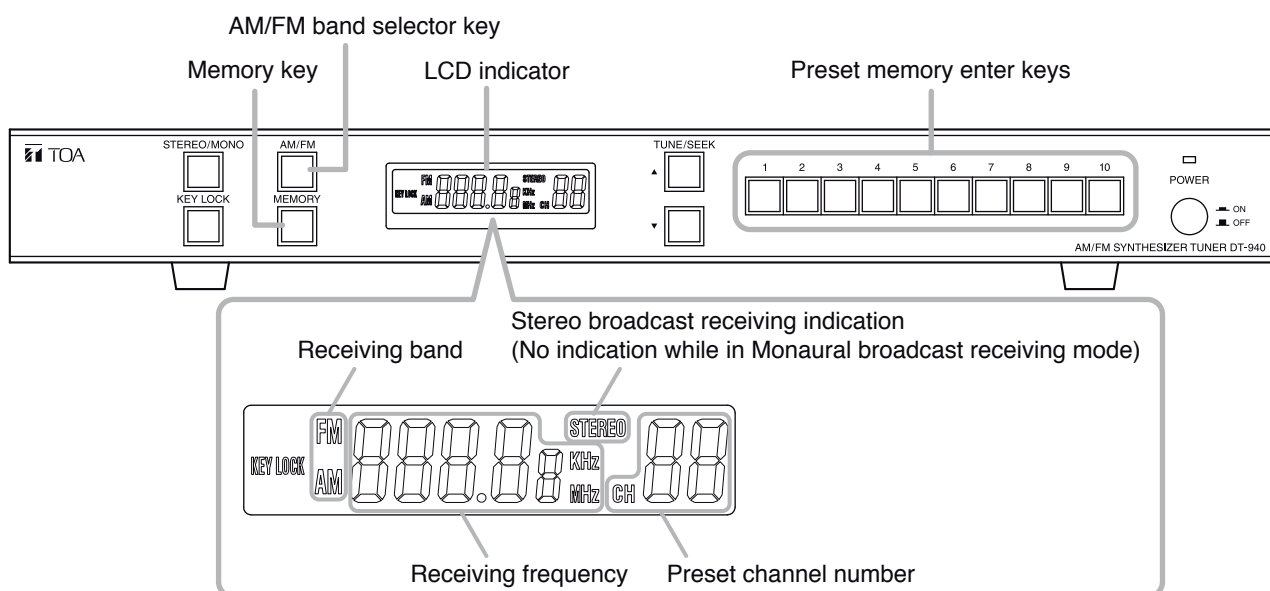
There are two methods for storing the receiving frequency in memory: manual memory preset and auto memory preset.

20 receiving channels each of AM and FM broadcasts can be stored in memory.

Tip

The receiving mode of the Stereo broadcast or the Monaural broadcast will also be stored in memory.

[Keys used for operation]



7.1. Manual Memory Preset

Step 1. Tune in the desired frequency.

Use Auto tuning or Manual tuning method for broadcast reception. (See p. 7.)

Step 2. Press the Memory key.

The "CH – –" indication flashes on the LCD indicator.

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 [1].
- CH11: Press [10], followed by [1].
- CH20: Press [10] twice in succession.

Memory preset programming is completed when the LCD indicator channel indication changes from flashing to steady ON.

Notes

- When 5 seconds has passed without key entry for the channel number, the unit reverts to the former status.
- When selecting the CH11 through CH20, if you enter no key after pressing the [10] key, the received frequency in **Step 1** above will be preset in CH10.

7.2. Auto Memory Preset

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 "CH – –" indication on the LCD indicator flashes.

Step 3. Release the Memory key while the "CH – –" indication is flashing.

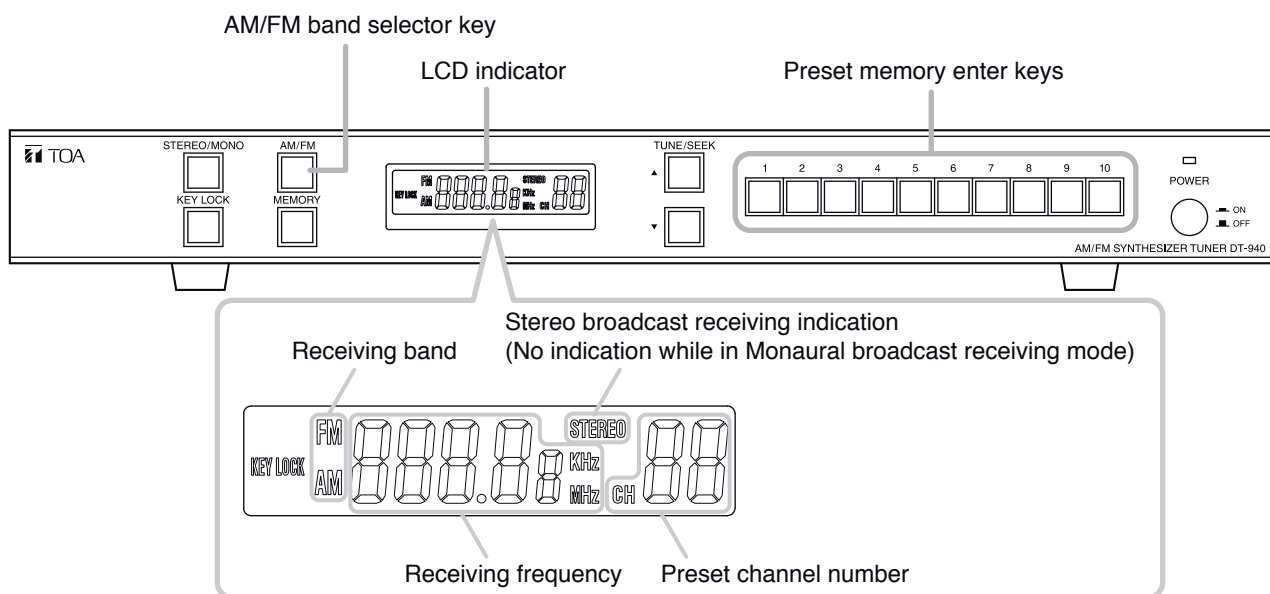
Frequencies that can be tuned are stored in memory in sequence automatically.

Tip

Preset frequencies for both AM and FM broadcasts are automatically assigned to channels CH01 – 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 LCD indicator.

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

(Example)

- CH01: Press [1].
- CH11: Press [10], followed by [1].
- CH20: Press [10] twice in succession.

The selected channel number and the receiving frequency are displayed on the LCD indicator.

Notes

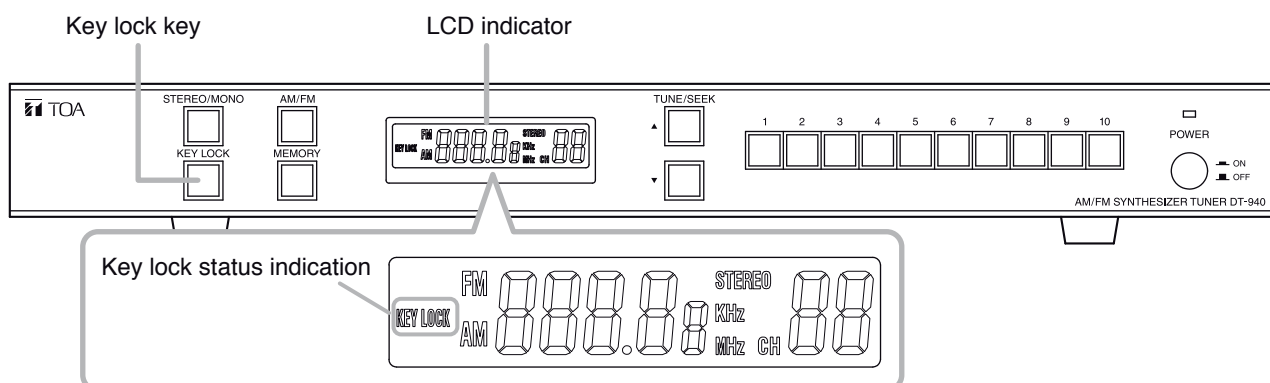
- Only when recalling the CH10, it takes approximately 1 second until its channel number and receiving frequency are displayed on the LCD indicator.
- Even if broadcast receiving mode has been stored in the preset channel as stereo mode, the broadcast will be received in monaural mode when the broadcast receiving signal level is low.

9. KEY LOCKING

All key operations except the Power switch and the Key lock key can be disabled by pressing the Key lock key.

Tip

Key lock status is retained even when the unit's power is switched off.



9.1. When Enabling the Key Lock

Step: Hold down the Key lock key for approximately 3 seconds while the [KEY LOCK] indication is not displayed. The [KEY LOCK] indication in the LCD indicator lights, enabling the Key lock function.

9.2. When Releasing the Key Lock

Step: Hold down the Key lock key for approximately 3 seconds while the [KEY LOCK] indication is displayed. The [KEY LOCK] indication in the LCD indicator goes off, disabling the Key lock function.

10. CONNECTIONS

Notes

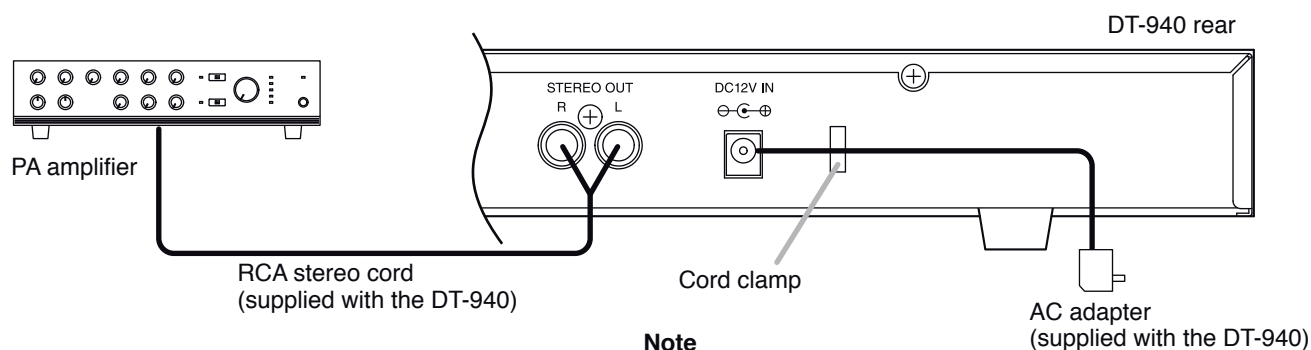
- The socket-outlet shall be installed near the unit and the plug (disconnecting device) shall be easily accessible.
- Ensure that the unit is located at least 100 mm (4") away from ceiling and wall surfaces.

10.1. 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.



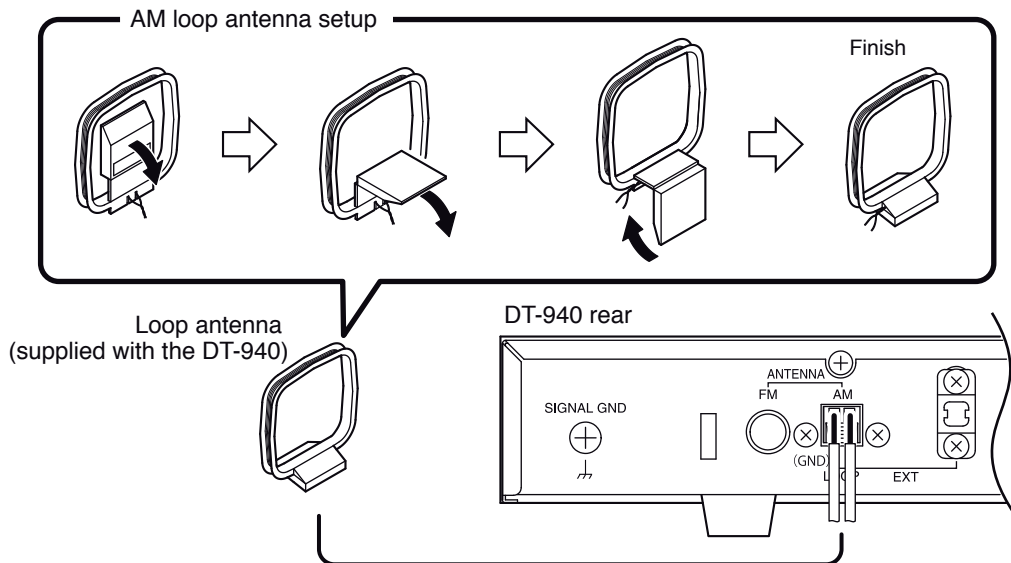
Note

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

10.2. AM Antenna Connections

10.2.1. When using the supplied AM loop antenna

Connect the supplied AM loop antenna to the AM antenna terminals. Use the supplied AM loop antenna to receive broadcasts if satisfactory reception can be obtained. Adjust the loop antenna's position for the best possible reception while listening to AM broadcasts.



Notes

- When using the supplied AM loop antenna, keep it as far away as possible from speaker cables, audio cables, power cables, and AC adapter.
- Connect the loop antenna cables to the antenna terminals so that their cable core wires are exposed several millimeters from the terminals. When the exposed core wire of the antenna cable is too long, cut it to an appropriate length.

10.2.2. When using an external antenna

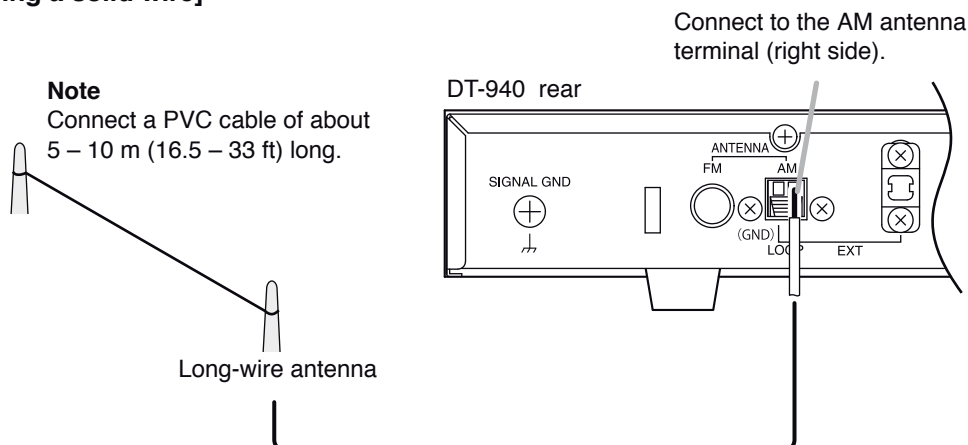
If satisfactory AM band reception cannot be obtained with the supplied AM loop antenna, connect a commercially available AM antenna or a long-wire antenna externally. Connect a cable core of the solid wire or the coaxial cable to the right side of the AM antenna terminals.

It is recommended that a long-wire antenna be installed outside when the unit is used in weak radio wave area or inside the ferroconcrete building. With the use of the long-wire antenna, it is possible to receive weak radio signals that the supplied loop antenna cannot receive. The long-wire antenna can be installed by stringing a PVC cable of about 5 – 10 m (16.5 – 33 ft) as illustrated below.

Notes

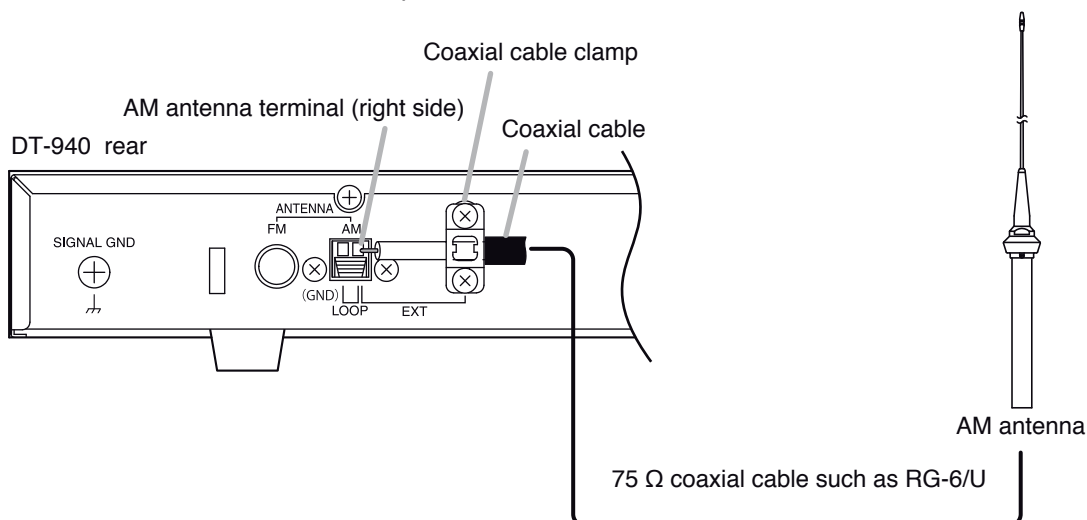
- Install the external antenna in an open field such as on the rooftop. Note that sufficient sensitivity cannot be obtained if the antenna wire is set up between buildings.
- Keep the antenna at least 30 cm (1 ft) away from walls or metal objects that can interfere with radio signals.

[When using a solid wire]



[When using a coaxial cable]

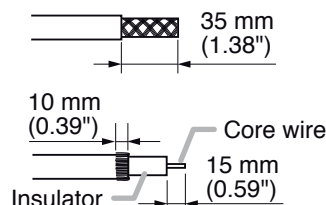
Use the RG-59/U or RG-6/U coaxial cable. Treat the coaxial cable end, then connect it to the right side of the AM antenna terminals viewed from the unit's rear panel.



Step 1. Treat the coaxial cable end.

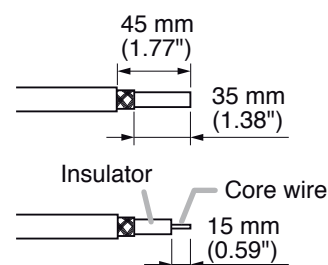
1-1. When using the RG-59/U cable

1. Strip the cable jacket 35 mm (1.38") from the end of the coaxial cable.
2. Fold back the shield wire over the cable, then cut it to 10 mm (0.39") in length.
3. Remove the insulator 15 mm (0.59") from the cable end.



1-2. When using the RG-6/U cable

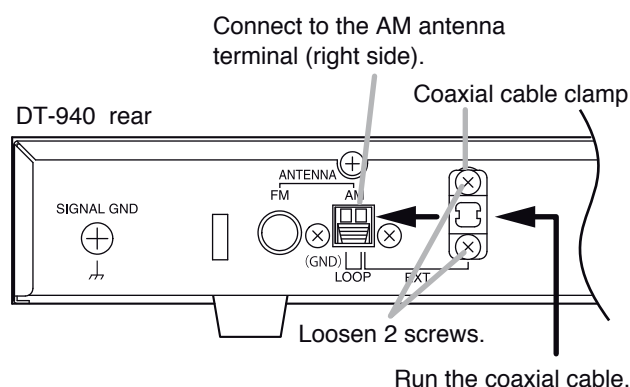
1. Strip the cable jacket 45 mm (1.77") from the end of the coaxial cable, then remove the shield wire 35 mm (1.38") from the cable end.
2. Remove the insulator 15 mm (0.59") from the cable end.



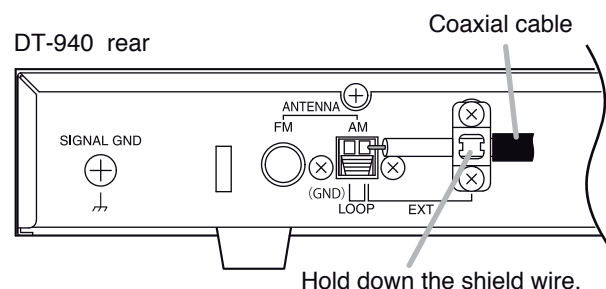
Step 2. Loosen 2 screws of the coaxial cable clamp, run the coaxial cable through the clamp, then connect the core wire to the right side of the AM antenna terminals fixing the shield wire by pressing on the clamp.

Note

Connect the coaxial cable only by loosening 2 screws without removing them. If the screws come off from the clamp, be sure to use the original ones.

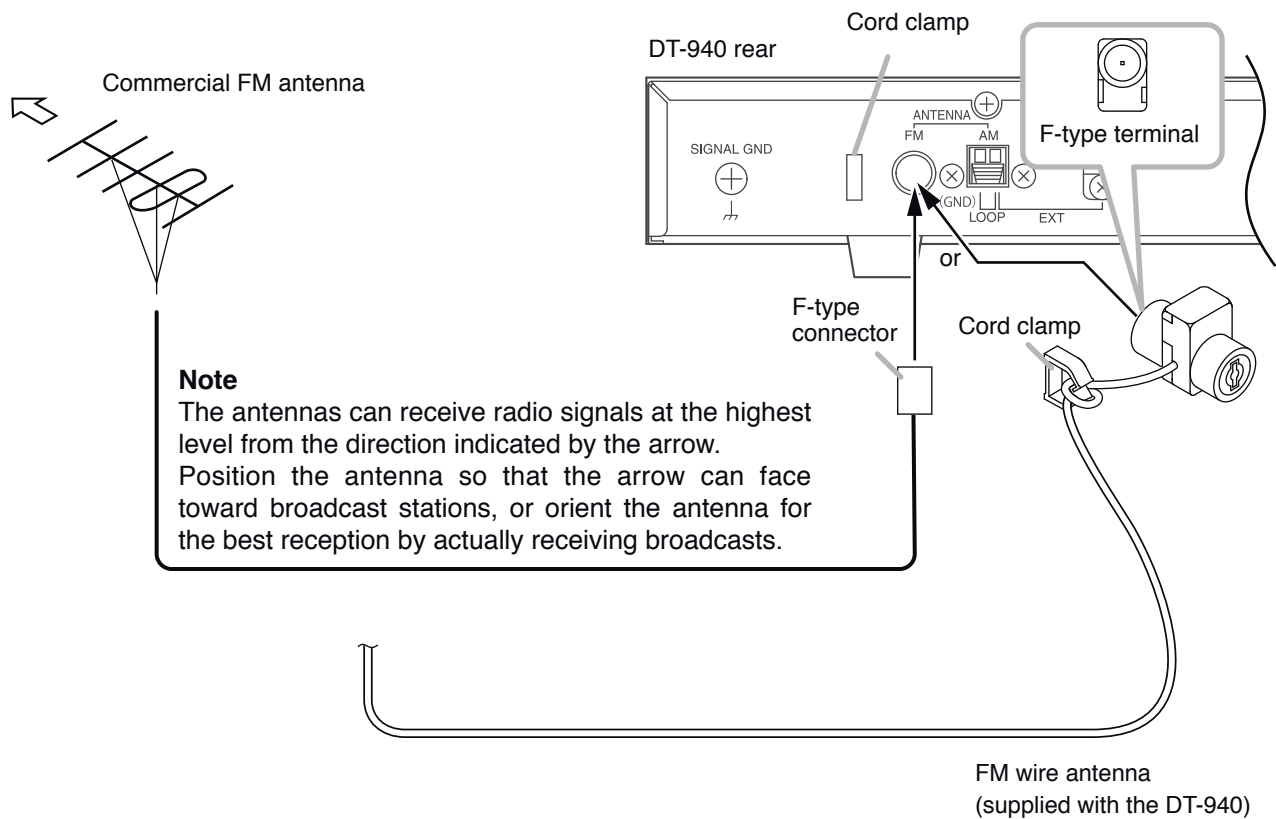


Step 3. Tighten the loosened 2 screws to secure the coaxial cable.



10.3. FM Antenna Connections

Connect the supplied FM wire antenna or a commercially available FM antenna to the FM antenna terminal.



10.3.1. When using the supplied FM wire antenna

Connect the F-type terminal of the supplied FM wire antenna to the FM antenna terminal.

Note

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

10.3.2. When using the external antenna

Connect an external antenna when the supplied FM wire antenna cannot obtain good reception.

When using the 75 Ω coaxial cable such as the RG-6/U for the external antenna, attach the F-type connector for connection.

When using the 300 Ω feeder wire for the external antenna, convert it to F-type connector using a 300 Ω to 75 Ω conversion connector, then connect it to the FM antenna terminal.

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.

11. RACK MOUNTING

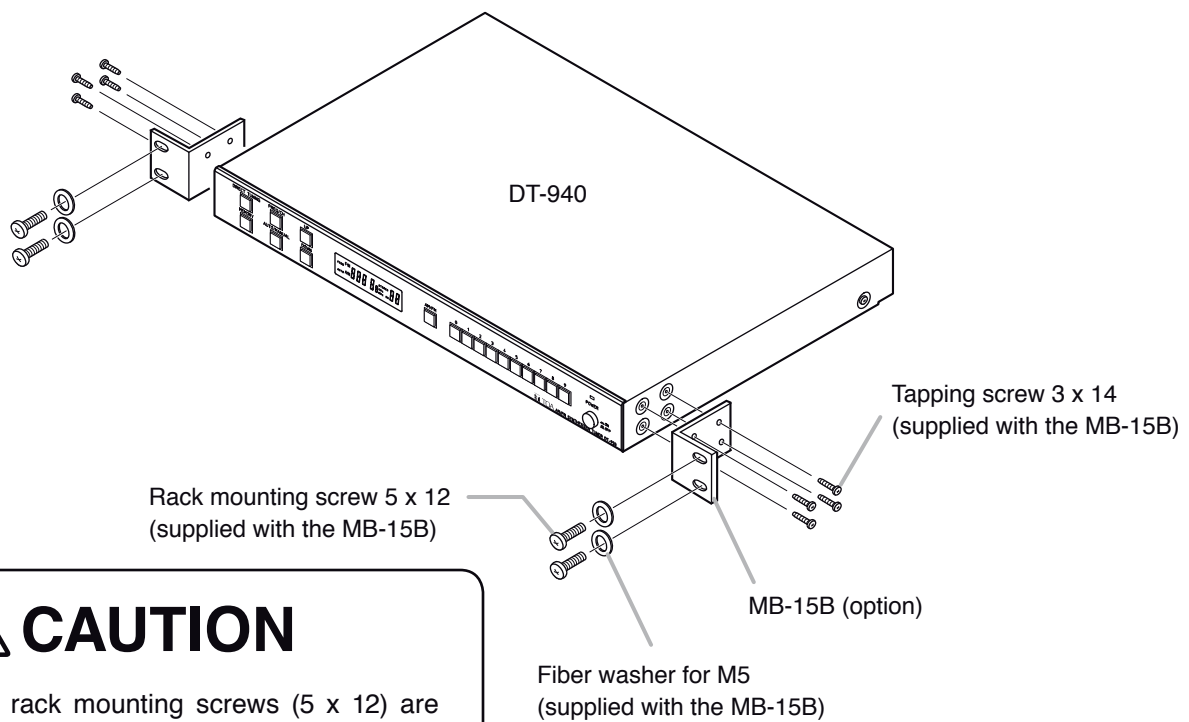
When mounting the unit on an equipment rack, use the optional MB-15B Rack Mounting Bracket. Before mounting, remove 4 plastic feet on the unit bottom.

Notes

- 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.
- When installing a digital amplifier in the equipment rack where the unit is installed, keep it at least 2 U* away from the unit.

Noise may be produced if the digital amplifier is installed in close proximity to the unit.

* 1 U size = 44.5 mm or 1.75" (reference size)



CAUTION

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

12. SPECIFICATIONS

Power Source	120 V AC, 60 Hz (use of the supplied AC adapter)
Power Consumption	60 mA (when the supplied AC adapter is used)
Receiving Frequency	FM: 87.9 – 107.9 MHz (100 kHz step) AM: 520 – 1710 kHz (10 kHz step)
Antenna Input	FM: 75 Ω (unbalanced), F type connector AM: Loop antenna (balanced)/external antenna (unbalanced), push type terminal
Audio Output	Stereo: –15 dB ^{*1} , 10 kΩ, unbalanced, RCA jack Monaural: –10 dB ^{*1} , 10 kΩ, balanced, M3 screw terminal, distance between barriers: 6.4 mm (0.25")
Channels of Memory	20 channels for AM, 20 channels for FM
Operating Temperature	0 to 40°C (32 to 104°F)
Operating Humidity	90 %RH or less (no condensation)
Finish	Panel: Aluminum (hair-line finish), black Case: Pre-coated steel plate, black
Dimensions	420 (w) x 50.8 (h) x 295.2 (d) mm (16.54" x 2" x 11.62")
Weight	2.9 kg (6.39 lb)

*1 0 dB = 1 V

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

• Accessories

AC adapter (1.5 m or 4.92 ft)	1
RCA stereo cord (1 m or 3.28 ft)	1
AM loop antenna ^{*2}	1
FM wire antenna ^{*3}	1

*2 For indoor use only, 135 x 125 mm (5.31" x 4.92"), leadwire: 1.2 m (3.94 ft)

*3 For indoor use only, element length: 2.2 m (7.22 ft)

• Optional product

Rack mounting bracket: MB-15B

