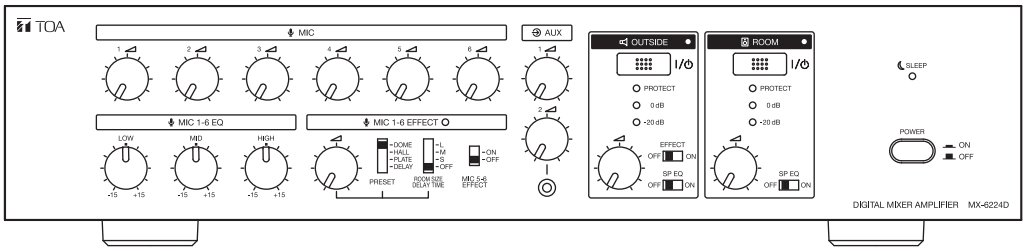
TOA

OPERATING INSTRUCTIONS

DIGITAL MIXER AMPLIFIER 2x240W MX-6224D
REMOTE CONTROLLER RC-03

MX-6224D



Thank you for purchasing TOA's Digital Mixer Amplifier 2x240W and Remote Controller.
Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

TABLE OF CONTENTS

1. 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.
⚠ **CAUTION**	Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.

⚠ WARNING

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.
- Be sure to replace the unit's terminal cover after connection completion. Because the voltage of up to 100 V is applied to the high impedance speaker terminals, never touch these terminals to avoid 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.
- Since the unit is designed for indoor 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.
- Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.
- Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan
- Apparatet må tilkoples jordet stikkontakt
- Apparaten skall anslutas till jordat uttag

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 qualified service personnel.
- 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 ventilation slots of the unit's cover, as this may result in fire or electric shock.
- Do not touch a power supply plug during thunder and lightning, as this may result in electric shock.

⚠ CAUTION

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 ventilation slots in the unit's cover. Doing so may cause heat to build up inside the unit and result in fire. Also, periodically clean the ventilation slots of dust.
- 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.
- To avoid electric shocks, be sure to switch off the unit's power when connecting speakers.
- 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.
  - Rack-mounting screws are not supplied with the unit. Prepare them that are appropriate for the equipment rack.

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.
- Switch OFF the unit's power before turning the phantom power switch ON or OFF. Operating the switch without switching OFF the main power could result in a large transient noise through the speakers, potentially resulting in speaker failure.
- Avoid using phantom power when connecting an unbalanced microphone to the MIC 1 input, as the microphone fails.
- Do not connect any other equipment than the RC-03 Remote Controller to the MX-6224D's Remote controller connection port.
  If other equipment, such as a PC, hub or network device, is connected to that port, the connected equipment could be damaged.
- Do not operate the unit for an extended period of time with the sound distorting. Doing so may cause the connected speakers to heat, resulting in 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.

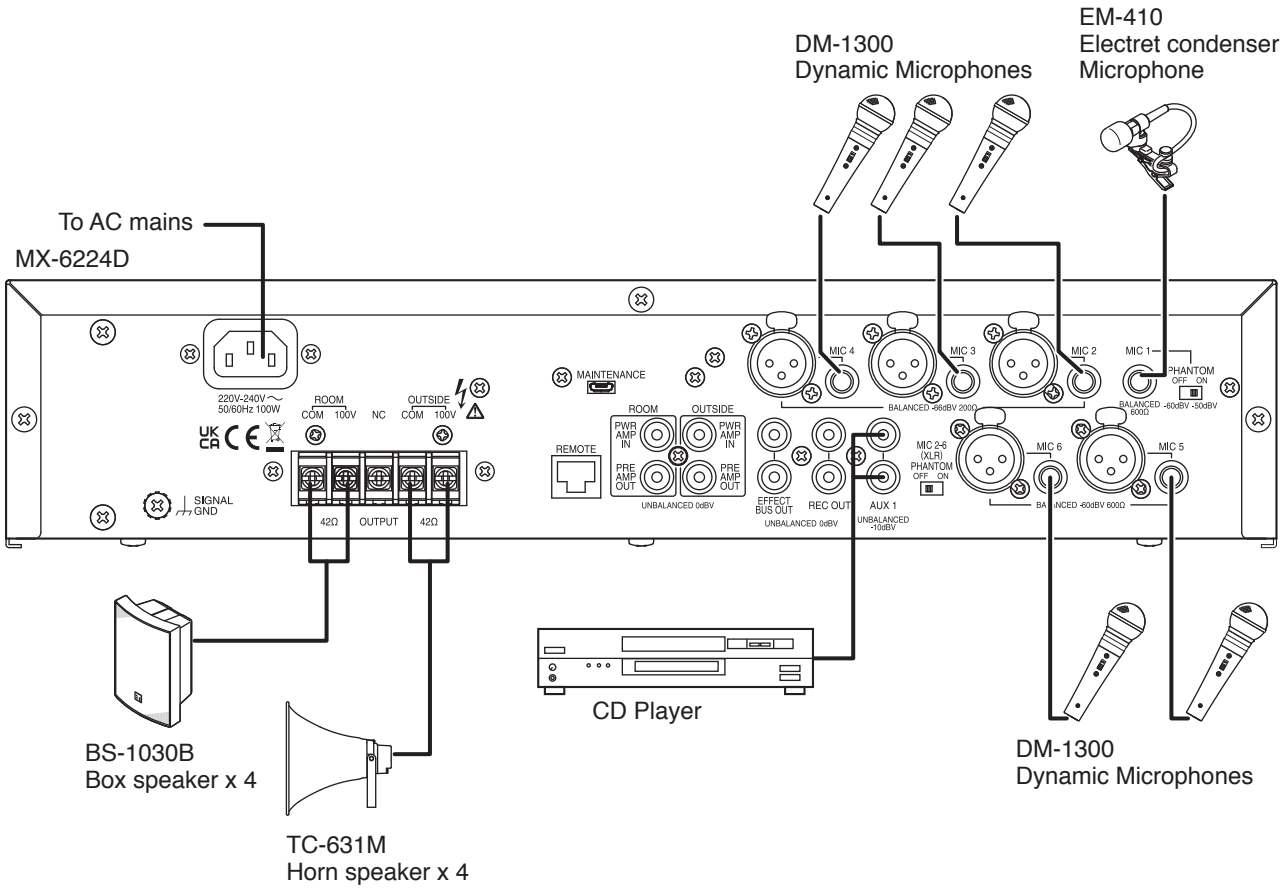
2. GENERAL DESCRIPTION

The MX-6224D Dual 240W Mixer Power Amplifier is designed for 2-zone Public address system suitable for small to middle sized mosques application.
The optional RC-03 Remote Controller exclusively designed for use in conjunction with the MX-6224D permits ON/OFF control of speaker zones and sound effect function.

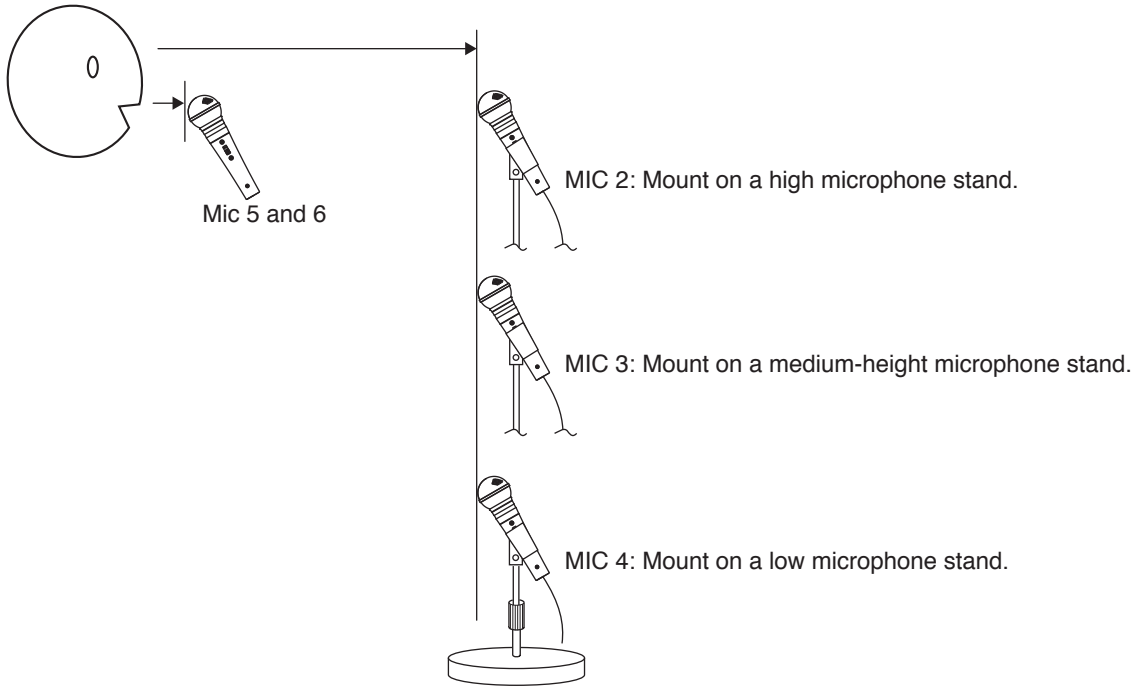
3. FEATURES

- Dual 240 W digital amplifier.
- 6 Microphone inputs and 2 AUX inputs.
- Independent input and output volume controls.
- Tone controls (Low, Middle and High).
- Speaker equalizer preset for BS-1030 and TC-631M/651M
- DSP multi-effect (4 types of Dome, Hall, Plate, and Delay)
- RC-03 Remote Controller connection

4. RECOMMENDED SYSTEM



Ways of using MIC 2 – 4 and 5 – 6 are shown below as a guideline:

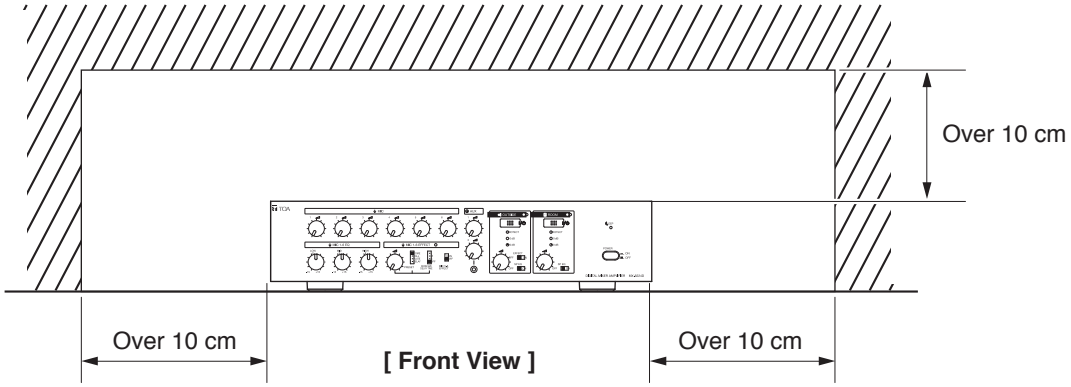


5. HANDLING PRECAUTIONS

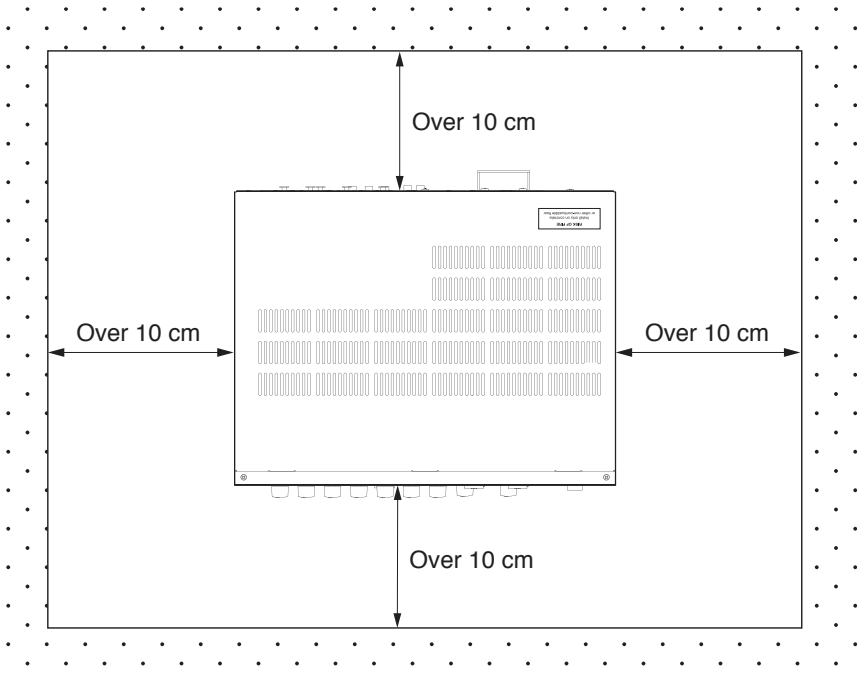
- The supplied power supply cord is designed to be used exclusively with the unit. Do not connect it to any other equipment.
- Install the unit in locations where the temperature is between 0 and 40 °C and the moisture is between 35 and 80% (no dew condensation must be formed).
- The unit is a precision audio component. To prevent failure, avoid locations where the unit may be exposed to strong shocks or vibrations.
- To clean, be sure to first switch off the unit's power, then wipe with a dry cloth. Never use benzene, thinner, alcohol, or chemically-treated cleaning cloth because such volatile liquids could deform or discolor the unit.

6. INSTALLATION PRECAUTIONS

- Be sure to install and connect the unit before the connection to the AC mains outlet. Remove the unit's power supply cord from the AC mains outlet when uninstalling or disconnecting the unit.
- The socket-outlet shall be installed near the unit and the plug shall be easily accessible.
- The unit shall be always installed inside an enclosure or cabinet during use.
- The unit should have at least 10 cm of open space around it on all sides within the interior of the enclosure or cabinet, as shown in the figure below, to allow adequate cooling and thus prevent extreme increases in temperature inside the unit. Also, do not place any other devices within that range.



[Front View]



[Top View]

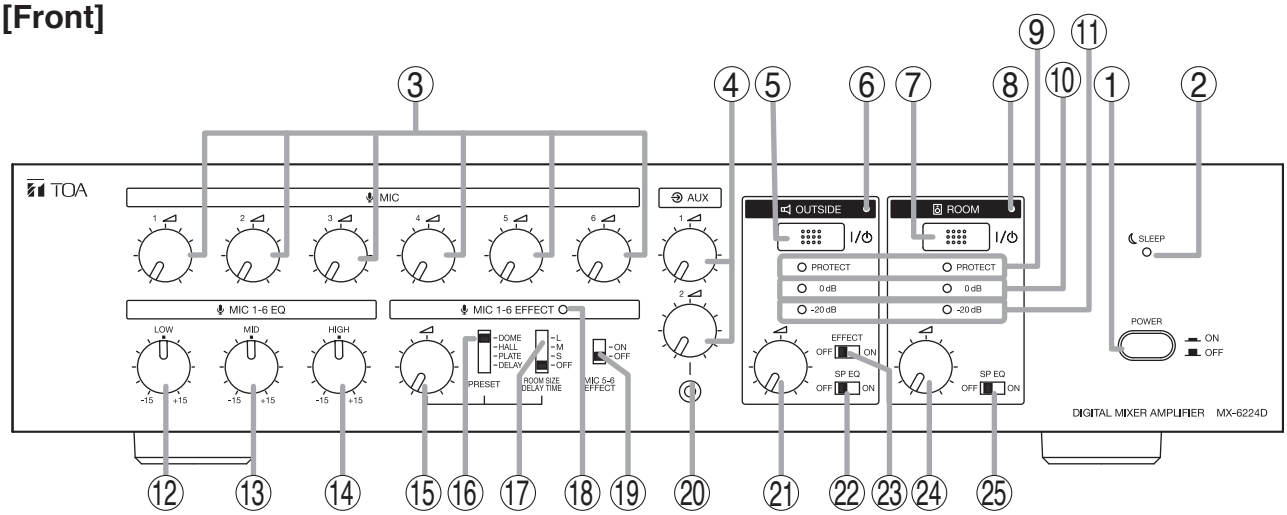
Make sure specification of cabinet or enclosure (such as rack) are:

- No opening holes in the top side panel.
- Material of enclosure or cabinet is made of non-combustible material or V-1 class material.
- Minimum size of enclosure 62 cm (width) x 20 cm (height) x 56 cm (depth) or more.

7. NOMENCLATURE AND FUNCTIONS

7.1. MX-6224D Digital Mixer Amplifier 2x240W

[Front]



1. Power switch
Turns on and off the main power.

2. Sleep indicator
Lights green when the power switch is ON and the unit is placed in sleep mode.

3. Microphone volume controls
Adjust each microphone input.

4. AUX 1 and 2 volume controls
Adjust the AUX 1 and 2 inputs.

5. Outside zone output switch
Turns on and off the outside zone output.

6. Outside zone output indicator
Lights red when sound is output from the Outside zone output terminals (34).

7. Room zone output switch
Turns on and off the room zone output.

8. Room zone output indicator
Lights green when sound is output from the Room zone output terminals (33).

9. Protection indicator
Lights red when the following situations are detected.
- Built-in digital amplifier failure
- Overcurrent flow inside the unit
- Overheat inside the unit
- Speaker output failure
- Excessive input of low frequency signals

10. Peak level indicator
Lights red when the output sound level reaches the peak level (0 dB) referenced to 0 dB at rated output (100 V).
In general use, each volume should be set below the point where the red indicator (0 dB) begins to light.

11. Signal level indicator (–20 dB)
Lights green when the power amplifier's output level is –20 dB referenced to 0 dB at rated output (100 V).

12. Low frequency control (80 Hz)
Turn the control knob clockwise to enhance low frequencies and counterclockwise to weaken them. The frequency is flat at the center position.

Note
This Equalizer control will not affect the AUX 1 and 2 inputs.

13. Middle frequency control (2.5 kHz)
Turn the control knob clockwise to enhance middle frequencies and counterclockwise to weaken them. The frequency is flat at the center position.

Note
This Equalizer control will not affect the AUX 1 and 2 inputs.

14. High frequency control (12 kHz)
Turn the control knob clockwise to enhance the high frequencies and counterclockwise to weaken them. The frequency is flat at the center position.

Note
This Equalizer control will not affect the AUX 1 and 2 inputs.

15. Effect control
Adjusts effect response.
Turn the control knob clockwise to strengthen the response of the effect selected by the Effect preset type selection switch (16), and counterclockwise to weaken it.
Turning the control fully counterclockwise provides no effect response.

16. Effect preset type selection switch
Select the type of the sound effect from "DOME," "HALL," "PLATE," and "DELAY."

17. Effect Room size/Delay time selection switch
Select the reverberation/delay time of effect from "S" (Short time), "M" (Medium time), and "L" (Long time).
When set to OFF, the effect function is disabled.

18. Effect indicator
Lights green when the built-in effector is activated.

19. MIC 5 – 6 effect switch
Turns on and off the effect for the MIC 5 and 6 inputs.

Note
Effect for the MIC 1 to 4 inputs is constantly ON.

20. AUX 2 input jack
–20 dB*, 10 kΩ mixed monaural, unbalanced, ø3.5 mm mini jack (3P: stereo)
Connects to an external music player.

21. Volume control for the outside zone
Adjusts the outside zone output level.

22. Equalizer switch (Horn speaker)
Set this switch to the ON position to optimize the output sound for the TOA TC-631M/651M speaker.

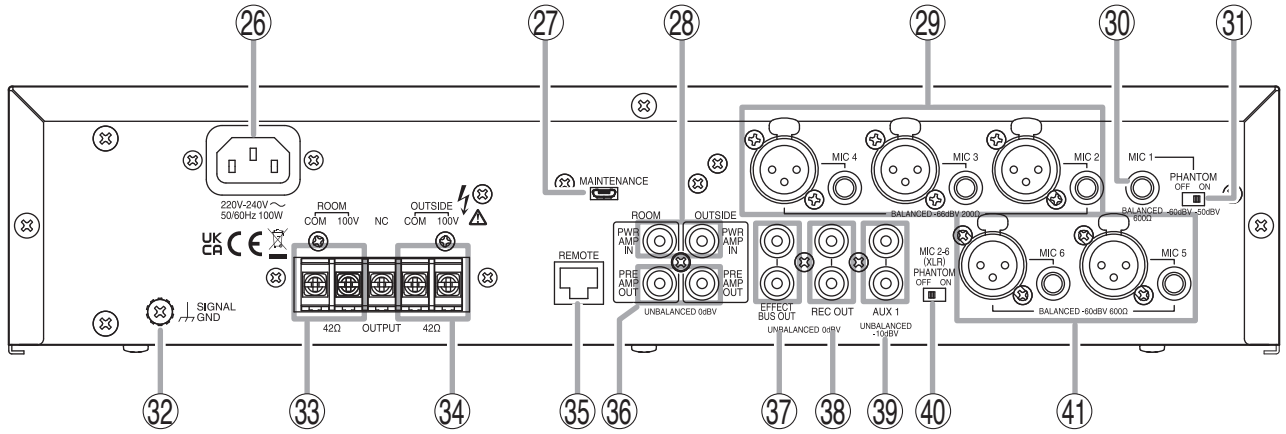
23. Outside zone output effect switch
Turns on and off the effect for the Outside zone output.

Note
Effect for the Room zone output is constantly ON.

24. Volume control for the room zone
Adjusts the room zone output level.

25. Equalizer switch (Box speaker)
Set this switch to the ON position to optimize the output sound for the TOA BS-1030B/1030W speaker.

[Rear]



26. AC inlet
Connects to the AC power source using the supplied AC power supply cord.

Note
Connect the AC power supply cord to a grounded AC outlet.

27. Maintenance port
For service personnel use only.

28. Power amplifier input jacks
0 dB*, 10 kΩ, unbalanced, RCA pin jacks
Connect to an external speaker processor.

29. MIC 2 – 4 input jacks/XLR type connectors
–66 dB*, 200 Ω, electronically-balanced
Use either the phone jack or XLR type connector for each MIC input.
Connect to the balanced type microphone, suitable for on microphone application. A balanced type dynamic microphone can be connected to each phone jack input. For the microphones connected to each XLR type input, see "40. MIC 2 – 6 (XLR) phantom switch."

30. MIC 1 input jack
–50 dB* (24 V phantom powered)/–60 dB* phantom power OFF), 600 Ω, electronically-balanced, ø6.3 mm phone jack
Connects to the balanced type microphone, suitable for off microphone application (a lavaliere microphone is recommended).
For the connectable microphones, see "31. MIC 1 phantom switch."

* 0 dB = 1 V

31. MIC 1 phantom switch

When switched ON, phantom power is supplied to the MIC 1 input. Microphones connected to the MIC 1 input depend on the switch setting as follows.

ON: A balanced type phantom powered condenser microphone can be connected.

OFF: A balanced type dynamic microphone can be connected.

IMPORTANT

Never use an unbalanced TS connector (sleeve and ring connected) for connection to the MIC 1 input jack if you want to use the phantom power supply.

Note

Before switching on the phantom power, be sure to turn the MIC 1 volume control (3) fully counterclockwise. Otherwise a switching noise may be produced, possibly damaging the unit.

32. 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.

33. Room zone output terminals [100 V Line]

Galvanic isolated balanced, M4 screw terminal

Connect to the 100 V line type speaker for the room zone.

34. Outside zone output terminals [100 V Line]

Galvanic isolated balanced, M4 screw terminal

Connect to the 100 V line type speaker for the outside zone.

35. Remote controller connection port

Connects to an optional RC-03 Remote Controller.

36. Preamplifier output jacks

0 dB*, 600 Ω monaural, unbalanced, RCA pin jacks

Connect to an external power amplifier or an external speaker processor.

37. Effect bus output jacks

0 dB*, 600 Ω monaural, unbalanced, RCA pin jacks (1 pair)

Connect to an external sound effector.

38. Recording output jacks

0 dB*, 600 Ω monaural, unbalanced, RCA pin jacks (1 pair)

Connect to a sound recorder.

39. AUX 1 input jacks

–10 dB*, 10 kΩ mixed monaural, unbalanced, RCA pin jacks (1 pair)

Connect to external auxiliary equipment.

40. MIC 2 – 6 (XLR) phantom switch

When switched ON, phantom power is supplied to the XLR type connectors of MIC 2 – 6 inputs. Microphones connected to the XLR type inputs depend on the switch setting as follows.

ON: A balanced type phantom powered condenser microphone can be connected.

OFF: A balanced type dynamic microphone can be connected.

Note

Before switching on the phantom power, be sure to turn the MIC 2 – 6 volume controls (3) fully counterclockwise. Otherwise a switching noise may be produced, possibly damaging the unit.

41. MIC 5 and 6 input jacks/XLR type connectors

–60 dB*, 600 Ω, electronically-balanced

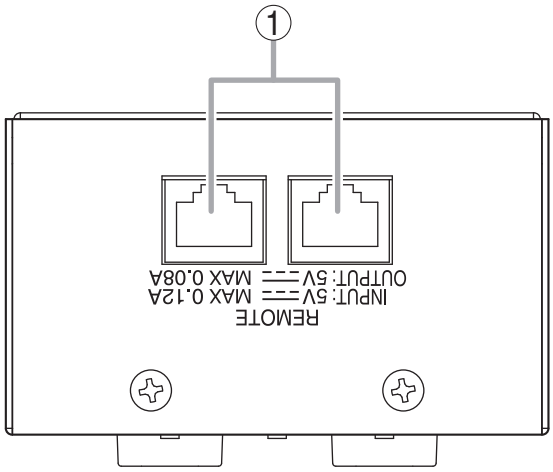
Use either the phone jack or XLR type connector for each MIC input.

Connect to the balanced type microphone, suitable for on or off microphone application. A balanced type dynamic microphone can be connected to each phone jack input. For the microphones connected to each XLR type input, see "40. MIC 2 – 6 (XLR) phantom switch."

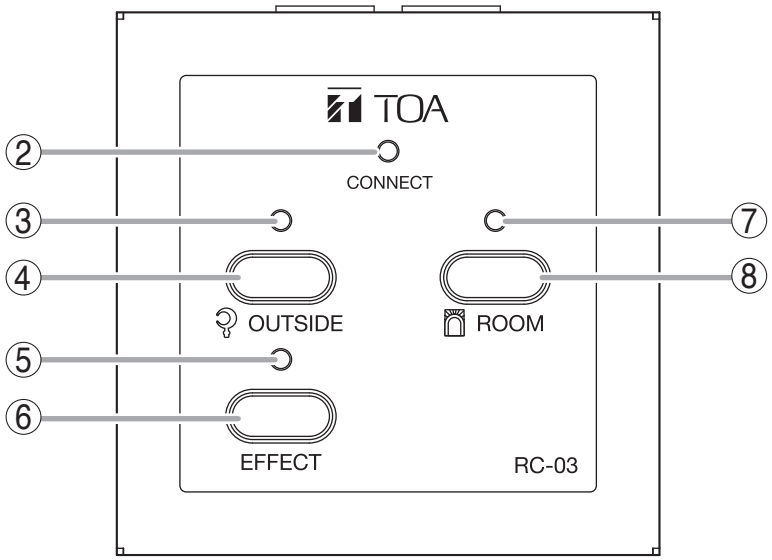
* 0 dB = 1 V

7.2. RC-03 Remote Controller

[Top]



[Front]



1. Control line connection ports
Equipped with 2 RJ-45 ports.
Connect either of the 2 ports to the MX-6224D amplifier.
Maximum cable length is 200 m.
Use STP or UTP Category 5 straight cable for LAN with RJ-45 connectors.
Note
Do not use crossover cable.

2. Connection indicator
Lights green when the Remote Controller is connected to the MX-6224D and the power switch of MX-6224D is ON.

3. Outside zone indicator
Lights red when sound is output to the outside zone.

4. Outside zone switch
Turns on and off the outside zone output.

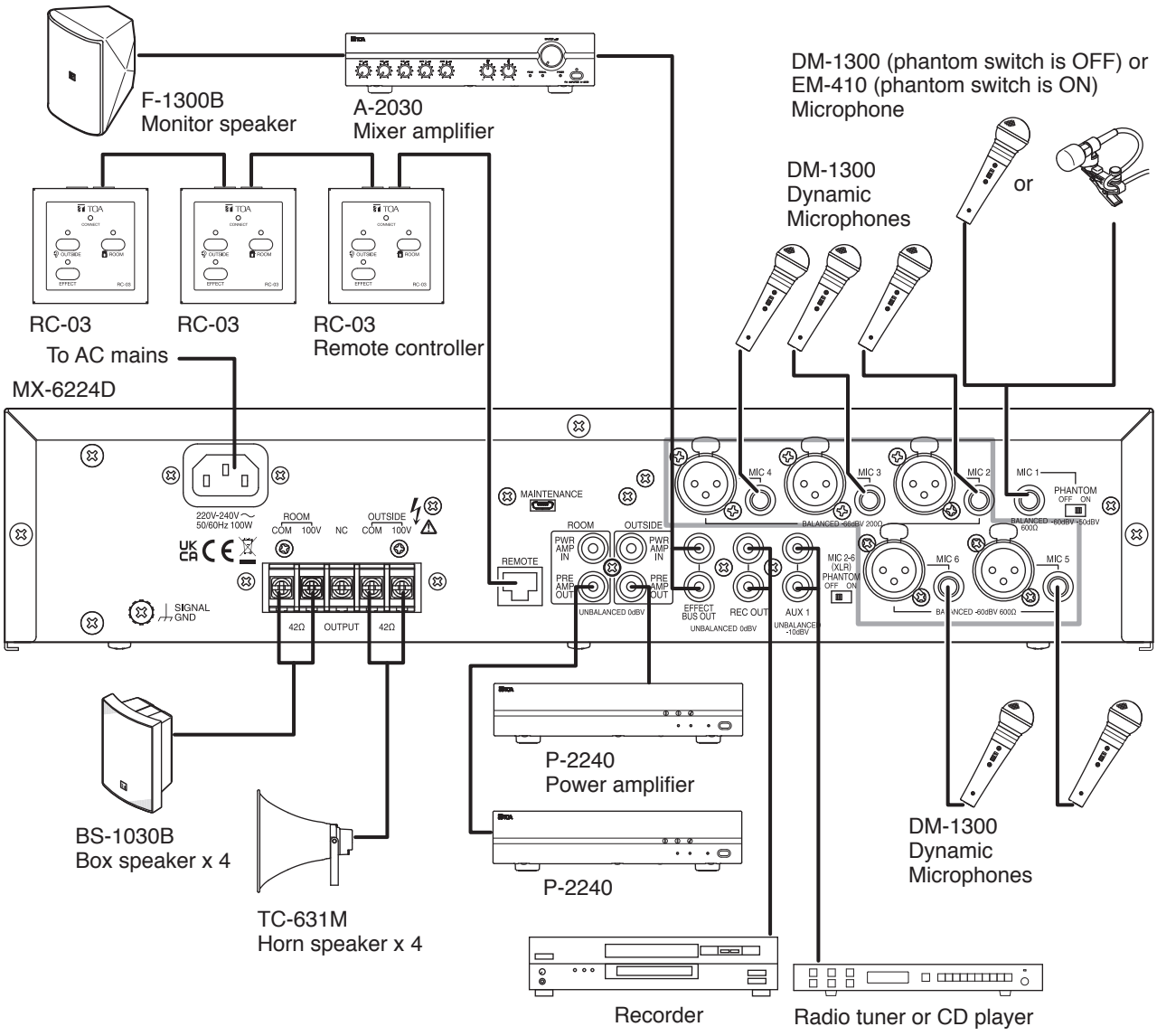
5. Effect indicator
Lights green when effector is enabled.

6. Effect switch
Turns on and off the effector.

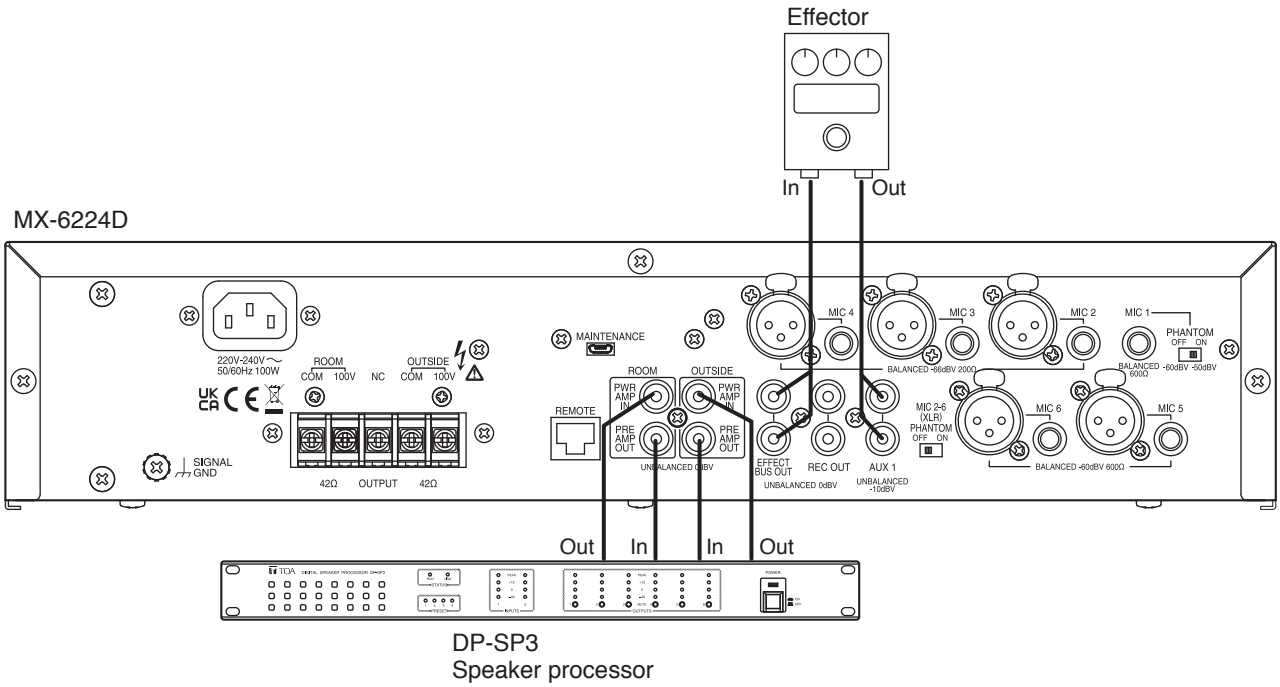
7. Room zone indicator
Lights green when sound is output to the room zone.

8. Room zone switch
Turns on and off the room zone output.

8. CONNECTION EXAMPLE

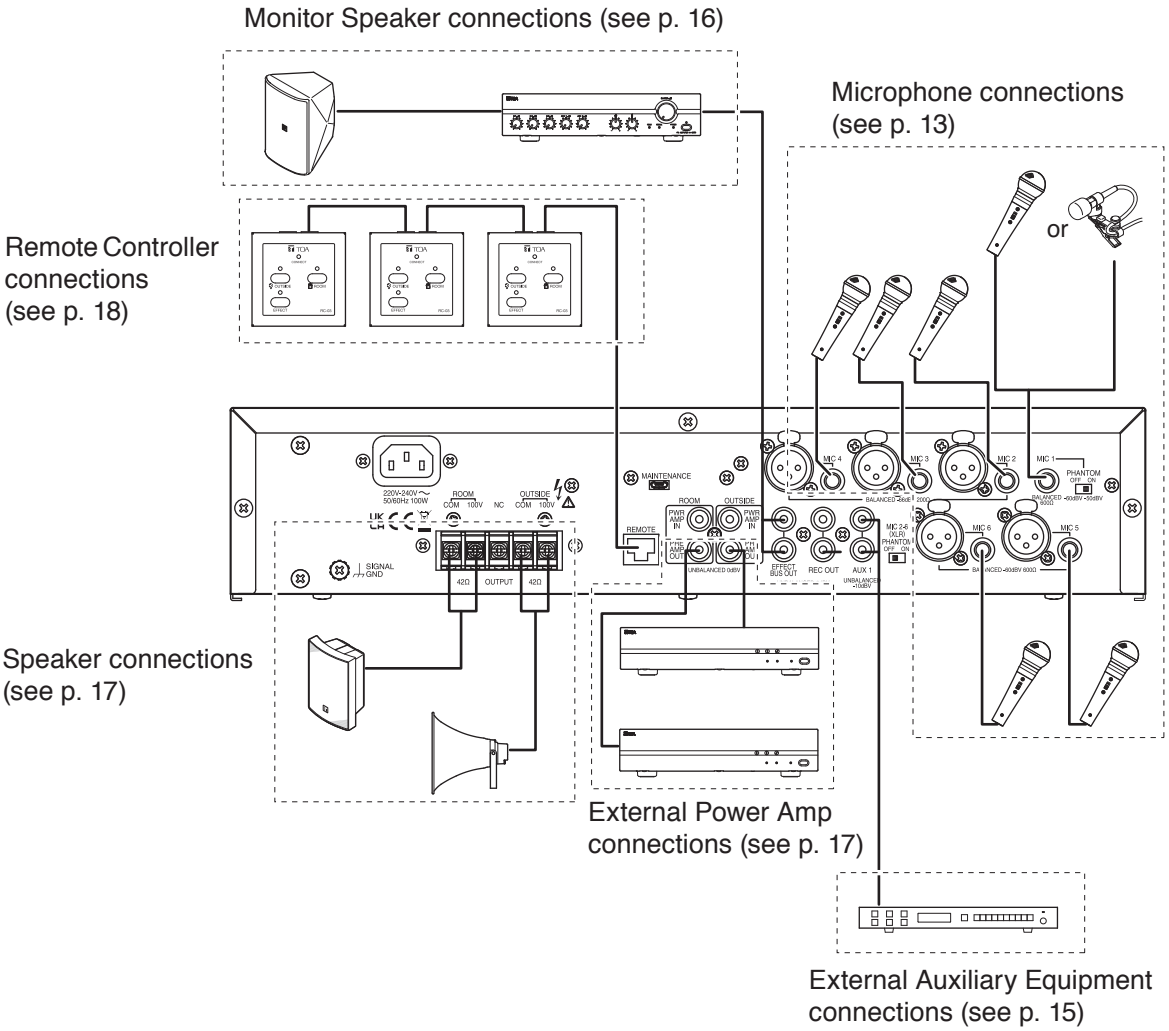


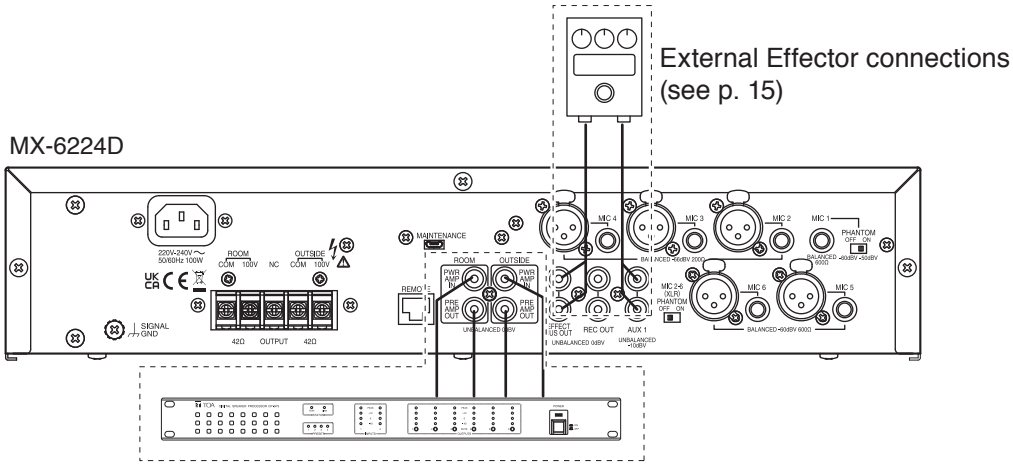
[Connection when signal processing equipment is used]



9. CONNECTIONS

Note
Always be sure that the power is switched OFF before connecting the unit. After connection is completed, be sure to set all volume controls to their minimum level (fully rotated counterclockwise) before switching the power ON again.





9.1. Microphone Connections

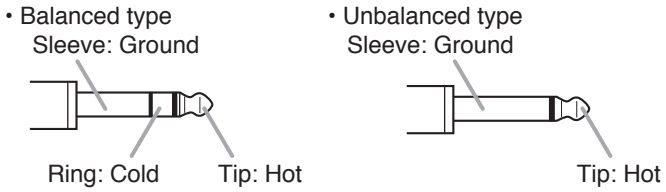
⚠ CAUTION

- Switch OFF the unit's power before turning the phantom power switch ON or OFF. Operating the switch without switching OFF the main power could result in a large transient noise through the speakers, potentially resulting in speaker failure.
- Avoid using phantom power when connecting an unbalanced microphone to the MIC 1 input, as the microphone fails.

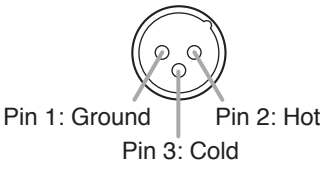
9.1.1. About the pin arrangement of the microphone input jack

Refer to the figure below when connecting the microphone input plug and connector:

[Phone plug]



[XLR type connector (male)]



9.1.2. MIC 1 connections

Microphones equipped with a phone plug can be connected to the MIC 1 input jack.

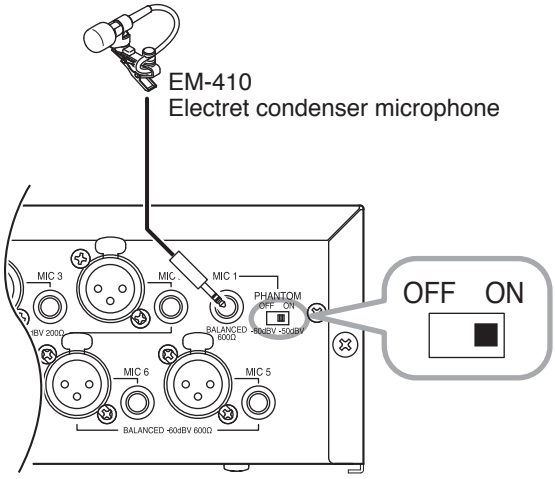
- Both balanced and unbalanced microphones can be used.
- Turning the phantom power switch ON causes a 24 V voltage to be applied to the phone plug's tip and ring.
- When using a lavalier microphone, it is recommended that TOA's EM-410 Lavalier Microphone be used.

Microphone sensitivity when phantom power is used or unused is as follows:

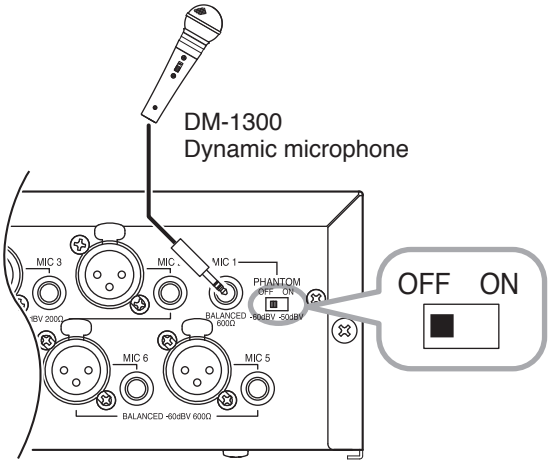
When used: –50 dB*
When not used: –60 dB*

* 0 dB = 1 V

[When phantom power is used]

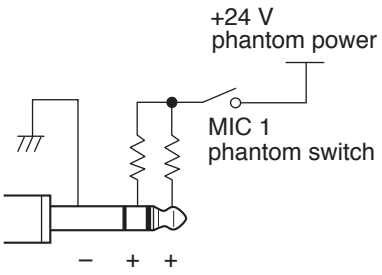


[When phantom power is not used]



Note

Use only balanced phone plugs when connecting a condenser microphone that requires phantom power to MIC 1.

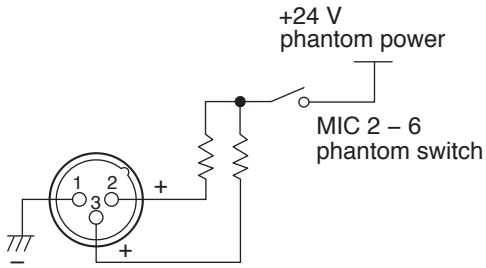


9.1.3. MIC 2 – 6 connections

Microphones equipped with either an XLR connector or a phone plug can be used with microphone inputs 2 – 6.

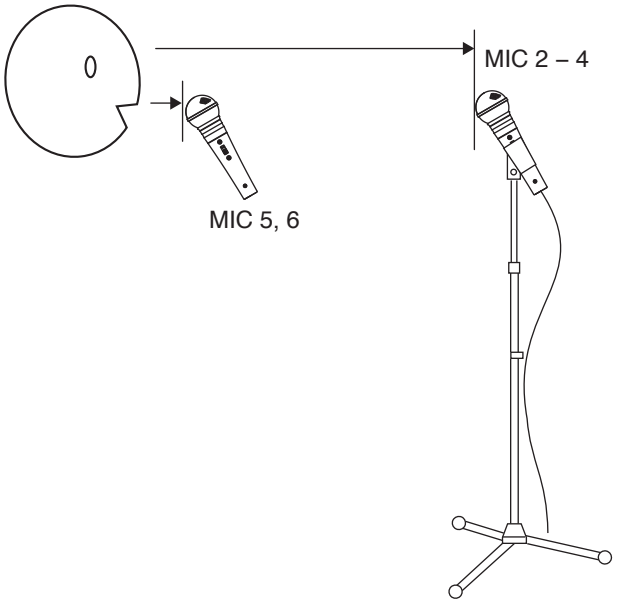
- Balanced or unbalanced microphones can be connected to the phone jack.
- Switching ON the phantom power switch supplies power to all MIC 2 – 6 XLR connectors.
- No phantom power is supplied to the MIC 2 – 6 phone jacks.

Tip
When phantom power is used for the MIC 2 – 6 XLR connectors, a 24 V voltage is applied to Pins 2 and 3 in each connector.



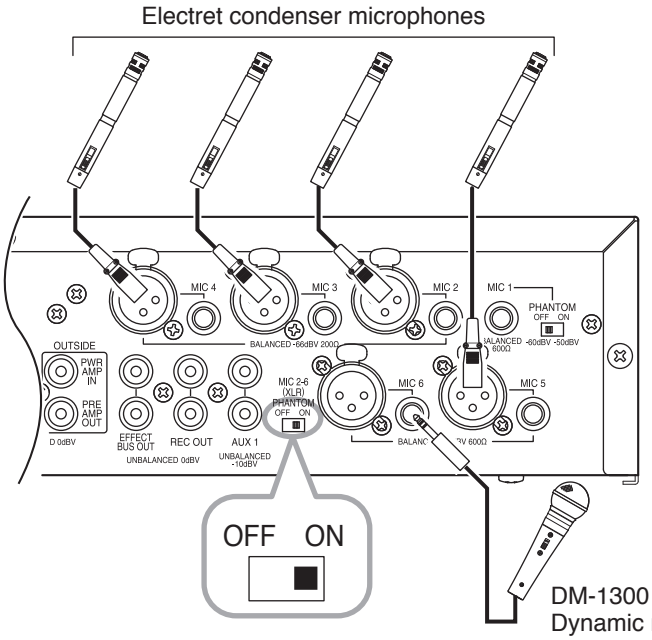
Microphone sensitivity is as follows:
MIC 2 – 4: –66 dB (high sensitivity)
MIC 5 – 6: –60 dB

For microphones connected to MIC 2 – 4, it is assumed that the microphone will be mounted on a microphone stand and used at a distance from the speaker's mouth. For microphones connected to MIC 5 or 6, it is assumed that the microphone will be used close to the speaker's mouth.

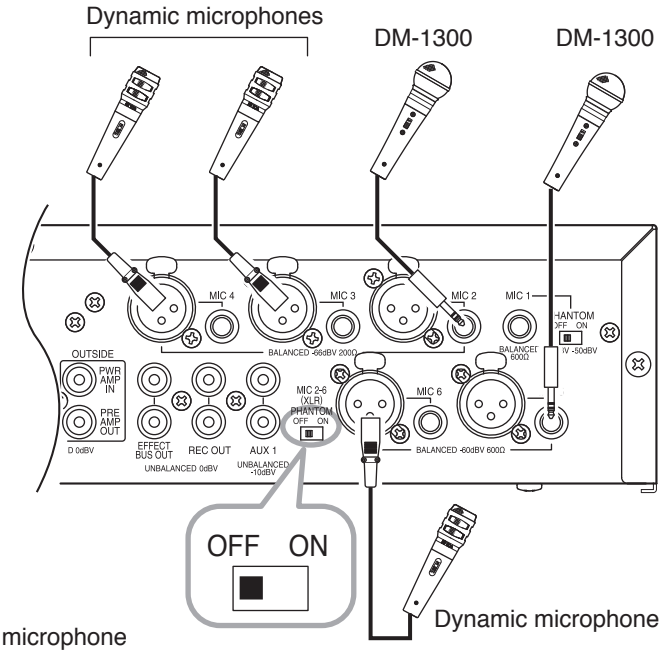


Note
Do not simultaneously connect microphones to the XLR connector and the phone jack of the same number. Input signals to the microphone input may be attenuated, potentially disabling normal use of these connectors.

[When phantom power is used]



[When phantom power is not used]

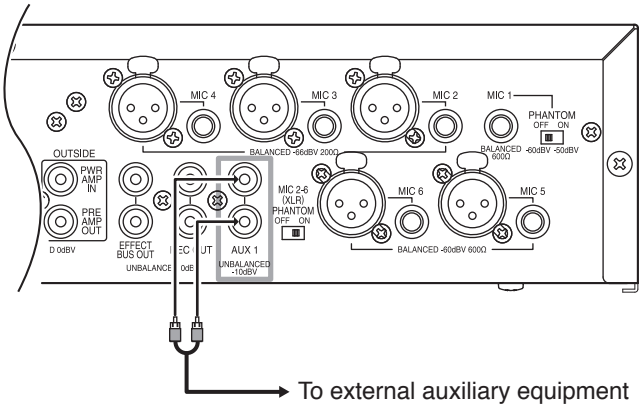


Note
In this figure, since a microphone with a phone plug is used for MIC 6 input, the phantom power is not supplied.

9.2. External Auxiliary Equipment Connections

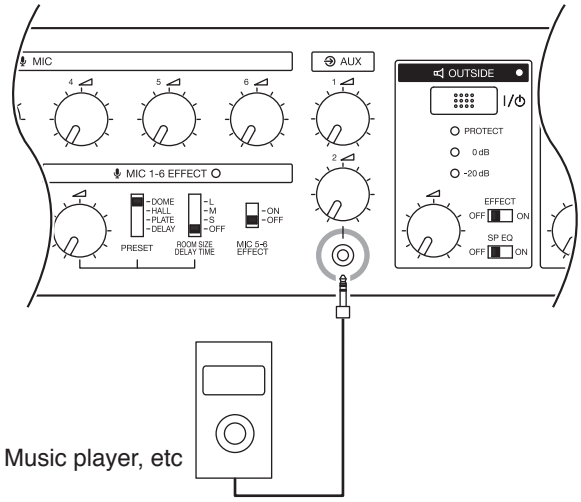
9.2.1. AUX 1 input jack connections

Two input signals can be mixed within the unit. For stereo sound source wiring, connect to both RCA pin jacks. For monaural sound source wiring, connect to either jack.



9.2.2. AUX 2 input jack connections

Signal inputs to the stereo mini jacks are mixed within the unit. For stereo sound source wiring, use a stereo mini plug for connection. For connection to a monaural sound source, use either a monaural or stereo mini plug.

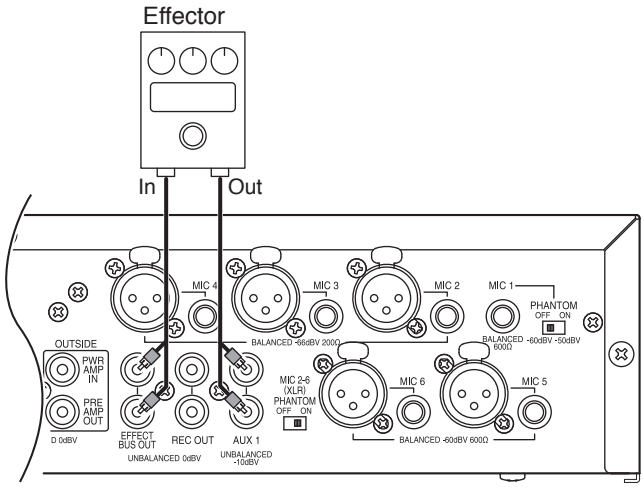


9.3. External Effector Connections

An external effector can be connected without using the unit's internal effector function (see p. 19). If the Effect Room Size/Delay Time Selection Switch is switched OFF, the internal effector is disabled, but external effectors can still be used. Even when using an external effector, the effect on MIC 5 and 6 can be cut off with the MIC 5 and 6 effect switches.

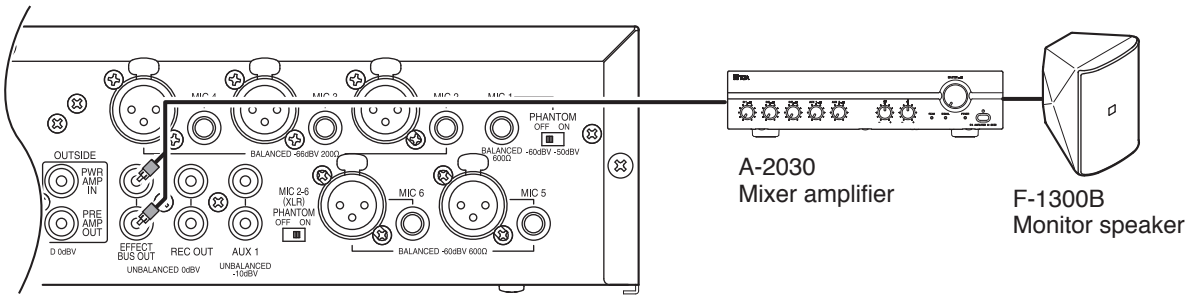
Tips

- For information on effector use, see the instruction manual enclosed with the effector.
- The internal effector can also be used while the external effector is connected. Using both effectors at the same time will result in both effects being mixed.



9.4. Monitor Speaker Connections

Amplifiers and speakers for monitoring applications can be connected using the effect bus output jack.



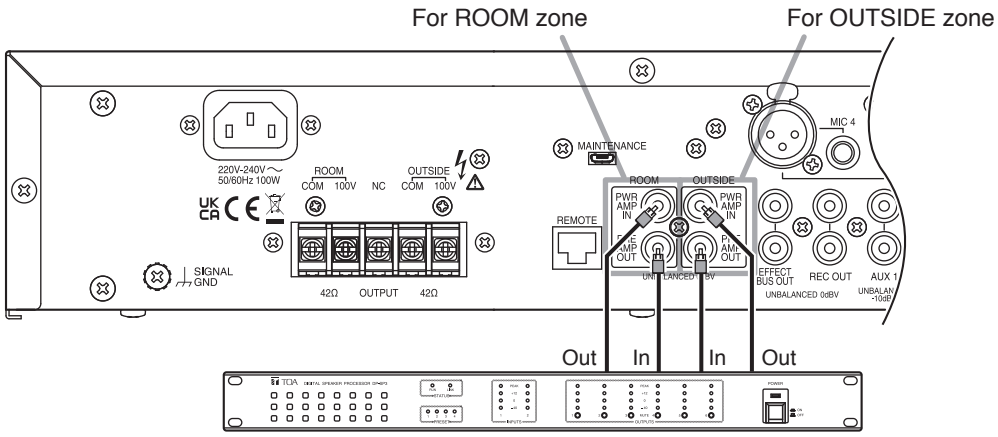
Monitor speaker sound volume is not interlocked with the outside and room volume controls located on the front panel, but is instead interlocked with the effect volume control. When using both the monitor speaker and internal effector, adjust the effect volume control first, then adjust the sound volume with the volume control of the amplifier for monitoring.

Tips

- Output from the effect bus output jack is not interlocked with the front panel-mounted outside and room volume controls.
- For more information on using the amplifier for monitoring, see the instruction manual enclosed with the amplifier.

9.5. External Speaker Processor Connections

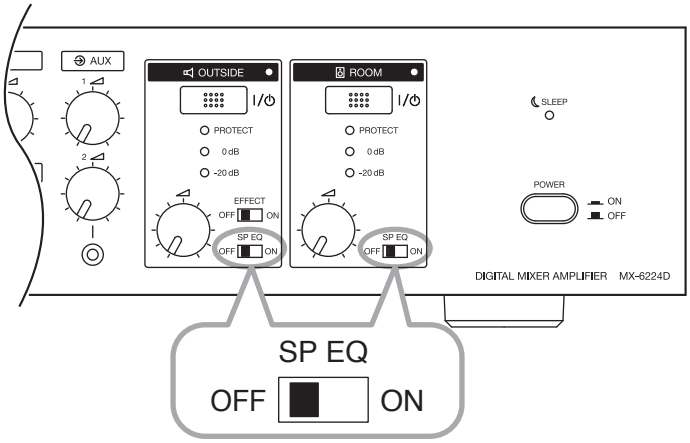
TOA's DP-SP3 Digital Speaker Processor can be used as an external speaker processor without using the unit's internal speaker equalizer function (see p. 21). The external speaker processor can also be used for either the ROOM or OUTSIDE speakers.
For more information on use of the DP-SP3 processor, see the instruction manual enclosed with the DP-SP3.



DP-SP3 Digital speaker processor

Note

Turn the Equalizer switch OFF for zones using the DP-SP3 Digital Speaker Processor. If not turned OFF, the effects produced by both the external and internal effectors will be applied and optimum sound quality adjustment cannot be achieved.



9.6. Speaker Connections

> **⚠ WARNING**
>
> Be sure to reattach the terminal cover after connections are completed. Failure to do so could result in electrical shocks, as a high voltage is applied to the speaker terminals. Also, take care to NEVER touch the speaker terminals.

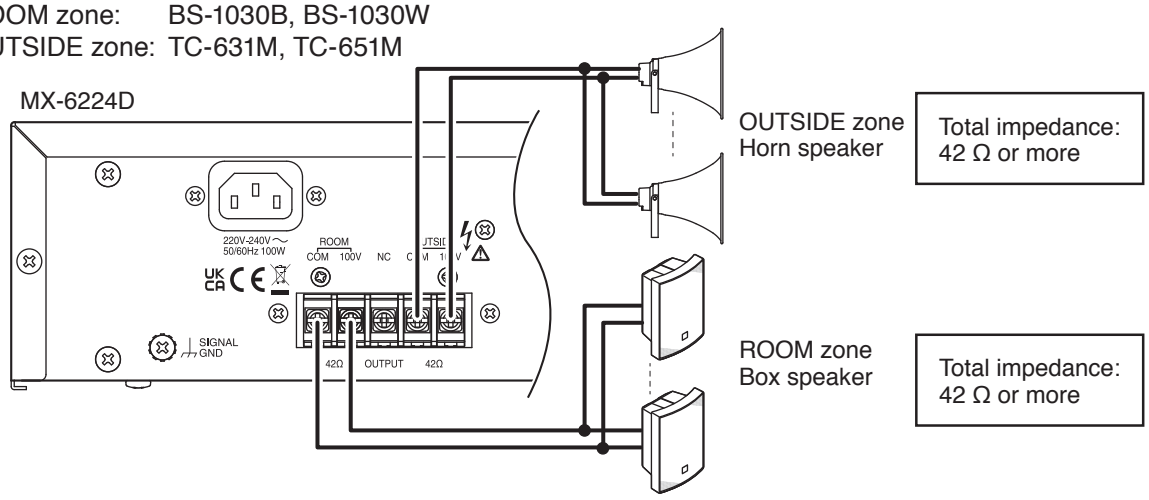
Notes

- Connect only high-impedance 100 V line speakers to the unit. Connection of low-impedance speakers could cause amplifier failure.
- Carry out connections so that the total impedance at each speaker terminal is greater than the value shown in the figure below (42 Ω). If the impedance is smaller than the indicated value, the amplifier could fail.

Tips

- The unit is designed for a total impedance to be greater than the indicated value (42 Ω) when high-impedance 100 V line speakers are connected to each speaker terminal and the total wattage is less than 240 W.
- The unit can produce optimum sound quality conditions when the following TOA speakers are connected and the speaker equalizer function is used. (see p. 21.)

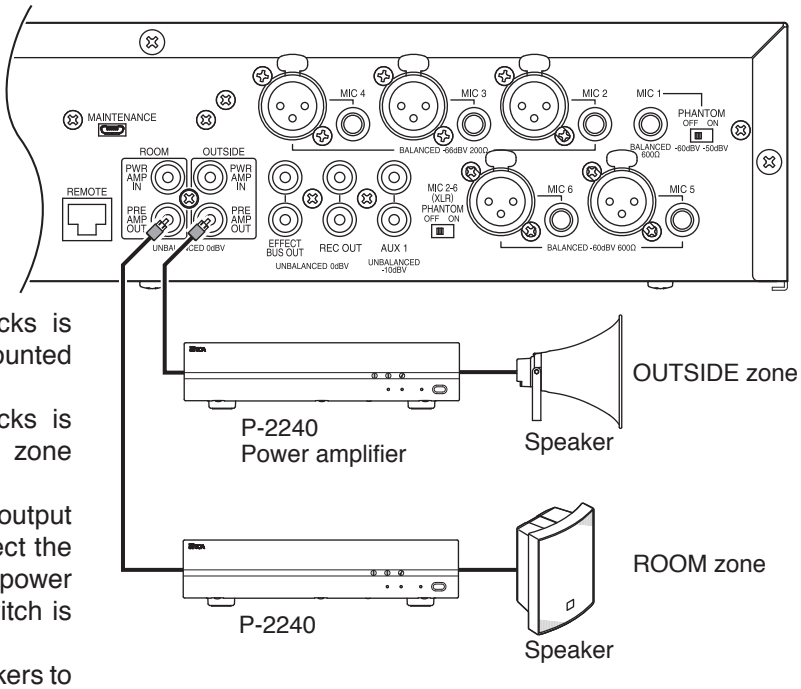
For ROOM zone: BS-1030B, BS-1030W
For OUTSIDE zone: TC-631M, TC-651M



9.7. Extension Power Amplifier Connections

The unit is designed for connection to high-impedance 100 V line speakers, adding up to a total wattage of 240 W each for OUTSIDE and ROOM use. However, if more speakers are required, the power amplifier can be extended.

The sound volume of speakers connected to the extension power amplifier is not interlocked with the front panel-mounted outside and room volume controls. Adjust the volume using the extension power amplifier's volume control.



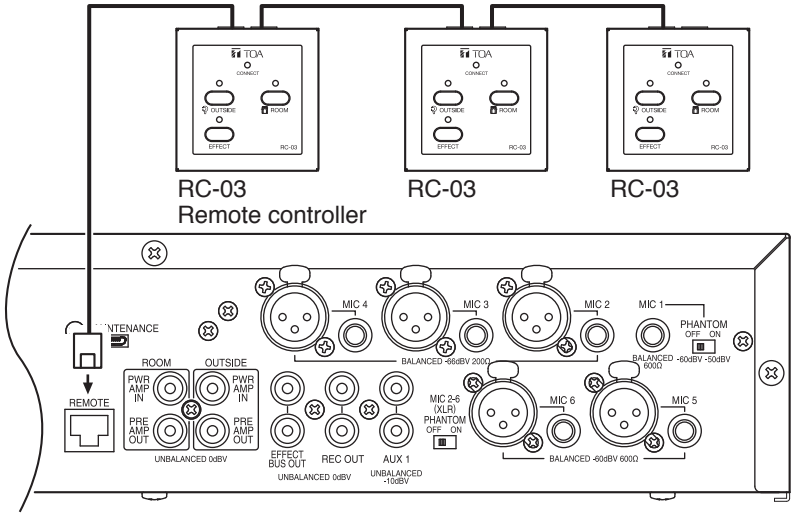
Tips

- Output from the preamplifier output jacks is not interlocked with the front panel-mounted outside and room volume controls.
- Output from the preamplifier output jacks is interlocked with the outside and room zone output switches.
- Since the speaker equalizer affects output from the preamplifier output jacks, connect the designated speakers (see p. 21.) to the power amplifier when the speaker equalizer switch is ON for the zone(s).
- For more information on connecting speakers to the extension amplifier and use of the extension amplifier, see the instruction manual enclosed with the amplifier.

9.8. RC-03 Remote Controller Connections

> **⚠ CAUTION**
>
> Do not connect any other equipment than the RC-03 Remote Controller to the MX-6224D's Remote controller connection port.
> If other equipment, such as a PC, hub or network device, is connected to that port, the connected equipment could be damaged.

Up to three RC-03 controllers can be connected to the unit.
The RC-03 has two connection ports, which permit connection in daisy chain fashion. Both ports can be used.



Use STP or UTP Category 5 straight cable for LAN with RJ-45 connectors for connection.
Note
Do not use crossover cable.

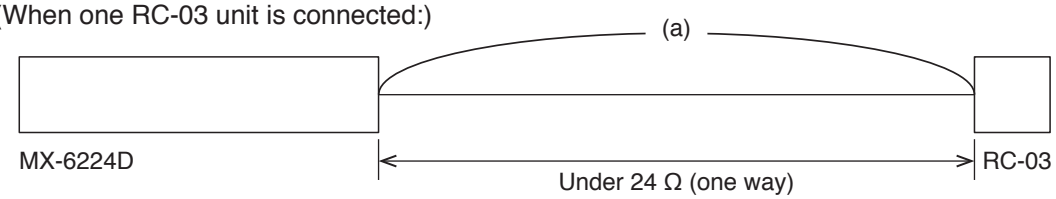
The total permissible cable extension distance is as follows:

No. of Connected RC-03 Units	Total Extension Distance*1
1	200 m or less
2	Total of 115 m or less*2
3	Total of 80 m or less*2

*1 When using a cable with the following specifications:
- STP Category 5 straight cable
- AWG 24
- Cable resistance (one way): 93.8 Ω/km

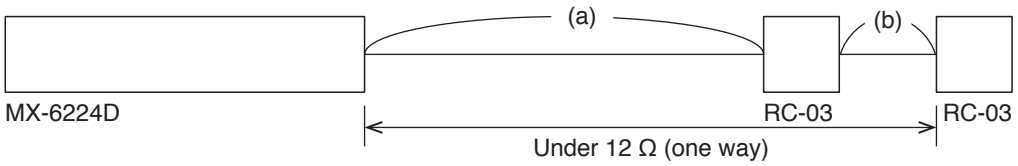
*2 This table refers to the total length of cable between the unit and the RC-03, and between RC-03 units. There are no restrictions on the distance between devices.

(When one RC-03 unit is connected:)



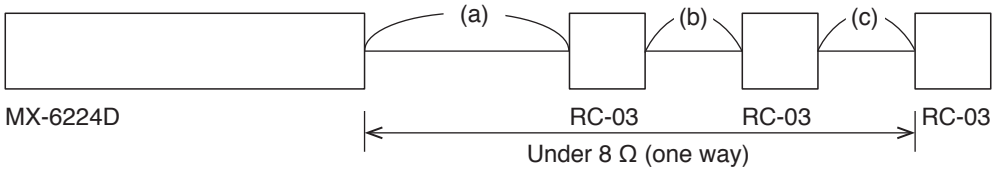
(a) ≤ 200 m

(When two RC-03 units are connected:)



(a) + (b) ≤ 115 m

(When three RC-03 units are connected:)

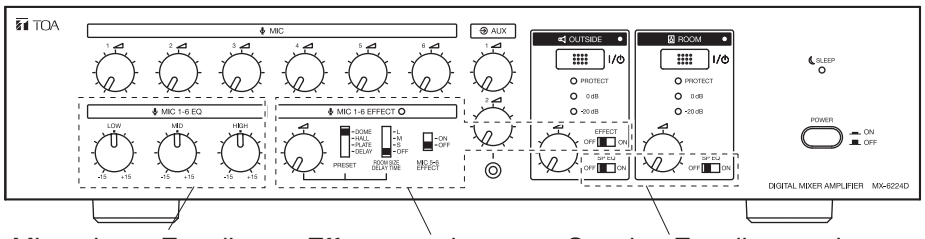


(a) + (b) + (c) ≤ 80 m

10. SETTINGS

After connection completion, perform settings while sound is actually being broadcasting (see p. 22).

MX-6224D



Microphone Equalizer settings (see below)

Effector settings (see below)

Speaker Equalizer settings (see p. 21)

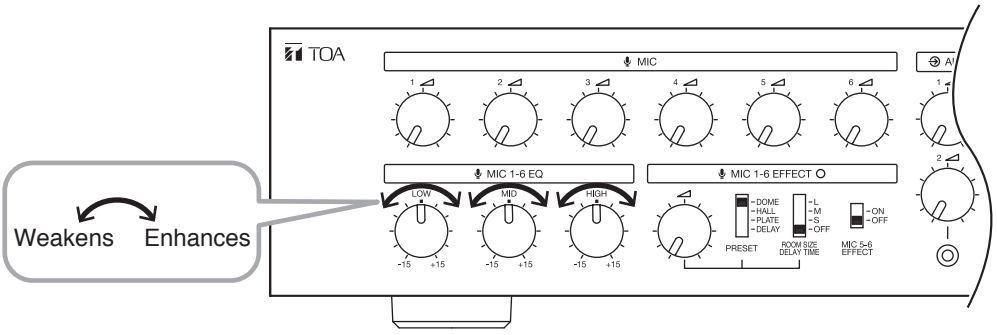
10.1. Microphone Equalizer Settings

The equalizer settings of MIC 1 – 6 can be adjusted to low, middle and high frequency bands. Rotating the Frequency Control knob of each band clockwise enhances the relevant band, while counterclockwise rotation weakens the band.

Note
The equalizer settings of AUX 1 and 2 inputs cannot be adjusted.

Tip
Each frequency band's center frequency is as follows:

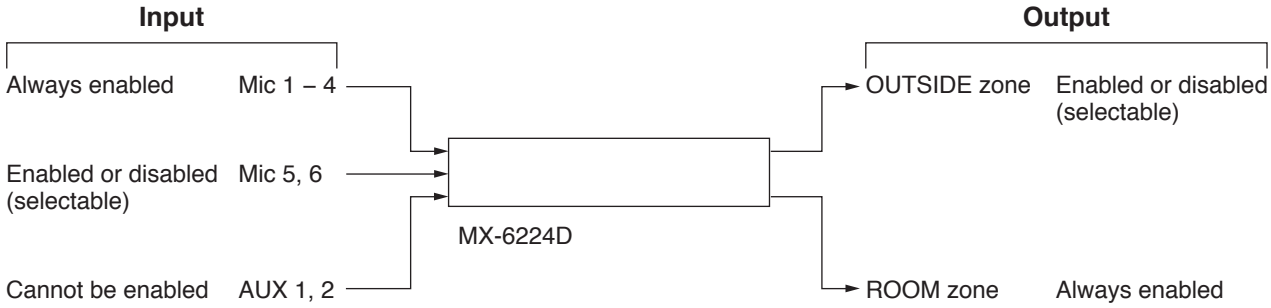
Low frequency band: ±15 dB, 80 Hz
Middle frequency band: ±15 dB, 2.5 kHz
High frequency band: ±15 dB, 12 kHz



10.2. Effector Settings

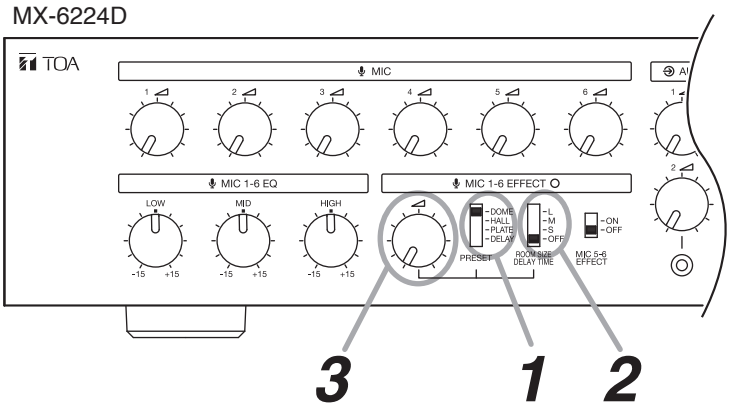
The unit’s built-in effector function offers a range of settings.

The effector is enabled whenever the Effect Room Size/Delay Time Selection switch is set to any other position than OFF. When enabled, the effector is applied to each input and output as follows:



Note
The effector is not applicable to source signals input from AUX 1 and 2.

10.2.1. Effector types and settings



Step 1. Select the type of effect to be used with the Effect Preset Type Selection switch.
Refer to the following table for the types of effects that can be selected:

Effect Name	Effect Description
DOME	Creates an effect of stone walls with semi-domed ceilings.
HALL	Creates an effect of wooden walls with carpeted floors.
PLATE	Creates an effect of metallic reverberation as by a metal plate hung from the ceiling, accompanied by an extended high frequency band.
DELAY	Creates an effect of sound being repeatedly reflected following a delay.

Step 2. Enable or disable (ON/OFF) the effector, and select the reverberation time and delay time conditions using the Effect Room Size/Delay Time Selection Switch.

	DOME, HALL or PLATE settings	DELAY settings
L	Long reverberation time	Long delay time
M	Medium reverberation time	Medium delay time
S	Short reverberation time	Short delay time
OFF	Effector disabled.	Effector disabled.

Step 3. Adjust the effector's response strength.
To adjust, rotate the Effect Control Knob. The effect becomes more pronounced as the knob is rotated clockwise, and weakens as the knob is rotated counterclockwise.

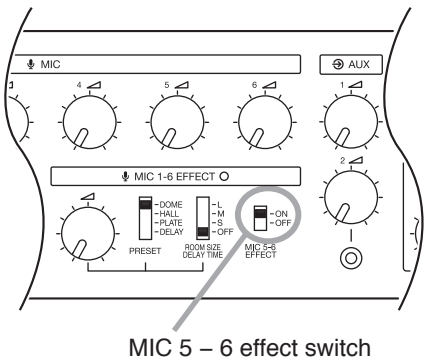
10.2.2. Effector settings for MIC 5 and 6 inputs

The effector can be enabled or disabled (ON/OFF) for Microphone 5 and 6 inputs (default setting: OFF).

Step: To apply the sound effect to these inputs, set their Effect switches to the ON position.

The following table shows the effector status of each input when MIC 5 and 6 Effect switches are set to the ON or OFF position:

	OFF	ON
MIC 1–4	Effector enabled	Effector enabled
MIC 5 and 6	Effector disabled	Effector enabled
AUX 1 and 2	Effector disabled	Effector disabled

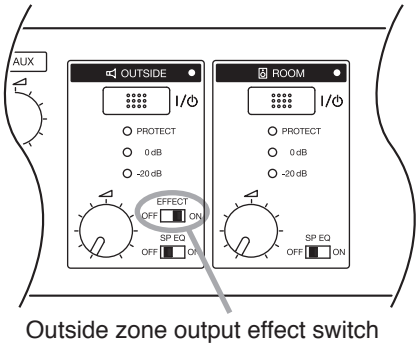


MIC 5 – 6 effect switch

10.2.3. Settings when using the effector for OUTSIDE zones

The effector can also be enabled or disabled (ON/OFF) for OUTSIDE zone output (default setting: OFF).

Step: To apply the sound effect to broadcasts made to OUTSIDE zones, set the Outside Zone Output Effect switch to the ON position.



Outside zone output effect switch

The following table shows the effector status of each zone output when the Outside Zone Output Effect Switch is set to the ON or OFF position:

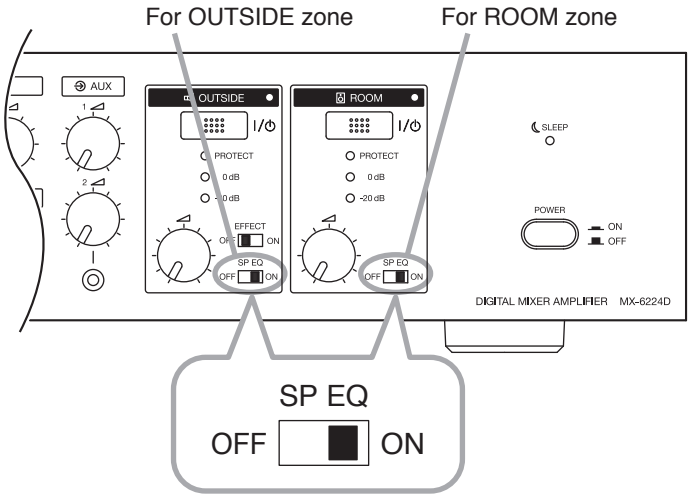
	OFF	ON
ROOM zone output	Effector enabled	Effector enabled
OUTSIDE zone output	Effector disabled	Effector enabled

10.3. Speaker Equalizer Settings

The unit's built-in speaker equalizer can be used to adjust the following TOA speakers for optimal sound quality:

For ROOM zone: BS-1030B, BS-1030W
For OUTSIDE zone: TC-631M. TC-651M

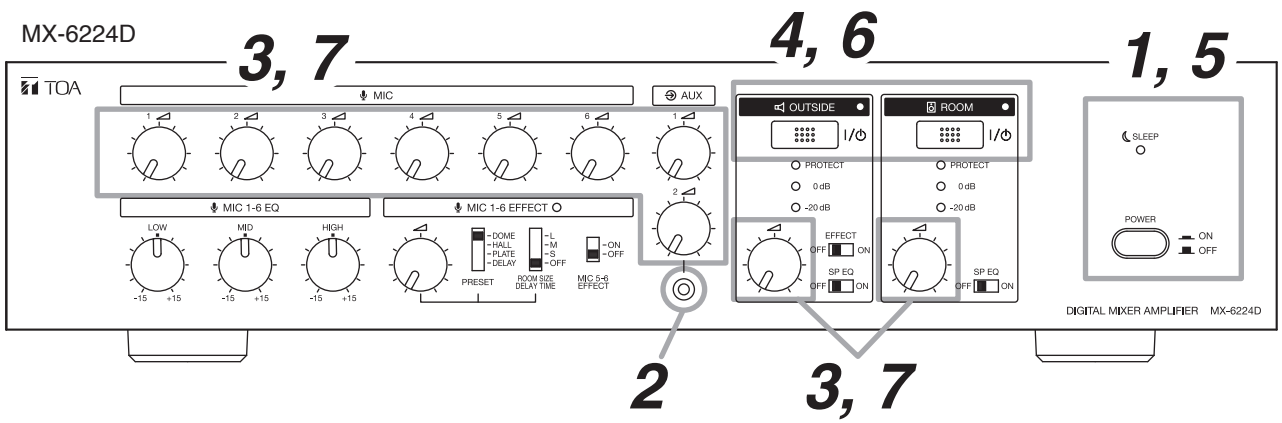
To use this function, set the Equalizer switch ON for the desired zone(s).



11. OPERATIONS

11.1. Making Broadcasts

11.1.1. When using the MX-6224D amplifier alone for broadcasting



Safety Measures to Prevent Abrupt Loud Sound Output

Step 1. Ensure that the power switch is in the OFF position.

Step 2. When using a sound player or other external sound source, connect it to AUX 2 input jack located on the front panel.

Step 3. Ensure that all volume controls have been fully rotated counterclockwise.

Step 4. Ensure that both the OUTSIDE and ROOM Zone output switches are placed in the OFF position.

Switch ON the Power after Completing Safety Measures.

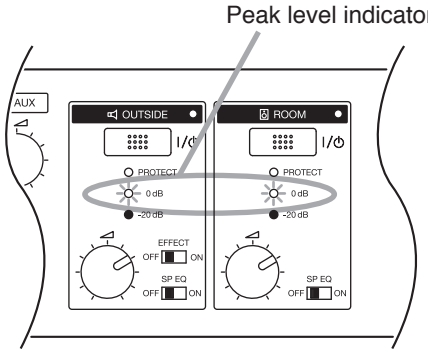
Step 5. Press the Power switch.
AC main power is turned on and the Sleep indicator lights.

Select Broadcast Zones.

Step 6. Press the Zone output switch(es) for the desired broadcast zone(s).
The Sleep indicator extinguishes and the Zone output indicator(s) for the selected zone(s) will light.

Adjust the Sound Volume.

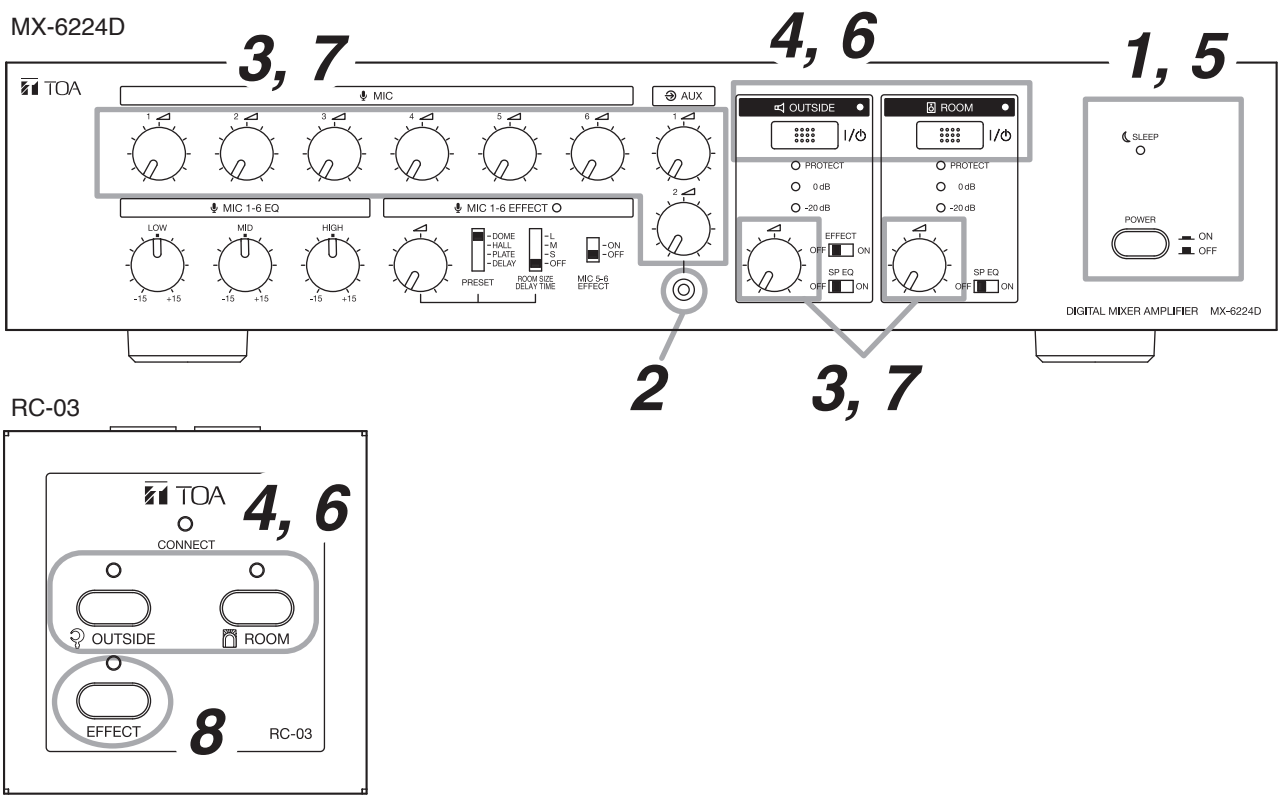
Step 7. Rotate the unit's volume control for the zone and the volume control of a microphone or external sound source to be used clockwise to adjust the broadcast volume to an appropriate level.
Adjust the volume so that the Peak Level indicator does not continuously light.



Note
Start playing the external sound source before volume adjustment. If play is started after the volume is set, a loud sound may be suddenly output.

Tip
For more information about operation of the external sound source, see the instruction manual enclosed with that sound source.

11.1.2. When using the MX-6224D amplifier in conjunction with the RC-03 Remote Controller (1 – 3 units) for broadcasting



Safety Measures to Prevent Abrupt Loud Sound Output

Step 1. Ensure that the power switch is in the OFF position.

Step 2. When using a sound player or other external sound source, connect it to AUX 2 input jack located on the front panel.

Step 3. Ensure that all volume controls have been fully rotated counterclockwise.

Step 4. Ensure that both the OUTSIDE and ROOM Zone output switches on both the amplifier and Remote Controller are set to OFF.

Switch ON the Power after Completing Safety Measures.

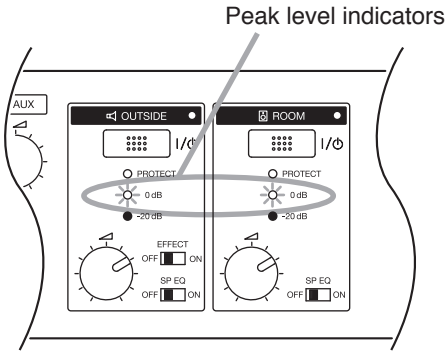
Step 5. Press the Power switch.
AC main power is turned on and the Sleep indicator lights.

Select Broadcast Zones.

Step 6. Press the Zone output switch(es) on either the amplifier or the Remote Controller for the desired broadcast zone(s).
The Sleep indicator extinguishes and the Zone output indicator for the selected zone(s) will light.
Tip
The relevant zone output indicator for the amplifier or Remote Controller, other than that actually being operated, also lights.

Adjust the Sound Volume.

Step 7. Rotate the unit's volume control for the zone and the volume control of a microphone or external sound source to be used counterclockwise to adjust the broadcast volume to an appropriate level.
Adjust the volume so that the Peak Level indicator does not continuously light.



Note
Start playing the external sound source before volume adjustment. If play is started after the volume is set, a loud sound may be suddenly output.

Tip
For more information about operation of the external sound source, see the instruction manual enclosed with that sound source.

Effector Function Settings

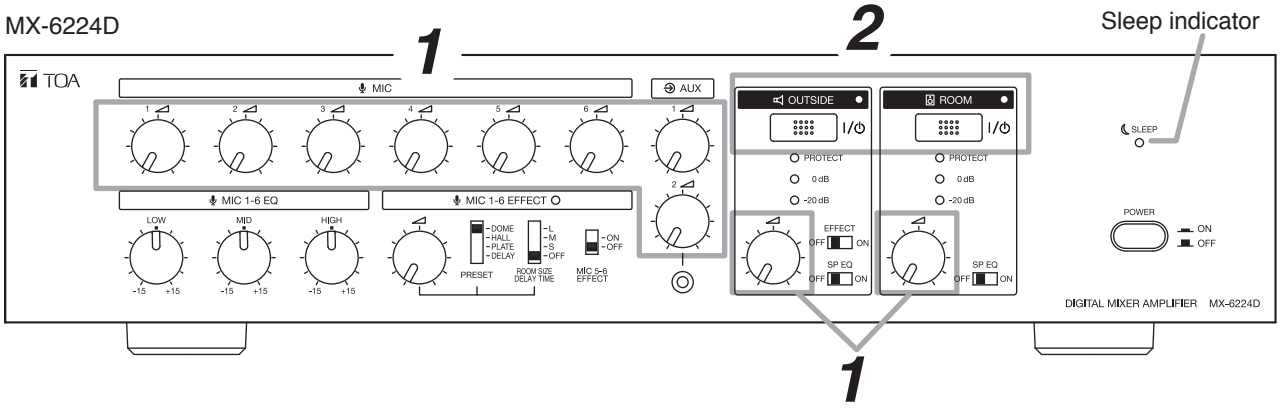
Step 8. When using the effector, press the Effect switch on any connected Remote Controller.
The Effect indicators on all Remote Controllers light, and the effector is enabled.

Notes
- Even if the effector has been switched on at the amplifier, it cannot be used until the Effect switch on any of the connected Remote Controllers is pressed.
- If the effector has not been switched on at the amplifier, it cannot be used even if the Effect switch on a Remote Controller is pressed.

11.2. Using Sleep Mode

The sleep mode is a power-saving function that puts the amplifier on standby to minimize power consumption. It can also resume broadcasts more quickly than switching off the power.
After use, the amplifier can be placed in Sleep (standby) mode with no need of switching off its AC main power. Sleep mode can be enabled when both the outside and room outputs are OFF.

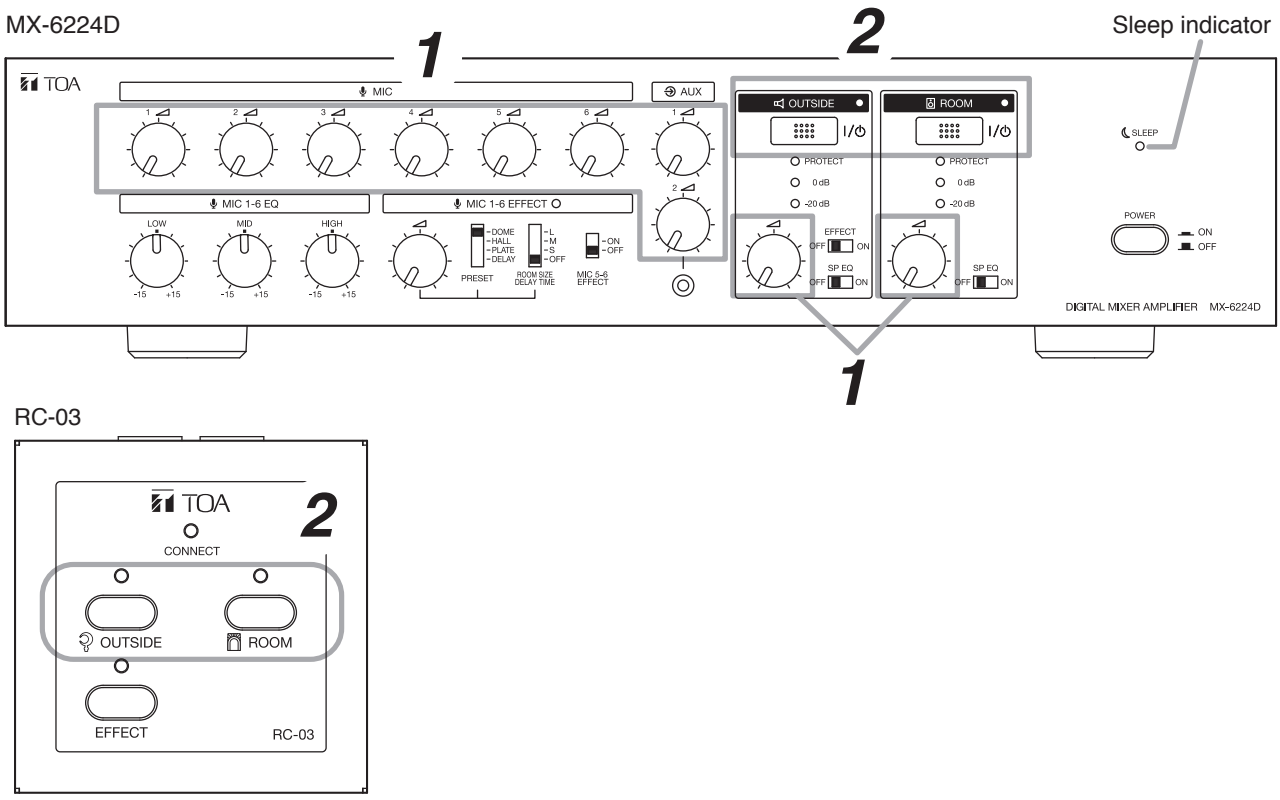
11.2.1. Setting the MX-6224D amplifier to Sleep mode



Step 1. Fully rotate all volume controls counterclockwise.

Step 2. Set the OUTSIDE and ROOM Zone output switches to OFF.
The Sleep indicator lights, placing the unit in Sleep mode. To resume broadcasting, press the Zone output switch for the desired broadcast zone(s), then adjust the sound volume with the volume control.

11.2.2. Setting the MX-6224D amplifier and the RC-03 Remote Controller (1 – 3 units) to Sleep mode

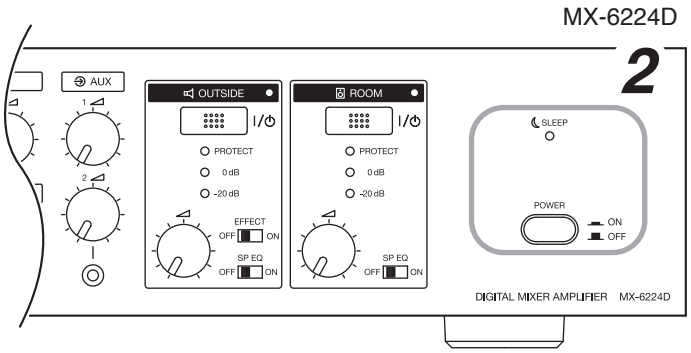


Step 1. Fully rotate all volume controls counterclockwise.

Step 2. Set all Zone switches for the OUTSIDE and ROOM outputs of the amplifier and Remote Controllers to OFF. The Sleep indicator lights, placing both the amplifier and connected controllers in Sleep mode. To resume broadcasting, press the Zone switch for the desired broadcast zone(s) on either the amplifier or Remote Controller, and adjust the sound volume with the volume control.

11.3. Switching the AC Power OFF

When done using the amplifier, follow the procedure below to switch OFF the AC main power:



Step 1. Place the unit in Sleep mode (see "Using Sleep Mode" on p. 24).

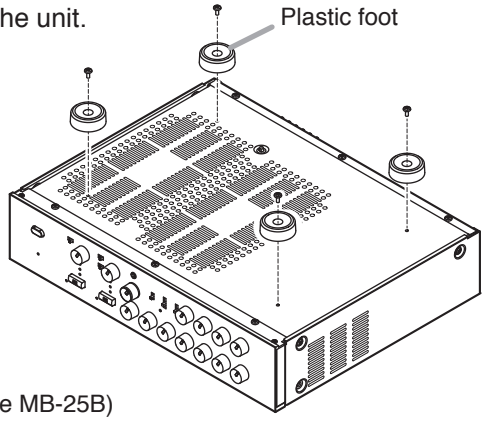
Step 2. Press the MX-6224D amplifier's Power switch.
The Sleep indicator extinguishes and the AC main power is switched OFF.

12. RACK MOUNTING

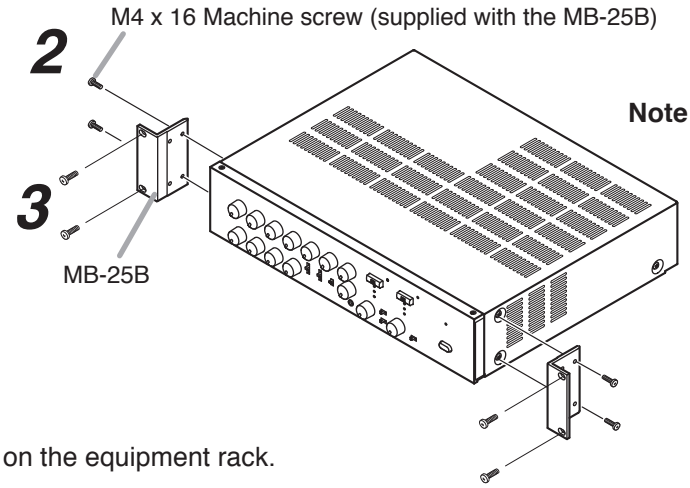
To mount the unit in an equipment rack, use the optional MB-25B Rack mounting bracket.

Note
Equipment racks having venting holes in their top panels must not be used.

Step 1. Remove the 4 plastic feet attached to the bottom surface of the unit.



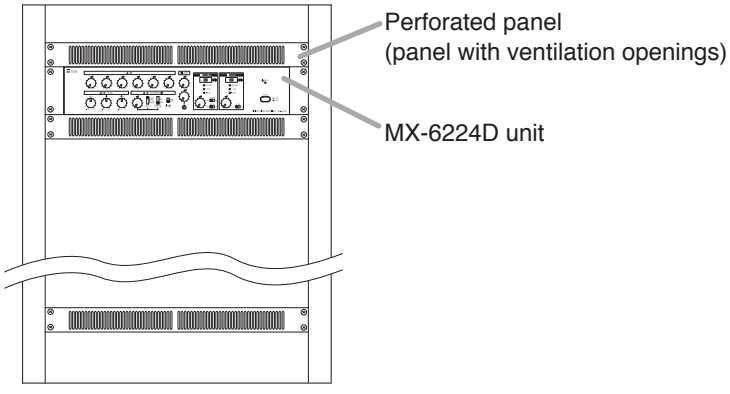
Step 2. Attach the MB-25B to the unit using the supplied 4 screws.



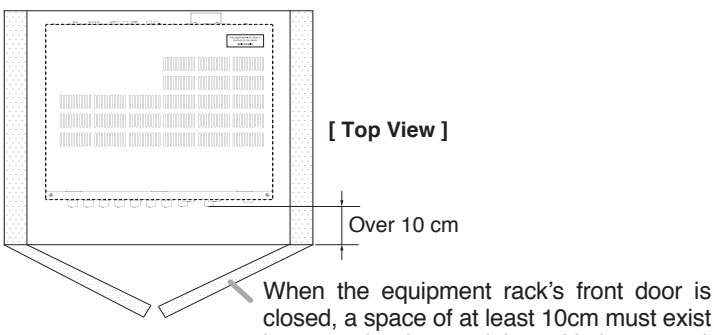
Note: Be sure to use the supplied screws.

Step 3. Mount the unit on the equipment rack.

⚠ CAUTION Rack-mounting screws are not supplied with the unit.
Prepare them that are appropriate for the equipment rack.



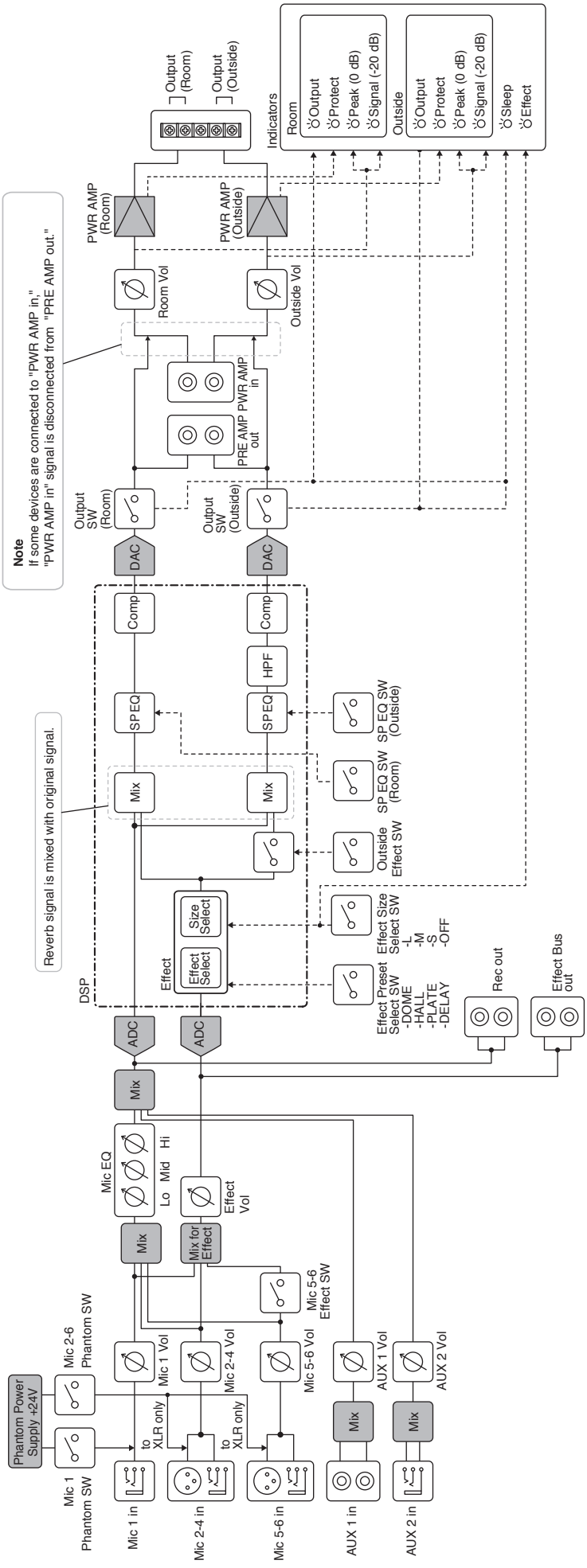
Note
To improve ventilation, ensure that a perforated panel (panel with air openings) of 1-unit size or greater is mounted over and under the unit, as well as on the top and at the bottom of the rack.



13. TROUBLE SHOOTING

Symptom	Possible Cause	Remedy
No sound output.	When protection indicator is unlit	
	AC power supply cord is not connected.	Check connections.
	Microphone and other sound source are not connected.	
	Speakers are not connected.	
	Power switch is set to OFF.	Set power switch to ON.
	Both Outside Zone and Room Zone output switches are set to OFF.	Set either of the output switches to ON.
	All volume controls are set to minimum position.	Set volume controls to appropriate level.
	[When MIC 1 is in use] Microphone requiring phantom power is in use, but phantom power switch is set to OFF.	Set phantom switch to ON. **Note** Do not use unbalanced type microphones.
	[When MIC 2 – 6 inputs are in use] Microphone requiring phantom power is in use, but phantom power switch is set to OFF.	Set phantom switch to ON.
	[When MIC 2 – 6 inputs are in use] Microphone requiring phantom power is connected to phone jack.	Connect microphone to XLR jack. Note that phantom power is not supplied to phone jack.
	When protection indicator is lit	
	Vent is blocked, causing heat buildup.	Remove objects blocking the vent. Sound will begin to be output when temperature falls.
	Excessively loud speaker sound output causes heat buildup.	Adjust amplifier volume controls. Sound will begin to be output when temperature falls.
	Speaker wires shorted.	Find and fix speaker wire short circuit.
Intermittent sound output.	Low-impedance speaker connected to speaker terminals.	Connect speaker with higher impedance than specified rating.
Cannot use effector.	Effect Room Size/Delay time selection switch is set to OFF.	Select mode other than OFF.
	Effect control is set to minimum position.	Set effect control to appropriate level.
	Audio is input to AUX 1 and 2, or PWR AMP IN.	Correct operation. (Effector function is disabled for AUX 1 and 2, and PWR AMP IN.)
	In-use remote controller effect switch is set to OFF.	Set the remote controller effect switch to ON.
	Outside Zone output effect switch is set to OFF.	To apply sound effect to outside zone, set Outside Zone output effect switch to ON.
Cannot turn unit ON/OFF using remote controller.	[When remote controller's connection indicator is unlit] Cable is not correctly connected.	Check cable connections.
	[When remote controller's connection indicator is lit] The unit's Outside Zone and Room Zone output switches are both set to ON.	Correct operation. (When the unit is ON, it cannot be turned OFF using the remote controller.)
Cannot turn unit OFF using the remote controller.	The unit's Outside Zone and Room Zone output switches are both set to ON.	Set both Outside Zone and Room Zone output switches to OFF. (When the unit is ON, it cannot be turned OFF using the remote controller.)
MIC 1 – 6 EQ does not work.	Audio is input to AUX 1 and 2, or PWR AMP IN.	Correct operation. (Equalization is disabled for AUX 1 and 2, and PWR AMP IN.)

14. BLOCK DIAGRAM



15. SPECIFICATIONS

[MX-6224D]

Power Source	220 V – 240 V AC, 50/60 Hz
Power Output	240 W x 2 channels (100 V, 42 Ω, rated output)
Power Consumption	100 W (according to IEC60065), 570 W (at rated output, both channels)
Amplification System	Class D, Output transformerless galvanic isolated output
Frequency Response	50 Hz – 20 kHz, ±3 dB (at 1/3 rated output, rated load, from power amplifier input)
Distortion	1 % or less (at 1 kHz, 1/3 rated output power)
Input	MIC 1: –50 dB* (24 V phantom powered)/–60 dB* (phantom power OFF) 600 Ω, electronically-balanced, ø6.3 mm phone jack (3P: balance) MIC 2 – 4: –66 dB*, 200 Ω, electronically-balanced, XLR-3-31 type and ø6.3 mm phone jack (3P: balance) (either one usable) MIC 5 – 6: –60 dB*, 600 Ω, electronically-balanced, XLR-3-31 type and ø6.3 mm phone jack (3P: balance) (either one usable) AUX 1: –10 dB*, 10 kΩ mixed monaural, unbalanced, RCA pin jacks (1 pair) AUX 2: –20 dB*, 10 kΩ mixed monaural, unbalanced, ø3.5 mm mini jack (3P: stereo) Power amplifier input: 0 dB*, 10 kΩ, unbalanced, RCA pin jacks (1 each for ROOM and OUTSIDE outputs)
Output	Speaker output: 2 zones, 100 V (42 Ω), galvanic isolated balanced, M4 screw terminal Recording output: 0 dB*, 600 Ω monaural, unbalanced, RCA pin jacks (1 pair) Effect bus output: 0 dB*, 600 Ω monaural, unbalanced, RCA pin jacks (1 pair) Preamplifier output: 0 dB*, 600 Ω monaural, unbalanced, RCA pin jacks (1 each for ROOM and OUTSIDE outputs)
Phantom Power	ON/OFF switchable for MIC 1 and XLR-3-31 type connectors of MIC 2 – 6
Signal to Noise Ratio	60 dB or more (All volume controls: min.)
Controls	6 Microphone volume controls, 2 AUX volume controls, 1 ROOM output switch, 1 ROOM volume control, 1 OUTSIDE output switch, 1 OUTSIDE volume control, 1 Effect control (0 to 100 %) of Effect bus, 1 Effect preset type selection switch (DOME/HALL/PLATE/DELAY), 1 Effect Room size/Delay time selection switch (L/M/S/OFF), 1 Effect output selection switch (OFF/ON), 1 MIC 5 – 6 effect switch, 1 Low EQ control (±15 dB, 80 Hz) for MIC 1 – 6, 1 Mid EQ control (±15 dB, 2.5 kHz) for MIC 1 – 6, 1 High EQ control (±15 dB, 12 kHz) for MIC 1 – 6, 1 Speaker EQ (TC-631M, TC-651M) switch for OUTSIDE output, 1 Speaker EQ (BS-1030B, BS-1030W) switch for ROOM output, 1 Power switch, 1 Phantom switch for MIC 1, 1 Phantom switch for MIC 2 – 6 (XLR-3-31)
Indicators	SLEEP indicator Output Level meters (2 points, –20 dB and 0 dB) for ROOM and OUTSIDE Protection indicators for ROOM and OUTSIDE amplifiers Output indicators for ROOM and OUTSIDE EFFECT indicator for MIC 1 – 6
Ventilation	Natural air cooling
Operating Temperature	0 to 40 ºC (32 to 104 ºF)
Operating Humidity	35 to 80% RH (no condensation)
Dimensions	420 (w) x 99.8 (h) x 360.6 (d) mm (16.54" x 3.93" x 14.2")
Weight	6.1 kg (13.45 lb)
Finish	Front Panel: Aluminum, black, alumite Case: Steel plate, black, paint

* 0 dB = 1 V

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

• **Accessories**

Power supply cord 1

Sticker for Arabic indication 1

[RC-03]

Power Source	5 V DC (supplied from MX-6224D)
Consumption current	120 mA Maximum
Terminal	RJ-45 connector
Controls	1 ROOM ON/OFF control switch 1 OUTSIDE ON/OFF control switch 1 Effect ON/OFF control switch
Indicators	CONNECTION indicator Output ON/OFF for ROOM and OUTSIDE EFFECT ON/OFF
Connection Cable	Shielded Category 5 twisted pair Straight cable for LAN (CAT5-STP) Unshielded Category 5 twisted pair Straight cable for LAN (CAT5-UTP)
Maximum cable length	200 m
Operating Temperature	0 to 40 °C (32 to 104 °F)
Operating Humidity	35 to 80% RH (no condensation)
Dimensions	86 (w) x 55.3 (h) x 87.2 (d) mm (3.39" x 2.18" x 3.43")
Weight	380 g (0.84 lb)
Finish	Plated steel sheet, white (RAL 9016 equivalent), paint

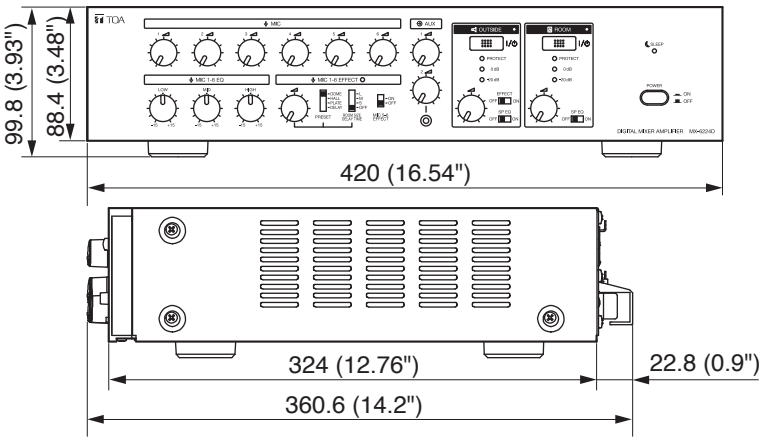
• **Accessory**
Sticker for Arabic Indication 1

• **Optional products**

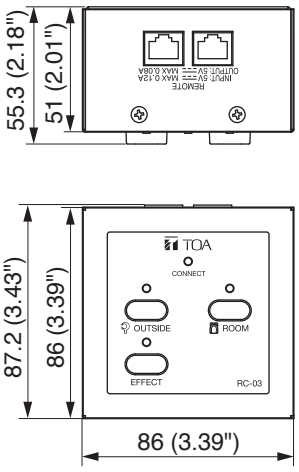
Power amplifier:	P-2240
Multichannel power amplifier:	DA-250FH
Dynamic microphone:	DM-1300
Lavalier microphone:	EM-410
Horn speaker:	TC-631M, TC-651M
Universal speaker:	BS-1030B, BS-1030W
Rack mounting bracket:	MB-25B
Perforated panel:	PF-013B

16. DIMENSIONAL DIAGRAM

16.1. MX-6224D



16.2. RC-03



Unit : mm