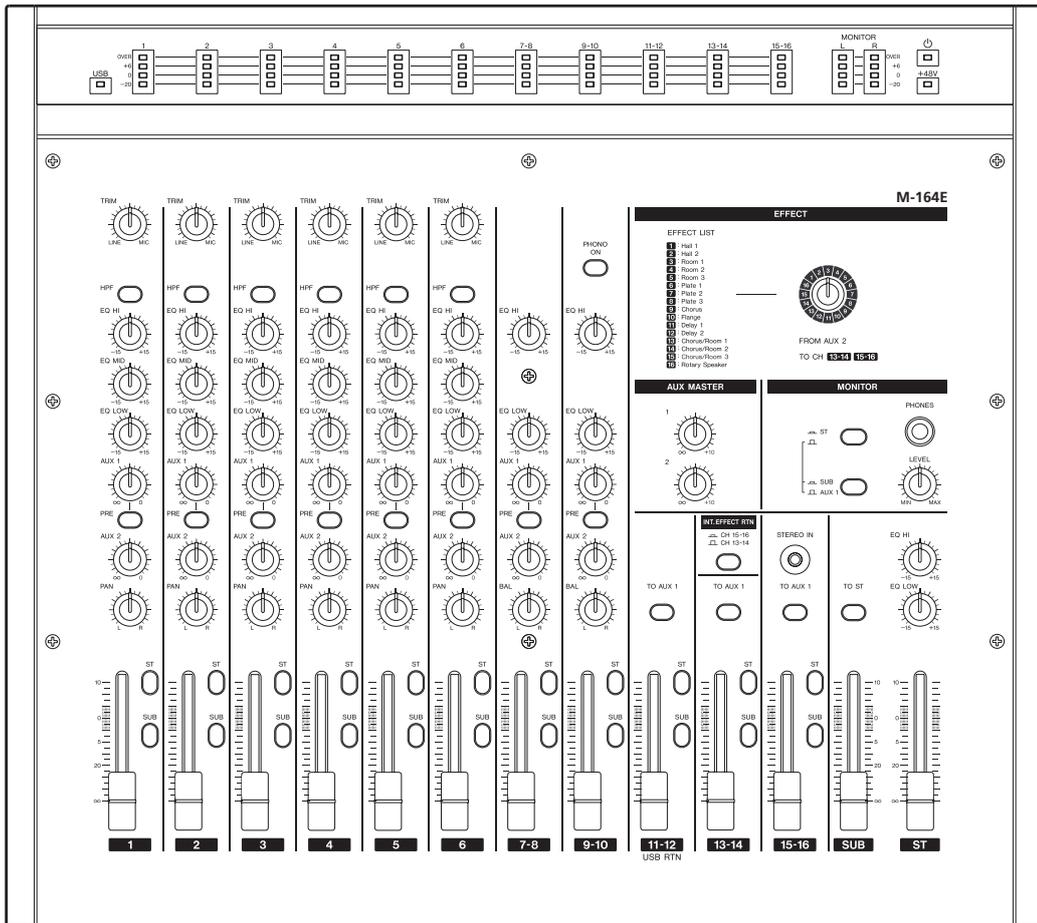




INSTRUCTION MANUAL

ANALOG MIXER

M-164E



Thank you for purchasing TOA's Analog Stereo Mixer.

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

IMPORTANT SAFETY PRECAUTIONS



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For the customers in Europe

WARNING

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Pour les utilisateurs en Europe

AVERTISSEMENT

Il s'agit d'un produit de Classe A. Dans un environnement domestique, cet appareil peut provoquer des interférences radio, dans ce cas l'utilisateur peut être amené à prendre des mesures appropriées.

Für Kunden in Europa

Warnung

Dies ist ein Gerät, welches die Einstufung nach Klasse A hat. Dieses Gerät kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen.

**WARNING: TO PREVENT FIRE
OR SHOCK HAZARD, DO
NOT EXPOSE THIS
APPLIANCE TO RAIN OR
MOISTURE.**

CE Marking Information

- a) Applicable electromagnetic environment: E4
- b) Peak inrush current: 4.3 A

IMPORTANT SAFETY INSTRUCTIONS

- 1 Read these instructions.
 - 2 Keep these instructions.
 - 3 Heed all warnings.
 - 4 Follow all instructions.
 - 5 Do not use this apparatus near water.
 - 6 Clean only with dry cloth.
 - 7 Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
 - 8 Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
 - 9 Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
 - 10 Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
 - 11 Only use attachments/accessories specified by the manufacturer.
 - 12 Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
 - 13 Unplug this apparatus during lightning storms or when unused for long periods of time.
 - 14 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Do not expose this apparatus to drips or splashes.
 - Do not place any objects filled with liquids, such as vases, on the apparatus.
 - Do not install this apparatus in a confined space such as a book case or similar unit.
 - The apparatus draws nominal non-operating power from the AC outlet with its POWER or STANDBY/ON switch not in the ON position.
 - The apparatus should be located close enough to the AC outlet so that you can easily grasp the power cord plug at any time.
 - The mains plug is used as the disconnect device, the disconnect device shall remain readily operable.
 - Products with Class I construction are equipped with a power supply cord that has a grounding plug. The cord of such a product must be plugged into an AC outlet that has a protective grounding connection.
 - If the product uses batteries (including a battery pack or installed batteries), they should not be exposed to sunshine, fire or excessive heat.
 - CAUTION for products that use replaceable lithium batteries: there is danger of explosion if a battery is replaced with an incorrect type of battery. Replace only with the same or equivalent type.
 - Caution should be taken when using earphones or headphones with the product because excessive sound pressure (volume) from earphones or headphones can cause hearing loss.
 - Use the included AC adaptor (TOA AD-1225L-AE) and power cord set with this equipment. Use of any other power source could cause malfunction, fire or electrical shock.
 - Do not use the included AC adaptor (TOA AD-1225L-AE) and power cord set with other equipment. Doing so could cause malfunction, fire or electrical shock.



1 – Introduction

Thank you very much for purchasing this TOA M-164E series mixer.

Before using the unit, please read this Owner's Manual carefully so that you will understand the correct operating procedures. We hope that you will enjoy using this product for many years to come.

Please keep this manual for future reference.

Main features

- Audio mixer with 16 inputs, 4 output busses and 2 AUX sends
- All input channels have faders and the stereo (ST) and SUB buses have output faders
- Meter bridge allows observation of input and monitor levels
- Channels 1–6 are mic/line input channels that have both XLR mic input connectors with +48V phantom power, standard jacks for line inputs and a full set of mixer functions (TRIM, HPF, 3-band EQ, 2 AUX sends, PAN, fader and bus assign switch)
- Channels 7–10 are stereo line input channels with numerous mixer functions (2-band EQ, 2 AUX sends, PAN, fader and bus assign switch)
- Channels 9-10 include a PHONO input preamp, allowing direct connection of a record player
- Channels 11-12, 13-14 and 15-16, which are 3 pairs of stereo line input channels with faders and bus assign switches, have adjustable levels and can be used as sub-inputs
- Channels 13-14 or 15-16 can be used as return channels for the internal effects
- TO AUX 1 switches are included on channels 13-14 and 15-16
- SUB and main stereo (ST) output busses each have dedicated faders, allowing independent adjustment of output levels
- TO ST switch on SUB bus can be turned ON to send its signal to the stereo output, allowing the SUB bus to be used as a sub-mix group
- Channel 1-10 AUX sends can be used to send input signals to the internal effects or monitoring outputs
- AUX 1 has a **PRE** switch allowing pre/post selection (AUX 2 is fixed to post)

- **AUX MASTER (1, 2)** knobs adjust the total AUX 1 and 2 send levels
- Bus assign switches on all input channels
- Internal digital effects
- 2-band EQ on the stereo bus to control the sound quality of the mixed stereo output
- Stereo and mono output jacks for both stereo and SUB bus outputs
- Headphone monitoring of stereo, SUB or AUX 1 bus possible

Included items

The included items are listed below.

Take care when opening the package not to damage the items. Keep the package materials for transportation in the future.

Please contact the store where you purchased this unit if any of these items are missing or have been damaged during transportation.

- Main unit 1
- AC adaptor (AD-1225L-AE)..... 1
- Instruction manual (this manual)..... 1

CAUTION

Always use the included AC adaptor (AD-1225L-AE)/ power cord with this equipment. Do not use the included AC adaptor and power cord set with other equipment. Doing so could cause malfunction, fire or electrical shock.

About this manual

In this manual, we use the following conventions:

- The names of keys and controls are given in the following typeface: **MENU**.
- Additional information is introduced in the styles below when needed:

TIP

Useful hints when using the unit.

NOTE

Explanation of actions in special situation and supplement.

CAUTION

Instructions that should be followed to avoid injury, damage to the unit or other equipment, and loss of data.

1 – Introduction

Trademarks

- TOA is a trademark of TOA, registered in the U.S. and other countries.
- Microsoft, Windows, and Windows Vista are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Apple, Macintosh, Mac OS and Mac OS X are trademarks of Apple Inc., registered in the U.S. and other countries.
- Pentium and Intel are trademarks of Intel Corporation in the U.S. and other countries.
- AMD Athlon is a trademark of Advanced Micro Devices, Inc.
- iPod is a trademark of Apple Inc.
- Cubase is a registered trademark of Steinberg Media Technologies GmbH.
- Other company names, product names and logos in this document are the trademarks or registered trademarks of their respective owners.

Precautions and notes for placement and use

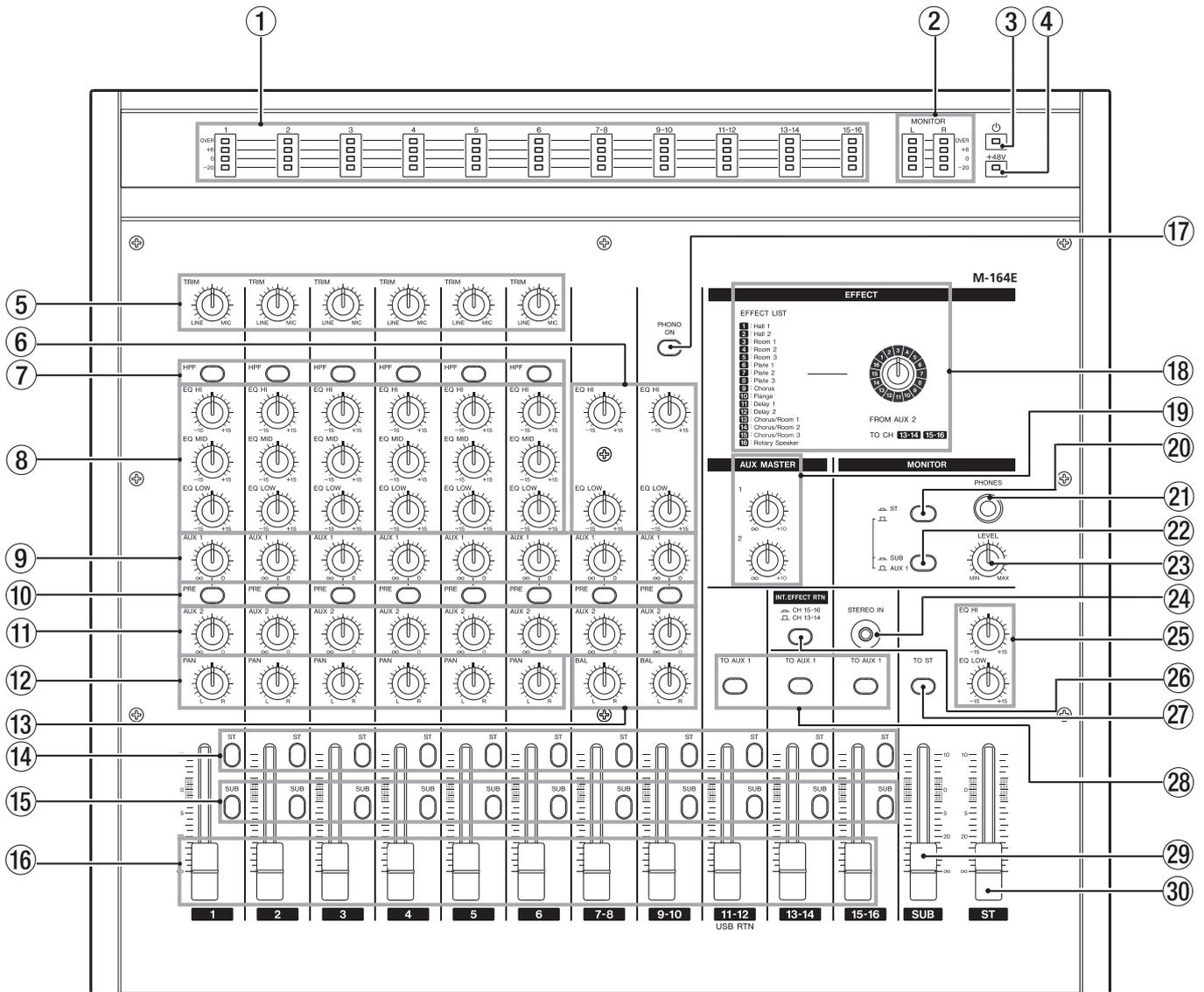
- Use this product within its guaranteed operating temperature range of 5–35° C. In addition, avoid placement in dusty or humid locations because such conditions could cause malfunction.
- Do not apply strong force to this unit. Doing so could damage the internal circuitry or external panels.
- Do not use near anything that generates a strong magnetic field. Doing so could cause hum or high frequency interference, for example.

Cleaning the unit

To clean the unit, wipe it gently with a soft cloth slightly dampened with a diluted neutral cleanser. Do not wipe with chemical cleaning cloths, benzine, paint thinner, or other chemical agents as they could damage the surface.

2 – Names and Functions of Parts

Top panel



① Input channel meters

Display the input level of each input channel (levels after signals pass through the EQ section).

② MONITOR (L, R) meters

Display the output signal level of the monitoring source (stereo, SUB or AUX 1 bus) that has been selected with the two switches at the **MONITOR** section.

③ indicator

Lights when the mixer power has been turned ON using the **ON/STANDBY** switch on the rear panel.

④ +48V indicator

Lights when the phantom power has been turned ON using the **PHANTOM (+48V)** switch on the rear panel.

⑤ TRIM knobs (channels 1–6)

Use to adjust the input levels of signals from the **MIC**

and **LINE** input jacks. While observing the channel meters above, turn to the left (toward **LINE**) for line level sources (electronic instruments, audio equipment, etc.) or to the right (toward **MIC**) for microphones.

⑥ EQ section (channels 7-8, 9-10)

These channels each have a 2-band EQ.

The **EQ HI** knob adjusts the high frequency range with a roll-off frequency of 12 kHz and a boost/cut range of ± 15 dB.

The **EQ LOW** knob adjusts the low frequency range with a roll-off frequency of 100 Hz and a boost/cut range of ± 15 dB.

⑦ HPF switch (channels 1–6)

Push this switch in to turn ON the high-pass filter, which cuts frequencies below 80 Hz by 12 dB/octave. The high-pass filters affect inputs from both **MIC** and **LINE** input jacks.

2 – Names and Functions of Parts

⑧ EQ knobs (channels 1–6)

These channels each have a 3-band EQ.

The **EQ HI** knob adjusts the high frequency range with a roll-off frequency of 12 kHz and a boost/cut range of ± 15 dB.

The **EQ MID** knob adjusts the middle frequency range with a central frequency of 2.5 kHz and a boost/cut range of ± 15 dB.

The **EQ LOW** knob adjusts the low frequency range, with a roll-off frequency of 100 Hz and a boost/cut range of ± 15 dB.

⑨ AUX 1 knobs (channels 1-6, 7-8, 9-10)

Use to adjust the level of the channel signals sent to the AUX 1 bus.

When the **PRE** switch is OFF (switch not pushed in), the post-fader signal (signal after being adjusted by the fader) is sent to the AUX 1 bus. When ON (switch pushed in) the pre-fader signal (signal after EQ adjustment but before fader adjustment) is sent to the AUX 1 bus. In addition to being output from the rear panel **AUX SEND 1** jacks, the AUX 1 bus signal can also be monitored with headphones.

⑩ PRE switches (channels 1-6, 7-8, 9-10)

Use to set when the channel signal is sent to the AUX 1 bus. When OFF (switch not pushed in), the post-fader signal (signal after being adjusted by the fader) is sent to the AUX 1 bus, and when ON (switch pushed in), the pre-fader signal (signal after EQ adjustment but before fader adjustment) is sent.

⑪ AUX 2 knobs (channels 1-6, 7-8, 9-10)

Use to adjust the post-fader signal level (signal after being adjusted by the fader) of the channel signal sent to the AUX 2 bus.

In addition to outputting the AUX 2 bus signal from the rear panel **AUX SEND 2** jacks, M-164E units can also send these signals to the internal effects.

⑫ PAN knobs (channels 1-6)

Use to set the left-right position of the channel signals sent to the stereo and SUB busses.

⑬ BAL knobs (channels 7-8, 9-10)

Use to set the left-right balance of stereo channel signals sent to the stereo and SUB busses.

⑭ ST switches (all channels)

Turn ON (push switch in) to send a channel signal to the stereo (ST) bus.

⑮ SUB switches (all channels)

Turn ON (push switch in) to send a channel signal to the SUB bus.

⑯ Channel faders (all channels)

Use to adjust the levels of channel signals sent.

⑰ PHONO ON switch (channels 9-10)

Turn this switch ON (push switch in) when the output of a record player is connected to channels 9-10.

⑱ EFFECT rotary knob

Use to select the internal effect type. Turn left or right to select the number of the corresponding effect in the list to the left.

The internal effects stereo return output is sent to channels 13-14 or 15-16.

⑲ AUX MASTER (1, 2) knobs

Use to adjust the output levels of the AUX 1 and AUX 2 busses.

⑳ MONITOR section ST switch

Turn ON (push switch in) to monitor the stereo bus signal through headphones. Turn OFF to monitor the SUB or AUX 1 bus.

㉑ PHONES jack (standard stereo jack)

Connect stereo headphones here. Depending on the **MONITOR** section switch settings, you can monitor the stereo, SUB or AUX 1 bus.

㉒ MONITOR section SUB/AUX 1 switch

When the **MONITOR** section **ST** switch is OFF, push this switch in to monitor the SUB bus or leave it out to monitor the AUX 1 bus through headphones.

㉓ LEVEL knob

Use to adjust the signal level sent to the headphones.

㉔ STEREO IN jack (stereo mini-jack)

Use this jack to connect an iPod or another external (stereo) sound source.

The connected source signal is sent to channels 15-16.

NOTE

*On M-164E mixers, when an input is connected to this jack, the input is given priority and the internal effects return signal is not sent to channels 15-16 even if the **INT. EFFECT RTN** switch described below is pushed in to set channels 15-16 as the internal effects return channels.*

㉕ EQ HI and EQ LOW knobs

Use this 2-band EQ on the stereo bus to adjust the sound character of the mixed stereo signal output.

The **EQ HI** knob adjusts the high frequency range, with a roll-off frequency of 12 kHz and a boost/cut range of ± 15 dB.

The **EQ LOW** knob adjusts the low frequency range with a roll-off frequency of 100 Hz and a boost/cut range of ± 15 dB.

2 – Names and Functions of Parts

②⑥ INT. EFFECT RTN switch

This switch above the channel 13-14 fader of the mixer allows the selection of the internal effects return channels.

Channels 13-14 are selected as return channels when the switch is not pushed in, and channels 15-16 are selected when the switch is pushed in.

②⑦ TO ST switch

Turn this switch ON (push switch in) to send the SUB bus output signal to the stereo bus.

②⑧ TO AUX 1 switches

The M-164E has one switch each for both channel 13-14 and 15-16 pairs.

When ON (switch pushed in), the post-fader signal (signal after being adjusted by the fader) is sent to the AUX 1 bus.

②⑨ SUB fader

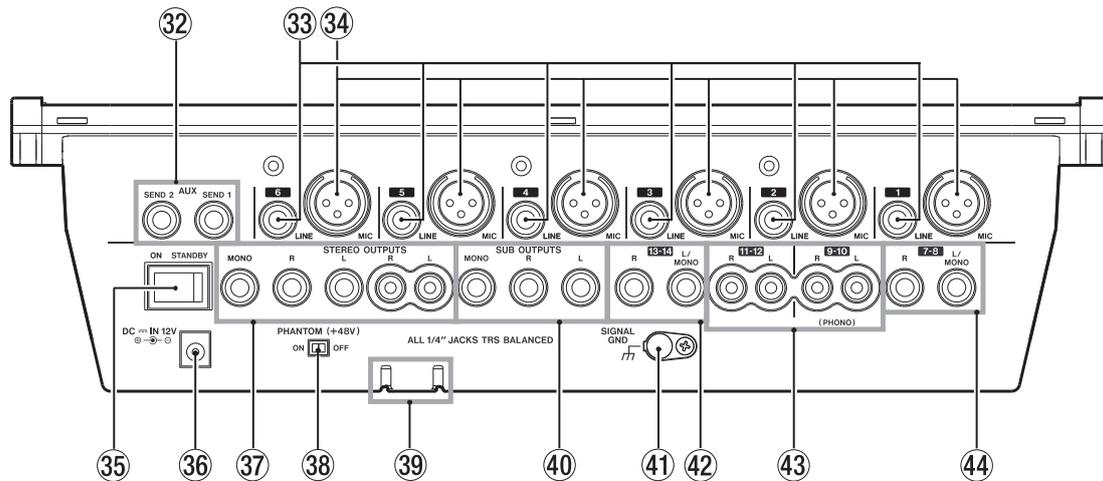
This is the SUB bus output fader.

③⑩ ST fader

This is the stereo bus output fader.

2 – Names and Functions of Parts

Rear panel



32 AUX SEND 1 and 2 jacks (standard jacks)

These are balanced outputs for the AUX bus 1 and 2 signals. Unbalanced connections are also possible. Use with external effects or monitoring systems.

33 LINE input jacks (standard jacks)

The outputs of electronic instruments, audio equipment and other line level signals can be connected to these input jacks. Both 3-pole balanced and 2-pole unbalanced standard plugs can be connected.

34 MIC input connectors (XLR connectors)

These are balanced mic inputs wired for pin 2 to be hot.

35 ON/STANDBY switch

Turns the mixer power ON and STANDBY.

36 DC IN 12V

Connect the included AC adaptor (TOA AD-1225L-AE) here.

In order to prevent the cord from being accidentally disconnected during use, pass the cord through the cord holder.

37 STEREO OUTPUTS jacks (standard and RCA pin jacks)

These output the stereo bus signals. The standard jacks (L, R, MONO) output balanced signals, but connection with unbalanced cables is also possible. The MONO jack outputs a monaural signal. The RCA pin jacks (L, R) output unbalanced signals.

38 PHANTOM (+48V) switch

Use this to turn +48V phantom power to channel 1-6 MIC inputs ON and OFF.

CAUTION

Do not connect or disconnect mics when the PHANTOM (+48V) switch is ON.

39 Cord holder

Use this to hold the cord and prevent accidental disconnection of the plug.

40 SUB OUTPUTS (standard jacks)

These output the SUB bus signals on balanced jacks, but connection with unbalanced cables is also possible. The MONO jack outputs a monaural signal.

41 SIGNAL GND

When connecting a record player to channels 9-10, connect the player's grounding wire here.

NOTE

If huming occurs when external equipment other than a record player is connected to the mixer, connecting this jack with part of the metal frame of the external equipment (or the rack frame if rack mounted) with grounding wire might reduce the noise.

42 13-14 input jacks (standard jacks)

The outputs of electronic instruments, audio equipment and other line level signals can be connected to these input jacks. Both 3-pole balanced and 2-pole unbalanced standard plugs can be connected. If a connection is only made to the L/MONO input jack, the signal is sent to both left and right channels.

NOTE

On M-164E mixers, do not connect anything to this input jack if the internal effects return channels are set to channels 13-14 (INT. EFFECT RTN switch not pushed in).

43 9-10, 11-12 input jacks (RCA pin jacks)

The outputs of electronic instruments, audio equipment and other line level signals can be connected to these unbalanced input jacks.

A record player can also be connected to the 9-10 input jacks. When doing so, also connect the grounding wire from the record player to the SIGNAL GND jack and turn the PHONO ON switch on the top panel ON.

2 – Names and Functions of Parts

④ 7-8 input jacks (standard jacks)

The outputs of electronic instruments, audio equipment and other line level signals can be connected to these input jacks. Both 3-pole balanced and 2-pole unbalanced standard plugs can be connected.

If a connection is only made to the **L/MONO** input jack, the signal is sent to both left and right channels.

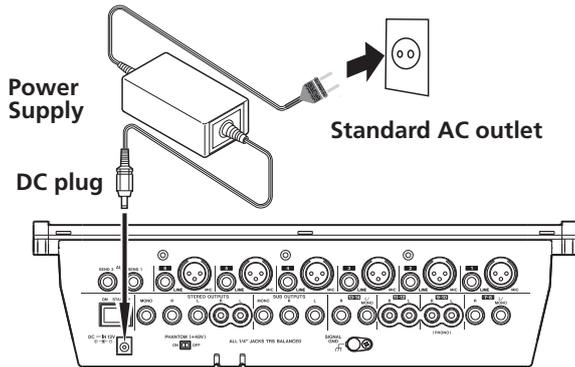
3 – Preparation for Use

This chapter explains how to connect external equipment and the power cord, as well as how to make other preparations before turning on the power.

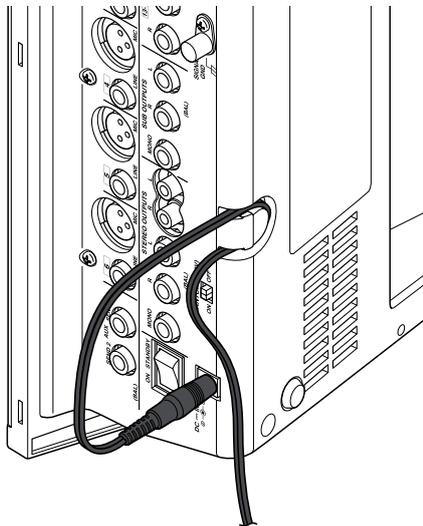
Connecting the power

Confirm that the mixer power switch is set to **STANDBY** beforehand.

Connect the included power cord and AC adaptor (AD-1225L-AE) to the mixer.



The cord holder is an opening on the bottom of the mixer for securing the AC adaptor cord. When connecting the cord, pass it through the cord holder to prevent it from accidentally becoming disconnected during use.



CAUTION

- Always use the included AC adaptor (AD-1225L-AE). Use of a different AC adaptor could cause malfunction, generation of heat, fire or other trouble.
- Do not force the cord into the holder. Doing so could break the line.

Examples of connecting external equipment

Two connection examples follow.

For details about making connections, see “Making stereo output connections” and “Making input sound source connections.”

Precautions before making connections

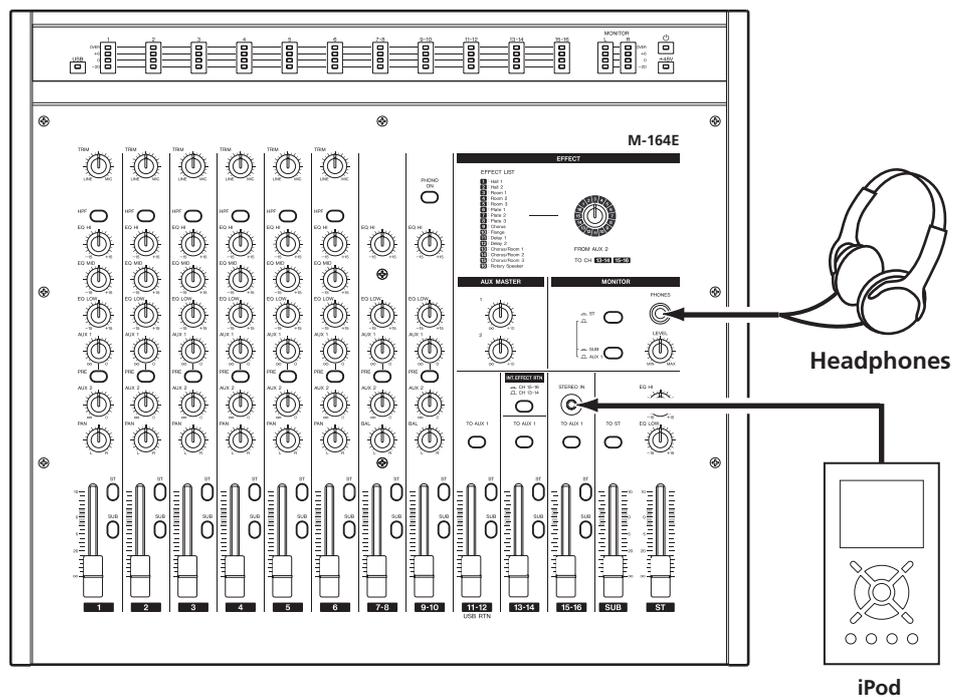
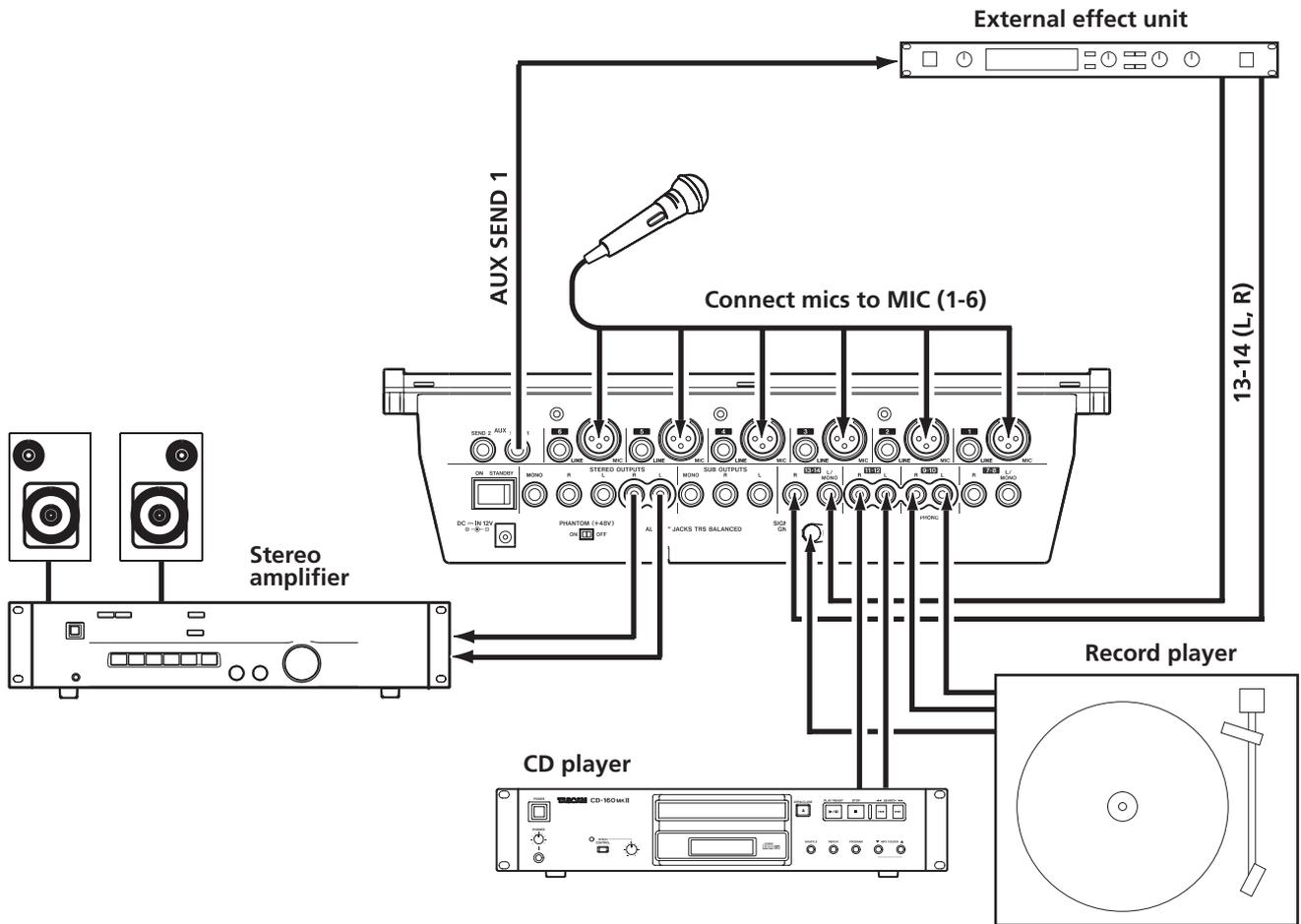
- Turn the power OFF on all the equipment to be connected and set the mixer to standby.

- Plug in all pieces of equipment into the same outlet or power strip so that they will receive power from the same line.

To minimize power voltage fluctuation when using an extension cord, for example, use a heavy cable with high electrical current capacity.

3 – Preparation for Use

Connection example 1: Using an M-164E with multiple mics and for background music in a club



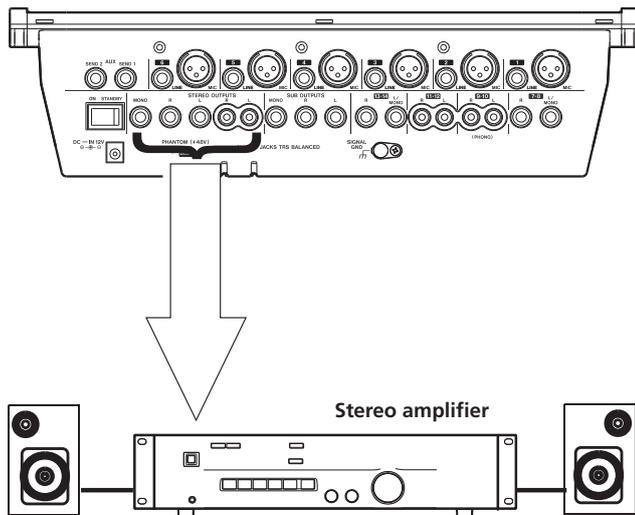
3 – Preparation for Use

Making stereo output connections

CAUTION

Turn the power OFF on all equipment to be connected and set the mixer to standby before making connections.

The mixer stereo bus output is usually used as the main output and connected to an external amplifier or speaker system. Depending on the type of amplifier, use the **STEREO OUTPUTS** standard jacks (L, R) or the **RCA** pin jacks (L, R). The standard jacks provide balanced outputs, but unbalanced cables can also be used to connect to amplification systems with unbalanced inputs.

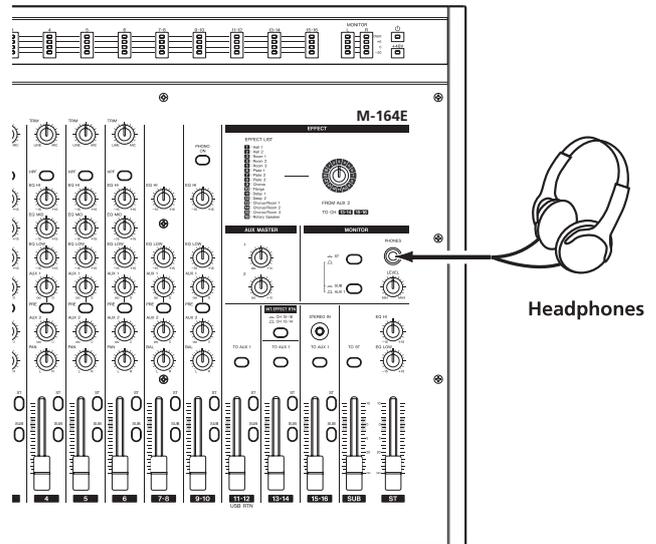


TIP

- Using the **MONO** jack instead of the **L** and **R** jacks is convenient when connecting to a mono amplifier.
- Using both the **STEREO OUTPUTS** and **SUB OUTPUTS** is convenient for connecting two amplification or speaker systems at the same time, including setups with main and sub speakers or main and monitor speakers. Each output pair has a dedicated fader, so you can set their levels independently with the mixer.
- By connecting the **SUB OUTPUTS** to a recorder, you can record the same stereo mix signal as it is output from an amplification or speaker system.

Connecting headphones

To monitor with headphones, connect stereo headphones to the **PHONES** jack on the top panel.



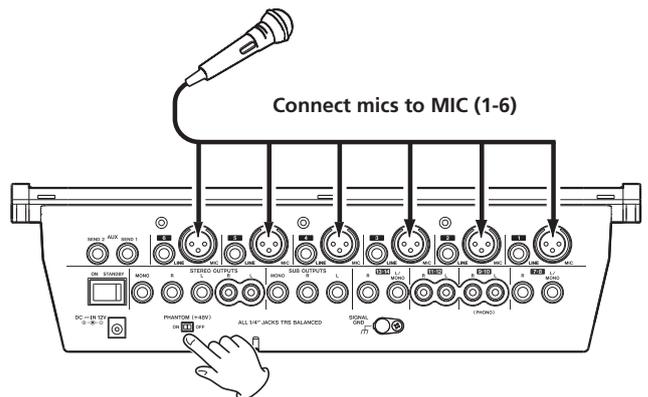
Making input sound source connections

CAUTION

Turn the power OFF on the mixer and all equipment to be connected before making connections.

Connecting mics

Connect mics to the channel 1–6 **MIC** input jacks (XLR). When using condenser mics that require phantom power, turn the **PHANTOM (+48V)** switch on the rear panel ON.



Use the **PHANTOM (+48V)** switch to turn the phantom power supply to all channels (1–6) ON or OFF simultaneously. When the **PHANTOM (+48V)** switch is ON, if you want to use dynamic mics at the same time as condenser mics, always connect the dynamic mics using balanced connections.

3 – Preparation for Use

CAUTION

- Connecting a dynamic mic with an unbalanced connection could damage it if the PHANTOM (+48V) switch is ON.
- Do not connect or disconnect mics when the PHANTOM (+48V) switch is ON. Doing so could cause loud noise or damage the equipment.

NOTE

- When the PHANTOM (+48V) switch is ON (and the mixer power is ON) the +48V indicator lights on the right side of the meter panel.
- The XLR connector #2 pins are “hot” on this mixer.

Connecting synthesizers, other sound sources and audio equipment (line level sound sources)

Line level sound sources can be connected to every channel (1–16). However, the types of jacks and mixer functions differ depending on the channel. Channels 7–16 are five pairs of stereo channels, and channels 9-10 can also be connected to a record player.

» Channels 1–6

- Connect using the standard (LINE) jacks. These jacks are balanced, but they can also be connected with unbalanced sound sources.
- Use the TRIM knobs on the top panel to adjust the input levels (see “Adjusting levels ” on page 18). The mixer channel functions include a high-pass filter, a 3-band EQ, AUX 1 and 2 sends and pan.

» Channels 7-8

- Connect a stereo sound source using standard jacks (L, R). These jacks are balanced, but they can also be connected with unbalanced sound sources.
- If a mono sound source is connected to the L jack, the L input signal is sent to both channels 7 and 8.
- The mixer channel functions include a 2-band EQ, AUX 1 and 2 sends and balance.

» Channels 9-10

- Connect a stereo sound source using RCA pin jack jacks (L, R).
- A record player can be connected to these jacks. When doing so, press in the PHONO ON switch on the top panel. In addition, connect the grounding wire from the record player to the SIGNAL GND jack.
- The mixer channel functions include a 2-band EQ, AUX 1 and 2 sends and balance.

Channels 11-12

- Connect a stereo sound source using RCA pin jack jacks (L, R).

» Channels 13-14

- Connect a stereo sound source using standard jacks (L, R). These jacks are balanced, but they can also be connected with unbalanced sound sources.
- If a mono sound source is connected to the L jack, the L input signal is sent to both channels 13 and 14.
- If the INT. EFFECT RTN switch is not pushed in, the internal effects return signal is input to channels 13-14.

CAUTION

- When connecting an external sound source to the standard jacks of channels 13-14, push the INT. EFFECT RTN switch in to set channels 15-16 as the internal effects return channels. If the INT. EFFECT RTN switch is not pushed in, the signal from the external sound source connected to the standard jacks of channels 13-14 and the internal effects return signal will interfere with each other and neither signal will be input correctly.
- The signals from channels 13-14 can also be sent to AUX 1.

» Channels 15-16

- Connect a stereo sound source to the STEREO IN jack on the top panel. This stereo mini-jack is convenient for connecting iPods and similar devices.

CAUTION

When a plug is connected to the STEREO IN jack, this external input is prioritized even if the INT. EFFECT RTN switch is pushed in, setting channels 15-16 as the internal effects return channels. As a result, the effects signal will not be returned to these channels. Therefore, when using this jack, set the internal effects return to channels 13-14.

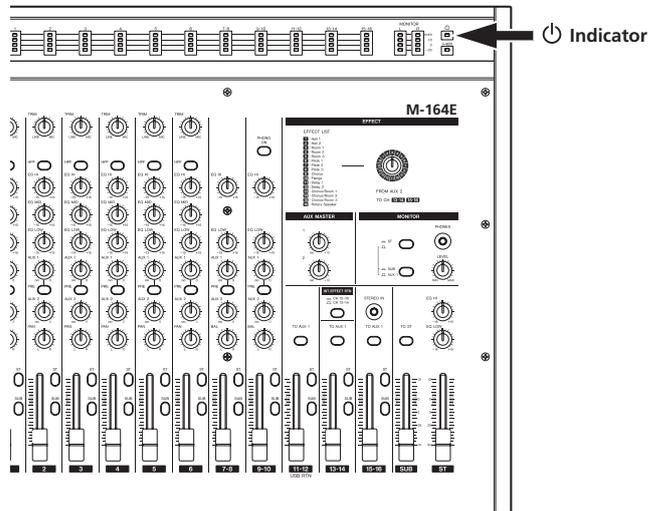
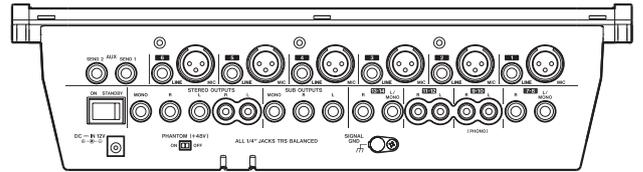
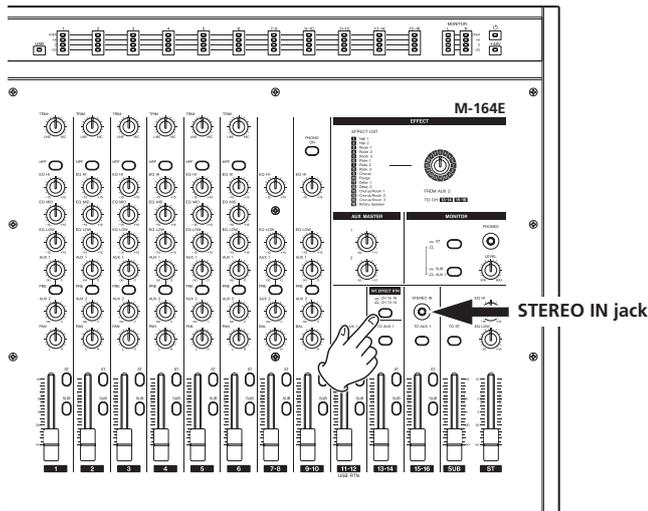
- The signals from channels 15-16 can also be sent to AUX 1.

Setting the internal effects return channels

When using the internal effects, either channels 13-14 or 15-16 can be used as the return channels. Use the INT. EFFECT RTN switch to select the return channels.

When using the channel 13-14 input jacks on the rear panel, push the INT. EFFECT RTN switch in to select channels 15-16 as the return channels. When using the channel 15-16 STEREO IN jack on the top panel, select channels 13-14 as the return channels by setting the INT. EFFECT RTN switch so that it is not pushed in.

3 – Preparation for Use



NOTE

When using channels 13-14 as the return channels, do not use the channel 13-14 input jacks on the rear panel. When using channels 15-16 as the return channels, do not use the STEREO IN jack on the top panel.

Turning the power on and putting the mixer in standby

Before turning the power on

- 1 Prepare the mixer as follows.
 - Set the EQ, PAN and BAL knobs to their center positions.
 - Turn other knobs completely to the left (minimum).
 - Lower faders completely (minimum).
 - Turn switches OFF (not pushed in).
- 2 Minimize the output levels of sound sources and the input levels of amplifying equipment connected to the mixer.

Turning on the power

- 1 Turn the mixer power ON using the ON/STANDBY switch on the rear panel of the mixer.

The indicator  on the right of the meter panel lights.

- 2 Turn the power of the connected input sound source equipment ON.
- 3 Finally turn the power of the connected amplification system ON.

Putting the mixer in standby

To put the mixer in standby, reverse the procedures above. Failure to do so might cause noise that could damage the equipment.

4 – Using the mixer

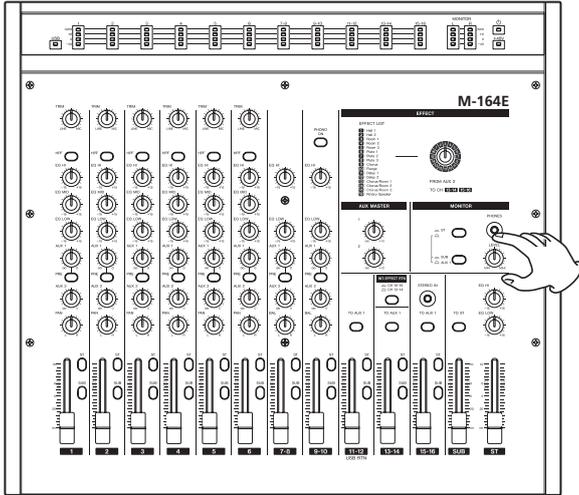
Adjusting levels

After turning on the power, adjust the level of each input signal. The following explanation assumes that the **STEREO OUTPUTS** are being used as the main outputs.

1 Prepare headphones or an amplification system to output the sound in advance.

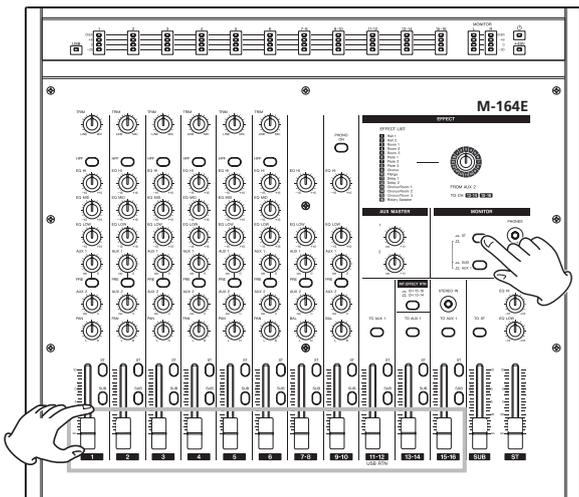
If monitoring with headphones, raise the volume with the PHONES LEVEL knob slightly.

If monitoring with an amplification system, raise the input level on the amp slightly.

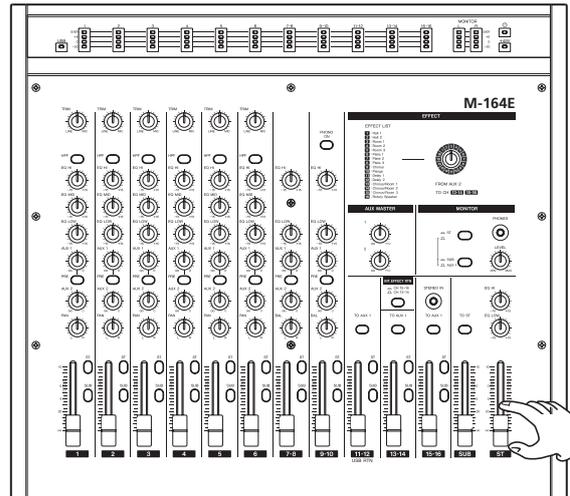


2 Turn the MONITOR section ST switch ON (push switch in).

With this set, the level of the signals output from the **STEREO OUTPUTS** jacks is shown on the **MONITOR** meters.

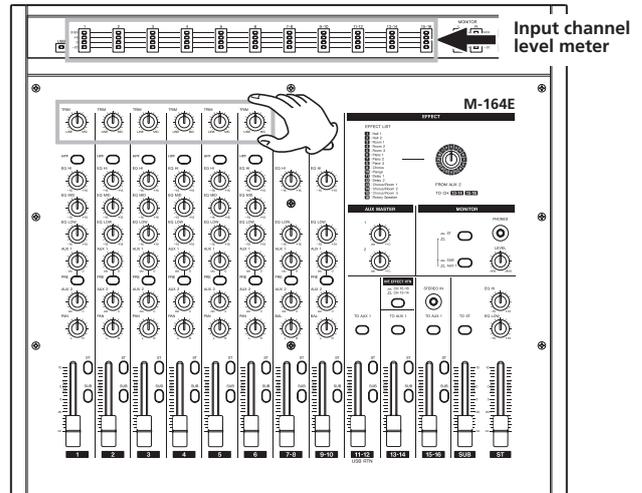


3 Raise the ST (stereo) fader to the 0 position.



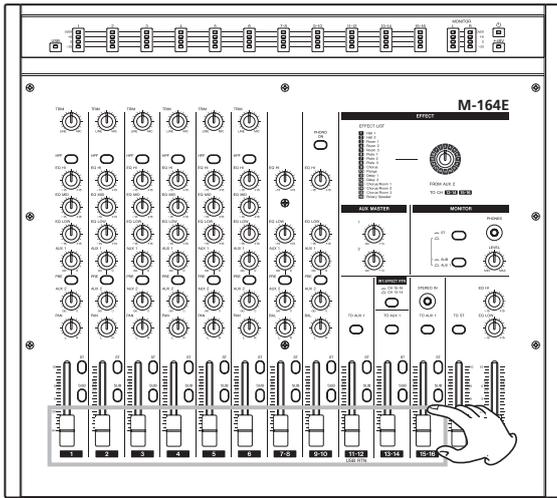
4 For the channel 1–6 inputs, adjust the TRIM knob for the channel so that the “0” indicator on the channel level meter lights when a signal is being input that is at the loudest level ordinarily expected.

For the channel 7–16 inputs, adjust the level at the sound source so that the “0” indicator on the channel level meter lights when a signal is being input that is at the loudest level ordinarily expected.



4 – Using the mixer

5 Raise the channel fader.

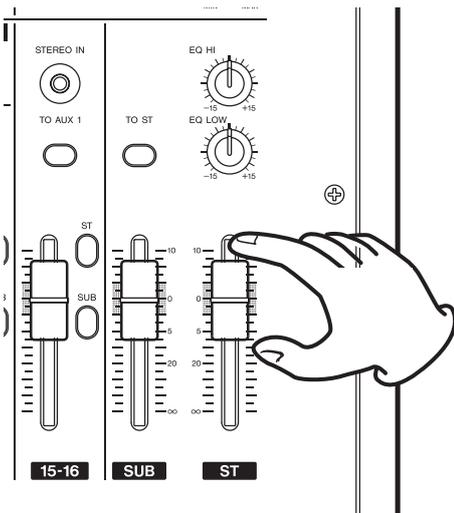


CAUTION

Even if there is no meter indication or no signal is being output despite the fact that a signal is being input, do not raise the faders carelessly. The operation of other switches or features could cause a loud signal to be output suddenly, possibly damaging speakers or other equipment. Sudden loud noises could also harm your hearing.

TIP

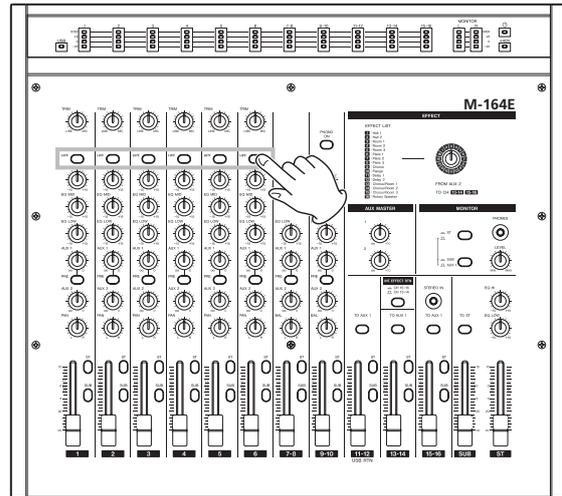
The best settings for audio quality are when the input meter "0" indicator lights, and the channel fader or ST fader is set in the range around 0 (where the fader scale on the mixer is highlighted). If the fader is set to an extremely low value, we recommend lowering the amp volume and then raising the fader. On the other hand, if the fader is too high, we recommend raising the amp volume and lowering the fader.



Using the mixer channel functions

High-pass filter (HPF)

Press the **HPF** switch to turn the high-pass filter ON and cut frequencies of 80 Hz or less by -12 dB/octave. The high-pass filter affects inputs from both **MIC** and **LINE** input jacks, but it is especially effective when using mics for reducing unwanted noise from wind and breathing.



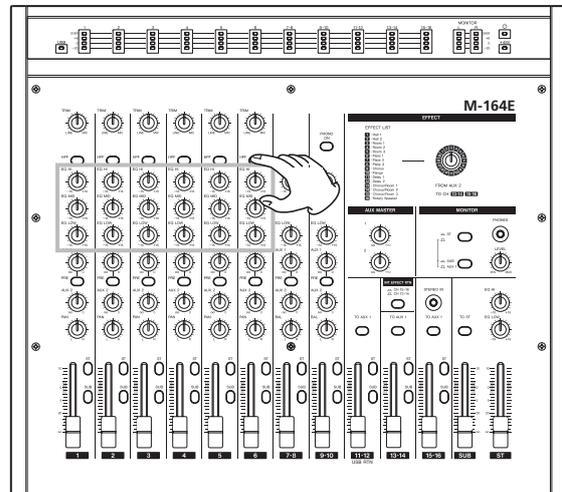
EQ

Channels 1–6 have 3-band equalization (EQ) with **HI**, **MID** and **LOW** frequency boost and cut adjustment ranges of ± 15 dB.

The **HI** band is a shelving EQ. Use the **EQ HI** knob to boost or cut the frequency band above 12 kHz.

The **MID** band is a peaking EQ with 2.5 kHz as the central frequency. Use the **EQ MID** knob to boost or cut mid frequencies.

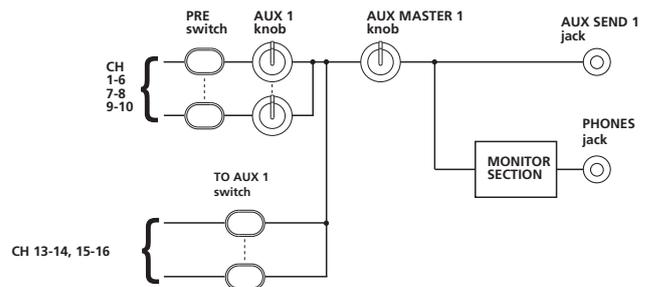
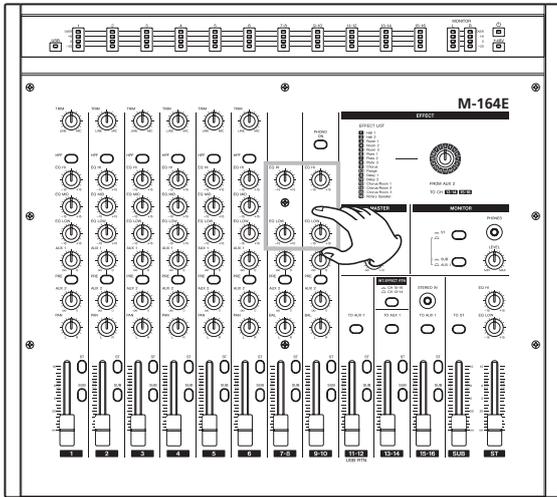
The **LOW** band is a shelving EQ. Use the **EQ LOW** knob to boost or cut the frequency band below 100 Hz.



4 – Using the mixer

Channels 7-8 and 9-10 have 2-band EQ with HI and LOW shelving frequency boost and cut adjustment ranges of ± 15 dB.

Use the **EQ HI** knob to boost or cut the frequency band above 12 kHz, and use the **EQ LOW** knob to boost or cut the frequency band below 100 Hz.



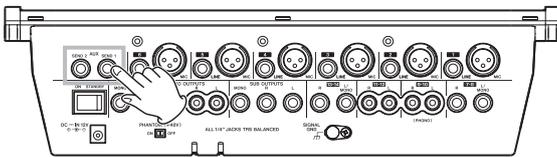
You can set whether the signal sent to the AUX 1 bus is pre-fader or post-fader. When the **PRE** switch is ON (switch pushed in), the signal is sent to the AUX 1 bus after EQ adjustment but before fader adjustment so the fader position has no effect. When the **PRE** switch is OFF (switch not pushed in), the signal is sent to the AUX 1 bus after being adjusted by the fader.

Ordinarily, if you want to use AUX 1 for stage or cue monitoring, turn the **PRE** switch ON to create a mix that is entirely independent from the main mix. To use AUX 1 as an effect send, turn the **PRE** switch OFF.

In addition, there is a **TO AUX 1** switch on channels 13-16. Turn this ON to send the post-fader signal to the AUX 1 bus. For example, input an effect return to a pair of these channels, and use this switch to set whether or not to send this to a monitoring setup on the AUX 1 bus.

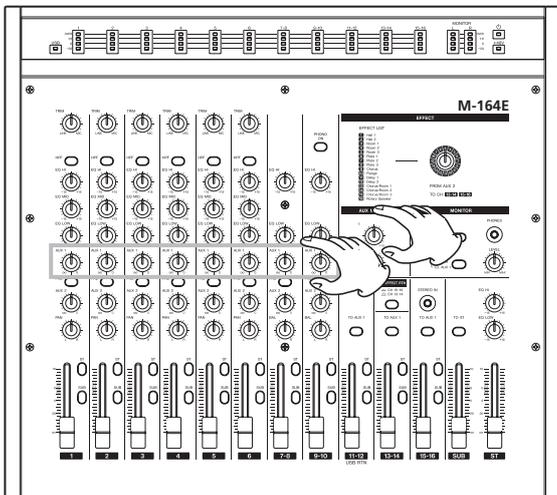
AUX sends

The mixer has 2 AUX busses (AUX 1, AUX 2).



AUX 1

Signals from channels 1–6, 7-8 and 9-10 can be sent to the AUX 1 bus by adjusting their **AUX 1** knob levels. Use the **AUX MASTER 1** knob to set the final level of the AUX 1 bus signal that is output from the **AUX SEND 1** jack on the rear panel. You can also monitor the AUX 1 signal using headphones attached to the mixer.



AUX 2

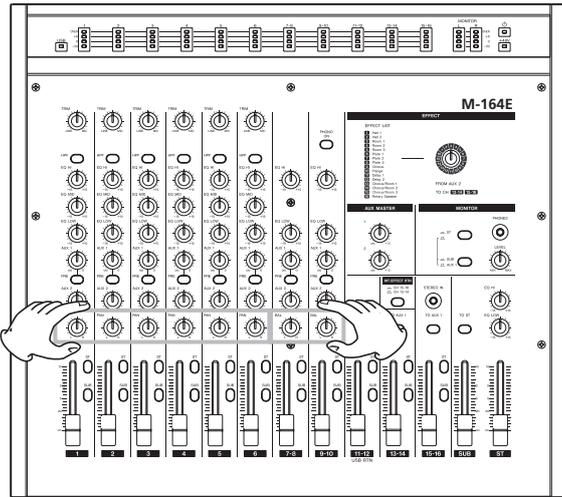
Signals from channels 1–6, 7-8 and 9-10 can be sent to the AUX 2 bus by adjusting their AUX 2 knob levels.

The signal sent to the AUX 2 bus is always post-fader, so the AUX 2 bus is usually used for an effect send. Use the **AUX MASTER 2** knob to set the final level of the AUX 2 bus signal that is output from the **AUX SEND 2** jack on the rear panel.

The AUX 2 signal is also sent to the internal effects. (See “Using internal effects” on page 22.)

4 – Using the mixer

Pan And Balance

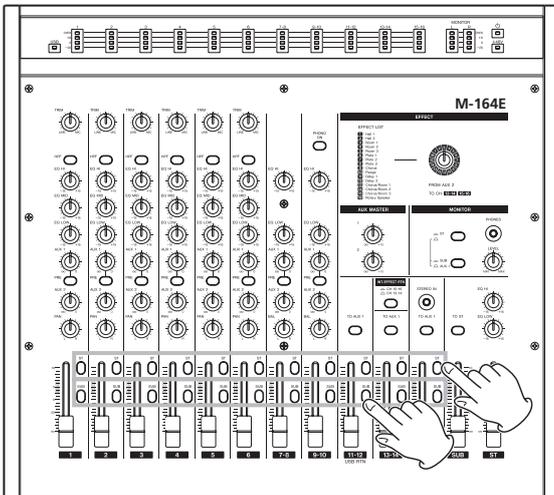


For channels 1–6, use the **PAN** knob to set the left-right stereo position of the channel signal sent to the stereo and SUB busses.

For stereo channels 7-8 and 9-10, use the **BAL** knob to set the left-right balance of the stereo channel signals sent to the stereo and SUB busses.

Stereo channels 11-12, 13-14 and 15-16 do not have left-right balance control.

Bus assignments

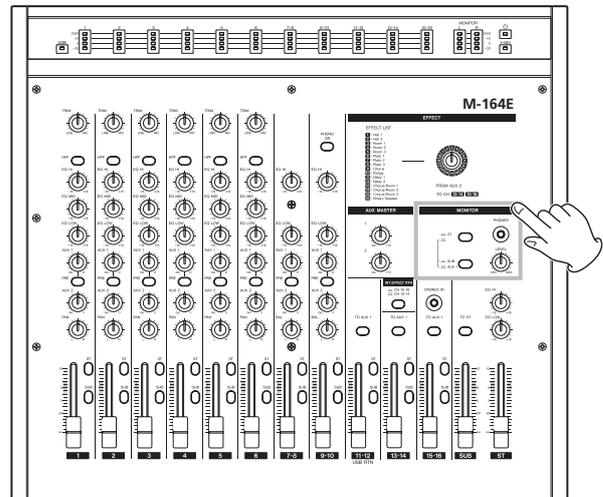


Using the **ST** and **SUB** switches, the outputs of channels 1–16 can be sent to the stereo and SUB busses.

Turn both ST and SUB switches OFF to cut (mute) the output of a channel easily.

Monitoring with headphones

You can monitor the outputs of the mixer’s stereo, SUB or AUX 1 send bus.



- 1 Connect stereo headphones to the **PHONES** jack on the top panel of the mixer.
 - 2 Raise the **PHONES** knob level slightly.
 - 3 Use the two switches in the **MONITOR** section to set whether the stereo, SUB or AUX 1 send bus is monitored.
- Push in the upper switch to monitor the stereo bus signal. (The status of the bottom switch has not effect.)
 - Without pushing in the upper switch, push in the lower switch to monitor the SUB bus.
 - Do not push in either the upper or lower switch to monitor the AUX 1 send bus.

Using AUX 1 for a monitoring mix

By using the AUX 1 bus to output a pre-fader signal mix, you can use this for stage and cue monitoring setups, as explained in “AUX sends” in “Using the mixer channel functions.”

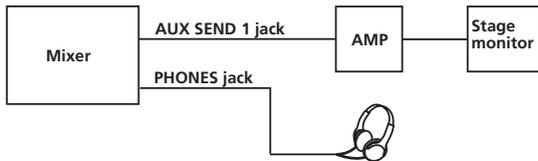
Pre-fader signal levels can be sent to the AUX 1 bus for channels 1–6, 7-8 and 9-10.

NOTE

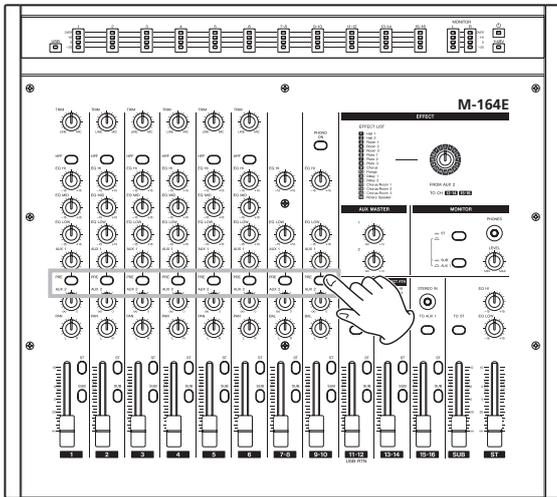
The TO AUX 1 switches on channels 13-16 can be used to send post-fader signals to the AUX 1 bus. Pre-fader signals cannot be sent from these channels.

Connect an amplification or speaker system to the **AUX SEND 1** jack or connect headphones to the mixer in advance, to allow monitoring of AUX 1. (See “Monitoring with headphones” on the top of the page.)

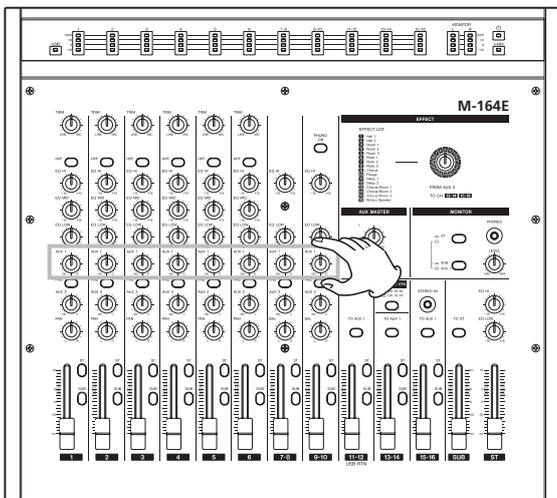
4 – Using the mixer



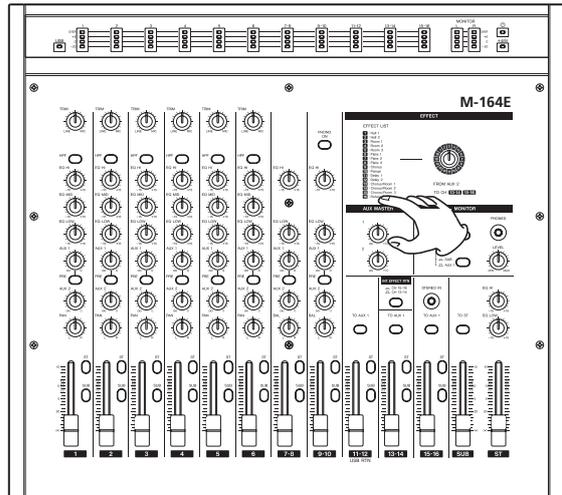
- 1 Turn ON (push in) the PRE switch under the AUX 1 knob of each channel that you want to monitor.



- 2 Use each channel's AUX 1 knob to adjust the signal level sent for monitoring.



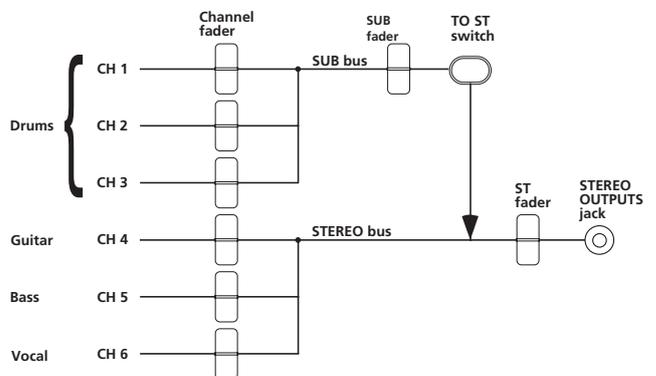
- 3 Use the AUX MASTER 1 knob to adjust the overall level sent to the AUX 1 send bus.



Using sub-group functions

By using the SUB bus as a sub-group, you can make adjusting the stereo mix balance more efficient.

For example, in a live application when connecting drum mics to channels 1–3, and inputting guitar, bass, and vocal on channels 4–6, turn the ST assign switches OFF and the SUB assign switches ON for channels 1–3. Turn the ST assign switches ON and the SUB assign switches OFF for channels 4–6. Then turn the TO ST switch above the SUB fader ON.



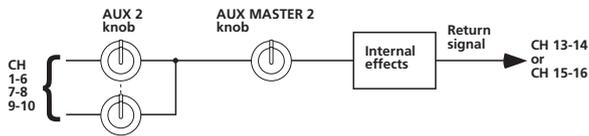
With this setting, the guitar, bass and vocal signals are sent directly to the stereo bus, but the drums signals pass through the SUB bus before being sent to the stereo bus. By doing this, after adjusting the balance of the three drum mics, you can use the SUB fader to adjust the overall level of the drums when balancing with the other sound sources.

4 – Using the mixer

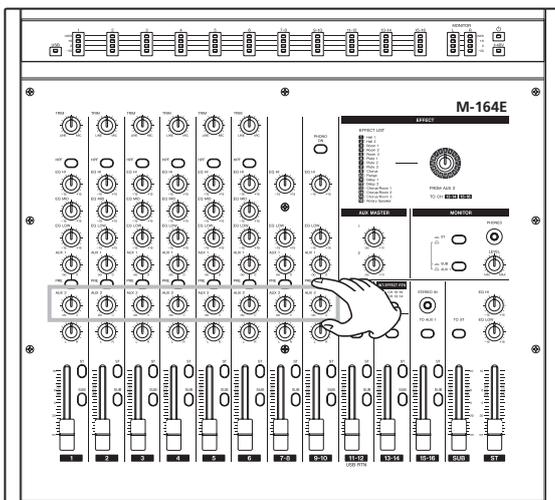
Using the internal effects

M-164E units have an internal effects capability that allows the use of an effect without connecting an external effect unit.

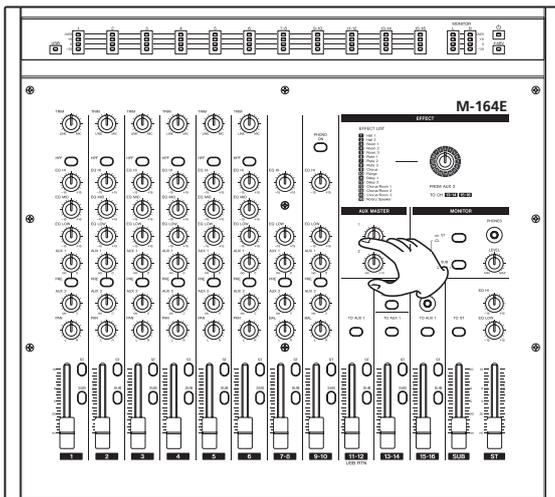
These internal effects can be applied by sending signals from channels 1–6, 7-8 and 9-10 to the AUX 2 bus. The return signal can be sent to channels 13-14 or 15-16.



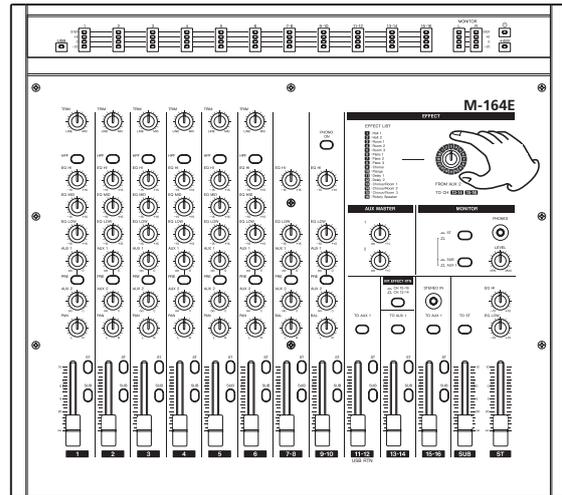
- 1 Use the AUX 2 knob of each channel to adjust the level of the channel signal sent to the effects.



- 2 Use the AUX MASTER 2 knob to adjust the overall level of the signal sent to the effects.



- 3 Use the EFFECT section rotary knob to select the effect type. The effect types are explained in the list below by their corresponding numbers.

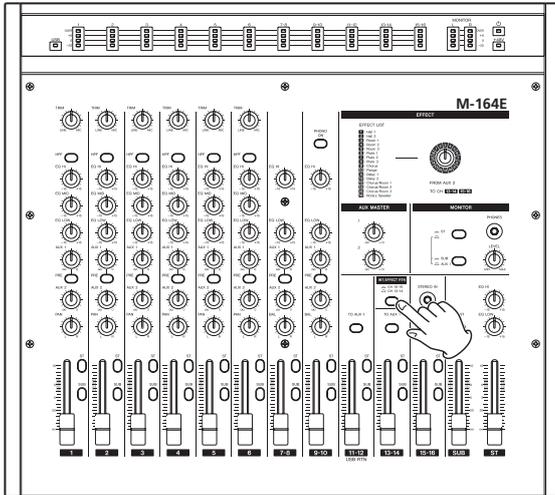


No.	Effect name	Description
1	Hall 1	Bright hall reverb suitable for drums, guitars and vocals
2	Hall 2	Warm hall reverb suitable for acoustic guitars, pianos and vocals
3	Room 1	Simulation of a room with hardwood walls and floor suitable for acoustic instruments
4	Room 2	Ambience suitable for acoustic mixes and synth sounds
5	Room 3	Warm room sound suitable for guitars and rhythm instruments
6	Plate 1	Classic plate reverb suitable for lead vocals and lead instruments
7	Plate 2	Bright and showy plate reverb suitable for vocals and drums
8	Plate 3	Short vintage plate reverb suitable for snare drums and guitars
9	Chorus	Stereo chorus suitable for guitars and pianos
10	Flange	Stereo flanger creates a jet-like sound
11	Delay 1	125-ms slapback delay suitable for vocals and guitars
12	Delay 2	190-ms delay suitable for percussive arpeggios
13	Chorus/Room 1	Chorus/reverb suitable for guitars, synths and pianos
14	Chorus/Room 2	Autowah guitar effect with reverb suitable for lead instruments
15	Chorus/Room 3	Vintage style of chorus/reverb suitable for guitars, synths and pianos
16	Rotary Speaker	Emulation of a rotary speaker suitable for organs and guitars

4 – Using the mixer

4 Select the input channel for the return signal.

Push the INT. EFFECT RTN switch in to send the return signal to channels 15-16. Leave the switch out (do not press it in) to send the return signal to channels 13-14.



CAUTION

Do not connect anything to the STEREO IN jack when using channels 15-16 for the return signal. Doing so cuts (mutes) the return signal.

TIP

When connecting an iPod or other device to the STEREO IN jack on channels 15-16, set the INT. EFFECT RTN switch to channels 13-14 to send the return signal to these channels.

5 Turn the ST switch ON for the input channel receiving the return signal, and use its fader to adjust return levels.

NOTE

When using AUX 1 for stage or cue monitoring, if you want to monitor the sound with the effect applied, turn the TO AUX 1 switch ON for the input channel receiving the return signal.

Using external effects

External effects can also be used with this mixer.

Channels 1–6, 7-8 and 9-10 can have an external effect applied by sending their signals to the external effect through the AUX 1 or AUX 2 bus. The return signal can be input into any other channels as desired.

In the following explanation, the signals are sent through the AUX 2 bus to an external effect, and the return signals are received by channels 13-14.

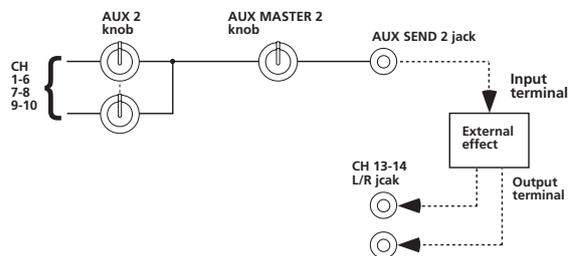
NOTE

- When sending signals to an external effect through AUX 1, turn the PRE switch OFF to send the post fader signal.
- When receiving external effect signals back through channels 13-14, do not set the internal effect return to channels 13-14 (by setting the INT. EFFECT RTN switch to CH 13-14).

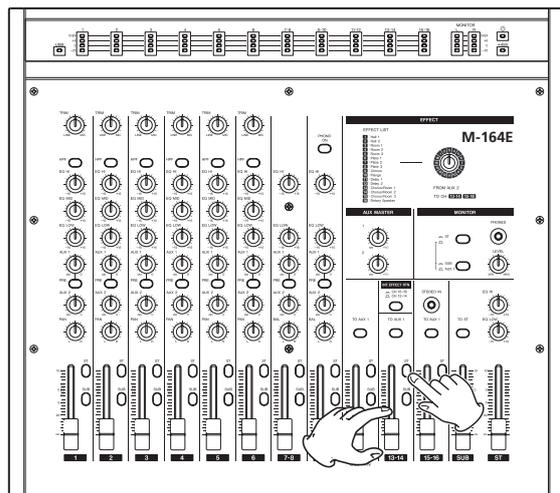
TIP

- If the AUX 2 bus is used to send signals to an external effect, the AUX 1 bus can still be used for monitoring.
- By sending AUX 1 to an external effect and AUX 2 to the internal effect, two types of effects can be used.

First, connect the input jack of the external effect to the AUX SEND 2 jack first, and connect the external effect output jacks to the L/R input jacks of mixer channels 13-14.



- 1 Use the AUX 2 knob of each channel to adjust the level of the channel signal sent to the effect.
- 2 Use the AUX MASTER 2 knob to adjust the overall level of the signal sent to the effect.
- 3 Set the effect as desired.
- 4 Turn the ST switch for channels 13-14 ON, and use its fader to adjust the return level.



TIP

When using the AUX 1 bus for monitoring, turn the TO AUX 1 switch for channels 13-14 ON to also monitor the effect return signal.

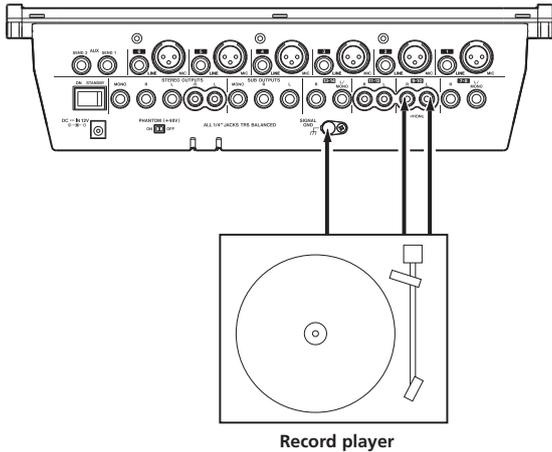
4 – Using the mixer

Using a record player

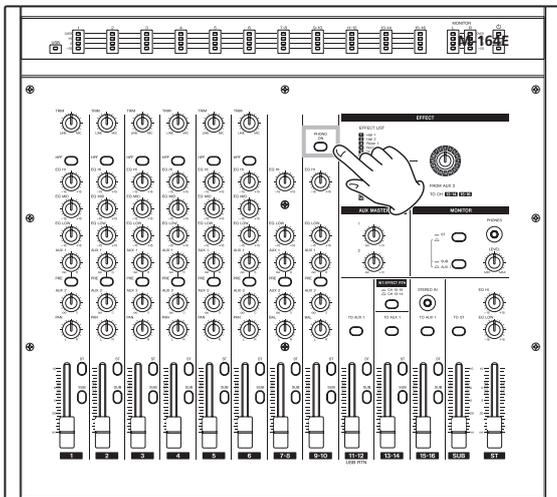
An analog record player can be directly connected to mixer channels 9-10.

Make the following connections and settings to use an analog record player with this mixer.

- Connect the record player audio output to the channel 9-10 input jacks on the rear panel of the mixer.
- Connect the record player grounding wire to the **SIGNAL GND** jack on the rear panel of the mixer.



- Turn the **PHONO ON** switch on the top panel ON (push switch in).

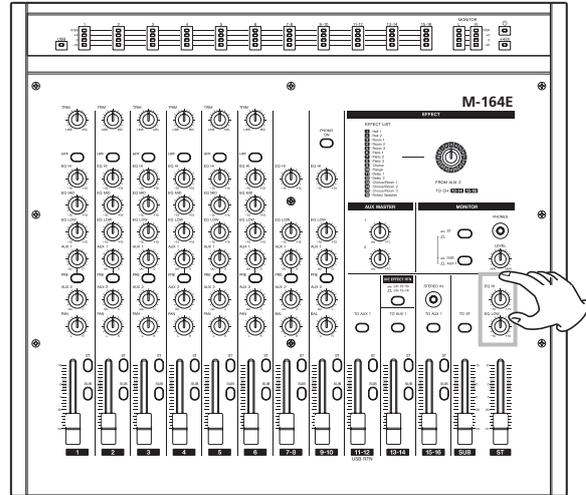


NOTE

The output signals of analog record players are different from ordinary line output signals. If the connections and settings described above are not made, the playback sound will not be correct.

Making final adjustments to the main output sound

The stereo bus has a 2-band EQ with HI and LOW shelving that can be used to adjust the sound of the mix overall.



The **EQ HI** and **EQ LOW** knobs can boost and cut the high and low frequency ranges by ± 15 dB.

Use the **EQ HI** knob to boost or cut the frequency band above 12 kHz, and use the **EQ LOW** knob to boost or cut the frequency band below 100 Hz.

5 – Troubleshooting

Related to mixer settings

Q: There is no sound from the speakers connected to the STEREO OUTPUTS jacks.

A:

Turn the **MONITOR ST** switch ON and check the **MONITOR** meters.

If the meter indicators are changing:

- Check the settings and volume of the connected amplification system.

If the meter indicators are not changing:

- Are the channel **ST** assign switches ON (pushed in)?
- Are the channel and **ST** faders raised?
- Is the input sound source properly connected to the mixer?

Q: The sound is quiet even if the faders are raised.

A:

- If mics are being input to channels 1–6, are their **TRIM** knobs turned up?
- Are external sound sources connected to both the **MIC** and **LINE** input jacks of any of these channels (1–6)?
- If a condenser mic is connected, is phantom power ON?

Q: The sound is distorted.

A:

If the channel meters are peaking:

- Are the channel 1–6 **TRIM** knobs set suitably?
- Are the output levels of external sound sources connected to channels 7–16 too high?

If the channel meters display normal levels:

- Are the EQ settings too high?
- Are the channel or **ST** faders raised too high?

Q: The record player sounds strange.

A:

- Is it connected to channels 9-10, and is the **PHONO ON** switch ON?
- Is the record player grounding wire connected to the **SIGNAL GND** jack on the mixer?

Q: There is a humming noise coming from external equipment.

A:

- Try using grounding wire to connect a metal part of the external equipment chassis with the **SIGNAL GND** jack on the mixer.

Q: The internal effect does not work:

- Have you increased the level of the **AUX 2** knob for any channels with inputs to send their signals to the internal effect and increased the level of the **AUX MASTER 2** knob?
- Have you raised the fader of the return channels selected by the **INT. EFFECT RTN** switch?
- If the return channels are set to 15-16, is something plugged into the **STEREO IN** jack, causing the effect return to be bypassed?

Q: There is no sound from the monitoring system connected to the AUX SEND 1 jack.

If you can monitor the AUX 1 bus by headphones:

- Check the settings of the external monitoring system.

If you cannot monitor the AUX 1 bus by headphones:

- Have you increased the level of the **AUX 1** knob for any channels with inputs and increased the level of the **AUX MASTER 1** knob?
- Are the **PRE** switches for the channels that you want to monitor ON? (If the **PRE** switches are OFF and the channel faders are lowered, those channels cannot be monitored.)

6 – Specifications and Block Diagrams

Ratings

Internal operation level: –2 dBu

Inputs

MIC input jacks (channels 1–6)

Connectors: XLR-3-31

Circuit type: electronically balanced (#1: ground, #2: hot, #3: cold)

Input impedance: 2.4 k Ω

Nominal input level (TRIM knob at maximum): –58 dBu

Nominal input level (TRIM knob at minimum): –12 dBu

Maximum input level: +10 dBu (TRIM knob at minimum)

LINE input jacks (channels 1–6)

Connectors: 3-pole standard jacks

Circuit type: electronically balanced (tip: hot, ring: cold, sleeve: ground)

Input impedance: 22 k Ω

Nominal input level (TRIM knob at maximum): –38 dBu

Nominal input level (TRIM knob at minimum): +8 dBu

Maximum input level: +30 dBu (TRIM knob at minimum)

7-8, 13-14 input jacks

Connectors: 3-pole standard jacks

Circuit type: electronically balanced (tip: hot, ring: cold, sleeve: ground)

Input impedance: 10 k Ω

Nominal input level: +4 dBu

Maximum input level: +22 dBu

9-10 input jacks

Connectors: RCA pin jacks

Circuit type: unbalanced

Input impedance: 47 k Ω (47 k Ω with PHONO ON)

Nominal input level: –10 dBV (–54 dBV with PHONO ON)

Maximum input level: +11 dBV

11-12 input jacks

Connectors: RCA pin jacks

Circuit type: unbalanced

Input impedance: 10 k Ω

Nominal input level: –10 dBV

Maximum input level: +11 dBV

15-16 input jacks

Connectors: 3-pole mini-jack (tip: L, ring: R, sleeve: ground)

Circuit type: unbalanced

Input impedance: 10 k Ω

Nominal input level: –10 dBV

Maximum input level: +11 dBV

Outputs

STEREO OUTPUTS (L, R) balanced jacks

Connectors: 3-pole standard jacks

Circuit type: electronically balanced (tip: hot, ring: cold, sleeve: ground)

Output impedance: 100 Ω

Nominal output level: +4 dBu

Maximum output level: +24 dBu

STEREO OUTPUTS (MONO) jacks

Connectors: 3-pole standard jacks

Circuit type: Pseudo balanced (tip: hot, ring: cold, sleeve: ground)

Output impedance: 100 Ω

Nominal output level: –2 dBu

Maximum output level: +20 dBu

STEREO OUTPUTS (L, R) unbalanced jacks

Connectors: RCA pin jacks

Circuit type: unbalanced

Output impedance: 100 Ω

Nominal output level: –10 dBV

Maximum output level: +6 dBV

SUB OUTPUTS (L, R) jacks

Connectors: 3-pole standard jacks

Circuit type: Pseudo balanced (tip: hot, ring: cold, sleeve: ground)

Output impedance: 150 Ω

Nominal output level: +4 dBu

Maximum output level: +20 dBu

SUB OUTPUTS (MONO) jacks

Connectors: 3-pole standard jacks

Circuit type: Pseudo balanced (tip: hot, ring: cold, sleeve: ground)

Output impedance: 150 Ω

Nominal output level: –2 dBu

Maximum output level: +20 dBu

AUX SEND (1, 2) jacks

Connectors: 3-pole standard jacks

Circuit type: Pseudo balanced (tip: hot, ring: cold, sleeve: ground)

Output impedance: 150 Ω

Nominal output level: +4 dBu

Maximum output level: +20 dBu

PHONES jack

Connector: 3-pole standard jack (tip: L, ring: R, sleeve: ground)

Maximum output: 45 mW + 45 mW (1% THD, for 32 Ω load)

6 – Specifications and Block Diagrams

Performance

(Measured at a -2 dBu operating level)

Frequency response (MIC inputs all outputs)

20 Hz – 20 kHz, +1/-3 dB (TRIM at maximum, for 150Ω load)

Distortion (MIC inputs STEREO OUTPUTS)

0.01% or less (20 Hz – 20 kHz, TRIM at minimum)

Hum & noise (MIC inputs STEREO OUTPUTS)

With 1 mic input: -60 dBu or less (TRIM at maximum)
 With 6 mics input: -52 dBu or less (TRIM at maximum)

Crosstalk

-80 dB (1 kHz)

Other

Power:

AC adaptor (AD-1225L-AE included in delivery)
 AC adaptor input: AC 100–240 V, 50–60 Hz
 AC adaptor output voltage: 12V DC
 AC adaptor output electric current: 2.5 A

Power consumption:

25 W

Dimensions:

390 (width) x 112 (height) x 344.5 (depth) mm

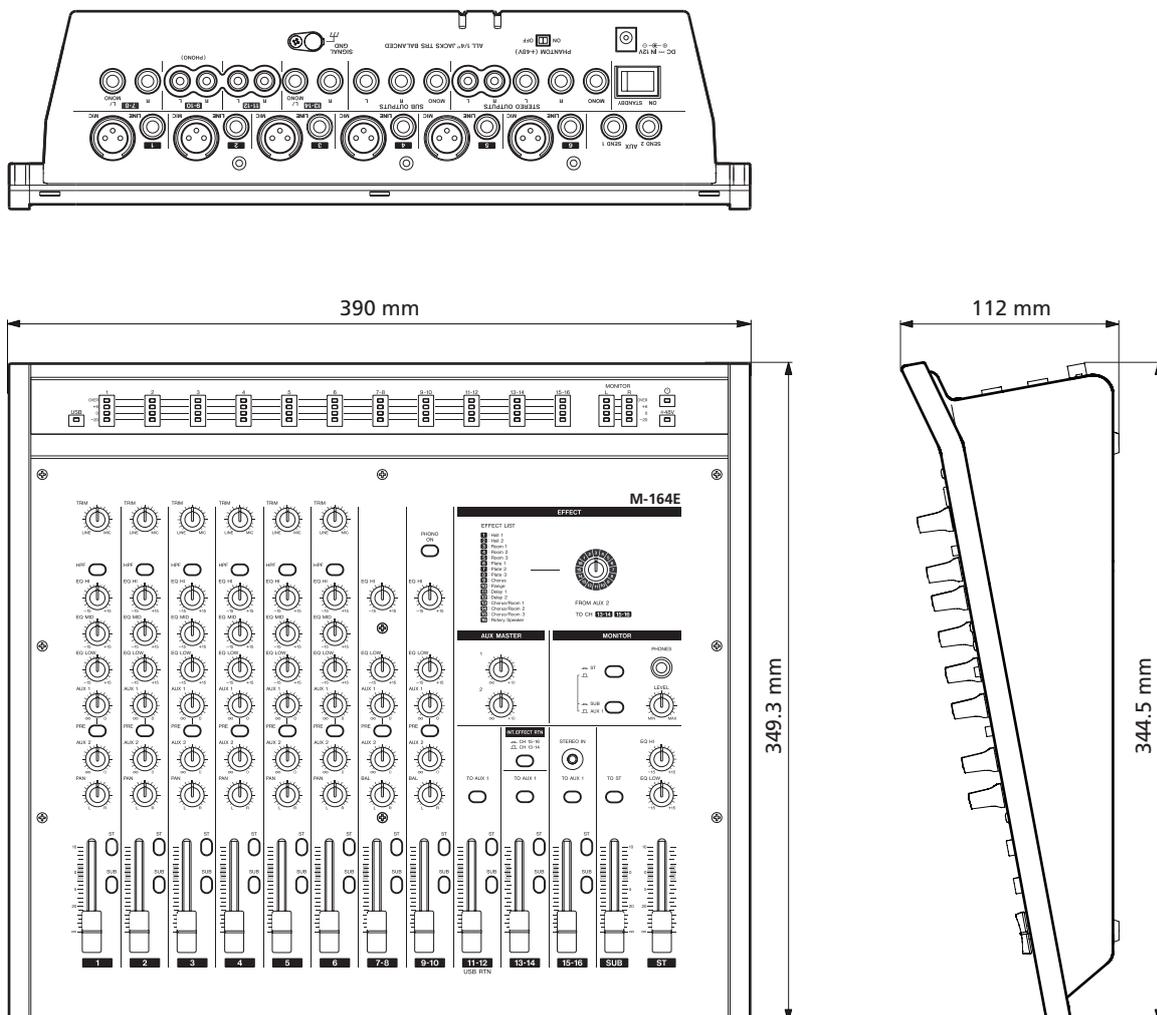
Weight:

3.4 kg

NOTE

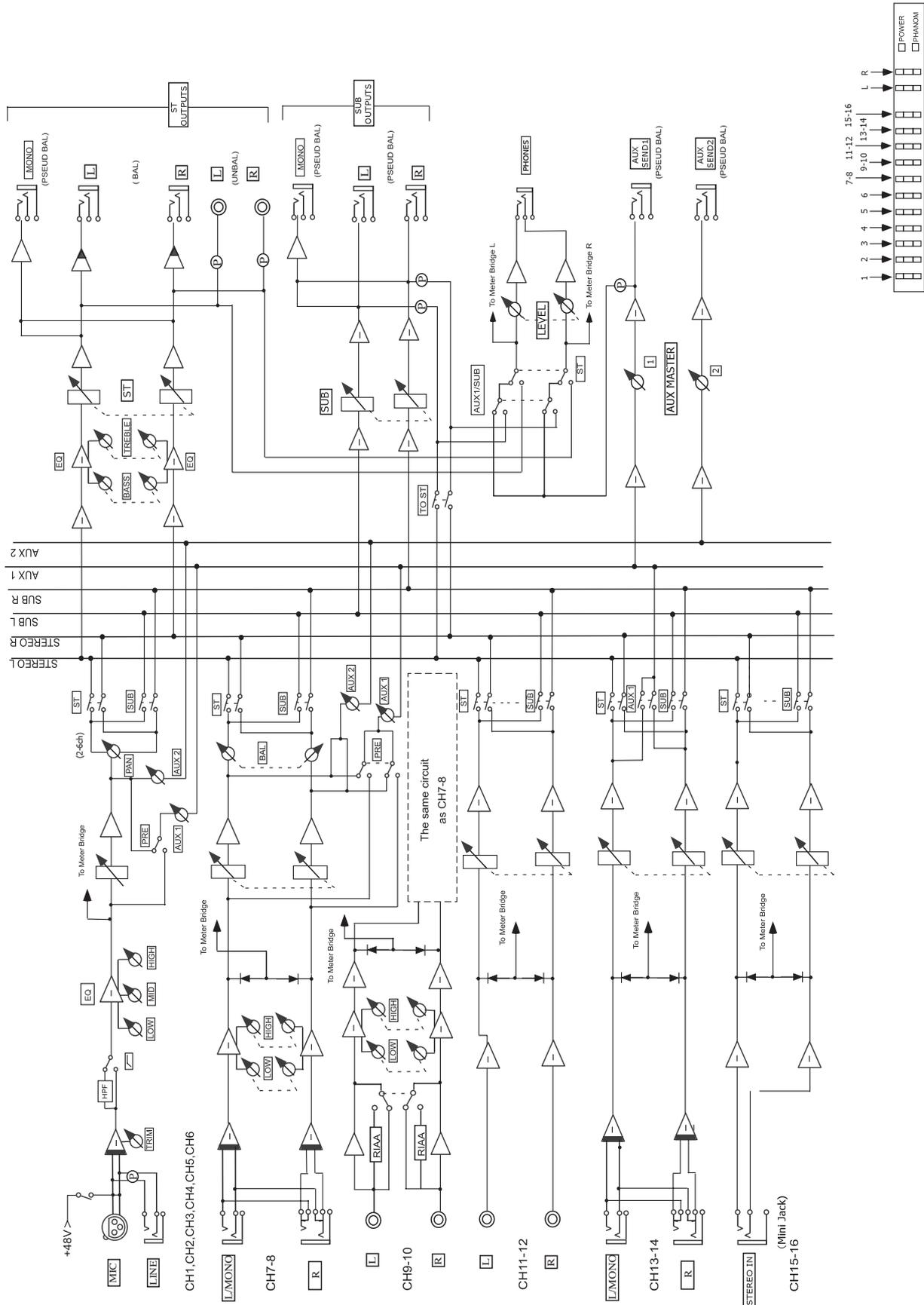
- Illustrations in this Owner's Manual might differ from the appearance of the actual product.
- In order to improve a product, its specifications and/or appearance might be changed without notice.

Dimensional drawing



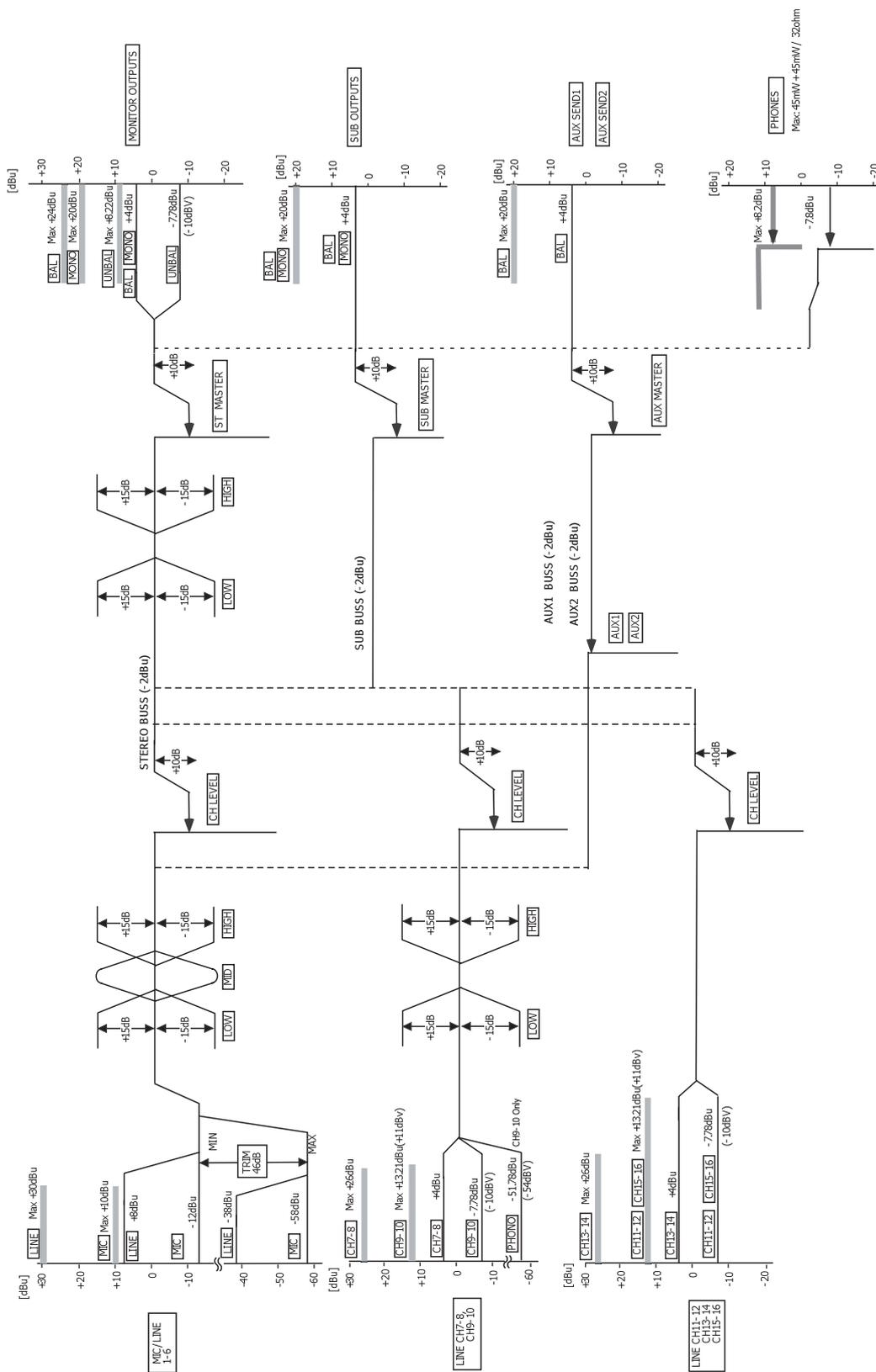
6 – Specifications and Block Diagrams

Block diagram



6 – Specifications and Block Diagrams

Level diagram



Traceability Information for Europe (EMC directive 2004/108/EC)

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