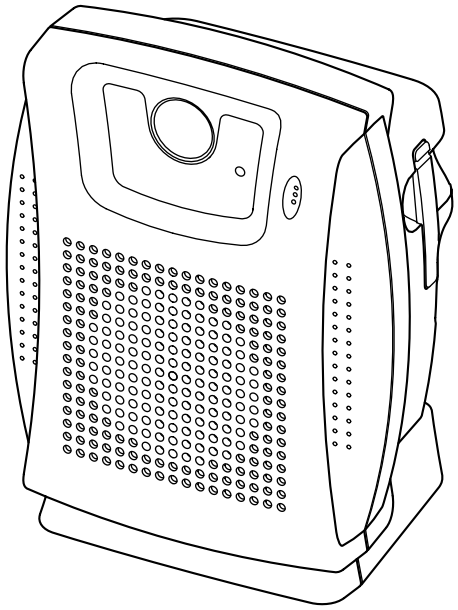
TOA

OPERATING INSTRUCTIONS

SOUND REPEATER EV-20A



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.

TOA Corporation

TABLE OF CONTENTS

1. SAFETY PRECAUTIONS 3

2. GENERAL DESCRIPTION 5

3. FEATURES 5

4. HANDLING PRECAUTIONS 5

5. NOMENCLATURE AND FUNCTIONS 6

6. SENSOR OPERATION
- 6.1. Installation Locations 8
- 6.2. Operation 8

7. OPERATION
- 7.1. Recording 9
- 7.2. Playback
  - 7.2.1. BGM (Music) / Message playback 11
  - 7.2.2. Playback by external activation 12
- 7.3. Formatting the SmartMedia Card 13
- 7.4. Broadcasting the Output of Connected External Equipment 14

8. CONNECTION
- 8.1. External Activation Terminal Wiring
  - 8.1.1. Matching cable size, stripped cable end 15
  - 8.1.2. Cable connections 15
- 8.2. PC Connection
  - 8.2.1. Connection 16
  - 8.2.2. Equipment ID number settings 16

9. USING THE SUPPLIED SOFTWARE
- 9.1. System Requirements 17
- 9.2. CD-ROM File Configuration 17
- 9.3. Notes on Use of Software 18
- 9.4. Software Program Installation
  - 9.4.1. USB driver installation 18
  - 9.4.2. Installing the data transfer software program 21

10. TROUBLESHOOTING 22

11. SPECIFICATIONS 23
- Accessories 24
- Optional product 24

1. SAFETY PRECAUTIONS

- Be sure to read the instructions in this section carefully before use.
- Make sure to observe the instructions in this manual as the conventions of safety symbols and messages regarded as very important precautions are included.
- We also recommend you keep this instruction 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.
- Install the unit only in a location that can structurally support the weight of the unit and the mounting bracket. Doing otherwise may result in the unit falling down and causing personal injury and/or property damage.
- 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.
- Fix the unit firmly not to fall off when installing it high above the floor.
  Improper fixing may cause the unit to fall off, resulting in personal injury.
- Use the specified mounting bracket in combination. Doing otherwise may cause the unit or component to fall off, resulting in personal injury.

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 insert nor drop metallic objects or flammable materials in the unit's ventilation slots or the SmartMedia receptacle, as this may result in fire or electric shock.
- Do not touch a plug 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.
- Do not block the unit's ventilation slots. Doing so may cause heat to build up inside the unit and result in fire.
- 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.

When the Unit is in Use

- Make sure that the volume control is set to minimum position before power is switched on. Loud noise produced at high volume when power is switched on can impair hearing.
- Do not operate the unit for an extended period of time with the sound distorting. This is an indication of a malfunction, which in turn can cause heat to generate and result in a fire.
- Use the dedicated AC adapter for the unit. Note that the use of other adapter may cause a fire.
- 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.

2. GENERAL DESCRIPTION

The TOA EV-20A is an all-in-one, indoor-use Sound Repeater that is especially useful for small-scale broadcasting.
Equipped with its own built-in amplifier and speaker, it can repeatedly broadcast programmed sound content, and also features a built-in sensor that permits it to automatically begin broadcasts when it detects somebody approaching.
The EV-20A can record and play back up to two different messages and two different music pieces.
Recording can be easily performed using either its built-in microphone or external input, and audio files can also be input from a PC using the supplied software.

3. FEATURES

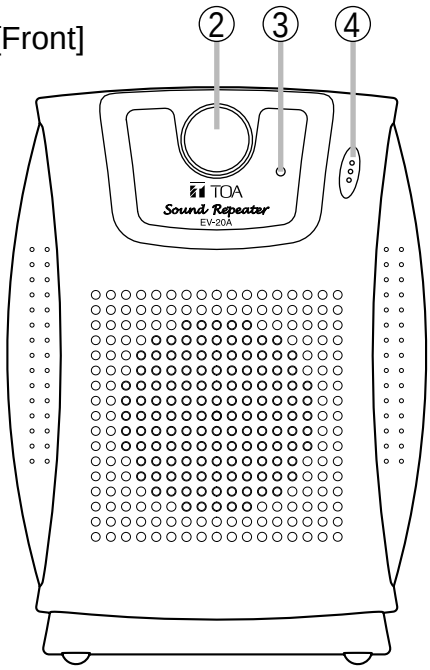
- Supplied software permits audio files to be easily transferred from a PC to the Sound Repeater over a USB connection.
- Audio files are recorded on the SmartMedia flash memory card installed in the Sound Repeater.
- Maximum SmartMedia recording time:
  16 MB card: 3 minutes
  32 – 128 MB cards: 6 minutes
- Messages can be played back and broadcast by way of external activation, or external source can be broadcast from equipment connected to the external input.
- Messages can be repeatedly broadcast, and the automatic playback interval can be set to a maximum of 1 hour.
- The Sound Repeater can be mounted to a wall or ceiling using the optional C-BC31 Mounting Bracket.

4. HANDLING PRECAUTIONS

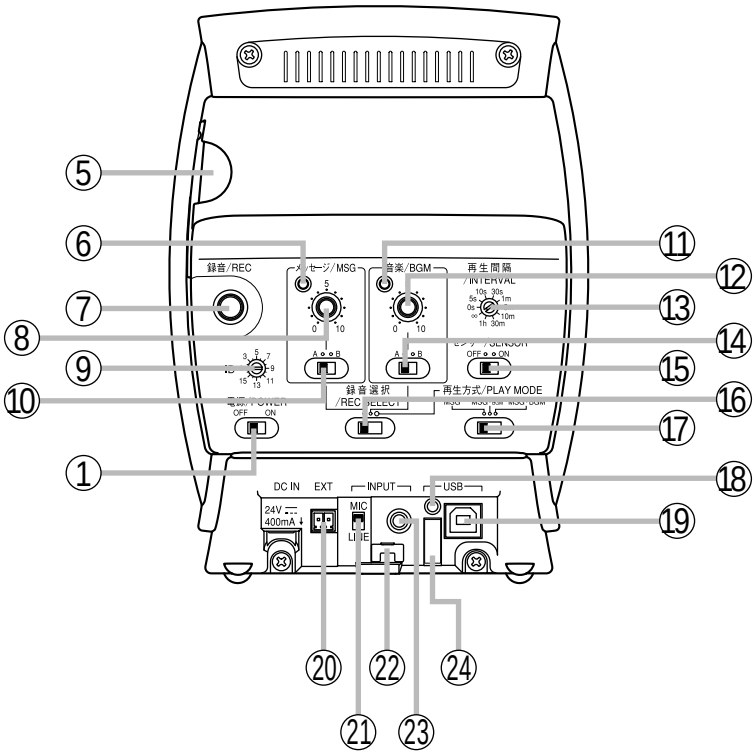
- When using commercial SmartMedia cards, be sure to format first before using. (Refer to p. 13.)
  Note: The supplied SmartMedia card has been formatted.
- To avoid radio interference, keep the unit and the AC adapter as far away as possible from radios or wireless tuners.
- Do not open the case nor perform any modifications to the unit, as this may result in unit failure. Leave the inspection, adjustment and repair of the unit's internal circuitry to your TOA dealer.
- The CD-ROM supplied with the unit is not for audio applications, and should not be used in an ordinary audio CD player.
- Internal Copyright Acts prohibit the copy or use of commercially available music and sound data for commercial purposes without the approval of the copyright holder. It is strongly advised that a copyright lawyer be consulted when using such material.
- When cleaning the unit, be sure to switch off the unit's power first, then wipe with a dry cloth. Should the unit become very dirty, use a cloth dampened in a neutral detergent. Never use benzene, thinner or chemically-treated towels, as the unit's finish may be damaged.

5. NOMENCLATURE AND FUNCTIONS

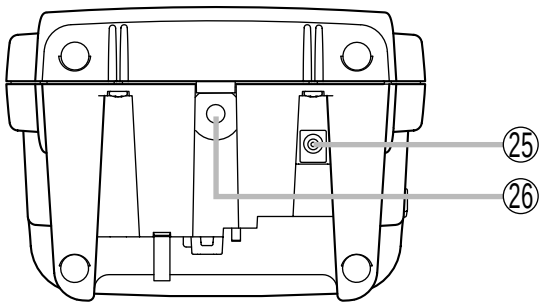
[Front]



[Rear]



[Bottom]



1. Power switch
   Turns on and off the power.

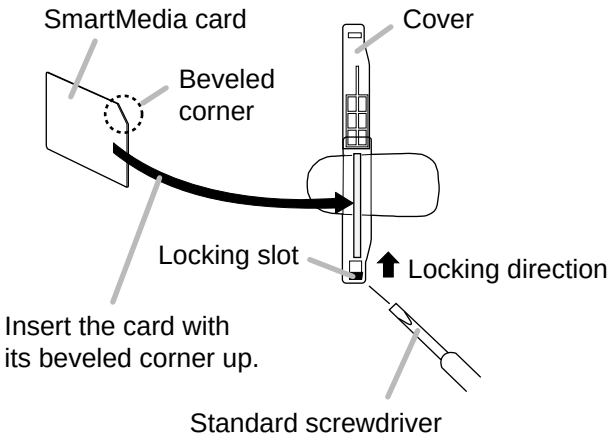
2. Sensor
   Detects environmental temperature changes caused by human movement.
   This sensor is enabled by setting the Sensor switch (15) to the ON position.
   (Refer to p. 8 "SENSOR OPERATION.")

3. Recording indicator
   Flashes or continuously lights during recordings.

4. Built-in microphone
   Speak into this microphone when recording.
   Note
   Keep your mouth about 5 cm away from the microphone when speaking.

5. SmartMedia receptacle
   Insert the supplied SmartMedia card into this receptacle.
   Note: The SmartMedia card must be installed when recording or playing.

[Inserting the SmartMedia card]



Locking the SmartMedia card

Insert a small standard screwdriver blade into the locking slot, then slide it in the direction indicated by the arrow.

6. Message indicator
Flashes or continuously lights depending on the message operation status.

7. Record button
Press this button to record.

8. Message volume control
Adjusts the message playback sound volume.
Note: This control is disabled during recording.

9. ID setting switch
Used to assign an identification number when using two or more Sound Repeaters.

10. Message selector switch
Selects Message A or B.

11. Music indicator
Flashes or continuously lights depending on the music operating status.

12. Music volume control
Adjusts the music playback sound volume.
Note: This control is disabled during recording.

13. Playback interval setting switch
Sets the repeat interval between message playbacks. (Refer to p. 12.)
This switch is factory-preset to " " (Repeat broadcasts disabled).

14. Music selector switch
Selects Music channel A or B.

15. Sensor switch
- ON: Enables the front panel-mounted sensor.
- OFF: Disables the front panel-mounted sensor.

16. Record/play selector switch
- Left: Set to this position when recording the message.
- Center: Set to this position when recording music.
- Right: Set to this position when playing.

17. Playback method selector switch
Used to set the mixing method of message and music.
- Left [MSG]: Music output is muted when a message is played back.
- Center [MSG-BGM]: Music volume is reduced when a message is played back. (The volume level decreases to 1/4.)
- Right [MSG-BGM]: Music playback volume remains unchanged even when a message is played back.

18. USB indicator
Continuously lights or flashes during USB communications.

19. USB terminal
Connects to a PC or a USB Hub using the supplied USB cable.

20. External activation terminal
"Make" this terminal when externally activating the message or when directly broadcasting sound from equipment connected to the external input.

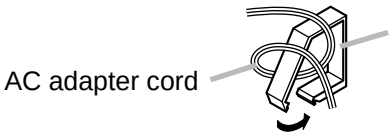
21. MIC/LINE selector switch
Select the appropriate setting depending on the equipment connected to the External input/external record input terminal (23).
Set to MIC (upper position) if a microphone is connected, and to LINE (lower position) if other equipment is connected.
This switch is factory-preset to the LINE position.
Note: Set this switch to LINE (lower position) if no microphone is connected.

22. Wire hook
Used to protect the unit against stealing.

23. External input/external record input terminal
Connect a microphone or CD player to this terminal. Set the MIC/LINE selector switch (21) corresponding to the type of equipment connected to this terminal.
Shown below are the input specifications set using the MIC/LINE selector switch:
- MIC: –40 dB*, 2.2 k , mini-jack, unbalanced
- LINE: 0 dB*, 10 k , mini-jack, unbalanced

* 0 dB = 1 V

24. Cord clamp
Wrap the AC adapter cord around this clamp to prevent the plug from pulling out.



25. AC adapter input terminal
Connects to an AC adapter.

26. Mounting screw hole
AU1/4 camera screw can be used. Use the optional C-BC31 Camera Mounting Bracket when mounting the Sound Repeater to a wall.
(For mounting, refer to the instruction manual enclosed with the C-BC31.)

6. SENSOR OPERATION

6.1. Installation Locations

- Do not place any moving objects in front of the sensor, which could cause it to malfunction.

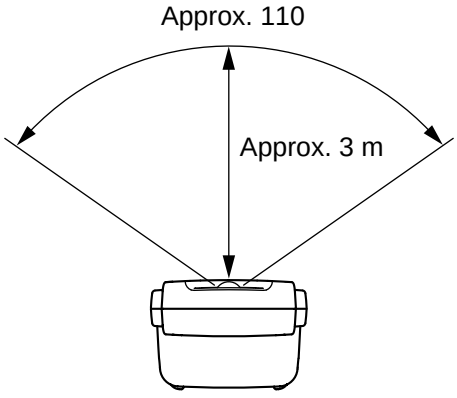
- Avoid installing the Sound Repeater in the following locations, which could cause the sensor to malfunction:
  - · Locations where there are moving objects such as curtains and plant foliage.
  - · Locations that could become passages for small animals, such as rats and cats.
  - · Locations where temperature rapidly changes due to exposure to stoves or air-conditioners.
  - · Locations with obstacles (for instance, the sensor cannot detect through glass).
  - · Locations that may be exposed to water, steam or oil.
  - · Locations exposed to the steam of a humidifier.
  - · Locations with floor surfaces that strongly reflect light.
  - · Outdoors, such as under building eaves.
  - · Locations close to sources of electrical noise (such as broadcast stations, amateur radio stations, or regular cellular phone usage).
  - · Locations exposed to the direct or reflected light of the sun or headlights.

6.2. Operation

- Sensor operation stabilizes approximately 30 seconds after the Power switch has been turned on.

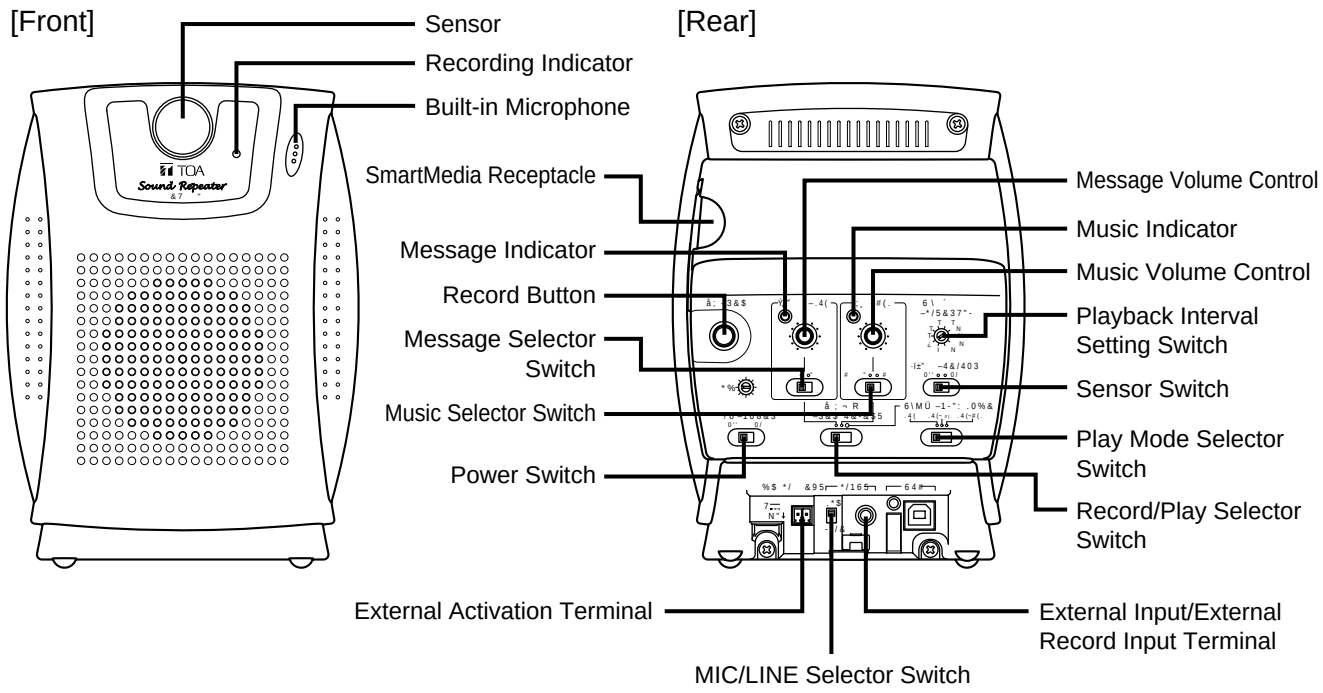
- The sensor is triggered by sudden changes in temperature, whatever the cause may be. It cannot sense a person approaching if there is only a small difference between ambient temperature and body temperature, if the person is stopped or moving extremely slowly, or if the person quickly passes the sensor at running speed. (The sensor will not trigger if it fails to detect any change in temperature.)

- Sensor's detection range:



[Figure seen from above the Sound Repeater]

7. OPERATION



7.1. Recording

You can record two Messages and two Music pieces using the unit's built-in microphone or external input.
A SmartMedia card must be installed for recording. Be sure to insert the card into the Sound Repeater's SmartMedia receptacle.
The recording time for both the message and music is approximately 3 minutes when a 16 MB SmartMedia card is installed, and 6 minutes for 32 – 128 MB cards. The recording level does not need to be adjusted.

Notes

- Only 3.3 V SmartMedia cards of capacities between 16 and 128 MB are compatible with the Sound Repeater. 5 V SmartMedia cards cannot be used.
- Original BGM is pre-recorded in both Music channels A and B on the supplied SmartMedia card. Both BGM pieces are also contained in the supplied CD-ROM as sample data.
  · Music channel A: bgm_0001.wav, Title "Walk" (1 minute)
  · Music channel B: bgm_0002.wav, Title "Sunset" (56 seconds)

Step 1. Decide whether to use the built-in microphone or external equipment for recording.

1-1. When using the built-in microphone:
Advance to Step 2.

Note
Ensure that nothing is connected to the External Record Input terminal.
Recording cannot be performed using the built-in microphone if this terminal is connected.

1-2. When using external equipment:
Connect an external source equipment to the External Record Input terminal, and set the input level with the MIC/LINE selector switch.

- MIC: –40 dB*, 2.2 k , mini-jack, unbalanced
- LINE: 0 dB*, 10 k , mini-jack, unbalanced

* 0 dB=1 V

Step 2. Set the Record/Play Selector Switch to either the "Message" (left) or "Music" (center) position.
If recorded with "Music" selected, the recorded content will be repeatedly played back while the Sound Repeater's power is switched on.
Recorded "Message" content is either repeatedly played back at the preset playback interval or played back at sensor activation or external activation.
Normally, set this switch to "Message" when recording voice with the microphone, and to "Music" when recording music.

Step 3. Turn ON the Power Switch.

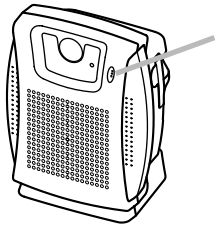
Step 4. Set the Message Selector Switch or Music Selector Switch to the A or B position.
Select either A or B for the "Message" or "Music" selection made in Step 2.

Note
Content previously recorded into A or B is deleted. It is highly recommended that the Sound Repeater be played back and checked for previously recorded content before starting recording.

Step 5. Hold down the Record Button until the Recording Indicator flashes, and begin to record when the Indicator changes from flashing to steady ON.
The indicator begins to flash 1 second after the button is pressed, and changes to steady ON 5 seconds after flashing begins. The Message or Music Indicator also changes from flashing to steady ON.

Note
If the indicator extinguishes immediately after it begins flashing, this indicates that recording can no longer be performed because the SmartMedia card's maximum recording capacity has already been reached.

5-1. When recording from the built-in microphone:
Speak into the built-in microphone.



Note
Speak at approximately 5 cm away from the microphone.

5-2. When recording with external equipment:
Operate the connected external equipment.

Step 6. To stop recording, press the Record Button again.
The Recording indicator extinguishes along with the illuminated Message or Music Indicator.

Tips

- The Recording Indicator and the Message or Music Indicator flash whenever less than 5 seconds of recording time remain during recording.
- Sample audio data contained in the supplied CD-ROM can be transferred to the EV-20A for use. It is also possible to back up the messages using the data transfer software program contained in the supplied CD-ROM. For details, please read the "EV20 Software Instruction Manual.pdf" file on the CD-ROM.

7.2. Playback

Broadcast the recorded "Music" or "Message."

- Whenever the Power Switch is turned on while the Sound Repeater is in Playback mode (when the Record/Play Selector Switch is shifted to the right), the "Music" recorded on the SmartMedia card is played back repeatedly.

  Note: When you want to mute "Music" coming from the speaker, set the Music Volume Control to its minimum position.

- A recorded "Message" is played back repeatedly at the preset playback interval, or played back in response to sensor or other external activation.

Playback requires a recorded SmartMedia card be installed. Be sure the recorded card is inserted into the Sound Repeater's SmartMedia receptacle.

7.2.1. BGM (Music) / Message playback

Turn OFF the Power Switch and set the Message Volume Control to the minimum position before operation.

Step 1. Shift the Record/Play Selector Switch to the right.

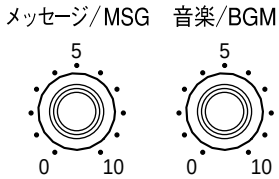
Step 2. Set the Play Mode Selector Switch.
Set the message/music mixing method.

- Left [MSG]: Music cannot be heard while the message is played back.
- Center [MSG-BGM]: Music volume is reduced whenever a message is played back.
  (The volume level decreases to 1/4.)
- Right [MSG-BGM]: Music playback volume remains unchanged even when a message is played back.

Step 3. Set the Music Selector Switch or Message Selector Switch to either A or B in order to be played back.

Step 4. Turn ON the Power Switch.
Repeat "Music" playback begins.

Step 5. Adjust the playback volume level using the Music or Message Volume Control.
When adjusting message volume, play back the actual message by either turning ON the Sensor Switch and placing the hand close to the sensor, or by selecting a time interval with the Playback Interval Setting switch, then adjust the volume while checking the output volume from the speaker.



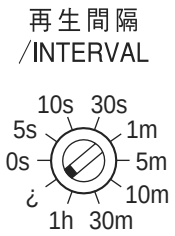
Step 6. Turn the Sensor Switch ON or OFF.
If the Sensor Switch is set to ON, the sensor triggers playback of the message whenever someone approaches the Sound Repeater.
To disable the sensor function, set the Sensor Switch to OFF.

Step 7. Set the Playback Interval Setting Switch.

The recorded message is played back repeatedly at the preset interval (the time period between the end of the selected message and its next start).

Set the switch shaft (the portion marked in black in the figure below) to the desired interval.

Setting Position	Repeat Playback Interval
’ (Factory-preset position)	Playback not repeated.
0 s	Continuous playback without interval.
5 s, 10 s, 30 s	5-second, 10-second or 30-second
1 m, 5 m, 10 m, 30 m	1-minute, 5-minute, 10-minute or 30-minute
1 h	1-hour



Note

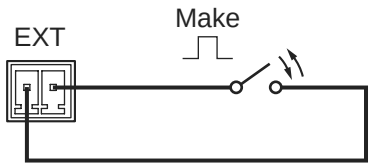
When the Sensor Switch is set to the ON position, the message can be played back irrespective of the playback interval setting whenever the sensor is activated.

To set the message for playback only when the sensor is activated, set the Playback Interval Setting switch to the "’ " position (playback not repeated).

7.2.2. Playback by external activation

The Sound Repeater's playback can be activated by external equipment. To perform this function, leave the Record/Play Selector Switch in the right position and the Message Volume control properly adjusted.
Either Message A or B, as selected by the Message Selector switch is played back.

"Making" the External Activation Terminal (with a pulse exceeding 200 ms) triggers message playback. The broadcast stops automatically after message completion. (Playback is not repeated.)



Notes

- Continuously closing the external activation terminal repeats the message playback, which then stops at its end when the terminal is opened.
- This function cannot be used when the External Input Terminal is connected to external equipment.
- The External Activation Terminal is of a detachable type. For connection, please refer to "External Activation Terminal Wiring."

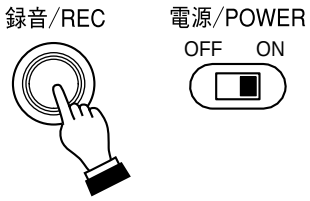
7.3. Formatting the SmartMedia Card

Delete all the recorded contents of the SmartMedia card by formatting the card.

Note
Be sure to format commercially purchased SmartMedia cards when using for the first time.
The supplied SmartMedia card has been formatted.

Step 1. Switch OFF the power.

Step 2. Turn ON the Power Switch while holding down the Record Button. Keep pressing the Record Button until the Recording Indicator changes flashing to steady ON (about 5 seconds). Then, formatting begins even if the Record Button is released. Simultaneously, both the Message and Music Indicators also light. Approximately 20 to 40 seconds* after the indicators began to continuously light, all indicators extinguish, indicating formatting completion.



* Varies depending on the capacity of the SmartMedia card.

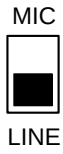
Note
Do not turn OFF the Power Switch during formatting. If the power is switched OFF partway through formatting, the SmartMedia card will not be correctly formatted and cannot be used. In such cases, format the card again in the correct manner.

7.4. Broadcasting the Output of Connected External Equipment

Output from equipment connected to the External Input Terminal can be directly broadcast with external activation. If externally activated during "Message" or "Music" playback, the message is interrupted, allowing the external equipment output to be broadcast.

Turn ON the Power Switch and set the Message Volume Control to the minimum position before starting operation.

Step 1. Set the MIC/LINE Selector Switch.
Select the MIC or LINE position, depending on the type of equipment to be connected to the External Input Terminal. Set the switch to MIC (upper position) when connecting the microphone, and to LINE (lower position) when using other source equipment.

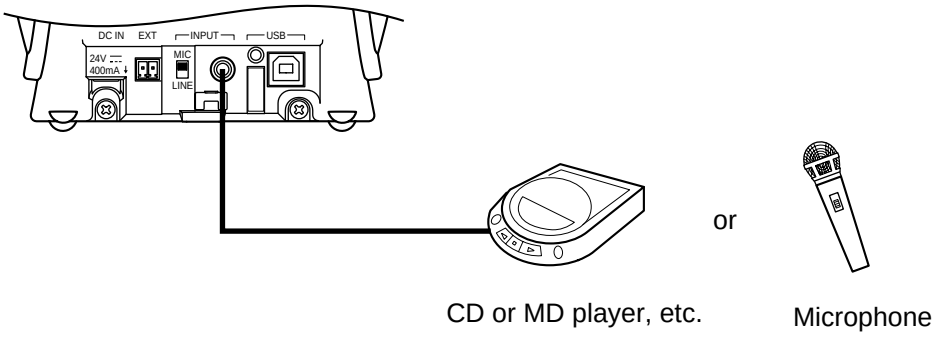


- MIC: –40 dB*, 2.2 k , mini-jack, unbalanced
- LINE: 0 dB*, 10 k , mini-jack, unbalanced

* 0 dB = 1 V

Note: Be sure to set the switch to the LINE position whenever the microphone is not being used.

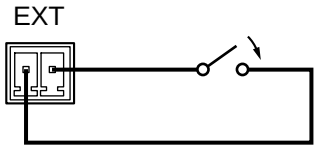
Step 2. Connect the sound source equipment to the External Input Terminal.



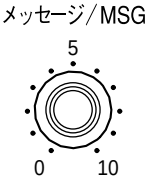
CD or MD player, etc. Microphone

Step 3. Shift the Record/Play Selector Switch to the right position.

Step 4. "Make" the External Activation Terminal.
The output of the connected equipment is broadcast while the terminal is kept at "make." "Breaking" the terminal connection restores the previous condition.

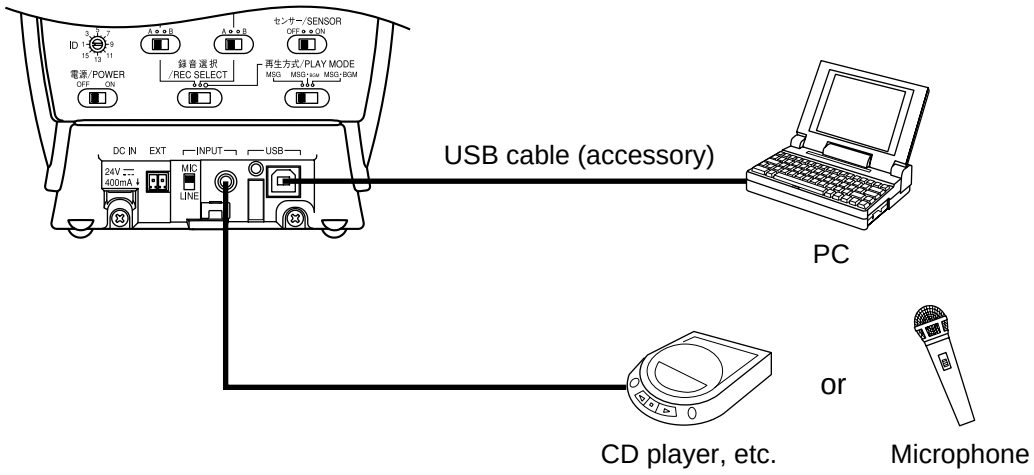


Step 5. Adjust the sound volume with the Message Volume Control.

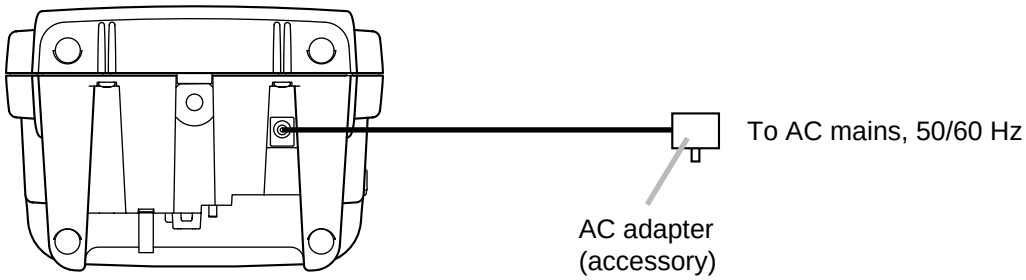


8. CONNECTION

[EV-20A Rear]



[EV-20A Bottom]

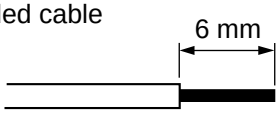


8.1. External Activation Terminal Wiring

After wiring the supplied detachable terminal plug, insert it into the External Activation Terminal.

8.1.1. Matching cable size, stripped cable end

Solid or stranded cable



Conductor cross-sectional area: 0.5 – 1.5 mm^2

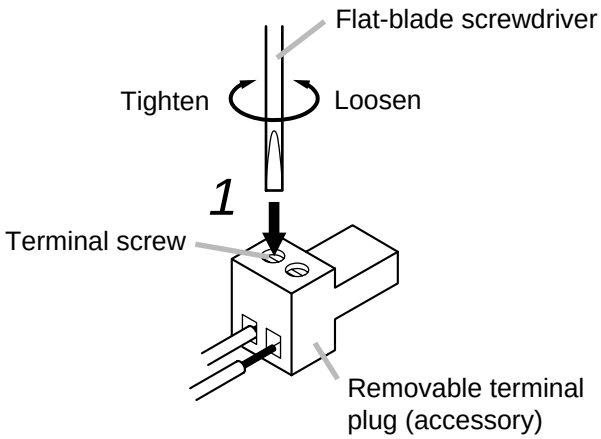
8.1.2. Cable connections

Step 1. Loosen the terminal screw to insert the cable into the connector, then retighten the screw.

Note
Tug lightly on the cable to be sure that it does not pull free.
If the cable pulls free, loosen the terminal screw again and reconnect from the beginning.

Step 2. Insert the removable terminal plug into the rear-mounted socket.

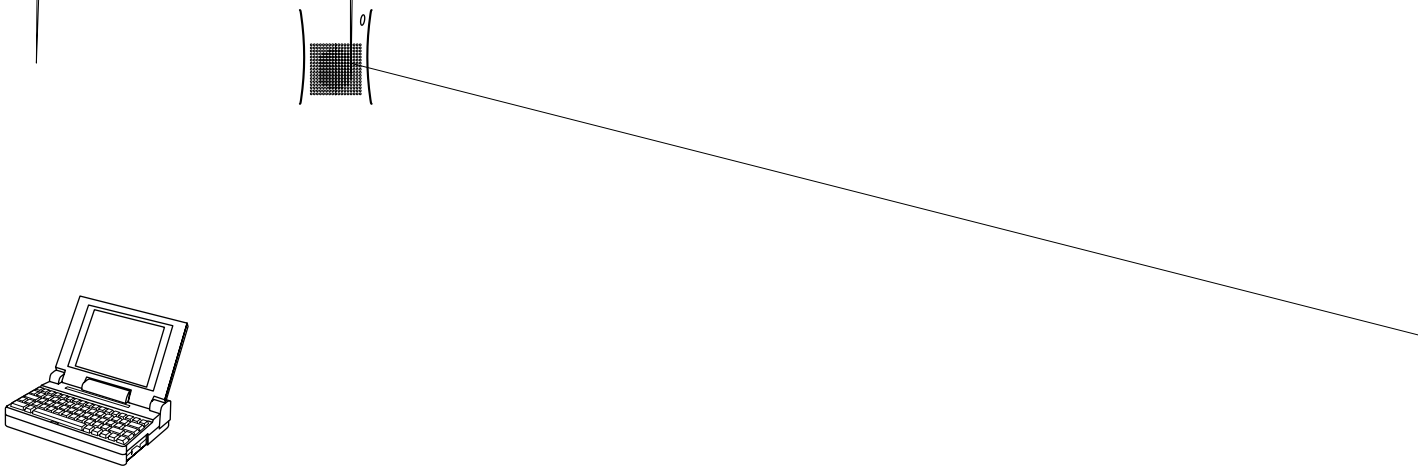
Note
Insert the plug with the terminal screws faced down.



8.2. PC Connection

Audio data can be transferred from a PC to the Sound Repeater via the USB port. Use the supplied software to transfer audio data. (Refer to p. 17.)

8.2.1. Connection



PC

A maximum of 16 EV-20A Sound Repeaters can be connected. Set the ID number of each connected unit in order to distinguish individual Repeaters. (Refer to the following section.)
The maximum distance between Sound Repeater and PC is 5 meters. A length of commercial USB extension cable can be used to lengthen the connection distance. However, the hierarchy of the USB Hub should be as shown in the above figure.
For more information on connections, please read the instruction manual enclosed with the product.

Note: Do not mix connections with other USB equipment.

8.2.2. Equipment ID number settings

When connecting two or more EV-20A Sound Repeaters to a PC, the ID numbers of each unit must be set in order to distinguish individual units.

Assign a different ID number to each connected Sound Repeater.
Set the switch shaft (the portion colored in black in the figure at right) to the number to be set.

Note
If the same ID number is duplicated, the PC cannot correctly identify the connected equipment, resulting in audio data transfer failure. Take care to ensure that different numbers are assigned to different units.