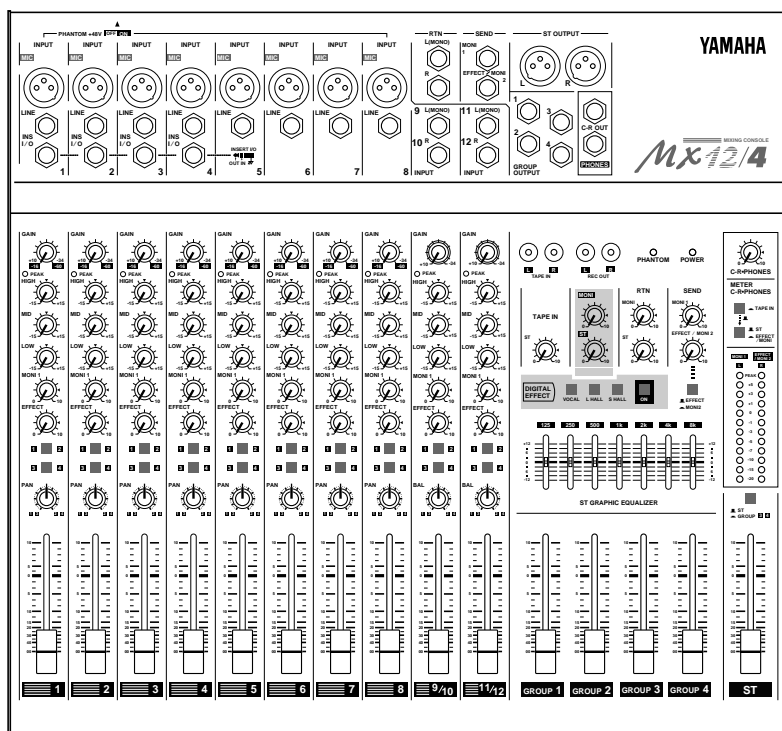


# YAMAHA

## MIXING CONSOLE

# Mx12/4

## Owner's Manual



# Precautions

## 1. Avoid Excessive Heat, Humidity, Dust and Vibration

Keep the unit away from locations where it is likely to be exposed to high temperatures or humidity — such as near radiators, stoves, etc. Also avoid locations which are subject to excessive dust accumulation or vibration which could cause mechanical damage.

## 2. Ventilation

The unit has ventilation slots on the rear and bottom panels. Do not block these vents.

## 3. Avoid Physical Shocks

Strong physical shocks to the unit can cause damage. Handle it with care.

## 4. Do Not Open the Case or Attempt Repairs or Modifications Yourself

This product contains no user-serviceable parts. Refer all maintenance to qualified Yamaha service personnel. Opening the case and/or tampering with the internal circuitry voids the warranty.

## 5. Always power off before making connections

Always turn the power OFF before connecting or disconnecting cables. This is important to prevent damage to the unit itself as well as other connected equipment.

## 6. Handle Cables Carefully

Always plug and unplug cables — including the AC power cord — by gripping the connector, not the cord.

## 7. Clean With a Soft Dry Cloth

Never use solvents such as benzine or thinner to clean the unit. Wipe clean with a soft, dry cloth.

## 8. Always Use the Correct Power Supply

Make sure that the power supply voltage specified on the rear panel matches your local AC mains supply. Also make sure that the AC mains supply can deliver more than enough current to handle all equipment used in your system.

### 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.

### IMPORTANT NOTICE FOR THE UNITED KINGDOM

#### Connecting the Plug and Cord

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 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.

Thank you for purchasing the Yamaha MX12/4 mixing console. The MX12/4 is a 12 in/4 group out mixer that provides an ideal balance of operability, functionality, and simplicity.

In order to take full advantage of the MX12/4's functionality and to enjoy long and trouble-free use, please read this owner's manual before use, and keep it for future reference.

## Features

- The MX12/4 provides 12 input channels, and mixes them to stereo or to four group outputs.
- A C-R OUT jack is provided for convenient connection to a sub amp for monitoring. You can monitor the main stereo output, the TAPE IN input, and the effect/monitor signals.
- A digital effect unit is built-in, allowing you to create a polished mix without the need for additional equipment.
- Two SEND jacks are provided: the MONO 1 jack (pre fader) and the EFFECT/MONO 2 jack (post/pre fader). These can be used as sends for external effects or a monitor system.
- Phantom power is provided, so that condenser microphones requiring an external power supply can be easily connected.
- INS I/O jacks are provided for input channels 1-4, allowing individual effects to be inserted into each channel.
- Input channels 1-8 provide both XLR type mic inputs and TRS phone line inputs. Channels 9-12 provide stereo line inputs. The MX12/4 accommodates a wide range of sources, from microphones to line level devices and stereo output synthesizers.
- TAPE IN jacks and REC OUT jacks make it easy to connect tape decks for playback and recording.

## Contents

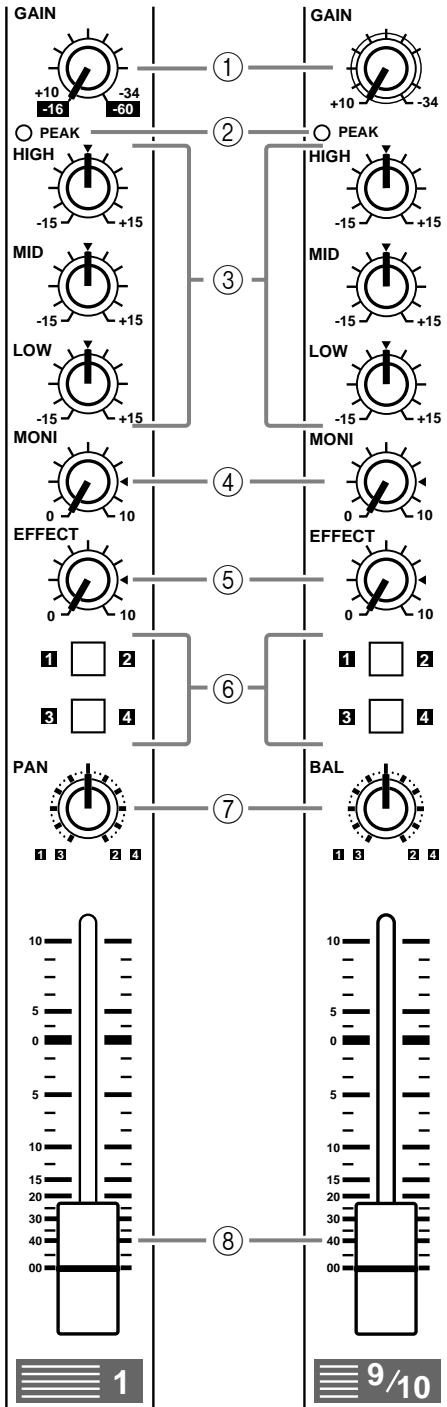
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# Front panel

## Channel control section

### Channels 1~8 (monaural)

### Channels 9~12 (stereo)



#### ① GAIN control

Use this knob to adjust the sensitivity according to the input signal level, so that the input level is appropriate.

For the best balance of S/N ratio and dynamic range, adjust this knob so that the peak indicator ② lights occasionally.

■-60 ~ ■-16 indicates the MIC input adjustment level, and -34~+10 indicates the LINE input adjustment level.

#### ② PEAK indicator

This detects the peak level post EQ.

The indicator will light red 3dB before clipping, warning that clipping level is near.

#### ③ Equalizer

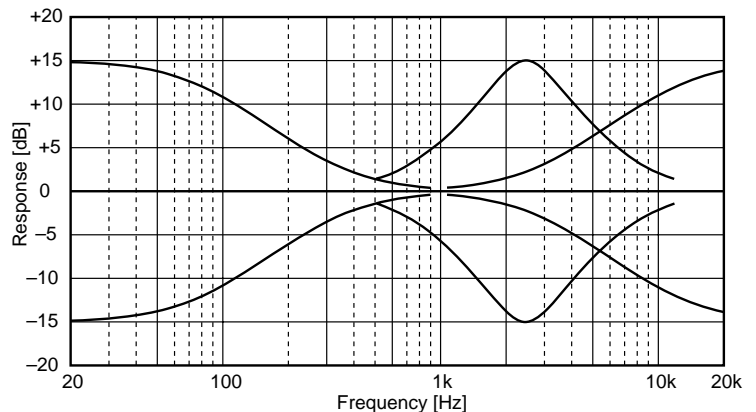
This provides  $\pm 15$ dB of control over the high, mid and low ranges at the following center frequencies.

HIGH : 12kHz (shelving)

MID : 2.5kHz (peaking)

LOW : 80Hz (shelving)

The frequency response will be flat when the knob is in the “▼” position.



#### ④ MONI (monitor) control

This knob controls the level of the signal that is sent from each channel to the MONI bus.

Since this control is placed before the channel fader, it controls the level independently from the channel fader setting.

#### ⑤ EFFECT control

This knob controls the level of the signal that is sent from each channel to the EFFECT bus.

Since this control is placed after the channel fader, the signal level will be affected by the channel fader setting.

⑥ **Group select switches**

These switches send the signal of each channel to GROUP buses 1~4.

When the **1** / **2** switches are on (pressed in), the signal will be sent to the GROUP buses 1/2.

When the **3** / **4** switches are on (pressed in), the signal will be sent to the GROUP buses 3/4.

When both switches are on, the signal will be sent to GROUP buses 1/2 and 3/4.

⑦ **PAN (panpot) control**  
**BAL (balance) control**

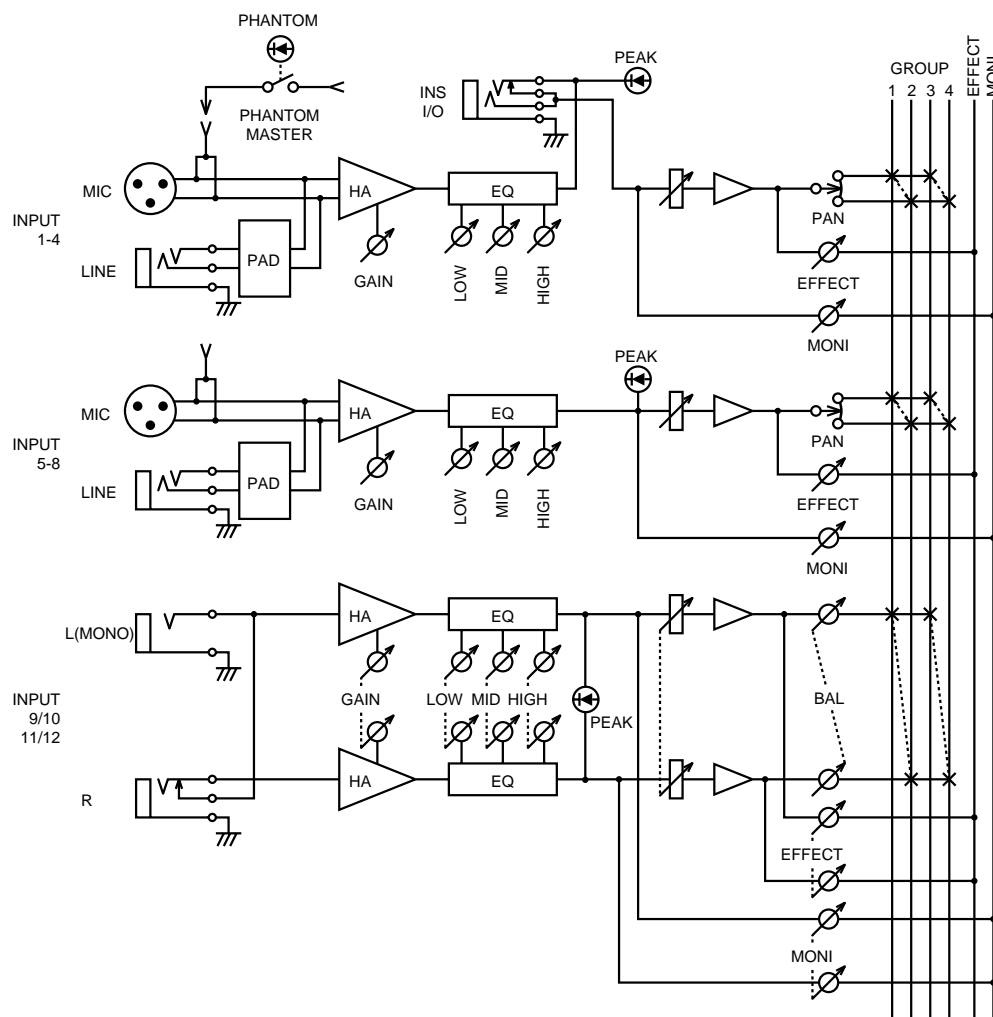
The PAN knobs (channels 1~8) set the stereo position of the signal that is sent to the GROUP buses 1/2 or 3/4.

The BAL knobs (channels 9~12) set the balance between the left/right channels, and assign the signals received at inputs 9 L (MONO) and 11 L (MONO) to the GROUP buses 1/3, and the signals received at inputs 10 R and 12 R to the GROUP buses 2/4.

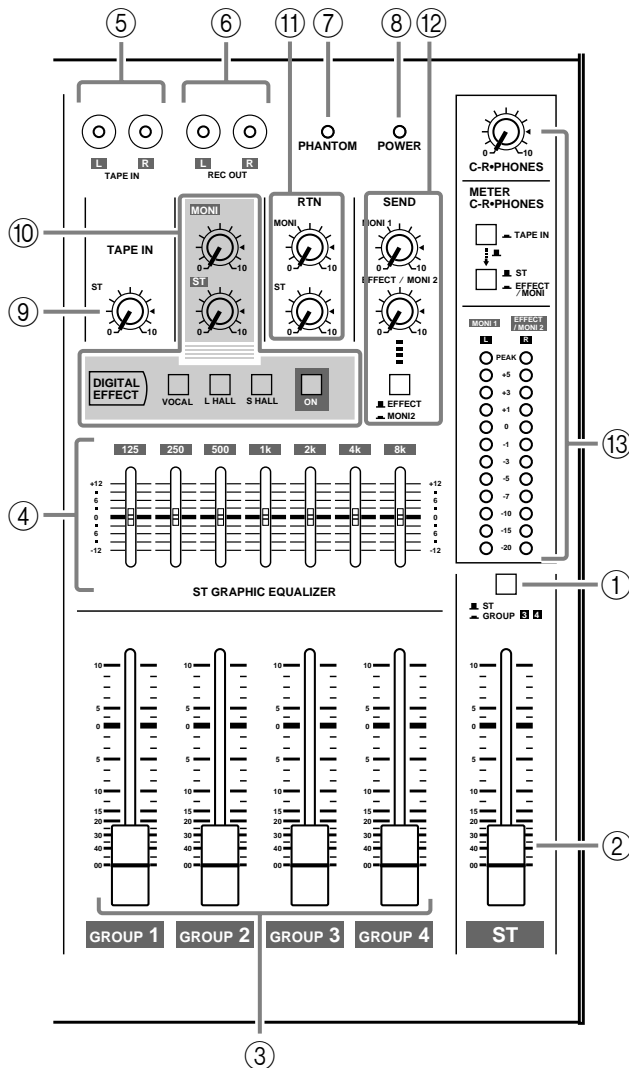
If signals are input monaurally to input 9 L (MONO) or 11 L (MONO), the same signal will be sent to groups 1~4.

⑧ **Channel fader**

This controls the output level of the input channel signal, adjusting the volume balance between channels. The faders of unused channels should be lowered.



## Master control section



### ① ST OUT output select switch

This switch selects the signal which is output via the ST fader from the ST OUTPUT jacks.

### ST position (■)

The ST OUTPUT jacks will output the ST bus signal (the post-fader signals of groups 1~4, the input signals from the RTN jacks, the return signal from the internal digital effect, and the input signal from the TAPE IN jacks).

### GROUP 3 4 position (▬)

The ST OUTPUT jacks will output the pre-fader signals of groups 3/4.

When this position is selected, the input channel signals will be sent directly to the ST bus without passing through the group buses 1~4. This setting lets you use the MX12/4 as a simple 12 in-2 out mixer.

### ② ST master fader

This fader adjusts the final combined level of all channels, and sends the signal to the ST OUTPUT jacks.

The meters allow you to view the L and R output levels.

### ③ GROUP 1~4 faders

These faders adjust the signal levels of groups 1~4, and send their signals to GROUP OUTPUT 1~4 jacks respectively and to the ST bus.

Groups 1 and 3 are sent to ST L, and groups 2 and 4 are sent to ST R.

### ④ Stereo graphic EQ

This is a stereo 7-band graphic equalizer that adjust the tonal quality of the signal output to the ST OUTPUT jacks.

A  $\pm 12$ dB boost or cut is provided at each of the frequency bands 125, 250, 500, 1k, 2k, 4k, and 8kHz.

### ⑤ TAPE IN jacks

These are line level input jacks to which an external DAT recorder or CD player etc. can be connected for monitoring. The signals which are input here are sent to the ST bus. The input levels are adjusted by the TAPE IN ST control (⑨). Depending on the setting of the C-R•PHONES select switch (⑭), the signal can also be monitored directly from the C-R OUT jack.

### ⑥ REC OUT jacks

These jacks allow an external DAT recorder or cassette recorder to be connected, to record the same signal as the ST OUTPUT jacks.

The signals that are output from these jacks are not affected by the settings of the ST master fader or the graphic EQ. Make recording level adjustments on the recording device.

### ⑦ PHANTOM indicator

This indicator will light when the PHANTOM switch (rear panel ②) is on.

### ⑧ POWER indicator

This indicator will light when the MX12/4's power is on.

### ⑨ **ST control**

This knob adjusts the monitor level of the external device (tape deck etc.) connected to the TAPE IN jacks (⑤).

### ⑩ **DIGITAL EFFECT**

**MONI control**—This knob adjusts the level of the return signal which is sent from the internal digital effect to the MONI bus.

**ST control**—This knob adjusts the level of the return signal which is sent from the internal digital effect to the ST bus.

**Effect select switches**—These switches select the effect type for the internal digital effect: VOCAL, L HALL (large hall), or S HALL (small hall).

Do not attempt to turn off all switches or to simultaneously press two or more switches, since this will cause malfunctions.

**ON switch**—This switch turns the internal digital effect on/off. When this is off, no signal will be sent from the internal digital effect.

### ⑪ **RTN**

**MONI control**—This knob adjusts the level of the signal that is sent from the RTN jacks to the MONI bus.

**ST control**—This knob adjusts the level of the signal that is sent from the RTN jacks to the ST bus. If a signal is input only to the RTN L (MONO) jack, the same signal will be sent to the ST bus L and R.

### ⑫ **SEND**

**MONI 1 control**—This knob adjusts the level of the MONI bus signal that is output to the SEND MONI 1 jack.

**EFFECT/MONI 2 control**—This knob adjusts the level of the EFFECT bus or MONI bus signal that is output to the SEND EFFECT/MONI 2 jack.

The level of the signal that is sent from the EFFECT bus to the internal digital effect is fixed, and cannot be adjusted (nor by this control).

**Output select switch**—This switch selects the signal that will be output to the SEND EFFECT/MONI 2 jack.

**EFFECT position (■)**—The EFFECT bus signal will be output.

**MONI 2 position (■)**—The MONI bus signal will be output.

### ⑬ **C-R•PHONES**

Here you can select and adjust the signal that is output to the C-R OUT jack and the PHONES jack.

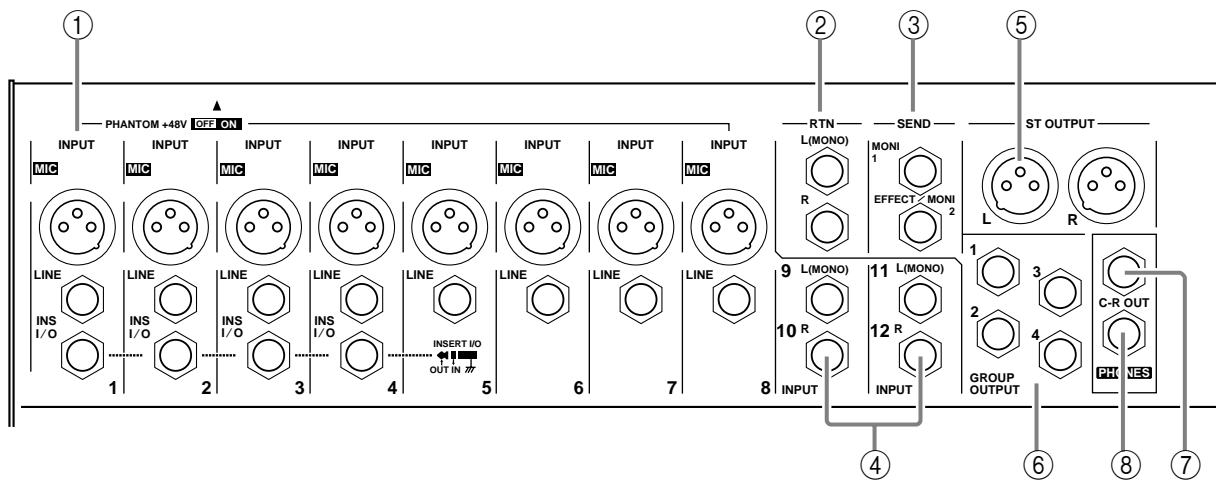
**C-R•PHONES control**— This knob adjusts the output level to the C-R OUT jack and PHONES jack.

**Output select switch**—These switches select the output signal for the C-R OUT jack and PHONES jack.

- When the upper switch is on (TAPE IN ■), the signal from the TAPE IN jacks will be output.
- When the upper switch is off (■)
  - When the lower switch is off (ST ■), the same signal as the ST OUTPUT jacks will be output.
  - When the lower switch is on (EFFECT/MONI ■), the signal of the SEND MONI 1 jack will be sent to the L channel, and the SEND EFFECT/MONI 2 signal will be sent to the R channel.

**Meter**—The LEDs indicate the output level before the C-R•PHONES control. A position of 0 indicates nominal level, and when clipping level is approached, PEAK will light red as a warning.

## Connector section



### ① INPUT

**MIC (1~8)**—These are balanced XLR type mic input jacks (1: ground, 2: hot, 3: cold). These inputs are compatible with 50~600Ω microphones.

**LINE (1~8)**—These are balanced TRS phone type line input jacks (T: hot, R: cold, S: ground).

These inputs are compatible with 600 ohm line level devices.

It is also possible to connect unbalanced phone plugs, but noise may enter the signal if the cables are long or if the location is susceptible to electromagnetic interference.

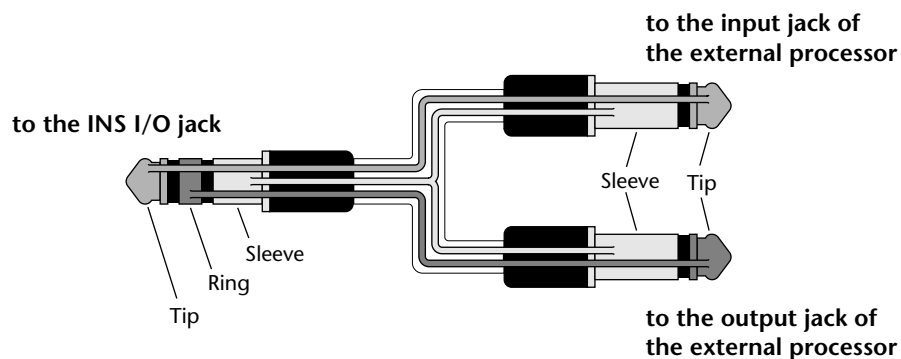
*Note:* It is not possible to connect both the MIC INPUT jack and the LINE INPUT jack for an individual input channel. Only one or the other jack may be used.

**INS I/O 1~4**—These are input/output jacks placed between the equalizer and fader of input channels 1~4.

The nominal input level/impedance is 0dB/600Ω, and the nominal output level/impedance is 0dB/10kΩ.

Devices such as graphic equalizers, compressors or noise filters can be connected here.

The INS I/O jacks provide bi-directional connections using TRS (tip, ring, sleeve) phone jacks. These connections require a special insertion cable such as shown in the following diagram.





**② RTN L (MONO), R**

These are unbalanced phone type line input jacks, with a nominal input level and impedance of +4dB/600Ω.

The signals which are input from these jacks are sent to the ST bus and the MONI bus.

Normally, these jacks are used to receive the return signal from an external effect device such as reverb or delay, but they can also be used as auxiliary stereo inputs. If only the L (MONO) jack is connected, the same signal will be sent both to the R jack and L jack, for monaural input.

**③ SEND MONI 1, EFFECT/MONI 2**

These are unbalanced phone type output jacks. The nominal input level and impedance are +4dB/600Ω.

The MONI 1 jack outputs the MONI bus signal, and the EFFECT/MONI 2 jack outputs the signal of the EFFECT bus or MONI bus. These are used to send signals to an external effect unit or to a monitor system such as a cue box.

**④ INPUT 9~12**

These are unbalanced phone type stereo line input jacks, compatible with 600Ω line level devices.

If only the L (MONO) jack is connected, the same signal will be sent both to the L and R jacks, for monaural input. In this case, the group select switch (channel control section ⑥) will send the same signal to the group buses 1/2 or 3/4.

**⑤ ST OUTPUT (L, R)**

These are balanced XLR type output jacks with a nominal output/impedance of +4dB/600Ω.

They provide stereo output of the mixed signal, and are normally connected to a power amp etc. which drives the main speakers.

These outputs can also be used in order to record the signal at a level adjusted by the ST fader.

**⑥ GROUP OUTPUT 1~4**

These are unbalanced phone type output jacks which output the signals of group buses 1~4, with a nominal output/impedance of +4dB/600Ω. Normally these are connected to the input jacks of an MTR or an external mixer.

**⑦ C-R OUT**

This is a stereo phone type output jack for connection to a monitor system etc., with a nominal output/impedance of +4dB/10kΩ.

The source monitored by this jack is selected by the C-R•PHONES output select switch (master control section ⑬).

*Note:* An insertion cable can also be used when connecting this jack to a stereo monitor system.

**⑧ PHONES**

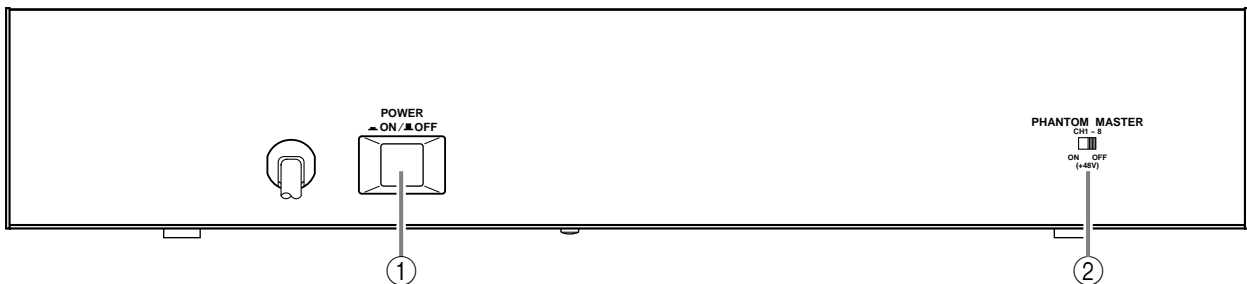
This is a stereo phone type output jack for connecting a set of headphones.

The source monitored by the headphones is selected by the C-R•PHONES output select switch (master control section ⑬).

## Connector polarity

MIC INPUT ST OUTPUT	Pin 1: ground Pin 2: hot (+) Pin 3: cold (-)	
LINE Input	Tip: hot (+) Ring: cold (-) Sleeve: ground	
INS I/O	Tip: Output Ring: Input Sleeve: ground	
C-R OUT	Tip: L Ring: R Sleeve: ground	
Stereo Input RTN GROUP OUTPUT SEND MONI1 SEND EFFECT/MONI2	Tip: hot Sleeve: ground	

## Rear panel



### Phantom Power Warning

To prevent hazard or damage, connect only microphones and cables that conform to the IEC268-15A standard.

#### ① POWER switch

When this is on, power is applied to the unit.

When turning off the power, the rule for audio equipment is to turn off devices in the order of their closeness to the speakers (normally beginning with the power amp).

#### ② PHANTOM switch

This switch turns the phantom power on/off for all channels 1~8.

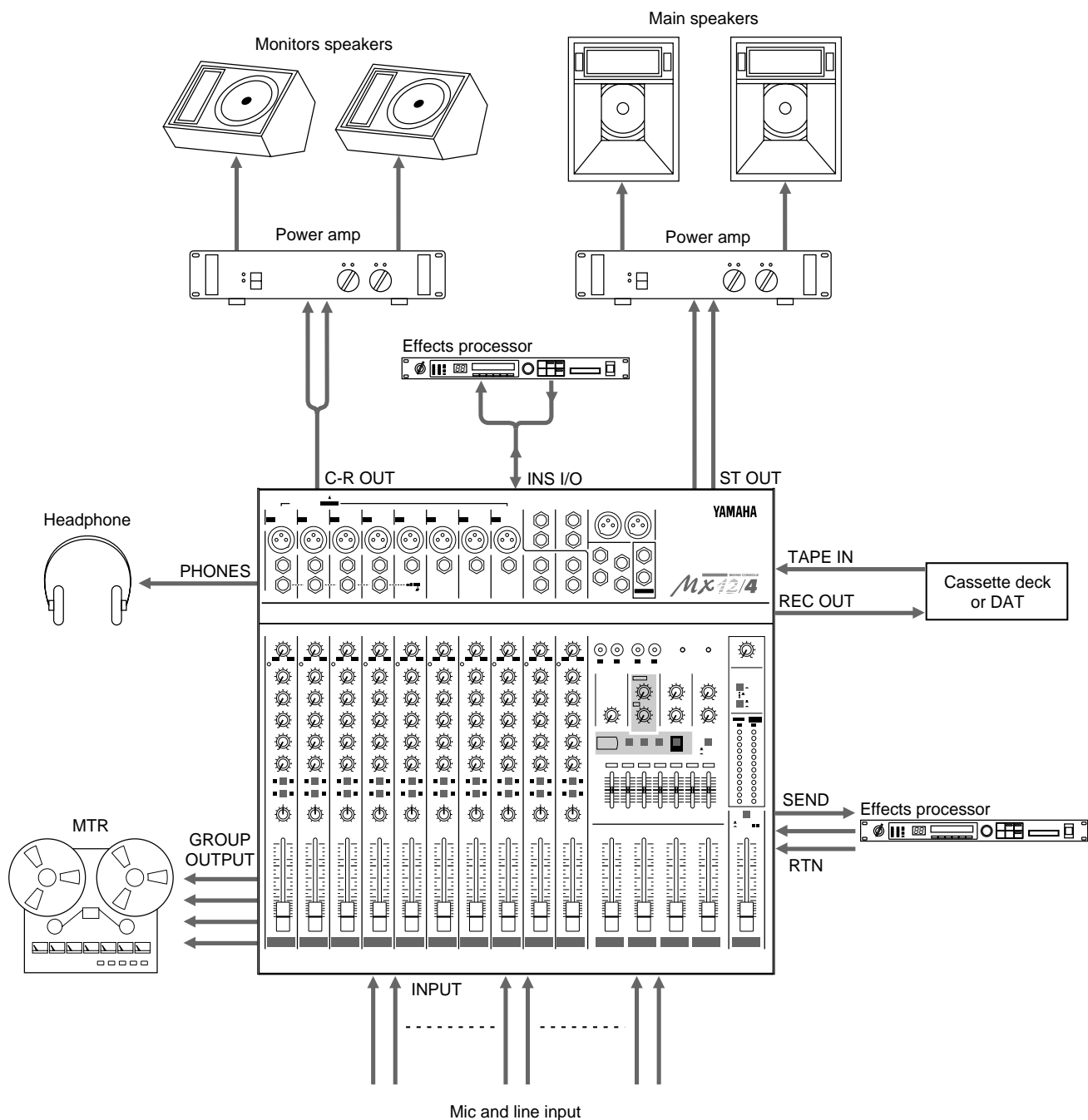
Use this when you are using condenser microphones.

When this switch is on, +48V DC will be supplied to pins 2 and 3 of all XLR type MIC INPUT connectors.

If you do not require phantom power, be sure to set this in the OFF position.

*Note:* Although it will not cause problems to connect balanced dynamic microphones or line level devices with this switch turned on, connecting unbalanced devices or devices for which the center of the transformer is ungrounded may cause hum or malfunction.

# Application Example



# Specifications

## ■ General specifications

<b>Frequency response</b>	20Hz~20kHz+1dB, -2dB @+4dB Input Gain control at minimum level (ST OUT, GROUP OUT, MONITOR OUT, EFFECT OUT@600Ω)	
<b>Total harmonic distortion</b>	<0.1%@+14dB 20Hz~20kHz (ST OUT, GROUP OUT, MONITOR OUT, EFFECT OUT@600Ω)	
<b>Hum and noise (Rs=150Ω, 20Hz~20kHz)</b>	-128dB equivalent input noise -95dB residual output noise (ST OUT, GROUP OUT, MONITOR OUT, EFFECT OUT@600Ω)	
	-87dB (ST OUT/GROUP OUT)	ST master/GROUP fader at nominal level and all channel fader at minimum.
	-64dB (68dB S/N) (ST OUT/GROUP OUT)	ST master/GROUP fader at nominal level One channel fader, Gain control: maximum. Fader: nominal
	-80dB (MONITOR1 OUT, EFFECT/ MONITOR2 OUT)	Master level control at nominal level and all channel level controls at minimum.
	-64dB (68dB S/N) (MONITOR1 OUT, EFFECT/MONITOR2 OUT)	Master fader at nominal level One channel fader, Gain control: maximum. Fader: nominal Control level: nominal
<b>Maximum voltage gain</b>	84dB MIC IN to GROUP OUT 58dB LINE IN to GROUP OUT 90dB MIC IN to EFFECT/MONITOR2 OUT 80dB MIC IN to MONITOR1 OUT	
<b>Crosstalk at 1kHz</b>	70dB adjacent input 70dB input to output	
<b>Gain control</b>	44dB variable	
<b>Input channel equalization</b>	±15dB Maximum HIGH 12kHz shelving MID LOW 2.5kHz peaking LOW 80Hz shelving * Turn over/Roll off frequency of shelving: 3dB below maximum variable level	
<b>Meters</b>	12 points LED	
<b>Channel peak indicators</b>	An indicator for each channel turns on when the pre-channel fader signal is 3dB below clipping.	
<b>Graphic equalizer</b>	7 bands (125, 250, 500, 1k, 2k, 4k, 8kHz) ±12 Maximum	
<b>Internal digital effect</b>	3 types	
<b>Phantom power</b>	+48V (balanced)	
<b>Option</b>	Rack Mount Kit RK124	
<b>Power supply/ Power consumption</b>	USA and Canadian General	120V AC 60Hz, 30W 230V AC 50Hz, 40W
<b>Dimensions (WxHxD)</b>	436.2x83.1x401.2mm	
<b>Weight</b>	7.0kg	

## Input specifications

Input connectors	Gain trim	Input impedance	Nominal impedance	Input level			Connector type
				Sensitivity <sup>1</sup>	Nominal level	Max. before clipping	
MIC INPUT (1-8)	MAX MIN	5k $\Omega$	50~600 $\Omega$ mic	-90dB (24.5 $\mu$ V) -36dB (12.3mV)	-60dB (775 $\mu$ V) -16dB (123mV)	-40dB (7.75mV) +4dB (1.23V)	XLR3-31 type <sup>2</sup>
LINE INPUT (1-8)	MAX MIN	50k $\Omega$	600 $\Omega$ line	-64dB (490 $\mu$ V) -10dB (245mV)	-34dB (15.5mV) +10dB (2.45V)	-14dB (155mV) +30dB (24.5V)	Phone jack (TRS) <sup>2</sup>
ST INPUT (9-12)	MAX MIN	10k $\Omega$	600 $\Omega$ line	-54dB (1.55mV) -10dB (245mV)	-34dB (15.5mV) +10dB (2.45V)	-14dB (155mV) +30dB (24.5V)	Phone jack <sup>3</sup>
RTN (L•R)		10k $\Omega$	600 $\Omega$ line	-12dB (195mV)	+4dB (1.23V)	+20dB (7.75V)	Phone jack <sup>3</sup>
TAPE IN (L•R)		10k $\Omega$	600 $\Omega$ line	-26dBV (50.1mV)	-10dBV (316mV)	+18dBV (7.75V)	RCA pin jack
INS I/O (1-4)		10k $\Omega$	600 $\Omega$ line	-20dB (77.5mV)	0dB (775mV)	+20dB (7.75V)	Phone jack (I/O) <sup>4</sup>

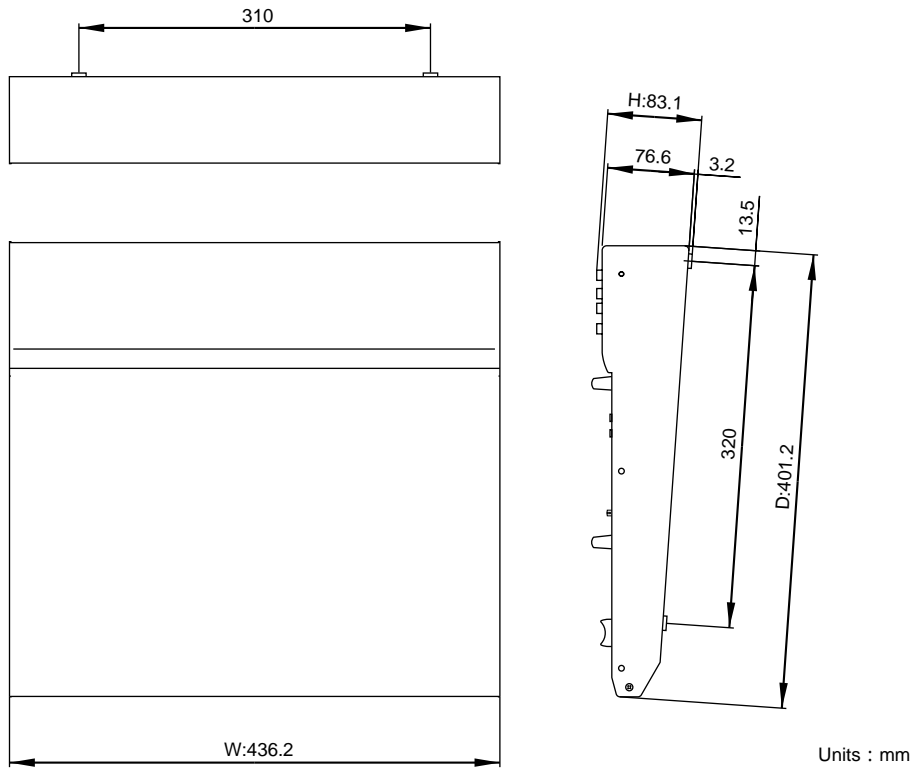
- Sensitivity is the lowest level that will produce an output of +4 dB (1.23V) or the nominal output level when the unit is set to maximum gain.
- XLR type connectors and phone jacks (TRS) (T=Hot, R=Cold, S=Gnd) are balanced.
- Phone jacks are unbalanced.
- Phone jacks (I/O) (T=OUT, R=IN, S=GND) are unbalanced.
  - 0dB=0.775Vrms, 0dBV=1Vrms

## Output specifications

Output connector	Output impedance	Nominal impedance	Output level		Connector type
			Nominal	Max. before clipping	
ST OUTPUT (L•R)	150 $\Omega$	600 $\Omega$ Lines	+4dB (1.23V)	+24dB (12.3V)	XLR-3-32 type <sup>1</sup>
GROUP OUTPUT (1-4)	75 $\Omega$	600 $\Omega$ Lines	+4dB (1.23V)	+20dB (7.75V)	Phone jack <sup>2</sup>
MONITOR1 OUT	75 $\Omega$	600 $\Omega$ Lines	+4dB (1.23V)	+20dB (7.75V)	Phone jack <sup>2</sup>
SEND MONI1, EFFECT/MONI2	75 $\Omega$	600 $\Omega$ Lines	+4dB (1.23V)	+20dB (7.75V)	Phone jack <sup>2</sup>
C-R OUT	470 $\Omega$	10k $\Omega$ Lines	+4dB (1.23V)	+20dB (7.75V)	ST phone jack <sup>3</sup>
REC OUT (L•R)	600 $\Omega$	10k $\Omega$ Lines	-10dBV (316mV)	+10dBV (3.16V)	RCA pin jack
PHONES	100 $\Omega$	40 $\Omega$ Phones	3mW	100mW	ST phone jack
INS I/O (1-4)	600 $\Omega$	10k $\Omega$ Lines	0dB (775mV)	+20dB (7.75V)	Phone jack <sup>4</sup>

- XLR type connectors are balanced.
- Phone jacks are unbalanced.
- ST phone jacks (T=L, R=R, S=GND) are unbalanced.
- Phone jacks (I/O) (T=OUT, R=IN, S=GND) are unbalanced.
  - 0dB=0.775Vrms, 0dBV=1Vrms

## ■ Dimensions



Specifications are subject to change without prior notice.



# YAMAHA