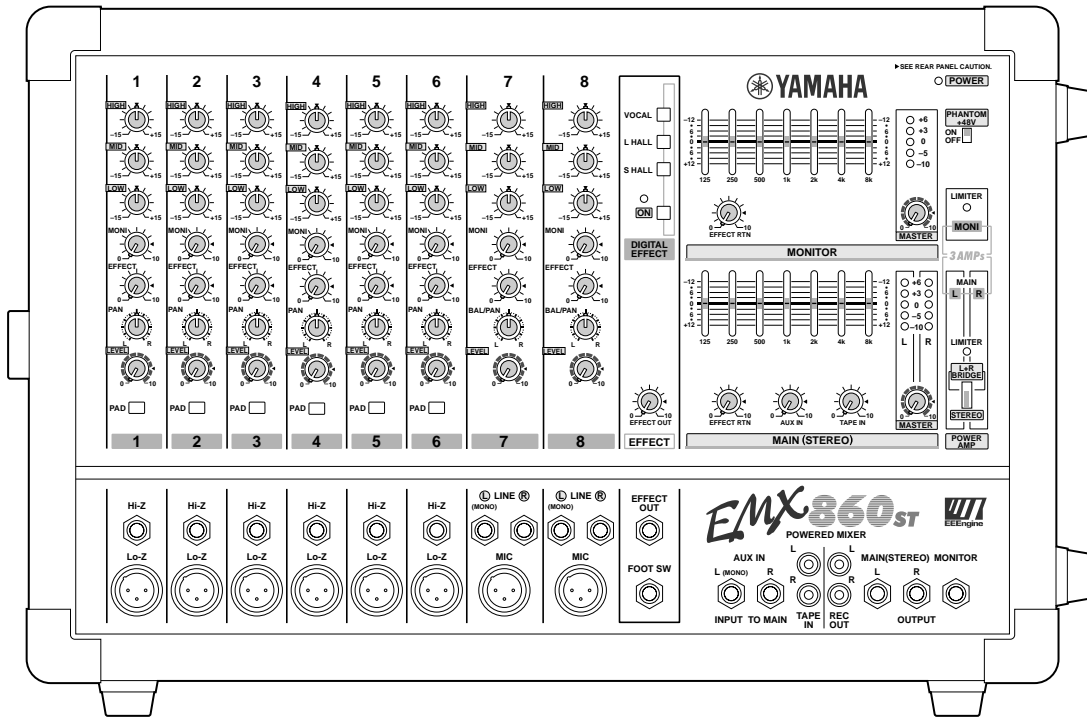




# EMX860st

POWERED MIXER

## Owner's Manual



### FCC INFORMATION (U.S.A.)

1. **IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!** This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.
2. **IMPORTANT:** When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product **MUST** be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.
3. **NOTE:** This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures: Relocate either this product or the device that is being affected by the interference. Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s. In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to coaxial type cable. If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Corporation of America, Electronic Service Division, 6600 Orangethorpe Ave, Buena Park, CA 90620

This applies only to products distributed by YAMAHA CORPORATION OF AMERICA.

WARNING: THIS APPARATUS MUST BE EARTHED

### IMPORTANT

THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE:

GREEN-AND-YELLOW :	EARTH
BLUE :	NEUTRAL
BROWN :	LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured GREEN and YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol  $\equiv$  or coloured GREEN and YELLOW.

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

\* This applies only to products distributed by YAMAHA KEMBLE MUSIC (U.K.) LTD.

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# Important

## Read the Following Before operating the EMX860ST

### Warnings

- Do not allow water to enter this unit or allow the unit to become wet. Fire or electrical shock may result.
- Connect this unit's power cord only to an AC outlet of the type stated in this Owner's Manual or as marked on the unit. Failure to do so is a fire and electrical shock hazard.
- Do not scratch, bend, twist, pull, or heat the power cord. A damaged power cord is a fire and electrical shock hazard.
- Do not place heavy objects, including this unit, on top of the power cord. A damaged power cord is a fire and electrical shock hazard. In particular, be careful not to place heavy objects on a power cord covered by a carpet.
- If you notice any abnormality, such as smoke, odor, or noise, or if a foreign object or liquid gets inside the unit, turn it off immediately. Remove the power cord from the AC outlet. Consult your dealer for repair. Using the unit in this condition is a fire and electrical shock hazard.
- Should this unit be dropped or the cabinet be damaged, turn the power switch off, remove the power plug from the AC outlet, and contact your dealer. If you continue using the unit without heeding this instruction, fire or electrical shock may result.
- If the power cord is damaged (i.e., cut or a bare wire is exposed), ask your dealer for a replacement. Using the unit with a damaged power cord is a fire and electrical shock hazard.
- Do not remove the unit's cover. You could receive an electrical shock. If you think internal inspection, maintenance, or repair is necessary, contact your dealer.
- Do not modify the unit. Doing so is a fire and electrical shock hazard.

### Cautions

- Allow enough free space around the unit for normal ventilation. This should be: 20 cm at the sides, 40 cm behind, and 40 cm above.  
These distances should also be adopted when rack-mounting the unit. For normal ventilation during use, remove the rear of the rack or open a ventilation hole.  
If the airflow is not adequate, the unit will heat up inside and may cause a fire.
- This unit has ventilation holes at the front, rear and sides to prevent the internal temperature rising too high. Do not block them. Blocked ventilation holes are a fire hazard.
- Clean the contacts of the phone plug before connecting it to the SPEAKERS jack of this unit. Dirty contacts may generate heat.
- Use only speaker cables when connecting speakers to amplifier outputs. Using other types of cables is a fire hazard.
- Hold the power cord plug when disconnecting it from an AC outlet. Never pull the cord. A damaged power cord is a potential fire and electrical shock hazard.
- Do not touch the power plug with wet hands. Doing so is a potential electrical shock hazard.

## Operating Notes

- The digital circuits of this unit may induce a slight noise into nearby radios and TVs. If noise occurs, relocate the affected equipment.
- Using a mobile telephone near this unit may induce noise. If noise occurs, use the telephone away from the unit.
- XLR-type connectors are wired as follows:  
pin 1: ground, pin 2: hot (+), and pin 3: cold (-).
- Do not set all equalizer controls and faders to maximum. Doing so may cause oscillation depending on the condition of the connected unit and speakers, and may damage the speakers.
- The performance of components with moving contacts, such switches, rotary controls, faders, and connectors, deteriorates over time. The rate of deterioration depends on the operating environment and is unavoidable. Consult your dealer about replacing defective components.

## Introduction

Thank you for purchasing the Yamaha EMX860ST Powered Mixer. The EMX860ST has the following features.

In order to take full advantage of the EMX860ST and enjoy long and trouble-free performance, please read this owner's manual carefully, and keep it in a safe place for future reference.

## Features

- The EMX860ST features eight input channels that support a wide range of audio sources, from microphones to line-level devices. The microphone input for each channel has a +48 V phantom powering for use with condenser-type microphones.
- A built-in independent monitoring power amplifier rated at 200 W, in addition to two powerful main power amplifiers (200 W + 200 W — total 400 W monaural in bridge connection), is capable of driving stereo main speakers and monitoring speakers on stage simultaneously in a sophisticated PA system environment.
- Individual seven-band graphic equalizers are provided to the main and the monitor sections. In this way, you can individually adjust the volume level and frequency response of the main speakers and monitor speakers.
- Two limiter circuits are built-in to prevent excessive input levels to the amp.
- A digital effect with three selectable effect types is built-in. A variety of effects can be applied to add reverberation or ambiance to vocals or instrumental sounds.

## Contents

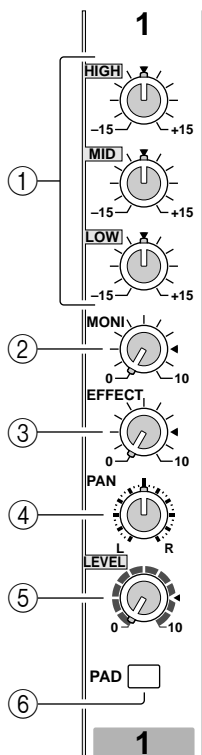
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# Front and rear panel

## Control panel

### ■ Channel section

Use these controls to adjust factors such as the equalization, (frequency response), volume, effect and monitor output level for the input signal to each channel.



#### ① Equalizer controls (HIGH, MID, LOW)

This is a 3-band equalizer that adjusts the high frequency range, mid frequency range, and low frequency range of each channel. Response is flat when the knobs are in the ▼ position. Rotating it toward the right will boost the corresponding frequency band, and rotating it toward the left will cut it.

The base frequency (or center frequency), range of boost or cut, and equalizer type of each band are as follows.

HIGH:	10 kHz	±15 dB	shelving type
MID:	2.5 kHz	±15 dB	peaking type
LOW:	100 Hz	±15 dB	shelving type

#### ② Monitor controls (MONI)

For each channel, this controls the amount of signal that is sent to the MONI bus.

The signal of the MONI bus is sent to the speakers connected to the MONITOR A/B jacks and to the MONITOR jacks (input/output panel ⑥).

*Note:* The signal is sent to the MONITOR bus from a location before the level control (⑤) of each channel. This means that it will not be affected by the setting of the LEVEL control.

#### ③ Effect control (EFFECT)

For each channel, this controls the amount of signal that is sent to the EFFECT bus.

The signal of the EFFECT bus passes through the EFFECT section and the built-in digital effect, and is sent to the external effect device connected to the EFFECT OUT jacks (input/output panel ③).

*Note:* The signal is sent to the EFFECT bus from a location after the level control (⑤) of each channel. This means that the amount of signal that is sent to the EFFECT bus will be affected not only by the setting of the effect control, but also by the setting of the level control.

#### ④ PAN control (BAL/PAN control for CH7/8)

This knob adjusts the stereo image (L/R) for each channel. Adjust for equal volume on left and right with a sound source input to the CH7 and 8 LINE connectors (L/R).

#### ⑤ Level control (LEVEL)

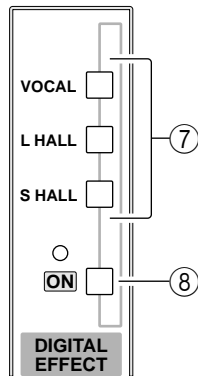
This adjusts the output level for each channel.

#### ⑥ Pad switch (PAD) (1–6 only)

This switch attenuates the input signal by 30 dB. When connecting a line level device to channels 1–6, or if the mic input is distorted, turn this switch on (the pressed-in position).

## ■ DIGITAL EFFECT section

This section allows you to turn the built-in digital effect on/off and to select the effect type.



### ⑦ Effect select switch

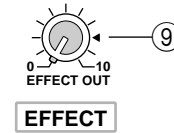
Select the effect type for the built-in digital effect.

### ⑧ DIGITAL EFFECT ON switch

Use this switch to turn the digital effect on and off. When this switch is on, the effect bus signal processed with the built-in digital effect is sent to the ST bus and MONI bus. The mix level of the effect sound is adjusted with the EFFECT RTN control in the MAIN and MONITOR sections.

## ■ EFFECT section

This section allows you to adjust the level of the signal sent from the EFFECT bus to an external effect device.



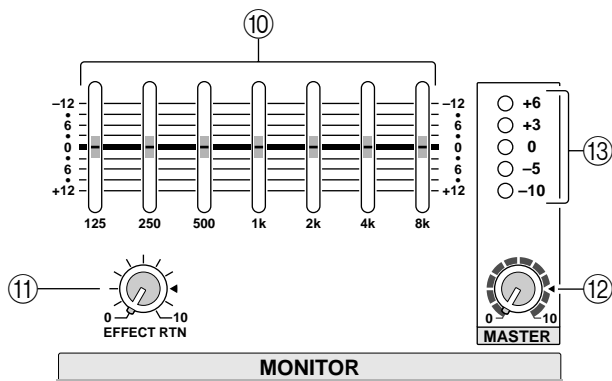
### ⑨ EFFECT OUT control

This adjusts the effect send level for an external effect device connected to the EFFECT OUT jack (input/output panel ③).

*Note:* The EFFECT OUT control does not affect the level sent to the built-in digital effect.

## MONITOR section

This section allows you to adjust the tone and volume of the MONITOR bus, and specify the mix level of the built-in digital effect.



### 10 Graphic equalizer

The EMX860ST has a 7-band graphic equalizer for adjusting the frequency response of the MONI bus signal. This allows you to cut or boost each frequency band by a maximum of  $\pm 12$  dB. You can use these sliders to reduce the level of frequency bands at which feedback easily occurs. Frequency response is flat when a slider is in the center position. Moving a slider in the positive direction will boost, and in the negative direction will cut.

These graphic equalizer settings affect both the MONI bus signal output to the speakers and the line level signal sent from MONITOR jack signal (input/output panel 6).

### 11 EFFECT RTN control

This control adjusts the effect signal level sent to the MONI bus from the built-in digital effect.

### 12 MASTER control

This control adjusts the MONI bus signal output level.

This setting is output to both the front and rear panel MONITOR jacks and appears in the MONI bus signal.

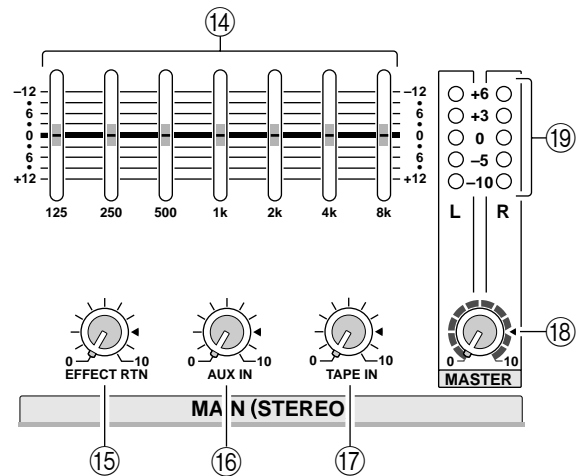
### 13 Peak level indicator

This indicator allows you to monitor the level of the signal which is output from the MONITOR jack (input/output panel 6).

*Note:* To avoid distortion, adjust the MASTER control (12) so that the 0 indicator lights occasionally.

## MAIN section

This section allows you to adjust the tone and volume of the ST bus, the mix level of the built-in effect, and the mix level of the external input.



### 14 Graphic equalizer

The EMX860ST has a 7-band graphic equalizer for adjusting the frequency response of the ST bus signal. This allows you to cut or boost each frequency band by a maximum of  $\pm 12$  dB.

These graphic equalizer settings affect both the ST bus signal output to the speakers and the line level signal output from the MAIN (STEREO) jack (input/output panel 6).

### 15 EFFECT RTN control

Use this control to adjust the effect signal sent to the ST bus from the built-in digital effect.

### 16 AUX IN control

This adjusts the amount of signal that is sent from the AUX IN jack to the ST bus.

### 17 TAPE IN

This adjusts the amount of signal that is sent from the TAPE IN jacks to the ST bus.

### 18 MASTER control

This control adjusts the ST bus signal output level. This setting is output to the SPEAKERS L/R/L+R, BRIDGE jacks and the MAIN (STEREO) jack on the rear panel and appears in the ST bus signal.

### 19 Peak level indicator

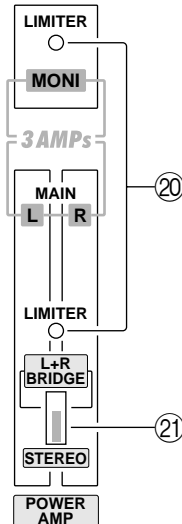
This indicator allows you to monitor the level of the signal which is output from the MAIN (STEREO) jack (input/output panel 6).

*Note:* To avoid distortion, adjust the MASTER control (18) so that the 0 indicator lights occasionally.



## ■ POWER AMP section

This section allows you to select the signals that will be output from the built-in three-channel power amplifier, and to select the BRIDGE mode.



### ②① LIMITER indicator

This indicator lights up when the level of the signal output from the power amp section reaches the maximum and the limiter is activated. Adjust appropriate control so that the indicator lights up for only a short while when the signal reaches the maximum level.

*Note:* The indicator lights up or flashes for a longer duration if the power amp section is significantly overloaded, which could result in malfunction. Avoid such a situation.

### ②① Stereo/Bridge select switch

Select a signal route depending on the speakers connected to the SPEAKERS L/R/L+R BRIDGE jacks ② on the rear panel.

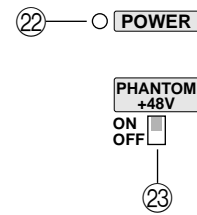
#### • L+R BRIDGE

The monaural signal mixed in the L and R channels of the ST bus is output to the SPEAKERS L+R BRIDGE jack. However, the ST bus signal output from MAIN (STEREO) jack is still a stereo signal. A bridge connection is then made between the stereo power amps (200 W+200 W) to use them as a 400 W monaural power amp.

#### • STEREO

MAIN bus signals are output from the POWER-AMP 1 A/B and POWER AMP 2 A/B jacks. Only the MASTER control ⑱ is effective.

## ■ POWER indicator & PHANTOM switch



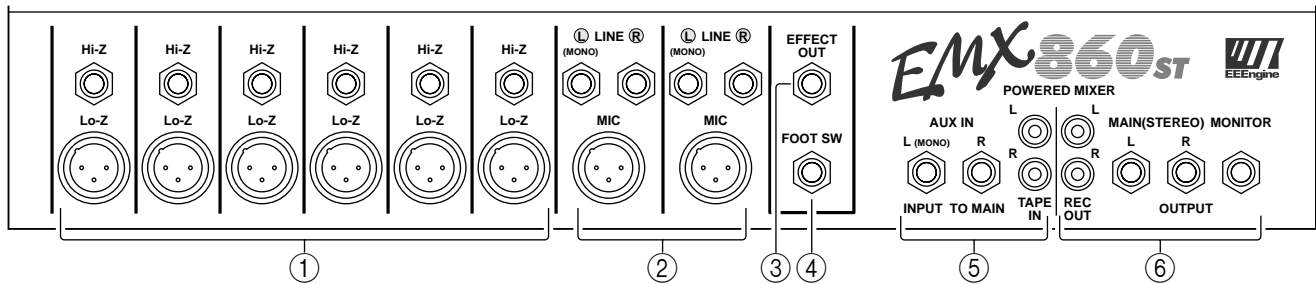
### ②② POWER indicator

This indicator will light when the power of the EMX860ST is turned on.

### ②③ PHANTOM +48 V switch

This switch turns the phantom power supply on/off for the Lo-Z input jacks of channels 1–6 and MIC input jacks of channels 7–8.

# Input/output panel



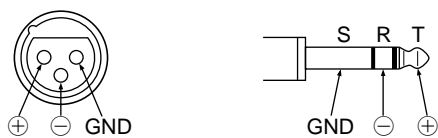
**① Channel input jacks (Hi-Z, Lo-Z) 1–6**

These are the input jacks for channels 1–6. By using the PAD switches (control panel ⑥) you can connect any of the jacks to a wide range of sources from mics to line level devices (synthesizers or rhythm boxes etc.). The Lo-Z jacks can provide +48 V phantom power, allowing you to use condenser microphones.

Both Hi-Z and Lo-Z are balanced, and are compatible with microphones of output impedance 50–600Ω or line level devices of 600Ω. The nominal input level is from –40 dB to –10 dB for the Hi-Z jacks, and from –50 dB to –20 dB for the Lo-Z jacks.

Pin connections for the Hi-Z and Lo-Z jacks are as follows.

Lo-Z jacks (XLR type)	Hi-Z jacks (TRS phone jacks)
Pin 1: ground	Sleeve: ground
Pin 2: hot (+)	Tip: hot (+)
Pin 3: cold (–)	Ring: cold (–)



*Note:* It is not possible to simultaneously use both the Hi-Z and Lo-Z inputs of a given channel. For each channel, use only one of the inputs as appropriate for the input source. Phantom power is switched on/off in simultaneously for channels 1–8. For this reason, devices which do not require phantom power must be connected to the Hi-Z or LINE jacks if the PHANTOM +48 V switch (control panel ②③) is on.

**② Channel input jacks (MIC/LINE) 7–8**

These are the input jacks for channels 7–8.

Connect microphones to the MIC jacks. Connect line-level devices, such as synthesizers to LINE L (MONO)/R jacks if the devices are stereo sound sources. Use the LINE L (MONO) jack if the devices are monaural sound sources.

The MIC jacks are balanced, and are compatible with microphones of output impedance 50–600Ω. The LINE jacks are unbalanced, and are compatible with line level devices of 600Ω output impedance. Nominal input level is –50 dB for the MIC jacks and –20 dB for the LINE jacks.

*Note:* The MIC and LINE inputs for channel 7 can be used simultaneously but their levels cannot be adjusted separately (Same for channel 8.)

**③ Effect output jack (EFFECT OUT)**

The input of an external effect such as a delay or echo can be connected to this jack. The signal adjusted by the EFFECT control of each channel will be sent to the EFFECT bus, its level adjusted by the EFFECT OUT control, and output from this jack.

The nominal output level and impedance are +4 dB/10 kΩ.

**④ Foot switch jack (FOOT SW)**

You can connect a Yamaha FC5 foot switch (sold separately) to this jack and use it to turn the built-in digital effect on and off. The Digital Effect ON switch on the front panel must always be set to ON in order to use the foot switch.

### ⑤ AUX IN/TAPE IN jacks

These are input jacks that allow the signal from an external device to be added to the MAIN output.

- **AUX IN jacks:** Connect these jacks to the output jacks of an external effects processor. If the effects processor has a stereo output, connect it to the AUX IN L (MONO) and R jacks. If it has monaural output, use the AUX IN L (MONO) jack. Signal input to these jacks is sent to the ST bus.
- **TAPE IN jacks:** Use these jacks to connect a stereo device, such as a cassette player or a CD player. The signals input to these jacks is sent to the ST bus.

The nominal input level and impedance are  $-10$  dB/ $600\Omega$  for the AUX IN jack, and  $-10$  dBV/ $600\Omega$  for the TAPE IN jacks.

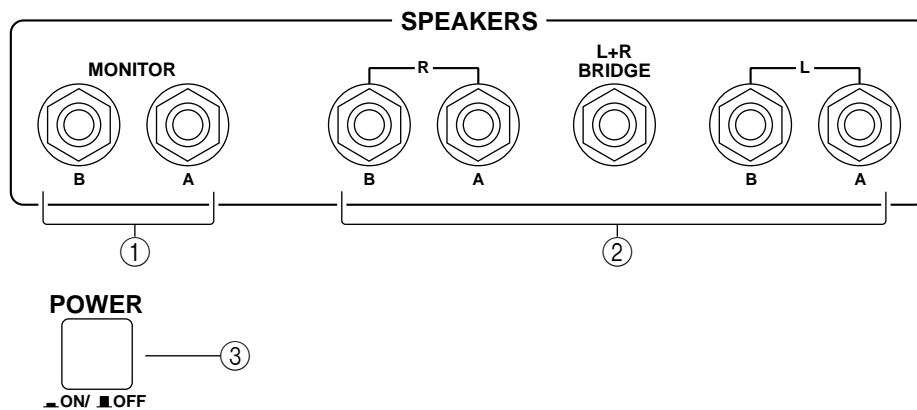
### ⑥ REC OUT/MONITOR/MAIN (STEREO) jacks

These are output jacks which send line level signals from the EMX860ST to external devices. A stereo recording device such as a cassette recorder or MD recorder can be connected to the REC OUT jacks, and a playback device such a power amp can be connected to the MONITOR and MAIN (STEREO) jacks. The signals sent from each jack are as follows.

- **REC OUT jacks:** The ST bus signal before it has passed through the MASTER control and graphic equalizer
- **MONITOR jack:** The MONI bus signal which has passed through the Monitor MASTER control and graphic equalizer
- **MAIN (STEREO) jack:** The ST bus signal which has passed through the Main MASTER control and graphic equalizer

The nominal output level and impedance are  $-10$  dBV/ $10$  k $\Omega$  for the REC OUT jacks, and  $+4$  dB/ $10$  k $\Omega$  for the MONITOR/MAIN (STEREO) jacks.

## Rear panel



### ① SPEAKERS MONITOR jacks

Connect monitoring speakers to these jacks. MONI bus signals adjusted at the MONITOR section are output from these jacks. The SPEAKERS MONITOR A and B jacks are internally connected in parallel, and output the same signals. You can connect speakers with an impedance of 4–8Ω to either or both the A or B jacks. You can connect speakers with an impedance of 8–16Ω to both pairs.

*Note:* Do not connect any devices other than speakers to these jacks. Do not confuse these jacks with the MONITOR jacks on the I/O panel.

### ② SPEAKERS L/R/L+R BRIDGE jacks

Use these jacks to connect the main speakers. These jacks output ST bus signals that are adjusted at the MASTER section. The speaker connection varies depending on the setting of the stereo/bridge select switch.

#### ■ When the Stereo/Bridge select switch is set to STEREO (2-channel connection)

L/R channel signals are routed from the ST bus to the SPEAKERS L/R jacks. The SPEAKERS L A/B jacks are internally wired in parallel and output the same signals. You can connect a pair of speakers with an impedance of 4–8Ω to either or both the A or B pair of the SPEAKER L/R jacks (total of two speakers). You can connect two pairs of speakers with an impedance of 8–16Ω to both A

and B pairs or the SPEAKER L/R jacks (total of four speakers).

This connection provides a maximum output of 200 W + 200 W.

*Note:* Do not connect anything to the SPEAKERS L+R BRIDGE jack when you are using this 2-channel connection.

#### ■ When the Stereo/Bridge select switch is set to L+R BRIDGE (BRIDGE connection)

L/R channel signals are mixed in the ST bus and routed to the SPEAKERS L+R BRIDGE jack as a monaural signal. You can connect only one speaker with an impedance of 8–16 Ω to the SPEAKERS L+R BRIDGE jack. This connection provides the maximum output of 400 W.

*Note:* Do not connect anything to the SPEAKERS L/R jacks if you use this BRIDGE connection.

### ③ Power switch

This switch turns the power of the EMX860ST on/off.

*Note:* Before turning the EMX860ST on/off, turn down fully the MASTER controls of the MONITOR and MAIN section.

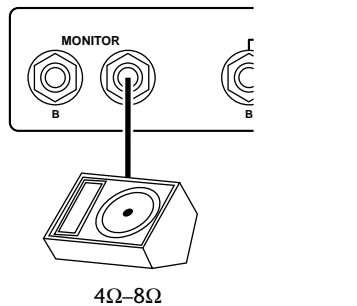
# Connections

When connecting various devices, make sure the cables and plugs have the correct rating. Be sure to use cables designed for the purpose when you connect speakers to speaker jacks.

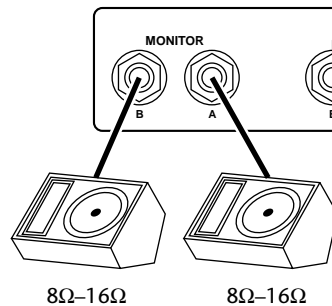
## ■ Connecting monitoring speakers

You can connect one or two speakers to the SPEAKERS MONITOR jacks. Speaker impedance varies with the number of speakers that are connected. Be sure to maintain speaker impedance at the specified value or higher. Refer to the figure below.

Connecting one speaker:



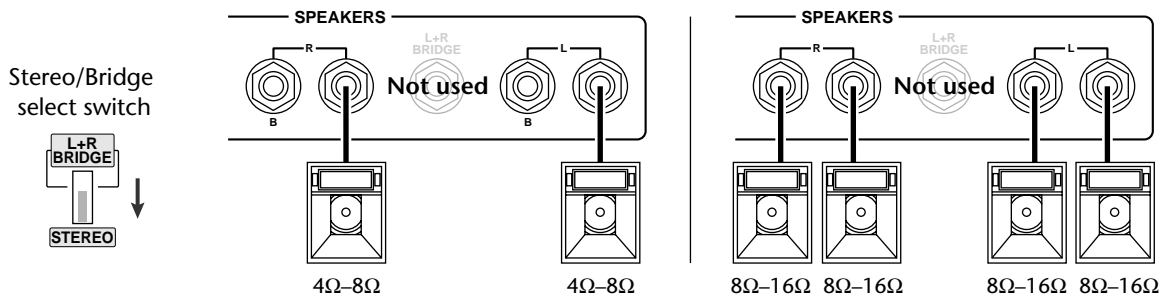
Connecting two speakers:



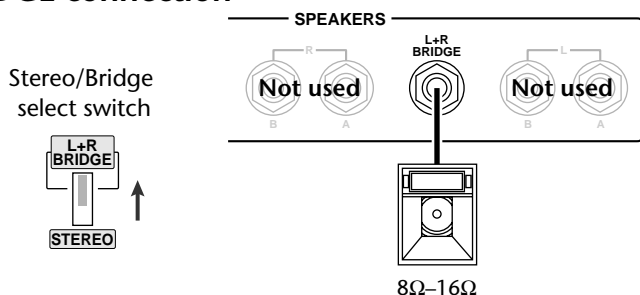
## ■ Connecting main speakers

If you select the two-channel connection, connect the speakers to the SPEAKERS L/R jacks. If you select the BRIDGE connection, connect the speakers to the SPEAKERS L+R BRIDGE jack. Depending on the number of connected speakers and the type of connection, speaker impedance requirements vary. Be sure to maintain speaker impedance at the specified value or higher. Refer to the figure below.

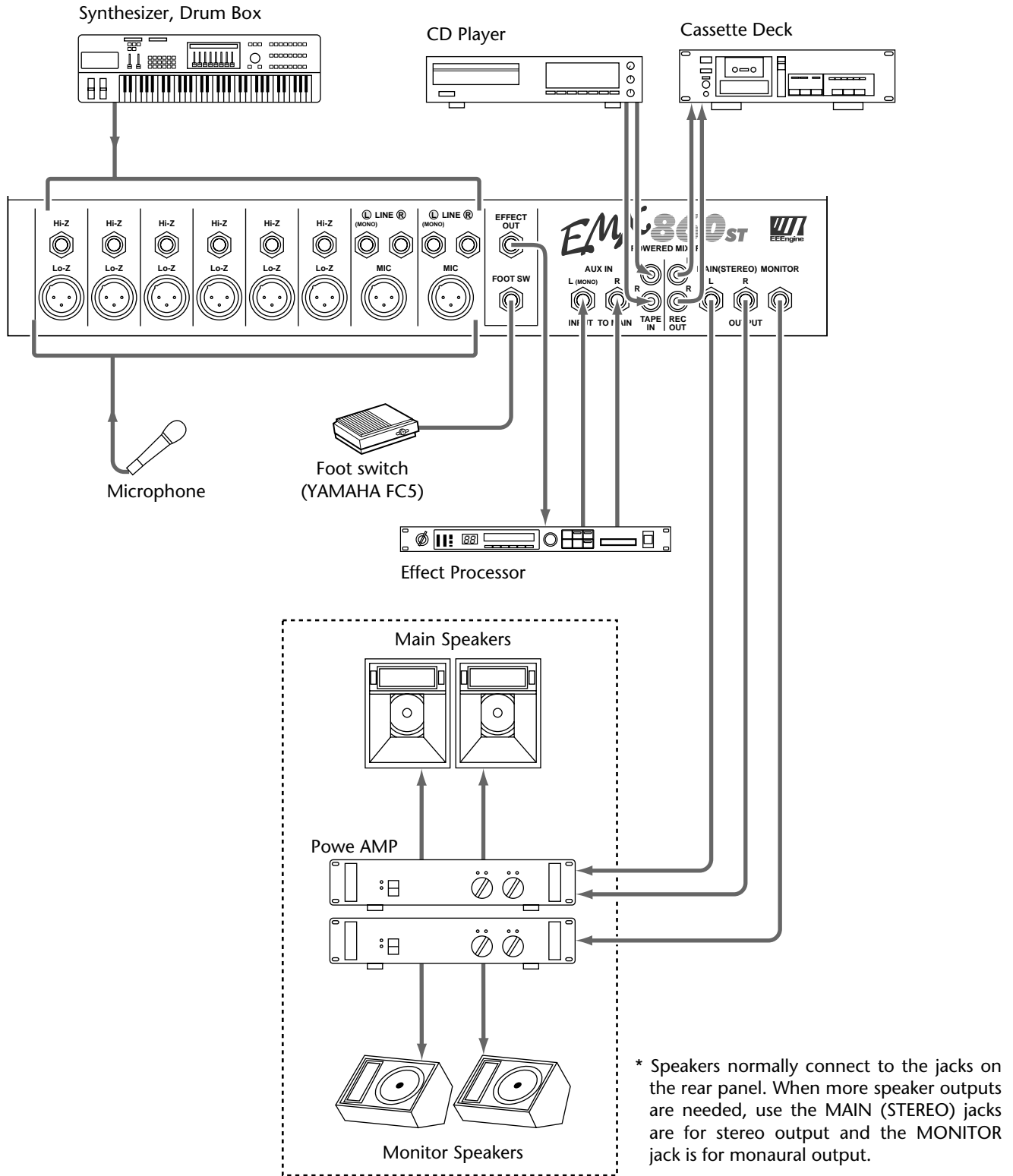
### Two-channel connection



### BRIDGE connection



■ Example connections



# Basic Operation

## Connecting microphones and instruments

- ① Before connecting mics or instruments, make sure that the power of all equipment (where applicable) is turned off. Also make sure that the level controls of each channel of the EMX860ST and the MASTER control of the MAIN section are turned down.
- ② Connect cables to your mics and instruments, and insert the other end of the cable firmly into the appropriate Lo-Z/Hi-Z jack (channels 1–6) or the MIC/LINE jack (channels 7–8).

*Note:* When connecting a line level device to channels 1–6, turn on the PAD switch. You cannot use a channel's Lo-Z and Hi-Z jacks, and MIC and LINE jacks at the same time.

- ③ Turn the power on in the order of peripheral devices → EMX860ST.

*Note:* When turning the power off, reverse this sequence.

- ④ Set the MAIN section MASTER control to the ◀ position.  
Adjusts the stereo image of each channel using the PAN controls. (Adjust the balance between the left and right volume levels of the sound sources connected to the LINE connectors L/R for channels 7 and 8 using the BAL/PAN controls.)
- ⑤ While speaking into the mic (while playing the instrument), adjust the channel LEVEL control so that the 0 LED of the MAIN section peak level meter lights occasionally.
- ⑥ If you wish to adjust the tone of each channel, rotate the equalizer controls as desired.
- ⑦ Use the MAIN section graphic equalizer and MASTER control to adjust the overall volume and tone.

## Sending an independent mix to the monitor speakers

- ① Set the MONITOR section MASTER control to the ◀ position.
- ② Adjust the MONI control to increase the level of the channel you want to hear from the monitor speaker, and also adjust so that the peak level meter 0 LED of the monitor section lights up occasionally.

*Note:* The MONI controls are not affected by the level settings of each channel. This allows you to create a mix that is independent of the MAIN section.

- ③ Use the graphic equalizers and MASTER controls of the MAIN/MONITOR sections to adjust the overall volume and tone.

## Using the digital effect

The EMX860ST has a built-in digital effect, allowing reverberation or ambiance to be added to vocals or instrumental sounds.

- ① Connect a mic or instrument to the desired channels, and adjust the volume and tone.
- ② Press the DIGITAL EFFECT ON switch of the DIGITAL EFFECT section.
- ③ Use the effect select switches of the DIGITAL EFFECT section to select the effect type.  
VOCAL ..... Reverb appropriate for vocals.  
L. HALL..... Reverb typical of a large hall.  
S. HALL..... Reverb typical of a small hall.
- ④ Raise the EFFECT control of the channels to which you wish to apply the digital effect.
- ⑤ Use the MAIN/MONITOR section EFFECT RTN control to adjust the level of the sound processed by the effect.

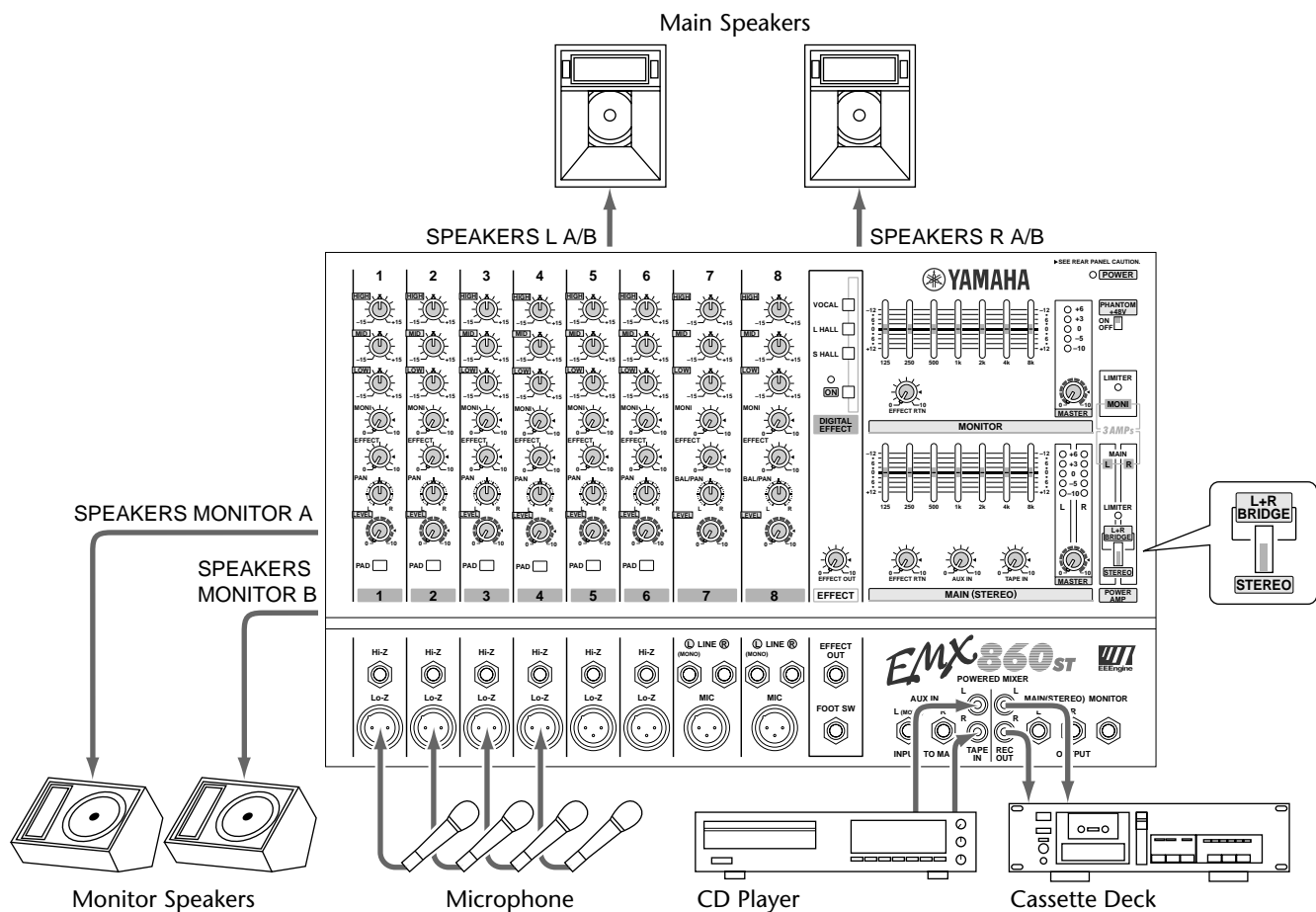
*Note:* If the effect sound is distorted even if the EFFECT RTN is turned all the way down, lower the EFFECT controls of each channel.

# Example setups

This section provides some ways in which the EMX860ST can be used, and explains connections and operation.

## As a conference PA system/installed sound system

This example shows the EMX860ST used as a conference PA system or sound system. A sound mix different from that of the main speakers can be sent to the monitor amp connected to the SPEAKERS MONITOR jacks.



## Connections

- Connect mics to channel inputs 1–8.
- If you wish to use an external device such as a CD player or LD player, connect the outputs of the device to the TAPE IN jacks of the EMX860ST.

*Note:* You can connect a stereo playback device, such as a CD player or an LD player, to channels 7–8 LINE inputs. The MIC and LINE inputs of channel 7 can be used simultaneously but their levels cannot be separately adjusted. (Same for channel 8)

- If you wish to record the audio from the mics to a cassette deck, connect the REC OUT jacks of the EMX860ST to the input jacks of the cassette deck
- Connect the main speakers to the SPEAKERS L A/B jacks and the SPEAKERS R A/B jacks.
- Connect the monitor speakers to the SPEAKERS MONITOR A/B jacks.



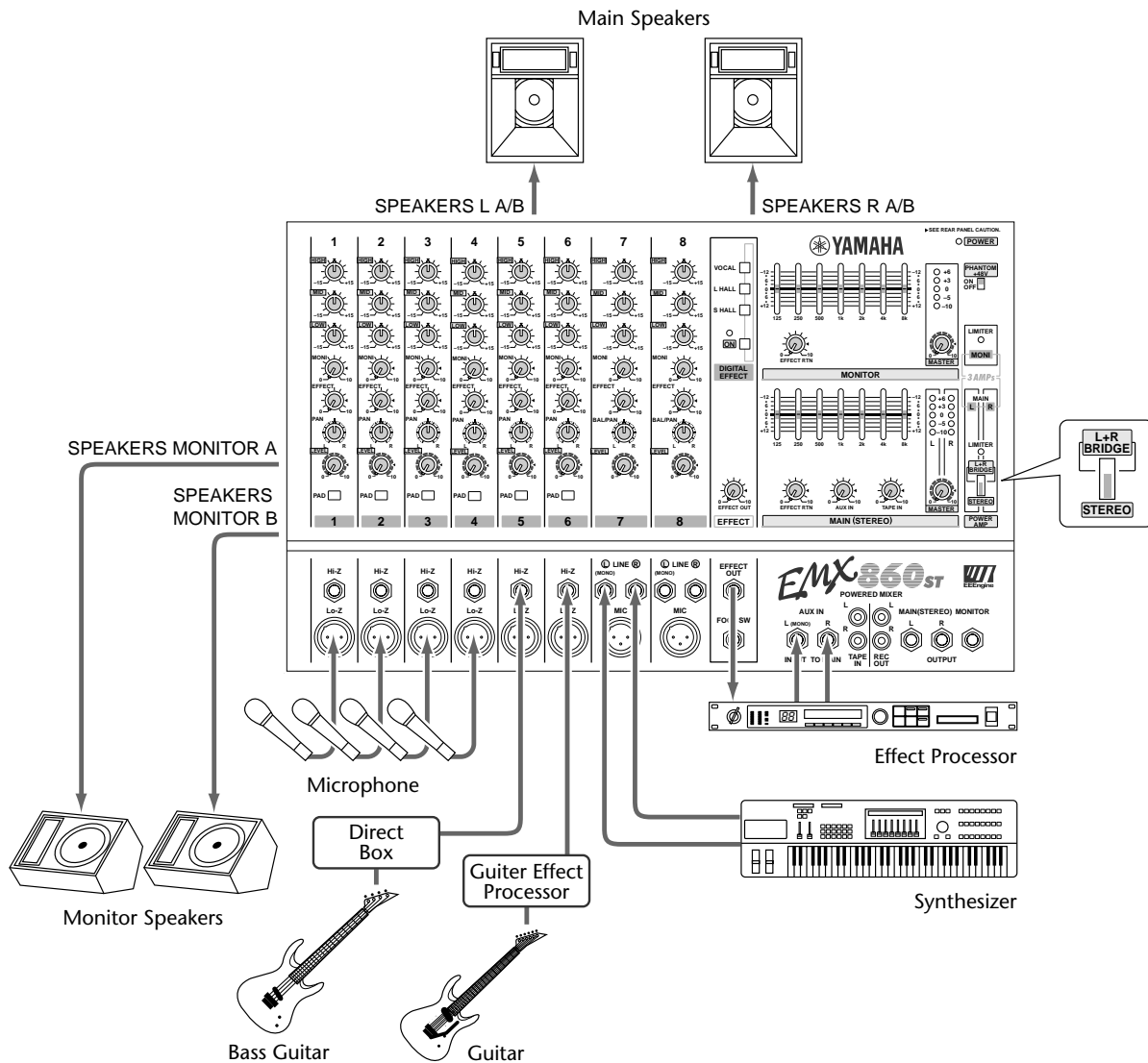
## Playing back a CD player

- ① Turn the power on in the order of peripheral devices → EMX860ST.
- ② Adjust the MASTER control of the MAIN section to the ◀ position.
- ③ Start playback on the CD player, and use the MAIN section TAPE IN control to adjust the level so that the 0 LED of the MAIN section peak level meter does not light.

## As a band PA

Here is an example of using the EMX860ST as a small PA for a band. In this example, an external effect such as delay or reverb is also being used.

### Connections



- Connect mics or instruments, such as keyboards, to the channel input jacks 1–8.
- Connect the main speakers to the SPEAKERS L/R's A/B jacks, and connect the monitor speakers to the SPEAKERS MONITOR's A/B jacks.
- Connect the monitor speakers to the SPEAKERS MONITOR A/B jacks.
- If you will be using an external effect such as delay or reverb, connect the EMX860ST's EFFECT OUT jack to the input jack of the external effect, and connect the output jack of the external effect to the EMX860ST's AUX IN jack.

*Note:* Set the power amp select switch of the POWER AMP section to the “MAIN MONITOR” position.

If you are using an external effect, we recommend that you turn down the EFFECT RTN controls of the MAIN and MONITOR sections. If the external effect has a stereo output, it is possible to connect its output jacks to the LINE jacks of channels 5–6. However in this case, be sure that the EFFECT controls are turned all the way down for the channels into which the effect sound is being input. If the EFFECT controls are raised, feedback will occur, and your speakers may be damaged.

## Using an external effect

- ① Set the EFFECT section EFFECT OUT control to the ◀ position.
- ② Raise the EFFECT controls for the channels to which you want the external effect to be applied.
- ③ Adjust the input level of the external effect so that the sound is not distorted at the input of the external effect.
- ④ Use the MAIN section AUX IN control to adjust the level of the sound processed by the effect.

# Troubleshooting

The following table describes the possible malfunctions of this device, and the appropriate actions to be taken in each case.

Problem		Cause	Action
Sound is no longer output from the speakers.	The POWER indicator is dark.	The load on this device was too great, and the protection circuit for the internal transformer has operated. Possible reasons for the excessive load are an excessive input to the device, or inappropriate ventilation.	Please wait. When the device cools off, normal operation will resume automatically. However, please check the following two points to prevent the problem from recurring. If the input to this device is greater than the nominal level, lower the input to the nominal level. If the device is not ventilated sufficiently, refer to the cautions given at the beginning of this manual and take appropriate measures to insure adequate ventilation.
	The POWER indicator is lit.	The load on the amplifier of this device was too great, and the protection circuit for the amplifier has operated. Possible reasons for the excessive load are an excessive level setting in the channel control section or main section, insufficient ventilation, or insufficient load impedance of the connected speakers.	Please wait. When the device cools off, normal operation will resume automatically. However, please check the following three points to prevent the problem from recurring. If the level setting is excessive, lower it to the nominal level. You can refer to the peak level indicators of the main section when doing so. If the device is not ventilated sufficiently, refer to the cautions given at the beginning of this manual and take appropriate measures to insure adequate ventilation. If the load impedance (including a short) is too low, refer to the chapter on connections (page 13) and change the connections so that the impedance is correct.
	Other	Connections between devices have come loose.	Inspect the connections, and correct any faulty connections.
		Other	The device may have malfunctioned. Please contact your dealer.

# Specifications

## ■ General specifications

<b>Maximum output power</b>	MAIN STEREO: 135 W+135 W/8Ω @0.5% THD at 1 kHz, 200 W+200 W/4Ω @0.5% THD at 1 kHz MAIN BRIDGE: 400 W/8Ω @0.5% THD at 1 kHz MONITOR: 135 W/8Ω @0.5% THD at 1 kHz, 200 W/4Ω @0.5% THD at 1 kHz	
<b>Frequency response</b>	20 Hz–20 kHz +1 dB, –3 dB @1 W output into 8Ω (POWER AMP OUT) 20 Hz–20 kHz +1 dB, –3 dB @+4 dB output into 10 kΩ (MAIN OUT, MONITOR OUT, EFFECT OUT)	
<b>Total harmonic distortion</b>	Less than 0.5% @20 Hz–20 kHz, 100 W output into 4Ω (POWER AMP OUT) Less than 0.3% @20 Hz–20 kHz, +14 dB output into 10 kΩ (MAIN OUT, MONITOR OUT, EFFECT OUT)	
<b>Hum &amp; noise</b> (Average, $R_s=150\Omega$ ) (with 20 Hz–20 kHz BPF)	–125 dB equivalent input noise, –68 dB residual output noise (POWER AMP OUT)	
	–95 dB residual output noise (MAIN OUT, MONITOR OUT, EFFECT OUT)	
	–80 dB (MAIN OUT)	Master level control: nominal level, All channel level controls: minimum
	–75 dB (MONITOR OUT)	Master level control: nominal level, All channel level controls: minimum
	–71 dB (MAIN OUT)	Master level control: nominal level, 1 channel level control: nominal level
	–84 dB (EFFECT OUT)	Master level control: nominal level, All channel level controls: minimum
	–64 dB (EFFECT OUT)	Master level control: nominal level, 1 channel level control: nominal level
<b>Maximum voltage gain</b> (PAD: OFF)	86 dB CH IN (Lo-Z) to POWER AMP OUT (CH1–6) 66 dB CH IN (Lo-Z) to MAIN OUT, MONITOR OUT (CH1–6) 72 dB CH IN (Lo-Z) to EFFECT OUT (CH1–6) 48 dB CH IN (Lo-Z) to REC OUT (CH1–6) 56 dB CH IN (Hi-Z) to MAIN OUT, MONITOR OUT (CH1–6) 26 dB AUX IN to MAIN OUT 24 dB TAPE IN to MAIN OUT 66 dB MIC IN to MAIN OUT (CH7–8) 26 dB LINE IN to MAIN OUT (CH7–8)	
<b>Crosstalk at 1 kHz</b>	–65 dB adjacent input, –65 dB input to output	
<b>Input channel equalization</b>	±15 dB Maximum HIGH                    10 kHz shelving MID                     2.5 kHz peaking LOW                     100 Hz shelving * Turn over/roll-off frequency of shelving: 3 dB below maximum variable level.	
<b>Meters</b>	5 POINTS LED METER (MAIN OUT L/R, MONITOR OUT)	
<b>Graphic equalizer</b>	7 bands (125, 250, 500, 1k, 2k, 4k, 8k Hz) ±12 dB Maximum (MAIN OUT, MONITOR OUT)	
<b>Internal digital effect</b>	3 types (Vocal, L Hall, S Hall)	
<b>Phantom power</b>	+48 V is supplied to electrically balanced inputs for powering condenser microphones via 6.8 kΩ current limiting/isolation resistors.	
<b>Limiters</b>	Comp. : THD≥0.5% (MAIN, MONITOR)	
<b>LIMIT indicators</b>	Turns on. : THD≥0.5% (MAIN, MONITOR)	
<b>Foot switch</b>	DIGITAL EFFECT MUTE : on/off	
<b>Optional accessories</b>	FC5 Foot switch	
<b>Power requirement</b>	USA and Canada	120 V AC 60 Hz
	Europe	230 V AC 50 Hz
	Other	240 V AC 50 Hz
<b>Power consumption</b>	300 W	
<b>Dimensions (WxHxD)</b>	497×324×275 mm	
<b>Weight</b>	17 kg	

## Input specifications

Input connectors	PAD	Actual load impedance	Nominal impedance	Input level			Connector type
				Sensitivity* <sup>1</sup>	Nominal level	Max. before clipping	
CH INPUT (Lo-Z) (CH1–6)	OFF	3 k $\Omega$	50–600 $\Omega$ Mics	–62 dB (616 $\mu$ V)	–50 dB (2.45 mV)	–20 dB (77.5 mV)	XLR-3-31 type <sup>2</sup>
	ON		600 $\Omega$ Lines	–32 dB (19.5 mV)	–20 dB (77.5 mV)	+10 dB (2.45 V)	
CH INPUT (Hi-Z) (CH1–6)	OFF	10 k $\Omega$	50–600 $\Omega$ Mics	–52 dB (1.95 mV)	–40 dB (7.75 mV)	–10 dB (245 mV)	Phone jack (TRS) <sup>2</sup>
	ON		600 $\Omega$ Lines	–22 dB (61.6 mV)	–10 dB (245 mV)	+20 dB (7.75 V)	
MIC INPUT (CH7, 8)		3 k $\Omega$	50–600 $\Omega$ Mics	–62 dB (616 $\mu$ V)	–50 dB (2.45 mV)	–20 dB (77.5 mV)	XLR-3-31 type <sup>2</sup>
LINE INPUT (CH7, 8) (L, R)		10 k $\Omega$	600 $\Omega$ Line	–22 dB (61.6 mV)	–10 dB (245 mV)	+20 dB (7.75 V)	Phone jack <sup>3</sup>
TAPE IN (L, R)		10 k $\Omega$	600 $\Omega$ Line	–22 dBV (79.4 mV)	–10 dBV (316 mV)	+17.8 dBV (7 V)	Phono jack
AUX IN (L, R)		10 k $\Omega$	600 $\Omega$ Line	–22 dB (61.6 mV)	–10 dB (245 mV)	+20 dB (7.75 V)	Phone jack <sup>3</sup>

\*1. Sensitivity is the lowest level that can produce an output of +4 dB (1.23 V) or the nominal output level when the unit is set at maximum gain.  
(All level controls are at maximum position.)

\*2. Balanced.

\*3. Unbalanced.

- 0 dB=0.775 Vrms, 0 dBV=1 Vrms.

## Output specifications

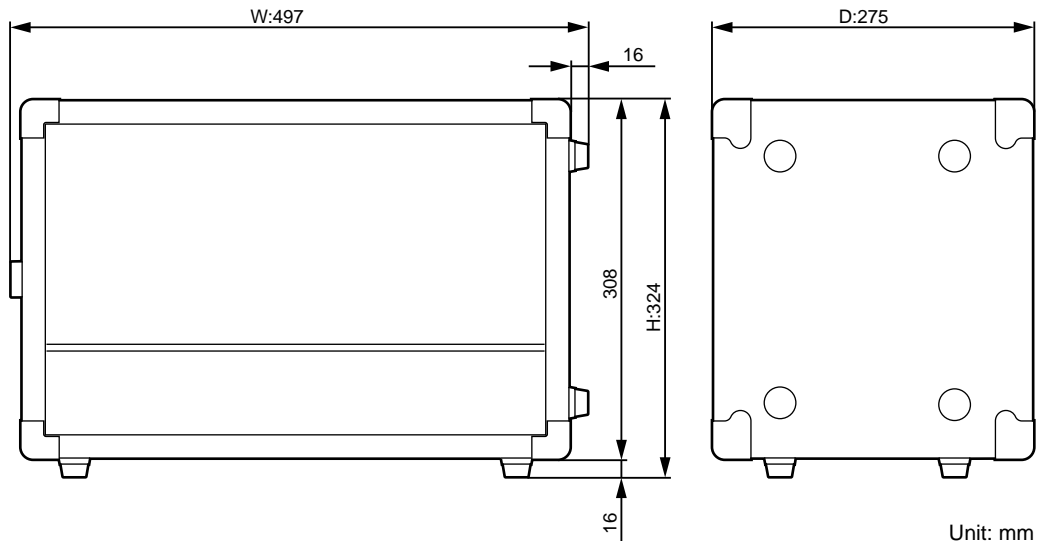
Output connectors	Actual source impedance	Nominal impedance	Output level		Connector type
			Nominal	Max. before clipping	
MAIN AMP OUT (L, R) (A, B)	0.1 $\Omega$	4/8 $\Omega$ Speaker	37.7 W/4 $\Omega$	(200 W/4 $\Omega$ )	Phone jack
MAIN BTL OUT	0.1 $\Omega$	8 $\Omega$ Speaker	75.4 W/8 $\Omega$	(400 W/8 $\Omega$ )	Phone jack
MONITOR AMP OUT (A, B)	0.1 $\Omega$	8 $\Omega$ Speaker	37.7 W/4 $\Omega$	(200 W/4 $\Omega$ )	Phone jack
MAIN OUT (L, R)	600 $\Omega$	10 k $\Omega$ Lines	+4 dB (1.23 V)	+20 dB (7.75 V)	Phone jack
MONITOR OUT	600 $\Omega$	10 k $\Omega$ Lines	+4 dB (1.23 V)	+20 dB (7.75 V)	Phone jack
EFFECT OUT	600 $\Omega$	10 k $\Omega$ Lines	+4 dB (1.23 V)	+20 dB (7.75 V)	Phone jack
REC OUT (1, 2)	600 $\Omega$	10 k $\Omega$ Lines	–10 dBV (316 mV)	+10 dBV (3.16 V)	Phono jack

• All output jacks are unbalanced.

- 0 dB=0.775 Vrms, 0 dBV=1 Vrms.

Specifications are subject to change without prior notice.

## ■ Dimensions



## ■ Block and Level diagram

