



MIXING CONSOLE

GF24/12

GF16/12

GF12/12

Owner's Manual

Keep This Manual For Future Reference.



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 $\frac{\text{E}}{\text{—}}$ 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.

Precautions

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

- This unit has ventilation holes at the top and right side to prevent the internal temperature rising too high. Do not block them. Blocked ventilation holes are 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

- 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 (-).
- Insert TRS phone jacks are wired as follows:
sleeve: ground, tip: send, and ring: return.
- 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 GF24/12, GF16/12, or GF12/12 mixing console. These mixers provide an ample twelve outputs, and are suitable for a wide variety of applications ranging from concert sound reinforcement to installed systems. In order to take full advantage of the mixer's functionality and to enjoy years of trouble-free performance, please read this manual carefully.

Note:

- This owner's manual assumes that you are familiar with basic operation of a mixing console and its specialized vocabulary.
- At points where the specifications of the GF24/12, GF16/12, and GF12/12 differ, the specifications of the GF16/12 and GF12/12 are given in curly brackets { }.

Features of the system

- In addition to the main stereo outputs, this mixer provides six AUX outputs plus four group outputs (a total of 12 outputs). The AUX/GROUP outputs can be used not only as sends to external effect processors or to a multitrack recorder, but are also ideal for creating separate foldback mixes for each speaker and amp.
- The MONO OUT jack can be controlled independently from the STEREO OUT jacks. Since a monoaural mix of the main output is sent from this output, it can be used to extend a PA system.
- All input channels provide a high-pass filter, a three-band EQ, and 60 mm faders.
- All input channels/AUX returns provide a PFL switch, and AUX/group/stereo output channels provide an AFL switch. You can audition input and output sources at the touch of a button.
- All mono input channels provide balanced XLR type and TRS phone jack connectors that accommodate a range of sources from mics to line level devices.
- Switchable phantom power is provided. This can supply DC +48 V power from the XLR type input connectors to condenser mics and direct boxes that require an external power supply.
- Two stereo input channels allow connection of line-level equipment. 1/4" phone jack and phono jack inputs can be selected by a switch.
- Two stereo AUX returns are provided. This allows AUX return signals to be sent to an AUX bus or GROUP bus as well as to the ST bus. These can also be used as spare line level input jacks.
- An insert I/O jack is provided on each mono input channel and on the ST bus, allowing you to insert external effect processors as desired.
- The TAPE IN jacks and REC OUT jacks let you easily connect a master recorder for recording or playback.

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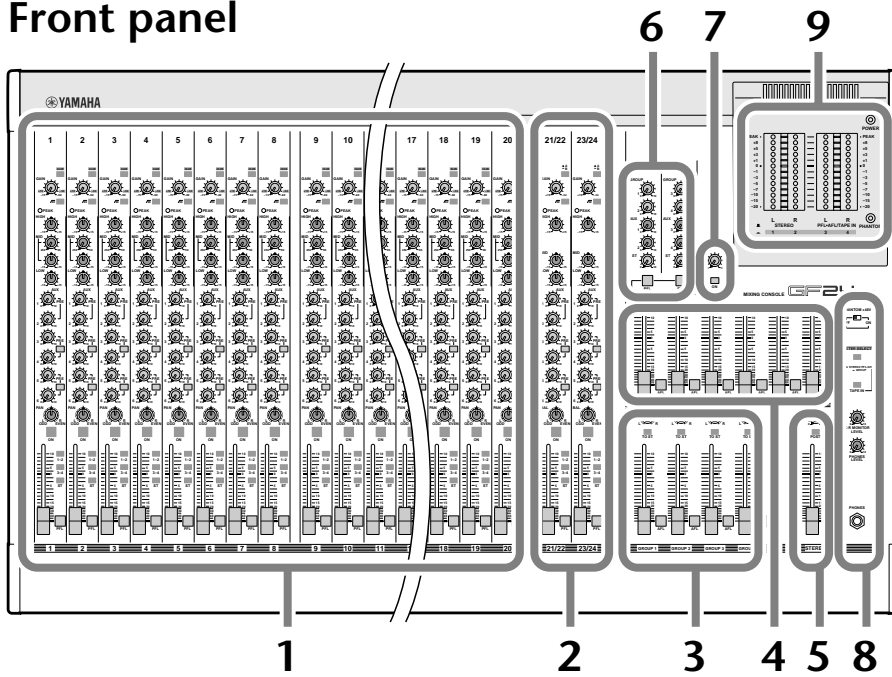
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Front and rear panel

This section explains the names and functions of each section of the GF24/12, GF16/12, and GF12/12.

The functionality of these mixers is grouped into ten sections. These are the two channel control sections, seven master control sections, and the rear panel connectors. Their functions will be explained sequentially.

Front panel



Channel controls

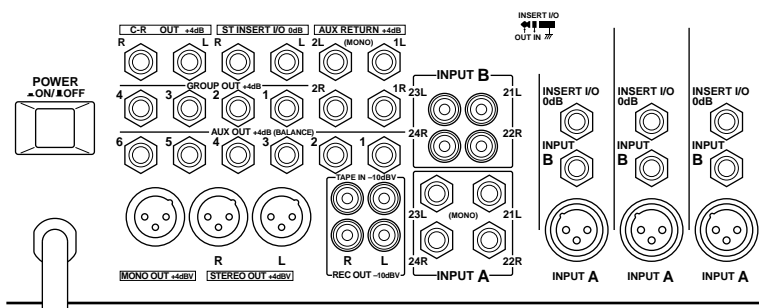
- 1. Mono input channels (page 6)
- 2. Stereo input channels (page 8)

Master controls

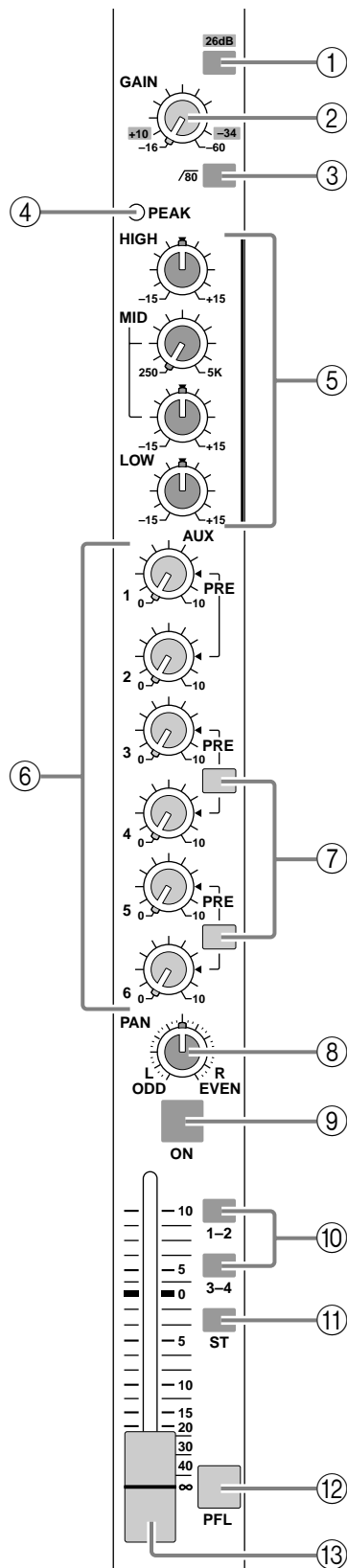
- 3. GROUP section (page 10)
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Rear panel

Connectors (page 17)



Channel controls



■ Mono input channels

Here are the 20 {12, 8} mono input channels of the GF24/12 {GF16/12, GF12/12}. The input channel section processes the signal from the input jacks of the connector section, and sends the result to the GROUP buses, AUX buses, and the ST bus.

① Pad switch

This attenuates the input signal by 26 dB. The pad is on when this switch is pressed in.

② GAIN control

This adjusts the input sensitivity. The range of levels that can be accommodated is -16 dB to -60 dB when the pad switch (①) is off, and +10 dB to -34 dB when the pad switch is on.

③ High pass filter switch

This is an on/off switch for the high pass filter that cuts the frequency range below 80 Hz at a slope of 12 dB/octave. The high pass filter is on when the switch is pressed in.

④ PEAK indicator

This is an indicator that detects post-EQ clipping. It will light 3 dB before clipping, indicating that the signal is near the clipping level. If this LED lights, lower the GAIN control (②).

⑤ EQ controls (HIGH/MID/LOW)

This is a three-band equalizer that boosts/cuts each frequency band over a ± 15 dB range. The center frequency and equalizer type for each band is shown below.

Band	Center frequency	Type
HIGH	10 kHz	shelving
MID	250 Hz–5 kHz	peaking
LOW	100 Hz	shelving

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

⑥ AUX controls (1–6)

These knobs adjust the level at which the input channel signal is sent to the AUX buses 1–6. AUX controls 1 and 2 are fixed at pre-fader, and AUX controls 3–6 can be switched between pre/post fader using the PRE switch (⑦). When a knob is in the “◀” position, the level is “nominal”.

⑦ PRE switches

These switches select whether the pre or post-fader signal will be sent to AUX buses 3–6. This setting is switched in pairs: AUX 3/4 and 5/6. When the switch is pressed in, the pre-fader signal will be sent to the corresponding pair of AUX buses. When the switch is in the out (up) position, the post-fader signal will be sent.

⑧ PAN control

This adjusts the left/right position at which the input channel signal will be sent to the ST (stereo) bus, GROUP bus 1/2, and GROUP bus 3/4.

⑨ ON switch

This switches the input channel on/off. When this switch is turned off, the signal of the input channel will not be sent to the ST bus, GROUP buses, or AUX buses. However even if this switch is off, you can use the PFL switch (⑫) to monitor the signal from the C-R OUT jacks or the PHONES jack.

⑩ Group select switches

These switches send the signal of the input channel to GROUP buses 1–4. When the 1–2 switch is on (pressed in) the signal will be sent to GROUP bus 1/2. When the 3–4 switch is on, the signal will be sent to GROUP bus 3/4.

⑪ ST (stereo) switch

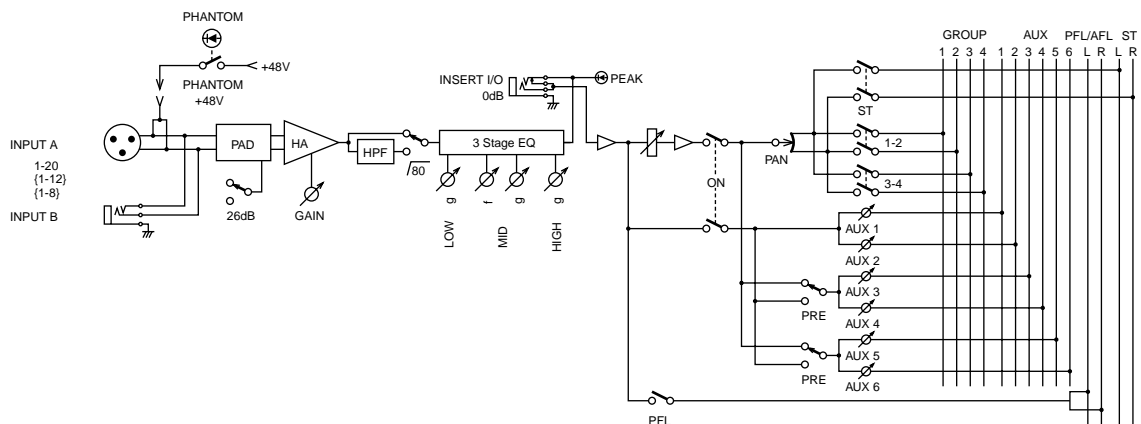
This switch sends the signal of the input channel to the ST bus. When this switch is on, the signal will be sent to the ST bus.

⑫ PFL (pre-fader listen) switch

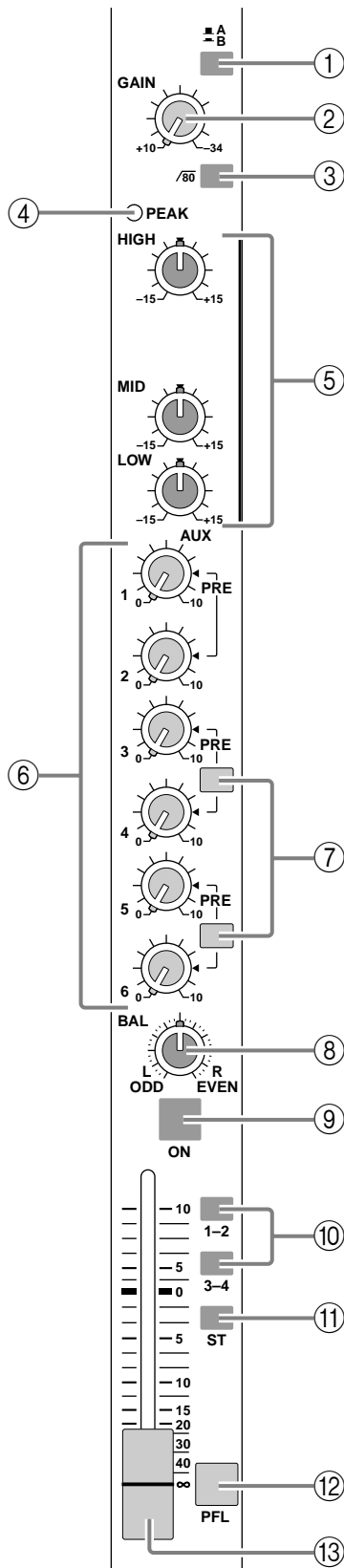
This switch sends the pre-fader signal to the PFL/AFL bus, allowing you to monitor it through headphones or monitor speakers. When this switch is on, the pre-fader signal of the input channel can be heard from the C-R OUT jacks and the PHONES jack, even if the ON switch (⑨) is off.

⑬ Channel fader

This fader adjusts the input level of the input channel. The position of the channel fader will affect the level of the signal that is output from the ST bus, GROUP buses 1–4, and AUX buses 1–6 (except when the PRE switch is on for AUX buses 3–6).



Mono input channel signal flow



■ Stereo input channels

Here are the two stereo input channels provided by the GF24/12, GF16/12, and GF12/12. The INPUT 21/22 and 23/24 {13/14 and 15/16 on the GF16, and 9/10 and 11/12 on the GF12/12} jacks (⑥ and ⑩ of the connector section) are pairs of connectors that let you control a stereo signal using one input channel. If a cable is connected only to the INPUT A 21L or 23L jack {13L or 15L on the GF16/12, or 9L or 11L on the GF12/12}, the source will be controlled as a monaural signal.

① A/B switch

This switch selects input jacks. When the switch is in the upward position (▲) the input signal of the INPUT A jack is selected (page 18, ⑥ of the connector section). When the switch is in the downward section (▼), the input signal of the INPUT B jack is selected (⑩ of the connector section).

② GAIN control

This adjusts the input sensitivity. The range of levels that can be accommodated is +10 dB to -34 dB.

③ High pass filter switch

This is an on/off switch for the high pass filter that cuts the frequency range below 80 Hz at a slope of 12 dB/octave. The high pass filter is on when the switch is pressed in.

④ PEAK indicator

This is an indicator that detects post-EQ clipping. It will light 3 dB before clipping, indicating that the signal is near the clipping level. If this LED lights, lower the GAIN control (②).

⑤ EQ controls (HIGH/MID/LOW)

This is a three-band equalizer that boosts/cuts each frequency band over a ± 15 dB range. The center frequency and equalizer type for each band is shown below.

Band	Center frequency	Type
HIGH	10 kHz	shelving
MID	250 Hz	peaking
LOW	100 Hz	shelving

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

⑥ AUX controls (1–6)

These knobs adjust the level at which the input channel signal is sent to the AUX buses 1–6. AUX controls 1 and 2 are fixed at pre-fader, and AUX controls 3–6 can be switched between pre/post fader using the PRE switch (⑦). When a knob is in the “◀” position, the level is “nominal.”

⑦ PRE switches

These switches select whether the pre or post - fader signal will be sent to AUX buses 3–6. This setting is switched in pairs: AUX 3/4 and 5/6. When the switch is pressed in, the pre-fader signal will be sent to the corresponding pair of AUX buses. When the switch is in the upward position, the post-fader signal will be sent.

⑧ BAL (balance) control

This adjusts the left/right balance at which the signal of the stereo input channel will be sent to the ST (stereo) bus, GROUP bus 1/2, and GROUP bus 3/4.

⑨ ON switch

This switches the input channel on/off. When this switch is turned off, the signal of the input channel will not be sent to the ST bus, GROUP buses, or AUX buses. However even if this switch is off, you can use the PFL switch (⑫) to monitor the signal from the C-R OUT jacks or the PHONES jack.

⑩ Group select switches

These switches send the signal of the input channel to GROUP buses 1–4. When the 1–2 switch is on (pressed in) the signal will be sent to GROUP bus 1/2. When the 3–4 switch is on, the signal will be sent to GROUP bus 3/4.

⑪ ST (stereo) switch

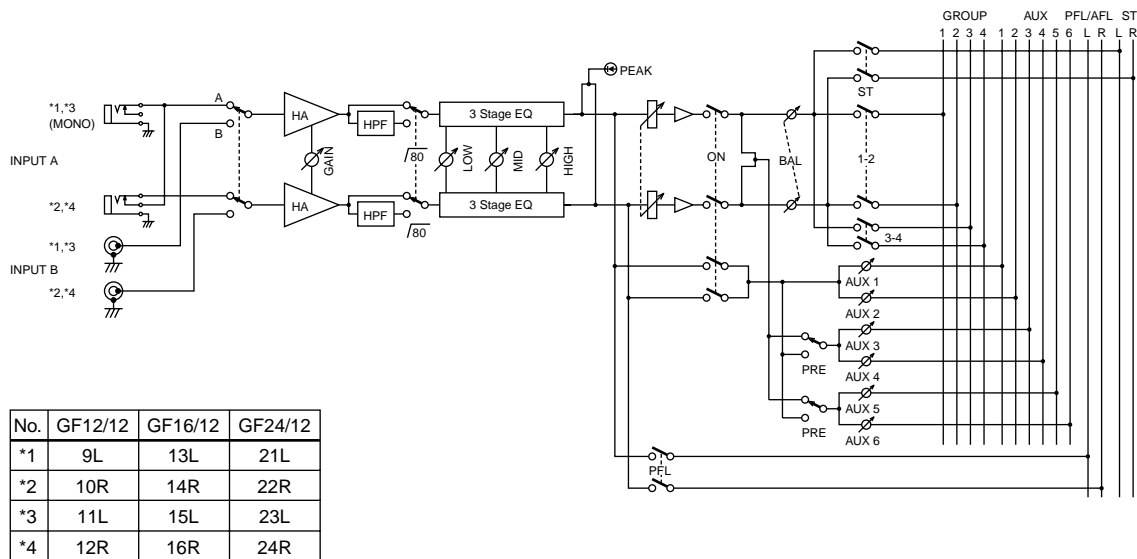
This switch sends the signal of the input channel to the ST bus. When this switch is on, the signal will be sent to the ST bus.

⑫ PFL (pre-fader listen) switch

This switch sends the pre-fader signal to the PFL/AFL bus, allowing you to monitor it through headphones or monitor speakers. When this switch is on, the pre-fader signal of the input channel can be heard from the C-R OUT jacks and the PHONES jack, even if the ON switch (⑨) is off.

⑬ Channel fader

This fader adjusts the input level of the stereo input channel. The position of the channel fader will affect the level of the signal that is output from the ST bus, GROUP buses 1–4, and AUX buses 1–6 (except when the PRE switch is on for AUX buses 3–6).

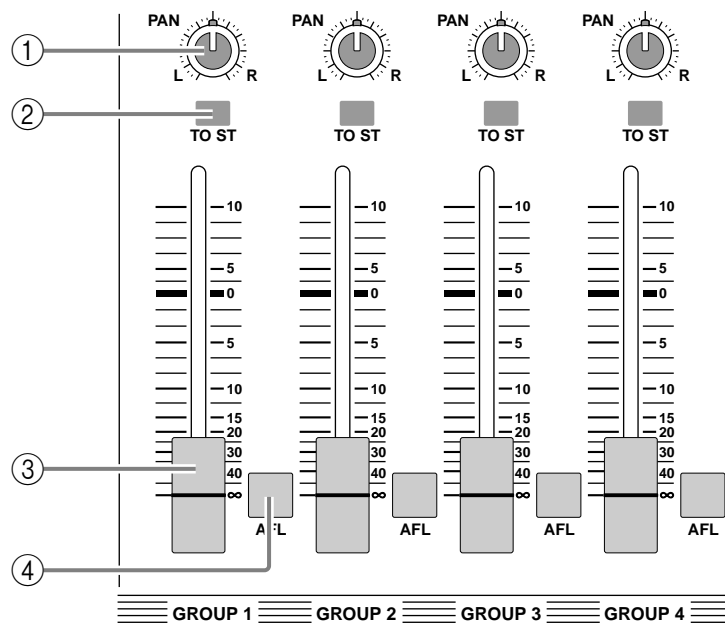


Stereo input channel signal flow

Master controls

GROUP section

This section individually controls the output signal of GROUP buses 1–4. The signal that passes through the GROUP 1–4 output channels can be sent individually from the GROUP OUT 1–4 output jacks (page 20, ⑭ in the connector section), and can also be sent to the ST bus or PFL/AFL bus by using the TO ST switch (group section ②) and AFL switch (group section ④).



① PAN control

This knob adjusts the left/right position when sending the signal of each GROUP bus 1–4 to the ST bus.

② TO ST switch

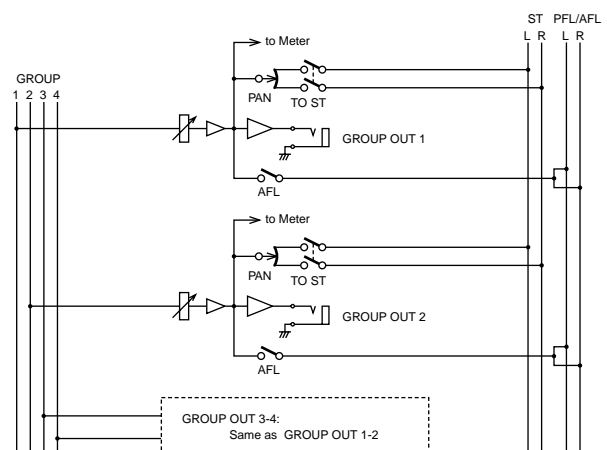
This switch sends the signal of each GROUP bus 1–4 to the ST bus. When the switch is on, the signal that has passed through the PAN control (①) will be sent to the ST bus.

③ Group fader

This adjusts the output level of each GROUP bus 1–4. The position of the group fader will affect all signals that are sent from the GROUP bus to the GROUP OUT jacks, ST bus, and PFL/AFL bus.

④ AFL (after-fader listen) switch

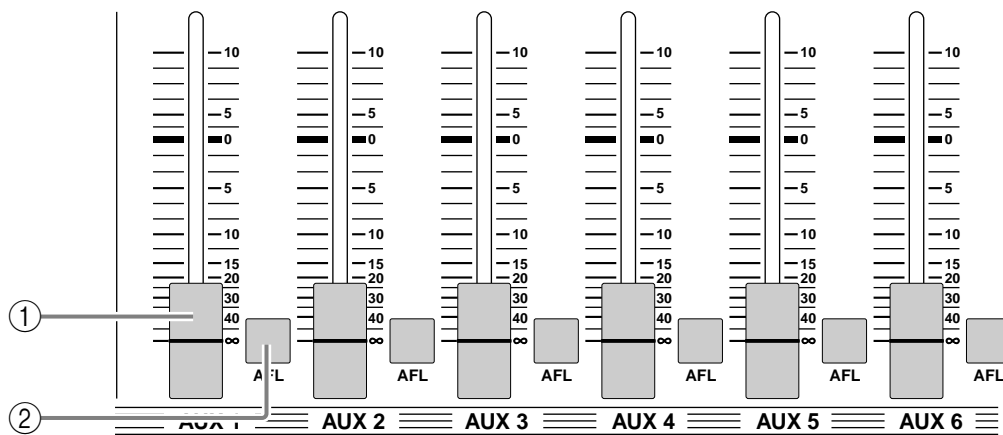
This switch sends the signal of the GROUP bus to the PFL/AFL bus. If this switch is on, the after-fader signal of the GROUP bus can be monitored in the C-R OUT jacks or the PHONES jack.



Group section signal flow

■ AUX section

This section individually controls the output signals of AUX buses 1–6. The signal that has passed through the AUX 1–6 output channels can be sent individually to the AUX OUT jacks 1–6 (page 17, ① in the connector section), and can also be sent to the PFL/AFL bus by using the AFL switch (② in the AUX section).

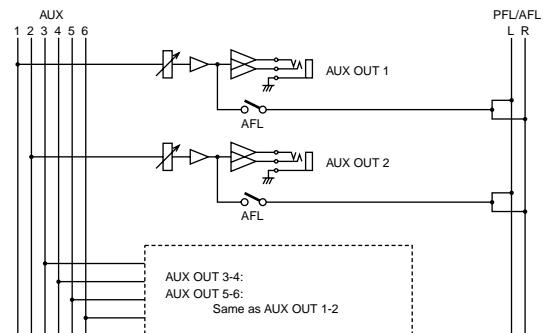


① AUX fader

These faders adjust the output level of AUX buses 1–6. The position of the AUX faders will affect the signals that are sent from the AUX bus to the AUX OUT jacks and the PFL/AFL bus.

② AFL (after-fader listen) switch

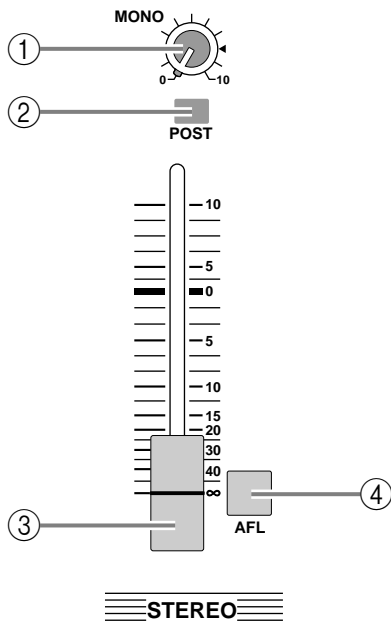
This switch sends the AUX bus signal to the PFL/AFL bus. When the switch is on, the after-fader signal of the AUX bus can be monitored in the C-R OUT jacks or the PHONES jack.



AUX section signal flow

STEREO/MONO section

This section separately controls the STEREO OUT jacks (page 17, ③ in the connector section) which are the main output of the mixer, and the MONO OUT jack (page 17, ② in the connector section) which outputs a monaural mix of the STEREO OUT output.



① MONO (monaural) control

This adjusts the signal level that is sent to the MONO OUT jack. The level is nominal when the control is at the “◀” position.

② POST switch

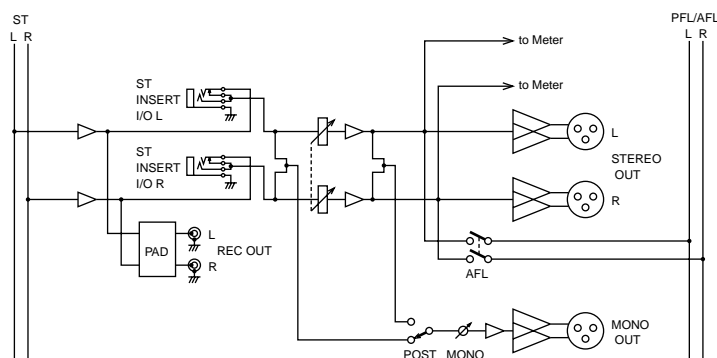
This switches the output of the fader between the pre- and post-fader signals. When this switch is pressed in, the signal after passing through the STEREO fader (post-fader) will be sent to the MONO OUT jack. When this switch is in the upward position, the signal before passing through the STEREO fader (pre-fader) will be sent to the MONO OUT jack.

③ STEREO fader

This adjusts the level of the signal that is sent to the STEREO OUT jack. The position of the STEREO fader will affect the signals that are sent from the ST bus to the STEREO OUT jacks, the MONO OUT jack (if the POST switch ② is on), and the PFL/AFL bus.

④ AFL (after-fader listen) switch

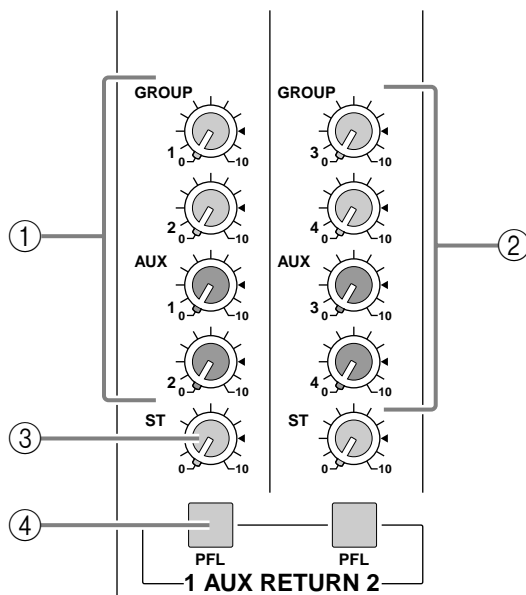
This switch sends the signal of the ST bus to the PFL/AFL bus. When the switch is on, the signal following the STEREO fader (the same signal as output from the STEREO OUT jacks) can be monitored from the C-R OUT jacks and the PHONES jack.



STEREO/MONO section signal flow

■ AUX RETURN section

This section controls the two stereo AUX returns. By using the L and R jacks of AUX RETURN 1/2 (page 19, ⑪ in the connector section) in pairs, you can input stereo signals. If only the L jack of AUX RETURN 1/2 is connected, this can be used as a monaural AUX return. The input signal from AUX RETURN jack 1 can also be sent to GROUP bus 1/2 and AUX bus 1/2, and the input signal from AUX RETURN jack 2 can be sent to GROUP bus 3/4 and AUX bus 3/4.



① GROUP 1/2, AUX 1/2 mix controls

These controls adjust the level at which signals from the AUX RETURN 1 jacks are sent to GROUP bus 1/2 and AUX bus 1/2. When a stereo signal is input, the signals of the L and R channels will be sent to GROUP buses 1/2 and AUX buses 1/2 respectively. When a monaural signal is input, the same signal will be sent to GROUP buses 1 and 2, and to AUX buses 1 and 2.

② GROUP 3/4, AUX 3/4 mix controls

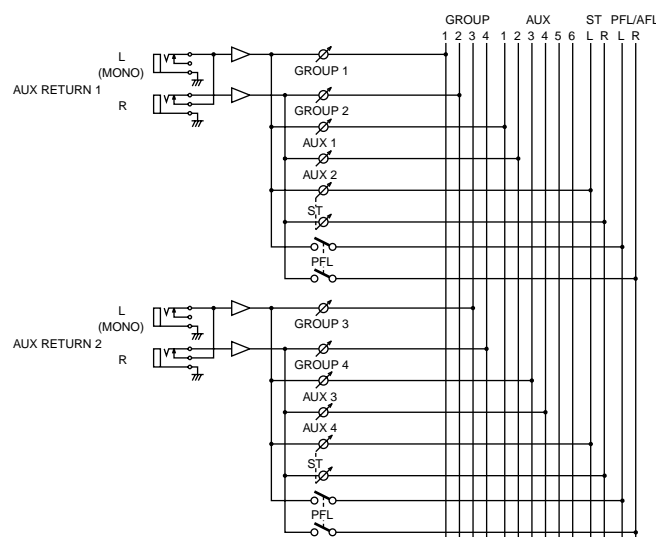
These controls adjust the level at which signals from the AUX RETURN 2 jacks are sent to GROUP bus 3/4 and AUX bus 3/4. When a stereo signal is input, the signals of the L and R channels will be sent to GROUP buses 3/4 and AUX buses 3/4 respectively. When a monaural signal is input, the same signal will be sent to GROUP buses 3 and 4, and to AUX buses 3 and 4.

③ ST (stereo) controls

These adjust the level at which the input signals from the AUX RETURN 1/2 jacks are sent to the ST bus. The position of the stereo control knobs does not affect the GROUP 1–4 and AUX 1–4 mix controls (① and ②).

④ PFL (pre-fader listen) switch

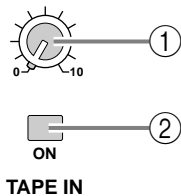
These switches send the input signal from the AUX RETURN 1/2 jacks to the PFL/AFL bus. When this switch is on, the input signal from the AUX RETURN 1/2 jacks can be monitored directly from the C-R OUT jacks or the PHONES jack.



AUX RETURN section signal flow

■ TAPE IN section

This section controls the signal that is input from the TAPE IN jacks (page 17, ④ in the connector section). The input signal from the TAPE IN jacks can be sent directly from the ST bus, and can also be monitored from the C-R OUT jacks or PHONES jack.

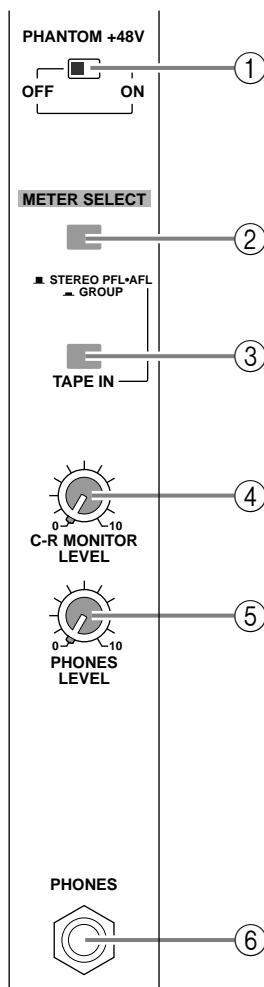


① ST (stereo) control

This adjusts the level at which the input signal from the TAPE IN jacks is output to the ST bus.

② ON switch

This is an on/off switch for the signal that is sent from the TAPE IN jacks to the ST bus. Even when this switch is off, the TAPE IN switch (page 15, ③ in the other controls/connector section) can be turned on to allow monitoring of the TAPE IN input signal from the C-R OUT jacks or the PHONES jack.



■ Other controls/connectors

① PHANTOM +48 V (phantom power supply) switch

This is the on/off switch for the +48 V phantom power supply. When this switch is on, the PHANTOM indicator (page 16, ③ in the meter bridge section) will light, and DC +48 V phantom power will be supplied to the INPUT A jacks (page 18, ⑦ in the connector section) of each mono input channel.

Caution: When phantom power is on, connecting an unbalanced device or a device whose transformer is center-grounded may cause hum, noise, or malfunctions. If you do not require phantom power, be sure to turn this switch off.

② METER SELECT switch

This selects the signal source whose level will be shown by the level meters.

When the switch is down (▾)

The level meters will show the output level of the GROUP buses 1–4.

When the switch is up (▴)

The two level meters at the left will show the output level of the ST bus, and the two level meters at the right will show the output level of either the PFL/AFL bus or the TAPE IN jacks (page 17, ④ in the connector section), depending on the setting of the TAPE IN switch (③).

③ **TAPE IN switch**

This selects the signal that will be monitored by the C-R OUT jacks and PHONES jack: either the PFL/AFL bus, or the TAPE IN jacks.

④ **C-R MONITOR LEVEL (control room monitor level) control**

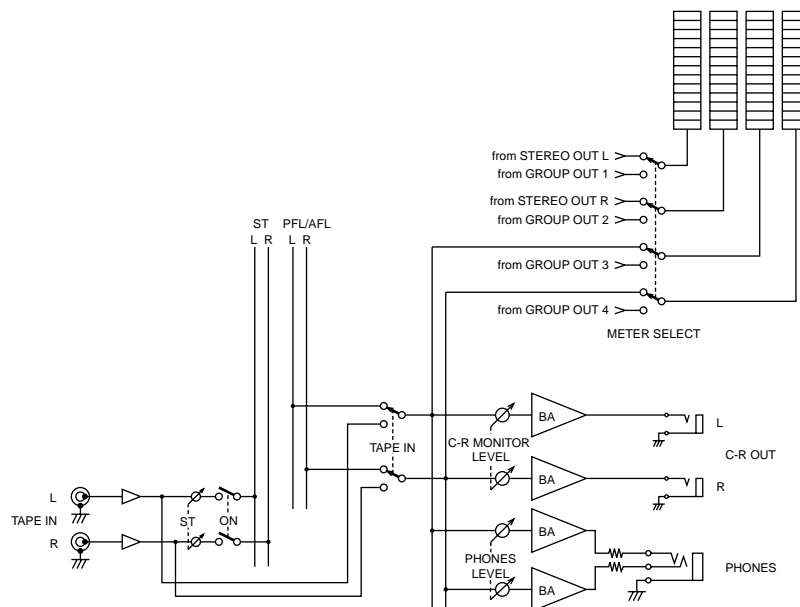
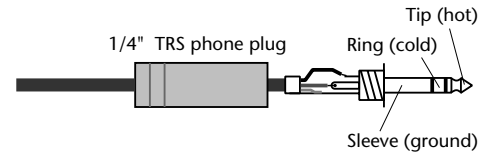
This adjusts the level of the signal that is sent to the C-R OUT jacks. It does not affect the output signal of the PHONES jack.

⑤ **PHONES LEVEL (headphone) jack**

This adjusts the level of the signal that is sent to the PHONES jack. It does not affect the output signal of the C-R OUT jacks.

⑥ **PHONES (headphone) jack**

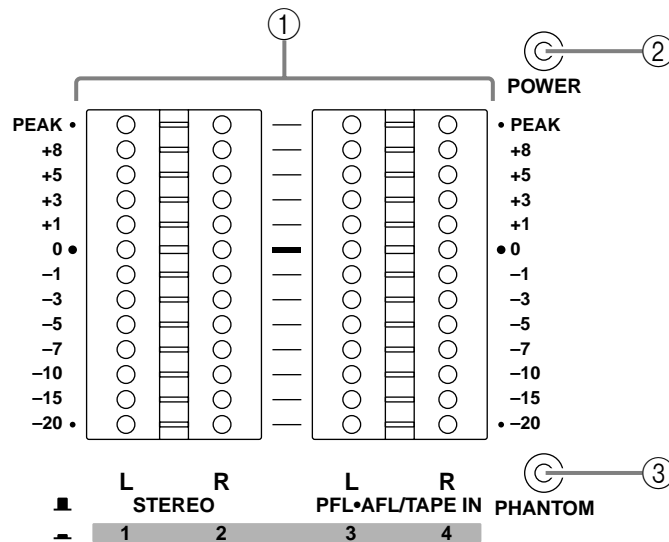
A set of stereo headphones can be connected to this jack for monitoring. This jack will output the same signal as the C-R OUT jacks. The wiring of this jack is as shown in the following diagram.





Tape input and monitor output signal flow

■ Meter section

This is a peak level meter that shows (according to the setting of the METER SELECT switch, page 14) the output levels of GROUP buses 1–4, the ST bus, and the PFL/AFL bus, and the input level of the TAPE IN jacks. The status of the mixer's power supply and phantom power is also shown here.



① Level meters

When the METER SELECT switch (page 14) is pressed inward (), the four level meters will show the output levels of GROUP buses 1–4. When the METER SELECT switch is in the upward position (), the two level meters at left will show the output level of the ST bus, and the two level meters at right will show either the output level of the PFL/AFL bus or the input level of the TAPE IN jacks (page 17, ④ of the connector section), depending on the setting of the TAPE IN switch (page 15, ③ of other controls/connectors).

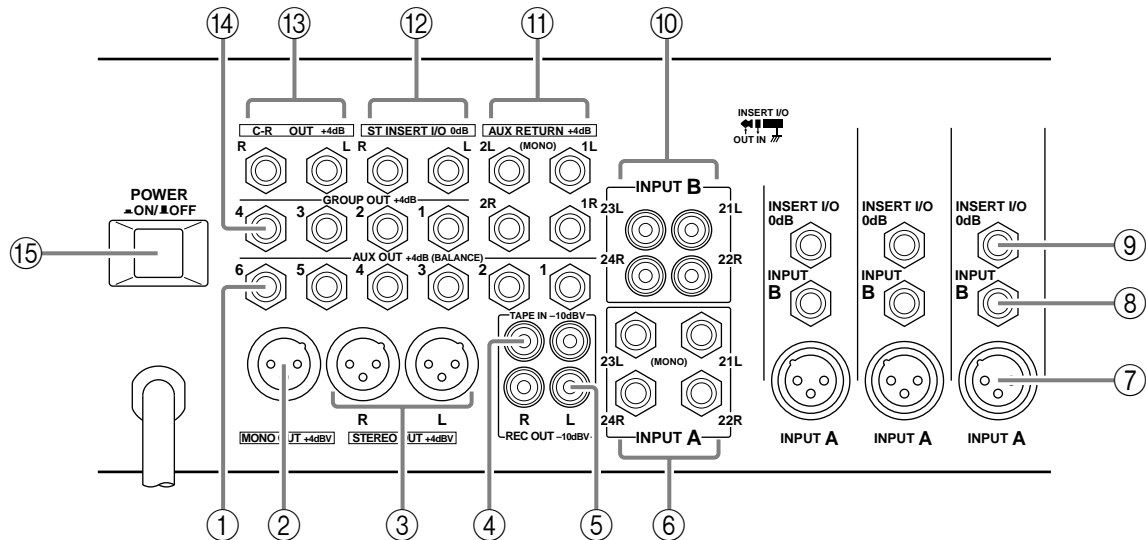
② POWER indicator

This indicator shows the on/off status of the mixer's power supply. When the POWER switch (page 20, ⑮ in the connector section) has been pressed to turn on the power, this indicator will light.

③ PHANTOM (phantom power supply) indicator

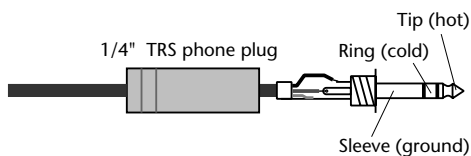
This indicator shows the on/off status of the phantom power supply. When the PHANTOM +48 V switch (page 14, ① in other controls/connectors) has been slid to turn on the phantom power, this indicator will light.

Connectors



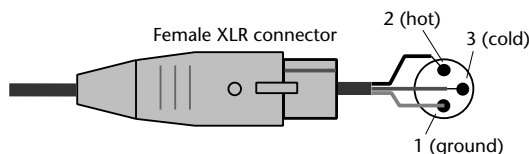
① AUX OUT jacks 1–6

These are TRS phone output jacks (balanced) that individually output the signals of AUX buses 1–6. Nominal level is +4 dB. These jacks can be connected to your foldback system or to the inputs of external effect processors. The pin wiring is shown in the following diagram.



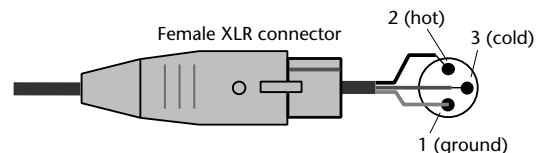
② MONO OUT jack

This is a XLR-3-32 type connector (balanced) which outputs a monaural mix of the main stereo output. Nominal output level is +4 dB. The pin wiring is shown in the following diagram.



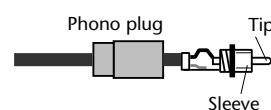
③ STEREO OUT jacks

These are XLR-3-32 type connectors (balanced) which output the main stereo signal that has passed through the STEREO fader. Nominal output level is +4 dB. The pin wiring is shown in the following diagram.



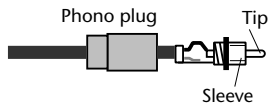
④ TAPE IN connector

These are phono input jacks (unbalanced) for connecting external line level devices. Nominal level is -10 dBV. The pin wiring is shown in the following diagram.



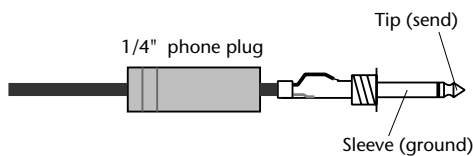
⑤ **REC OUT jacks**

These are phono jacks (unbalanced) that output the signal from the ST bus, with a nominal level of -10 dBV. This output signal is not affected by external effect processors connected to the ST INSERT I/O jacks (⑫) or by the position of the STEREO fader (page 12, ③ in the STEREO/MONO control section). The pin wiring is shown in the following diagram.



⑥ **INPUT A jacks 21–24 {13–16 on the GF16/12, 9–12 on the GF12/12}**

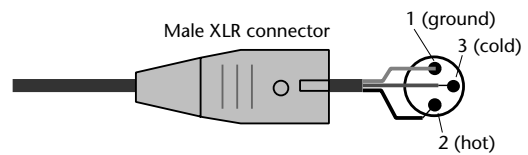
These are 1/4" phone input jacks (unbalanced) for the stereo input channels, with nominal level of $+10$ dB to -34 dB. When using these as mono channels, insert a plug only into the 21L/23L jacks {13L/15L on the GF16/12, or 9L/11L on the GF12/12}. The pin wiring is shown in the following diagram.



⑦ **INPUT A jacks 1–20 {1–12 on the GF16/12, 1–8 on the GF12/12}**

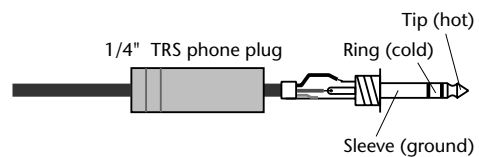
These are XLR-3-31 type input connectors (balanced) for the monaural input channels. Nominal input level is -16 dB to -60 dB when the pad switch (page 6, ① of the monaural input channel section) is off, and $+10$ dB to -34 dB when the pad switch is on.

When the PHANTOM $+48$ V switch (page 14, ① of other controls/connectors) is on, DC $+48$ V phantom power is supplied to pins 2/3. The pin wiring is shown in the following diagram.



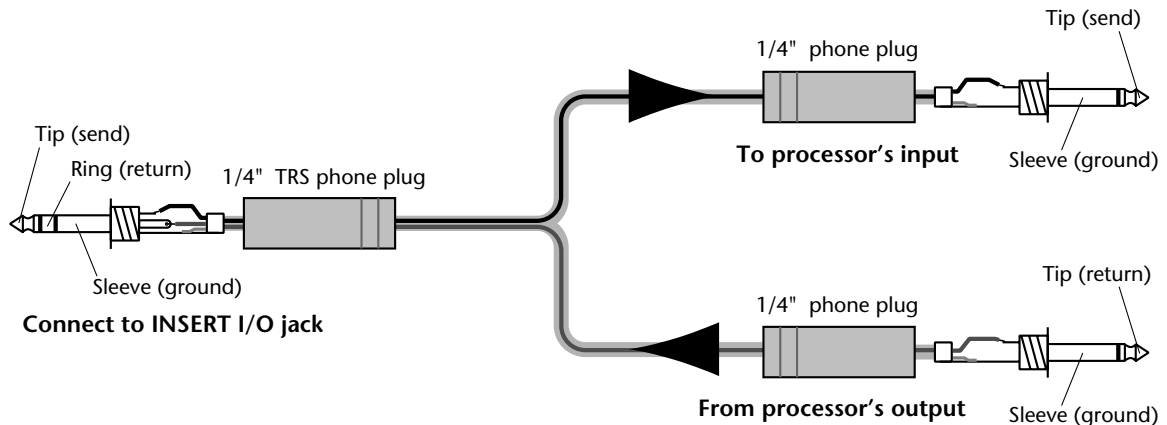
⑧ **INPUT B jacks 1–20 {1–12 on the GF16/12, 1–8 on the GF12/12}**

These are TRS phone input jacks (balanced) for the monaural input channels. Nominal input level is the same as for the INPUT A jacks (⑦). Be aware that it is not possible to simultaneously use both the INPUT A and INPUT B jacks of the same channel. Phantom power is not supplied to the INPUT B jacks. The pin wiring is shown in the following diagram.



⑨ **INSERT I/O jacks 1–20 {1–12 on the GF16/12, 1–8 on the GF12/12}**

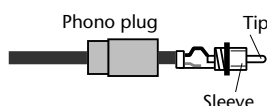
These are TRS phone input/output jacks for inserting external effect processors between the EQ and channel fader of a monaural input channel. Nominal level is 0 dB. The pin wiring is shown in the following diagram.



⑩ **INPUT B jacks 21–24 {13–16 on the GF16/12, 9–12 on the GF12/12}**

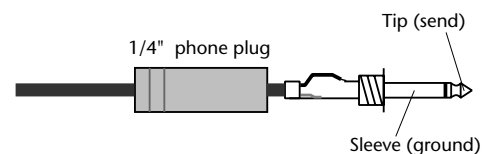
These are phono input jacks (unbalanced) for the stereo input channels. Nominal level is the same as the INPUT A jacks (⑥). On the stereo input channels, you can make connections both to the INPUT A jacks (⑥) and the INPUT B jacks (⑩), and use the A/B switch (page 8, ① in the stereo input channel section) to select whether INPUT jack A or B will be used.

Be aware that in the case of the INPUT B jacks, the channel cannot be used as a mono input channel by inserting a plug only into 21L and 23L. (If only 21L or 23L are connected, the signal will be sent only to the left channel.) The pin wiring is shown in the following diagram.



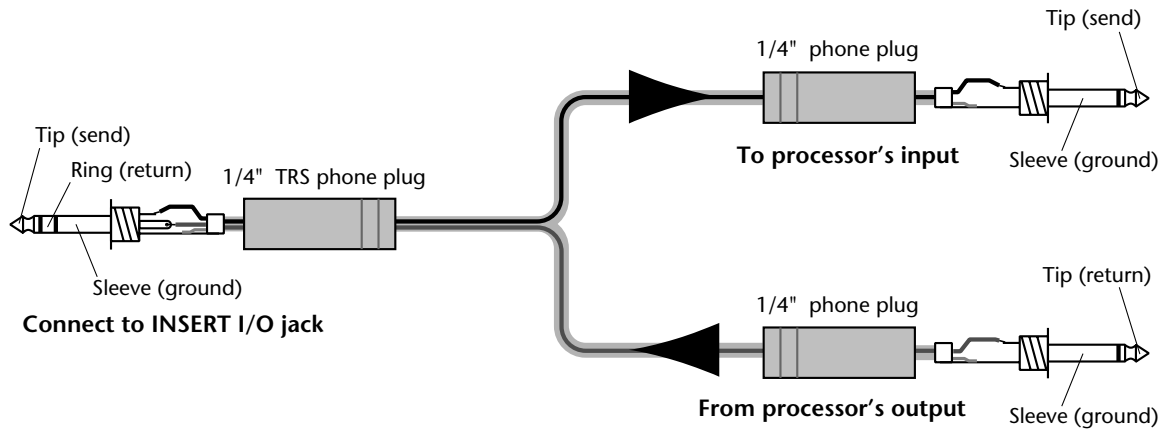
⑪ **AUX RETURN jacks 1/2**

These are 1/4" phone input jacks (unbalanced) for connecting the stereo output of external effect processors, etc. The nominal level is +4 dB. If inputting a monaural signal, connect a plug only to the 1L or 2L jack. The pin wiring is shown in the following diagram.



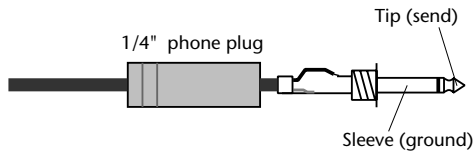
⑫ **ST INSERT I/O jacks**

These are TRS phone input/output jacks for inserting external effect processors between the ST bus and the STEREO fader. The nominal input/output level is 0 dB. The pin wiring is shown in the following diagram.



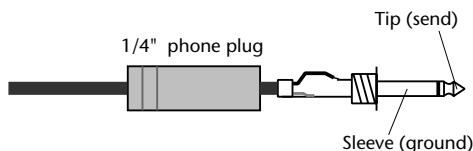
⑬ **C-R OUT (control room monitor out) jacks**

These are 1/4" phone output jacks (unbalanced) for monitoring the PFL/AFL bus or the input signal from the TAPE IN jacks (④). The nominal output level is +4 dB. The pin wiring is shown in the following diagram.



⑭ **GROUP OUT jacks 1-4**

These are 1/4" phone jacks (unbalanced) which individually output the signals of GROUP buses 1-4. The nominal output level is +4 dB.



⑮ **POWER switch**

This switch turns the power of the mixer on or off.

Specifications

General specifications

Frequency response	20 Hz–20 kHz +1 dB, –3 dB @+4 dB into 600Ω (GROUP OUT, AUX OUT, ST OUT, MONO OUT)	Input gain control: minimum
Total harmonic distortion	Less than 0.1%, @20 Hz–20 kHz, +14 dB into 600Ω (GROUP OUT, AUX OUT, ST OUT, MONO OUT)	
Hum & noise (Average, $R_s=150\Omega$ with 20 Hz–20 kHz BPF)	–128 dB equivalent input noise	
	–95 dB residual output noise (GROUP OUT, AUX OUT, ST OUT, MONO OUT)	
	–86 dB (GROUP OUT, ST OUT, MONO OUT)	Master fader: nominal level All channel faders: minimum All channel assign switches: off
	–81 dB (AUX OUT)	Master fader: nominal level All channel faders, all AUX level controls: minimum
	–64 dB (68 dB S/N) (GROUP OUT, AUX OUT, ST OUT)	Master fader, one channel fader, AUX level control: nominal level, Assign switch: on One channel gain control: maximum
Maximum voltage gain	84 dB CH IN to ST OUT 84 dB CH IN to GROUP OUT 58 dB ST IN to ST OUT 58 dB ST IN to GROUP OUT	
Crosstalk (at 1 kHz)	70 dB adjacent input 70 dB input to output	
CH input gain control	44 dB variable	
CH input PAD	0 dB/26 dB	
CH input HPF	80 Hz 12 dB/oct	
CH input equalization	±15 dB maximum HIGH 10 kHz shelving* MID 250 Hz–5 kHz peaking LOW 100 Hz shelving* * Turn over/roll off frequency of shelving: 3 dB below maximum variable level.	
ST input equalization	±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.	
Meters	13 points LED meters x4 (GROUP 1–4 /ST L R, PFL•AFL•TAPE IN L R)	
CH peak indicators	Red LED on each channel turns on when Post EQ signal reaches the level –3 dB below clipping.	
Phantom power	+48 V is supplied to electrically balanced inputs.	
Power requirement	USA and Canada: 120 V AC 60 Hz Other: 230 V AC 50 Hz	
Power consumption	GF24/12: 70 W, GF16/12: 70 W, GF12/12: 70 W	
Dimensions (WxHxD)	GF24/12: 938×157×487 mm GF16/12: 701×157×487 mm GF12/12: 587×157×487 mm	
Weight	GF24/12: 20 kg, GF16/12: 16 kg, GF12/12: 14 kg	

- 0 dB is referenced to 0.775 Vrms.

Input specifications

Input terminals	Gain trim	Actual load impedance	For use with nominal	Input level			Connector
				Sensitivity ^{†1}	Nominal	Max. before clip	
INPUT A, B (1–20, 1–12, 1–8)	MAX	3 k Ω	50–600 Ω Mics & 600 Ω Lines	–86 dB (38.8 μ V)	–60 dB (0.775 mV)	–40 dB (7.75 mV)	A: XLR-3-31 type ^{†2} B: Phone jack ^{†2}
	MIN			–42 dB (6.16 mV)	–16 dB (123 mV)	+4 dB (1.23 V)	
ST INPUT A, B (21–24, 13–16, 9–12)	MAX	10 k Ω	600 Ω Lines	–60 dB (0.775 mV)	–34 dB (15.5 mV)	–14 dB (155 mV)	A: Phono jack ^{†3} B: Phone jack ^{†3}
	MIN			–16 dB (123 mV)	+10 dB (2.45 V)	+30 dB (24.5 V)	
AUX RTN IN (1, 2)	–12 dB (195 mV)			+4 dB (1.23 V)	+20 dB (7.75 V)	Phone jack ^{†3}	
TAPE IN (L, R)	–26 dBV (50.1 mV)			–10 dBV (316 mV)	+8 dBV (2.51 V)	Phono jack ^{†3}	
CH INSERT IN (1–20, 1–12, 1–8)	–26 dB (38.8 mV)			0 dB (775 mV)	+20 dB (7.75 V)	Phone jack (I/O) ^{†3}	
ST INSERT IN (L, R)	–10 dB (245 mV)						

†1. Sensitivity is the lowest level that will produce an output of +4 dB (1.23 V) or the nominal output level when the unit is set at maximum gain. (All faders and level controls are at maximum positions.)

†2. Balanced.

†3. Unbalanced.

- When dB represents a specific voltage, 0 dB is referenced to 0.775 Vrms, 0 dBV is referenced to 1 Vrms.

Output specifications

Output terminals	Actual source impedance	For use with nominal	Output level		Connector
			Nominal	Max. before clip	
ST OUT (L, R)	150 Ω	600 Ω Lines	+4 dB (1.23 V)	+24 dB (12.3 V)	XLR-3-32 type ^{†1}
MONO OUT					
GROUP OUT (1–4)	75 Ω			+20 dB (7.75 V)	Phone jack ^{†2}
AUX OUT (1–6)	150 Ω			+24 dB (12.3 V)	Phone jack ^{†1}
C-R OUT (L, R)	75 Ω			+20 dB (7.75 V)	Phone jack ^{†2}
REC OUT (L, R)	600 Ω	10 k Ω Lines	–10 dBV (316 mV)	+10 dBV (3.16 V)	Phono jack ^{†2}
CH INSERT OUT (1–20, 1–12, 1–8)			0 dB (775 mV)	+20 dB (7.75 V)	Phone jack (I/O) ^{†2}
ST INSERT OUT (L, R)					
PHONES OUT	100 Ω	40 Ω Phones	3 mW	100 mW	ST phone jack ^{†2}

†1. Balanced.

†2. Unbalanced.

- When dB represents a specific voltage, 0 dB is referenced to 0.775 Vrms, 0 dBV is referenced 1 Vrms.

Specifications are subject to change without prior notice.

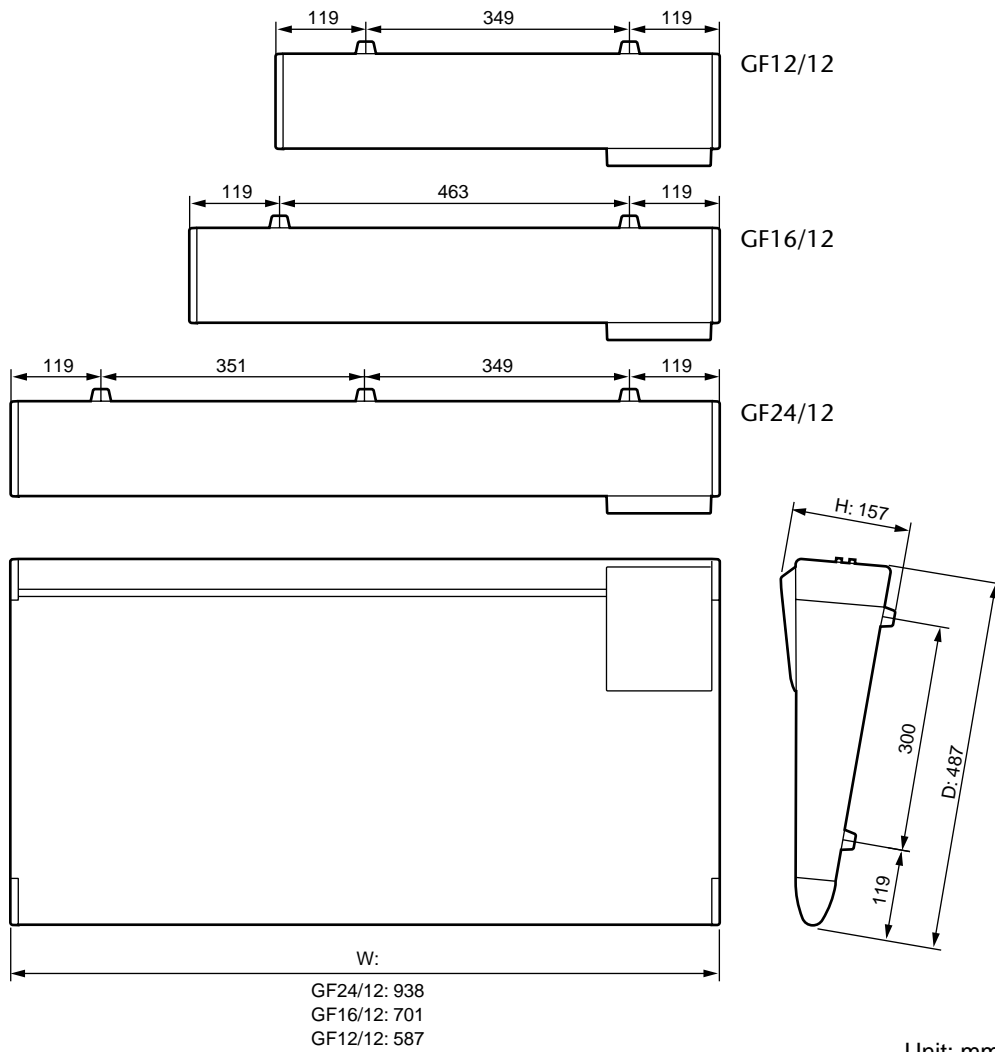
For European Model

Purchaser/User Information specified in EN55103-1 and EN55103-2.

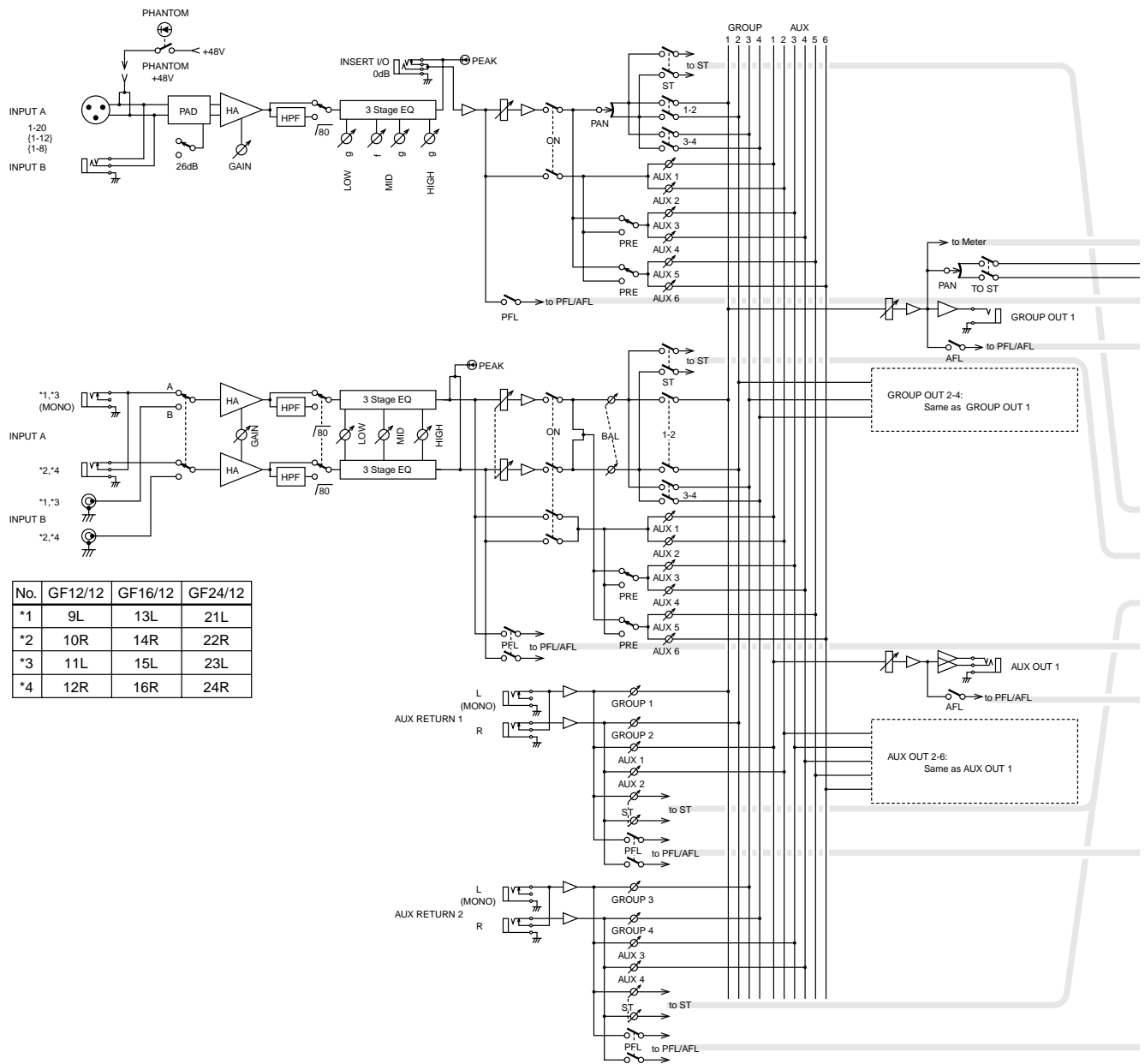
Inrush Current: 3A

Conformed Environment: E1, E2, E3 and E4

Dimensions



Block/Level Diagram



No.	GF12/12	GF16/12	GF24/12
*1	9L	13L	21L
*2	10R	14R	22R
*3	11L	15L	23L
*4	12R	16R	24R

