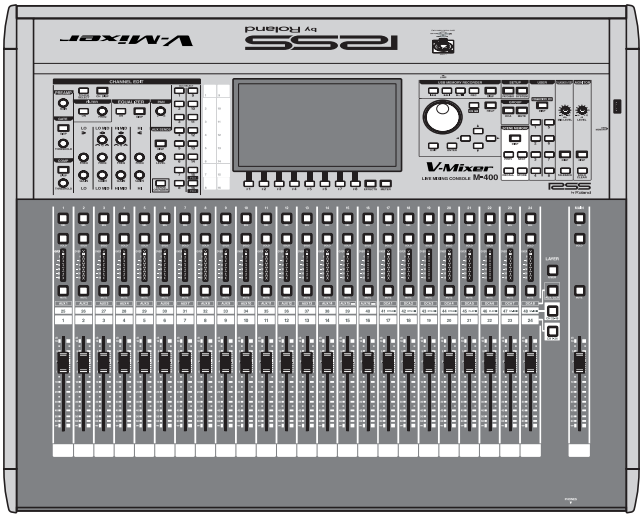
by Roland

LIVE MIXING CONSOLE M-400

Version 1.5

Owner's Manual

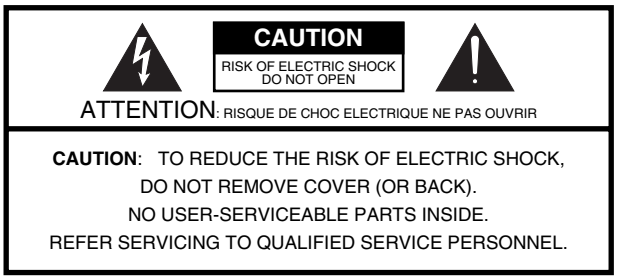


Before using this unit, carefully read the sections entitled: "IMPORTANT SAFETY INSTRUCTIONS" (p. 2), "USING THE UNIT SAFELY" (p. 3–5), and "IMPORTANT NOTES" (p. 6–7). These sections provide important information concerning the proper operation of the unit. Additionally, in order to feel assured that you have gained a good grasp of every feature provided by your new unit, Owner's manual should be read in its entirety. The manual should be saved and kept on hand as a convenient reference.

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WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.





The lightning flash with arrowhead symbol, within an 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 product.

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS.

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS

WARNING - When using electric products, basic precautions should always be followed, including the following:

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 a dry cloth.
7. Do not block any of the ventilation openings. Install in accordance with the manufacturers 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. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. 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.

For the U.K.

WARNING: THIS APPARATUS MUST BE EARTHED
IMPORTANT: THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.
GREEN-AND-YELLOW: EARTH, BLUE: NEUTRAL, BROWN: LIVE

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

The wire which is coloured GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or coloured GREEN or 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.

CAUTION: Danger of explosion if battery is incorrectly replaced.
Replace only with same or equivalent type.

USING THE UNIT SAFELY

INSTRUCTIONS FOR THE PREVENTION OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

About ⚠WARNING and ⚠CAUTION Notices

⚠WARNING	Used for instructions intended to alert the user to the risk of death or severe injury should the unit be used improperly.
⚠CAUTION	Used for instructions intended to alert the user to the risk of injury or material damage should the unit be used improperly. * Material damage refers to damage or other adverse effects caused with respect to the home and all its furnishings, as well to domestic animals or pets.

About the Symbols

⚠	The △ symbol alerts the user to important instructions or warnings.The specific meaning of the symbol is determined by the design contained within the triangle. In the case of the symbol at left, it is used for general cautions, warnings, or alerts to danger.
	The ⃠ symbol alerts the user to items that must never be carried out (are forbidden). The specific thing that must not be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the unit must never be disassembled.
	The ● symbol alerts the user to things that must be carried out. The specific thing that must be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the power-cord plug must be unplugged from the outlet.

ALWAYS OBSERVE THE FOLLOWING

⚠WARNING

- Before using this unit, make sure to read the instructions below, and the Owner's Manual.
- Connect mains plug of this model to a mains socket outlet with a protective earthing connection.
- Do not open or perform any internal modifications on the unit.
- Do not attempt to repair the unit, or replace parts within it (except when this manual provides specific instructions directing you to do so). Refer all servicing to your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.
- Never use or store the unit in places that are:
  - Subject to temperature extremes (e.g., direct sunlight in an enclosed vehicle, near a heating duct, on top of heat-generating equipment); or are
  - Damp (e.g., baths, washrooms, on wet floors); or are
  - Humid; or are
  - Exposed to rain; or are
  - Dusty; or are
  - Subject to high levels of vibration.
- Make sure you always have the unit placed so it is level and sure to remain stable. Never place it on stands that could wobble, or on inclined surfaces.

⚠WARNING

- The unit should be connected to a power supply only of the type described in the operating instructions, or as marked on the rear side of unit.
- Use only the attached power-supply cord. Also, the supplied power cord must not be used with any other device.
- Do not excessively twist or bend the power cord, nor place heavy objects on it. Doing so can damage the cord, producing severed elements and short circuits. Damaged cords are fire and shock hazards!
- This unit, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level, or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should immediately stop using the unit, and consult an audiologist.
- Do not allow any objects (e.g., flammable material, coins, pins); or liquids of any kind (water, soft drinks, etc.) to penetrate the unit.

⚠ WARNING

- Immediately turn the power off, remove the power cord from the outlet, and request servicing by your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page when:
  - The power-supply cord or the plug has been damaged; or
  - If smoke or unusual odor occurs
  - Objects have fallen into, or liquid has been spilled onto the unit; or
  - The unit has been exposed to rain (or otherwise has become wet); or
  - The unit does not appear to operate normally or exhibits a marked change in performance.

- In households with small children, an adult should provide supervision until the child is capable of following all the rules essential for the safe operation of the unit.

- Protect the unit from strong impact.
  (Do not drop it!)

- Do not force the unit's power-supply cord to share an outlet with an unreasonable number of other devices. Be especially careful when using extension cords—the total power used by all devices you have connected to the extension cord's outlet must never exceed the power rating (watts/amperes) for the extension cord. Excessive loads can cause the insulation on the cord to heat up and eventually melt through.

- Before using the unit in a foreign country, consult with your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.

- Keep lithium batteries out of reach of small children. If a child has accidentally swallowed a battery, see a doctor immediately.

- Lithium batteries must never be recharged, heated, taken apart, or thrown into a fire or water.

- Do not put anything that contains water (e.g., flower vases) on this unit. Also, avoid the use of insecticides, perfumes, alcohol, nail polish, spray cans, etc., near the unit. Swiftly wipe away any liquid that spills on the unit using a dry, soft cloth.

- Never expose Lithium Battery to excessive heat such as sunshine, fire or the like.

⚠ CAUTION

- The unit should be located so that its location or position does not interfere with its proper ventilation.

- Always grasp only the plug on the power-supply cord when plugging into, or unplugging from, an outlet or this unit.

- At regular intervals, you should unplug the power plug and clean it by using a dry cloth to wipe all dust and other accumulations away from its prongs. Also, disconnect the power plug from the power outlet whenever the unit is to remain unused for an extended period of time. Any accumulation of dust between the power plug and the power outlet can result in poor insulation and lead to fire.

- Try to prevent cords and cables from becoming entangled. Also, all cords and cables should be placed so they are out of the reach of children.

- Never climb on top of, nor place heavy objects on the unit.

- Never handle the power cord or its plugs with wet hands when plugging into, or unplugging from, an outlet or this unit.

- Before moving the unit, disconnect the power plug from the outlet, and pull out all cords from external devices.

- Before cleaning the unit, turn off the power and unplug the power cord from the outlet (p. 17).

- Whenever you suspect the possibility of lightning in your area, pull the plug on the power cord out of the outlet.

- Use only the specified type (model no. CR2032) of lithium battery (p. 18). Be sure to insert it as directed (to ensure correct polarity).

- Used lithium batteries must be disposed of in compliance with whatever regulations for their safe disposal that may be observed in the region in which you live.

- Keep the USB memory cover, the REAC caps, the grounding terminal screw, the lithium battery, the battery panel, the battery panel screws, the power cord hook, the power cord screws and any fader knobs you may remove and the included the REAC connector and the ferrite cores in a safe place out of children's reach, so there is no chance of them being swallowed accidentally.

⚠ CAUTION



- Always turn the phantom power off when connecting any device other than condenser microphones that require phantom power. You risk causing damage if you mistakenly supply phantom power to dynamic microphones, audio playback devices, or other devices that don't require such power. Be sure to check the specifications of any microphone you intend to use by referring to the manual that came with it.

  (This instrument's phantom power: +48V DC, 14mA Max)

IMPORTANT NOTES

In addition to the items listed under "IMPORTANT SAFETY INSTRUCTIONS" and "USING THE UNIT SAFELY" on pages P. 2 and P. 3, please read and observe the following:

Power Supply

- Do not connect this unit to same electrical outlet that is being used by an electrical appliance that is controlled by an inverter (such as a refrigerator, washing machine, microwave oven, or air conditioner), or that contains a motor. Depending on the way in which the electrical appliance is used, power supply noise may cause this unit to malfunction or may produce audible noise. If it is not practical to use a separate electrical outlet, connect a power supply noise filter between this unit and the electrical outlet.
- Before connecting this unit to other devices, turn off the power to all units. This will help prevent malfunctions and/or damage to speakers or other devices.
- Although the LCD and LEDs are switched off when the POWER switch is switched off, this does not mean that the unit has been completely disconnected from the source of power. If you need to turn off the power completely, first turn off the POWER switch, then unplug the power cord from the power outlet. For this reason, the outlet into which you choose to connect the power cord's plug should be one that is within easy reach and readily accessible.
- When you turn off the power switch, the M-400's display, buttons, and meters will go dark, but this does not mean that the main power has been completely shut off.

Placement

- Using the unit near power amplifiers (or other equipment containing large power transformers) may induce hum. To alleviate the problem, change the orientation of this unit; or move it farther away from the source of interference.
- This device may interfere with radio and television reception. Do not use this device in the vicinity of such receivers.
- Noise may be produced if wireless communications devices, such as cell phones, are operated in the vicinity of this unit. Such noise could occur when receiving or initiating a call, or while conversing. Should you experience such problems, you should relocate such wireless devices so they are at a greater distance from this unit, or switch them off.
- Do not expose the unit to direct sunlight, place it near devices that radiate heat, leave it inside an enclosed vehicle, or otherwise subject it to temperature extremes. Excessive heat can deform or discolor the unit.
- When moved from one location to another where the temperature and/or humidity is very different, water droplets (condensation) may form inside the unit. Damage or malfunction may result if you attempt to use the unit in this condition. Therefore, before using the unit, you must allow it to stand for several hours, until the condensation has completely evaporated.
- Depending on the material and temperature of the surface on which you place the unit, its rubber feet may discolor or mar the surface.
  You can place a piece of felt or cloth under the rubber feet to prevent this from happening. If you do so, please make sure that the unit will not slip or move accidentally.

Maintenance

- For everyday cleaning wipe the unit with a soft, dry cloth or one that has been slightly dampened with water. To remove stubborn dirt, use a cloth impregnated with a mild, non-abrasive detergent. Afterwards, be sure to wipe the unit thoroughly with a soft, dry cloth.
- Never use benzine, thinners, alcohol or solvents of any kind, to avoid the possibility of discoloration and/or deformation.

Repairs and Data

- Please be aware that all data contained in the unit's memory may be lost when the unit is sent for repairs. Important data should always be backed up on a USB memory, or written down on paper (when possible). During repairs, due care is taken to avoid the loss of data. However, in certain cases (such as when circuitry related to memory itself is out of order), we regret that it may not be possible to restore the data, and Roland assumes no liability concerning such loss of data.

Memory Backup

- This unit contains a battery which powers the unit's memory circuits while the main power is off. When this battery becomes weak, the message shown below will appear in the display. Once you see this message, have the battery replaced with a fresh one as soon as possible to avoid the loss of all data in memory. To have the battery replaced, consult with your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.

Additional Precautions

- Please be aware that the contents of memory can be irretrievably lost as a result of a malfunction, or the improper operation of the unit. To protect yourself against the risk of loosing important data, we recommend that you periodically save a backup copy of important data you have stored in the unit's memory on a USB memory.
- Unfortunately, it may be impossible to restore the contents of data that was stored on a USB memory once it has been lost. Roland Corporation assumes no liability concerning such loss of data.
- Use a reasonable amount of care when using the unit's buttons, sliders, or other controls; and when using its jacks and connectors. Rough handling can lead to malfunctions.
- Never strike or apply strong pressure to the display.
- When connecting / disconnecting all cables, grasp the connector itself—never pull on the cable. This way you will avoid causing shorts, or damage to the cable's internal elements.
- A small amount of heat will radiate from the unit during normal operation.
- To avoid disturbing your neighbors, try to keep the unit's volume at reasonable levels (especially when it is late at night).
- When you need to transport the unit, package it in the box (including padding) that it came in, if possible. Otherwise, you will need to use equivalent packaging materials.
- Some connection cables contain resistors. Do not use cables that incorporate resistors for connecting to this unit. The use of such cables can cause the sound level to be extremely low, or impossible to hear. For information on cable specifications, contact the manufacturer of the cable.
- The M-400's center of gravity is located toward the rear of the unit. When transporting the M-400, grasp it firmly and be careful not to let it fall.
- If the display becomes extremely dim, it is possible that the display backlight has malfunctioned. If this occurs, you must contact your dealer or a Roland service center.
- Due to the nature of the display, there may be screen pixels that remain lit or that fail to light; please be aware that this is not a malfunction or a defect.

Before Using USB memory

Using USB memory

- Carefully insert the USB memory all the way in—until it is firmly in place.
- Never touch the terminals of the USB memory. Also, avoid getting the terminals dirty.
- USB memories are constructed using precision components; handle the cards carefully, paying particular note to the following.
  - To prevent damage to the cards from static electricity, be sure to discharge any static electricity from your own body before handling the cards.
  - Do not touch or allow metal to come into contact with the contact portion of the cards.
  - Do not bend, drop, or subject cards to strong shock or vibration.
  - Do not keep cards in direct sunlight, in closed vehicles, or other such locations (storage temperature: -25 to 85˚ C).
  - Do not allow cards to become wet.
  - Do not disassemble or modify the cards.

Copyright

- Recording, duplication, distribution, sale, lease, performance, or broadcast of copyrighted material (musical works, visual works, broadcasts, live performances, etc.) belonging to a third party in part or in whole without the permission of the copyright owner is forbidden by law.
- Do not use this unit for purposes that could infringe on a copyright held by a third party. We assume no responsibility whatsoever with regard to any infringements of third-party copyrights arising through your use of this unit.

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Kyoto Software Research

Fugue FLASH FILE SYSTEM

* Microsoft and Windows are registered trademarks of Microsoft Corporation.

* Windows® is known officially as: "Microsoft® Windows® operating system."

Functionality added in version 1.10

- Support for RS-232C transmission/reception (p. 190)
- Support for the M-400RCS (p. 189)

Functionality added in version 1.50

Input channels

- Gate/expander/ducking is now supported for all input channels. A maximum of 24 units can be used simultaneously (p. 93).
- Compressor is now supported for all input channels. A maximum of 24 units can be used simultaneously (p. 99).
- Direct out has been added to all input channels (p. 60).

MATRIX channels

- MATRIX1–MATRIX8 have been added (p. 85).
  In addition to mixing audio signals from AUX1–AUX16 and MAIN L/R, you can select and mix any two input channels for each MATRIX.

Output patchbay

- Now you can select the following items in the output patchbay.
  - CH1–CH48 direct out
  - Talkback output
  - Oscillator output

Effects and 31-band GEQ

- The DELAY UNIT parameter has been added to delay-type effects (p. 229).
- This lets you specify the delay in any of these units: msec, Meter, Feet, Frame, or Note.
- When specifying the delay in Note units, the TEMPO parameter has been added (p. 131).
- When using the top panel faders to control the GEQ, you can reset a fader to the 0 dB position by pressing the corresponding MUTE button (p. 135).

User settings

- User buttons 9–16 have been added (p. 177).
- The following items have been added as functions for the user buttons (p. 209).
  - EDIT FX (FX1–FX4)
  - EDIT GEQ (GEQ1–GEQ4)
  - TAP TEMPO
- The following functions have been added to the user preferences (p. 178).
  - AUX/DCA layer select button
  - SHIFT LOCK select button

REAC

- The input from the S-4000S can now be distributed to the SPLIT/BACKUP connector (a maximum of 32 channels).

  MEMO

  In order to distribute inputs using the S-4000S, the firmware of the S-4000S must be version 2.010 or later.

Other settings

- The MUTE switch can now be disabled for MAIN L/R (p. 196).

Improvements in panel operation

- You can now use [SHIFT] + GATE [DISP] to turn the gate on/off for the selected channel.
- You can now use [SHIFT] + COMP [DISP] to turn the compressor on/off for the selected channel.
- You can now use [SHIFT] + AUX SENDS [1]–[16] to turn on/off the AUX send or MATRIX send.
- You can now use [SHIFT] + USER [1]–[8] to operate user buttons 9–16.
- You can now use a top panel [SEL] button to assign a channel to a DCA group (p. 142).
- You can now use a top panel [SEL] button to assign a channel to a MUTE group (p. 146)

Improvements in screen display

- The layout of the top display area has been re-designed, and the channel display has been enlarged (p. 47).

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Introduction

Features of the M-400

Live mixing console that allows direct connection of REAC (Roland Ethernet Audio Communication) devices

REAC is a next-generation transmission protocol that uses Ethernet technology. It allows a single Cat5e Ethernet cable to carry up to forty channels of digital audio. Transmission between the M-400 and the input/output unit occurs digitally, allowing you to construct a high-quality digital mixing system without any danger of signal loss or noise even over extended distances.

With the M-400 live mixing console at the center, a V-Mixing system can be assembled by connecting input/output units such as the S-1608 stage unit, S-0816 FOH unit, and the S-4000S 40-channel I/O modular rack.

REAC port for splitting or backup

A REAC port for splitting or backup is provided, allowing splitting of the M-400's inputs or redundant transmission via the S-4000S.

Flexible input/output environment

Two REAC ports allow input/output units to be divided between two sides of the stage, or the number of inputs and outputs to be customized. The rear panel of the M-400 provides eight XLR input jacks featuring high-quality remote head amps and phantom power, eight XLR output jacks, stereo input, digital output, and talkback mic input, letting you construct a flexible input/output environment.

48-channel 18-bus mixer

Four-band EQ is provided on CH1–CH48, MAIN L/R, and AUX1–AUX16. There are also twenty-four gate/expander units and twenty-four compressors that can be used on CH1–CH48, and limiters are provided for AUX1–AUX16 and MAIN L/R.

Four effects that can be used for send/return or as inserts

The M-400 provides four effects that can be used as spatial-type effects such as reverb or delay, modulation-type effects such as chorus, or dynamics-type effects such as multi-band compressor. You can connect them via an AUX channel in a send/return configuration within the mixer, or insert them into the desired channels.

Up to twelve 31-band GEQ units

The M-400 provides four 31-band GEQ units that can be inserted into AUX1–AUX16, MATRIX1–MATRIX8 or MAIN L/R. In addition, since the four effects can be used as dual 31-band GEQ units, you have the ability to use a total of twelve 31-band GEQ units.

Up to eight external effects can be inserted

The eight sets of XLR input/output jacks on the M-400's rear panel allow you to insert up to eight external effects into the desired channels.

Equipped with USB Memory Recorder for live recording or background music playback

The USB memory recorder function lets you play back WAV files from USB memory, or record the output of a desired bus as a 16-bit linear WAV file.

You can use this as a convenient way to play background music or record a live performance.

Check the included items

The following items are included with the M-400. Make sure that all of them are present.

- The M-400 itself
- Power cord

  * Use only the power cord that was included with the M-400.
- REAC connector covers (three)
- Channel number sticker
- Ferrite cores (three)
- Owner's manual (the document you're reading)
- Cover

Conventions used in this manual

The explanations in this manual include illustrations that depict what should typically be shown by the display. Note, however, that your unit may incorporate a newer, enhanced version of the system (e.g., includes newer sounds), so what you actually see in the display may not always match what appears in the manual.

Names

The following input/output units can be connected to the M-400's REAC ports.

- S-1608 stage unit
- S-0816 FOH unit
- S-4000S 40-channel I/O modular rack (Ver. 2.010 and later)

In this manual, we may abbreviate these units as the S-1608, S-0816, or S-4000S, or may refer to them collectively as input/output units.

Text enclosed in square brackets [ ] indicates a button. For example, the direction to "press [METER]" means that you are to press the METER button.

If a secondary name is shown for a button, such as [DISP (BUTTON ASSIGN)], the text in parentheses indicates the function that the button has when pressed while holding down [SHIFT].

In the case of function buttons, the function is given in parentheses, such as [F1 (LINK)].

About the icons

This owner's manual uses various icons. These icons indicate supplementary information about the M-400's functions or operation.

NOTE	Indicates important information that will help you avoid personal injury, or damage to the M-400 or other devices.
MEMO	Indicates supplementary information on a related topic.
TIP	Indicates an idea for using the function being explained.
cf.	Indicates a reference page.

Basic knowledge about REAC

About REAC

The REAC (Roland Ethernet Audio Communication) interface is the core of this system. It uses a proprietary protocol based on Ethernet technology, and allows 40 channels of digital audio to be sent via a single Cat5e Ethernet cable.

REAC can do the following.

- Send 40 channels of digital audio
- Send audio up to 100 meters on one Cat5e cable
- A switching hub or the S-OPT option can be used to extend the cable.
- Use a switching hub to easily split the signal
- The transmission delay between REAC devices is extremely small (approximately 375 microseconds)

  MEMO

  When the signal passes through a switching hub, there will be approximately 200 microseconds of delay for each unit.

About cables

Since Cat5e Ethernet cables are used, it's very easy to connect REAC devices to each other. Cat5e Ethernet cables are commonly used for computer network connections, and have RJ45 plugs.

Types of Ethernet cable

There are two types of Ethernet cables. Although both types have the same exterior appearance, their RJ45 plugs are wired differently, as follows.

- **Crossover cable**

  The internal wiring of the cable is crossed at each RJ45 plug. This means that the connections of the RJ45 plugs will differ at each end of the cable.

- **Straight cable**

  The internal wiring of the cable is the same at each end.

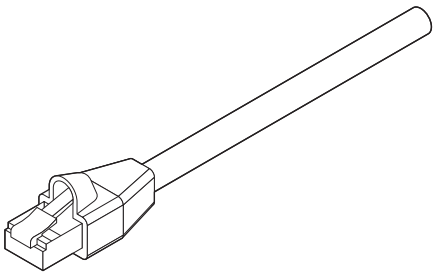
Crossover cables (such as RSS SC-W100S or RSS W100S-R) should be used when connecting to the REAC ports on this product.

MEMO

Certain cautions apply if you're using a conventional switching hub with this system. For details, refer to "REAC applications" (p. 181).

Ethernet connectors

Ethernet cables use RJ45 plugs. REAC equipment provides an RJ45 connector for each REAC port.



RJ45 plug

REAC RJ45 connector

For critically important communication, it is vital to protect the RJ45 plug and connector. For such situations, REAC RJ45 connectors use a sturdy Neutrik EtherCon plug. Using the EtherCon RJ45 plug allows a latched-type connector similar to an XLR plug.

Neutrik Corporation provides EtherCon RJ45 plugs as well as The Neutrik Corporation manufactures EtherCon RJ45 plugs, as well as EtherCon plugs that can be added to the RJ45 plug of commercially available Ethernet cable.

MEMO

The RJ45 connectors of REAC ports can accept either RJ45 plugs or EtherCon plugs.

Cautions for handling Cat5e cables

- Do not apply excessive force to Cat5e cables.
- Do not bundle (bend) a Cat5e cable to a radius less than 25 mm, or fold it in two.
- Do not tightly bundle a Cat5e cable.
- Do not place multiple Cat5e cables in parallel for an extended distance.
- Do not place Cat5e cables near a source of electrical noise (power supply cord, motor, fluorescent lights, etc.).

REAC connections

Here is a typical example of connections using the S-1608.

When connecting REAC devices to each other, the REAC mode of one device must be set to Master, and the REAC mode of the others must be set to Slave.

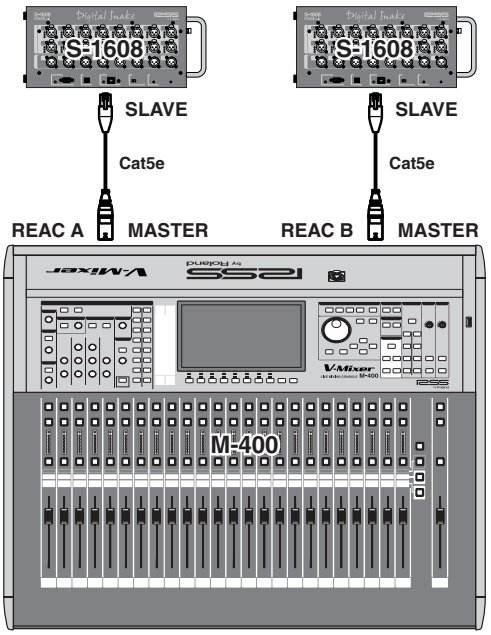
In this system, the M-400 is normally set to be the master (FOH setting), while the input/output units are set to be slaves.

cf.

For a more detailed description of connections, refer to “REAC applications” (p. 181).

MEMO

Cat5e Ethernet cables up to 100 meters long are supported. If you need a longer connection, we recommend that you use the optional S-OPT.



Cautions when making REAC connections

- REAC connections are designed so that noise will not be produced even if you hot-swap (plug or unplug a live connection). However in rare cases, noise may occur at the audio output of the system. To prevent hot-swapping from causing damage to your speakers or other equipment connected to the audio outputs, please observe the following points.
- Make REAC connections while holding down the [MUTE ALL OUTPUTS] of the input/output unit
- Before you make REAC connections, mute the outputs using [F6 (MUTE ALL OUT)] in the MUTE GROUP screen (p. 145).

MEMO

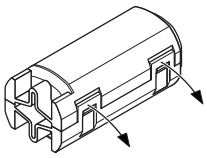
In some cases, the muted state will continue even after you release your finger from [MUTE ALL OUTPUTS] of the input/output unit. In this case, press [MUTE ALL OUTPUTS] once again to mute, and then release your finger to unmute the unit.

Placement

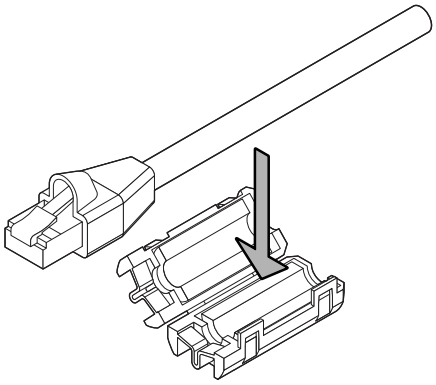
Attaching the ferrite core

You must attach the ferrite cores before using the M-400. This is for the purpose of preventing electromagnetic noise; do not remove it.

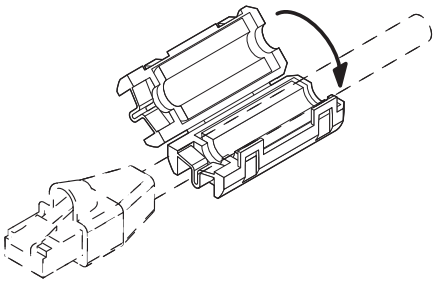
1. Spread the tabs, and open the ferrite core.



2. Attach the ferrite core near the base of the Ethernet cable's RJ45 plug.



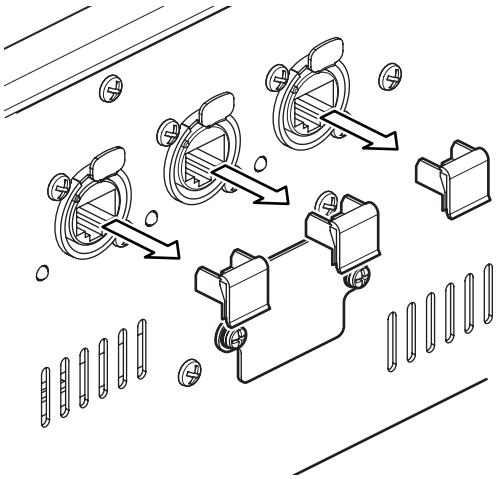
3. Close the ferrite core until you hear it snap shut.



4. Connect the plug with the ferrite core to the M-400's REAC port.

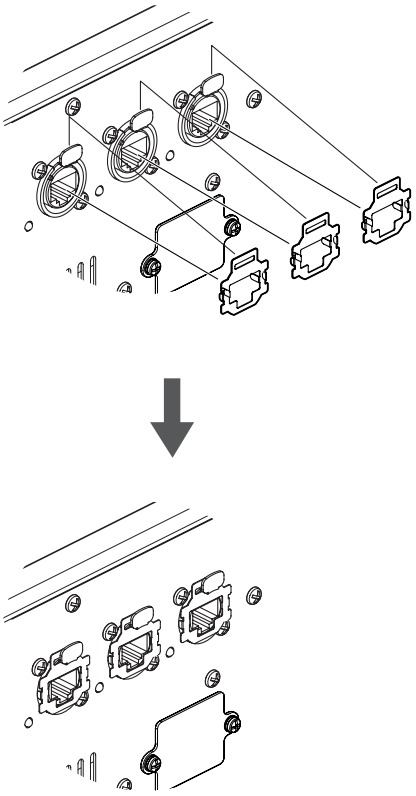
About the REAC caps

When the M-400 is shipped from the factory, REAC caps are attached to the REAC ports. In order to use REAC port, you'll need to remove the REAC cap. Take care not to lose the REAC caps you remove.



About the REAC connector covers

When using an Ethernet cable with standard RJ45 plugs, fit the included REAC connector covers on the REAC ports as shown.



MEMO

Remove the REAC connector cover if you're using an EtherCon type REAC cable (SC-W100S/W100S-R). Take care not to lose the REAC connector covers you removed.

AC power connections

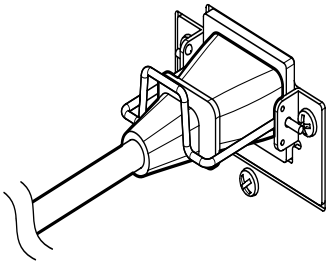
Connect one end of the supplied AC power cord to a grounded AC outlet, and the other end to the AC INPUT connector to provide power for the M-400's internal power supply.

NOTE

Use only the supplied power cords to prevent damage to the units.

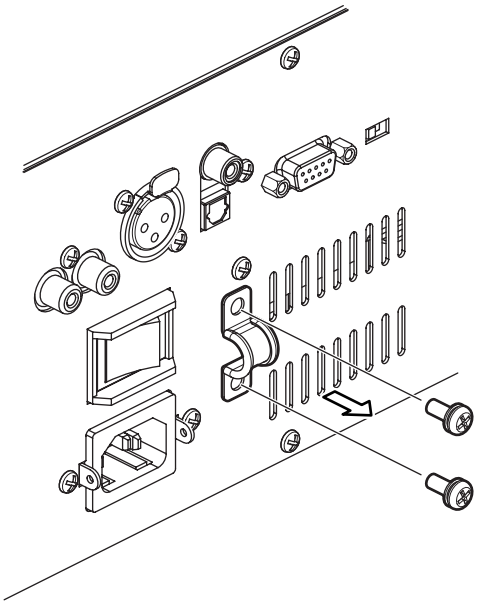
Attaching the power cord clamp

1. Lower the power cord clamp to fasten the power cord.

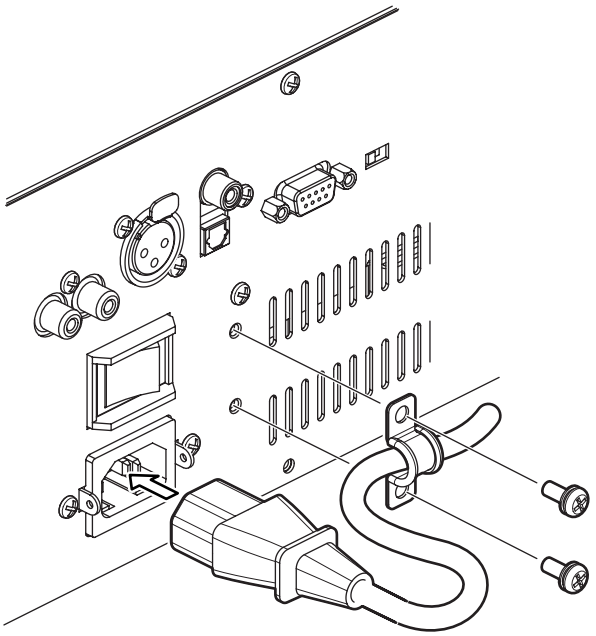


Attaching the power cord hook

1. As shown in the illustration, remove the two screws that fasten the hook, and detach the power cord hook.



2. As shown in the illustration, fit the power cord hook over the power cord, and fasten it using the two screws you removed in step 1.

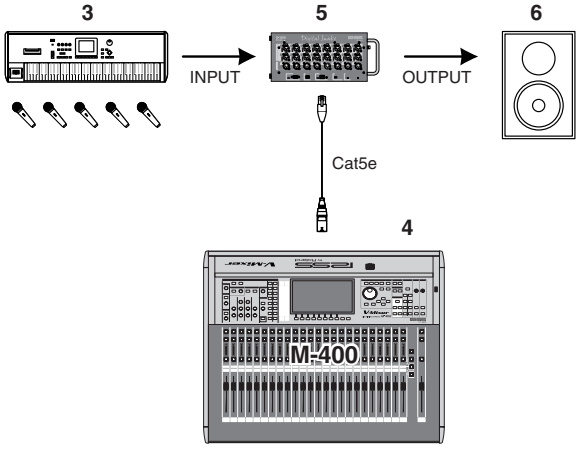


Turning the power on/off

Turning the power on

NOTE

Once the connections have been completed (p. 22), turn on power to your various devices in the order specified. By turning on devices in the wrong order, you risk causing malfunction and/or damage to speakers and other devices.



1. **Connect your input/output units (S-1608, S-0816, S-4000S, etc.) to the M-400's REAC port.**
2. **Connect your audio equipment to the audio inputs and audio outputs of the M-400 and your input/output units.**
3. **Turn on the power of the equipment connected to the audio inputs of the M-400 and your input/output units.**
4. **Turn on the power using the POWER switch located on the M-400's rear panel.**

   When the power supply has started up, a screen like the following will appear.



5. **Turn on the power of your input/output units.**

MEMO

If your input/output unit is the S-1608 or S-0816, use the power cord included with the unit to connect the AC inlet of the input/output unit to an electrical outlet.

6. **Turn on the power of the equipment connected to the audio outputs of the M-400 and your input/output units.**

NOTE

This unit is equipped with a protection circuit. A brief interval (a few seconds) after power up is required before the unit will operate normally.

Turning the power off

1. **Mute the outputs using [F6 (MUTE ALL OUT)] in the MUTE GROUP screen (p. 145).**
2. **Turn off the power of the equipment connected to the audio outputs of the M-400 and your input/output units.**
3. **Turn off the power using the POWER switch located on the M-400's rear panel.**
4. **Turn off the power of your input/output units.**
5. **Turn off the power of the equipment connected to the audio inputs of the M-400 and your input/output units.**

NOTE

Before you turn off the power of the M-400, make sure that it is not reading/writing USB memory or reading/writing scene memory or library data. The data may be destroyed if you turn off the power during such operations.

NOTE

To prevent malfunction and/or damage to speakers or other devices, always turn down the volume, and turn off the power on all devices before making any connections.

About the internal lithium battery

The M-400 has an internal lithium battery that backs up the clock function and the mixer settings. If this battery runs down, the clock function and the feature that provides for the reinstatement of the mixer settings that existed prior to switching off the power will no longer operate correctly. If a popup message recommending that you replace the battery appears when you turn on the power, replace the battery as described in the following procedure.

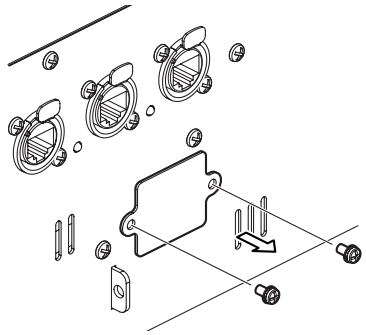
Replace the old battery with a CR2032 type lithium battery. Ask your consumer electronics dealer for a "CR2032 type lithium battery."

1. Back up the M-400's mixer settings to USB memory.

cf.
For details, refer to "Saving and loading mixer settings" (p. 199).

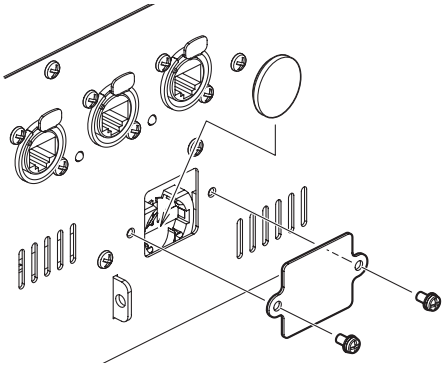
2. Switch off the M-400's power, and disconnect the power cord from the AC outlet.

3. Remove the two screws that fasten the battery cover as shown in the illustration, and detach the battery cover.



4. Remove the old battery, and insert the new battery.

5. Attach the battery cover as shown in the illustration, and fasten it using the two screws you removed in step 3.



6. Turn on the power of the M-400, and set the date and time (p. 202).

7. Load the previously saved settings (MIXER PARAMETER, SYSTEM SETTING) from the USB memory to which you backed up the data in step 1. (p. 200)

À propos de la pile interne au lithium

French language
for Canadian Safety Standard

Le M-400 est équipé d'une pile au lithium qui fait fonctionner l'horloge et préserve les réglages du mélangeur. Si la pile est faible, l'horloge et la restauration des réglages du mélangeur ne fonctionnent pas correctement. Si un message contextuel recommandant de remplacer la pile s'affiche lorsque l'appareil est mis sous tension, il faut la remplacer comme suit.

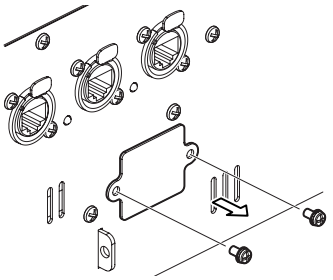
Remplacement de la pile usée par une pile au lithium de type CR2032. Il faut s'assurer d'obtenir pile au lithium de type CR2032 du détaillant d'appareils électroniques.

1. Faire une copie de sauvegarde des réglages du mélangeur interne dans la mémoire USB.

cf.
Pour obtenir les détails, se reporter à la rubrique "Saving and loading mixer settings" (p. 199).

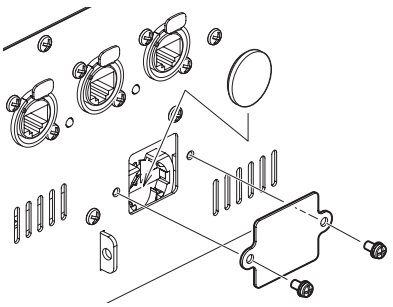
2. Couper l'alimentation du M-400 et débrancher le câble d'alimentation de la prise de courant.

3. Comme le montre l'illustration, retirer les deux vis qui retiennent le couvercle du compartiment de la pile et retirer le couvercle.



4. Retirer la pile usée et insérer la pile neuve.

5. Remettre en place le couvercle du compartiment de la pile et le fixer à l'aide des deux vis retirées à l'étape 3.



6. Mettre le M-400 sous tension et régler la date et l'heure (p. 202).

7. Charger les réglages enregistrés (PARAMÈTRE DU MÉLANGEUR, RÉGLAGE DU SYSTÈME) dans la mémoire USB où la copie de sauvagarde a été faite à l'étape 1. (p. 200)

About USB memory

The M-400 can use USB memory to store and read a variety of data.

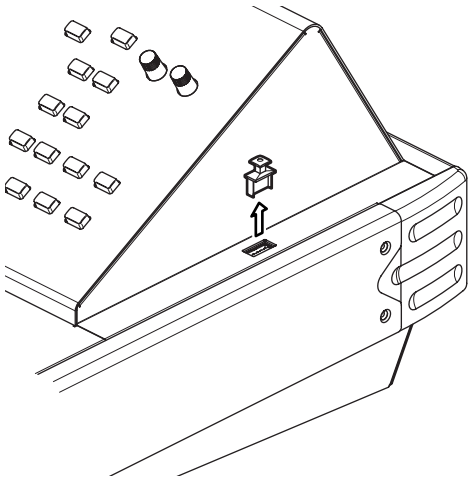
- Record and play WAV files using the USB Memory Recorder
- Save and load user settings files
- Back up and recover internal mixer data

MEMO

USB memory used with the USB Memory Recorder must support USB 2.0 (Hi-speed).

About the USB memory cover

When the M-400 is shipped, a USB memory cover is attached to the USB memory connector. Remove the USB memory cover when using USB memory. Take care not to lose the USB memory cover you removed.



Quick start

Preparations

Switch the user to ADMIN

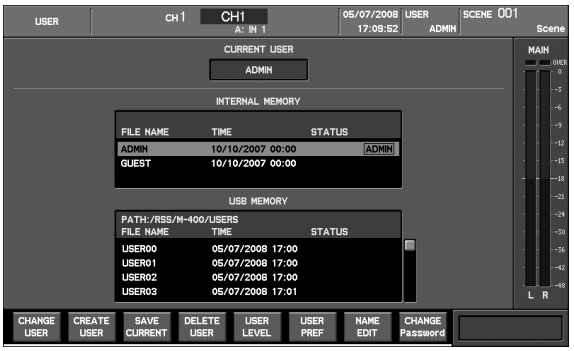
Depending on the user settings, the operations described in this chapter may be restricted. In the interests of simplicity, we will switch the user setting to ADMIN (administrator).

1. Check the current user indication in the user setting area at the top of the screen.



If the current user is ADMIN, you don't need to change the user setting.
If the current user is other than ADMIN, switch the user setting to ADMIN as described in steps 2–5.

2. In the USER section, press [DISP] to access the USER screen.



3. In INTERNAL MEMORY, choose "ADMIN" and press [F1 (CHANGE USER)].

4. If an ADMIN password has been set, the ENTER PASSWORD popup will appear.



Enter the password and press [F8 (OK)].

MEMO

The ADMIN password is set by the administrator of the M-400. You must follow the intentions of the M-400's administrator for operations related to the ADMIN password.

5. A message will indicate that the user setting has switched.

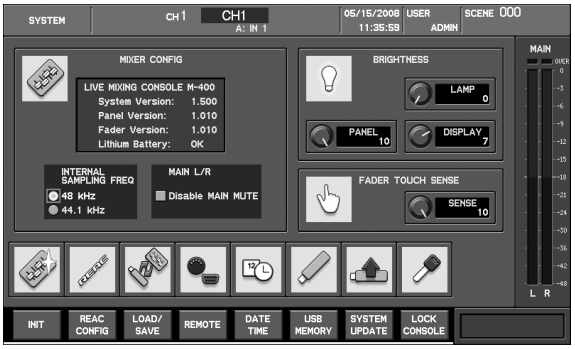


Press [F8 (OK)] to close the message.

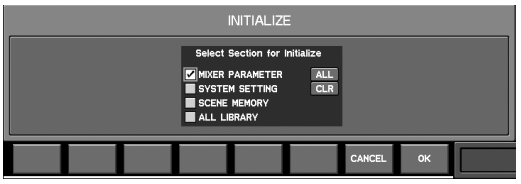
Return the M-400's setting to the default state

For this chapter, we will initialize the M-400's mixer parameters and system settings in the interests of simplicity. This will reset the REAC mode settings and input/output patchbay settings to the default state.
To initialize the mixer parameters and system settings, proceed as follows.

1. Press [SYSTEM] to access the SYSTEM screen.



2. Press [F1 (INIT)].

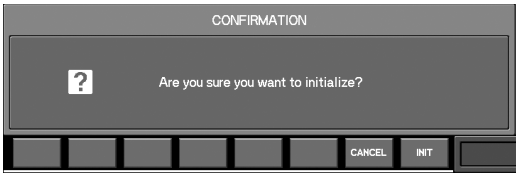


The INITIALIZE popup will appear.

3. Move the cursor to MIXER PARAMETER, and press [ENTER] to select it.

4. Move the cursor to SYSTEM SETTING, and press [ENTER] to select it.

5. Press [F8 (OK)], and a message will ask you to confirm the operation.



If you press [F7 (CANCEL)], the operation will be cancelled and the popup will close.

6. Press [F8 (INIT)], and the mixer parameters and system settings will be initialized.

If you press [F7 (CANCEL)], the initialization will be cancelled and the popup will close.

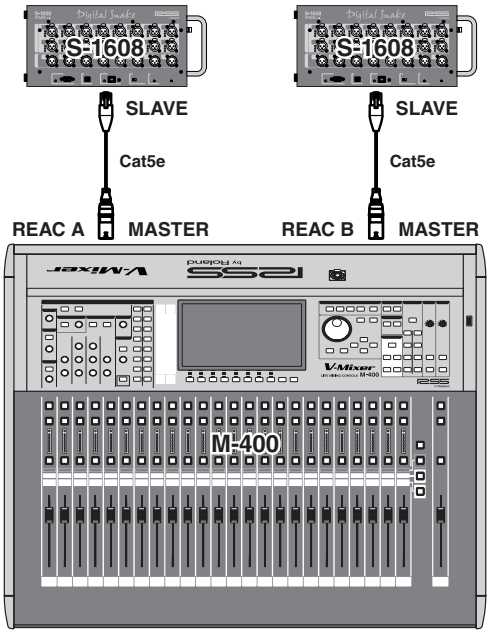
cf.

The current settings will be lost once you carry out an initialization. For details on saving the current settings to USB memory, refer to "Saving and loading mixer settings" (p. 199).

REAC mode settings and connections

Rules for connecting REAC devices

When connecting REAC devices to each other, the REAC mode of one device must be set to Master, and the REAC mode of the others must be set to Slave.
In this system, the M-400 is normally set to be the master (FOH setting), while the input/output units are set to be slaves.



Setting the REAC mode

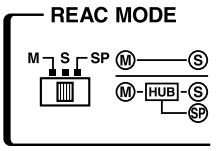
Setting the REAC mode of the input/output unit

1. **Switch off power to the input/output unit.**

MEMO

For the S-1608 or S-0816, disconnect the power cord.

2. **Set the REAC mode of the input/output unit to Slave.**



TIP

M, S, and SP on the input/output units indicate MASTER, SLAVE, and SPLIT, respectively.

TIP

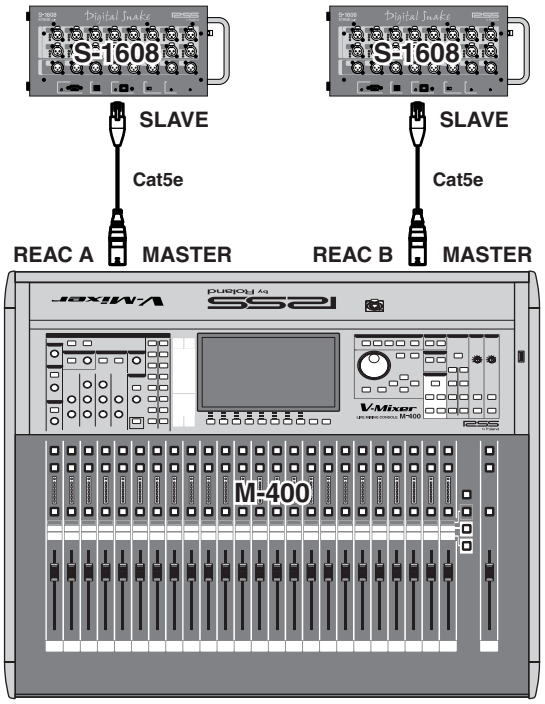
When you return the M-400's setting to the factory-set state, the REAC setting will be set to Master (FOH setting).

cf.

In order to construct advanced systems, you will need to set each REAC device to the appropriate REAC mode.
For details, refer to "REAC applications" (p. 181).

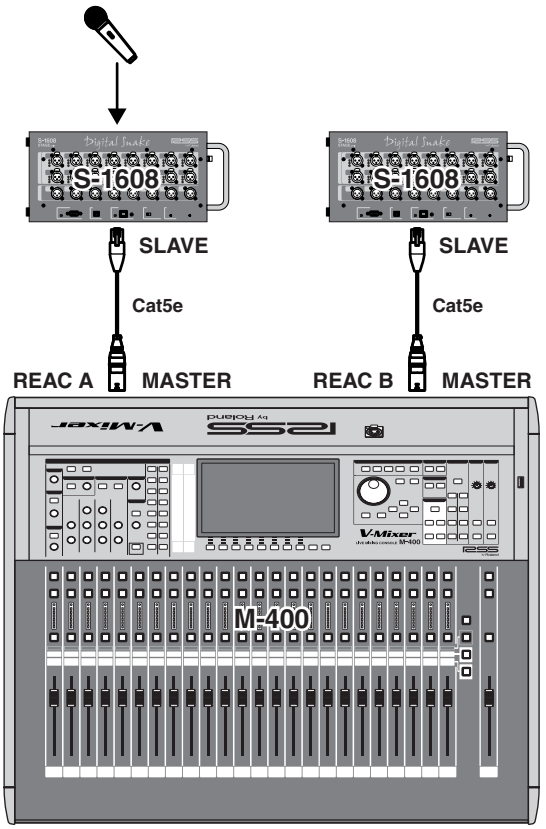
Connect the input/output units

Use a Cat5e cable to connect the M-400 to each input/output unit.



Mic connections

Connect your mic to INPUT 1 of the input/output unit connected to REAC A.



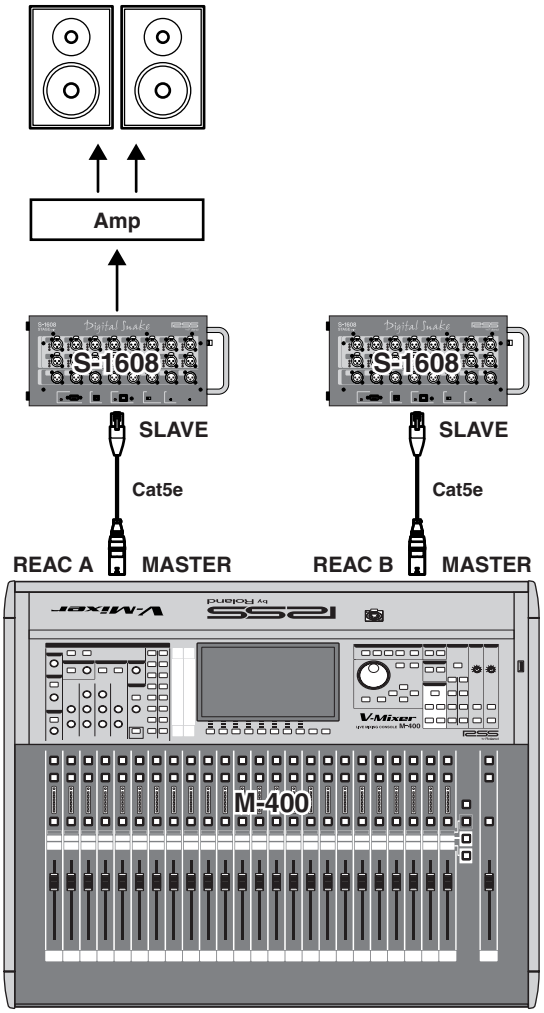
NOTE

Howling could be produced depending on the location of microphones relative to speakers. This can be remedied by:

1. Changing the orientation of the microphone(s).
2. Relocating microphone(s) at a greater distance from speakers.
3. Lowering volume levels.

Amp and speaker connections

Connect your amp and speaker to OUTPUT 7 and 8 of the input/output unit connected to REAC A.



Checking the REAC connections

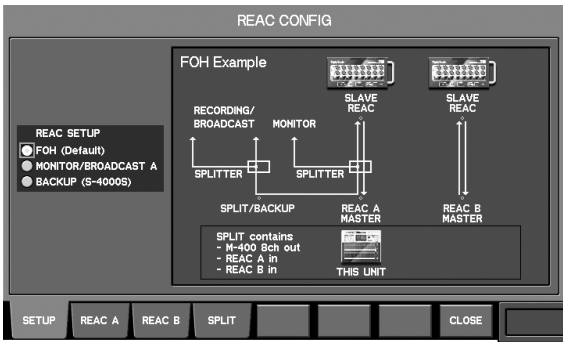
When you've made the correct connections, check the REAC connections as follows.

1. Power up the M-400 first, then the input/output units, and wait until the M-400 starts up.

2. Press the M-400's [SYSTEM] to access the System screen.

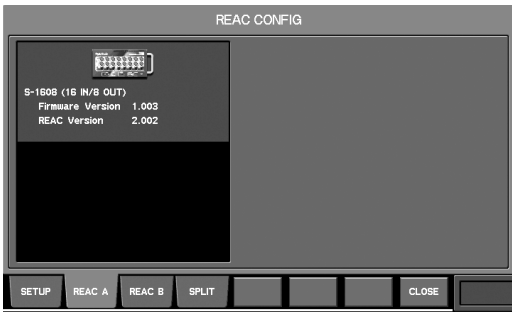


3. Press [F2 (REAC CONFIG)].



The REAC CONFIG popup will appear.

4. Press [F2 (REAC A)] to access the REAC A tab, and verify that the name of the input/output unit connected to REAC port A is shown.



5. Verify the same for the REAC B tab ([F3 (REAC B)]).

6. Press [F8 (CLOSE)] to close the popup.

MEMO

If the input/output units connected to the REAC ports are not detected correctly, check the M-400's REAC setting (p. 186), the REAC settings of the input/output units, the connections of the Cat5e cables, and the conductivity of the Cat5e cables.

Input/output patching

Input patchbay

When the M-400 is in the default state, the input patchbay will be set as follows.

Input channels	Input ports
CH1–CH16	REAC A IN1–IN16
CH17–CH32	REAC B IN1–IN16
CH33–CH40	CONSOLE IN1–IN8
CH41–CH42	FX3 OUT L/R
CH43–CH44	FX4 OUT L/R
CH45–CH46	RECORDER L/R
CH47–CH48	STEREO IN L/R

Output patchbay

When the M-400 is in the default state, the output patchbay will be set as follows.

Output jacks	Output
REAC A OUT1–OUT6	AUX1–AUX6
REAC A OUT7–OUT8	MAIN L/R
REAC B OUT1–OUT6	AUX9–AUX14
REAC B OUT7–OUT8	MAIN L/R
CONSOLE OUT1–OUT6	AUX1–AUX6
CONSOLE OUT7–OUT8	MONITOR L/R
DIGITAL OUT	MONITOR L/R

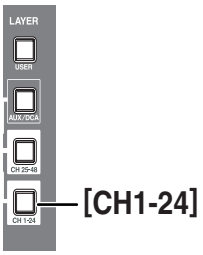
cf.

You can change the input/output patchbay settings. For details, refer to "Editing the input patching" (p. 116) or "Editing the output patching" (p. 118).

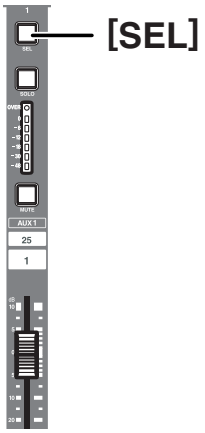
Mixing

Setting the preamp gain of the mic input, and sending it to the MAIN L/R bus

1. **In the layer section, press [CH1-24] to select the CH1–CH24 channel layer.**



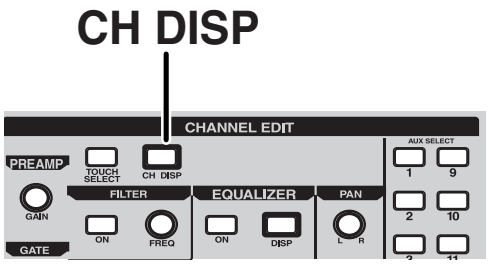
2. **Press the fader module 1 [SEL].**



CH1 will be selected, and the upper center of the screen will show the channel number, channel name, and input port name.



3. **In the CHANNEL EDIT section, press [CH DISP].**



The CHANNEL DISPLAY screen will appear.



4. **In the CHANNEL EDIT section, use the PREAMP GAIN knob to adjust the preamp gain.**



MEMO

As necessary, make settings in the CHANNEL EDIT screen for +48V phantom power and pad.

NOTE

It is felt that it does not change smoothly when it coordinates the preamp gain, but it is not trouble. In addition, some noises come out, but it is not trouble.

5. **Raise the fader of fader module 1 to send the mic audio to the MAIN L/R bus.**

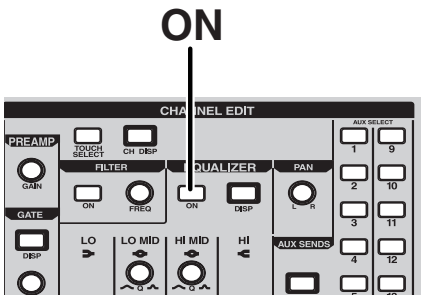
6. **When you raise the fader of the MAIN fader module, the mic audio will be output from output jacks connected to the MAIN L/R output.**

Applying four-band EQ to the mic input

1. **Access the CHANNEL DISPLAY screen for CH1.**



2. **In the CHANNEL EDIT section, press EQUALIZER [ON] to turn on the four-band EQ.**



3. **Use the knobs of the EQUALIZER area to control the four-band EQ.**

cf.

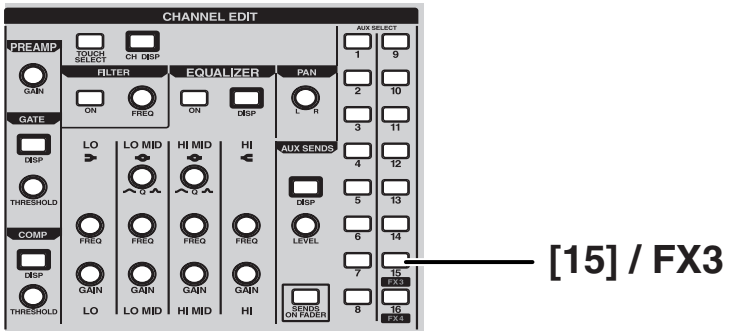
For details on using the four-band EQ, refer to “Four-band EQ operations” (p. 107).

Applying reverb to the mic input

1. Access the CHANNEL DISPLAY screen for CH1.



2. In the CHANNEL EDIT section, press AUX SELECT [15]/FX3 located in the AUX SENDS area.



The SEND LEVEL knob will now control AUX15.

3. Turn the SEND LEVEL knob to send the mic signal to AUX15.

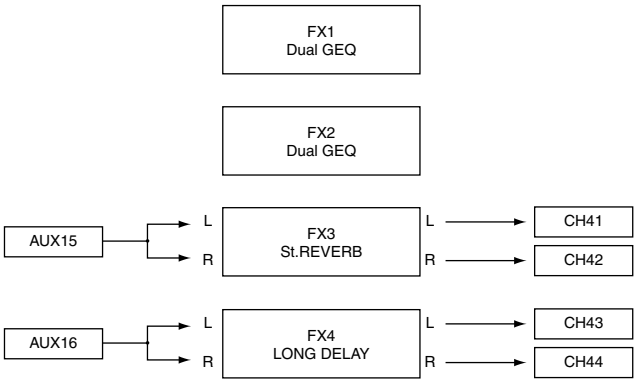
4. In the layer section, press [CH25–48] to select the CH25–CH48 channel layer.

5. When you raise the CH41 fader, the output of FX3 (St.REVERB) will be mixed into MAIN L/R.

TIP

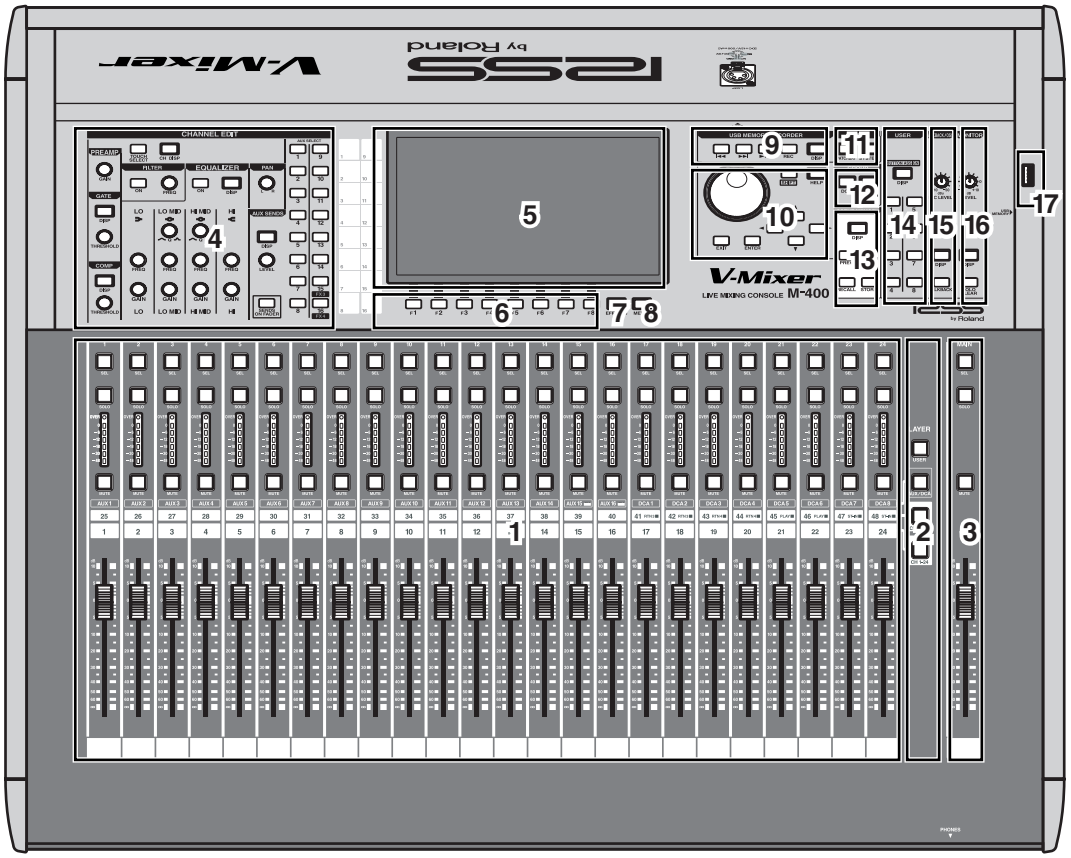
By default, CH41 and CH42 are linked, and the fader values will be the same. The pan of CH41 is set to L, and the pan of CH42 is set to R.

By default, the input and output of FX3 and FX4 are patched as follows, with a St.REVERB type recalled for FX3 and a LONG DELAY type recalled for FX4.



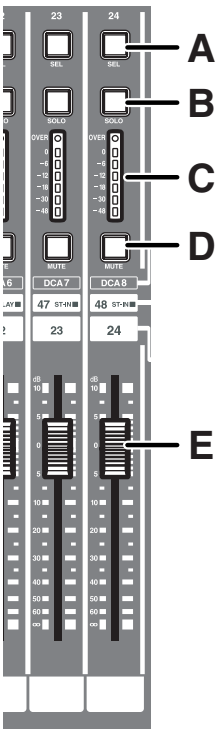
Explanation of the panels

Top panel



1	Fader module section	p. 33
2	Layer section	p. 33
3	Main fader module	p. 34
4	CHANNEL EDIT section	p. 34
5	Display	p. 36
6	Function button section	p. 36
7	EFFECTS button	p. 37
8	METER button	p. 36
9	USB MEMORY RECORDER section	p. 37
10	Screen controller section	p. 37
11	SETUP section	p. 38
12	GROUP section	p. 38
13	SCENE MEMORY section	p. 38
14	USER section	p. 38
15	TALKBACK/OSC section	p. 39
16	MONITOR section	p. 39
17	USB MEMORY connector	p. 39

1. Fader module section



This section lets you control the 24 channels you selected in the Layer section (p. 33).

A. SEL buttons

Use these buttons to select the channel that you want to control in the CHANNEL EDIT section or in the screen. The [SEL] button of the currently selected channel will light.

TIP

If all [SEL] buttons of the top panel are extinguished, a channel in a different channel layer is selected. The currently selected channel is also shown in the upper center of the screen.



MEMO

These buttons have no effect for DCA1–DCA8.

B. SOLO buttons

These buttons turn solo on/off for each channel. The button will light when solo is on.

There are two solo modes: LAST mode, in which you can monitor only the channel for which solo was activated most recently, or ADD ON mode, in which you can monitor the mix of all channels for which solo is on. You can switch between these modes in the monitor screen. For details, refer to "Using solo" (p. 156).

C. Meters

These indicate the signal level of each channel.

MEMO

The OVER indicator will light when a level that exceeds the OVER LEVEL specified in the METER screen is detected. For details, refer to "Editing the meter settings" (p. 122).

D. MUTE buttons

These turn muting on/off for each channel. The button will be lit if mute is active.

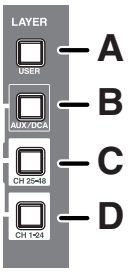
E. Faders

These adjust the signal level of each channel.

MEMO

In SENDS ON FADER mode, these adjust the send level from the channels to AUX.

2. Layer section



This section lets you select the channel layer that will be assigned to the fader module section. The button of the currently assigned channel layer will be lit.

A. USER layer button

This assigns the user fader layer to the fader module section.

cf.

For more about user faders, refer to "Editing the user settings" (p. 176).

B. AUX/DCA layer button

This assigns AUX1–AUX16 and DCA1–DCA8 to the fader module section.

C. CH25-48 button

This assigns CH25–CH48 to the fader module section.

D. CH1-24 button

This assigns CH1–CH24 to the fader module section.

MEMO

If the user preference AUX/DCA LAYER (p. 178) is set to "16Auxes + 8Matrices," the AUX/DCA layer button will assign AUX1–AUX16 and MATRIX1– MATRIX8 to the fader module section.

3. Main fader module



A. SEL button

This button selects the MAIN channel so that it can be controlled from the CHANNEL EDIT section or in the screen. It will light if the MAIN channel is selected.

MEMO

By repeatedly pressing [SEL] you can alternately select the MAIN L or MAIN R channels.

B. SOLO button

This button turns solo on/off for the MAIN L/R channels. It will light if solo is on.

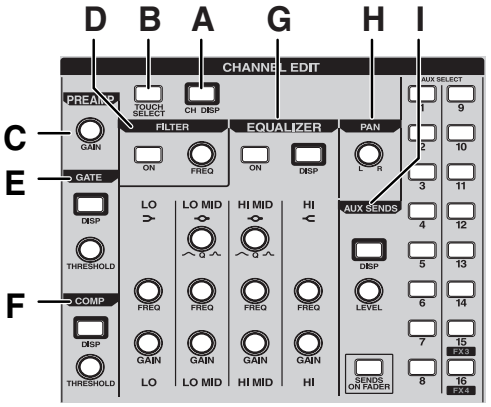
C. MUTE button

This button turns mute on/off for the MAIN L/R channels. It will light if mute is on.

D. Fader

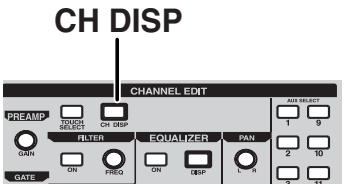
This adjusts the signal level of the MAIN L/R channels.

4. CHANNEL EDIT section



In this section you can operate the main parameters of the currently selected channel.

A. CH DISP button



This button accesses the CHANNEL DISPLAY screen. It will light red while this screen is displayed.

B. TOUCH SELECT button

This button turns the Touch Select function on/off. It will light if the Touch Select function is on.

MEMO

The Touch Select function lets you select a channel by touching its fader.

C. PREAMP area



- **GAIN knob**

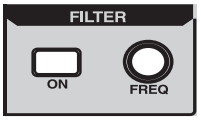
  This adjusts the preamp gain of CH1–CH48.

  This adjusts the attenuator of AUX1–AUX16, MATRIX1–MATRIX8 and MAIN L/R.

This control is invalid for the following channels.

- Input channels to which you have not patched an input port
- Input channels to which you've patched a port that has no preamp gain, such as an internal port

D. FILTER area

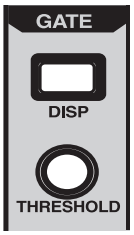


In this area you can operate the filter that is provided for each input channel.

- **ON button**
  This button turns the filter on/off. It will light if the filter is on.
- **FREQ knob**
  This adjusts the frequency of the filter.

These controls are invalid for the following channels.
- AUX1–AUX16
- MAIN L/R
- MATRIX1–MATRIX16

E. GATE area



In this area you can operate the gate/expander that is provided for CH1–CH48.

- **DISP button**
  This accesses the GATE/EXPANDER popup where you can make detailed settings. The button will light red while the popup is shown.
- **THRESHOLD knob**
  This adjusts the threshold level of the gate/expander.

These controls are invalid for the following channels.
- AUX1–AUX16
- MAIN L/R
- MATRIX1–MATRIX16

MEMO
You can turn the gate/expander on or off by holding down [SHIFT] and pressing [DISP].

F. COMP area



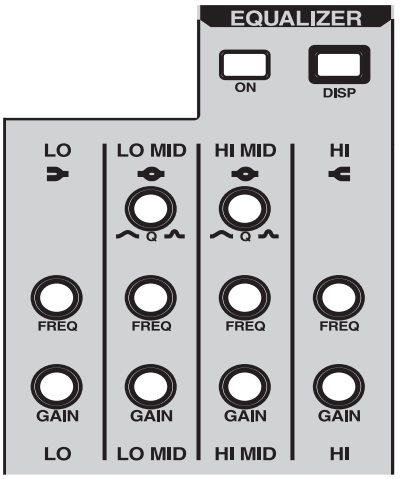
In this area you can operate the compressor that is provided on CH1–CH48 and the limiter that is provided on AUX1–AUX16 and MAIN L/R.

- **DISP button**
  This accesses a popup where you can make detailed settings. This will access the COMPRESSOR popup for CH1–CH48, or the LIMITER popup for AUX1–AUX16, MAIN L/R. The button will light red while the popup is shown.
- **THRESHOLD knob**
  This adjusts the threshold level of the compressor or limiter.

These controls are invalid for the following channels.
- MATRIX1– MATRIX8

MEMO
You can turn the compressor or limiter on or off by holding down [SHIFT] and pressing [DISP].

G. EQUALIZER area

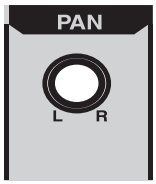


In this area you can operate the four-band EQ that is provided on each channel.

- **ON button**
  This button turns the EQ on/off. It will light if the EQ is on.
- **DISP button**
  This accesses the EQUALIZER popup where you can make detailed settings. The button will light red while the popup is shown.
- **Q knobs (LO-MID, HI-MID)**
  These adjust the Q of each band.
- **FREQ knobs (LO, LO-MID, HI-MID, HI)**
  These adjust the center frequency of each band.
- **GAIN knobs (LO, LO-MID, HI-MID, HI)**
  These adjust the gain of each band.

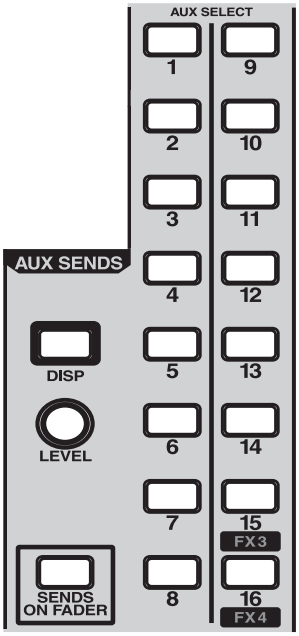
These controls are invalid for the following channels.
- MATRIX1– MATRIX8

H. PAN area



- **PAN knob**
  For CH1–CH48, this adjusts the pan. For AUX1–AUX16, MAIN L/R, MATRIX1–MATRIX8, it adjusts the balance.

I. AUX SENDS area



In this area you can adjust the send level from CH1–CH48 or the MAIN L/R channel to the AUX buses.

- **1–16 buttons**
  These buttons select the AUX bus that will be the target of the SEND LEVEL knob or the faders in SENDS ON FADER mode.
- **DISP button**
  This button accesses the AUX SENDS popup where you can make detailed settings. It will light red while the popup is shown.

  MEMO
  If an AUX channel is selected, or if the MTX SENDS indication is shown in the CHANNEL DISPLAY screen for MAIN L/R, this will adjust the send levels to MATRIX1–MATRIX8.

  MEMO
  If a MATRIX channel is selected, this will adjust the send levels from AUX1–AUX16 to MATRIX.

  MEMO
  You can turn the corresponding send switch on/off by holding down [SHIFT] and pressing AUX SELECT [1]–[16].
- **SEND LEVEL knob**
  This adjusts the send level to the AUX bus selected by the AUX SELECT [1]–[16] buttons.

TIP
If AUX buses are stereo-linked, selecting the odd-numbered AUX bus will let you adjust the send pan, and selecting the even-numbered AUX bus will let you adjust the send level.

- **SENDS ON FADER button**
  This button turns SENDS ON FADER mode on/off. It will blink if SENDS ON FADER mode is on.
  When SENDS ON FADER mode is on, you can use the faders of each channel to adjust the send level to the selected AUX Bus. Press one of the AUX SELECT [1]–[16] buttons to select the AUX bus whose send level you want to adjust.

  MEMO
  The main fader cannot be used with SENDS ON FADER.

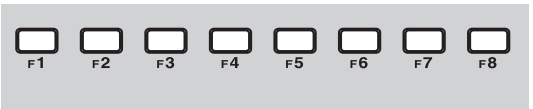
  MEMO
  SENDS ON FADER can be used only to adjust the send levels from CH1–CH48 to AUX.

5. Display



This area shows mixer parameters, system settings, and meters. You can use the CHANNEL EDIT section, the function button section, and the screen controller section to perform operations in the display.

6. Function button section



Use these buttons to operate the function buttons shown at the bottom of the display, and to operate the tabs that switch between display screens.

7. EFFECTS button



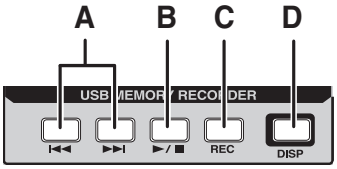
This button accesses the EFFECTS screen where you can control the effects, 31-band GEQ, and external insert paths. It will light red while this screen is shown.

8. METER button



This button accesses the METER screen where you can view the meters. It will light red while this screen is shown.

9. USB MEMORY RECORDER section



A. |◄◄ and ►►| buttons

Here you can select the song to play, and rewind or fast-forward the playback.

- **Selecting a song**

  By pressing these buttons, you can jump to the beginning of the preceding or following song. During playback, |◄◄ button takes you back to the beginning of the currently playing song.
- **Rewinding or fast-forwarding during playback**

  By pressing and holding these buttons while a song is playing, you can rewind or fast-forward. Normal playback will resume when you release the button.

  MEMO

  These buttons will not function while a song is being recorded.

B. ►/ ■ button

Use this button to start or stop playback, or to start recording.

- **Playing a song**

  When you press this button while the recorder is stopped, the currently selected song will play.
- **Stopping a song**

  When you press this button while the song is playing, playback will stop.
- **Starting recording**

  When you press this button in recording-standby mode, recording will start.
- **Stopping recording**

  When you press this button while recording a song, recording will stop.

C. REC button

Use this button to put the recorder in recording-standby mode, or to divide the song currently being recorded.

- **Recording-standby mode**

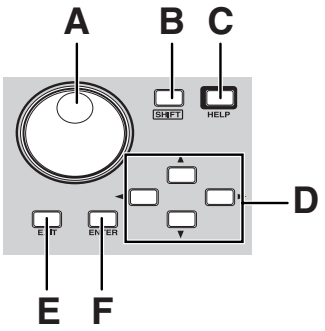
  When you press this button while the recorder is stopped, the recorder will enter recording-standby mode. Press [►/ ■] to start recording.
- **Dividing the song currently being recorded**

  When you press this button while a song is being recorded, recording of the song currently being recorded will be completed, and recording of a new song will begin.

D. DISP button

This button accesses the RECORDER screen where you can make recorder settings and manage the song list. It will light red while this screen is shown.

10. Screen controller section



A. Value dial

This adjusts the value of the parameter at which the cursor is located.

B. SHIFT button

This button has the following two functions.

- Some buttons change their function while [SHIFT] is held down. The function obtained while [SHIFT] is held down is printed above the button, enclosed by a line.
- You can hold down [SHIFT] to modify the range by which a value will change when you operate the CHANNEL EDIT section's knob or the value dial, allowing you to adjust the setting in finer detail.

  MEMO

  You can use the user preference SHIFT LOCK (p. 178) to change the behavior of the SHIFT button.

C. HELP button

This button accesses the HELP CONTENTS popup. If you hold down [HELP] and press another button, an explanation of that button will appear in the HELP popup. This button will light red while the popup is shown.

cf.

For more about using HELP, refer to the "Help function" (p. 208).

D. Cursor buttons

These buttons move the cursor up/down/left/right in the screen.

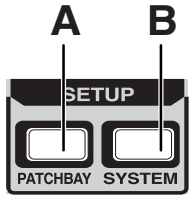
E. EXIT button

If you press this button while another screen is shown, you will return to the HOME screen. If you press this button while a popup is shown, the popup will close.

F. ENTER button

Use this button to turn an on-screen button on/off, or to confirm a change you've made to the settings.

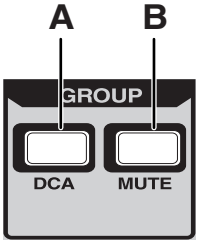
11. SETUP section



A. PATCHBAY button
This button accesses the PATCHBAY screen where you can make settings for the input/output patchbay. It will light red while the screen is shown.

B. SYSTEM button
This button accesses the SYSTEM screen where you can make various system settings. It will light red while the screen is shown.

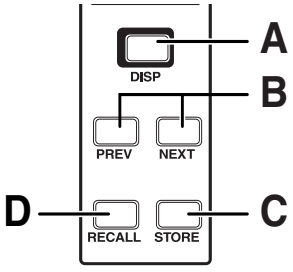
12. GROUP section



A. DCA button
This button accesses the DCA GROUP screen where you can control the DCA groups and make settings for them. It will light red while the screen is shown.

B. MUTE button
This button accesses the MUTE GROUP screen where you can control the mute groups and make settings for them. It will light red while the screen is shown.

13. SCENE MEMORY section



A. DISP button
This button accesses the SCENE screen where you can manage the scene list and make scene settings. It will light red while the screen is shown.

B. PREV, NEXT buttons
These buttons move to the preceding or following scene number. The scene number is shown in the upper right of the screen.

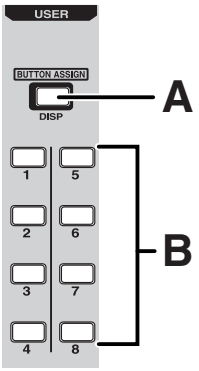
TIP
Simply changing the scene number does not store or recall the scene.

C. STORE button
Stores the current mixer parameters into the currently selected scene number.

D. RECALL button
Recalls the mixer parameters from the currently selected scene number.

TIP
You can't recall from a scene number in which scene data has not been stored.

14. USER section

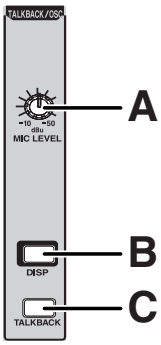


A. DISP (BUTTON ASSIGN) button
This button accesses the USER screen where you can change or edit the user settings. It will light red while the screen is shown.
If you hold down [SHIFT] and press this button, the USER BUTTON tab of the USER PREFERENCE popup will appear. This is a convenient way to check the user button settings.

B. USER 1–8 buttons
These access the function that is assigned to each button. You can make function assignments in the USER PREFERENCE popup. For details, refer to "Editing the user preferences" (p. 177).

MEMO
By holding down [SHIFT] and pressing a USER1–8 button, you can access the functions assigned to user buttons 9–16.

15. TALKBACK/OSC (talkback/oscillator) section



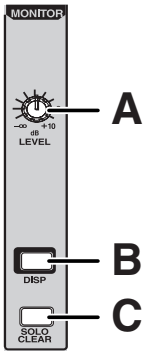
A. MIC LEVEL knob
This adjusts the preamp gain of the TALKBACK MIC input over a range of -10dBu–50 dBu.

B. DISP button
This button accesses the TALKBACK/OSCILLATOR screen, where you can make talkback settings and oscillator settings. It will light red while the screen is shown.

C. TALKBACK button
This button turns talkback on/off. It will blink while talkback is on.

The way in which you press [TALKBACK] will affect how it turns on/off.
Pressing and immediately releasing the button will alternately turn talkback off or on (latched operation).
Pressing and holding the button will cause talkback to remain on only while you continue holding down the button (momentary operation).

16. MONITOR section



A. LEVEL knob
This adjusts the monitor output level in a range of -Inf dB – +10.0 dB.

B. DISP button
This button accesses the MONITOR screen where you can make monitor or solo settings. It will light red while the screen is shown.

C. SOLO CLEAR button
This button clears (turns off) the solo settings of all channels in a single operation.

17. USB MEMORY connector

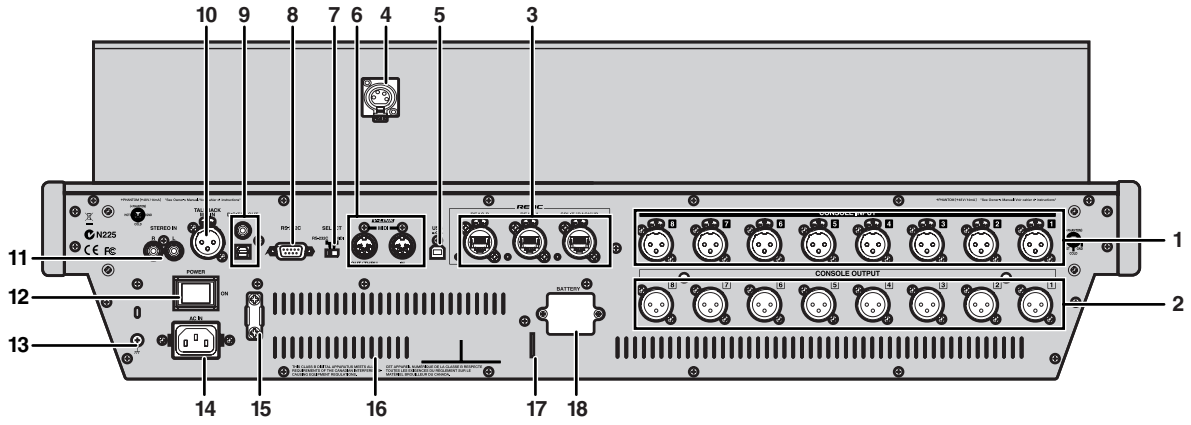


You can connect USB memory to this connector.

NOTE

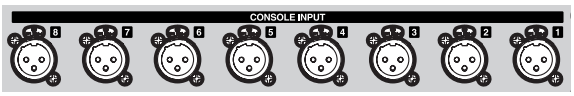
Before you disconnect USB memory, make sure that data is not being written to USB memory or being read from it. If you disconnect USB memory while these operations are occurring, you risk damaging the data.

Rear panel

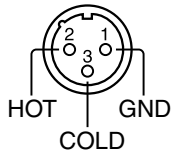


1	CONSOLE INPUT jacks	p. 41
2	CONSOLE OUTPUT jacks	p. 41
3	REAC ports	p. 41
4	LAMP connector	p. 42
5	USB connector	p. 42
6	MIDI connectors	p. 42
7	RS-232C/MIDI select switch	p. 42
8	RS-232C connector	p. 42
9	DIGITAL OUT jacks	p. 42
10	TALKBACK MIC IN jack	p. 42
11	STEREO IN jacks	p. 43
12	POWER switch	p. 43
13	Grounding terminal	p. 43
14	AC INPUT connector, power cord clamp	p. 43
15	Cord hook	p. 43
16	Cooling vent	p. 43
17	Theft prevention lock	p. 43
18	BATTERY slot	p. 43

1. CONSOLE INPUT jacks



These are balanced XLR-3-31 female input jacks for inputting analog audio signals from mics or line level equipment. Make connections after first checking the wiring diagrams of other equipment you intend to connect.



+PHANTOM[+48V/14mA]

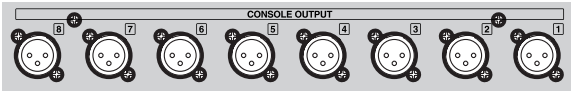
MEMO

By default, the CONSOLE INPUT jacks are patched to CH33–CH40.

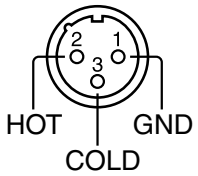
NOTE

When connection cables with resistors are used, the volume level of equipment connected to the inputs (CONSOLE INPUT, STEREO IN, TALKBACK MIC IN) may be low. If this happens, use connection cables that do not contain resistors.

2. CONSOLE OUTPUT jacks



These are balanced XLR-3-32 male output jacks for outputting analog audio signals.Make connections after first checking the wiring diagrams of other equipment you intend to connect.

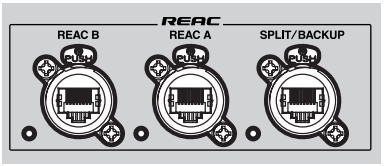


MEMO

By default, AUX1 OUT–AUX6 OUT and MONITOR L/R are patched to the CONSOLE OUT jacks.

The CONSOLE INPUT jacks and CONSOLE OUTPUT jacks can also be used as input/output jacks for inserting external effect processors into channels. For details, refer to "Inserting an external effects device" (p. 137).

3. REAC ports (A,B,SPLIT/BACKUP)



- **REAC A, B ports**

  These are RJ45 connectors for connecting input/output units such as the S-1608, S-0816, or S-4000S via Cat5e Ethernet cables.

  MEMO

  These connectors support Cat5e Ethernet cables up to 100 meters long. If you need a longer connection, we recommend that you use the optional S-OPT.

  The default input/output patching between the M-400 and input/output units connected to REAC ports A and B is as follows.

Input channel	Input connector
CH1–CH16	REAC A IN1–IN16
CH17–CH32	REAC B IN1–IN16

Output connector	Output
REAC A OUT1–OUT6	AUX1–AUX6
REAC A OUT7–OUT8	MAIN L/R
REAC B OUT1–OUT6	AUX9–AUX14
REAC B OUT7–OUT8	MAIN L/R

- **SPLIT/BACKUP port**

  This is used as a backup connection for the REAC A port, or for split connection. You can also use it for multitrack recording on a PC in which you've installed the REAC driver.

  cf.

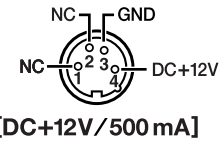
  For details on backup connections and split connections, refer to "REAC applications" (p. 181).

  The REAC A and B ports and the SPLIT/BACKUP port have REAC indicators that show the REAC communication status. The state of the REAC indicator has the following significance.

Status	Explanation
Unlit	No connection with a REAC device has been established.
Lit	A backup connection or split connection with a REAC device has been established.
Blinking	Connected normally with a REAC device.

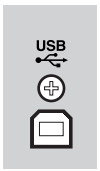
4. LAMP connector

This is an XLR-4-31 type connector that supplies power to a commercially available gooseneck lamp.



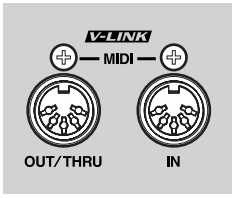
[DC+12V/500 mA]

5. USB connector



This USB connector can be connected to your PC to control the M-400 remotely. For more about remote operation, refer to "Remote" (p. 189).

6. MIDI connectors



These connectors are for connection with MIDI equipment. An IN connector (for reception) and an OUT/THRU connector (for transmission and "thru") are provided. You can use the REMOTE popup to switch between the OUT and THRU functions.
For details, refer to "Remote settings" (p. 190).

7. RS-232C/MIDI select switch

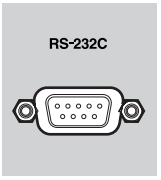


On the M-400 you can use either the MIDI connectors or the RS-232C connector. This switch selects the connector(s) you will use.

NOTE

You must switch off the M-400's power before changing the position of this switch.

8. RS-232C connector



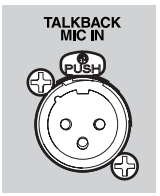
You can use this RS-232C connector to remotely control the M-400 from an external device.

9. DIGITAL OUT jacks

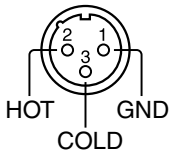


These jacks output a consumer format (IEC-60958 compliant) digital audio signal. Two types of jacks are provided: coaxial and optical. The same digital audio signal is output from both jacks. By default, MONITOR L/R is patched to these jacks.

10. TALKBACK MIC IN jack

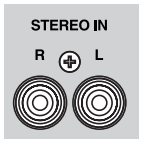


This is a balanced XLR-3-31 female input jack for connecting a talkback mic. Make connections after first checking the wiring diagrams of other equipment you intend to connect.



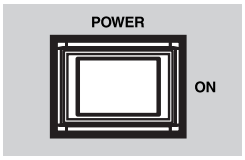
+PHANTOM[+48V/14mA]

11. STEREO IN jacks



These are RCA phono jacks for inputting analog audio signals from line level equipment. By default they are patched to CH47 and CH48.

12. POWER switch



This turns the power on/off.

cf.

If you need to turn off the power completely, first turn off the POWER switch, then unplug the power cord from the power outlet. Refer to **Power Supply** (p. 6).

13. Grounding terminal

Use this to connect the M-400 to an electrical ground.

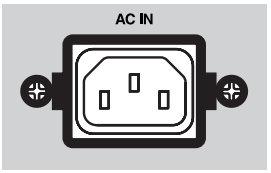
Do not ground the M-400 to locations such as the following.

- **Water pipe (doing so may cause electrical shock)**
- **Gas pipes (doing so may cause fire or explosion)**
- **Telephone ground or lightning rod (hazardous if lightning occurs)**

NOTE

Depending on the circumstances of a particular setup, you may experience a discomforting sensation, or perceive that the surface feels gritty to the touch when you touch this device, microphones connected to it, or the metal portions of other objects, such as guitars. This is due to an infinitesimal electrical charge, which is absolutely harmless. However, if you are concerned about this, connect the ground terminal (see figure) with an external ground. When the unit is grounded, a slight hum may occur, depending on the particulars of your installation. If you are unsure of the connection method, contact the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.

14. AC INPUT connector, power cord clamp



Connect the included power cord to the AC INPUT connector.

Use the power cord clamp to prevent the power cord from being accidentally disconnected.

cf.

For details on attaching the power cord clamp, refer to "Attaching the power cord clamp" (p. 16).

NOTE

Do not connect any power cord to the M-400 other than the included one.

15. Power cord hook

You can use this power cord hook to prevent the power cord from being accidentally disconnected. This provides greater security than the power cord clamp.

cf.

For details on attaching the power cord hook, refer to "Attaching the power cord hook" (p. 16).

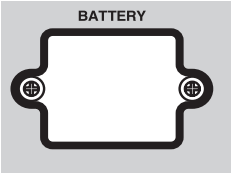
16. Cooling vent

This cooling vent cools the M-400. When placing the M-400, take care not to block the cooling vent.

17. Theft prevention lock

You can use this with a padlock to secure the M-400 from theft.

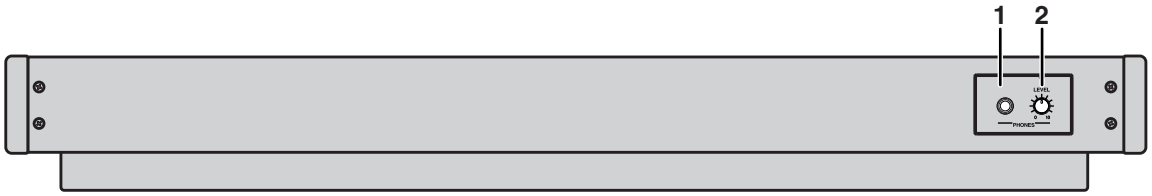
18. BATTERY slot



This slot contains a lithium battery that maintains the M-400's clock function and preserves the mixer settings.

If the battery runs down, you'll need to replace it. For details on replacing the battery, refer to "About the internal lithium battery" (p. 18).

Front panel



1. PHONES jack

You can connect a set of headphones to this jack, and use it to monitor the MONITOR L/R audio signal.

2. PHONES LEVEL knob

This adjusts the output level to the headphones connected to the PHONES jack.

Basic operation

Basic panel operations

Selecting the channel layer



Use the buttons of the Layer section to select the channel layer that will be controlled by the fader module section. Each channel layer assigns the following channels to the fader module section.

Channel layer	Channels
USER	USER FADER1–USER FADER24
AUX/DCA	AUX1–AUX16, DCA1–DCA8 (or AUX1–AUX16, MATRIX1–MATRIX8)
CH25-48	CH25–CH48
CH1-24	CH1–CH24

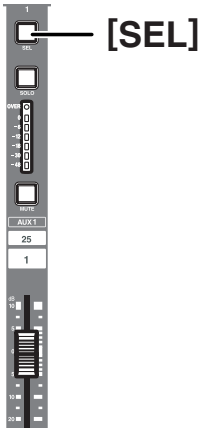
MEMO

If the user preference AUX/DCA LAYER (p. 178) is set to "16Auxes + 8Matrices," the AUX/DCA layer button will assign AUX1–AUX16 and MATRIX1– MATRIX8 to the fader module section.

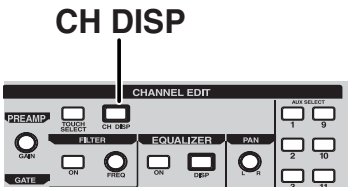
Operations in the CHANNEL EDIT section

Here's how to edit the channel parameters.

1. In the fader module section or main fader module, press a [SEL] button to select the channel that you want to control.



2. In the CHANNEL EDIT section, press [CH DISP].



3. The CHANNEL DISPLAY screen will appear. Use the controllers of the CHANNEL EDIT section to edit the values.



TIP

You can make adjustments in finer increments by holding down [SHIFT] while you operate the CHANNEL EDIT section's knobs or the value dial.

TIP

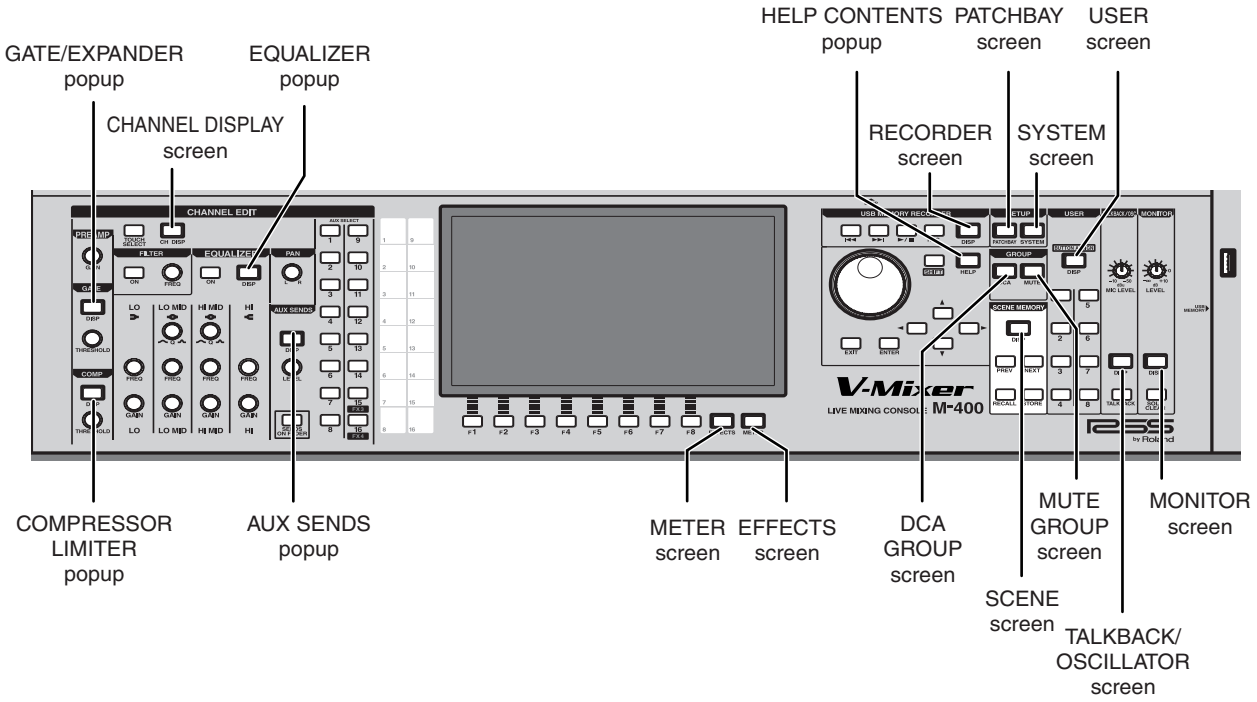
If you want to edit channel parameters that are not shown in the CHANNEL DISPLAY screen, you can press the [DISP] button in each area of the CHANNEL EDIT section to access a popup that lets you make settings in greater detail.

MEMO

If you've selected the CHANNEL SELECT item "CHANNEL DISPLAY follows CH SELECT button" in User Preference (p. 177), pressing a [SEL] button will cause the CHANNEL DISPLAY screen of that channel to appear.

Accessing a screen

When you press a screen select button that's lit in green, or a screen select button that has a blue border, the corresponding screen or popup will appear, and the button will light in red.
The following illustration shows the name of the screen or popup that appears for each button.



MEMO

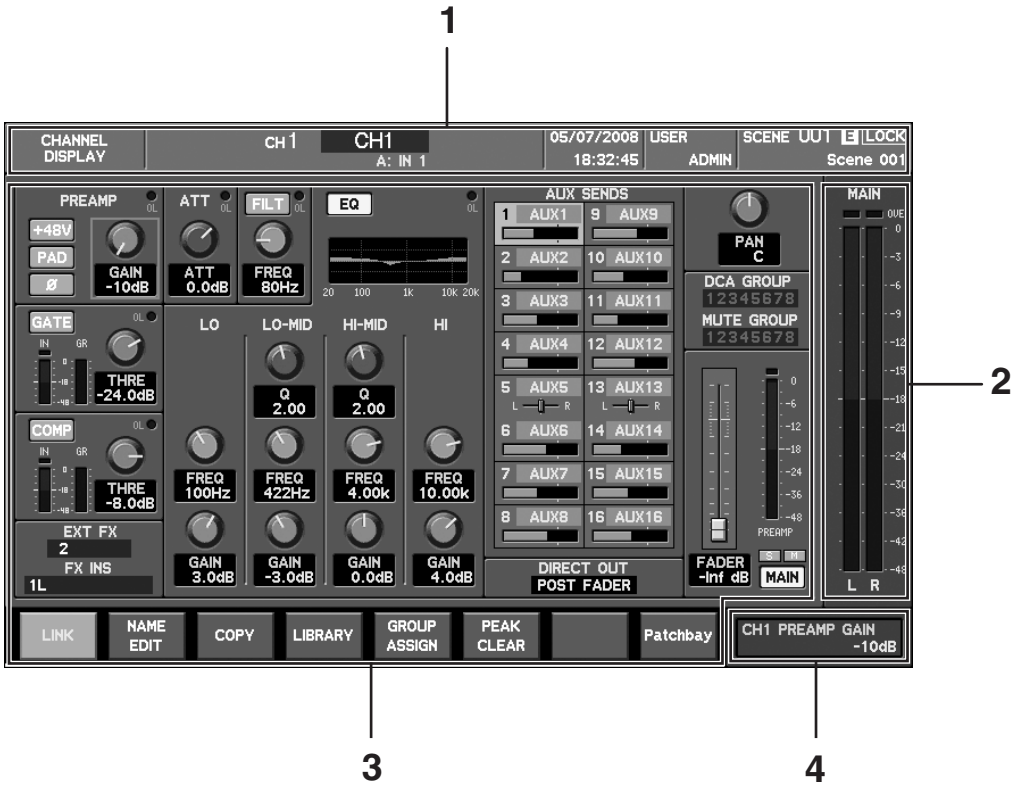
Popups are displayed on top of the screen. You can close the popup by pressing the button that turned red when you accessed that popup.

Home screen

To return to the Home screen, press the button that turned red when you pressed it to access a screen. (Buttons that access a popup are excepted.)
A user setting lets you choose either the CHANNEL DISPLAY screen or the METER screen as the Home screen.
For details on how to choose the Home screen, refer to "Editing the user preferences" (p. 177).

Screen operations

About the screen display



1. Top display area



This area is always shown in the upper part of the screen.

A. Screen name
This shows the name of the screen currently shown in the main display area.

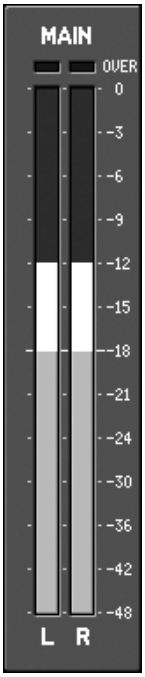
B. Channel indication
This indicates the currently selected channel's number, name, and port name.

C. Date/time indication
This shows the current date and time.

D. User setting indication
This shows the current user settings.

E. Scene indication
This shows the number and name of the currently selected scene.

2. MAIN level indication



This shows the output level of the MAIN L/R channels.

3. Main display area



Most screen operations are performed in this area. The name of the current screen is shown in the screen name indication of the top display area. You can use the cursor and function buttons to perform operations in this area.

3. Sub-display area

This area shows supplementary information. The following information is shown.

- Indication of the currently edited parameter value



When you edit a parameter whose value is not shown in the screen, or use the controllers of the CHANNEL EDIT section to edit a parameter, the value is shown here for a short time.

* If you attempt to operate a parameter that has been disabled by a user setting (p. 176), the following indication will appear.



- Output mute status



This indicates that the outputs have been muted by means of [F6 (MUTE ALL OUT)] in the MUTE GROUP screen (p. 145), or by means of [MUTE ALL OUTPUTS] on the input/output unit.

- Oscillator indication



This is shown if the oscillator is on.

- Recorder status indication



While a song is playing or being recorded, this shows the song name and time information.

Popup indication

These are popups that are shown overlaid on the menu display area. They provide a cursor and function buttons for performing operations in the screen.



MEMO

While a popup is displayed, cursor and function button operations are valid only for the popup.

Function button operations



The function buttons are assigned to the main display area of the screen or the popup, and are operated using [F1]–[F8]. There are three types of function buttons, as follows.

- Command function buttons



These execute commands or access popups.

- On/off function buttons



These turn parameters or functions on/off. The button in the screen is shown in gray when off, or light blue when on.

- Display select tabs



These tabs are used to switch between screens.

Cursor operations



The cursor is indicated by a red frame in the main display area or in the popup. Use the up/down/left/right keys to move the cursor.

Button operations

Buttons in the screen are used to turn a function on/off, to execute a command, or to access a screen. To operate a button, move the cursor to the desired button and press [ENTER].

ON/OFF buttons



These are used to turn a parameter or function on/off. The button is shown in gray when off, or in color (e.g., red, yellow, or blue) when on.

Popup access buttons

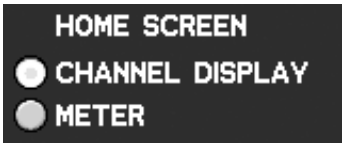


These are used to access a related popup.

Select buttons

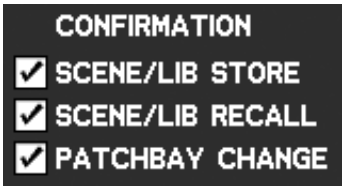
There are the following two types of select buttons.

- Radio buttons



These are used to select one of multiple mutually exclusive choices. Only the last-selected button will be selected.

- Check buttons



These are used when it is possible to select more than one of multiple choices. You can select more than one of these items if desired.

ALL/CLR buttons



These buttons assist you in operating check buttons. Pressing the ALL button will select all applicable check buttons. Pressing the CLR button will clear all applicable check buttons.

Knob operations



Knobs in the screen can be operated by the knobs of the CHANNEL EDIT section or by the value dial. To use the value dial, move the cursor to the desired fader.

TIP

You can make more detailed settings by holding down [SHIFT] while you operate the knobs or the value dial.

TIP

Purple knobs in the screen cannot be edited from the CHANNEL EDIT section.

Fader operations

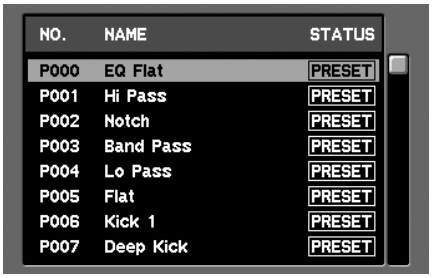


Faders in the screen can be operated by the corresponding fader controller or by the value dial. To use the value dial, move the cursor to the desired fader.

TIP

You can make more detailed settings by holding down [SHIFT] while you operate the value dial.

List operations



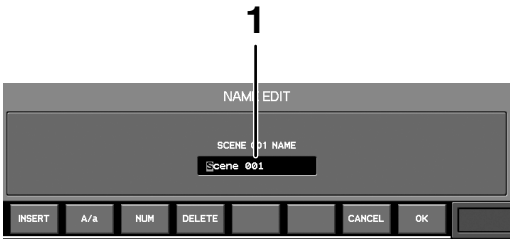
The selected item in a list is shown highlighted in red. Use the up/down keys or the value dial to select a different item.

Editing a name

You'll use the NAME EDIT popup to edit names.

Here we'll explain operations that are common to the NAME EDIT popup.

Operations in the NAME EDIT popup



1. Name edit field

You can edit the name in this field.

The buttons and dial will have the following functions in the name edit field.

Button/Dial	Function
Left/right buttons	Move the cursor location.
Value dial	Changes the character at the cursor location
[F1 (INSERT)]	Inserts a space at the cursor location. The text at the right of the cursor location will move to the right.
[F2 (A/a)]	Changes the letter at the cursor location between uppercase and lowercase. If the character is not an English letter, it will be changed to the letter "A."
[F3 (NUM)]	Converts the character at the cursor location to the numeral "0."
[F4 (DELETE)]	Deletes the character at the cursor location. The text at the right of the cursor location will move to the left.
[F7 (CANCEL)]	Cancels any changes and closes the popup.
[F8 (OK)]	Confirms the changes and closes the popup.

MEMO

There are limitations on the number of characters you can use in a name. The maximum number of characters will depend on the screen or popup that uses the NAME EDIT popup.

MEMO

If an INSERT operation causes the name to exceed the maximum number of characters, the excess will be deleted.

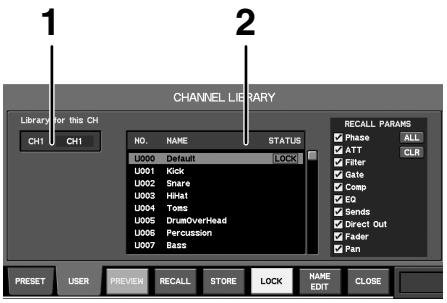
Library operations

Library operations are performed in the LIBRARY popups.
LIBRARY popups include the following.

Type	See page
CH LIBRARY	p. 66
GATE/EXP LIBRARY	p. 98
COMP LIBRARY	p. 103
LIMITER LIBRARY	p. 105
EQ LIBRARY	p. 109
FX LIBRARY	p. 130
GEQ LIBRARY	p. 135
INPUT PATCHBAY LIBRARY	p. 117
OUTPUT PATCHBAY LIBRARY	p. 119

Here we'll explain operations that are common to these LIBRARY popups.

LIBRARY popup operations



1. Applicable channel/effect indication
This shows the channel or effect to which the library operation will apply.

2. Library data list
This lists the library data.
The function buttons have the following operations in a LIBRARY popup.

[F1 (PRESET)]	Displays the recall-only PRESET library.
[F2 (USER)]	Displays the USER library in which you can store data or recall it.
[F4 (RECALL)]	Recalls the selected library data and closes the popup.
[F5 (STORE)]*	Stores the selected library data and closes the popup.
[F6 (LOCK)]*	Locks the selected USER library data.
[F7 (NAME EDIT)]*	Accesses a NAME EDIT popup for you to edit the name of the selected user library data.
[F8 (CLOSE)]	Closes the popup.

* Available only for the User library.

Recalling data from a library

1. Access the LIBRARY popup.

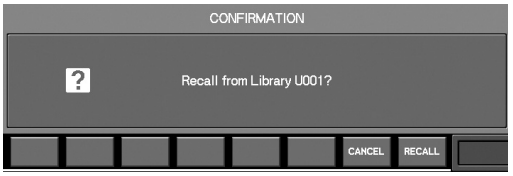


2. Make sure that the applicable channel/effect indication shows the object that you want to recall.

3. Use [F1 (PRESET)] or [F2 (USER)] to specify whether you want to recall data from the preset library or user library.

4. Select the desired library data in the library data list.

5. Press [F4 (RECALL)].



A message will ask you to confirm the library recall operation.

6. Press [F8 (RECALL)] to execute the library recall operation and close the popup.
Alternatively, press [F7 (CANCEL)] to cancel the library recall operation.

MEMO

If "SCENE/LIB RECALL" in the CONFIRMATION section of User Preference (p. 177) is not selected, a confirmation message will not appear in step 4.

Storing data to a library

1. **Access the LIBRARY popup.**



2. **Verify that the desired channel or effect is shown as the object of the store operation.**

3. **Press [F2 (USER)] to select the user library.**

4. **Select the desired number in the library data list.**

5. **Press [F5 (STORE)].**



A message will ask you to confirm the library store operation.

6. **Press [F8 (STORE)] to execute the library store operation and close the popup.**
Alternatively, press [F7 (CANCEL)] to cancel the library store operation.

MEMO

You can't overwrite library data that has been locked. Either store the data to a different library location, or defeat the Lock setting before you execute the store operation.

MEMO

If "SCENE/LIB STORE" in the CONFIRMATION section of the User Preference (p. 177) is not selected, a confirmation message will not appear in step 5.

Locking or unlocking user library data

Data in the user library can be locked to prevent it from being accidentally overwritten. For library data that has been locked, the indication "LOCK" is shown in the "STATUS" column of the list.



1. **Press [F2 (USER)] to select the user library.**

2. **From the library data list, select the desired library data.**

3. **Press [F6 (LOCK)] to lock or unlock the library data.**

Editing the name of user library data

You can assign a name of up to twelve characters to user library data. Use the NAME EDIT popup to edit the name.



1. **Press [F2 (USER)] to select the user library.**

2. **From the library data list, select the desired library data.**

MEMO

You can't edit library data that has been locked.

3. **Press [F7 (NAME EDIT)] to access the NAME EDIT popup.**

4. **Use the NAME EDIT popup to edit the name.**

cf.

For details on operations in the NAME EDIT popup, refer to "Editing a name" (p. 50).

5. **Press [F8 (OK)] to finalize the edited name and close the NAME EDIT popup.**
Alternatively, press [F7 (CANCEL)] to discard your edits and close the NAME EDIT popup.

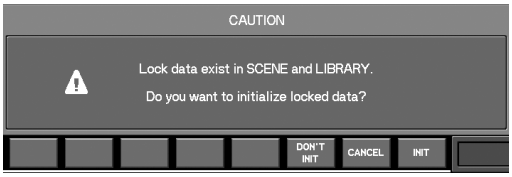
Message operations

- Confirmation message



This message asks you to confirm an operation.

- Caution message



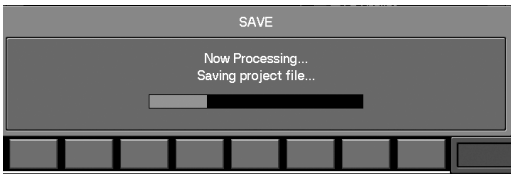
This message cautions you that a problem has occurred during operation.

- Error message



This message will appear if a fatal error occurs.

- Wait message

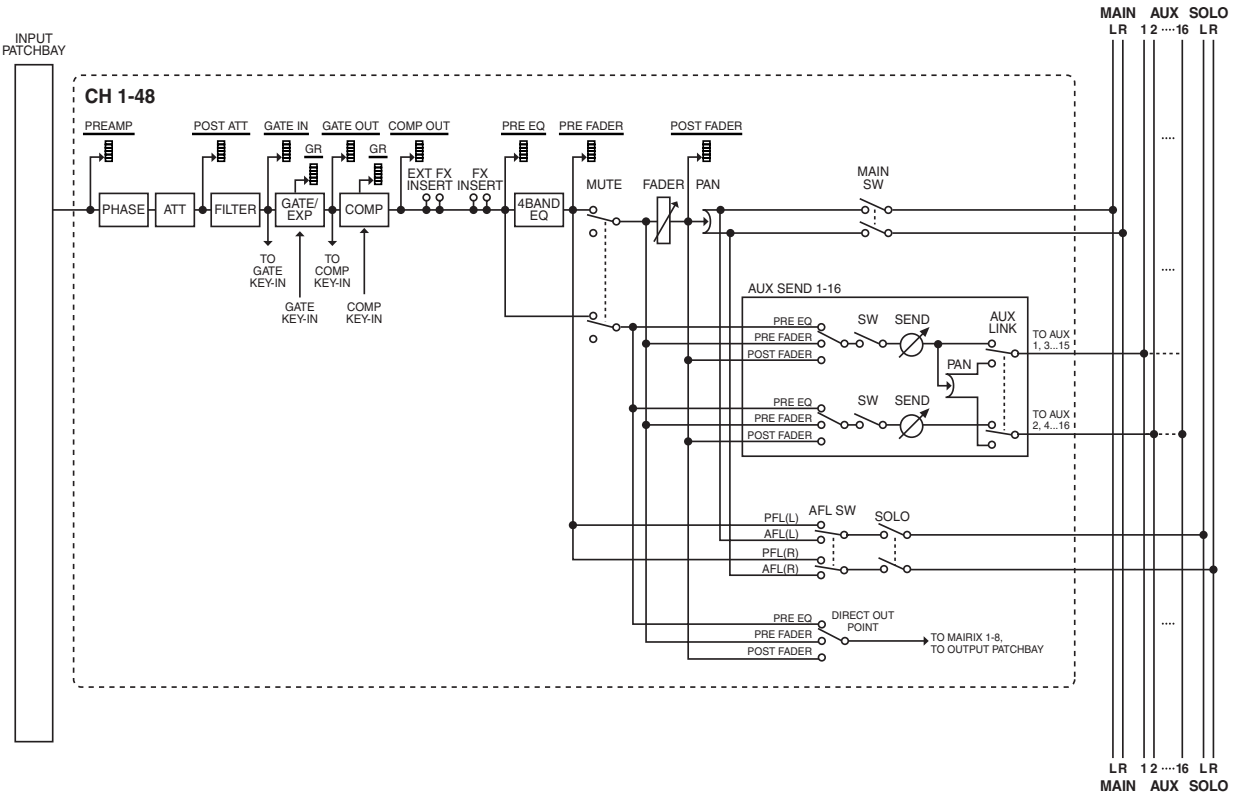


This message is shown while a time consuming process is being executed. You cannot close this until the process is completed.

Input channel operations

About the input channels

The input channels process the audio signals from the input jacks and internal ports, and send them to the MAIN L/R bus and AUX buses.

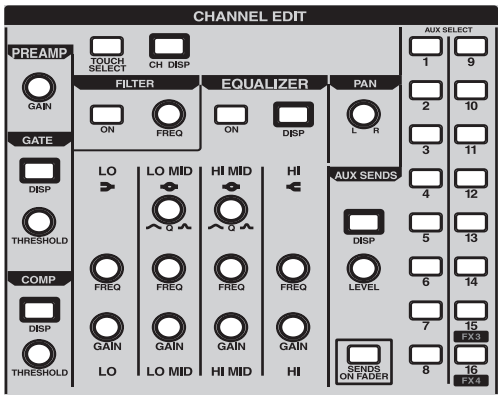


- **INPUT PATCHBAY**
  This section patches input ports to input channels.
- **PHASE**
  This reverses the phase of the audio signal.
- **ATT (Attenuator)**
  This adjusts the input level in the digital domain.
- **FILTER**
  This is a 12 dB/octave filter that passes or cuts the specified frequency range.
- **GATE/EXPANDER**
  This is a dynamics processor that can be used as a gate or expander, or for ducking. You can use a maximum of twenty-four units simultaneously.
- **COMPRESSOR**
  This is a dynamics processor that can be used as a compressor. You can use a maximum of twenty-four units simultaneously.
- **EXT INSERT (External insert)**
  An external effects processor can be inserted at this point using the rear panel CONSOLE IN1–IN8 and CONSOLE OUT1–OUT8 jacks.
- **FX INSERT (Effect insert)**
  FX1–FX4 can be inserted at this point.
- **4 BAND EQ (Four-band EQ)**
  This is a four-band EQ with LO, LO-MID, HI-MID, and HI frequency bands.
- **MUTE**
  This mutes the channel. The signal sent to the MAIN L/R bus, the AUX buses and the direct out will be muted.
- **FADER**
  This adjusts the send level to the MAIN L/R bus.
- **PAN**
  This adjusts the left/right panning of the audio signal sent to the MAIN L/R bus.
- **MAIN SW (Main switch)**
  This turns the send to the MAIN L/R bus on/off. It does not affect the send to the AUX buses.
- **AUX SEND**
  This adjusts the send to the AUX bus.
- DIRECT OUT POINT
  This specifies the position from which the direct out signal is taken.

Operations using the CHANNEL EDIT section

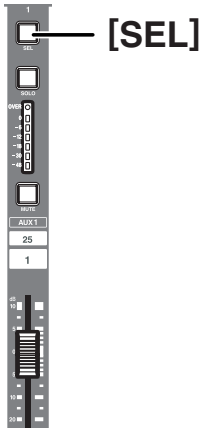
Most input channel operations can be performed in the CHANNEL EDIT section.

Here we will explain input channel operations using the CHANNEL EDIT section.



Selecting the channel to edit

1. In the fader module section, press a [SEL] button to select the input channel that you want to edit.



2. The selected channel is shown in the channel indication at the upper center of the screen.



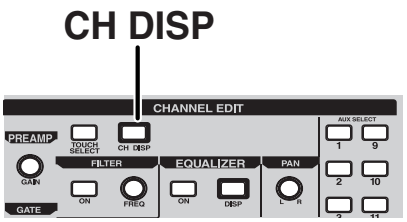
TIP

If you've pressed [TOUCH SELECT] to turn it on (lit), you can select a channel by touching its fader.

Viewing the parameter values

The arrangement of parameters and the color of knobs in the CHANNEL EDIT DISPLAY screen is close to that of the CHANNEL EDIT section, making it easy to check the values.

1. In the CHANNEL EDIT section, press [CH DISP].



The CHANNEL DISPLAY screen will appear.



Even if you don't access the CHANNEL DISPLAY screen, the value of the currently-operated parameter is shown in the sub display area when you operate an dial in the CHANNEL EDIT section.



Preamp gain adjustments

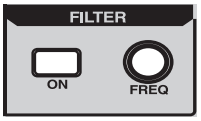
Use the PREAMP area of the CHANNEL EDIT section to adjust the preamp gain.



1. **Use the GAIN dial to adjust the preamp gain.**

Filter operations

Use the FILTER area of the CHANNEL EDIT section to operate the filter.



1. **Press [ON] to turn the filter on/off.**
2. **Use the FREQ dial to adjust the frequency of the filter.**

Gate/expander and compressor threshold level adjustments

Use the GATE area and COMP area of the CHANNEL EDIT section to make adjustments.



1. **Use the THRESHOLD knob of the GATE area or COMP area to adjust the threshold level.**

   TIP

   You can make fine adjustments by holding down [SHIFT] while you operate the knob.

   MEMO

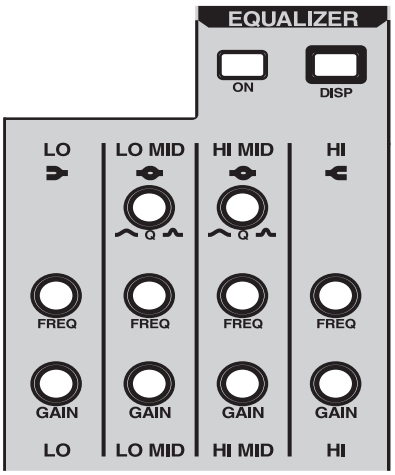
   By pressing [DISP] you can access the GATE/EXPANDER popup or COMPRESSOR popup, where you can make detailed settings for the gate/expander or compressor. For details, refer to "Gate/expander operations" (p. 93) or "Compressor operations" (p. 99).

   MEMO

   You can turn the gate/expander or compressor on/off by holding down [SHIFT] and pressing [DISP] in the GATE area or COMP area.

Four-band EQ operations

Use the EQUALIZER area of the CHANNEL EDIT section to operate the EQ.



1. **Press [ON] to turn the four-band EQ on/off.**
2. **Use the GAIN knobs to adjust the gain of each frequency band.**
3. **Use the FREQ knobs to adjust the center frequency of each band.**
4. **Use the Q knobs to adjust the Q of the LO-MID and HI-MID bands.**

   TIP

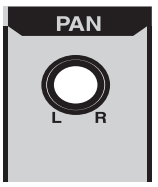
   You can make fine adjustments by holding down [SHIFT] while you operate the knob.

   MEMO

   By pressing [DISP] you can access the EQUALIZER popup, where you can make detailed settings for the four-band EQ. For details, refer to "Four-band EQ operations" (p. 107).

Adjusting the pan of the audio signal sent to the MAIN L/R bus

Use the PAN area of the CHANNEL EDIT section to make these adjustments.



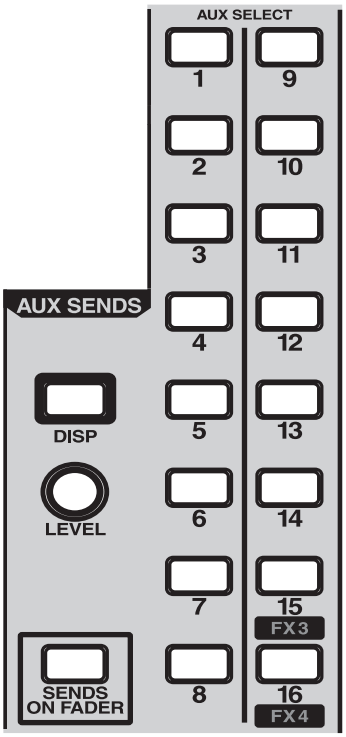
1. **Use the PAN knob to adjust the pan.**

   TIP

   You can make fine adjustments by holding down [SHIFT] while you operate the knob.

Sending the audio signal to the AUX buses

Use the AUX SENDS area of the CHANNEL EDIT section to perform these operations.



You can adjust the send level in either of two ways: using the SEND LEVEL knob of the AUX SENDS area, or using the faders of the top panel.

Using the SEND LEVEL knob

1. **Press AUX SELECT [1]–[16] to select the send-destination AUX bus.**

2. **Use the SEND LEVEL encoder to adjust the amount sent to the selected AUX bus.**

   MEMO

   You can make fine adjustments by holding down [SHIFT] while you operate SEND LEVEL.

   MEMO

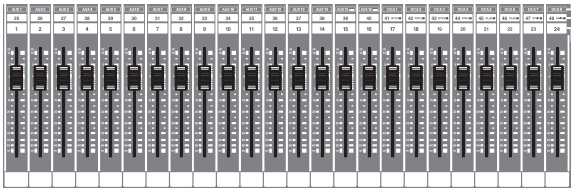
   You can turn the corresponding send switch on/off by holding down [SHIFT] and pressing AUX SELECT [1]–[16].

Using the top panel faders (SENDS ON FADER)

1. **Press AUX SELECT [1]–[16] to select the send-destination AUX bus.**

2. **Press [SENDS ON FADER] so it is blinking.**

3. **Use the top panel faders to adjust the amount sent from each input channel to the selected AUX bus.**



NOTE

SENDS ON FADER is a convenient function, but involves the risk of unintended mistakes. Operate the faders with care while [SENDS ON FADER] is blinking.

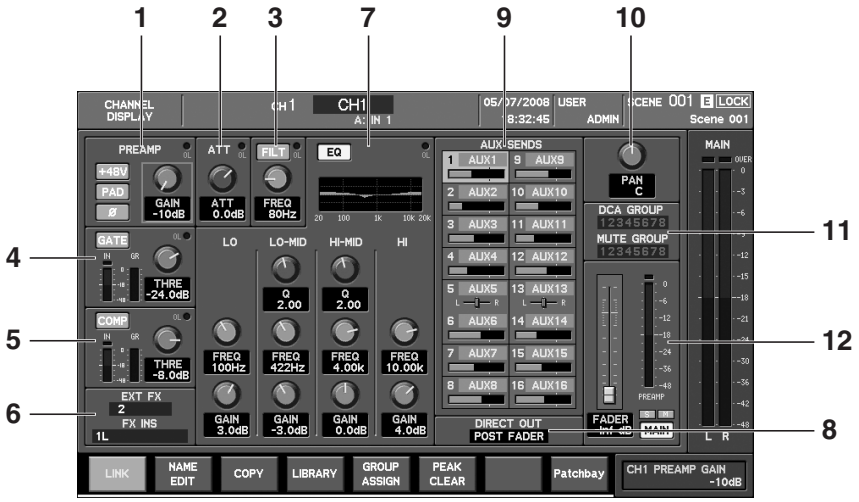
MEMO

By pressing [DISP] you can access the AUX SENDS popup, where you can make detailed settings for AUX send. For details, refer to "AUX send operations" (p. 111).

Operations in the CHANNEL DISPLAY screen

The principal parameters of an input channel can be operated in the CHANNEL DISPLAY screen.

CHANNEL DISPLAY screen



The principal operations for an input channel can be performed in the CHANNEL DISPLAY screen.

1. Preamp



Here you can make settings for the preamp of the input jack that is patched to the channel.

a. +48V button

This turns the +48V phantom power on/off.

NOTE

You must turn the phantom power off if you've connected equipment that does not require +48V phantom power. Mistakenly supplying phantom power to a dynamic microphone, audio playback device, or any other device that does not require phantom power will cause malfunctions. Carefully read the owner's manual for your microphone or other device, and make sure of its specifications.

MEMO

Since noise will be produced when you switch the phantom power setting, therefore the output of the channel whose setting you change will be briefly muted.

b. PAD button

This switches the pad on/off. Turning this on will lower the input sensitivity of the preamp by 20 dB.

MEMO

Since noise will be produced when you switch the pad setting, therefore the output of the channel whose setting you change will be briefly muted.

TIP

Turn the pad on if the input level is too high even when the preamp gain is set to the minimum position.

c. Ø (Phase) button

This reverses the phase of the audio signal. Turning this on will reverse the phase of the signal, and turning it off will maintain the normal phase.

d. GAIN knob

This adjusts the preamp gain in the range of -65 dBu– -10 dBu (if PAD is on, a range of -45 dBu– +10 dBu).

e. OL (Overload) indicator

This will light red when the output of the preamp exceeds the OVER Lev setting specified in the METER SETUP popup (p. 122).

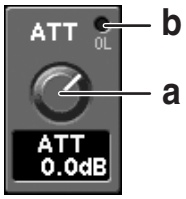
NOTE

It is felt that it does not change smoothly when it coordinates the preamp gain, but it is not trouble. In addition, some noises come out, but it is not trouble.

For the following channels, the preamp area will show only the Ø (phase) button.

- Channels to which no input port is patched
- Channels to which a port that has no preamp (such as an internal port) is patched

2. Attenuator



a. ATT knob

This adjusts the input level of the channel in the range of -48.0 dB– +24.0 dB.

b. OL (Overload) indicator

This will light red when the output of the attenuator exceeds the OVER Lev setting specified in the METER SETUP popup (p. 122).

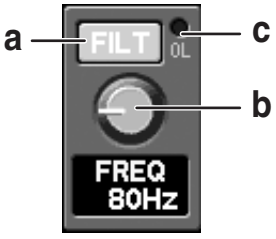
Normally, you should use the preamp gain to adjust the input level of the channel, and leave the attenuator at 0 dB. It is convenient to use the attenuator in the following types of cases.

- When you want to avoid overloading the filter
- When you've patched a port that has no preamp gain, such as an internal port
- When you've allowed plenty of head margin to avoid overloading the preamp's AD converter, and want to boost the level at the channel

TIP

Filter overload can also be avoided by using the filter ATT parameter that is shown in the EQUALIZER popup.

3. Filter



a. FILT button

This turns the filter on/off.

b. FREQ knob

This adjusts the filter frequency in the range of 20 Hz–20.0 kHz.

c. OL (Overload) indicator

This will light red when the output of the filter exceeds the OVER Lev setting specified in the METER SETUP popup (p. 122).

TIP

By default, HPF (High Pass Filter) is assigned to the filter, and the FREQ knob will adjust the cutoff frequency.

cf.

Detailed filter settings are made in the EQUALIZER popup. For details, refer to "Four-band EQ operations" (p. 107).

4. Gate/expander



a. GATE button

This turns the gate/expander on/off.

b. THRE (Threshold) knob

This adjusts the threshold level of the gate/expander in the range of -80.0 dB–0.0 dB.

c. IN meter

This shows the input level of the gate/expander. For stereo-linked channels, two meters (L and R) will be shown.

d. GR meter

This shows the amount of gain reduction for the gate/expander.

e. OL (Overload) indicator

This will light red when the output of the gate/expander exceeds the OVER Lev setting specified in the METER SETUP popup (p. 122).

MEMO

Up to twenty-four gate/expander units can be turned on.

cf.

For detailed gate/expander settings, refer to "Gate/expander operations" (p. 93).

5. Compressor



a. COMP button

This turns the compressor on/off.

b. THRE (Threshold) knob

This adjusts the threshold level of the compressor in the range of -40.0 dB–0.0 dB.

c. IN meter

This shows the input level of the compressor. For stereo-linked channels, two meters (L and R) will be shown.

d. GR meter

This shows the amount of gain reduction for the compressor.

e. OL (Overload) indicator

This will light red when the output of the compressor exceeds the OVER Lev setting specified in the METER SETUP popup (p. 122).

MEMO

Up to twenty-four compressors can be turned on.

cf.

For detailed compressor settings, refer to "Compressor operations" (p. 99).

6. Insert indication



a. EXT FX

If an external effects processor is inserted, this shows the number of the inserted EXT FX.

By moving the cursor to EXT FX and pressing [ENTER], you can access the EXT FX 1–4 tab or EXT FX 5–8 tab of the EFFECTS screen.

cf.

Inserting an external effects processor into a channel is done in the EFFECTS screen. For details, refer to "Inserting an external effects device" (p. 137).

b. FX INS

If FX1–FX4 are inserted, the number of the inserted FX is shown here.

If the number is shown in white, the effect insertion is enabled. If it is shown in gray, effect insertion is bypassed.

The FX INS number may have an appended "L" or "R." This has the following significance.

Indication	Explanation
Number+L	The L side of the FX is inserted.
Number+R	The R side of the FX is inserted.
Number only	Both L and R side of the FX are inserted. The return from the FX is mixed and input to the channel.

If you move the cursor to FX INS and press [ENTER], the FX 1–4 tab of the EFFECTS screen will appear.

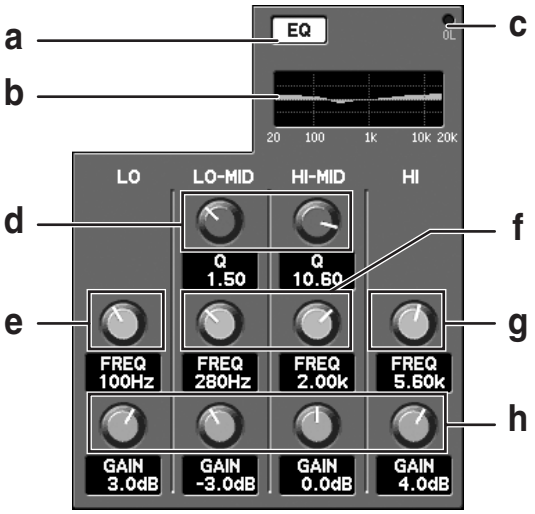
cf.

Inserting an effect into a channel is done in the EFFECTS screen. For details, refer to "Effect input/output settings" (p. 126).

MEMO

Up to four effects can be inserted into one channel. In this case, they will be inserted in series, in order of the FX number.

7. Four-band EQ



a. EQ button

This turns the four-band EQ on/off.

b. Four-band EQ graph

This shows the approximate response of the four-band EQ.

c. OL (Overload) indicator

This will light red when the output of the four-band EQ exceeds the OVER Lev setting specified in the METER SETUP popup (p. 122).

d. Q knobs (LO-MID, HI-MID)

These adjust the Q of the LO-MID and HI-MID bands in the range of 0.36–16. Higher values will produce a sharper curve.

e. LO FREQ knob

This adjusts the center frequency of the LOW band in the range of 20 Hz–1.00 kHz.

f. FREQ knob (LO-MID, HI-MID)

These adjust the center frequency of the LO-MID and HI-MID bands in the range of 20 Hz–20.0 kHz.

g. HI FREQ knob

This adjusts the center frequency of the HI band in the range of 1.00 kHz–20.0 kHz.

h. GAIN knob (LO, LO-MID, HI-MID, HI)

These adjust the gain of the LO, LO-MID, HI-MID, and HI bands in the range of -15.0 dB– +15.0 dB.

cf.

For detailed settings for the four-band EQ, refer to "Four-band EQ operations" (p. 107).

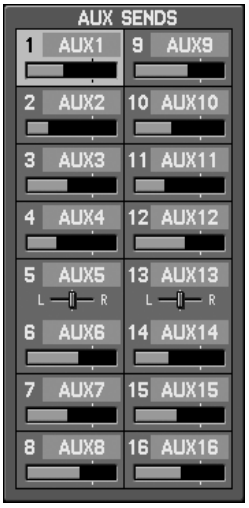
8. Direct out point



You can choose one of the following as the position from which the channel's signal is taken as the direct out signal.

PRE EQ	Take the pre-EQ signal
PRE FADER	Take the pre-fader signal
POST FADER	Take the post-fader signal

8. AUX sends



- **AUX sends 1–16**

  Here you can adjust the sends from the channel to the AUX1–AUX16 buses. The AUX sends are organized as follows.



a. AUX number

This indicates the AUX channel number.

b. AUX name

This indicates the AUX channel name.

c. Send level bar

This adjusts the send level to the AUX bus in the range of -Inf dB– +10.0 dB.

The color of the send level bar indicates the send point and the status of the send switch as follows.

Send level bar color	Status
Blue	send point is PRE EQ or PRE FADER
Green	send point is POST FADER
Gray	Send switch is off

- **AUX pan slider**



If the AUX send destination is stereo-linked, this lets you adjust the left/right panning of the audio signal in the range of L63–R63. This is shown in the area of the odd-numbered AUX send.

cf.

For detailed AUX send settings, refer to "AUX send operations" (p. 111).

9. Pan



This adjusts the left/right panning of the audio signal sent to the MAIN L/R bus in the range of L63–R63.

10. Group



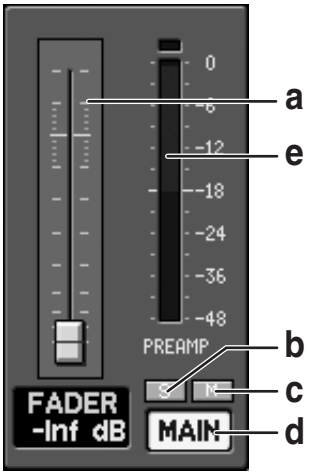
This indicates whether the channel is assigned to a DCA group or a MUTE group.

If you move the cursor to DCA GROUP or MUTE GROUP and press [ENTER], the GROUP ASSIGN popup will appear, allowing you to make DCA group or MUTE group assignments.

MEMO

You can also access the GROUP ASSIGN popup by pressing [F5 (GROUP ASSIGN)].

11. Fader



a. Fader

This adjusts the amount sent to the MAIN L/R bus in the range of -Inf dB– +10.0 dB.

MEMO

You can make settings in finer increments by operating the value dial while you hold down [SHIFT].

b. S button

This turns SOLO on/off for the channel.

c. M button

This turns MUTE on/off for the channel.

d. MAIN button

This turns the MAIN send on/off.

e. Channel meter

This indicates the signal level of the channel. For a stereo-linked channel, two meters L and R are shown. The level detection point is according to the setting in the METER screen. For

details, refer to "Editing the meter settings" (p. 122).

The function buttons have the following operations.

[F1 (LINK)]	Turns channel link on/off.	p. 62
[F2 (NAME EDIT)]	Accesses the NAME EDIT popup, where you can specify the channel name.	p. 63
[F3 (COPY)]	Accesses the CH COPY popup, where you can copy channel settings.	p. 65
[F4 (LIBRARY)]	Accesses the CH LIBRARY popup, where you can use the channel library.	p. 66
[F5 (GROUP ASSIGN)]	Accesses the GROUP ASSIGN popup, where you can assign the channel to DCA groups and MUTE groups.	p. 67
[F6 (PEAK CLEAR)]	Clears the level meter's peak hold or over indication.	
[F8 (Patchbay)]	Accesses the PATCHBAY screen.	p. 115

TIP

When you press [F8 (Patchbay)] to access the PATCHBAY screen, the PATCHBAY screen will appear with the currently selected channel highlighted.

Accessing the CHANNEL DISPLAY screen

1. **In the fader module section, press [SEL] to select a channel.**

2. **In the CHANNEL EDIT section, press [CH DISP] to access the CHANNEL DISPLAY screen.**



TIP

Pressing a different [SEL] while the CHANNEL DISPLAY screen is shown will switch you to the display for that channel.

MEMO

If you've selected the "CHANNEL DISPLAY follows CH SELECT" button located in the CHANNEL SELECT area of User Preference (p. 177), pressing a [SEL] will recall the CHANNEL DISPLAY screen for that channel.

Stereo-linking channels

Adjacent odd-numbered and even-numbered channels can be stereo-linked so that their parameters will have the same settings. This is convenient when you're dealing with stereo sources.

1. **Access the CHANNEL DISPLAY screen for the channel that you want to stereo-link.**



2. **Press [F1 (LINK)] to turn it on; the channels will be stereo-linked.**

MEMO

The parameters of the even-numbered channel will be set to the values of the odd-numbered channel.

Stereo-linked parameters

The following parameters are linked by stereo-link.

- **Phase**
- **Attenuator**
- **Filter parameters**
- **Gate/expander parameters other than Key In**
- **Compressor parameters other than Key In**
- **Four-band EQ parameters**
- **Fader parameters**
- **AUX send level, send switch and send point**
- **Direct out point**

MEMO

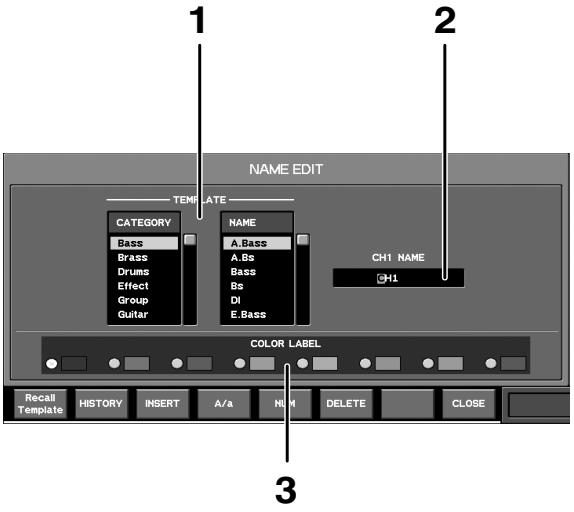
When you enable stereo-link, the gate/expander and compressor will operate in stereo.

Specifying a channel name and color label

You can specify a channel name and color label for each input channel. The channel name can be up to six characters, and you can select one of eight colors as the color label.

Channel name entry and color label selection are done in the NAME EDIT popup.

NAME EDIT popup



1. TEMPLATE

Here you can select a name from a list.

- **CATEGORY list**

  Select the category.

- **NAME list**

  Select a name from within that category.

TIP

Choose the CATEGORY first, and then choose a NAME.

2. Name edit field

You can edit the name in this field.

3. Color label selection buttons

Use these buttons to select a color label for the channel.

The function buttons have the following operations.

[F1 (Recall Template)]	Enters the name selected in the TEMPLATE list into the name edit field.
[F2 (HISTORY)]	Successively recalls the channel names that have been entered since power-up, starting with the most recent name.
[F3 (INSERT)]	Inserts a space at the cursor location. The characters to the right of the cursor location will move to the right.
[F4 (A/a)]	Changes the character at the cursor location between uppercase and lowercase.
[F5 (NUM)]	Changes the character at the cursor location to the numeral "0."
[F6 (DELETE)]	Deletes the character at the cursor location. The characters to the right of the cursor location will move to the left.
[F8 (CLOSE)]	Closes the popup.

MEMO

Up to sixteen names will be remembered in HISTORY.

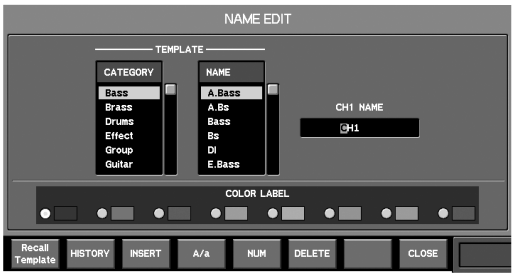
If HISTORY becomes full, the oldest name will be deleted.

Accessing the NAME EDIT popup

1. Access the CHANNEL DISPLAY screen for the desired channel.

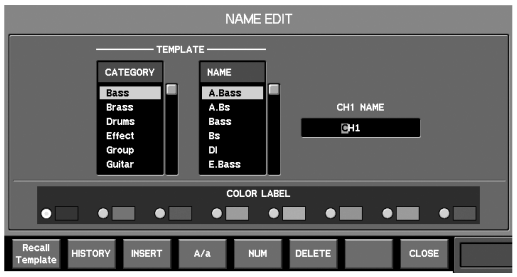


2. Press [F2 (NAME EDIT)] to access the NAME EDIT popup.



Editing the channel name

1. **Access the NAME EDIT popup for the desired channel.**

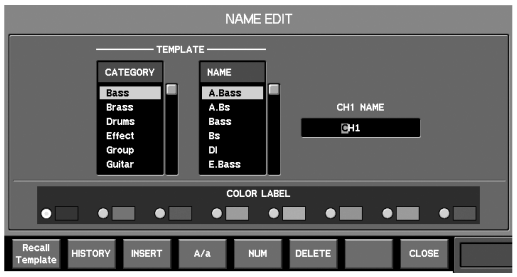


2. **Move the cursor to the name edit field, and edit the channel name.**
   Use the cursor left/right buttons to move the cursor location.
   Use the value dial to change the character at the cursor location.

3. **Press [F8 (CLOSE)] to close the popup.**

Choosing a color label

1. **Access the NAME EDIT popup for the desired channel.**

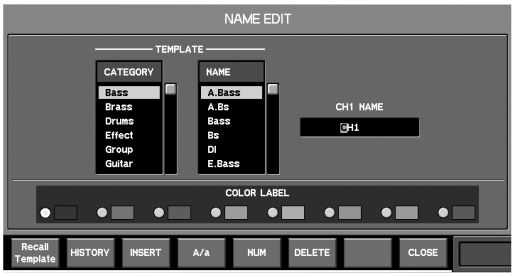


2. **Move the cursor to the desired color label select button, and press [ENTER] to make your selection.**

3. **Press [F8 (CLOSE)] to close the popup.**

Using the template to enter a channel name

1. **Access the NAME EDIT popup for the desired channel.**



2. **Move the cursor to the CATEGORY list in the TEMPLATE area, and select the category of the name you want to enter.**

3. **Move the cursor to the NAME list in the TEMPLATE area, and select the name that you want to enter.**

4. **Press [F1 (Recall Template)].**
   The selected name will be entered in the name edit field.

5. **Move the cursor to the name edit field, and you'll be able to edit the name that was entered.**

6. **Press [F8 (CLOSE)] to close the popup.**

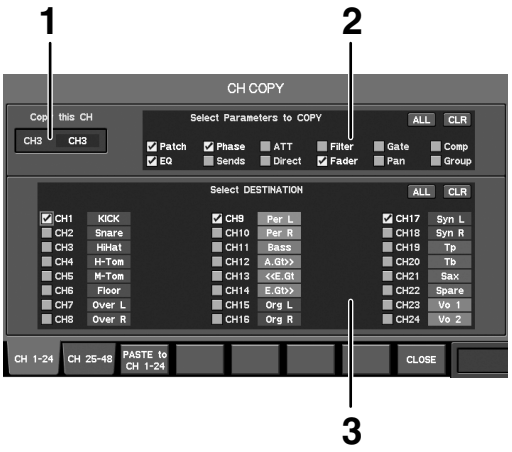
   MEMO

   If you enter a name from the template, the name that was previously in the name edit field will be deleted.

Copying channel settings to another channel

Channel settings can be copied to another channel. Channel copying is done in the CH COPY popup.

CH COPY popup



1. Copy-source channel

This indicates the copy-source channel.

2. Copy parameter select buttons

Here you can select the parameters that will be copied. You can select the following parameters.

Patch	Input patching
Phase	Phase
ATT	Attenuator
Filter	Filter
Gate	Gate/expander
Comp	Compressor
EQ	Four-band EQ
Sends	AUX sends
Direct	Direct out point
Fader	Fader and mute
Pan	Pan
Group	DCA groups and MUTE groups

3. Copy-destination channel select buttons

Here you can select the copy-destination channel(s).

The function buttons have the following operations.

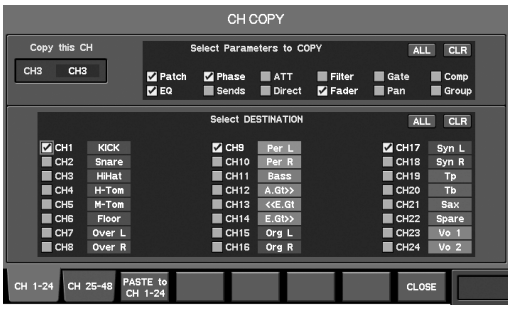
[F1 (CH1-24)]	Displays CH1–CH24 as the copy-destination channel select buttons.
[F2 (CH25-48)]	Displays CH25–CH48 as the copy-destination channel select buttons.
[F3 (PASTET to CH 1-24)] [F3 (PASTET to CH 25-48)]	Executes the copy.
[F8 (CLOSE)]	Closes the popup.

Accessing the CH COPY popup

1. Access the CHANNEL DISPLAY screen for the desired copy-source channel.

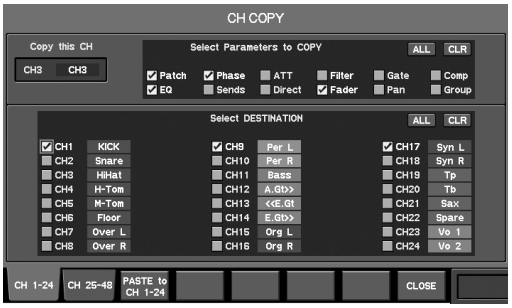


2. Press [F3 (COPY)] to access the CH COPY popup.



Copying the channel settings

1. **Access the CH COPY popup for the desired copy-source channel.**



2. **Verify that the copy-source channel is correct.**
3. **Move the cursor to the desired copy parameter select button, and press [ENTER] to select it.**
4. **Move the cursor to the desired copy-destination channel select button, and press [ENTER] to select it. You can select more than one channel.**
5. **Press [F3 (PASTE to CH 1–24)] or [F3 (PASTE to CH 25–48)].**



A confirmation message will appear, asking you to confirm the Copy operation.

6. **Press [F8 (PASTE)] to execute the Copy.**
   If you press [F7 (CANCEL)], the operation will be cancelled.
7. **Press [F8 (CLOSE)] to close the popup.**

MEMO

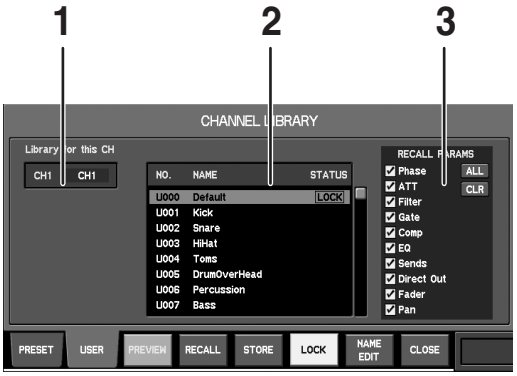
When you execute PASTE, the copy-destination channel select buttons will be cleared.

Using the channel library

You can recall channel settings from the library, or store the settings of the current channel in the library.

Channel library operations are performed in the CHANNEL LIBRARY popup.

CH LIBRARY popup



1. **Target channel**
   This indicates the channel that is the target of the CHANNEL LIBRARY popup.

2. **Library data list**
   This is a list of the library data.

3. **Recall parameter select buttons**
   Use these to select the parameters that will be recalled. You can select the following parameters.

Phase	Phase
ATT	Attenuator
Filter	Filter
Gate	Gate/expander
Comp	Compressor
EQ	Four-band EQ
Sends	AUX sends
Direct Out	Direct out point
Fader	Fader and mute
Pan	Pan

NOTE

Noise may occur when you execute a library preview or recall, but this is not a malfunction.

The function buttons have the following operations.

[F1 (PRESET)]	Displays the recall-only PRESET library.
[F2 (USER)]	Displays the USER library, which can be re-called or stored.
[F3 (PREVIEW)]	Previews (auditions) the selected library data.
[F4 (RECALL)]	Recalls the selected library data.
[F5 (STORE)]*	Stores the settings of the current channel into the selected library data.
[F6 (LOCK)]*	Locks or unlocks the selected library data.
[F7 (NAME EDIT)]*	Accesses the NAME EDIT popup, where you can edit the name of the selected library data.
[F8 (CLOSE)]	Closes the popup.

* Available only for the User library.

Accessing the CH LIBRARY popup

1. Access the CHANNEL DISPLAY screen for the desired channel.



2. Press [F4 (LIBRARY)] to access the CH LIBRARY popup.



cf.

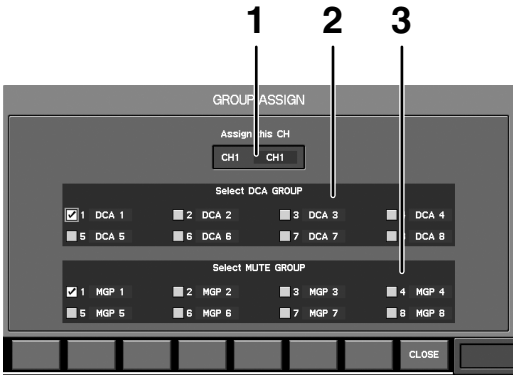
For details on library operations, refer to “Library operations” (p. 51).

Assigning channels to DCA groups and MUTE groups

Input channels can be assigned to DCA groups and mute groups.

Assignments to DCA groups and mute groups are made in the GROUP ASSIGN popup.

GROUP ASSIGN popup



1. Target channel

This indicates the channel that is the target of the GROUP ASSIGN popup.

2. DCA group select buttons

Use these to select the DCA group to which the channel will be assigned.

3. MUTE group select buttons

Use these to select the MUTE group to which the channel will be assigned.

The function buttons have the following operations.

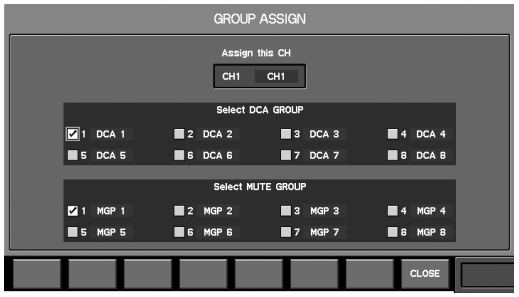
[F8 (CLOSE)]	Closes the popup.

Accessing the GROUP ASSIGN popup

1. **Access the CHANNEL DISPLAY screen for the desired channel.**

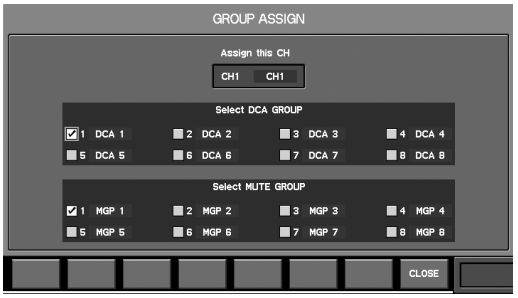


2. **Press [F5 (GROUP ASSIGN)] to access the GROUP ASSIGN popup.**



Assigning a channel to a DCA group

1. **Access the GROUP ASSIGN popup for the desired channel.**



2. **Verify that the target channel is correct.**

3. **Move the cursor to the desired DCA group select button, and press [ENTER] to select it.**

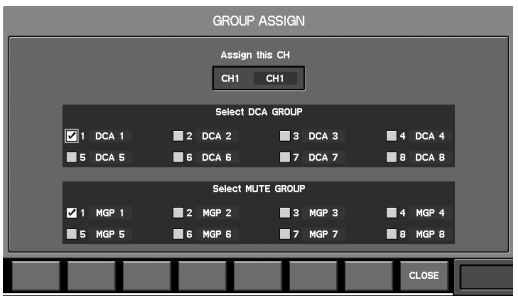
4. **Press [F8 (CLOSE)] to close the popup.**

cf.

For details on DCA groups, refer to “DCA groups” (p. 141).

Assigning a channel to a MUTE group

1. **Access the GROUP ASSIGN popup for the desired channel.**



2. **Verify that the target channel is correct.**

3. **Move the cursor to the desired MUTE group select button, and press [ENTER] to select it.**

4. **Press [F8 (CLOSE)] to close the popup.**

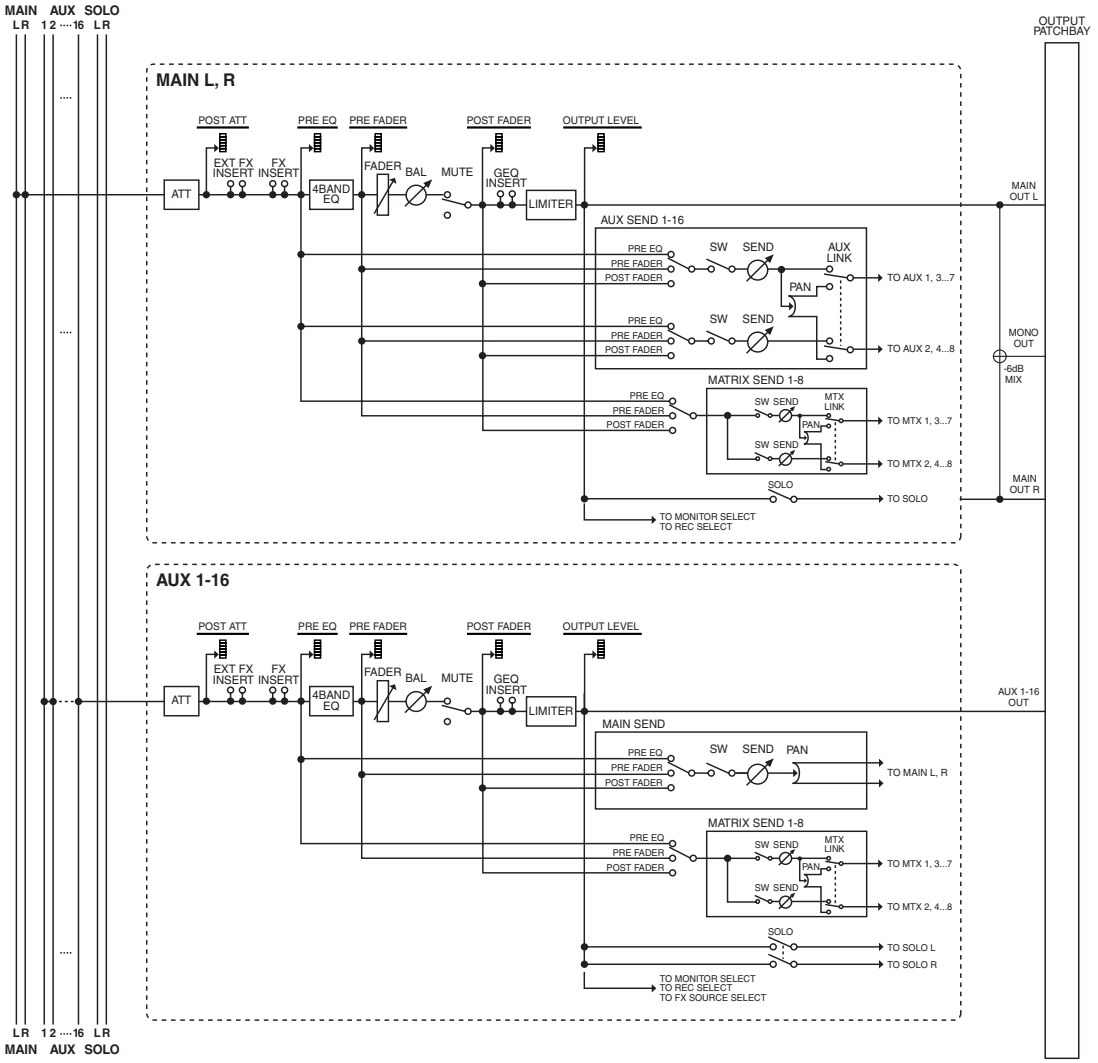
cf.

For details on MUTE groups, refer to “Mute groups” (p. 145).

AUX channel and MAIN L/R channel operations

About AUX channels and the MAIN L/R channels

The AUX and MAIN L/R channels process the mixed audio signals from the input channels, and send them to the output ports.

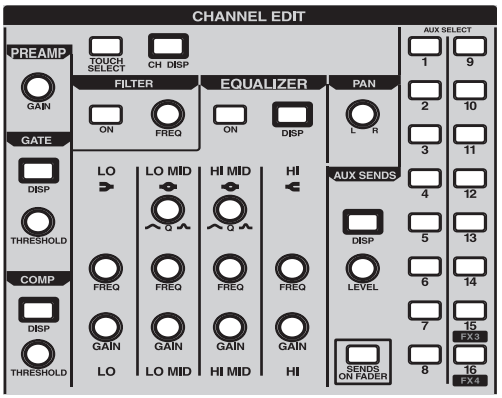


- **ATT (Attenuator)**
  This adjusts the input level.
- **EXT INSERT (External insert)**
  These ports let you use the rear panel CONSOLE IN1–IN8 and CONSOLE OUT1–OUT8 ports to insert external effects processors.
- **FX INSERT (Effect insert)**
  These ports let you insert FX1–FX4.
- **4 BAND EQ (Four-band EQ)**
  This is an EQ with four bands; LO, LO-MID, HI-MID, and HI.
- **FADER**
  This adjusts the output level.
- **BALANCE**
  This adjusts the left/right balance for MAIN L/R or for stereo-linked AUX buses.
- **MUTE**
  This mutes the output of the channel. The post fader sends to the MAIN L/R bus and AUX buses will also be muted.
- **GEQ INSERT**
  This port allows you to insert a 31-band GEQ.
- **LIMITER**
  This limits the output level.
- **AUX SEND (MAIN L/R only)**
  This adjusts the send to AUX.
- **MAIN SEND (AUX1–AUX16 only)**
  This adjusts the send to MAIN L/R.
- **MATRIX SEND**
  Adjust the send to MATRIX1–MATRIX8.

Operations using the CHANNEL EDIT section

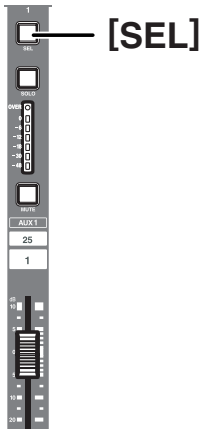
Most operations for the MAIN L/R channels and AUX channels can be performed in the CHANNEL EDIT section.

Here we will explain channel operations using the CHANNEL EDIT section.



Selecting the channel to edit

1. Use the [SEL] buttons of the fader module section to select the channel that you want to edit.



TIP

The MAIN [SEL] button will alternately select the MAIN L or MAIN R channel each time you press it.

2. The selected channel is shown in the channel indication at the upper center of the screen.



TIP

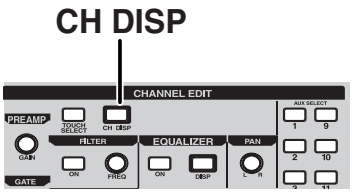
If you press [TOUCH SELECT] to turn it on (lit), you'll be able to select a channel by touching its fader.

Viewing the parameter values

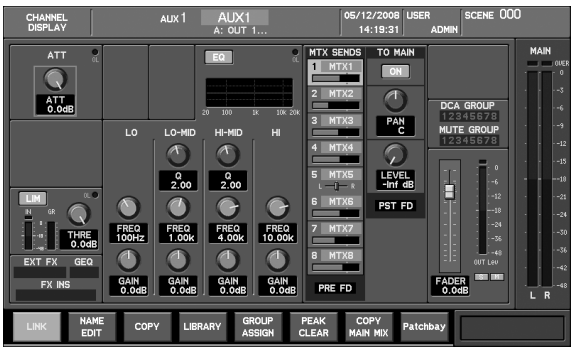
The CHANNEL DISPLAY screen shows the parameter values that you can operate in the CHANNEL EDIT section.

The arrangement of the parameters and the color of the knobs in the CHANNEL DISPLAY screen is similar to the layout of the CHANNEL EDIT section, making it easy for you to check the values.

1. In the CHANNEL EDIT section, press [CH DISP].



The CHANNEL DISPLAY screen will appear.



Even if you operate the knobs of the CHANNEL EDIT section without accessing the CHANNEL DISPLAY screen, the value of the currently-operated parameter is shown in the sub-display area.



Attenuator adjustments

Use the PREAMP area of the CHANNEL EDIT section to adjust the attenuator.



1. Use the GAIN dial to adjust the attenuator.

Adjusting the limiter threshold level

This operation is performed in the COMP area of the CHANNEL EDIT section.



1. **In the COMP area, use the THRESHOLD knob to adjust the threshold level.**

TIP

You can make fine adjustments by holding down [SHIFT] while you operate the knob.

MEMO

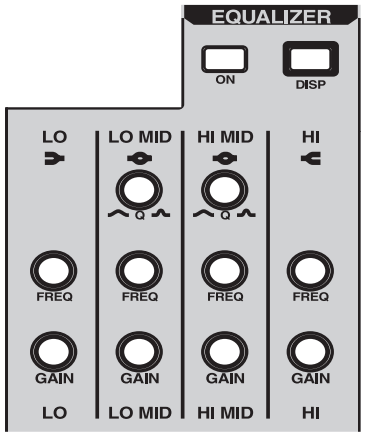
By pressing [DISP] you can access the LIMITER popup where you can make detailed settings for the limiter. For details, refer to "Limiter operations" (p. 104).

MEMO

You can turn the limiter on/off by holding down [SHIFT] and pressing [DISP] in the COMP area.

Four-band EQ operations

You can perform these operations in the EQUALIZER area of the CHANNEL EDIT section.



1. **Press [ON] to turn the four-band EQ on/off.**
2. **Use the GAIN knobs to adjust the gain of each band.**
3. **Use the FREQ knobs to adjust the center frequency of each band.**
4. **Use the Q knobs to adjust the Q of the LO-MID and HI-MID bands.**

MEMO

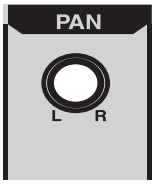
By pressing [DISP] you can access the EQUALIZER popup where you can make detailed settings for the four-band EQ. For details, refer to "Four-band EQ operations" (p. 107).

TIP

You can make fine adjustments by holding down [SHIFT] while you operate the knob.

Adjusting the left/right output balance

This operation is performed in the PAN area of the CHANNEL EDIT section. This is valid for the MAIN L/R channels and for stereo-linked AUX channels.



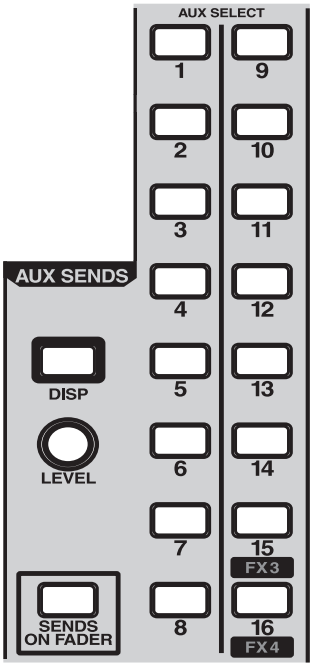
1. **Use the PAN knob to adjust the pan.**

TIP

You can make fine adjustments by holding down [SHIFT] while you operate the knob.

Sending the audio signal to an AUX bus (MAIN L/R channels)

This operation is performed in the AUX SENDS area of the CHANNEL EDIT section.



1. **Press AUX SELECT [1]–[16] to select the send-destination AUX bus.**
2. **Use the SEND LEVEL knob to adjust the amount of signal sent to the AUX bus.**

TIP

You can make fine adjustments by holding down [SHIFT] while you operate the knob.

MEMO

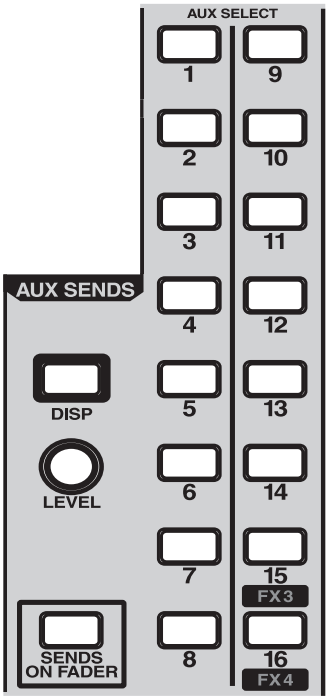
You can't use SENDS ON FADER to adjust the send amount from the MAIN L/R channels to an AUX bus.

MEMO

By pressing [DISP] you can access the AUX SENDS popup where you can make detailed AUX send settings. For details, refer to "AUX send operations" (p. 111).

Sending the audio signal to a MATRIX bus

This operation is performed in the AUX SENDS area of the CHANNEL EDIT section.



1. **Press AUX SELECT [1]–[8] to select the send-destination MATRIX bus.**
2. **Use the SEND LEVEL knob to adjust the amount of signal sent to the MATRIX bus.**

   TIP

   You can make fine adjustments by holding down [SHIFT] while you operate the knob.

   MEMO

   You can't use SENDS ON FADER to adjust the send amount to an MATRIX bus.

   MEMO

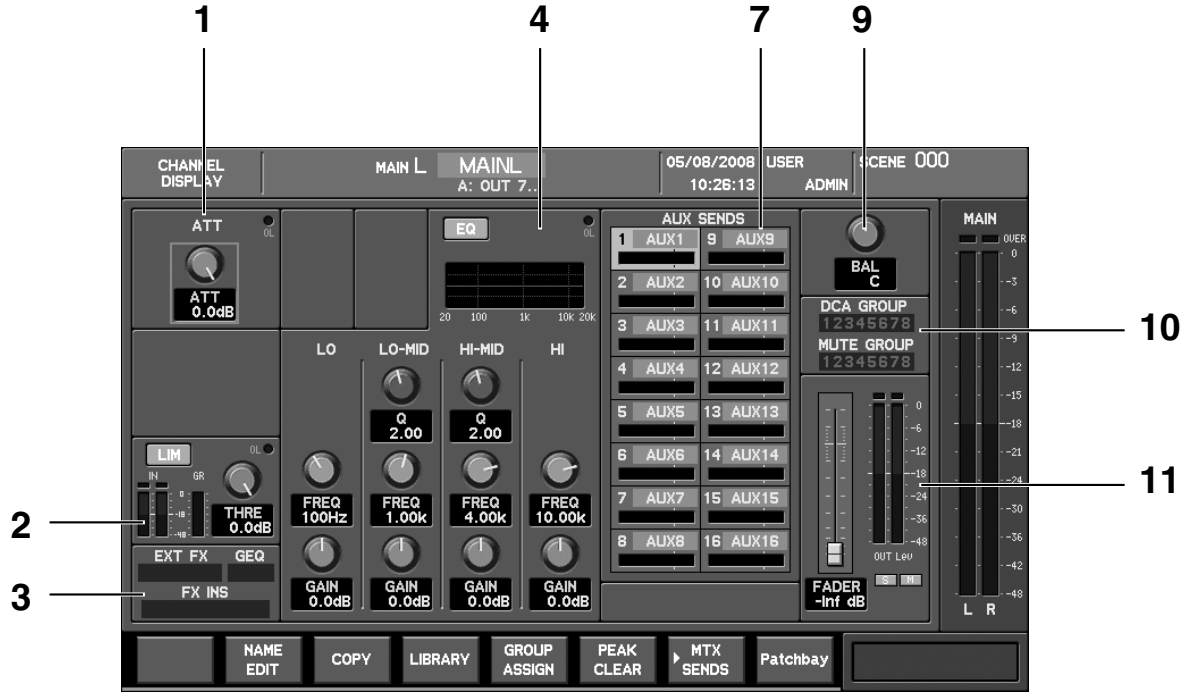
   By pressing [DISP] you can access the MATRIX SENDS popup where you can make detailed AUX send settings.

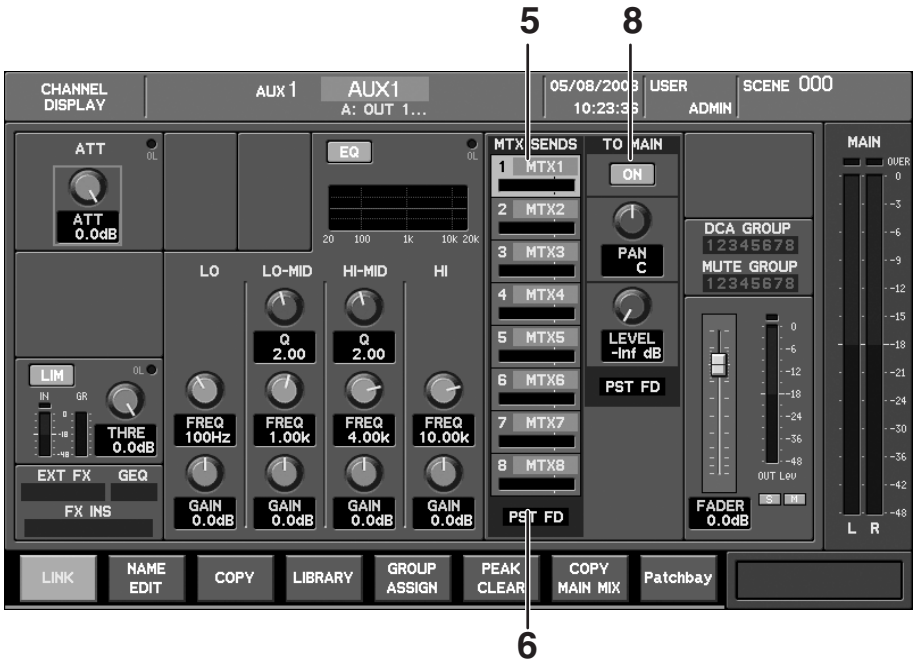
For the MAIN L/R channel, use [F7 (▶ MTX SENDS)] or [F7 (▶ AUX SENDS)] to switch the CHANNEL DISPLAY screen between the MTX SENDS display and the AUX SENDS display. The target of operations in the CHANNEL EDIT section's AUX SENDS area will also follow the CHANNEL DISPLAY screen. For the MAIN L/R channel, operations in the AUX SENDS area are valid only while the CHANNEL DISPLAY screen is shown.

Operations in the CHANNEL DISPLAY screen

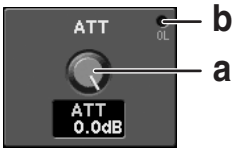
The principal parameters of the MAIN L/R channels and AUX channels can be operated in the CHANNEL DISPLAY screen.

CHANNEL DISPLAY screen





1. Attenuator



a. ATT knob

This adjusts the channel's input level in the range of -48 dB–0 dB (6 dB steps).

b. OL (Overload) indicator

This will light red when the output of the attenuator exceeds the OVER Lev setting specified in the METER SETUP popup (p. 122).

Normally, you should leave the attenuator set at 0 dB. It is convenient to use the attenuator in situations like the following.

- When the input of an output channel is overloaded, and all sends from the input channel must be lowered

2. Limiter



a. LIM button

This turns the limiter on/off.

b. THRE (Threshold) knob

This adjusts the limiter's threshold level in the range of -40.0 dB–0.0 dB.

c. IN meter

This indicates the input level of the limiter. For stereo-linked channels, two meters (L and R) are shown.

d. GR meter

This indicates the amount of gain reduction produced by the limiter.

e. OL (Overload) indicator

This will light red when the output of the limiter exceeds the OVER Lev setting specified in the METER SETUP popup (p. 122).

cf.

For details on limiter settings, refer to "Limiter operations (MAIN L/R, AUX1–AUX16)" (p. 104).

3. Insert indication



a. EXT FX

If an external effects processor is inserted, this shows the EXT FX number that is inserted.

By moving the cursor to EXT FX and pressing [ENTER], you can access the EXT FX tab of the EFFECTS screen.

cf.

Inserting an external effects processor into a channel is done in the EFFECTS screen. For details, refer to "Inserting an external effects device" (p. 137).

b. GEQ INS

If a GEQ is inserted, this shows the number of the GEQ that is inserted.

If the number is shown in white, the inserted GEQ is enabled. If it is shown in gray, the inserted GEQ is bypassed.

By moving the cursor to GEQ INS and pressing [ENTER], you can access the GEQ 1-4 tab of the EFFECTS screen.

cf.

Inserting a GEQ into a channel is done in the EFFECTS screen. For details, refer to "Inserting a 31-band GEQ" (p. 133).

c. FX INS

If FX1–FX4 is inserted, this shows the number of the inserted FX.

If the number is shown in white, the inserted effect is enabled. If it is shown in gray, the inserted effect is bypassed.

The character "L" or "R" may be added to the FX INS number. This has the following significance.

Indication	Explanation
Number+L	The L side of the FX is inserted.
Number+R	The R side of the FX is inserted.
Number only	Both L and R sides of the FX are inserted. The return from the FX is mixed and input to the channel.

By moving the cursor to FX INS and pressing [ENTER], you can access the FX 1-4 tab of the EFFECTS screen.

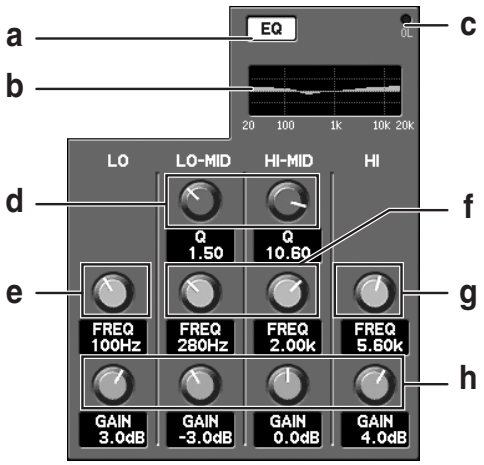
cf.

Inserting an effect into a channel is done in the EFFECTS screen. For details, refer to "Effect input/output settings" (p. 126).

MEMO

Up to four effects can be inserted in a channel. In this case, they are inserted in series in order of the FX number.

4. Four-band EQ



a. EQ button

This turns the four-band EQ on/off.

b. Four-band EQ graph

This shows the approximate response of the four-band EQ.

c. OL (Overload) indicator

This will light red when the output of the four-band EQ exceeds the OVER Lev setting specified in the METER SETUP popup (p. 122).

d. Q knobs (LO-MID, HI-MID)

These adjust the Q of the LO-MID and HI-MID bands in the range of 0.36–16. Higher values produce a sharper curve.

e. LO FREQ knob

This adjusts the center frequency of the LO band in the range of 20 Hz–1.00 kHz.

f. FREQ knobs (LO-MID, HI-MID)

These adjust the center frequency of the LO-MID and HI-MID bands in the range of 20 Hz–20.0 kHz.

g. HI FREQ knob

This adjusts the center frequency of the HI band in the range of 1.00 kHz–20.0 kHz.

h. GAIN knobs (LO, LO-MID, HI-MID, HI)

These adjust the gain of the LO, LO-MID, HI-MID, and HI bands in the range of -15.0 dB–+15.0 dB.

cf.

For detailed settings for the four-band EQ, refer to "Four-band EQ operations" (p. 107).

5. MTX send



- **MATRIX sends 1–8**

These adjust the send from AUX1–AUX16 or MAIN L/R to MATRIX1–MATRIX8. The MATRIX send area is structured as follows.



a. MATRIX number

This indicates the MATRIX channel number.

b. MATRIX name

This indicates the MATRIX channel name.

c. Send level bar

This adjusts the send level to each MATRIX in the range of -Inf dB–+10.0 dB.

The color of the level bar indicates the send point or status of the send switch as follows.

Color of the send level bar	Status
Blue	send point is PRE EQ or PRE FADER
Green	send point is POST FADER
Gray	Send switch is off

- **MATRIX pan slider**



If the send-destination is a stereo-linked pair of MATRIX channels, this slider adjusts the left/right position in the range of L63–R63. This is shown for the odd-numbered MATRIX send.

cf.

For detailed MATRIX send settings, refer to "MATRIX send operations" (p. 113).

6. MATRIX send point

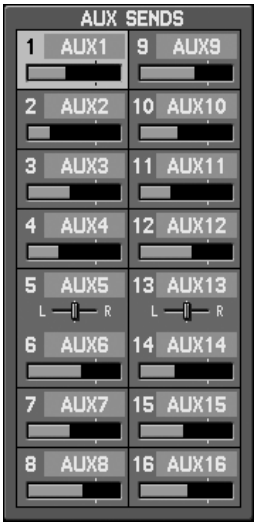


These select the point from which signal is sent to MATRIX1–MATRIX8.

The selected item corresponds to the send point as follows.

PRE EQ	Send from the pre-EQ point
PRE FD	Send from the pre-fader point
PST FD	Send from the post-fader point

7. AUX send (MAIN L/R only)



- **AUX sends 1–16**

  These adjust the send from MAIN L/R to AUX1–AUX16. The AUX send area is structured as follows.



a. AUX number

This indicates the AUX channel number.

b. AUX name

This indicates the AUX channel name.

c. Send level bar

This adjusts the send level to each AUX in the range of -Inf dB–+10.0 dB.

The color of the level bar indicates the send point or status of the send switch as follows.

Color of the send level bar	Status
Blue	send point is PRE EQ or PRE FADER
Green	send point is POST FADER
Gray	Send switch is off

- **AUX pan slider**

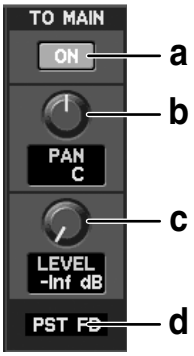


If the send-destination is a stereo-linked pair of AUX channels, this slider adjusts the left/right position in the range of L63–R63. This is shown for the odd-numbered AUX send.

cf.

For detailed AUX send settings, refer to "AUX send operations" (p. 111).

8. TO MAIN (AUX channels only)



These specify the amount of signal that will be sent from the AUX channel to MAIN L/R, and the send point.

a. ON button

This turns the send to MAIN L/R on/off.

b. PAN knob

This adjusts the left/right pan to MAIN L/R in the range of L63–R63.

c. LEVEL knob

This adjusts the send level to MAIN L/R in the range of-Inf dB–+10.0 dB.

d. MAIN send point

These select the point from which the signal is sent to MAIN L/R.

The selected item corresponds to the send point as follows.

PRE EQ	Send from the pre-EQ point
PRE FD	Send from the pre-fader point
PST FD	Send from the post-fader point

MEMO

If this is set to POST FADER, muting the AUX channel will also mute the send to the MAIN L/R channel. If this is set to PRE EQ or PRE FADER, muting the AUX channel will not affect the send to the MAIN L/R channel.

9. Balance



This adjusts the left/right output balance sent from MAIN L/R or stereo-linked AUX channels in the range of L63–R63.

10. Group

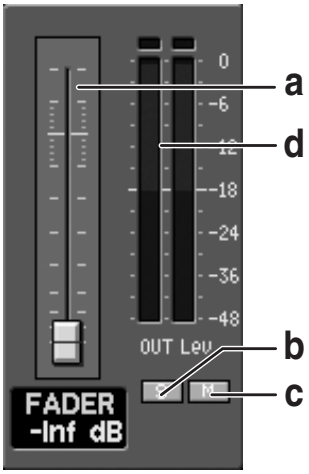


By moving the cursor to DCA GROUP or MUTE GROUP and pressing [ENTER], you can access the GROUP ASSIGN popup where you can make DCA group and MUTE group assignments.

MEMO

You can also access the GROUP ASSIGN popup window by pressing [F5 (GROUP ASSIGN)].

11. Fader



a. Fader

This adjusts the output level in the range of -Inf dB–+10.0 dB.

b. S button

This turns SOLO on/off for the channel.

c. M button

This turns MUTE on/off for the channel.

d. Channel meter

This indicates the signal level of the channel. For stereo-linked channels, two meters (L and R) are shown. The point at which the signal level is detected will be as specified in the METER screen. For details, refer to "Editing the meter settings" (p. 122).

The function buttons have the following operations.

[F1 (LINK)]*	Turns channel link on/off.	p. 78
[F2 (NAME EDIT)]	Accesses the NAME EDIT popup where you can specify the channel name.	p. 79
[F3 (COPY)]	Accesses the AUX/MAIN COPY popup where you can copy channel settings.	p. 81
[F4 (LIBRARY)	Accesses the AUX/MAIN LIBRARY popup where you can use the channel library.	p. 83
[F5 (GROUP ASSIGN)]	Accesses the GROUP ASSIGN popup where you can make DCA group and MUTE group assignments.	p. 83
[F6 (PEAK CLEAR)]	Clears the level meter peak hold or over indication.	
[F7 (COPY MAIN MIX)]*	Copies the send amount from each input channel to MAIN L/R.	p. 84
[F7 (▶ MTX SENDS)] [F7 (▶ AUX SENDS)]	Switches between the MTX SENDS display and the AUX SENDS display. This exists only for the MAIN L/R channel.	
[F8 (Patchbay)]	Accesses the PATCHBAY screen.	p. 115

* AUX channels only

TIP

If you press [F8 (Patchbay)] to access the PATCHBAY screen, the currently selected channel will be highlighted in the PATCHBAY screen.

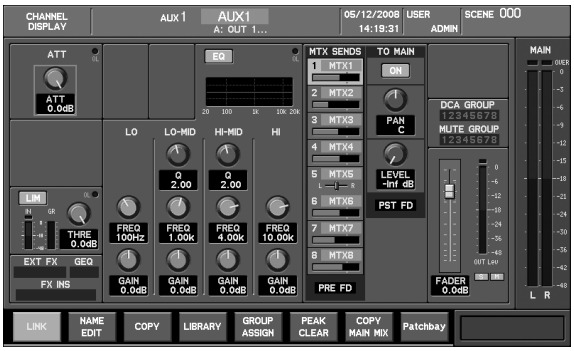
Accessing the CHANNEL DISPLAY screen

1. In the fader module section, press [SEL] to select MAIN L/R or an AUX channel.

TIP

The MAIN L channel or MAIN R channel will be selected alternately each time you press MAIN [SEL].

2. In the CHANNEL EDIT section, press [CH DISP] to access the CHANNEL DISPLAY screen.



TIP

By pressing a different [SEL] while the CHANNEL DISPLAY screen is shown, you can switch to the display for that channel.

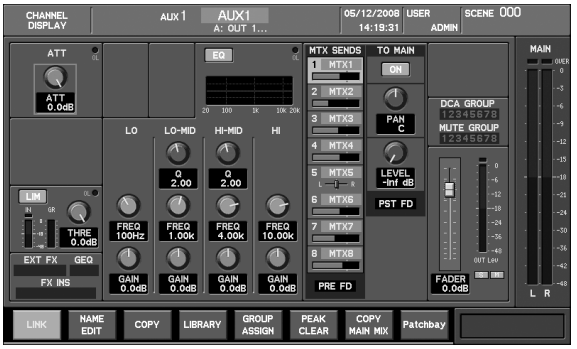
MEMO

If you've selected the "CHANNEL DISPLAY follows CH SELECT" button located in the CHANNEL SELECT area of User Preference (p. 177), pressing a [SEL] will recall the CHANNEL DISPLAY screen for that channel.

Stereo-linking AUX channels

You can stereo-link adjacent odd-numbered and even-numbered AUX channels so that their parameters will have the same settings. This is convenient when you want stereo output.

1. Access the CHANNEL DISPLAY screen for the AUX channel that you want to stereo-link.



2. Press [F1 (LINK)] to turn it on, and the AUX channels will be stereo-linked.

MEMO

The parameters of the even-numbered channel will be set to the values of the odd-numbered channel.

About linked parameters

Stereo-link will link the following parameters.

- **Attenuator**
- **Limiter parameters**
- **Four-band EQ parameters**
- **Fader parameters**
- **MAIN send level, send switch and send point**
- **MATRIX send level, send switch and send point**

MEMO

MAIN L/R is always stereo-linked.

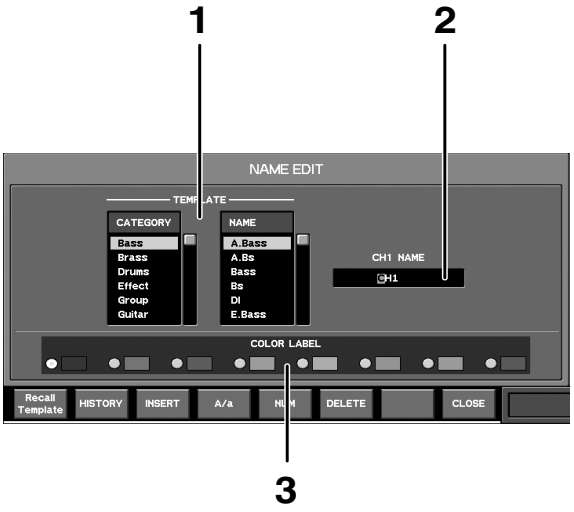
TIP

When linked, the limiter will operate in stereo.

Specifying a channel name and color label

You can specify a channel name and color label for each AUX channel and MAIN L/R channel. The channel name can be up to six characters, and you can select one of eight colors as the color label. Channel name entry and color label selection are done in the NAME EDIT popup.

NAME EDIT popup



1. TEMPLATE

Here you can select a name from a list.

- **CATEGORY list**

  Select the category.

- **NAME list**

  Select a name from within that category.

TIP

Choose the CATEGORY first, and then choose a NAME.

2. Name edit field

You can edit the name in this field.

3. Color label selection buttons

Use these buttons to select a color label for the channel.

The function buttons have the following operations.

[F1 (Recall Template)]	Enters the name selected in the TEMPLATE list into the name edit field.
[F2 (HISTORY)]	Successively recalls the channel names that have been entered since power-up, starting with the most recent name.
[F3 (INSERT)]	Inserts a space at the cursor location. The characters to the right of the cursor location will move to the right.
[F4 (A/a)]	Changes the character at the cursor location between uppercase and lowercase.
[F5 (NUM)]	Changes the character at the cursor location to the numeral "0."
[F6 (DELETE)]	Deletes the character at the cursor location. The characters to the right of the cursor location will move to the left.
[F8 (CLOSE)]	Closes the popup.

MEMO

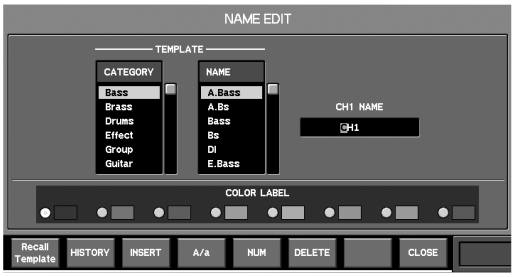
Up to sixteen names will be remembered in HISTORY.
If HISTORY becomes full, the oldest name will be deleted.

Accessing the NAME EDIT popup

1. Access the CHANNEL DISPLAY screen for the desired channel.

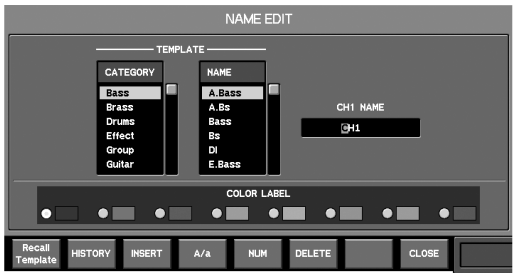


2. Press [F2 (NAME EDIT)] to access the NAME EDIT popup.



Editing the channel name

1. **Access the NAME EDIT popup for the desired channel.**



2. **Move the cursor to the name edit field, and edit the channel name.**

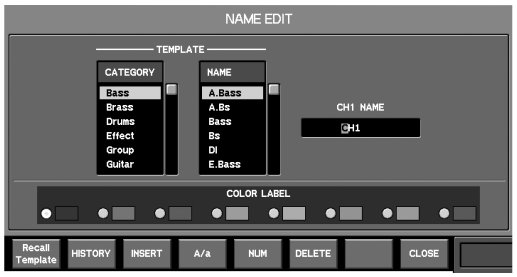
   Use the cursor left/right buttons to move the cursor location.

   Use the value dial to change the character at the cursor location.

3. **Press [F8 (CLOSE)] to close the popup.**

Choosing a color label

1. **Access the NAME EDIT popup for the desired channel.**

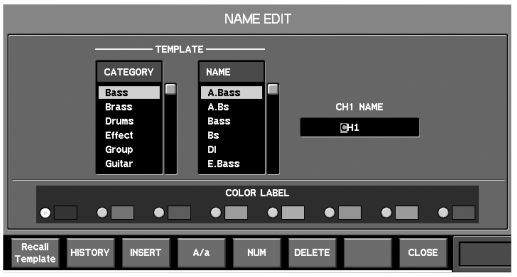


2. **Move the cursor to the desired color label select button, and press [ENTER] to make your selection.**

3. **Press [F8 (CLOSE)] to close the popup.**

Using the template to enter a channel name

1. **Access the NAME EDIT popup for the desired channel.**



2. **Move the cursor to the CATEGORY list in the TEMPLATE area, and select the category of the name you want to enter.**

3. **Move the cursor to the NAME list in the TEMPLATE area, and select the name that you want to enter.**

4. **Press [F1 (Recall Template)]. The selected name will be entered in the name edit field.**

5. **Move the cursor to the name edit field, and you'll be able to edit the name that was entered.**

6. **Press [F8 (CLOSE)] to close the popup.**

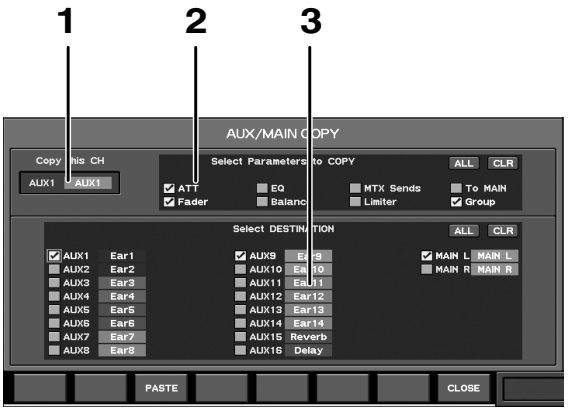
   MEMO

   If you enter a name from the template, the name that was previously in the name edit field will be deleted.

Copying channel settings to another channel

Channel settings can be copied to another channel. Channel copying is done in the AUX/MAIN COPY popup.

AUX/MAIN COPY popup



1. Copy-source channel

This indicates the copy-source channel.

2. Copy parameter select buttons

Here you can select the parameters that will be copied. You can select the following parameters.

ATT	Attenuator
EQ	Four-band EQ
MTX Sends	MATRIX Sends
TO Main	TO MAIN (AUX channels only)
Fader	Fader and mute
Balance	Balance
Limiter	Limiter
Group	DCA groups and MUTE groups

3. Copy-destination channel select buttons

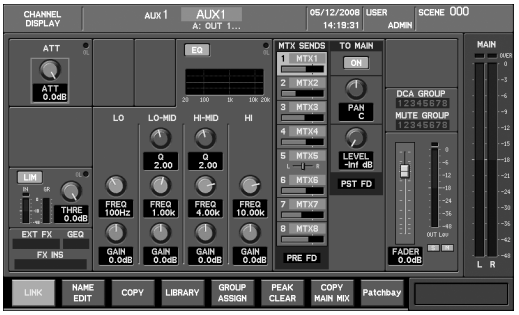
Here you can select the copy-destination channel(s).

The function buttons have the following operations.

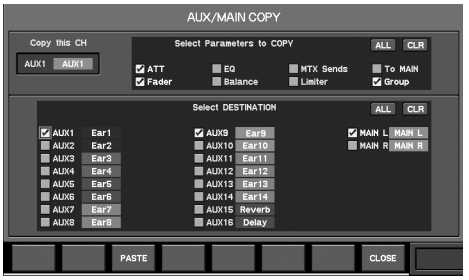
Button	Operation
[F3 (PASTE)]	Executes the copy.
[F8 (CLOSE)]	Closes the popup.

Accessing the AUX/MAIN COPY popup

1. Access the CHANNEL DISPLAY screen for the desired copy-source channel.

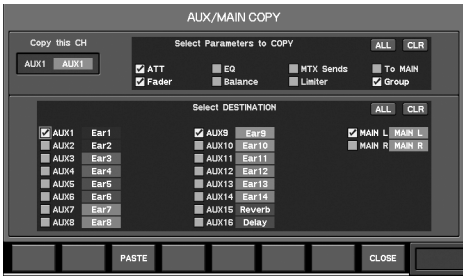


2. Press [F3 (COPY)] to access the AUX/MAIN COPY popup.



Copying the channel settings

1. **Access the AUX/MAIN COPY popup for the desired copy-source channel.**



2. **Verify that the copy-source channel is correct.**

3. **Move the cursor to the desired copy parameter select button, and press [ENTER] to select it.**

4. **Move the cursor to the desired copy-destination channel select button, and press [ENTER] to select it. You can select more than one channel.**

5. **Press [F3 (PASTE)].**



A confirmation message will ask you to confirm the Copy operation.

6. **Press [F8 (PASTE)] to execute the Copy operation.**
If you press [F7 (CANCEL)], the operation will be cancelled.

7. **Press [F8 (CLOSE)] to close the popup.**

MEMO

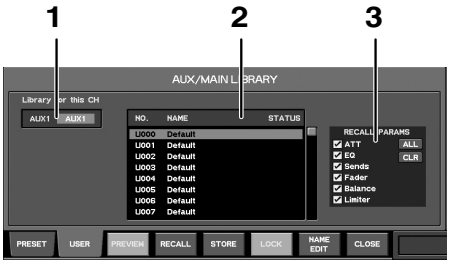
When you execute PASTE, the copy-destination channel select buttons will be cleared.

Using the AUX/MAIN library

You can recall channel settings from the library, or store the settings of the current channel in the library.

AUX/MAIN library operations are performed in the AUX/MAIN LIBRARY popup.

AUX/MAIN LIBRARY popup



1. **Target channel**
This indicates the channel that is the target of the AUX/MAIN LIBRARY popup.

2. **Library data list**
This is a list of the library data.

3. **Recall parameter select buttons**
Use these to select the parameters that will be recalled. You can select the following parameters.

ATT	Attenuator
EQ	Four-band EQ
Sends	AUX send and MAIN send
Fader	Fader and mute
Balance	Balance
Limiter	Limiter

NOTE

Noise may occur when you preview or recall a library item, but this is not a malfunction.

MEMO

AUX sends will not be recalled for AUX channels. The MAIN send will not be recalled for the MAIN L/R channel.

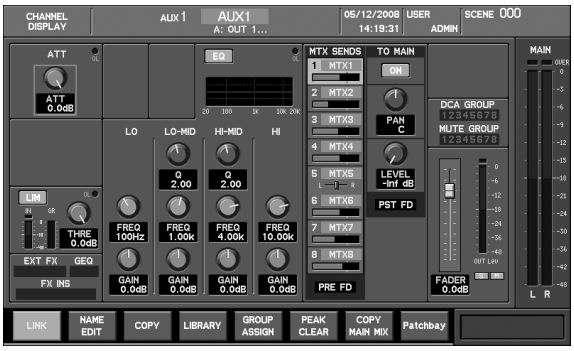
The function buttons have the following operations.

[F1 (PRESET)]	Displays the recall-only PRESET library.
[F2 (USER)]	Displays the USER library, which can be recalled or stored.
[F3 (PREVIEW)]	Previews (auditions) the selected library data.
[F4 (RECALL)]	Recalls the selected library data.
[F5 (STORE)]*	Stores the settings of the current channel into the selected library data.
[F6 (LOCK)]*	Locks or unlocks the selected library data.
[F7 (NAME EDIT)]*	Accesses the NAME EDIT popup, where you can edit the name of the selected library data.
[F8 (CLOSE)]	Closes the popup.

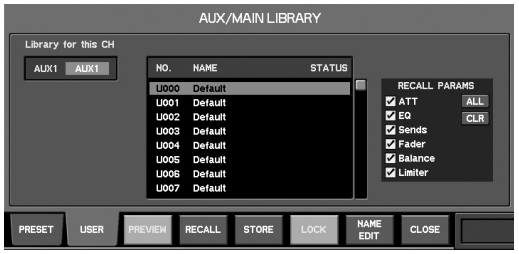
* Available only for the User library.

Accessing the AUX/MAIN LIBRARY popup

1. Access the CHANNEL DISPLAY screen for the desired channel.



2. Press [F4 (LIBRARY)] to access the AUX/MAIN LIBRARY popup.



cf.

For details on library operations, refer to “Library operations” (p. 51).

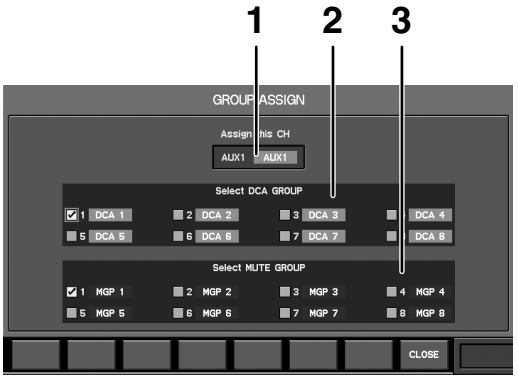
MEMO

When you store an AUX channel in the User library, the AUX sends will be stored with the default values. When you store the MAIN L/R channel in the User library, the MAIN send will be stored with the default value.

Assigning channels to DCA groups and MUTE groups

Output channels can be assigned to DCA groups and MUTE groups. Assignments to DCA groups and MUTE groups are made in the GROUP ASSIGN popup.

GROUP ASSIGN popup



1. Target channel

This indicates the channel that is the target of the GROUP ASSIGN popup.

2. DCA group select buttons

Use these to select the DCA group to which the channel will be assigned.

3. MUTE group select buttons

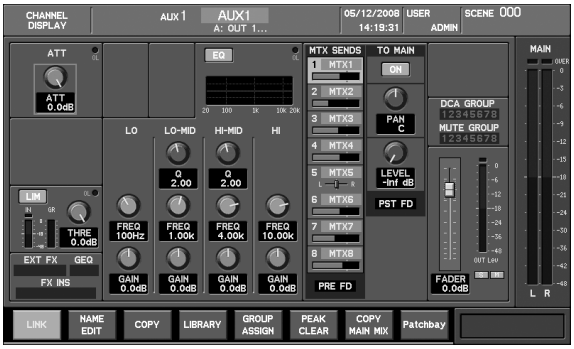
Use these to select the MUTE group to which the channel will be assigned.

The function buttons have the following operations.

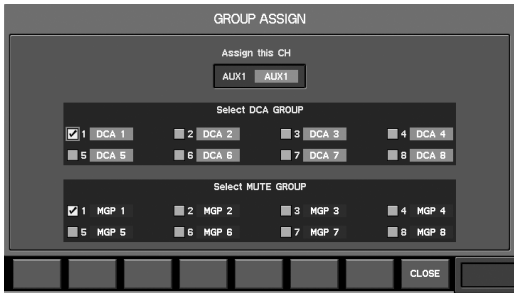
[F8 (CLOSE)]	Closes the popup.

Accessing the GROUP ASSIGN popup

1. **Access the CHANNEL DISPLAY screen for the desired channel.**

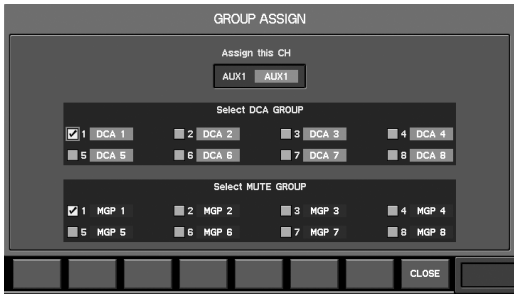


2. **Press [F5 (GROUP ASSIGN)] to access the GROUP ASSIGN popup.**



Assigning a channel to a DCA group

1. **Access the GROUP ASSIGN popup for the desired channel.**



2. **Verify that the target channel is correct.**

3. **Move the cursor to the desired DCA group select button, and press [ENTER] to select it.**

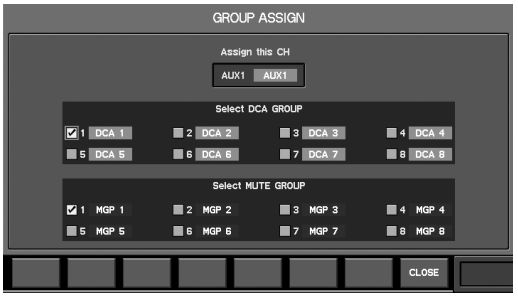
4. **Press [F8 (CLOSE)] to close the popup.**

cf.

For details on DCA groups, refer to "DCA groups" (p. 141).

Assigning a channel to a MUTE group

1. **Access the GROUP ASSIGN popup for the desired channel.**



2. **Verify that the target channel is correct.**

3. **Move the cursor to the desired MUTE group, and press [ENTER] to select it.**

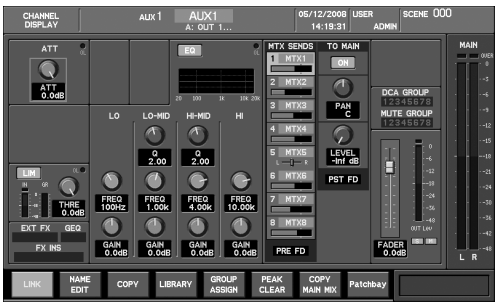
4. **Press [F8 (CLOSE)] to close the popup.**

cf.

For details on MUTE groups, refer to "Mute groups" (p. 145).

Copying the MAIN mix (AUX channels only)

1. **Access the CHANNEL DISPLAY screen for the AUX channel to which you want to copy the MAIN mix.**



2. **Press [F7 (COPY MAIN MIX)].**



A confirmation message will ask you to confirm the Copy operation.

3. **Press [F8 (OK)] to copy the send amount from each input channel to MAIN.**
If you press [F7 (CANCEL)], the Copy operation will be cancelled.

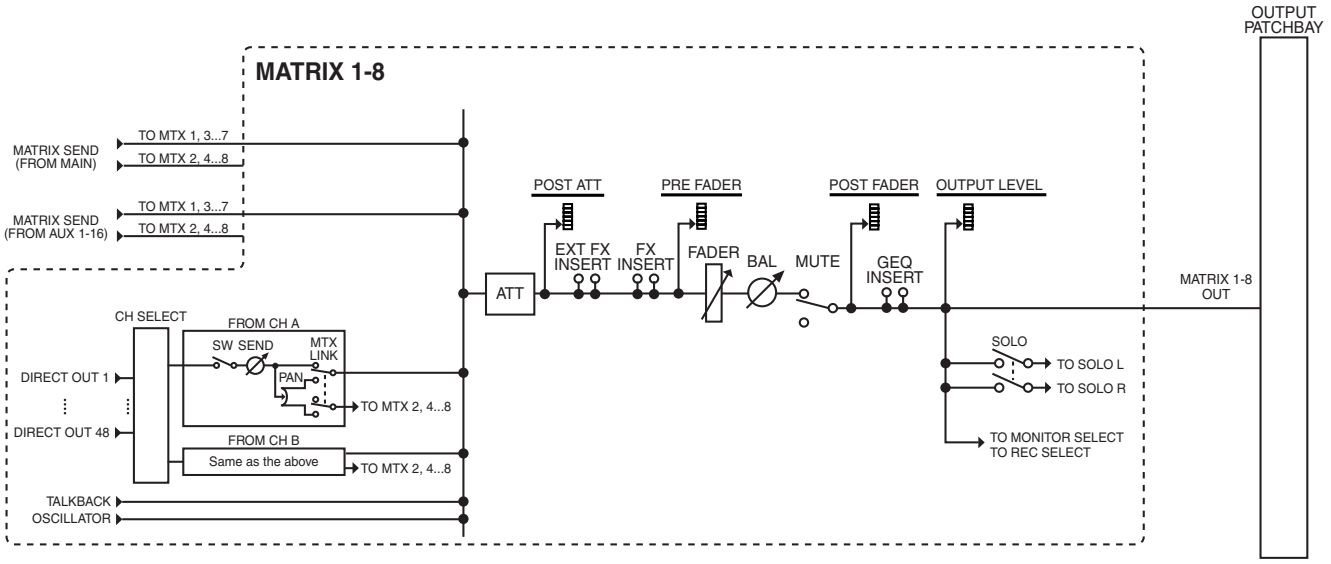
MEMO

In the case of stereo-linked AUX channels, the pan from each input channel to MAIN will also be copied.

MATRIX channel operations

About MATRIX channels

MATRIX channels process a mix of the audio signals from AUX1–AUX16 and MAIN L/R, and send them to an output port. You can also select any two channels from CH1–CH48 and mix them into a MATRIX channel.

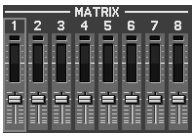


- **ATT (Attenuator)**
  This adjusts the input level.
- **EXT INSERT (External insert)**
  These ports let you use the rear panel CONSOLE IN1–IN8 and CONSOLE OUT1–OUT8 ports to insert external effects processors.
- **FX INSERT (Effect insert)**
  These ports let you insert FX1–FX4.
- **FADER**
  This adjusts the output level.
- **BALANCE**
  This adjusts the left/right balance for stereo-linked MATRIX.
- **MUTE**
  This mutes the output of the channel.
- **GEQ INSERT**
  This port allows you to insert a 31-band GEQ.

MATRIX channel operations

You can perform MATRIX channel operations in the following ways.

- Operations in the METER tab of the METER screen
  Select a MATRIX channel by moving the cursor between MATRIX1–MATRIX8. You can use the value dial to operate the faders.



- Operations in the USER layer
  Use the fader modules assigned to MATRIX1–MATRIX8 to select and operate channels. Before you can do this, you will need to set the user preference in the USER FADER tab (p. 177) to assign MATRIX1–MATRIX8 to the fader modules.

- Operations in the AUX/DCA layer
  Use fader modules 17–25 to select and operate channels. Before you can do this, you will need to set the user preference (p. 177) so that the AUX/DCA Layer select button will select "16Auxes + 8Matrices."

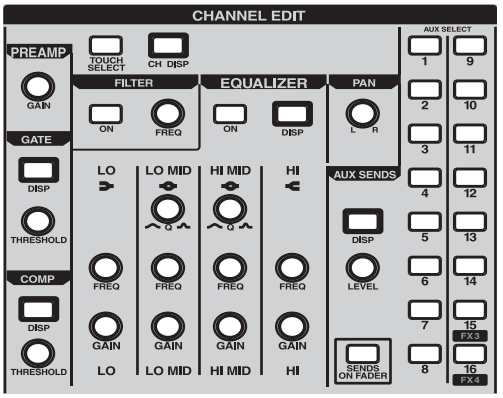
MEMO

If a MATRIX channel is selected, pressing the CHANNEL EDIT section [CH DISP] button will access the CHANNEL DISPLAY screen for the MATRIX channel.

Operations using the CHANNEL EDIT section

You can use the CHANNEL EDIT section to operate the following parameters of a MATRIX channel.

- ATT
- Balance
- Send levels from AUX1–AUX16 to the MATRIX



Selecting a channel to operate

1. **As described in "MATRIX channel operations (p. 86)," select the MATRIX channel that you want to operate.**
2. **The selected channel will appear in the channel display area in the upper middle of the screen.**



Attenuator adjustments

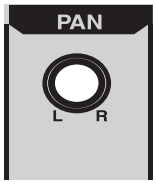
Use the PREAMP area of the CHANNEL EDIT section to adjust the attenuator.



1. **Use the GAIN dial to adjust the attenuator.**

Adjusting the left/right output balance

This operation is performed in the PAN area of the CHANNEL EDIT section. This is valid for stereo-linked MATRIX channels.



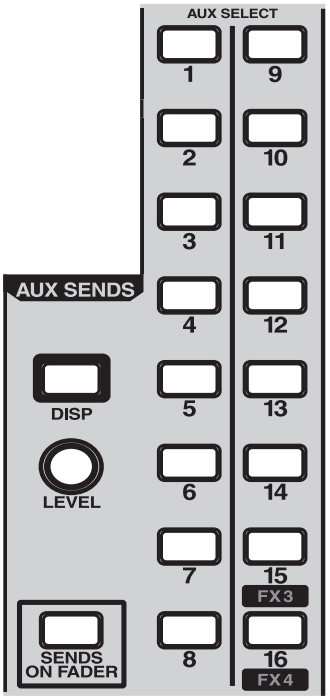
1. **Use the PAN knob to adjust the pan.**

TIP

You can make fine adjustments by holding down [SHIFT] while you operate the knob.

Sending the audio signal from an AUX bus

This operation is performed in the AUX SENDS area of the CHANNEL EDIT section.



1. **Press AUX SELECT [1]–[8] to select the send-source AUX bus**
2. **Use the SEND LEVEL knob to adjust the amount of signal sent to the MATRIX bus.**

TIP

You can make fine adjustments by holding down [SHIFT] while you operate the knob.

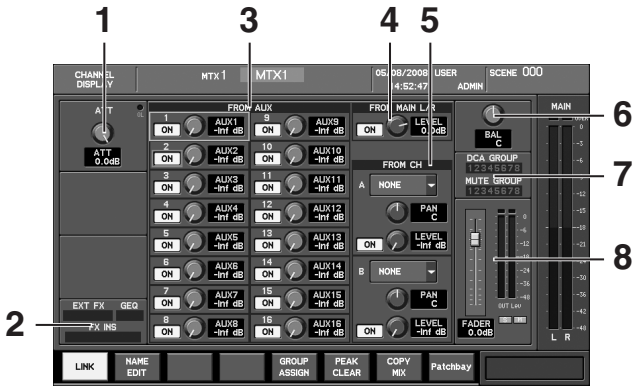
MEMO

You can't use SENDS ON FADER to adjust the send amount from AUX channels to an MATRIX bus.

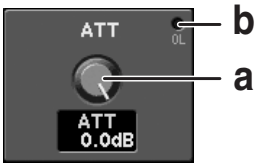
Operations in the CHANNEL DISPLAY screen

The parameters of the MATRIX channels can be operated in the CHANNEL DISPLAY screen.

CHANNEL DISPLAY screen



1. Attenuator



a. ATT knob

This adjusts the channel's input level in the range of -48 dB–0 dB (6 dB steps).

b. OL (Overload) indicator

This will light red when the output of the attenuator exceeds the OVER Lev setting specified in the METER SETUP popup (p. 122).

Normally, you can leave the attenuator at 0 dB. If an input is overloading, you can avoid the overload by adjusting the attenuator.

2. Insert indication



a. EXT FX

If an external effects processor is inserted, this shows the EXT FX number that is inserted.

By moving the cursor to EXT FX and pressing [ENTER], you can access the EXT FX tab of the EFFECTS screen.

cf.

Inserting an external effects processor into a channel is done in the EFFECTS screen. For details, refer to "Inserting an external effects device" (p. 137).

b. GEQ INS

If a GEQ is inserted, this shows the number of the GEQ that is inserted.

If the number is shown in white, the inserted GEQ is enabled. If it is shown in gray, the inserted GEQ is bypassed.

By moving the cursor to GEQ INS and pressing [ENTER], you can access the GEQ 1-4 tab of the EFFECTS screen.

cf.

Inserting a GEQ into a channel is done in the EFFECTS screen. For details, refer to "Inserting a 31-band GEQ" (p. 133).

c. FX INS

If FX1–FX4 is inserted, this shows the number of the inserted FX.

If the number is shown in white, the inserted effect is enabled. If it is shown in gray, the inserted effect is bypassed.

The character "L" or "R" may be added to the FX INS number. This has the following significance.

Indication	Explanation
Number+L	The L side of the FX is inserted.
Number+R	The R side of the FX is inserted.
Number only	Both L and R sides of the FX are inserted. The return from the FX is mixed and input to the channel.

By moving the cursor to FX INS and pressing [ENTER], you can access the FX 1-4 tab of the EFFECTS screen.

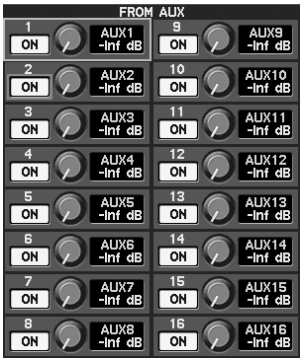
cf.

Inserting an effect into a channel is done in the EFFECTS screen. For details, refer to "Effect input/output settings" (p. 126).

MEMO

Up to four effects can be inserted in a channel. In this case, they are inserted in series in order of the FX number.

3. FROM AUX send



These adjust the send levels from AUX1–AUX16 to MATRIX. The FROM AUX sends are structured as follows.



a. AUX number

Indicates the AUX channel number.

b. ON button

Turns the AUX send on/off.

c. LEVEL knob

Adjusts the AUX send level in a range of -Inf dB–+10.0 dB.

MEMO

The FROM AUX send LEVEL knobs can also be operated from the CHANNEL EDIT section's AUX SENDS area (p. 87).

4. FROM MAIN L/R send



Adjusts the send level from MAIN L/R to MATRIX.

a. ON button

Turns the send from MAIN L/R on/off.

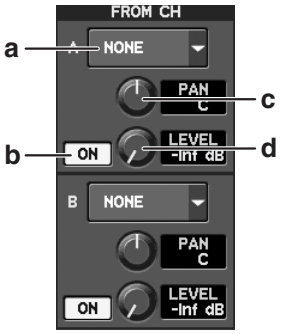
b. LEVEL knob

Adjusts the send level from MAIN L/R in a range of -Inf dB–+10.0 dB.

MEMO

The FROM AUX send and FROM MAIN L/R parameters are actually parameters of the AUX channels and MAIN L/R channel. If a MATRIX is stereo-linked, its send pan and send position can be edited in the CHANNEL DISPLAY screen for AUX1–AUX16 and MAIN L/R (p. 75).

5. FROM CH send



Here you can select any two channels from CH1–CH48 and mix them into the MATRIX.

a. MATRIX SOURCE SELECT popup button

This button accesses the MATRIX SOURCE SELECT popup (p. 91) where you can select the channels that will be mixed into the MATRIX. The name of the currently selected channel is shown on the button.

b. PAN knob

This is shown if the MATRIX is stereo-linked. You can adjust the left/right panning to the MATRIX in a range of L63–R63.

c. LEVEL knob

This adjusts the send level to the MATRIX in a range of -Inf dB–+10.0 dB.

MEMO

For a stereo-linked MATRIX, the channel selection and send level will be the same for FROM CH A and FROM CH B.

MEMO

The position at which the signal is taken from CH1–CH48 is the same as the direct out send position. This setting is made in the CHANNEL DISPLAY screen for CH1–CH48 (p. 60).

6. Balance



This adjusts the left/right output balance sent from stereo-linked MATRIX channels in the range of L63–R63.

7. Group

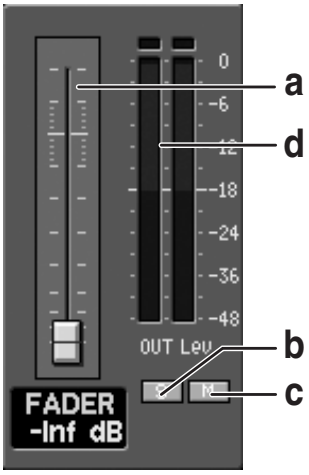


By moving the cursor to DCA GROUP or MUTE GROUP and pressing [ENTER], you can access the GROUP ASSIGN popup where you can make DCA group and MUTE group assignments.

MEMO

You can also access the GROUP ASSIGN popup window by pressing [F5 (GROUP ASSIGN)].

8. Fader



a. Fader

This adjusts the output level in the range of -Inf dB–+10.0 dB.

b. S button

This turns SOLO on/off for the channel.

c. M button

This turns MUTE on/off for the channel.

d. Channel meter

This indicates the signal level of the channel. For stereo-linked channels, two meters (L and R) are shown. The point at which the signal level is detected will be as specified in the METER screen. For details, refer to "Editing the meter settings" (p. 122).

The function buttons have the following operations.

[F1 (LINK)]	Turns channel link on/off.	
[F2 (NAME EDIT)]	Accesses the NAME EDIT popup where you can specify the channel name.	p. 79
[F5 (GROUP ASSIGN)]	Accesses the GROUP ASSIGN popup where you can make DCA group and MUTE group assignments.	p. 83
[F6 (PEAK CLEAR)]	Clears the level meter peak hold or over indication.	
[F7 (COPY MIX)]	Copies the mix of a MATRIX channel to another MATRIX channel.	p. 92
[F8 (Patchbay)]	Accesses the PATCHBAY screen.	p. 115

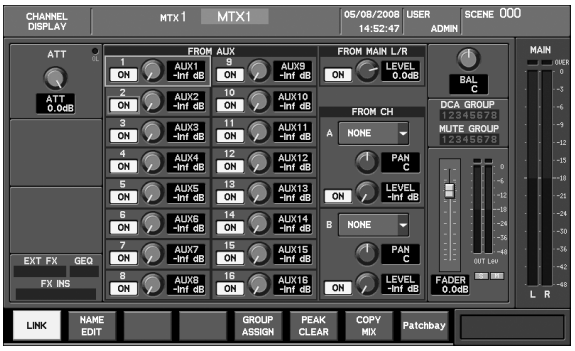
TIP

If you press [F8 (Patchbay)] to access the PATCHBAY screen, the currently selected channel will be highlighted in the PATCHBAY screen.

Accessing the CHANNEL DISPLAY screen

1. As described in "MATRIX channel operations" (p. 86), select the MATRIX channel that you want to operate.

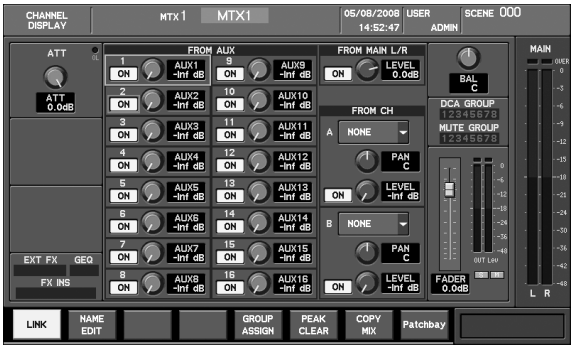
2. In the CHANNEL EDIT section, press [CH DISP] to access the CHANNEL DISPLAY screen.



Stereo-linking MATRIX channels

You can stereo-link adjacent odd-numbered and even-numbered MATRIX channels so that their parameters will have the same settings. This is convenient when you want stereo output.

1. Access the CHANNEL DISPLAY screen for the MATRIX channel that you want to stereo-link.



2. Press [F1 (LINK)] to turn it on, and the MATRIX channels will be stereo-linked.

MEMO

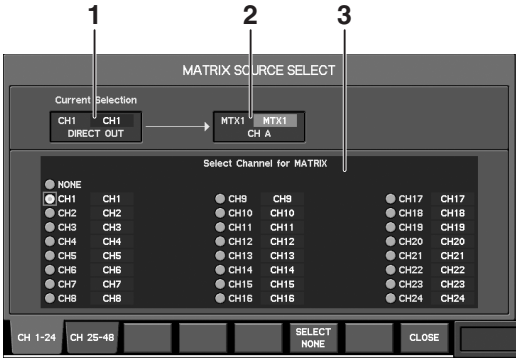
The parameters of the even-numbered channel will be set to the values of the odd-numbered channel.

About linked parameters

Stereo-link will link the following parameters.

- **Attenuator parameters**
- **Fader parameters**
- **The FROM AUX and FROM MAIN L/R send levels and send switches**
- **The FROM CH A/B channel selections, send levels, send switches, and send pans**

Operations in the MATRIX SOURCE SELECT popup



1. Current channel selection indication
This indicates the currently selected channel.

2. Target MATRIX indication
This indicates the MATRIX that is the target of operations in the MATRIX SOURCE SELECT popup.

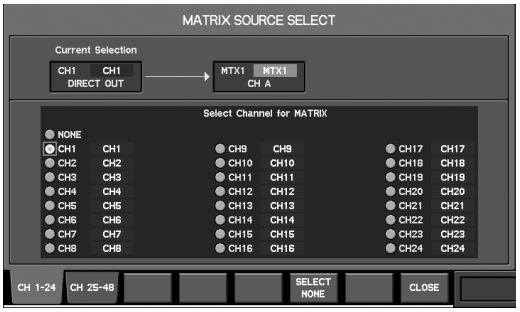
3. Channel select buttons
These buttons select the channels that will be mixed to the MATRIX.

In the MATRIX SOURCE SELECT popup, the function buttons perform the following operations.

[F1 (CH 1–24)]	Displays CH1–CH24 as the channel select buttons.
[F2 (CH 25–48)]	Displays CH25–CH48 as the channel select buttons.
[F5 (SELECT NONE)]	Cancels the channel selection.
[F8 (CLOSE)]	Closes the popup.

Accessing the MATRIX SOURCE SELECT popup

1. Move the cursor to the MATRIX SOURCE SELECT popup button (p. 89) and press [ENTER].



The MATRIX SOURCE SELECT popup will appear.

Selecting the FROM CH A/B channels

1. Access the MATRIX SOURCE SELECT popup.



2. Use [F1 (CH 1-24)] or [F2 (CH 25-48)] to access the desired channel select buttons.

3. Move the cursor to the desired channel select button, and press [ENTER] to select it.

4. Press [F8 (CLOSE)] to close the popup.

MEMO

If you decide to cancel your channel selection, press [F6 (SELECT NONE)].

Copying a mix to another MATRIX

You can copy the mix from one MATRIX to another MATRIX. Use the COPY MATRIX MIX popup to perform this operation.

COPY MATRIX MIX popup



1. Copy-source channel indication
This indicates the copy-source MATRIX channel.

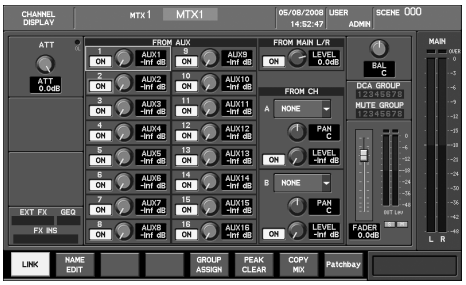
2. Copy-destination channel select button
This selects the copy-destination MATRIX channel.

In the COPY MATRIX MIX popup, the function buttons perform the following operations.

[F3 (PASTE)]	Executes the copy.
[F8 (CLOSE)]	Closes the popup.

Accessing the COPY MATRIX MIX popup

1. Access the CHANNEL DISPLAY screen for the desired copy-source MATRIX channel.

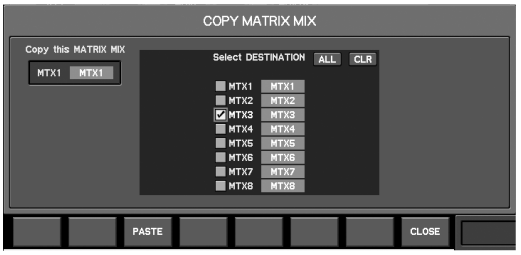


2. Press [F7 (COPY MIX)] to access the COPY MATRIX MIX popup.



Copying a mix to another MATRIX

1. Access the COPY MATRIX MIX popup for the desired copy-source MATRIX channel.



2. Use the copy-destination select button to select the copy-destination MATRIX channel.

3. Press [F3 (PASTE)].



A confirmation message will ask you to confirm the copy operation.

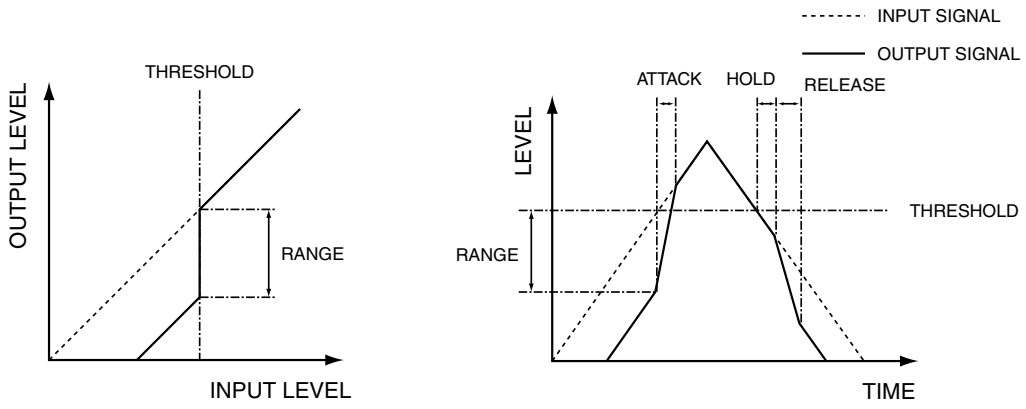
4. Press [F8 (PASTE)] to copy the mix to the MATRIX channel you selected in step 3.
If you press [F7 (CANCEL)], the operation will be cancelled.

Dynamics

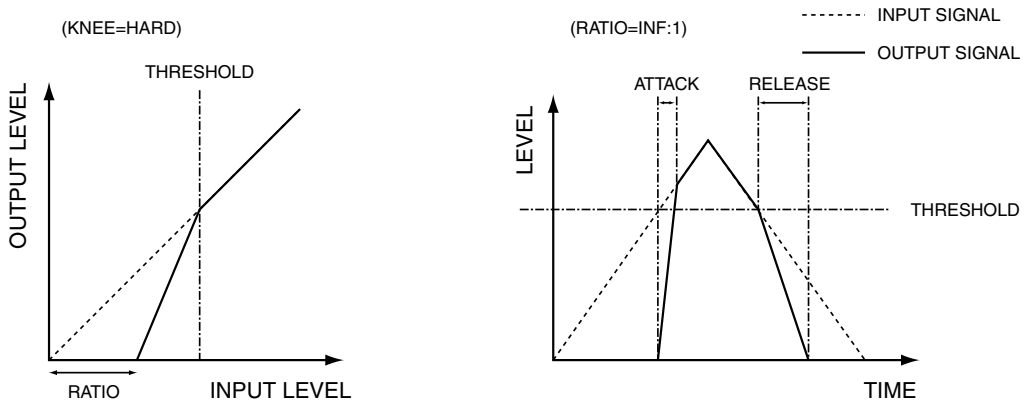
Gate/expander operations

A gate/expander is provided on CH1–CH48, and can be used as either a gate, an expander, or a ducking processor. Up to twenty-four gate/expander units can be turned on.

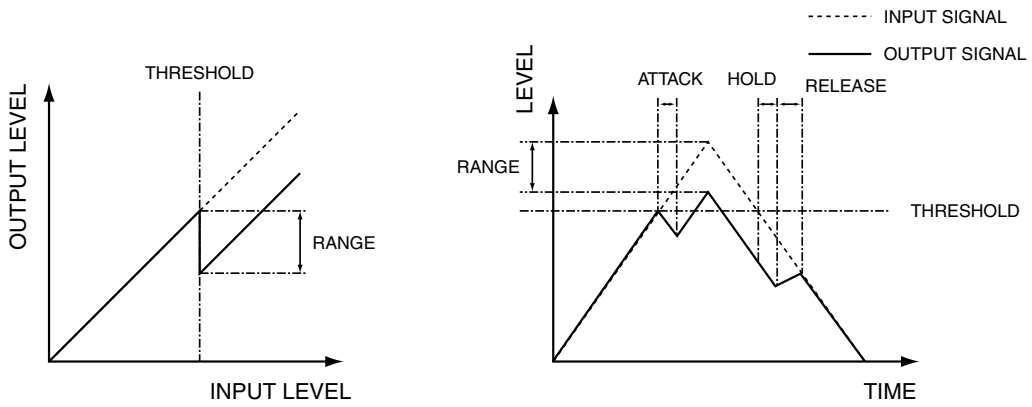
A gate applies a user-adjustable level of attenuation (RANGE) to input signals that are lower than the threshold level.



An expander applies a user-adjustable ratio of attenuation (RATIO) to input signals that are lower than the threshold level.

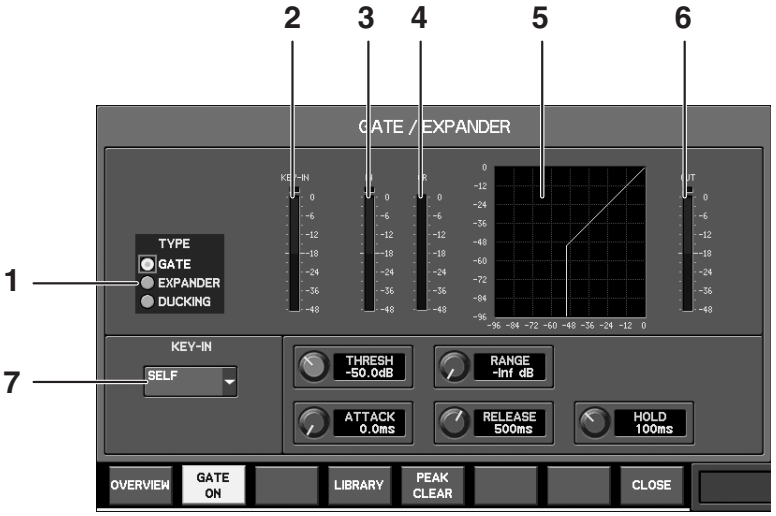


A ducking applies a user-adjustable level of attenuation (RANGE) to input signals that are higher than the threshold level.



Gate/expander operations are performed in the GATE/EXPANDER popup.

GATE/EXPANDER popup



1. TYPE select buttons

These select the gate/expander type from the following choices.

GATE	Gate
EXPANDER	Expander
DUCKING	Ducking

2. KEY-IN meter

This indicates the level of the key-in signal. For stereo-linked channels, two meters are shown (L and R).

3. IN meter

This indicates the input level to the gate/expander. For stereo-linked channels, two meters are shown (L and R).

4. GR meter

This indicates the amount of gain reduction produced by the gate/expander.

5. Gate/expander graph

This indicates the approximate response of the gate/expander.

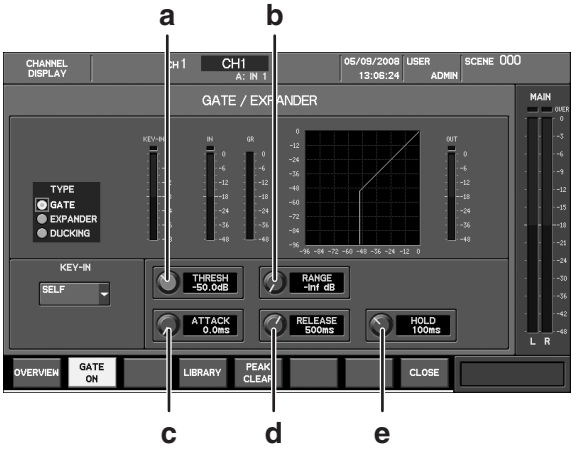
6. OUT meter

This indicates the output level of the gate/expander. For stereo-linked channels, two meters are shown (L and R).

7. KEY-IN SELECT popup button

This accesses the KEY-IN SELECT popup where you can select the key-in signal. For stereo-linked channels, there will be two (L and R). The channel currently selected as the key-in signal is shown on the button.

Gate



a. THRESH knob

This adjusts the threshold level in a range of -80.0 dB–0.0 dB.

b. RANGE knob

This adjusts the RANGE in a range of -Inf dB–0.0 dB.

c. ATTACK knob

This adjusts the ATTACK time in a range of 0.0 ms–800.0 ms. This is the time from when the input signal exceeds the threshold level until the gate opens completely.

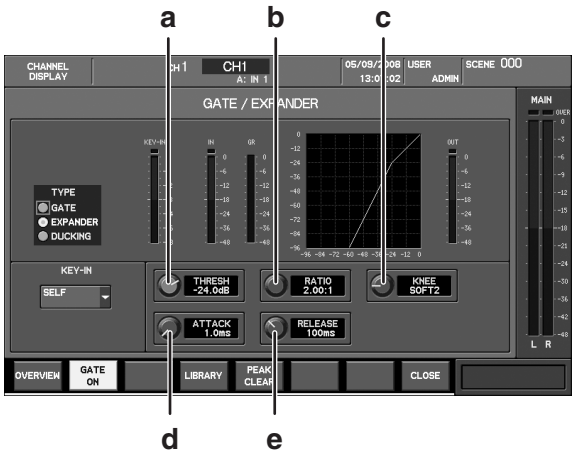
d. RELEASE knob

This adjusts the RELEASE time in a range of 0 ms–8000 ms. This is the time over which the gate reaches its maximum effect after the HOLD time has elapsed.

e. HOLD knob

This adjusts the HOLD time in a range of 0 ms–8000 ms. This is the time from when the input signal falls below the threshold level until the gate begins closing.

Expander



a. THRESH knob
This adjusts the threshold level in a range of -80.0 dB–0.0 dB.

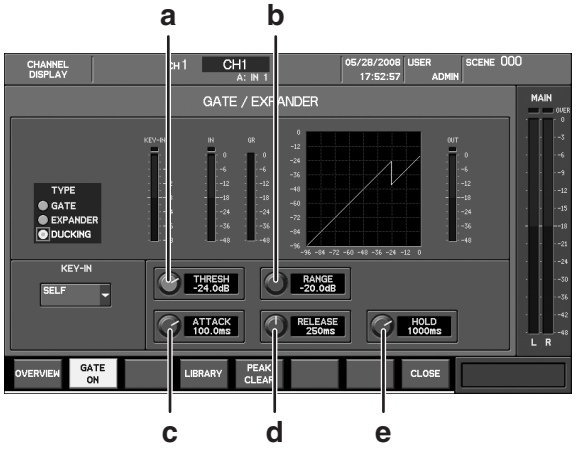
b. RATIO knob
This adjusts the RATIO in a range of 1.00:1–INF:1 (14 steps).

c. KNEE knob
This adjusts the KNEE in a range of HARD or SOFT1–SOFT9 (ten steps). The way in which the expander is applied to the region near the threshold level can be adjusted between steep (HARD) and gentle (SOFT9).

d. ATTACK knob
This adjusts the ATTACK time in a range of 0.0 ms–800.0 ms. This is the time from when the input signal exceeds the threshold level until the expander effect disappears.

e. RELEASE knob
This adjusts the RELEASE time in a range of 0 ms–8000 ms. This is the time from when the input signal falls below the threshold level until the expander effect reaches its maximum.

Ducking



a. THRESH knob
This adjusts the threshold level in a range of -80.0 dB–0.0 dB.

b. RANGE knob
This adjusts the RANGE in a range of -Inf dB–0.0 dB.

c. ATTACK knob
This adjusts the ATTACK time in a range of 0.0 ms–800.0 ms. This is the time from when the input signal exceeds the threshold level until the ducking effect reaches its maximum.

d. RELEASE knob
This adjusts the RELEASE time in a range of 0 ms–8000 ms. This is the time over which the ducking effect disappears after the HOLD time has elapsed.

e. HOLD knob
This adjusts the HOLD time in a range of 0 ms–8000 ms. This is the time from when the input signal falls below the threshold level until the ducking effect begins to disappear.

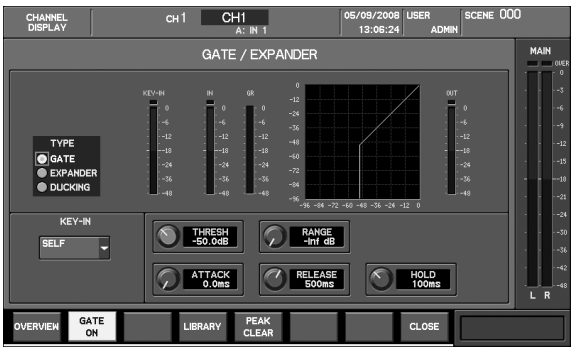
In the GATE/EXPANDER popup, the function buttons perform the following operations.

[F1 (OVERVIEW)]	Accesses the GATE/EXPANDER OVERVIEW popup.	p. 97
[F1 (GATE ON)]	Turns the gate/expander on/off.	
[F4 (LIBRARY)]	Accesses the GATE/EXP LIBRARY popup.	p. 98
[F5 (PEAK CLEAR)]	Clears the level meter's peak hold or over indication.	
[F8 (CLOSE)]	Closes the popup.	

Accessing the GATE/EXPANDER popup

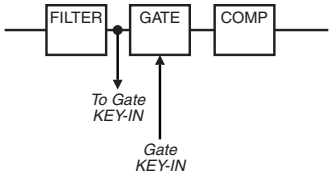
1. In the fader module section, press a [SEL] button to select the desired channel.

2. In the GATE area of the CHANNEL EDIT section, press [DISP].



The GATE/EXPANDER popup will appear.

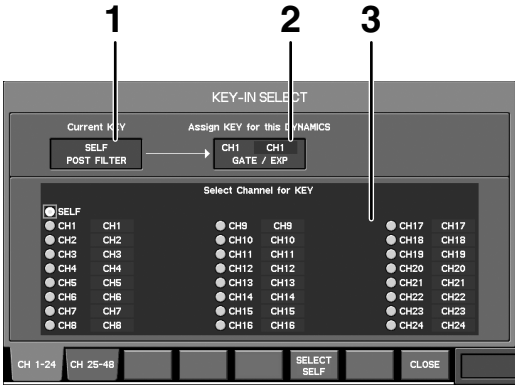
Selecting the key-in signal for the gate/expander



The key-in signal used by the gate/expander is taken from the post-filter point of CH1–CH48.

Use the KEY-IN SELECT popup to select the key-in signal.

KEY-IN SELECT popup



1. Current key indication

This indicates the current key.

2. Dynamics type indication

This indicates the type of dynamics to which the KEY-IN SELECT popup applies.

3. Key-in signal select buttons

These buttons select the channel that will be used as the key-in signal.

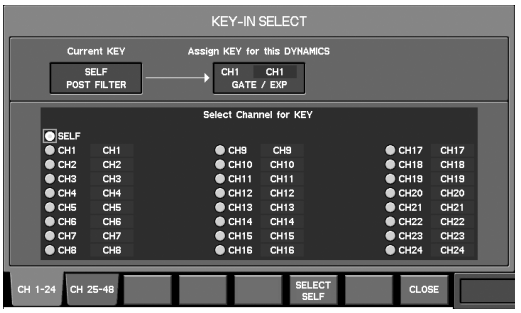
In the KEY-IN SELECT popup, the function buttons perform the following operations.

[F1 (CH 1–24)]	Displays CH1–CH24 as the key-in signal select buttons.
[F2 (CH 25–48)]	Displays CH25–CH48 as the key-in signal select buttons.
[F6 (SELECT SELF)]	Selects the channel itself as its own key-in signal.
[F8 (CLOSE)]	Closes the popup.

Accessing the KEY-IN SELECT popup

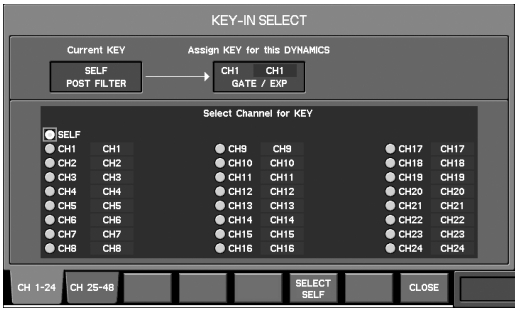
1. Move the cursor to the KEY-IN SELECT popup button and press [ENTER].

The KEY-IN SELECT popup will appear.



Selecting the key-in signal

1. Access the KEY-IN SELECT popup.



2. Use [F1 (CH 1–24)] or [F2 (CH 25–48)] to view the desired key-in signal select buttons.

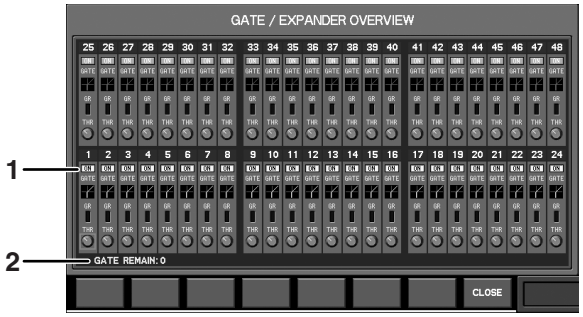
3. Move the cursor to the desired key-in signal select button, and press [ENTER] to select it.

4. Press [F8 (CLOSE)] to close the popup.

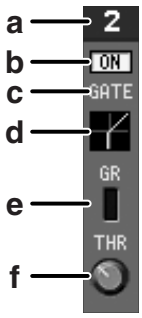
MEMO

If you want the channel itself to be its own key-in signal, press [F6 (SELCT SELF)].

GATE/EXPANDER OVERVIEW popup



1. Overview
This shows the overall gate/expander status for CH1–CH48.



a. Channel number

b. ON switch
Turns the gate/expander on or off.

c. Type indication
Indicates the currently selected type.

d. Gate/expander graph
Shows the approximate response of the gate/expander.

e. GR meter
Shows the amount of gain reduction for the gate/expander.

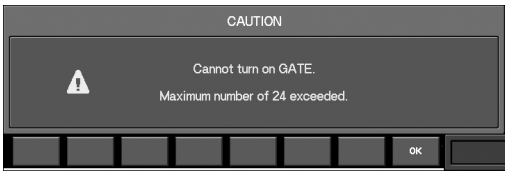
f. THR knob
Adjusts the threshold level of the gate/expander in a range of -80.0 dB–0.0 dB.

2. GATE REMAIN indication
Indicates the remaining number of gate/expander units that can be turned on. If this indicates 0, no further units can be turned on.

MEMO

Stereo-linked channels will use two gate/expander units. This means that if the GATE REMAIN indication is 1, you won't be able to turn on the gate/expander for a stereo-linked channel. If you enable stereo linking for a channel when the GATE REMAIN indication is 0, and this would cause the number of gate/expander units to exceed 24, the gate/expander for that channel will be turned off.

If you attempt to turn on more than twenty-four gate/expander units, the following warning message will appear, and no further units can be turned on.

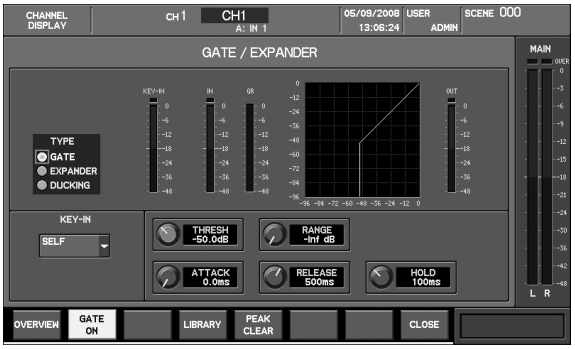


In the GATE/EXPANDER OVERVIEW popup, the function buttons perform the following operations.

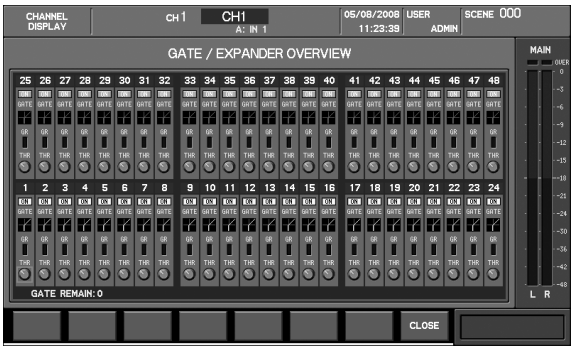
[F8 (CLOSE)]	Closes the popup.

Accessing the GATE/EXPANDER OVERVIEW popup

1. Access the GATE EXPANDER popup.



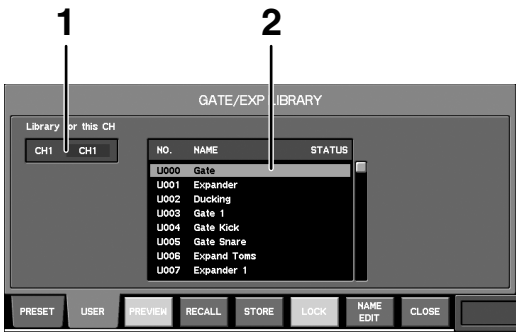
2. Press [F1 (OVERVIEW)] to access the GATE/EXPANDER OVERVIEW popup.



Using the gate/expander library

You can recall gate/expander settings from the library, or store the current gate/expander settings in the library.
The GATE/EXP LIBRARY popup is used to perform gate/expander library operations.

GATE/EXP LIBRARY popup



1. Channel indication
This indicates the channel to which the GATE/EXP LIBRARY popup applies.

2. Library data list
This is a list of the library data.

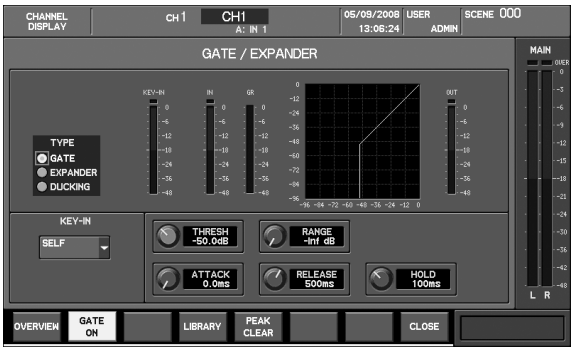
In the GATE/EXP LIBRARY popup, the function buttons perform the following operations.

[F1 (PRESET)]	Displays the recall-only PRESET library.
[F2 (USER)]	Displays the USER library, which lets you recall or store data.
[F3 (PREVIEW)]	Previews (auditions) the library data that is selected in the list.
[F4 (RECALL)]	Recalls the library data that is selected in the list.
[F5 (STORE)]*	Stores settings to the library data that is selected in the list.
[F6 (LOCK)]*	Locks the library data that is selected in the list.
[F7 (NAME EDIT)]*	Accesses the NAME EDIT popup for editing the name of the user library data that is selected in the list.
[F8 (CLOSE)]	Closes the popup.

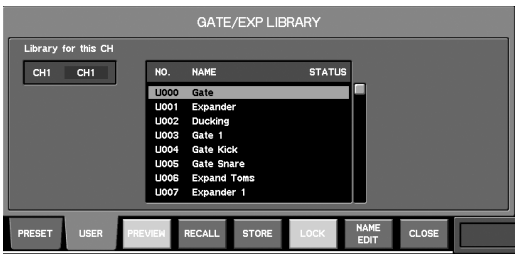
* Available only for the User library.

Accessing the GATE/EXP LIBRARY popup

1. Access the GATE/EXPANDER popup.



2. Press [F4 (LIBRARY)] to access the GATE/EXP LIBRARY popup.

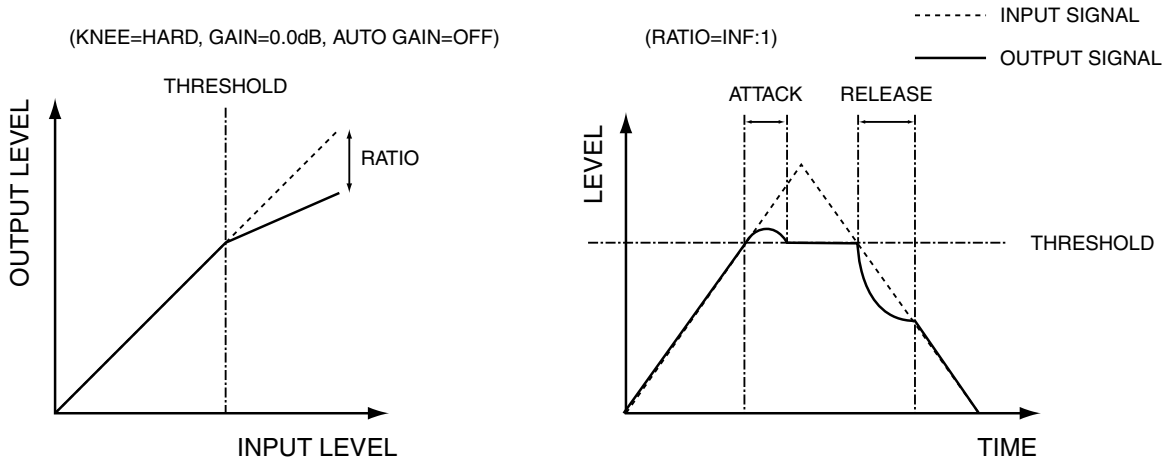


cf.

For details on library operations, refer to “Library operations” (p. 51).

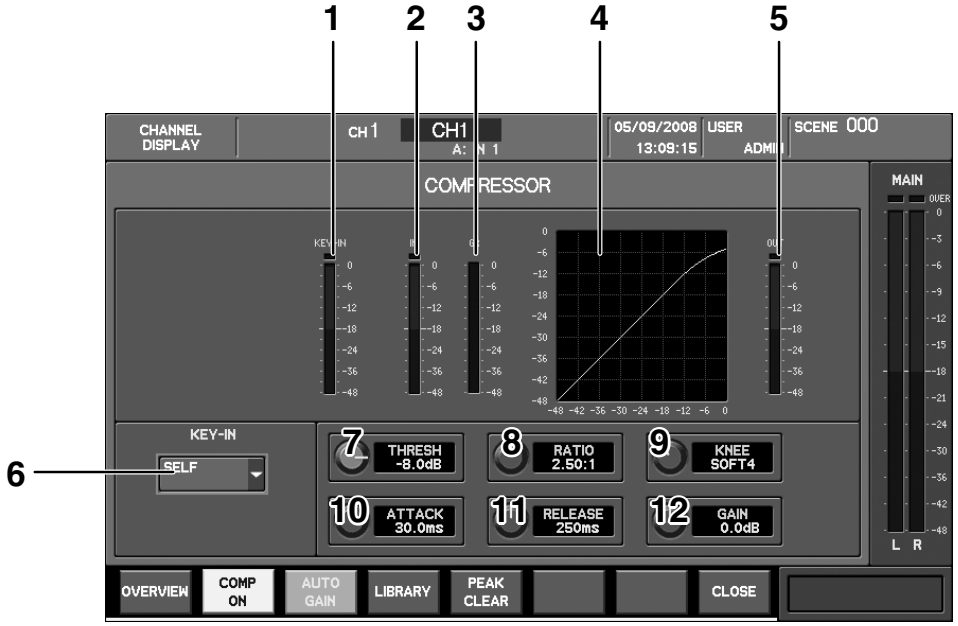
Compressor operations

Compressors are provided on CH1–CH48. They apply a user-adjustable ratio of attenuation to input signals that exceed the threshold level. Up to twenty-four compressors can be turned on.



The COMPRESSOR popup is used to perform compressor operations.

COMPRESSOR popup



1. KEY-IN meter
This indicates the level of the key-in signal. For stereo-linked channels, two meters (L and R) are shown.

2. IN meter
This indicates the input level to the compressor. For stereo-linked channels, two meters (L and R) are shown.

3. GR meter
This indicates the amount of gain reduction produced by the compressor.

4. Compressor graph
This indicates the approximate response of the compressor.

5. OUT meter
This indicates the output level of the compressor. For stereo-linked channels, two meters (L and R) are shown.

6. KEY-IN SELECT popup button
This accesses the KEY-IN SELECT popup window where you can select the key-in signal. For stereo-linked channels, there are two buttons (L and R). The channel currently selected as the key-in signal is shown on the button.

7. THRESH knob
This adjusts the threshold level in a range of -40.0 dB–0.0 dB.

8. RATIO knob
This adjusts the RATIO in a range of 1.00:1–INF:1(14 steps).

9. KNEE knob
This adjusts the KNEE in a range of HARD to SOFT1–SOFT9 (ten steps). The way in which the compressor applies to the region near the threshold level can be adjusted between steep (HARD) and gradual (SOFT9).

10. ATTACK knob
This adjusts the ATTACK time in a range of 0.0 ms–800.0 ms. This is the time from when the input signal exceeds the threshold level until the compressor reaches its maximum effect.

11. RELEASE knob
This adjusts the RELEASE time in a range of 0 ms–8000 ms. This is the time from when the signal falls below the threshold level until the compressor is no longer applied.

12. GAIN knob
This adjusts the GAIN in a range of -40.0 dB–+40.0 dB. This adjusts the output level of the compressor.

MEMO
If AUTO GAIN is on, the GAIN will have an effective range of -40.0 dB–+6.0 dB. If the GAIN value is outside the effective range, the value will be shown in red.

In the COMPRESSOR popup window, the function buttons perform the following operations.

[F1 (OVERVIEW)	Accesses the COMPRESSOR OVERVIEW popup.	p. 102
[F2 (COMP ON)]	Turns the compressor on/off.	
[F3 (AUTO GAIN)]	Turn AUTO GAIN on/off.	
[F4 (LIBRARY)	Accesses the COMP LIBRARY popup window.	p. 103
[F5 (PEAK CLEAR)]	Clears the level meter's peak hold or over indication.	
[F8 (CLOSE)]	Closes the popup.	

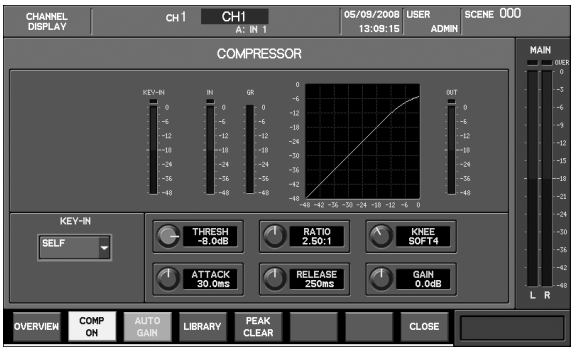
MEMO
If you turn AUTO GAIN on, the output response of the compressor will be boosted as high as possible while maintaining 6 dB of headroom.

The compressor will narrow the dynamic range, since it reduces the output of incoming signals that exceed the threshold level. If AUTO GAIN is on, the upper limit of the output level when ATTACK time is 0 ms will be boosted while maintaining 6 dB of headroom from clip level (0 dB), thus maximizing the dynamic range.
The 6 dB of headroom is maintained in order to prevent the compressor's output from clipping during the attack portion of the input signal when the ATTACK time is set to a longer value.

Accessing the COMPRESSOR popup

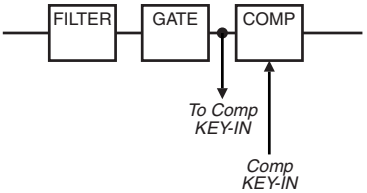
1. In the fader module section, press a [SEL] button to select the desired channel.

2. In the COMP area of the CHANNEL EDIT section, press [DISP].



The COMPRESSOR popup will appear.

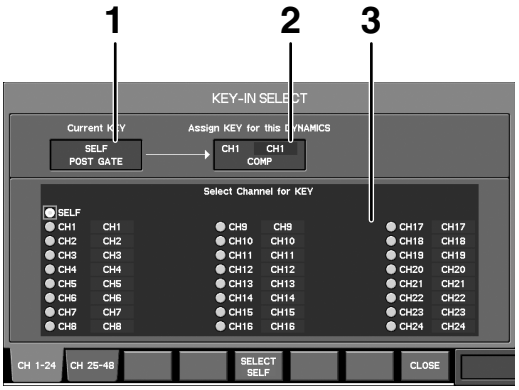
Selecting the key-in signal for the compressor



The key-in signal used by the compressor is taken from immediately after the gate of CH1–CH48.

To select the key-in signal, use the KEY-IN SELECT popup.

KEY-IN SELECT popup



1. **Current key indication**
   This indicates the current key.

2. **Assigned dynamics indication**
   This indicates the dynamics to which the KEY-IN SELECT popup applies.

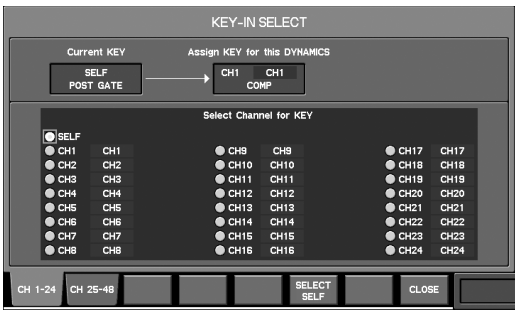
3. **Key-in signal select buttons**
   Use these to select the channel that will be used as the key-in signal.

In the KEY-IN SELECT popup, the function buttons perform the following operations.

[F1 (CH 1–24)]	Displays CH1–CH24 as the key-in signal select buttons.
[F2 (CH 25–48)]	Displays CH25–CH48 as the key-in signal select buttons.
[F6 (SELECT SELF)]	Selects the channel itself as its own key-in signal.
[F8 (CLOSE)]	Closes the popup.

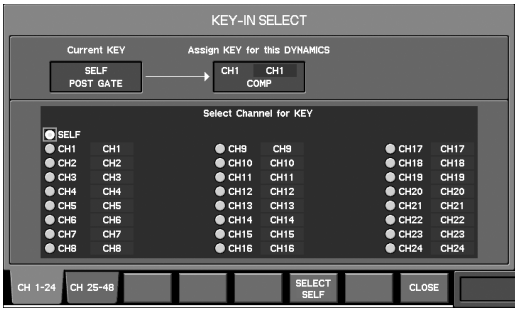
Accessing the KEY-IN SELECT popup

1. **Move the cursor to the KEY-IN SELECT popup button, and press [ENTER].**
   The KEY-IN SELECT popup will appear.



Selecting a key-in signal

1. **Access the KEY-IN SELECT popup.**



2. **Press [F1 (CH 1–24)] or [F2 (CH 25–48)] to view the desired key-in signal select buttons.**

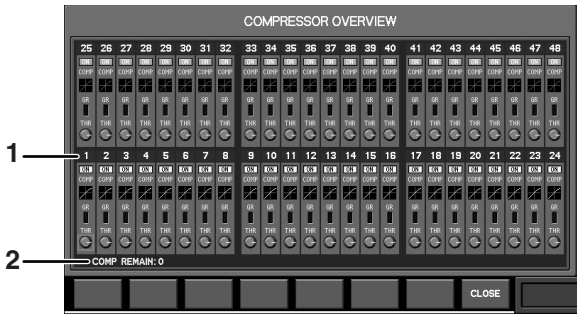
3. **Move the cursor to the desired key-in signal select button, and press [ENTER] to select it.**

4. **Press [F8 (CLOSE)] to close the popup.**

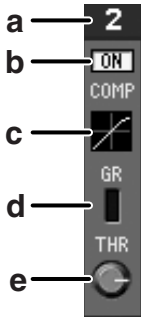
MEMO

If you want to use the channel itself as its own key-in signal, press [F6 (SELECT SELF)].

COMPRESSOR OVERVIEW popup



1. Overview
This shows the overall compressor status for CH1–CH48.



a. Channel number

b. ON switch
Turns the compressor on/off.

c. Compressor graph
Shows the approximate response of the compressor.

d. GR meter
Shows the amount of gain reduction for the compressor.

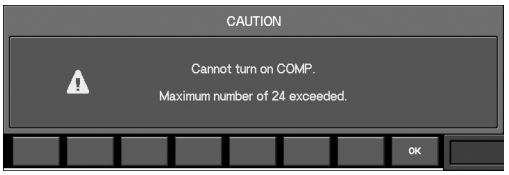
e. THR knob
Adjusts the threshold level of the compressor in a range of -40.0 dB–0.0 dB.

2. COMP REMAIN indication
Indicates the remaining number of compressor units that can be turned on. If this indicates 0, no further units can be turned on.

MEMO

Stereo-linked channels will use two compressor units. This means that if the COMP REMAIN indication is 1, you won't be able to turn on the compressor for a stereo-linked channel. If you enable stereo-linking for a channel when the COMP REMAIN indication is 0, and this would cause the number of compressor units to exceed 24, the compressor for that channel will be turned off.

If you attempt to turn on more than twenty-four compressor units, the following warning message will appear, and no further units can be turned on.



In the COMPRESSOR OVERVIEW popup, the function buttons perform the following operations.

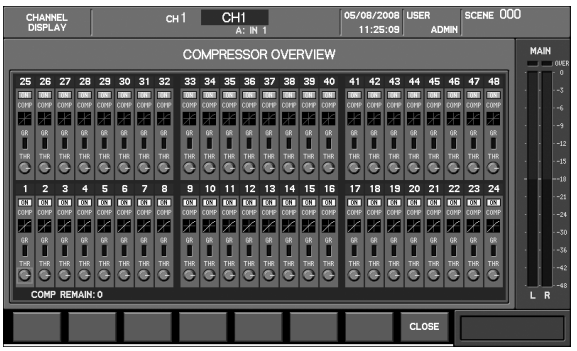
[F8 (CLOSE)]	Closes the popup.

Accessing the COMPRESSOR OVERVIEW popup

1. Access the COMPRESSOR popup.



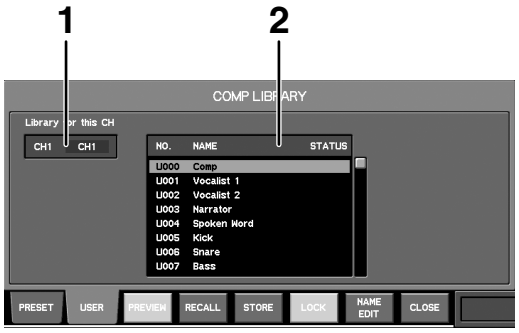
2. Press [F1 (OVERVIEW)] to access the COMPRESSOR OVERVIEW popup.



Using the compressor library

You can recall compressor settings from the library, or store the current compressor settings in the library.
The COMP LIBRARY popup is used to perform compressor library operations.

COMP LIBRARY popup



1. Channel indication

This indicates the channel to which the COMP LIBRARY popup applies.

2. Library data list

This is a list of the library data.

In the COMP LIBRARY popup, the function buttons perform the following operations.

Button	Function
[F1 (PRESET)]	Displays the recall-only PRESET library.
[F2 (USER)]	Displays the USER library, which lets you recall or store data.
[F3 (PREVIEW)]	Previews (auditions) the library data that is selected in the list.
[F4 (RECALL)]	Recalls the library data that is selected in the list.
[F5 (STORE)]*	Stores settings to the library data that is selected in the list.
[F6 (LOCK)]*	Locks the library data that is selected in the list.
[F7 (NAME EDIT)]*	Accesses the NAME EDIT popup for editing the name of the user library data that is selected in the list.
[F8 (CLOSE)]	Closes the popup.

* Available only for the User library.

Accessing the COMP LIBRARY popup

1. Access the COMPRESSOR popup.



2. Press [F4 (LIBRARY)] to access the COMP LIBRARY popup.

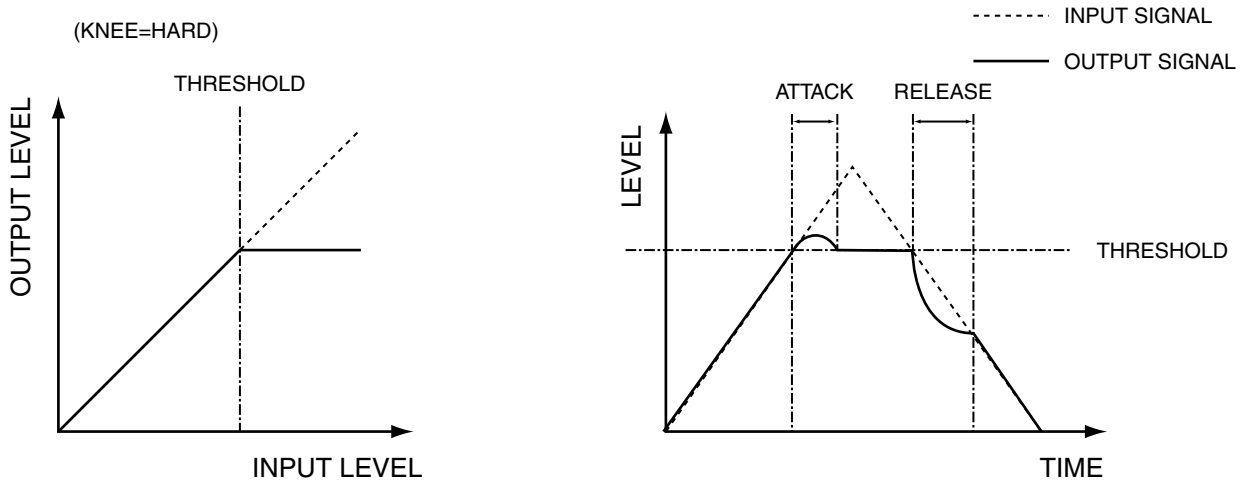


cf.

For details on library operations, refer to “Library operations” (p. 51).

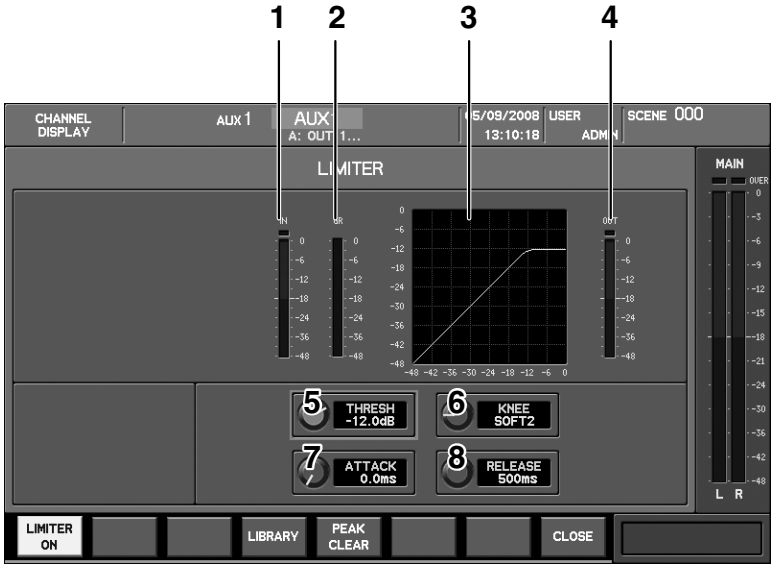
Limiter operations (MAIN L/R, AUX1–AUX16)

Limiters are provided on each AUX channel and MAIN L/R channel. They attenuate the signal so that the output does not exceed the threshold level.



The LIMITER popup is used to perform limiter operations.

LIMITER popup



1. IN meter
This indicates the input level of the limiter. For stereo-linked channels, two meters (L and R) are shown.

2. GR meter
This indicates the amount of gain reduction produced by the limiter.

3. Limiter graph
This indicates the approximate response of the limiter.

4. OUT meter
This indicates the output level of the limiter. For stereo-linked channels, two meters (L and R) are shown.

5. THRESH knob
This adjusts the threshold level in a range of -40.0 dB–0.0 dB.

6. KNEE knob
This adjusts the KNEE in a range of HARD to SOFT1–SOFT9 (ten steps). The way in which the limiter applies to the region near the threshold level can be adjusted between steep (HARD) and gradual (SOFT9).

7. ATTACK knob
This adjusts the ATTACK time in a range of 0.0 ms–800.0 ms. This is the time from when the input signal exceeds the threshold level until the limiter reaches its maximum effect.

8. RELEASE knob

This adjusts the RELEASE time in a range of 0 ms–8000 ms. This is the time from when the signal falls below the threshold level until the limiter is no longer applied.

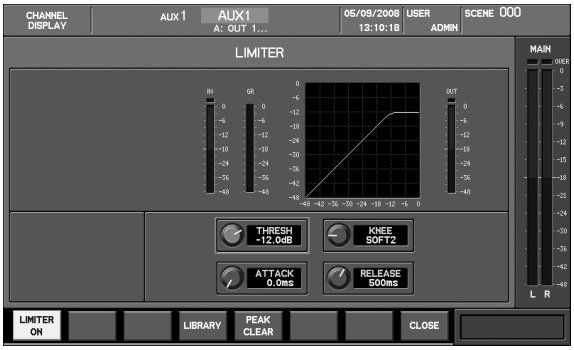
In the LIMITER popup, the function buttons perform the following operations.

Button	Function
[F1 (LIMITER ON)]	Turns the limiter on/off.
[F4 (LIBRARY)	Accesses the LIMITER LIBRARY popup.
[F5 (PEAK CLEAR)]	Clears the level meter's peak hold or over indication.
[F8 (CLOSE)]	Closes the popup.

Accessing the LIMITER popup

1. In the fader module section, press [SEL] to select the desired channel.

2. In the COMP area of the CHANNEL EDIT section, press [DISP] to access the LIMITER popup.

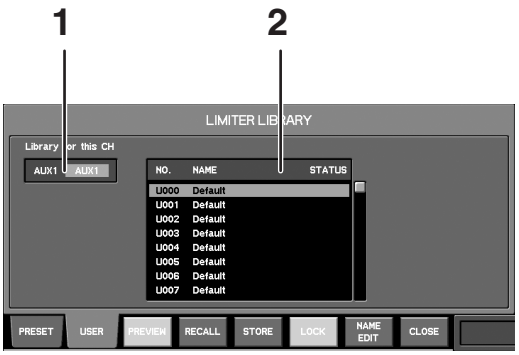


Using the limiter library

You can recall limiter settings from the library, or store the current limiter settings in the library.

The LIMITER LIBRARY popup is used to perform limiter library operations.

LIMITER LIBRARY popup



1. Channel indication

This indicates the channel to which the LIMITER LIBRARY popup applies.

2. Library data list

This is a list of the library data.

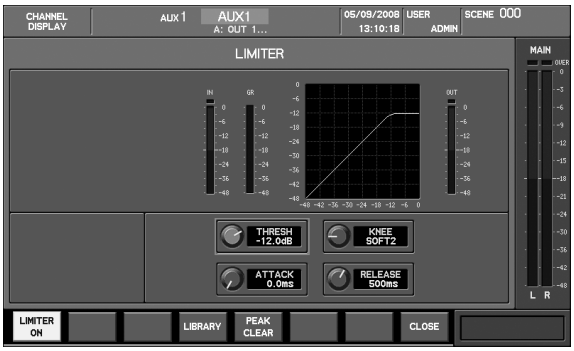
In the LIMITER LIBRARY popup, the function buttons perform the following operations.

Button	Function
[F1 (PRESET)]	Displays the recall-only PRESET library.
[F2 (USER)]	Displays the USER library, which lets you recall or store data.
[F3 (PREVIEW)]	Previews (auditions) the library data that is selected in the list.
[F4 (RECALL)]	Recalls the library data that is selected in the list.
[F5 (STORE)]*	Stores settings to the library data that is selected in the list.
[F6 (LOCK)]*	Locks the library data that is selected in the list.
[F7 (NAME EDIT)]*	Accesses the NAME EDIT popup for editing the name of the user library data that is selected in the list.
[F8 (CLOSE)]	Closes the popup.

* Available only for the User library.

Accessing the LIMITER LIBRARY popup

1. Access the LIMITER popup.



2. Press [F4 (LIBRARY)] to access the LIMITER LIBRARY popup.



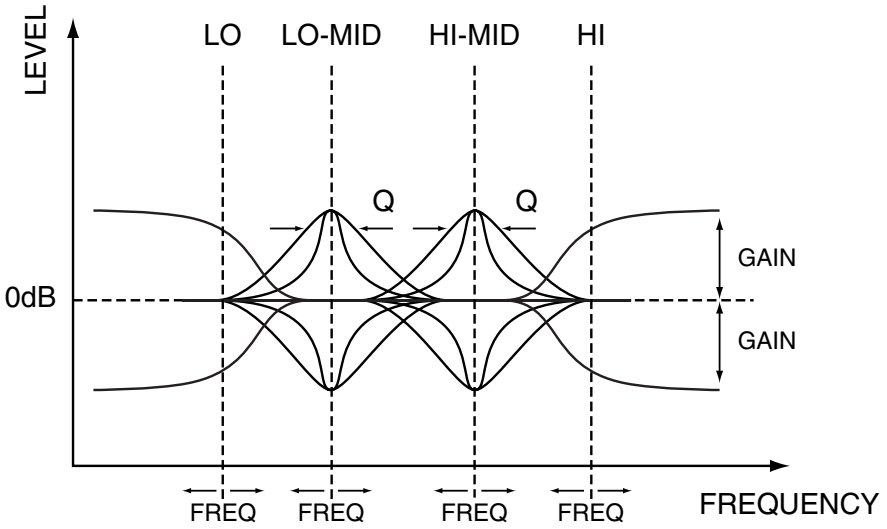
cf.

For details on library operations, refer to “Library operations” (p. 51).

Four-band EQ

Four-band EQ operations

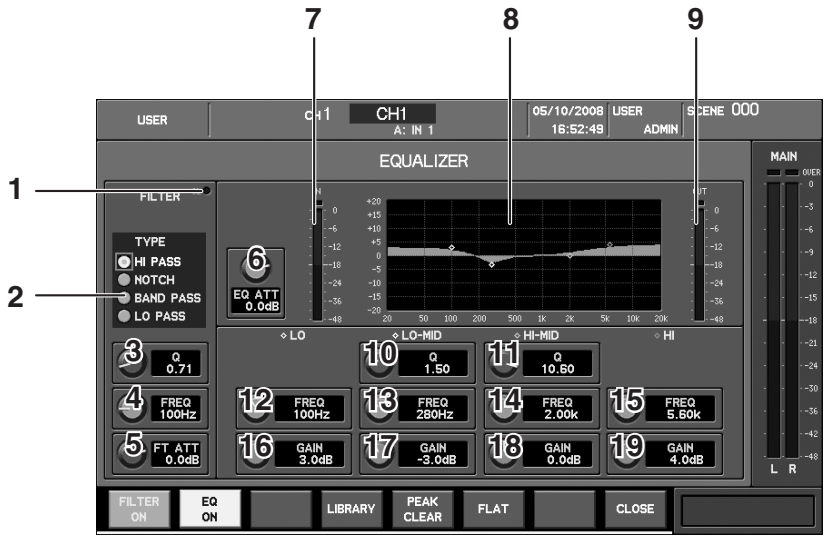
Four-band EQ is provided on each input channel, the MAIN L/R channels, and each AUX channel.
The LO and HI bands provide shelving-type filters, and the LO-MID and HI-MID bands provide peaking-type filters.



The EQUALIZER popup is used to perform four-band EQ operations.

EQUALIZER popup

In the EQUALIZER popup for an input channel, you can adjust filter operations as well as four-band EQ operations.



Filter (input channels only)

1. OL (Overload) indicator

This indicates that the filter's output is overloading.

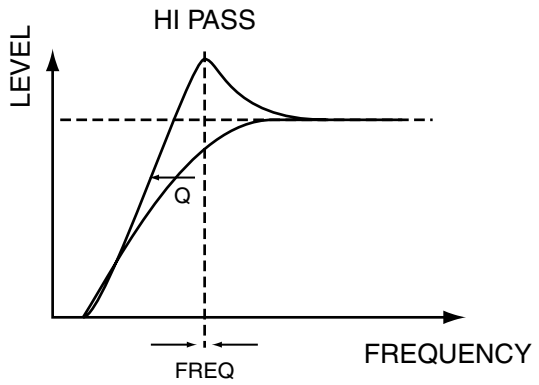
MEMO

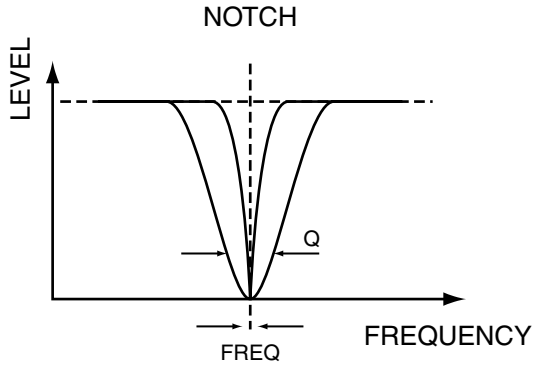
Use the METER SETUP popup to specify the level at which the overload indicator will light. For details, refer to "Editing the meter settings" (p. 122).

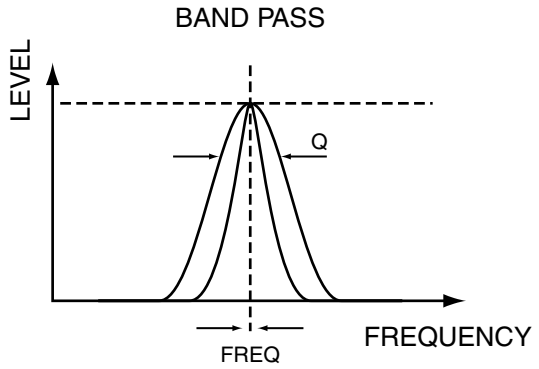
2. Filter type selection buttons

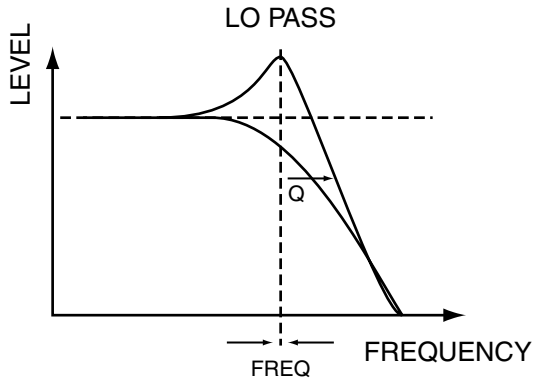
These buttons select one of the following filter types.

Type	Explanation
HI PASS	Passes the region higher than the specified frequency.
NOTCH	Cuts the region at the specified frequency.
BAND PASS	Passes the region at the specified frequency.
LO PASS	Passes the region below the specified frequency.









3. Q knob
This adjusts the filter's Q in a range of 0.36–16. Higher values produce a sharper curve.

4. FREQ knob
This adjusts the frequency in a range of 20 Hz–20.0 kHz.

5. FT ATT knob
This adjusts the filter's attenuator in a range of -48.0 dB–+15.0 dB.

TIP
Normally, you should leave FT ATT at 0.0 dB. Adjust this only when the filter is overloading.

Four-band EQ

6. EQ ATT knob
This adjusts the EQ input level in a range of -48.0 dB–+15.0 dB.

TIP
Normally, you should leave EQ ATT at 0.0 dB. Adjust this only when the four-band EQ is overloading.

7. IN meter
This indicates the input level of the four-band EQ. For stereo-linked channels, two meters (L and R) are shown.

8. Four-band EQ graph
This indicates the approximate response of the four-band EQ.

9. OUT meter
This indicates the output level of the four-band EQ. For stereo-linked channels, two meters (L and R) are shown.

10. Q knob (LO-MID)

11. Q knob (HI-MID)
These adjust the Q of the LO-MID and HI-MID bands in a range of 0.36–16. Higher values produce a sharper curve.

12. FREQ knob (LO)
This adjusts the center frequency of the LO band in a range of 20 Hz–1.00 kHz.

13. FREQ knob (LO-MID)

14. FREQ knob (HI-MID)
These adjust the center frequency of the LO-MID and HI-MID bands in a range of 20 Hz–20.0 kHz.

15. FREQ knob (HI)
This adjusts the center frequency of the HI band in a range of 1.00 kHz–20.0 kHz.

16. GAIN knob (LO)

17. GAIN knob (LO-MID)

18. GAIN knob (HI-MID)

19. GAIN knob (HI)

These adjust the gain of the LO, LO-MID, HI-MID, and HI bands in a range of -15.0 dB–+15.0 dB.

NOTE

Noise may occur when you operate the filter or four-band EQ, but this is not a malfunction.

In the EQUALIZER popup, the function buttons perform the following operations.

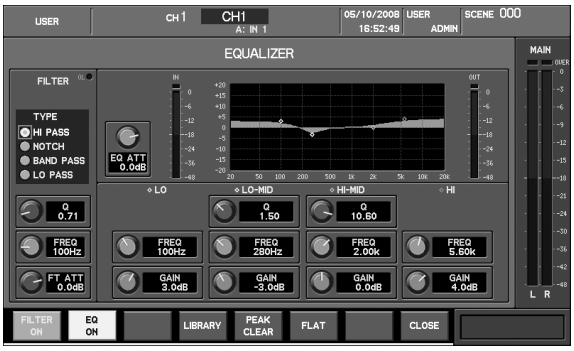
[F1 (FILTER ON)]*	Turns the filter on/off.	
[F2 (EQ ON)]	Turns the four-band EQ on/off.	
[F4 (LIBRARY)	Accesses the EQ LIBRARY popup.	p. 109
[F5 (PEAK CLEAR)]	Clears the level meter's peak hold or over indication.	
[F6 (FLAT)]	Sets the four-band EQ to flat response.	p. 110
[F8 (CLOSE)]	Closes the popup.	

* CH1 - CH48 only

Accessing the EQUALIZER popup

1. In the fader module section, press a [SEL] button to select the desired channel.

2. In the EQUALIZER area of the CHANNEL EDIT section, press [DISP].

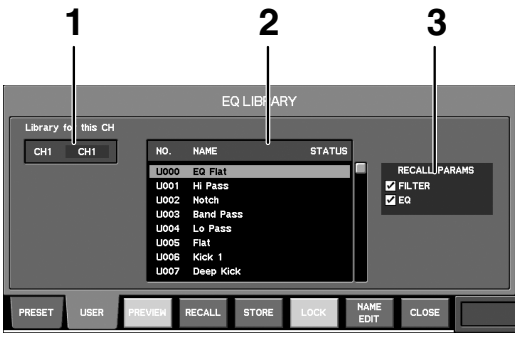


The EQUALIZER popup will appear.

Using the EQ library

You can recall four-band EQ and filter settings from the library, or store the current four-band EQ and filter settings to the library.
The EQ LIBRARY popup is used to perform EQ library operations.

EQ LIBRARY popup



1. Channel indication

This indicates the channel to which the EQ LIBRARY popup applies.

2. Library data list

This is a list of the library data.

3. Recall parameter select buttons

These select the section that will be recalled.

MEMO

If you're recalling to the MAIN L/R channels or AUX channels, filter data will not be recalled.

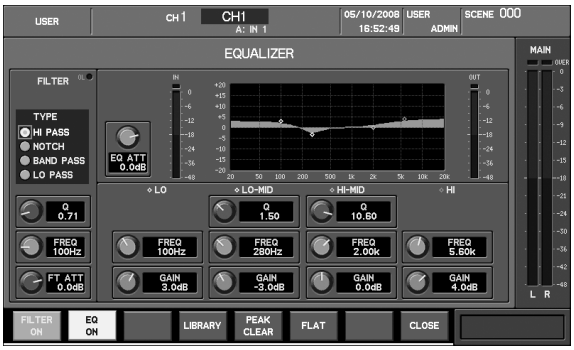
In the EQ LIBRARY popup, the function buttons perform the following operations.

[F1 (PRESET)]	Displays the recall-only PRESET library.
[F2 (USER)]	Displays the USER library, which lets you recall or store data.
[F3 (PREVIEW)]	Previews (auditions) the selected library data.
[F4 (RECALL)]	Recalls the selected library data.
[F5 (STORE)]*	Stores settings to the selected library data.
[F6 (LOCK)]*	Locks the selected library data.
[F7 (NAME EDIT)]*	Accesses the NAME EDIT popup for editing the name of the selected user library data.
[F8 (CLOSE)]	Closes the popup.

* Available only for the User library.

Accessing the EQ LIBRARY popup

1. **Access the EQUALIZER popup.**



2. **Press [F4 (LIBRARY)] to access the EQ LIBRARY popup.**



cf.

For details on library operations, refer to “Library operations” (p. 51).

NOTE

Noise may occur when you preview or recall a library item, but this is not a malfunction.

MEMO

When you store the EQ settings of the MAIN L/R channels or an AUX channel into the User library, the default filter values will be stored.

Setting the four-band EQ to a flat state

1. **Access the EQUALIZER popup.**

2. **Press [F6 (FLAT)].**



A confirmation message will ask you to confirm the operation.

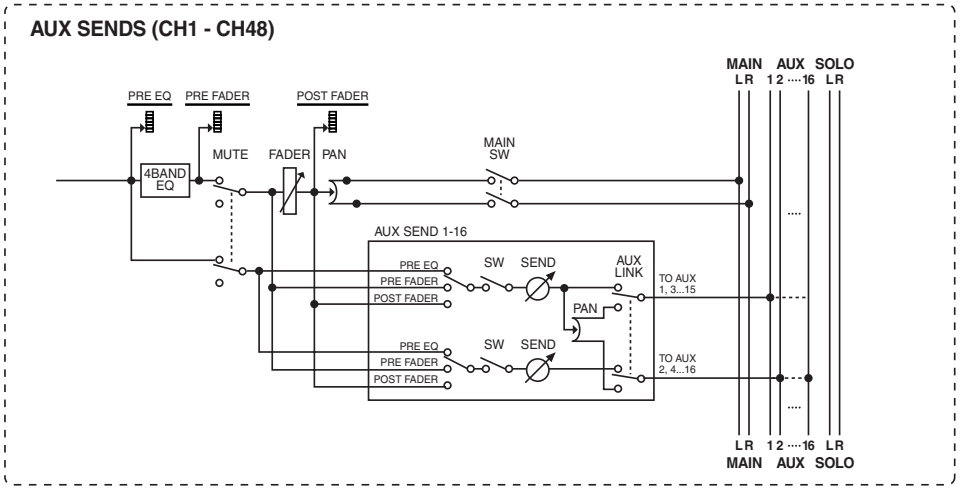
3. **Press [F8 (FLAT)]; the gain of the LO, LO-MID, HI-MID, and HI bands will be set to 0.0 dB.**

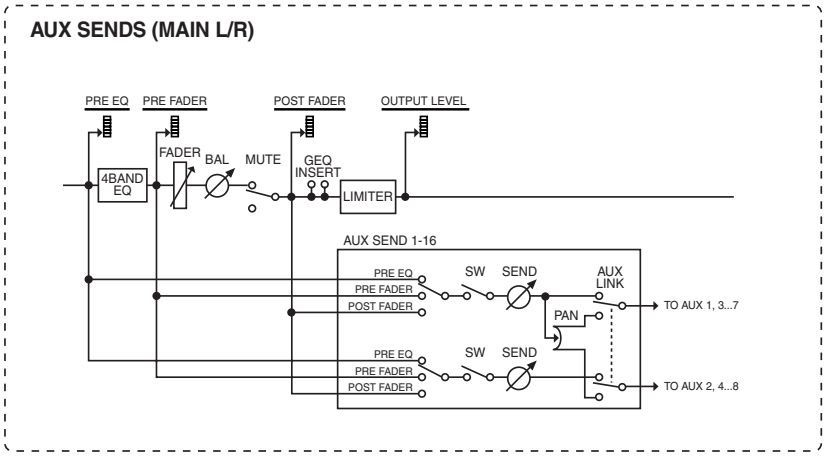
If you press [F7 (CANCEL)], the operation will be cancelled.

AUX send/MATRIX send

AUX send operations

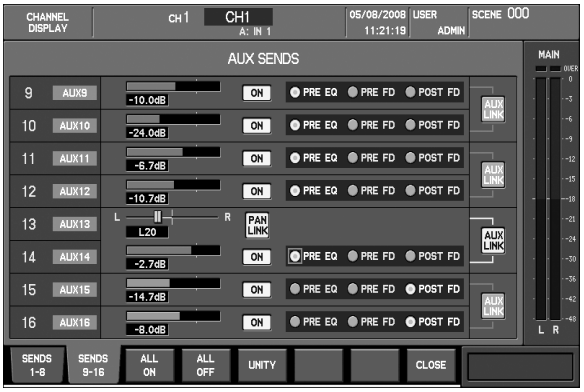
The AUX sends are used to send audio signals from input channels or the MAIN L/R channels to AUX1–AUX16.





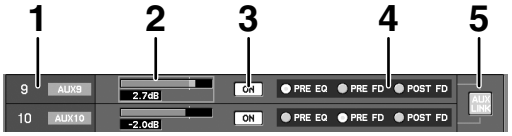
The AUX SENDS popup is used to perform AUX send operations.

AUX SENDS popup



You can use the tabs in the AUX SENDS popup to switch between two display pages: sends to AUX1–AUX8 (SENDS 1-8) or sends to AUX9–AUX16 (SENDS 9-16).

- **AUX sends 1–8, AUX sends 9–16**
  These adjust the sends from the CH to AUX. The AUX send area is structured as follows.



1. AUX number and name
This indicates the AUX channel number and name.

2. Send level bar
This adjusts the send level to AUX in a range of -Inf dB–+10.0 dB.
The color of the send level bar indicates the send point or the status of the send switch, as follows.

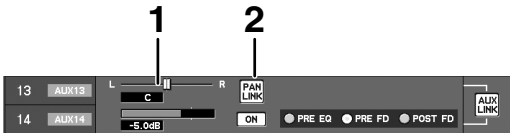
Color of the send level bar	Status
Blue	PRE EQ or PRE FADER send point
Green	POST FADER send point
Gray	Send switch is off

3. ON button
This turns the send switch on/off. The send switch turns the signal from the channel to AUX on/off.

4. send point select buttons
These select the point from which the CH signal is sent to AUX, from the following choices.

PRE EQ	Send from the pre-EQ point.
PRE FD	Send from the pre-fader point.
POST FD	Send from the post-fader point

5. AUX LINK switch
This turns linking of adjacent odd-numbered/even-numbered AUX channels on/off. If this is on, the adjacent AUX channels will be linked.
If AUX is stereo-linked, the following parameters will be shown for the odd-numbered AUX send.



1. AUX pan slider
This adjusts the left/right panning of the signal sent to the stereo-linked AUX channels in a range of L63–R63.

2. PAN LINK button (input channels only)
This turns the PAN LINK switch on/off. If PAN LINK is on, the pan from the channel to MAIN L/R will be linked with the pan from the channel to the stereo-linked AUX channels.

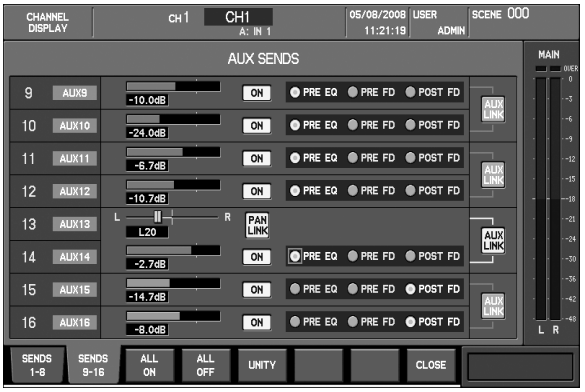
In the AUX SENDS popup, the function buttons perform the following operations.

Button	Function
[F1 (SENDS 1-8)]	Displays the sends to AUX1–AUX8.
[F2 (SENDS 9-16)]	Displays the sends to AUX9–AUX16.
[F3 (ALL ON)	Turns on all send switches for each send field.
[F4 (ALL OFF)	Turns off all send switches for each send field.
[F5 (UNITY)	Sets the send level to 0.0 dB for the send field at the cursor location.
[F8 (CLOSE)]	Closes the popup.

Accessing the AUX SENDS popup

1. In the fader module section, press a [SEL] button to select the desired channel.

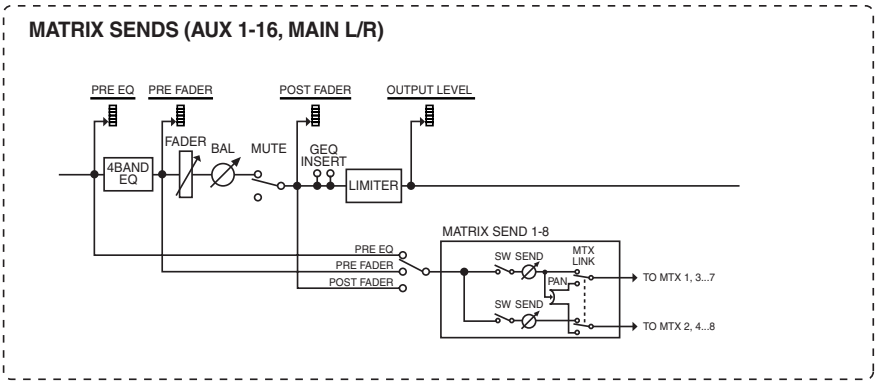
2. In the AUX SENDS area of the CHANNEL EDIT section, press [DISP].



The AUX SENDS popup will appear.

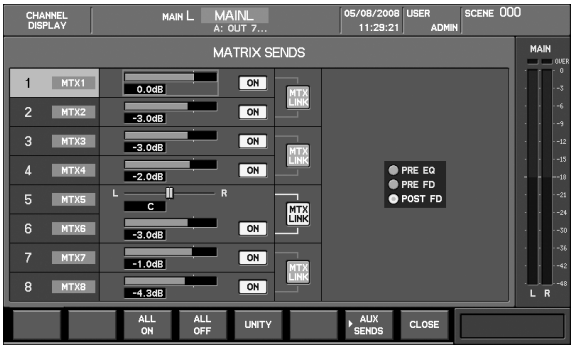
MATRIX send operations

The MATRIX sends are used to send audio signals from AUX1–AUX16 or MAIN L/R to MATRIX1–MATRIX8.



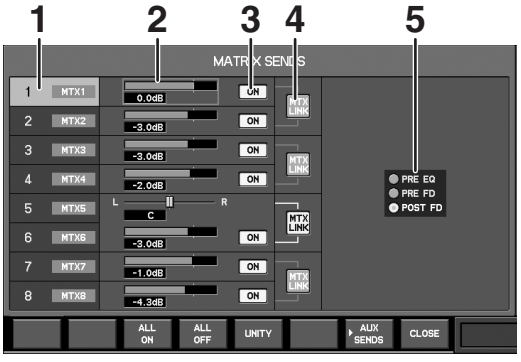
The MATRIX SENDS popup is used to perform AUX send operations.

MATRIX SENDS popup



- **MATRIX send 1–8**

  These adjust the sends from AUX1-AUX16 or MAIN L/R to MATRIX. The MATRIX send area is structured as follows.



1. MATRIX number and name

This indicates the MATRIX channel number and name.

2. Send level bar

This adjusts the send level to MATRIX in a range of -Inf dB–+10.0 dB.

The color of the send level bar indicates the send point or the status of the send switch, as follows.

Color of the send level bar	Status
Blue	PRE EQ or PRE FADER send point
Green	POST FADER send point
Gray	Send switch is off

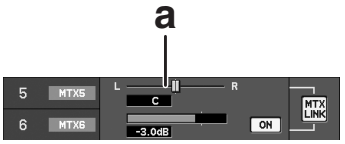
3. ON button

This turns the send switch on/off. The send switch turns the signal to MATRIX on/off.

4. MATRIX LINK switch

This turns linking of adjacent odd-numbered/even-numbered MATRIX channels on/off. If this is on, the adjacent MATRIX channels will be linked.

If MATRIX is stereo-linked, the following parameters will be shown for the odd-numbered MATRIX send.



a. MATRIX pan slider

This adjusts the left/right panning of the signal send to the stereo-linked MATRIX channels in a range of L63–R63.

5. Send point select buttons

These select the point from which the AUX or MAIN signal is sent to MATRIX, from the following choices.

PRE EQ	Send from the pre-EQ point.
PRE FD	Send from the pre-fader point.
POST FD	Send from the post-fader point.

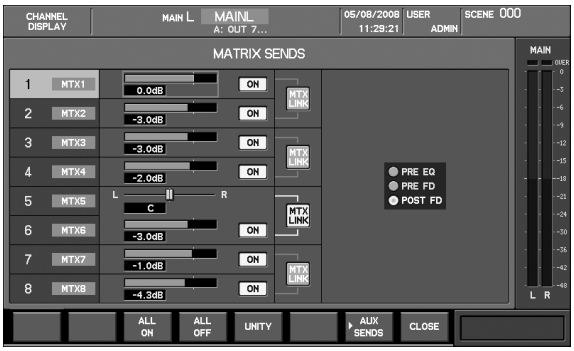
In the MATRIX SENDS popup, the function buttons perform the following operations.

Button	Function
[F3 (ALL ON)]	Turns on all send switches for each send field.
[F4 (ALL OFF)]	Turns off all send switches for each send field.
[F5 (UNITY)]	Sets the send level to 0.0 dB for the send field at the cursor location.
[F7(▶ MTX SENDS)] [F7(▶ AUX SENDS)]	Switch to the MATRIX SENDS popup or the AUX SENDS popup. This exists only for the MAIN L/R channel.
[F8 (CLOSE)]	Closes the popup.

Accessing the MATRIX SENDS popup

1. **In the fader module section, press a [SEL] button to select the desired channel.**
   Select from AUX1–AUX16 or MAIN L/R.

2. **In the AUX SENDS area of the CHANNEL EDIT section, press [DISP].**



The MATRIX SENDS popup will appear.

Input/output patchbay

Default settings of the input/output patchbay

Default settings of the input patchbay

When the M-400 is in its default state, the input patch bay is set as follows.

Input channel	Input port
CH1–CH16	REAC A IN1–IN16
CH17–CH32	REAC B IN1–IN16
CH33–CH40	CONSOLE IN1–IN8
CH41–CH42	FX3 OUT L, R
CH43–CH44	FX4 OUT L, R
CH45–CH46	RECORDER L, R
CH47–CH48	STEREO IN L, R

MEMO

Patching of the effect outputs and the output from the USB memory recorder is done in the EFFECTS screen and the RECORDER screen, respectively. For details, refer to "Effect input/output settings" (p. 126) and "Specifying the input/output for the USB memory recorder" (p. 167).

Default settings of the output patchbay

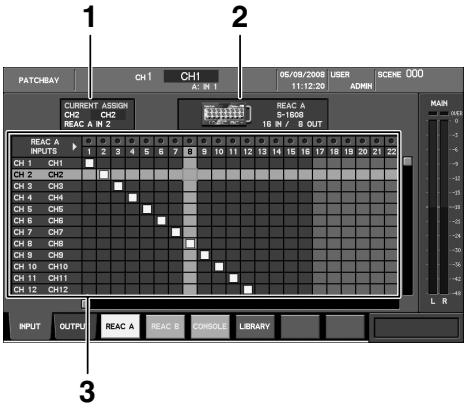
When the M-400 is in its default state, the output patchbay is set as follows.

Output port	Output
REAC A OUT1–OUT6	AUX1–AUX6
REAC A OUT7–OUT8	MAIN L, R
REAC B OUT1–OUT6	AUX9–AUX14
REAC B OUT7–OUT8	MAIN L, R
CONSOLE OUT1–OUT6	AUX1–AUX6
CONSOLE OUT7–OUT8	MONITOR L, R
DIGITAL OUT	MONITOR L, R

Patchbay operations

You can change the settings of the input/output patchbays. Use the PATCHBAY screen to perform patchbay operations.

PATCHBAY screen



1. Current Assign indication

For the input patchbay, this indicates the physical input source that is patched to the channel at the cursor location.

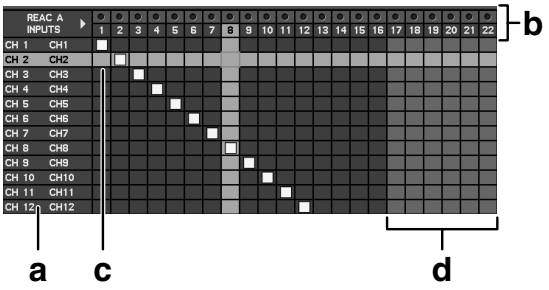
For the output patchbay, this indicates the channel that is patched to the physical output at the cursor location.

2. Device indication

This indicates the input/output unit that is connected to the REAC port currently selected by the function buttons, or indicates the M-400 itself.

3. Patchbay grid

This grid lets you make patchbay settings.



a. Channel indication

This indicates the channel number and name.

b. Jack indication

This indicates the jack number. For the input patchbay, this also indicates the signal level at the input jack.

The color indicates the signal level as follows.

Color	Level
Black	Below -48 dB
Green	Between -48 dB and -18 dB
Yellow	Between -18 dB and 0 dB
Red	Above 0 dB

c. Patch symbol

A patch symbol is shown where the currently patched channel and jack intersect. To change the patching, move the cursor to the location where the desired channel and jack intersect, and press [ENTER].

MEMO

You can make user preference settings to specify whether or not a confirmation message appears when you attempt to change the patching. For details, refer to "Editing the name of user settings" (p. 174).

d. Unavailable jack area

The number area is shown in gray for jacks that cannot be used with the currently connected input/output unit.

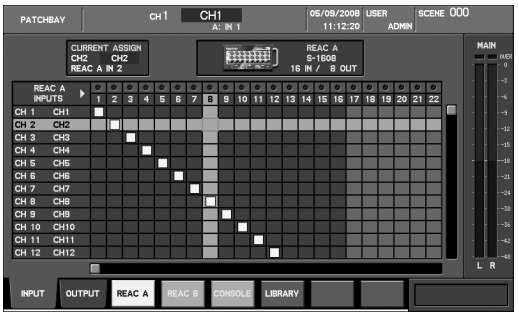
The function buttons perform the following operations.

[F1 (INPUT)]	Displays the INPUT tab, where you can set the input patch bay.	p. 116
[F2 (OUTPUT)]	Displays the OUTPUT tab, where you can set the output patchbay.	p. 118
[F3 (REAC A)]	Allows you to make patch bay settings for the REAC A input jacks.	
[F4 (REAC B)]	Allows you to make patch bay settings for the REAC B input jacks.	
[F5 (CONSOLE)]	Allows you to make patch bay settings for the M-400's rear panel input/output jacks, and for internal ports such as the effect output and the USB memory recorder output.	
[F6 (LIBRARY)	Accesses the IN PATCHBAY LIBRARY or OUT PATCHBAY LIBRARY popup.	p. 117 p. 119

Accessing the PATCHBAY screen

1. In the setup section of the top panel, press [PATCHBAY].

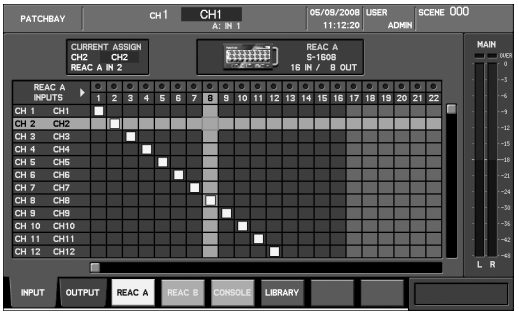
The PATCHBAY screen will appear.



Input patchbay operations

Editing the input patching

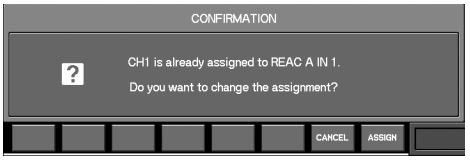
1. Access the PATCHBAY screen.



2. Press [F1 (INPUT)] to access the INPUT tab.

3. Press [F3 (REAC A)], [F4 (REAC B)], or [F5 (CONSOLE)] to select the desired location for the input jack.

4. Move the cursor to the intersection of the desired channel and jack, and press [ENTER].



If an input port is already patched to the channel, a message will ask you to confirm the input patching change.

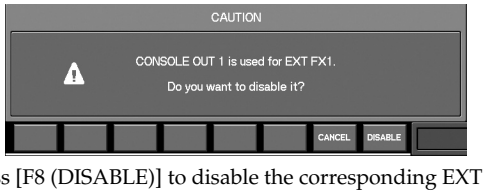
Press [F8 (ASSIGN)] to change the input patching.

If you press [F7 (CANCEL)], the input patching change will be cancelled.

MEMO

If the "PATCHBAY CHANGE" item in the CONFIRMATION section of User Preference (p. 177) is unselected, no confirmation message will appear in step 4.

If you attempt to patch a CONSOLE IN that an EXT FX is using, a caution message such as the following will appear.



Press [F8 (DISABLE)] to disable the corresponding EXT FX and continue with the patching change.

If you press [F7 (CANCEL)], the patching change will be cancelled.

MEMO

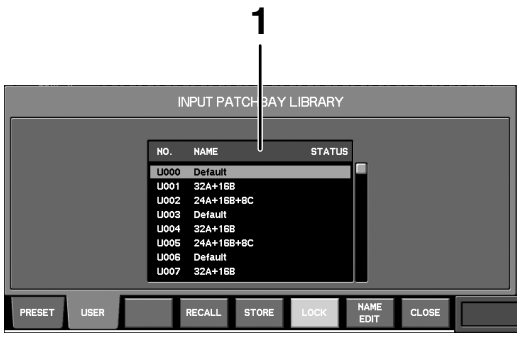
A maximum of 40 input jacks each can be handled for the REAC A port and the REAC B port, respectively.

Using the input patchbay library

The input patchbay library lets you store the current input patchbay settings for later recall.

The INPUT PATCHBAY LIBRARY popup is used to perform input patchbay library operations.

INPUT PATCHBAY LIBRARY popup



1. Library data list

This lists the library data.

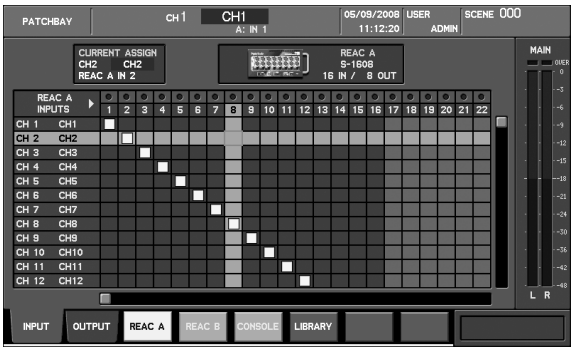
The function buttons perform the following operations.

[F1 (PRESET)]	Displays the recall-only PRESET library.
[F2 (USER)]	Displays the USER library, which lets you recall or store data.
[F4 (RECALL)]	Recalls the library data that is selected in the list.
[F5 (STORE)]*	Stores settings to the library data that is selected in the list.
[F6 (LOCK)]*	Locks the library data that is selected in the list.
[F7 (NAME EDIT)]*	Accesses the NAME EDIT popup for editing the name of the user library data that is selected in the list.
[F8 (CLOSE)]	Closes the popup.

* Available only for the User library.

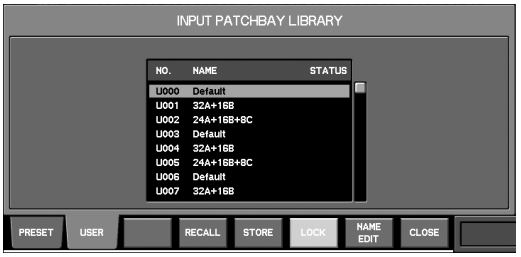
Accessing the INPUT PATCHBAY LIBRARY popup

1. Access the PATCHBAY screen.



2. Press [F1 (INPUT)] to access the INPUT tab.

3. Press [F6 (LIBRARY)] to access the INPUT PATCHBAY LIBRARY popup.



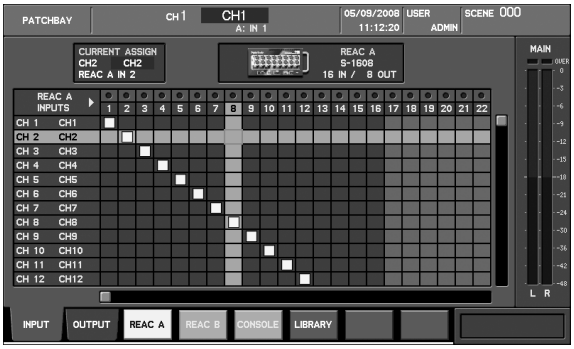
cf.

For details on library operations, refer to “Library operations” (p. 51).

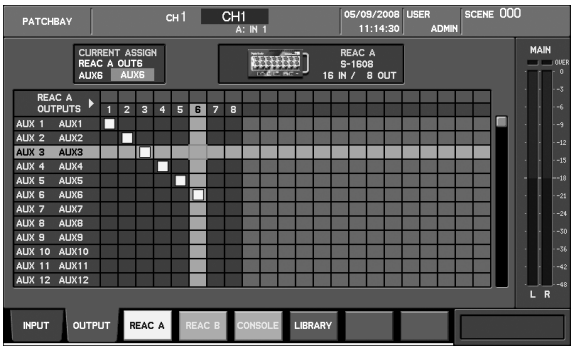
Output patchbay operations

Editing the output patching

1. Access the PATCHBAY screen.

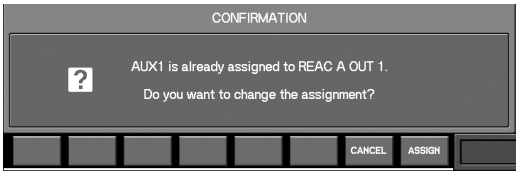


2. Press [F2 (OUTPUT)] to access the OUTPUT tab.



3. Press [F3 (REAC A)], [F4 (REAC B)], or [F5 (CONSOLE)] to select the desired location for the output jack.

4. Move the cursor to the intersection of the desired channel and jack, and press [ENTER].



If a channel is already patched to the output port, a message will ask you to confirm the output patching change.

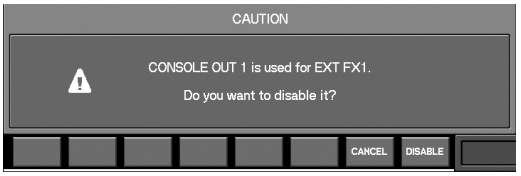
Press [F8 (ASSIGN)] to change the output patching.

If you press [F7 (CANCEL)] the output patching change will be cancelled.

MEMO

If the "PATCHBAY CHANGE" item in the CONFIRMATION section of User Preference (p. 177) is unselected, no confirmation message will appear in step 4.

If you attempt to patch to a CONSOLE OUT that an EXT FX is using, a caution message such as the following will appear.



Press [F8 (DISABLE)] to disable the corresponding EXT FX and continue with the patching change.

If you press [F7 (CANCEL)], the patching change will be cancelled.

MEMO

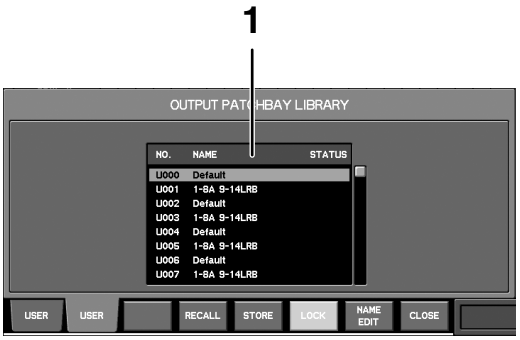
A maximum of eight output jacks can be handled by the REAC A port. In contrast, a maximum of forty output jacks can be handled by the REAC B port.

Using the output patchbay library

The output patchbay library lets you store the current output patchbay settings for later recall.

The OUTPUT PATCHBAY LIBRARY popup is used to perform output patchbay library operations.

OUTPUT PATCHBAY LIBRARY popup



1. Library data list

This lists the library data.

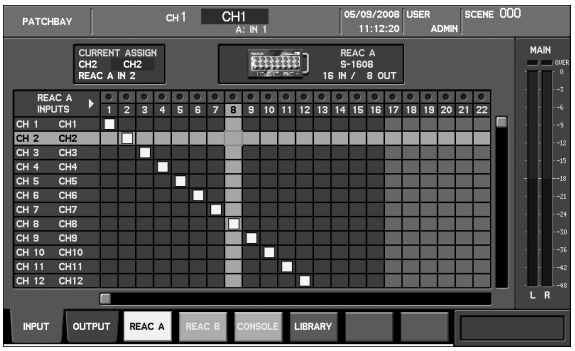
The function buttons perform the following operations.

[F1 (PRESET)]	Displays the recall-only PRESET library.
[F2 (USER)]	Displays the USER library, which lets you recall or store data.
[F4 (RECALL)]	Recalls the library data that is selected in the list.
[F5 (STORE)]*	Stores settings to the library data that is selected in the list.
[F6 (LOCK)]*	Locks the library data that is selected in the list.
[F7 (NAME EDIT)]*	Accesses the NAME EDIT popup for editing the name of the user library data that is selected in the list.
[F8 (CLOSE)]	Closes the popup.

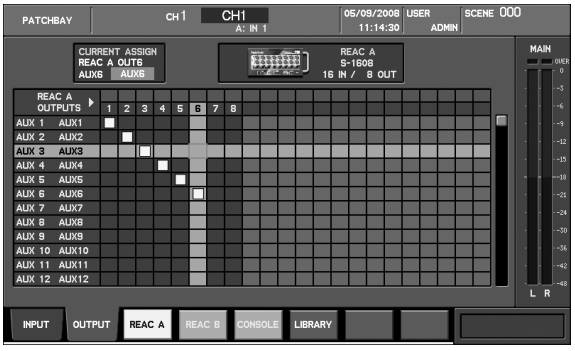
* Available only for the User library.

Accessing the OUTPUT PATCHBAY LIBRARY popup

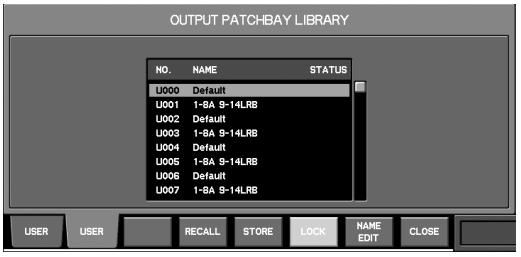
1. Access the PATCHBAY screen.



2. Press [F2 (OUTPUT)] to access the output patchbay.



3. Press [F6 (LIBRARY)] to access the OUTPUT PATCHBAY LIBRARY popup.



cf.

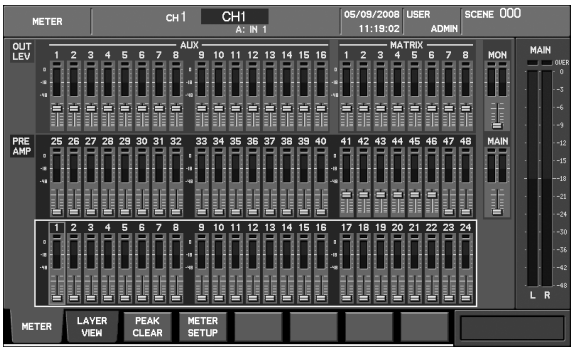
For details on library operations, refer to “Library operations” (p. 51).

Metering

About the meters

The M-400 provides meters on the top panel and in the screen.
Here we will explain the METER screen, which shows the levels of the channels.

METER screen

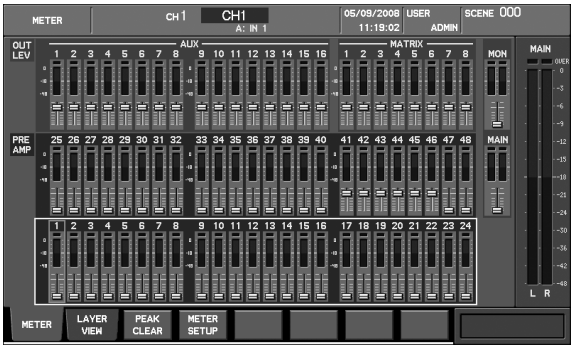


The content shown in the METER screen changes when you switch tabs.
In the METER screen, the function buttons perform the following operations.

[F1 (METER)]	Accesses the METER tab, which shows the levels of all channels.	
[F2 (LAYER VIEW)]	Accesses the LAYER VIEW tab, which shows the levels of the same channels as the top panel channel layer.	
[F3 (PEAK CLEAR)]	Clears the level meter's peak hold or over indications.	
[F4 (METER SETUP)]	Accesses the METER SETUP popup.	p. 122

Accessing the METER screen

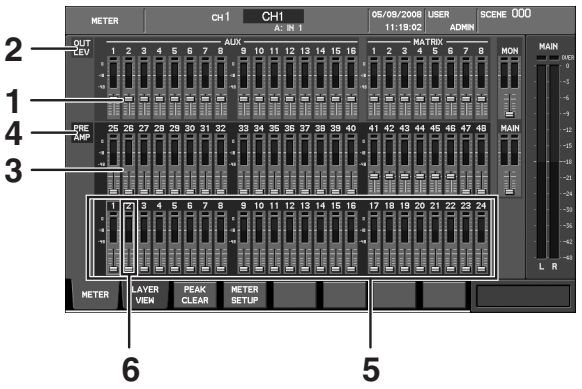
1. Press the top panel [METER] button.
The METER screen will appear.



Viewing the meters

To view the meters for all channels, use the METER tab of the METER screen.

METER tab



1. AUX/MAIN/MATRIX meters
These indicate the level and fader position for AUX1–AUX16, MATRIX1–MATRIX8, MONITOR L/R, and MAIN L/R.

2. AUX/MAIN/MATRIX meter point
This indicates the point at which the AUX/MAIN/MATRIX meters are detecting the level.

3. CH meters
This indicates the level and fader position for CH1–CH48.

4. CH meter point
This indicates the point at which the CH meters are detecting the level.

5. Panel layer indication
The frame indicates the channel layer that is selected in the layer section of the top panel.

MEMO
The panel layer indication is not shown if the USER layer is selected.

6. Cursor
This indicates the currently selected channel. You can use the value dial to adjust the fade of the channel at the cursor location.

TIP
When you press [SEL] to change the selected channel, the cursor in the screen will move. When you move the cursor in the screen, the [SEL] indication of the top panel will likewise move.

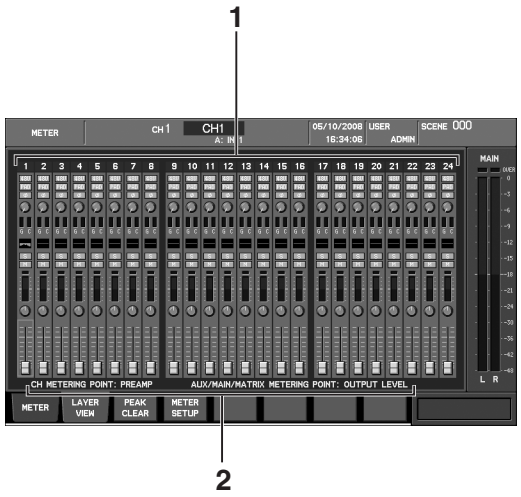
MEMO
If the "CHANNEL DISPLAY follows CH SELECT button" item in the CHANNEL SELECT section of User Preference (p. 177) is selected, pressing a [SEL] will cause the CHANNEL DISPLAY screen of that channel to appear.

Viewing the channel strip of the channel layer

You can view the channel strip of all of the input channels or output channels in the current layer of the top panel.

To view the channel strips, use the LAYER VIEW tab of the METER screen.

LAYER VIEW tab

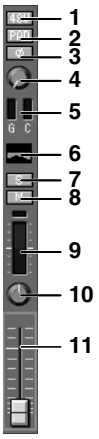


1. Channel strip
This shows the level and principal parameters of the channels.

2. Meter point indication
This shows the point at which the level is detected for the CH meters and AUX/MAIN/MATRIX meters.

Channel strip operations

You can move the cursor to the buttons, knobs, and faders of the channel strip, and use the value dial to edit them.



1. +48V button (CH1–CH48)
This turns +48V phantom power on/off for the input jack that is patched to the channel.

2. PAD button (CH1–CH48)
This is an on/off switch for the pad of the input jack that is patched to the channel. If this is on, the input sensitivity of the preamp will be lowered by 20 dB.

3. ø (phase) button (CH1–CH48)
This inverts the phase of the audio signal. The phase will be inverted if this is on, and will be normal if this is off.

4. Preamp gain knob
This adjusts the preamp gain for the input jack patched to the channel, in a range of -65 dBu– -10 dBu (or a range of -45 dBu–+10 dBu if PAD is on).

NOTE
It is felt that it does not change smoothly when it coordinates the preamp gain, but it is not trouble. In addition, some noises come out, but it is not trouble.

5. G meter (CH1–CH48),
C meter (CH1–CH48) / L meter (AUX1–AUX16)
The G meter indicates the amount of gain reduction produced by the gate/expander.
The C meter indicates the amount of gain reduction produced by the compressor, and the L meter indicates the amount of gain reduction produced by the limiter.

6. Four-band EQ graph
This indicates the approximate response of the four-band EQ.

7. S button
This turns SOLO on/off for the channel.

8. M button
This turns MUTE on/off for the channel.

9. Meter
This indicates the level of the channel.

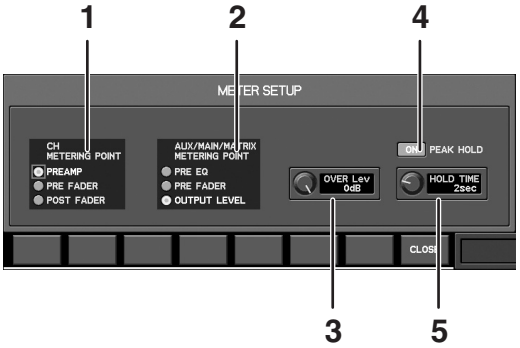
10. Pan/balance knob
This adjusts the pan of the channel. For stereo-linked AUX channels, this adjusts the left/right output balance.

11. Fader
This adjusts the fader of the channel.

Editing the meter settings

In the METER SETUP popup you can change the level detection point of the meter, and make peak hold settings.

METER SETUP popup



1. CH METERING POINT selection buttons

Use these to select the level detection point for the CH meters.

2. AUX/MAIN/MATRIX METERING POINT selection buttons

Use these to select the level detection point for the AUX/MAIN/MATRIX meters.

MEMO

If you select PRE EQ, the level at the pre-fader position will be shown for MATRIX channels.

3. OVER Lev knob

This adjusts the level at which the OVER indication of the meter will light, in a range of -18 dB–0 dB.

4. PEAK HOLD button

This turns the meter's peak hold function on/off.

5. HOLD TIME knob

This sets the duration that the meter's peak hold or OVER indication will stay lit, in a range of 1 sec–4 sec or CONTINUE. Meter peak hold is enabled only when the PEAK HOLD button is on.

MEMO

If CONTINUE is selected, the indication will remain until you execute the PEAK CLEAR operation (by pressing a function button) in the METER screen, etc.

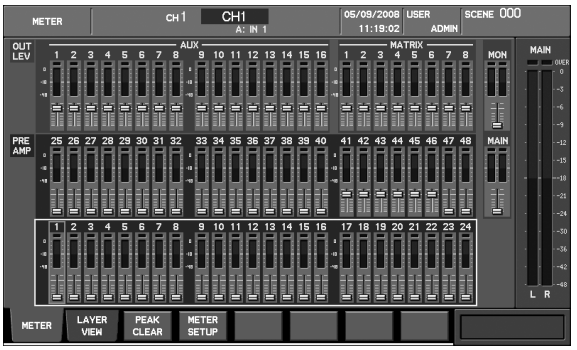
In the METER SETUP popup, the function buttons perform the following operations.

[F8 (CLOSE)]	Closes the popup.

The METERING POINT setting you make in the METER SETUP popup will apply to the top panel meters, the meters in the METER screen, the channel meters in the CHANNEL DISPLAY screen, the MONITOR screen, and the meters in the TALKBACK/OSC screen.

Accessing the METER SETUP popup

1. Access the METER screen.



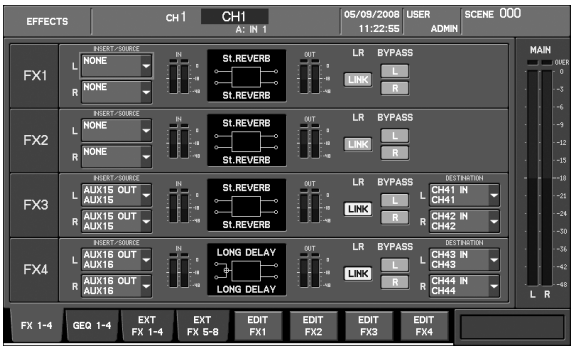
2. Press [F4 (METER SETUP)] to access the METER SETUP popup.



Effects and 31-band GEQ

The M-400 provides four effects (FX1–FX4) and four 31-band GEQ processors (GEQ1–GEQ4).
The EFFECTS screen is used to operate the effects and 31-band GEQs.

EFFECTS screen

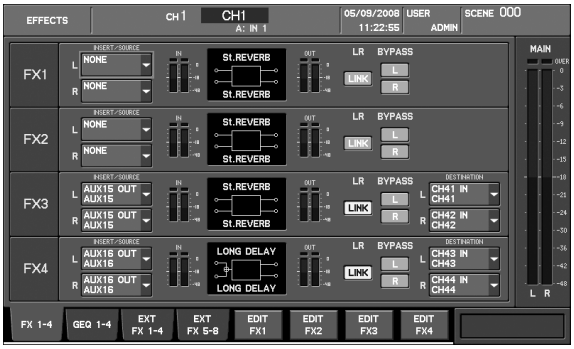


You can switch tabs to change the content shown in the EFFECTS screen.
In the EFFECTS screen, the function buttons perform the following operations.

[F1 (FX 1–4)]	Accesses the FX 1–4 tab.	p. 125
[F2 (GEQ 1–4)]	Accesses the GEQ 1–4 tab.	p. 132
[F3 (EXT FX 1–4)]	Accesses the EXT FX 1–4 tab.	p. 138
[F4 (EXT FX 5–8)]	Accesses the EXT FX 5–8 tab.	p. 138

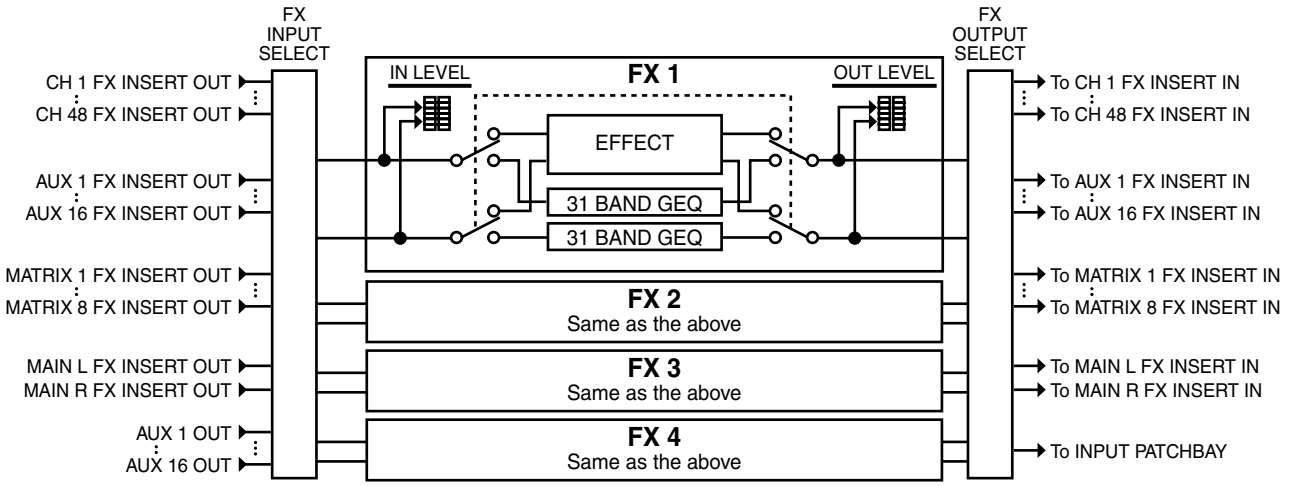
Accessing the EFFECTS screen

1. Press the top panel [EFFECTS] button.
The EFFECTS screen will appear.



Effects

About effects

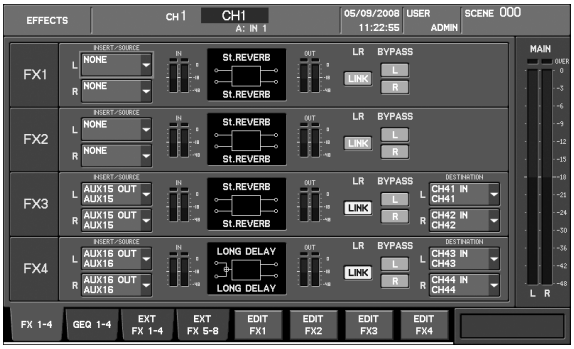


The M-400 contains four internal effects (FX1–FX4), each of which allows you to select from 11 different effect types including reverb and delay, or to use them as a dual 31-band GEQ.

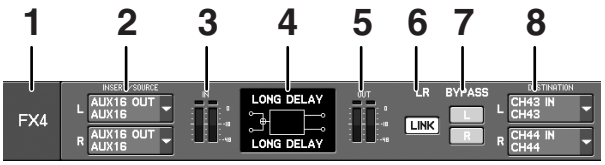
You can use effects by inserting them into a channel, or in a send/return configuration using an AUX channel in combination with an input channel as the FX return.

The FX 1–4 tab of the EFFECTS screen is used to perform effect operations.

FX 1–4 tab



- **FX1–FX4**



This area indicates the status of FX1–FX4. It is organized as follows.

1. Effect number indication
This indicates the effect number.

2. FX INSERT/SOURCE SELECT popup button
This selects the input source for the effect. The current input source is shown on the button. When you move the cursor to the button and press [ENTER], the FX INSERT/SOURCE SELECT popup will appear. This can be set separately for the L and R channels.

MEMO

If you've selected insertion into a channel in the FX INSERT/SOURCE SELECT popup, the channel insert will be used as both the input and output of the effect. In this case, the corresponding FX DESTINATION SELECT button will be unavailable.

3. IN meters
These indicate the input level to the effect.

4. Effect name indication
The upper line shows the library name, and the lower line shows the effect type name. The icon indicates the input/output configuration for the effect.

- **Mono-in/Stereo-out**



This is a monaural-input/stereo-output type effect. These effects are used mainly in a send/return configuration.

MEMO

If you specify two input sources, the two inputs will be mixed to mono before being input.

- **Dual mono**



This allows the effect to be used as two monaural effects. These effects are used mainly for insertion in a channel.

- **Stereo-in/Stereo-out**



This is a stereo-input/stereo-output type effect. These effects can be inserted into a stereo channel, or used in a send/return configuration with stereo-linked AUX channels.

5. OUT meters
These indicate the output level from the effect.

6. LR LINK button
This links the parameters of the effect between the L and R sides.
The following effect types support LR LINK.

- DUAL GEQ
- DELAY x2
- P.SHIFTER x2
- CH STRIP x2

7. BYPASS L, R buttons
These buttons bypass the effect. When these are on, the effect will be bypassed, and the input signal will be "thru-ed" to the output. Separate buttons are provided for the L and R channels.

8. FX DESTINATION SELECT popup buttons
These select the output destination for the effect. The current output source is shown on the button. When you move the cursor to the button and press [ENTER], the FX DESTINATION SELECT popup will appear. This can be set separately for the L and R channels.

MEMO

If you select insertion into a channel in the FX INSERT/SOURCE SELECT popup, the corresponding FX DESTINATION SELECT button will be unavailable. If you want to re-enable the FX DESTINATION SELECT button, select an input source other than Insert in the corresponding FX INSERT/SOURCE SELECT popup.

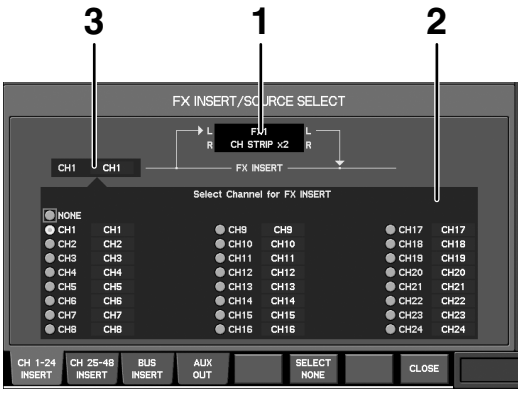
The function buttons specific to the FX 1–4 tab have the following operations.

[F5 (EDIT FX1)]	Accesses the FX EDIT popup for FX1.	p. 129
[F6 (EDIT FX2)]	Accesses the FX EDIT popup for FX2.	p. 129
[F7 (EDIT FX3)]	Accesses the FX EDIT popup for FX3.	p. 129
[F8 (EDIT FX4)]	Accesses the FX EDIT popup for FX4.	p. 129

Effect input/output settings

The FX INSERT/SOURCE SELECT popup and the FX DESTINATION SELECT popup are used to select the input source and output destination for the effect.

FX INSERT/SOURCE SELECT popup



In this popup you can select the input source for the effect.

1. **Applicable effect indication**
   This indicates the effect to which the FX INSERT/SOURCE SELECT popup applies.

2. **Insert-destination/Input-source channel select buttons**
   Here you can select the insert-destination channel or the input-source channel for the effect.

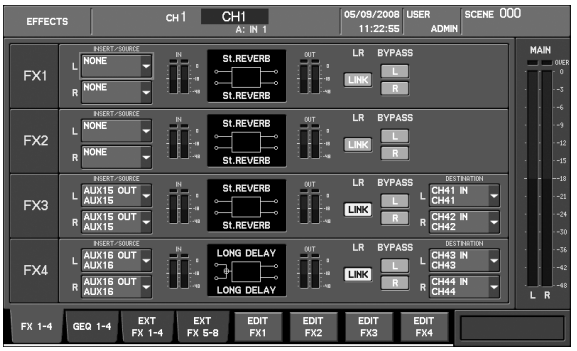
3. **Current insert-destination/input-source channel indication**
   This indicates the current insert-destination channel or the input-source channel for the effect.

In the FX INSERT/SOURCE SELECT popup, the function buttons perform the following operations.

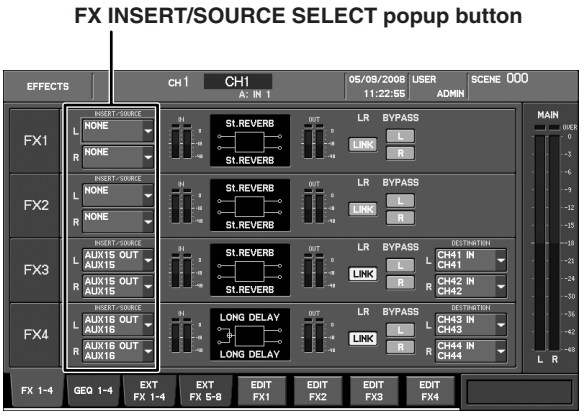
[F1 (CH 1–24 INSERT)]	Displays CH1–CH24 as the insert-destination channel select buttons.
[F2 (CH 25–48 INSERT)]	Displays CH25–CH48 as the insert-destination channel select buttons.
[F3 (BUS INSERT)]	Displays AUX1–AUX16, MATRIX1–MATRIX8 and MAIN L/R as the insert-destination channel select buttons.
[F4 (AUX OUT)]	Displays AUX1–AUX16 as the input-source channel select buttons.
[F6 (SELECT NONE)]	Clears the input-source selection.
[F8 (CLOSE)]	Closes the popup.

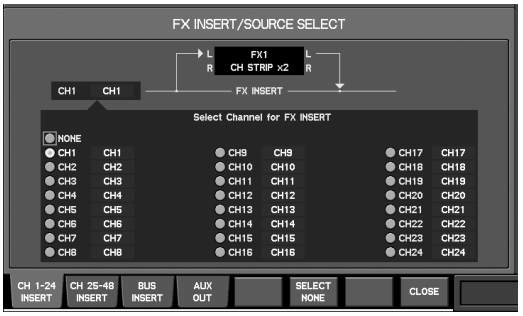
Accessing the FX INSERT/SOURCE SELECT popup

1. Access the EFFECTS screen, and display the FX 1–4 tab.



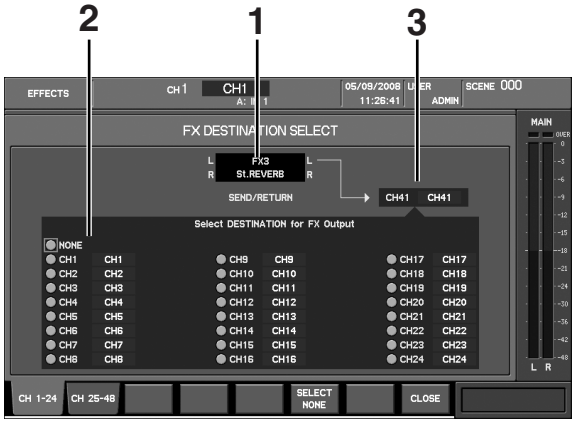
2. Move the cursor to the FX INSERT/SOURCE SELECT popup button L or R of the desired effect, and press [ENTER].





The FX INSERT/SOURCE SELECT popup will appear.

FX DESTINATION SELECT popup



In this popup you can select the output destination for the effect.

1. Applicable effect indication
This indicates the effect to which the FX DESTINATION SELECT popup applies.

2. Output channel select buttons
These select the output-destination channel for the effect.

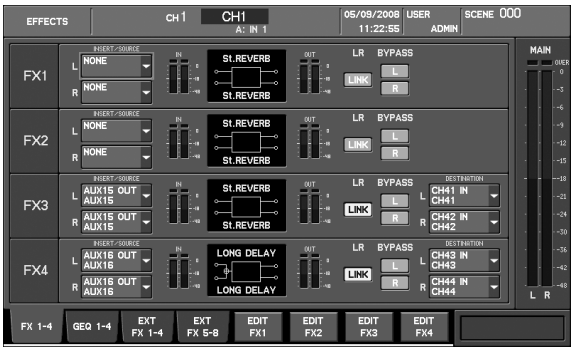
3. Current output-destination indication
This indicates the current output-destination channel.

In the FX DESTINATION SELECT popup, the function buttons perform the following operations.

[F1 (CH 1–24)]	Displays CH1–CH24 as the output-destination channel select buttons.
[F2 (CH 25–48)]	Displays CH25–CH48 as the output-destination channel select buttons.
[F6 (SELECT NONE)]	Clears the output-destination selection.
[F8 (CLOSE)]	Closes the popup.

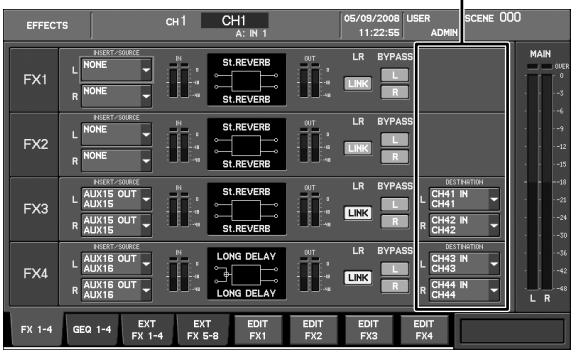
Accessing the FX DESTINATION SELECT popup

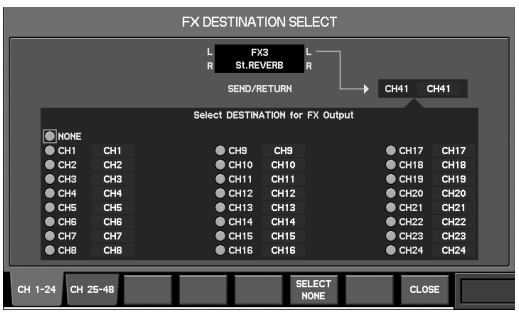
1. Access the EFFECTS screen, and display the FX 1–4 tab.



2. Move the cursor to the FX DESTINATION SELECT popup button L or R of the desired effect, and press [ENTER].

FX DESTINATION SELECT popup button





The FX DESTINATION SELECT popup will appear.

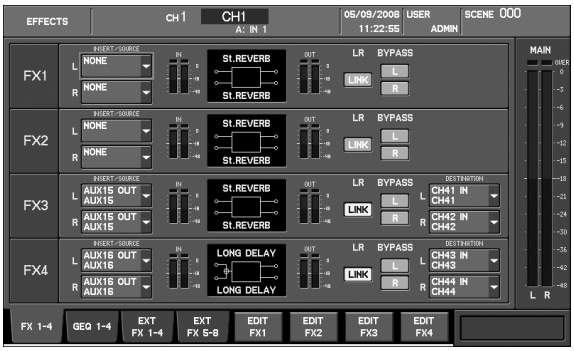
Using an effect via send/return

Effects such as reverb and delay are typically used in a send/return configuration.

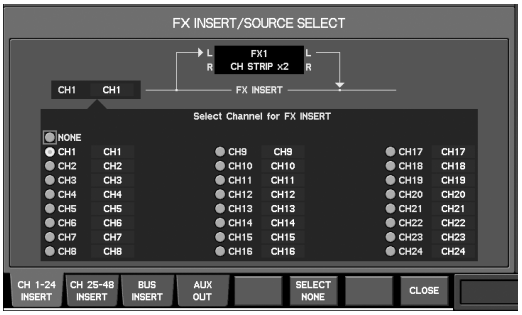
Here we will explain the procedure for using FX3 as a send/return type effect using AUX15 and CH41 and CH42.

Specifying the effect input source

1. **Access the EFFECTS screen, and press [F1 (FX 1–4)] to display the FX 1–4 tab.**

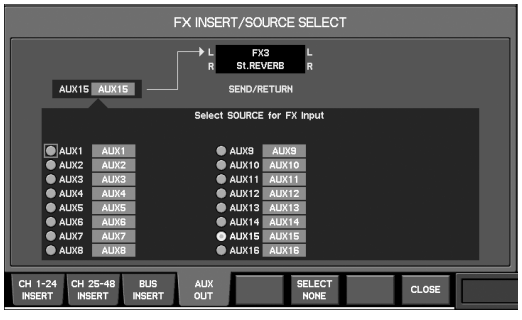


2. **Move the cursor to the FX INSERT/SOURCE SELECT popup button L for FX3, and press [ENTER].**



The FX INSERT/SOURCE SELECT popup will appear.

3. **Press [F4 (AUX OUT)] to access the AUX OUT tab.**



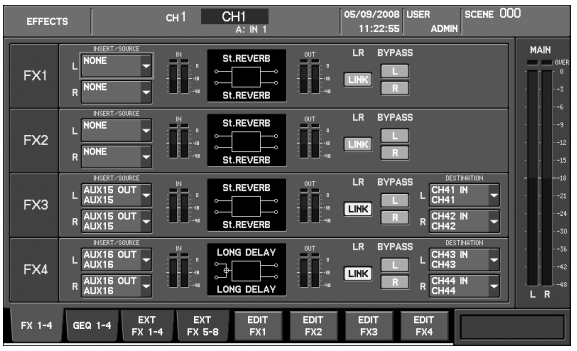
4. **Move the cursor to the AUX15 input-source channel select button, and press [ENTER] to select it.**

5. **Press [F8 (CLOSE)] to close the popup.**

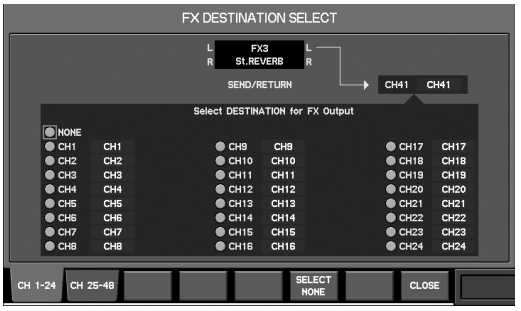
6. **In the same way as you did in steps 1 through 5, select AUX15 as the input source for the R side of FX3.**

Specifying the effect return channel

1. **Access the EFFECTS screen, and press [F1 (FX 1–4)] to display the FX 1–4 tab.**

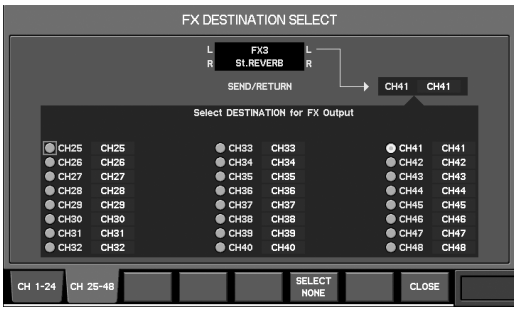


2. **Move the cursor to the FX DESTINATION SELECT popup button L for FX3, and press [ENTER].**



The FX DESTINATION SELECT popup will appear.

3. **Press [F2 (CH 25–48)] to access the CH 25–48 tab.**



4. **Move the cursor to the CH41 output-destination select button, and press [ENTER] to select it.**

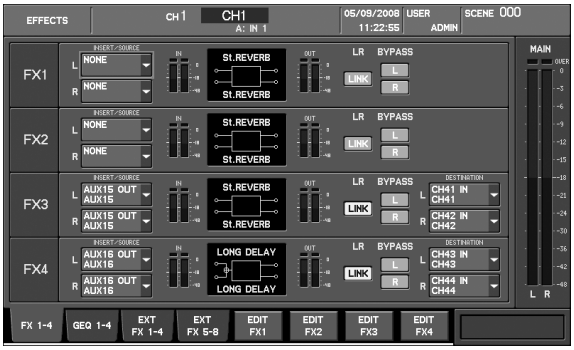
5. **Press [F8 (CLOSE)] to close the popup.**

6. **In the same way as you did in steps 1 through 5, select CH42 as the output destination for the R side of FX3.**

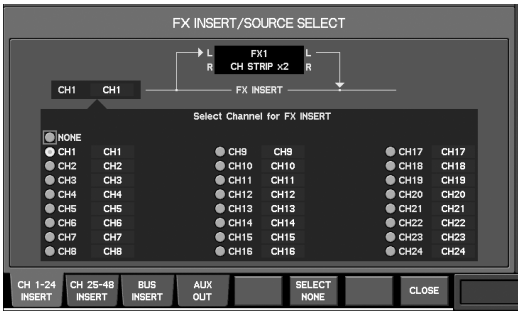
Inserting an effect into a channel

Here we will explain the procedure for inserting the L side of FX1 into CH1.

1. Access the EFFECTS screen, and press [F1 (FX 1–4)] to display the FX 1–4 tab.

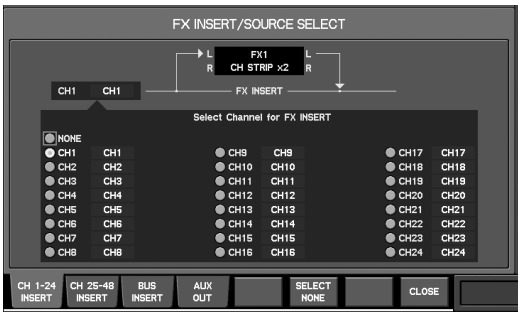


2. Move the cursor to the FX INSERT/SOURCE SELECT popup button L for FX1, and press [ENTER].



The FX INSERT/SOURCE SELECT popup will appear.

3. Press [F1 (CH 1–24 INSERT)] to access the CH 1–24 INSERT tab.



4. Move the cursor to the CH1 input-source channel select button, and press [ENTER] to select it.

5. Press [F8 (CLOSE)] to close the popup.

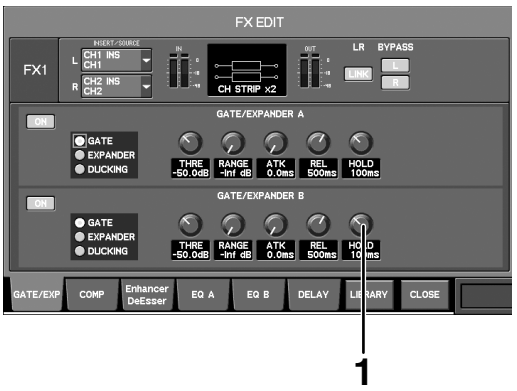
TIP

If you want to insert the effect into both channels of a stereo-linked pair, make insert settings for both the L and R sides.

Editing effect parameters

The FX EDIT popup is used to edit the effect parameters.

FX EDIT popup



1. Effect parameter field

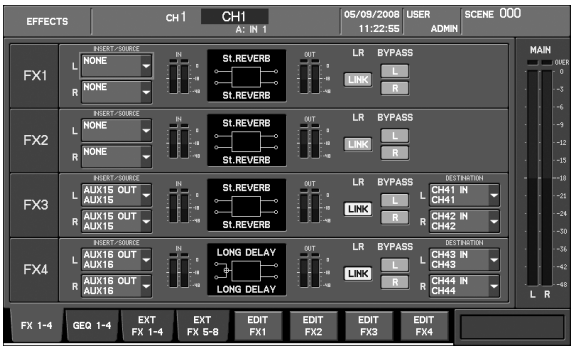
In this field you can edit the effect parameters. The contents of this field will depend on the effect type.

In the FX EDIT popup, the function buttons perform the following operations.

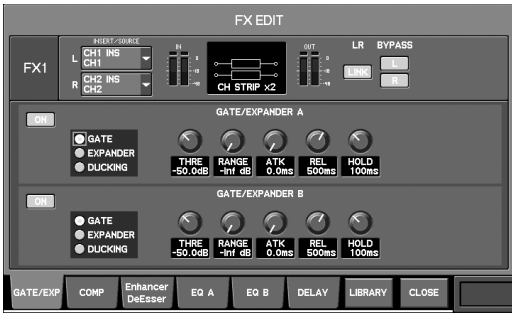
[F1]–[F6]	Switch the display in the effect parameter field. The number of tabs will depend on the effect type.	
[F6 (TEMPO)]	Accesses the TEMPO popup. This exists only for delay-type effects.	p. 131
[F7 (LIBRARY)]	Accesses the FX LIBRARY popup.	p. 130
[F8 (CLOSE)]	Closes the popup.	

Accessing the FX EDIT popup

1. **Access the EFFECTS screen, and press [F1 (FX 1–4)] to display the FX 1–4 tab.**



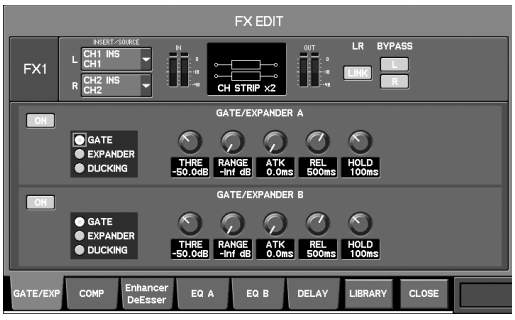
2. **According to the FX that you want to use, press [F5 (EDIT FX1)]–[F8 (EDIT FX4)].**



The FX EDIT popup will appear.

Editing effect parameters

1. **Access the FX EDIT popup for the desired effect.**



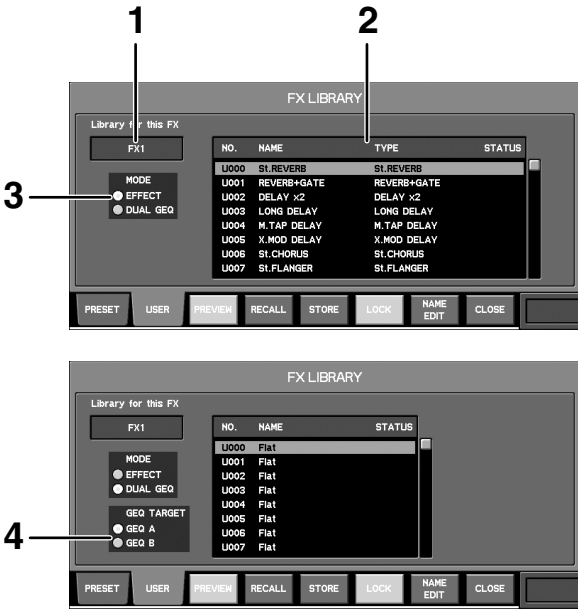
2. **Use [F1]–[F6] to switch between tabs to view the parameters you want to edit.**
3. **Move the cursor to the desired parameter, and use the value dial to change the value.**
4. **Press [F8 (CLOSE)] to close the popup.**

Using the effect library

The effect library is used to select the effect type. You can recall effect settings from the library, and store the current effect settings in the library.

Effect library operations are performed in the FX LIBRARY popup.

FX LIBRARY popup



1. **Applicable effect indication**
   This indicates the effect to which the FX LIBRARY popup applies.

2. **Library data list**
   This is the list of library data. If you've used the MODE select buttons to select DUAL GEQ, the GEQ library (p. 135) will be shown.

3. **MODE select buttons**
   These select the effect mode from the following choices.

Item	Explanation
EFFECT	Use as a conventional effect.
DUAL GEQ	Use as a dual 31-band GEQ.

4. **Applicable GEQ select buttons**
   When the effect type is dual 31-band GEQ, these buttons select whether the A side or B side will be the target of FX LIBRARY operations.

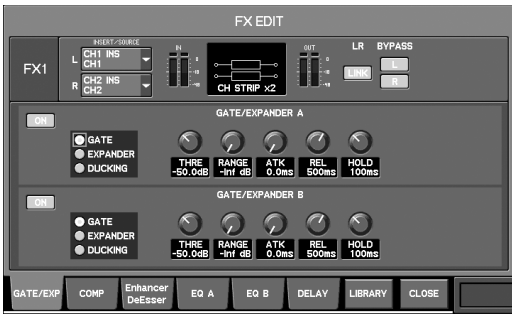
In the FX LIBRARY popup, the function buttons perform the following operations.

[F1 (PRESET)]	Accesses the recall-only PRESET library.
[F2 (USER)]	Accesses the USER library, which allows you to recall or store data.
[F3 (PREVIEW)]	Previews (auditions) the library data that is selected in the list.
[F4 (RECALL)]	Recalls the library data that is selected in the list.
[F5 (STORE)]*	Stores the current settings in the library item that is selected in the list.
[F6 (LOCK)]*	Locks the library data that is selected in the list.
[F7 (NAME EDIT)]*	Accesses the NAME EDIT popup, where you can edit the name of the user library data selected in the list.
[F8 (CLOSE)]	Closes the popup.

* Available only for the User library.

Accessing the FX LIBRARY popup

1. Access the FX EDIT popup for the desired effect.



2. Press [F7 (LIBRARY)].



The FX LIBRARY popup will appear.

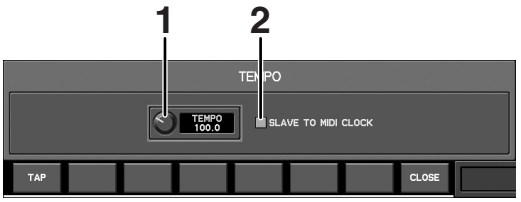
cf.

For details on library operations, refer to "Library operations" (p. 51).

TEMPO popup

From the FX EDIT popup for delay-type effects, you can access the TEMPO popup, which lets you set the tempo used for delay-type effects.

This tempo is used in common by FX1–FX4.



1. TEMPO knob

Sets the tempo (BPM) in a range of 5.0–300.0.

2. SLAVE TO MIDI CLOCK select button

If this is selected, the tempo will synchronize to MIDI clock messages received from the M-400's rear panel MIDI connector or USB connector. In this case, you won't be able to use the TEMPO knob or the tap tempo function using [F1 (TAP)] or a user button.

[F1 (TAP)]	Specifies the tempo (BPM) as the average interval at which the button is pressed (Tap Tempo).
[F8 (CLOSE)]	Closes the popup.

MEMO

You can assign TAP TEMPO as a function for a user button (p. 180). This allows you to use USER [1]–[8] to enter the tempo via tap tempo.

Accessing the TEMPO popup

1. Access the FX EDIT popup for a delay-type effect.



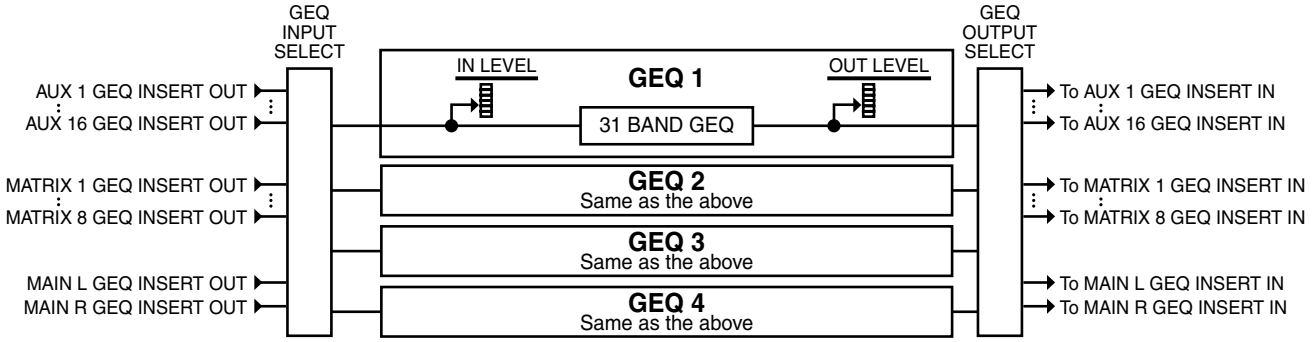
2. Press [F6 (TEMPO)].



The TEMPO popup will appear.

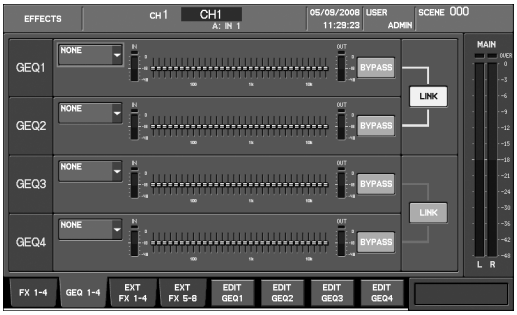
31-band GEQ

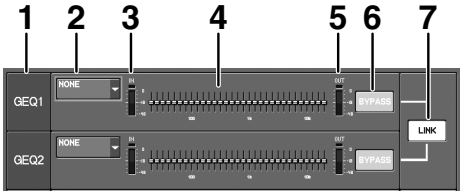
About the 31-band GEQ



The M-400 provides four 31-band GEQ processors, GEQ1–GEQ4. You can insert a 31-band GEQ processor into the MAIN L/R channel, into an AUX channel or into an MATRIX channel.

GEQ 1–4 tab





This shows GEQ1–GEQ4. This area is organized as follows.

1. GEQ number indication
This indicates the GEQ number.

2. GEQ INSERT SELECT popup button
This selects the channel into which the GEQ will be inserted. The selected channel is shown on the button. When you move the cursor to the button and press [ENTER], the GEQ INSERT SELECT popup will appear.

3. IN meter
This indicates the level of the signal being input to the GEQ.

4. GEQ fader indication
This indicates the state of the GEQ. The GEQ cannot be operated in this screen.

5. OUT meter
This indicates the level of the signal being output from the GEQ.

6. BYPASS button
This bypasses the GEQ. If this is on, the GEQ will be bypassed and the input signal will be output without modification.

7. LINK button
This links adjacent odd-numbered and even-numbered GEQ processors. If they are linked, the GEQ settings will be identical.

MEMO

When you activate LINK, the odd-numbered unit's settings will be applied to the even-numbered processor.

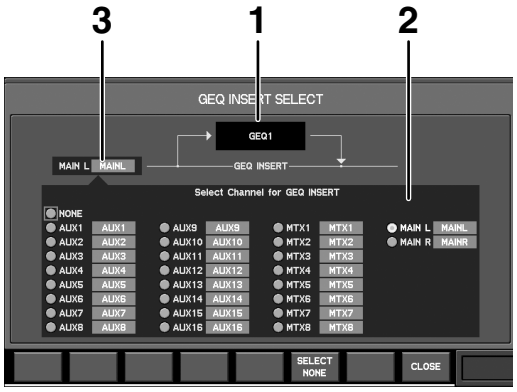
The function buttons specific to the GEQ 1–4 tab have the following operations.

[F5 (EDIT GEQ1)]	Accesses the GEQ EDIT popup for GEQ1.	p. 134
[F6 (EDIT GEQ2)]	Accesses the GEQ EDIT popup for GEQ2.	p. 134
[F7 (EDIT GEQ3)]	Accesses the GEQ EDIT popup for GEQ3.	p. 134
[F8 (EDIT GEQ4)]	Accesses the GEQ EDIT popup for GEQ4.	p. 134

Inserting a 31-band GEQ

Use the GEQ INSERT SELECT popup to select the destination into which you want to insert a 31-band GEQ.

GEQ INSERT SELECT popup



This popup lets you select the destination into which the 31-band GEQ will be inserted.

1. Applicable GEQ indication
This indicates the GEQ to which the GEQ INSERT SELECT popup applies.

2. Insert-destination channel select buttons
These buttons select the channel into which the GEQ will be inserted.

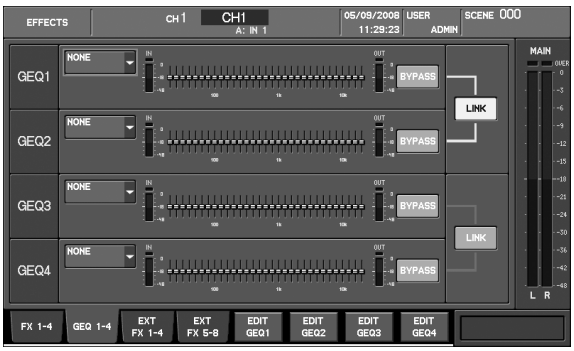
In the GEQ INSERT SELECT popup, the function buttons perform the following operations.

[F6 (SELECT NONE)]	Clears the insert-destination selection.
[F8 (CLOSE)]	Closes the popup.

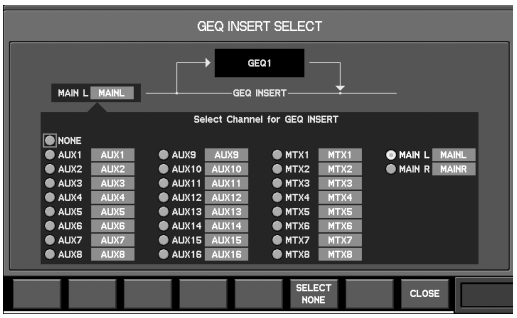
3. Current insert destination indication
This indicates the current insert destination.

Accessing the GEQ INSERT SELECT popup

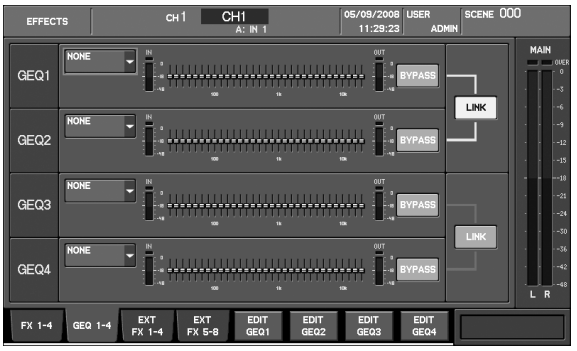
1. Access the EFFECTS screen, and press [F2 (GEQ 1–4)] to display the GEQ 1–4 tab.



2. Move the cursor to the GEQ INSERT SELECT popup button for the desired GEQ, and press [ENTER].

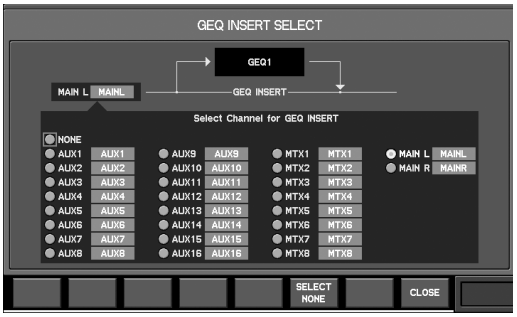


The GEQ INSERT SELECT popup will appear.



3. Move the cursor to the LINK button located at the right of GEQ1 and GEQ2, and press [ENTER] to turn the button on.

4. Move the cursor to the GEQ INSERT SELECT popup button for GEQ1, and press [ENTER].



The GEQ INSERT SELECT popup will appear.

5. Move the cursor to the MAIN L insert-destination channel select button, and press [ENTER] to select it.

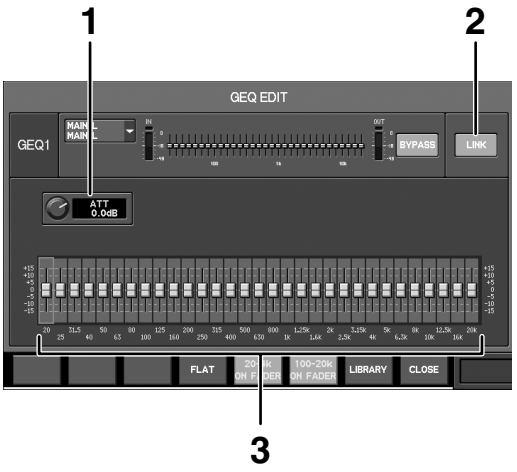
6. Press [F8 (CLOSE)] to close the popup.

7. In the same way as you did in steps 1 through 5, select MAIN R as the insert destination for GEQ2.

Editing the 31-band GEQ parameters

The GEQ EDIT popup is used to edit the 31-band GEQ.

GEQ EDIT popup



1. ATT knob

This adjusts the input level of the 31-band GEQ in a range of -42.0 dB–+15.0 dB.

2. LINK button

This links adjacent odd-numbered and even-numbered GEQ units. If they are linked, the GEQ settings will be identical.

3. GEQ faders

These adjust the amount of boost or cut for each band in a range of -15.0 dB–+15.0 dB. The value of the operated fader is shown in the sub-display area.

MEMO

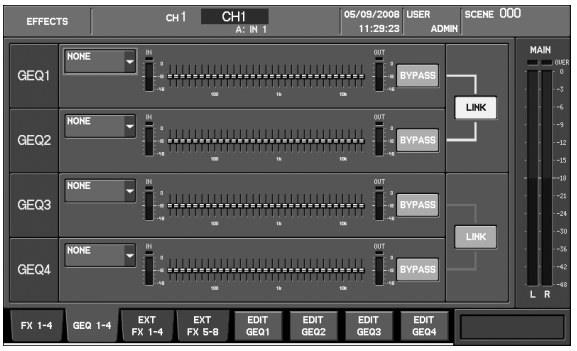
Noise may occur when you operate the GEQ faders, but this is not a malfunction.

In the GEQ EDIT popup, the function buttons perform the following operations.

[F4 (FLAT)]	Sets the 31-band GEQ to a flat response.	
[F5 (20–4k ON FADER)]	Allows you to use the top panel faders to operate the 20 Hz–4 kHz bands.	p. 135
[F6 (100–20k ON FADER)]	Allows you to use the top panel faders to operate the 100 Hz–20 kHz bands.	p. 135
[F7 (LIBRARY)]	Accesses the GEQ LIBRARY popup.	p. 135
[F8 (CLOSE)]	Closes the popup.	

Accessing the GEQ EDIT popup

1. Access the EFFECTS screen, and press [F2 (GEQ1 - 4)] to access the GEQ 1 - 4 tabs.



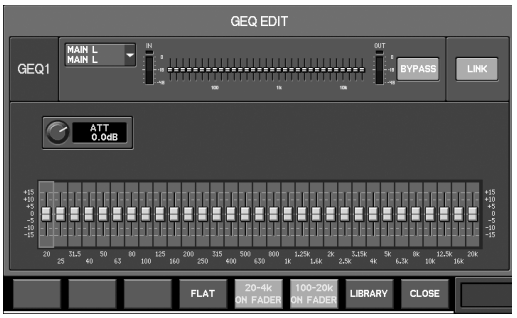
2. Press [F5 (EDIT GEQ1)] – [F8 (EDIT GEQ4)] depending on the GEQ you want to use.



The GEQ EDIT popup will appear.

Controlling the GEQ

1. Access the GEQ EDIT popup for the desired GEQ.



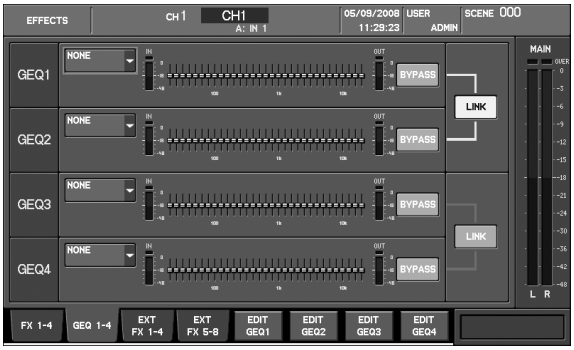
2. Move the cursor to the desired parameter, and use the value dial to change the value.

3. Press [F8 (CLOSE)] to close the popup.

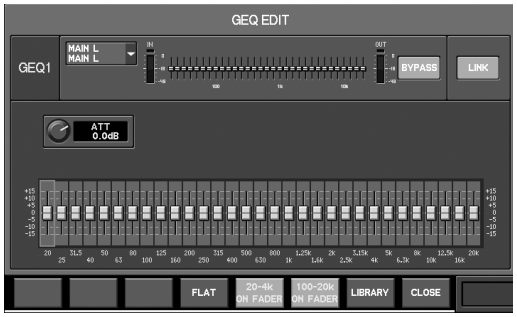
Using the top panel faders to control the GEQ

You can use the top panel faders to control the GEQ.

1. Access the EFFECTS screen, and press [F2 (GEQ 1–4)] to display the GEQ 1–4 tab.

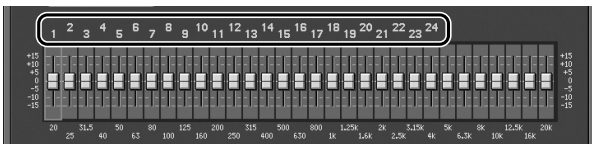


2. Move the cursor to the GEQ whose parameters you want to edit, and press [F5 (EDIT GEQ)].



The GEQ EDIT popup will appear.

3. Press [F5 (20–4k ON FADER)] or [F6 (100–20k ON FADER)] to turn it on, and you'll be able to use the top panel faders to operate the GEQ.



The numbers of the corresponding faders are shown in the screen.

TIP

If you've enabled top panel fader control of the GEQ, touching a fader with your hand will cause the cursor to move to the corresponding GEQ fader in the screen. By lightly touching the fader before you move it, you can verify the frequency band that you'll be operating.

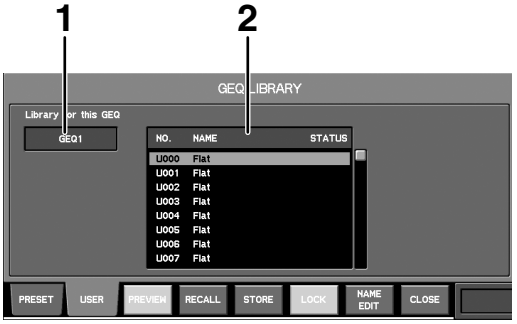
MEMO

If a fader's position is anything other than 0 dB, the corresponding [MUTE] will blink. When you press the blinking [MUTE], the fader will be reset to the 0 dB position.

Using the GEQ library

You can recall 31-band GEQ settings from the library, and store the current 31-band GEQ settings in the library.
GEQ library operations are performed in the GEQ LIBRARY popup.

GEQ LIBRARY popup



1. Applicable GEQ indication
This indicates the effect to which the GEQ LIBRARY popup applies.

2. Library data list
This is a list of the library data.

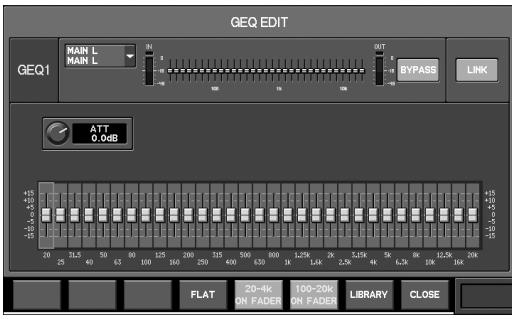
In the GEQ LIBRARY popup, the function buttons perform the following operations.

[F1 (PRESET)]	Accesses the recall-only PRESET library.
[F2 (USER)]	Accesses the USER library, which allows you to recall or store data.
[F3 (PREVIEW)]	Previews (auditions) the library data that is selected in the list.
[F4 (RECALL)]	Recalls the library data that is selected in the list.
[F5 (STORE)]*	Stores the current settings to the library item that is selected in the list.
[F6 (LOCK)]*	Locks the library data that is selected in the list.
[F7 (NAME EDIT)]*	Accesses the NAME EDIT popup, where you can edit the name of the user library data selected in the list.
[F8 (CLOSE)]	Closes the popup.

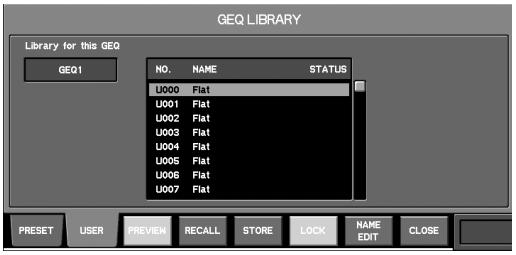
* Available only for the User library.

Accessing the GEQ LIBRARY popup

1. Access the GEQ EDIT popup for the GEQ unit that is the target of GEQ LIBRARY operations.



2. Press [F7 (LIBRARY)].



The GEQ LIBRARY popup will appear.

cf.

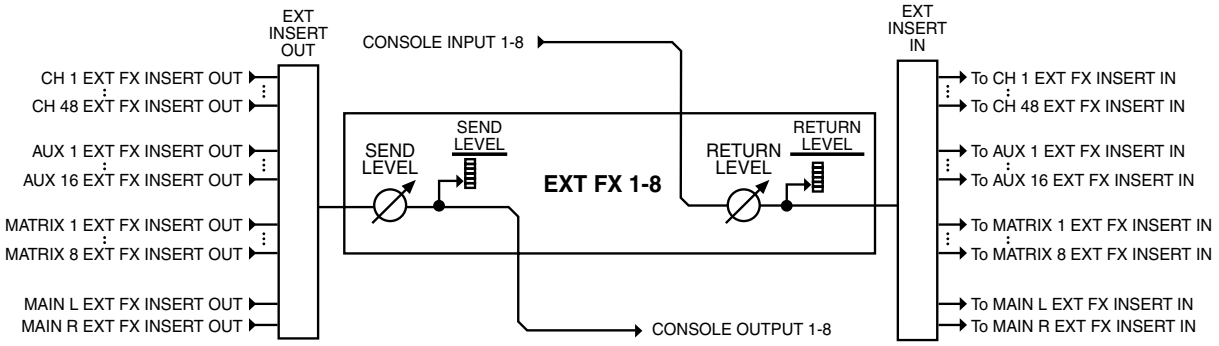
For details on library operations, refer to “Library operations” (p. 51).

MEMO

The GEQ library is shared by GEQ1 -GEQ4 and by the DUAL GEQ of FX1 - FX4. GEQ1 - GEQ4 will not recall the delay parameter of the DUAL GEQ. When you store GEQ1 - GEQ4 into the User library, the delay parameter of DUAL GEQ will be stored with the default value.

Inserting an external effects device

About inserting an external effects device



You can use the CONSOLE IN 1–8 and CONSOLE OUT 1–8 jacks located on the M-400's rear panel to insert up to eight external effects devices into channels.

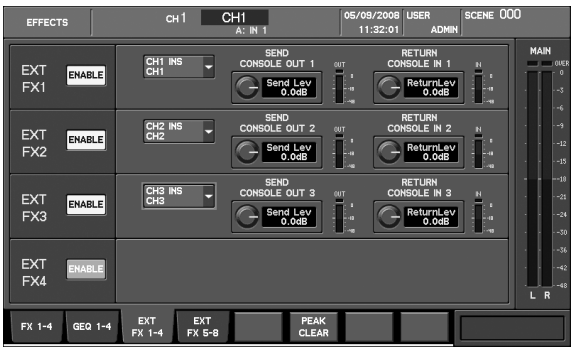
The eight external effects devices are shown virtually as an EXT FX1–EXT FX8 rack, allowing you to adjust the input levels and insert them into channels.

EXT FX1–EXT FX8 use the following input/output jacks.

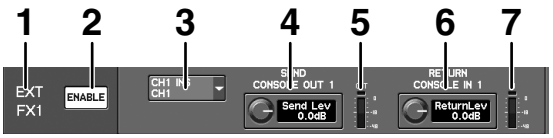
External effect	Output jack	Input jack
EXT FX1	CONSOLE OUT 1	CONSOLE IN 1
EXT FX2	CONSOLE OUT 2	CONSOLE IN 2
EXT FX3	CONSOLE OUT 3	CONSOLE IN 3
EXT FX4	CONSOLE OUT 4	CONSOLE IN 4
EXT FX5	CONSOLE OUT 5	CONSOLE IN 5
EXT FX6	CONSOLE OUT 6	CONSOLE IN 6
EXT FX7	CONSOLE OUT 7	CONSOLE IN 7
EXT FX8	CONSOLE OUT 8	CONSOLE IN 8

To insert external effects devices into channels, you'll use the EXT FX 1–4 tab and EXT FX 5–8 tab of the EFFECTS screen.

EXT FX 1–4 tab, EXT FX 5–8 tab



- **EXT FX1–EXT FX8**



This area indicates the status of EXT FX1–EXT FX8. This area is organized as follows.

1. External effect number

This indicates the number of the external effect.

2. ENABLE button

This enables or disables the EXT FX.

If you turn the ENABLE button on, you'll be able to use the corresponding CONSOLE IN jack and CONSOLE OUT jack to insert your external effects device into the assigned channel, and the buttons, knobs, and meters 3–7 described below will be shown.

If you turn the ENABLE button off, the corresponding CONSOLE IN jack and CONSOLE OUT jack can be used as conventional input/output jacks, and the following buttons, knobs, and meters 3–7 will not be shown.

3. EXT FX INSERT SELECT popup button

This selects the channel into which the external effect will be inserted. The selected channel is shown on the button. When you move the cursor to the button and press [ENTER], the EXT FX INSERT SELECT popup will appear.

4. Snd Lev knob

This adjusts the output level to the external effect in a range of -Inf dB–+6.0 dB.

MEMO

The CONSOLE OUT jack is fixed at a nominal output level of +4 dBu. The Snd Lev knob adjusts the output level in the digital domain.

5. OUT meter

This indicates the level of the signal being output to the external effect.

6. ReturnLev knob

This adjusts the input level from the external effect in a range of -Inf dB–+6.0 dB.

MEMO

When you're using it for insertion of an external effects device, the CONSOLE IN jack's nominal input level is fixed at +4 dBu. The ReturnLev knob adjusts the input level in the digital domain.

7. IN meter

This indicates the level of the signal being input from the external effect.

The function buttons specific to the EXT FX 1–4 tab and EXT FX 5–8 tab perform the following operations.

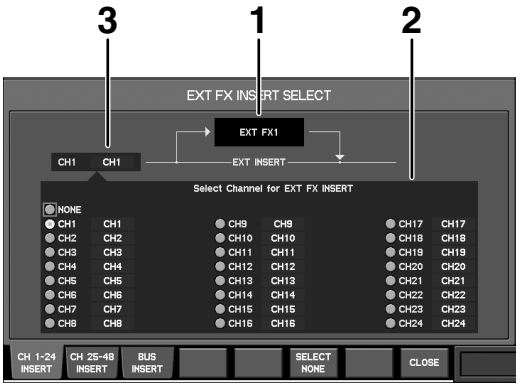
[F6 (PEAK CLEAR)]	Clears the level meter's peak hold or over indication.

Inserting an external effects device into a channel

To insert an external effects device into a channel, connect the CONSOLE IN jack and CONSOLE OUT jack to your external effects device, and insert the corresponding EXT FX into the desired channel.

The EXT FX INSERT SELECT popup is used to insert an EXT FX into a channel.

EXT FX INSERT SELECT popup



This popup lets you select the destination into which the EXT FX will be inserted.

1. **Target EXT FX indication**
   This indicates the EXT FX to which the EXT FX INSERT SELECT popup applies.

2. **Insert-destination channel select buttons**
   These buttons select the channel into which the EXT FX will be inserted.

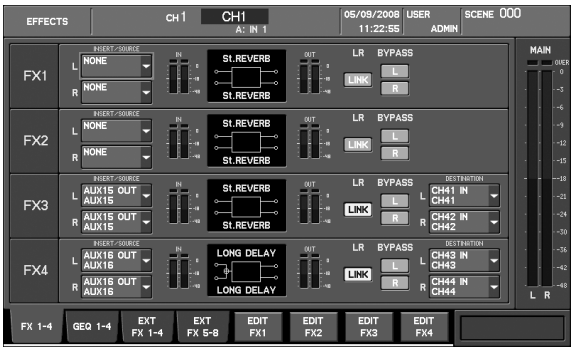
3. **Current insert destination indication**
   This indicates the current insert destination.

In the EXT FX INSERT SELECT popup, the function buttons perform the following operations.

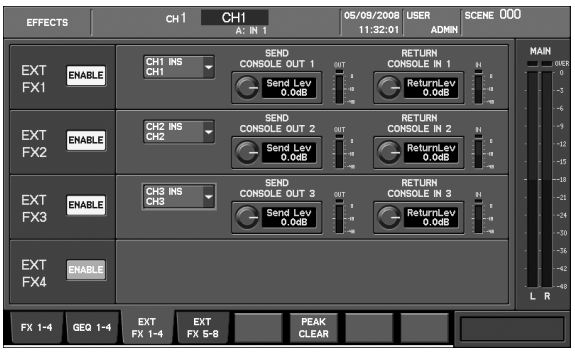
[F1 (CH 1–24 INSERT)]	Displays CH1–CH24 as the insert-destination channel select buttons.
[F2 (CH 25–48 INSERT)]	Displays CH25–CH48 as the insert-destination channel select buttons.
[F3 (BUS INSERT)]	Displays AUX1–AUX16, MATRIX1–MATRIX8 and MAIN L/R as the insert-destination channel select buttons.
[F6 (SELECT NONE)]	Clears the insert-destination selection.
[F8 (CLOSE)]	Closes the popup.

Accessing the EXT FX INSERT SELECT popup

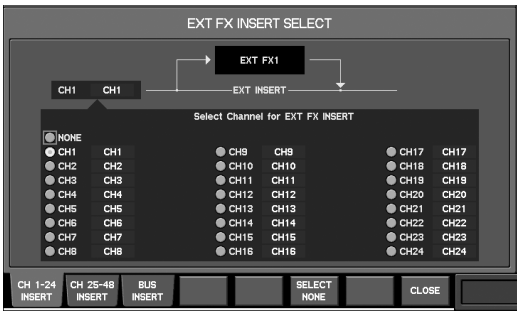
1. **Access the EFFECTS screen.**



2. **Press [F3 (EXT FX 1–4)] or [F4 (EXT FX 5–8)] to access the EXT FX 1–4 tab or EXT FX 5–8 tab.**



3. **Move the cursor to the EXT FX INSERT SELECT popup button for the desired EXT FX, and press [ENTER].**

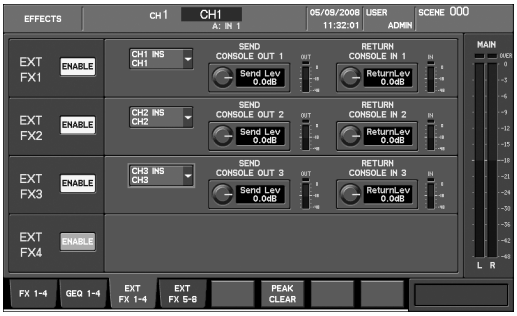


The EXT FX INSERT SELECT popup will appear.

Inserting an EXT FX into a channel

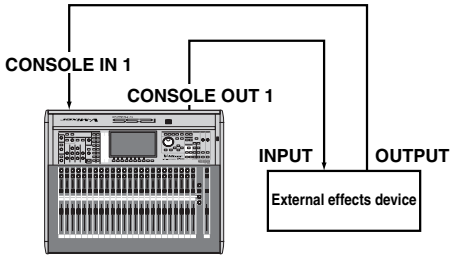
Here we'll explain how to connect your external effects device to CONSOLE IN1 and CONSOLE OUT1, and insert it into CH1.

1. **Access the EFFECTS screen, and press [F3 (EXT FX 1–4)] to display the EXT FX 1–4 tab.**



2. **Move the cursor to the ENABLE button for EXT FX1, and press [ENTER] to select it.**

3. **Connect your external effects device to CONSOLE IN1 and CONSOLE OUT1.**



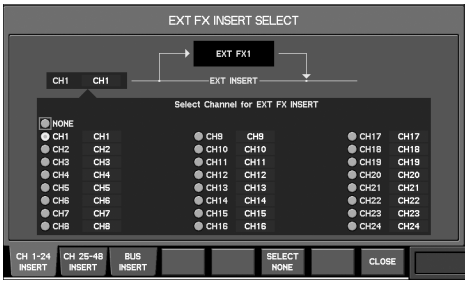
NOTE

If you connect your external effects device while the EXT FX ENABLE button is off, the input and output may loop.

NOTE

If the EXT FX insert destination is already specified when you connect your external effects device, noise may be heard in the channel.

4. **Move the cursor to the EXT FX INSERT SELECT popup button for EXT FX1, and press [ENTER].**



The EXT FX INSERT SELECT popup will appear.

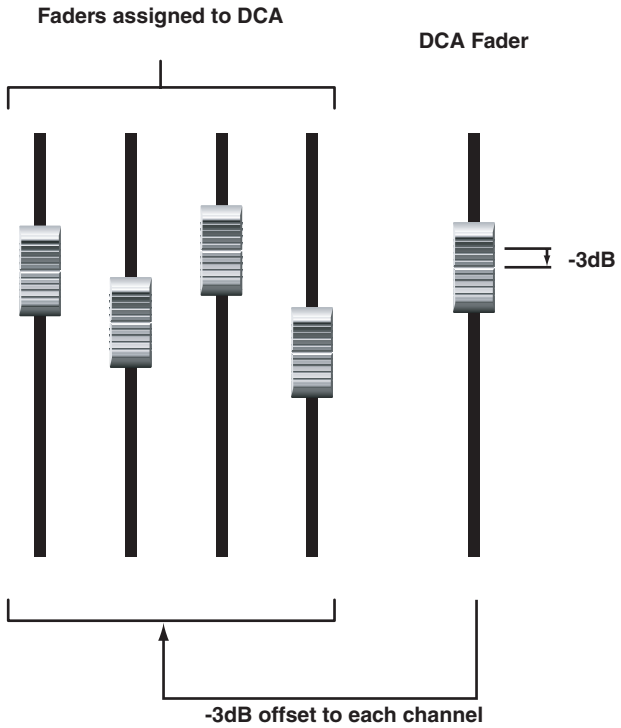
5. **Move the cursor to the CH1 insert-destination channel select button, and press [ENTER] to select it.**

6. **Press [F8 (CLOSE)] to close the popup.**

DCA groups

About DCA groups

DCA grouping is a function that lets you make relative adjustments to the output level of channels so that the level of multiple channels belonging to a group can be controlled together.

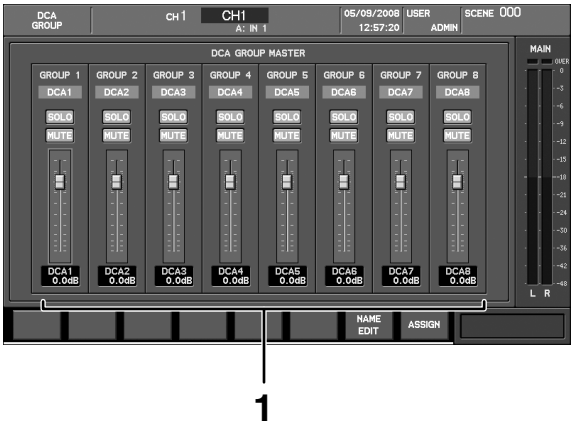


A channel can belong to more than one DCA group. This is convenient when grouping drums or instruments.

DCA group settings

The DCA GROUP screen is used to make DCA group settings.

DCA GROUP screen



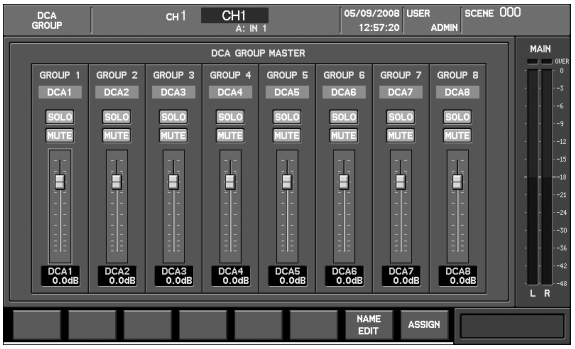
1. DCA group 1–8 faders
These adjust the levels of DCA groups 1–8 in a range of -Inf dB–+10.0 dB.

In the DCA GROUP screen, the function buttons perform the following operations.

[F7 (NAME EDIT)]	Accesses the NAME EDIT popup.	p. 143
[F8 (ASSIGN)]	Accesses the DCA GROUP ASSIGN popup.	p. 142

Accessing the DCA GROUP screen

1. In the GROUP section, press [DCA].
The DCA GROUP screen will appear.



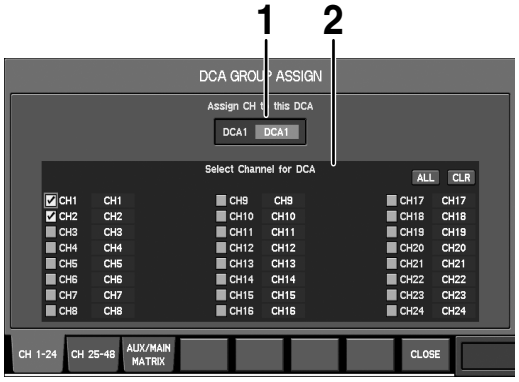
Assigning a channel to a DCA group

The DCA GROUP ASSIGN popup is used to assign a channel to a DCA group.

cf.

You can also use the GROUP ASSIGN popup of the CHANNEL DISPLAY screen to assign a channel to a DCA group. For details, refer to "Assigning channels to DCA groups and MUTE groups" (p. 67).

DCA GROUP ASSIGN popup



1. Target DCA group indication

This indicates the DCA group to which the settings in the DCA GROUP ASSIGN popup will apply.

2. Channel select buttons

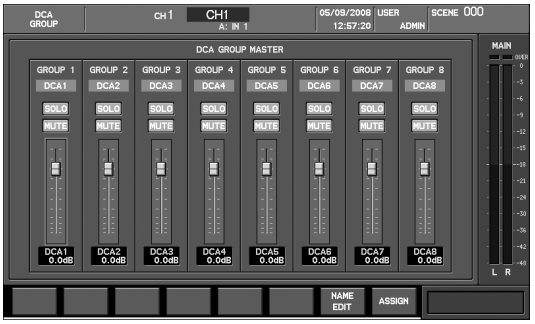
Here you can select the channels that will be assigned to the DCA group.

In the DCA GROUP ASSIGN screen, the function buttons perform the following operations.

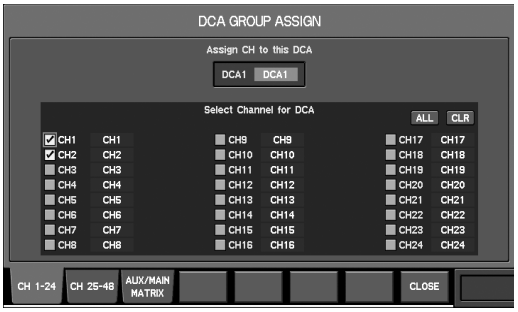
[F1 (CH 1–24)]	Displays CH1–CH24 as the channel select buttons.
[F2 (CH 25–48)]	Displays CH25–CH48 as the channel select buttons.
[F3 (AUX/MAIN/MATRIX)]	Displays AUX1–AUX16, MATRIX1–MATRIX8 and MAIN L/R as the channel select buttons.
[F8 (CLOSE)]	Closes the popup.

Accessing the DCA GROUP ASSIGN popup

1. In the GROUP section, press [DCA] to access the DCA GROUP screen.



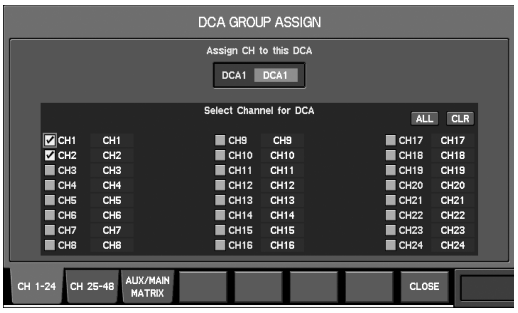
2. Move the cursor to the DCA group fader of the desired DCA group, and press [F8 (ASSIGN)].



The DCA GROUP ASSIGN popup will appear.

Assigning a channel to a DCA group

1. Access the DCA GROUP ASSIGN popup for the desired DCA group.



2. Verify that the target DCA group is correct.

3. Move the cursor to the desired channel select button, and press [ENTER] to select it.

4. Press [F8 (CLOSE)] to close the popup.

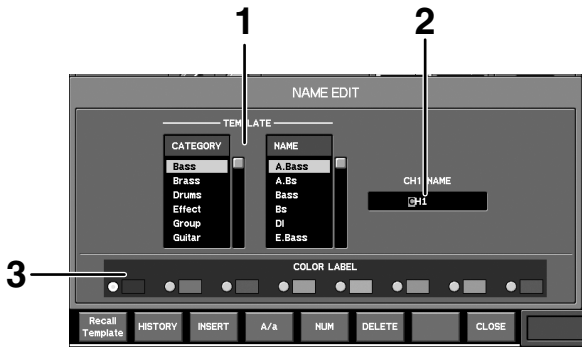
MEMO

When the DCA GROUP ASSIGN popup is displayed, you can press a top panel [SEL] to turn on/off the corresponding channel's assignment to the DCA group.

Specifying a name and color label for the DCA group

You can specify a name and color label for each DCA group. A name of up to six characters can be specified, and you can choose one of eight colors as the color label.
The NAME EDIT popup is used to edit the name and select a color label.

NAME EDIT popup



1. TEMPLATE

Here you can select a name from a list.

- **CATEGORY list**

  Here you can select a category.

- **NAME list**

  Here you can select a name from within the category you specified.

TIP

Select the CATEGORY first, and then select the NAME.

2. Name edit field

In this field you can enter any desired name.

3. Color label selection buttons

Use these buttons to select a color label for the DCA group.

The function buttons perform the following operations.

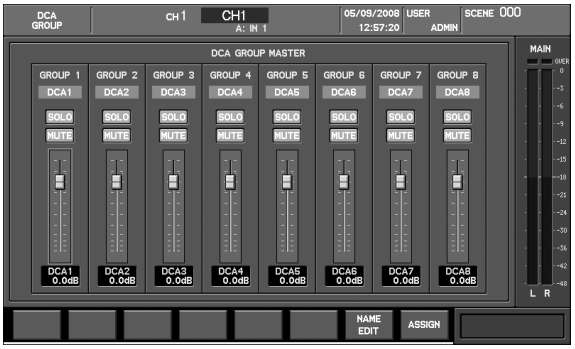
[F1 (Recall Template)]	Enters the name selected in the TEMPLATE field into the name edit field.
[F2 (HISTORY)]	Successively recalls the most recent names that were entered since the power was turned on.
[F3 (INSERT)]	Inserts a space at the cursor location. The characters to the right of the cursor location will be moved toward the right.
[F4 (A/a)]	Changes the character at the cursor location between uppercase and lowercase.
[F5 (NUM)]	Changes the character at the cursor location to "0."
[F6 (DELETE)]	Deletes the character at the cursor location. The characters to the right of the cursor location will be moved toward the left.
[F8 (CLOSE)]	Closes the popup.

MEMO

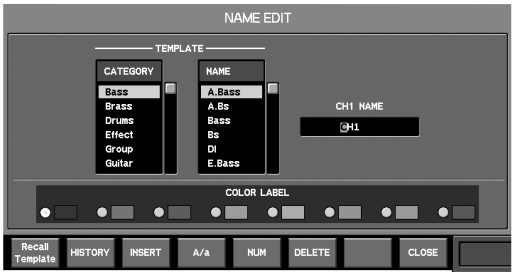
A maximum of sixteen names are remembered by HISTORY. If HISTORY becomes full, the oldest names will be deleted.

Accessing the NAME EDIT popup

1. Access the DCA GROUP screen.



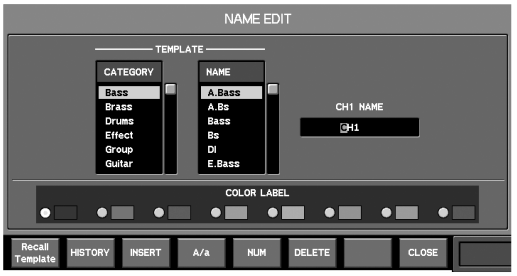
2. Move the cursor to the DCA group fader of the desired DCA group, and press [F7 (NAME EDIT)].



The NAME EDIT popup will appear.

Editing the name of a DCA group

1. Access the NAME EDIT popup for the desired DCA group.



2. Move the cursor to the name edit field, and edit the DCA Group name.

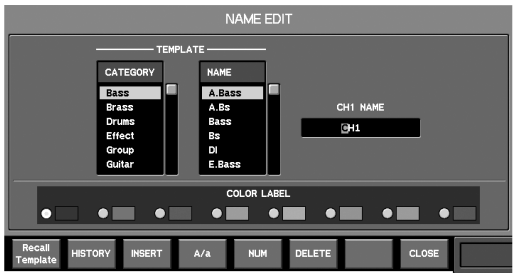
3. Press [F8 (CLOSE)] to close the popup.

cf.

For details on name editing, refer to "Editing a name" (p. 50).

Selecting a color label

1. **Access the NAME EDIT popup for the desired DCA group.**

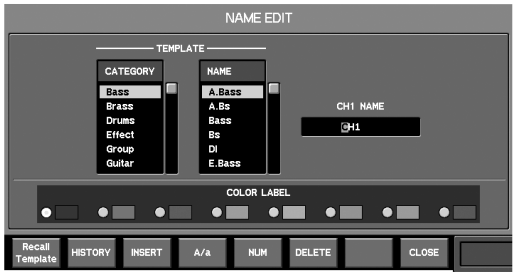


2. **Move the cursor to the desired color label select button, and press [ENTER] to select it.**

3. **Press [F8 (CLOSE)] to close the popup.**

Using a template to enter the DCA group name

1. **Access the NAME EDIT popup for the desired DCA group.**



2. **Move the cursor to the CATEGORY list in the TEMPLATE area, and select the category of name you want to enter.**

3. **Move the cursor to the NAME list in the TEMPLATE area, and select the name you want to enter.**

4. **Press [F1 (Recall Template)]; the selected name will be entered in the name edit field.**

5. **Move the cursor to the name edit field, and edit the name that you entered.**

6. **Press [F8 (CLOSE)] to close the popup.**

MEMO

When you enter a name from the template list, the previous name in the name edit field will be deleted.

Using the panel to control DCA groups

You can use the AUX/DCA layer of the fader module section to control DCA groups from the panel.

1. **In the layer section, press [AUX/DCA] to access the AUX/DCA layer.**



2. **Use the faders of fader module 17 (DCA1)–24 (DCA8) to adjust the level of the DCA groups.**

3. **By pressing [SOLO], you can operate the solo settings of all channels belonging to the corresponding DCA group.**

4. **By pressing [MUTE], you can operate the mute settings of all channels belonging to the corresponding DCA group.**

MEMO

The user preference AUX/DCA LAYER select button (p. 178) must be set to "16Auxes + 8DCA."

Mute groups

About mute groups

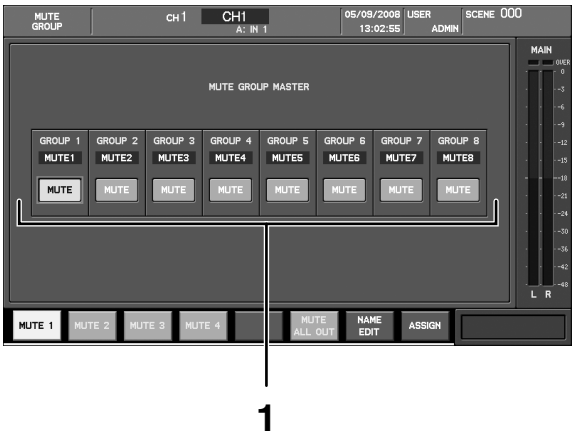
Mute grouping is a function that lets you control the mute status of multiple channels belonging to a mute group.

A channel can belong to more than one mute group.

Mute group settings

The MUTE GROUP screen is used to make mute group settings.

MUTE GROUP screen



1

1. MUTE group 1–8 buttons

These buttons turn mute groups 1–8 on/off. When you turn on a mute group, the channels belonging to that group will be muted.

In the MUTE GROUP screen, the function buttons perform the following operations.

[F1 (MUTE1)]	Turns MUTE group 1 on/off.	
[F2 (MUTE2)]	Turns MUTE group 2 on/off.	
[F3 (MUTE3)]	Turns MUTE group 3 on/off.	
[F4 (MUTE4)]	Turns MUTE group 4 on/off.	
[F6 (MUTE ALL OUT)]	Mutes all outputs of the M-400 and input/output units.	
[F7 (NAME EDIT)]	Accesses the NAME EDIT popup.	p. 147
[F8 (ASSIGN)]	Accesses the MUTE GROUP ASSIGN popup.	p. 146

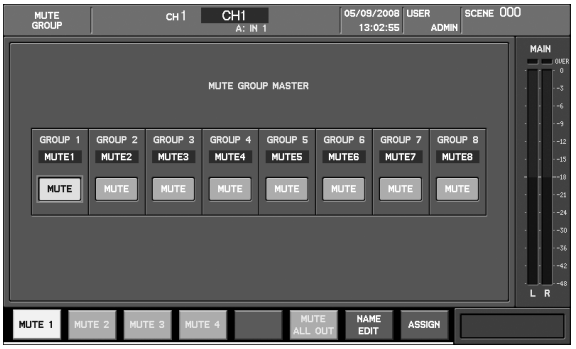
MEMO

Output muting controlled by [F6 (MUTE ALL OUT)] cannot be stored in a scene memory. When the M-400 is started up, muting caused by [F6 (MUTE ALL OUT)] will be turned off.

Accessing the MUTE GROUP screen

1. In the GROUP section, press [MUTE].

The MUTE GROUP screen will appear.



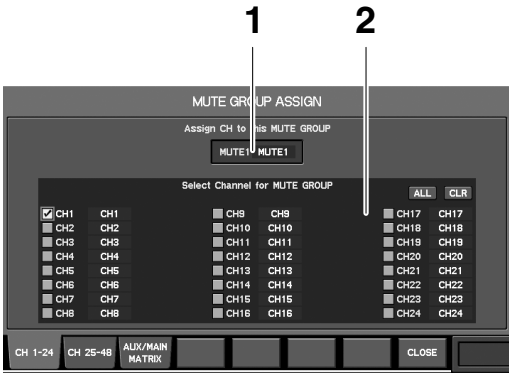
Assigning a channel to a mute group

The MUTE GROUP ASSIGN popup is used to assign a channel to a mute group.

cf.

You can also use the GROUP ASSIGN popup of the CHANNEL DISPLAY screen to assign a channel to a mute group. For details, refer to "Assigning channels to DCA groups and MUTE groups" (p. 67).

MUTE GROUP ASSIGN popup



1. Target mute group indication

This indicates the mute group to which the settings in the MUTE GROUP ASSIGN popup will apply.

2. Channel select buttons

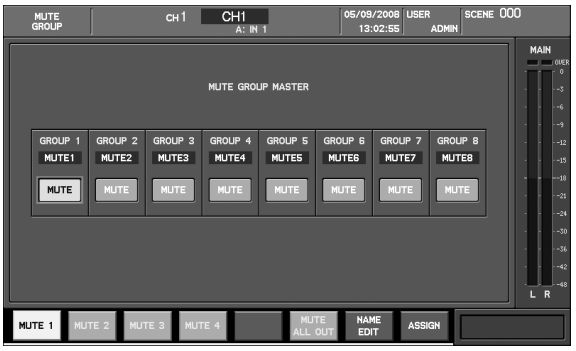
Here you can select the channels that will be assigned to the mute group.

In the MUTE GROUP ASSIGN screen, the function buttons perform the following operations.

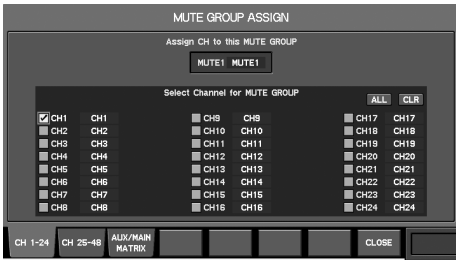
[F1 (CH 1–24)]	Displays CH1–CH24 as the channel select buttons.
[F2 (CH 25–48)]	Displays CH25–CH48 as the channel select buttons.
[F3 (AUX/MAIN/MATRIX)]	Displays AUX1–AUX16, MATRIX1–MATRIX8 and MAIN L/R as the channel select buttons.
[F8 (CLOSE)]	Closes the popup.

Accessing the MUTE GROUP ASSIGN popup

1. In the GROUP section, press [MUTE] to access the MUTE GROUP screen.



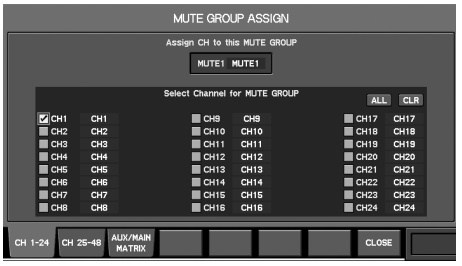
2. Move the cursor to the MUTE group button of the desired mute group, and press [F8 (ASSIGN)].



The MUTE GROUP ASSIGN popup will appear.

Assigning a channel to a mute group

1. Access the MUTE GROUP ASSIGN popup for the desired mute group.



2. Verify that the target mute group is correct.

3. Move the cursor to the desired channel select button, and press [ENTER] to select it.

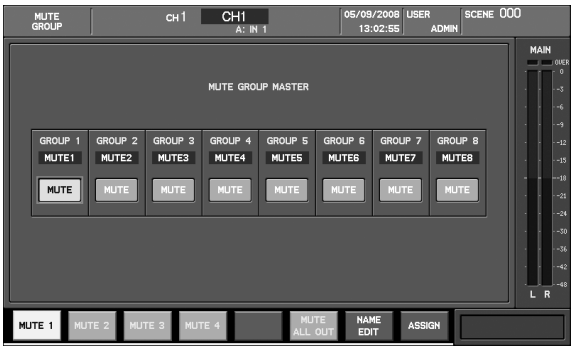
4. Press [F8 (CLOSE)] to close the popup.

MEMO

When the MUTE GROUP ASSIGN popup is displayed, you can press a top panel [SEL] to turn on/off the corresponding channel's assignment to the mute group.

Using mute groups

1. Access the MUTE GROUP screen.



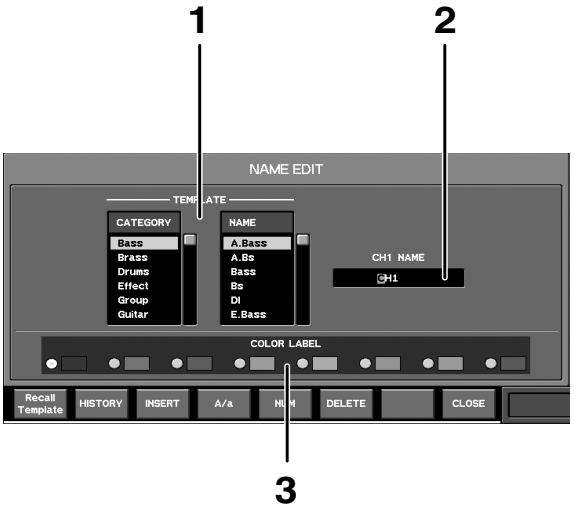
2. Move the cursor to the desired mute group button, and press [ENTER] to turn it on/off.

Specifying a name and color label for a mute group

You can specify a name and color label for each mute group. A name of up to six characters can be specified, and you can choose one of eight colors as the color label.

The NAME EDIT popup is used to edit the name and select a color label.

NAME EDIT popup



1. TEMPLATE

Here you can select a name from a list.

- **CATEGORY list**

  Here you can select a category.

- **NAME list**

  Here you can select a name from within the category you specified.

TIP

Select the CATEGORY first, and then select the NAME.

2. Name edit field

In this field you can enter any desired name.

3. Color label selection buttons

Use these buttons to select a color label for the mute group.

The function buttons perform the following operations.

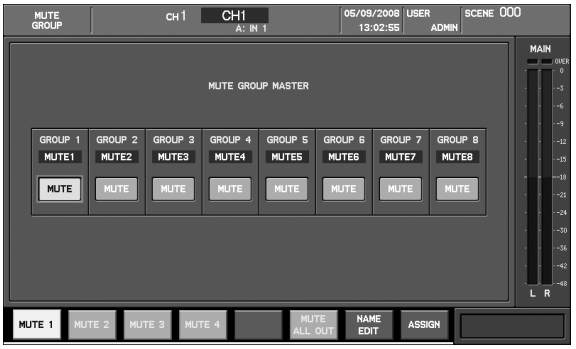
[F1 (Recall Template)]	Enters the name selected in the TEMPLATE field into the name edit field.
[F2 (HISTORY)]	Successively recalls the most recent names that were entered since the power was turned on.
[F3 (INSERT)]	Inserts a space at the cursor location. The characters to the right of the cursor location will be moved toward the right.
[F4 (A/a)]	Changes the character at the cursor location between uppercase and lowercase.
[F5 (NUM)]	Changes the character at the cursor location to "0."
[F6 (DELETE)]	Deletes the character at the cursor location. The characters to the right of the cursor location will be moved toward the left.
[F8 (CLOSE)]	Closes the popup.

MEMO

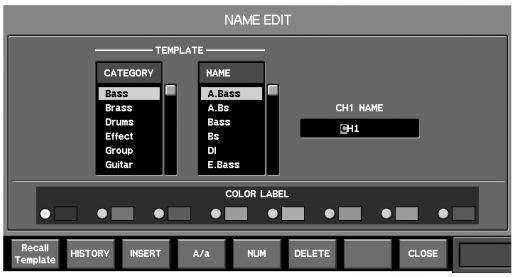
A maximum of sixteen names are remembered by HISTORY. If HISTORY becomes full, the oldest names will be deleted.

Accessing the NAME EDIT popup

1. Access the MUTE GROUP screen.



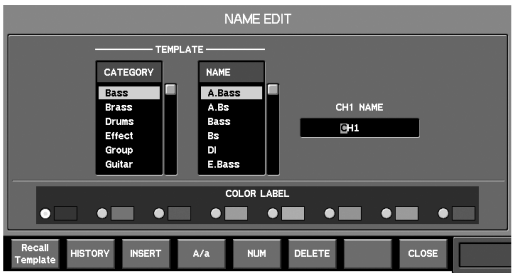
2. Move the cursor to the MUTE group fader of the desired mute group, and press [F7 (NAME EDIT)].



The NAME EDIT popup will appear.

Editing the name of a mute group

1. Access the NAME EDIT popup for the desired mute group.



2. Move the cursor to the name edit field, and edit the mute group name.

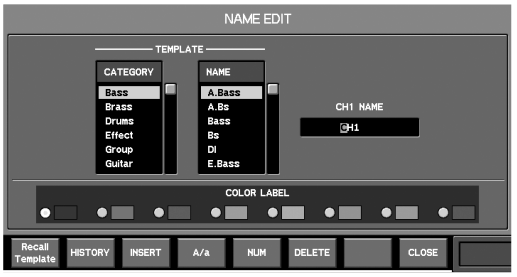
3. Press [F8 (CLOSE)] to close the popup.

cf.

For details on name editing, refer to "Editing a name" (p. 50).

Selecting a color label

1. Access the NAME EDIT popup for the desired mute group.

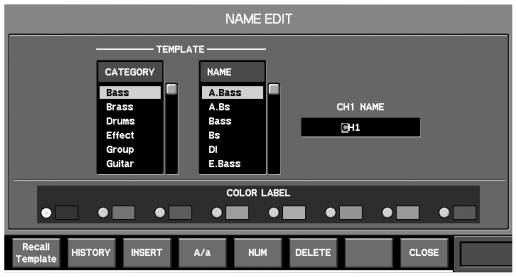


2. Move the cursor to the desired color label select button, and press [ENTER] to select it.

3. Press [F8 (CLOSE)] to close the popup.

Using a template to enter the mute group name

1. **Access the NAME EDIT popup for the desired mute group.**



2. **Move the cursor to the CATEGORY list in the TEMPLATE area, and select the category of name you want to enter.**

3. **Move the cursor to the NAME list in the TEMPLATE area, and select the name you want to enter.**

4. **Press [F1 (Recall Template)]; the selected name will be entered in the name edit field.**

5. **Move the cursor to the name edit field, and edit the name that you entered.**

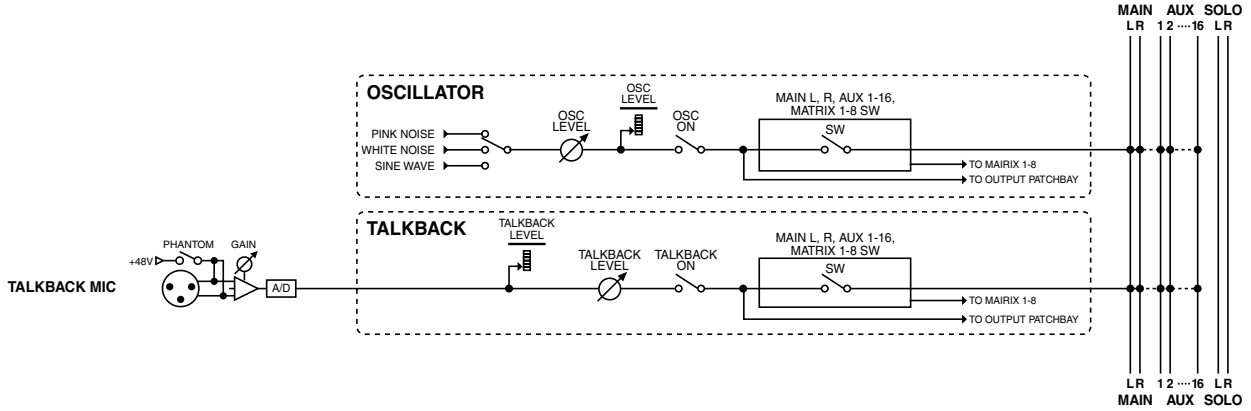
6. **Press [F8 (CLOSE)] to close the popup.**

MEMO

When you enter a name from the template list, the previous name in the name edit field will be deleted.

Talkback/Oscillator

About talkback and oscillator



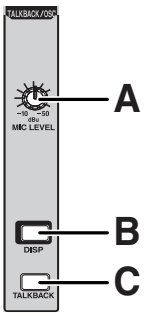
Talkback is a function that sends the input of a mic connected to the TALKBACK MIC IN on the rear panel jack to an AUX bus, MATRIX bus or the MAIN L/R bus. This is useful when the mixer operator needs to convey instructions to performers on stage or to staff.

Oscillator is a function that generates pink noise, white noise, or a sine wave, and sends it to an AUX bus or MAIN L/R. This is useful when you need to measure the acoustical response of a hall, or when checking the connections of external devices.

You can also output the talkback or the oscillator directly via the output patchbay without routing the signal through a bus.

Talkback/Oscillator section

Talkback and oscillator operations are performed in the Talkback/Oscillator section.



A. MIC LEVEL knob

This adjusts the preamp gain of the TALKBACK MIC input.

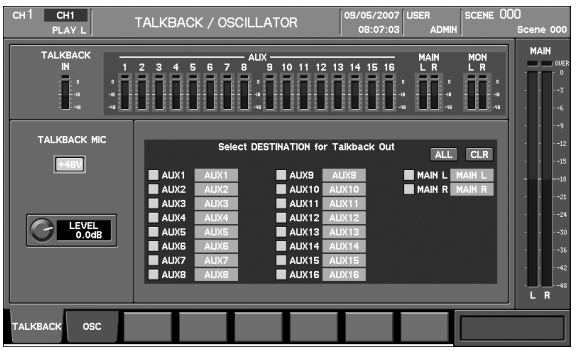
B. DISP button

This accesses the TALKBACK/OSCILLATOR screen, where you can make talkback settings and oscillator settings.

C. TALKBACK button

This turns talkback on/off. It will be lit when talkback is on.

TALKBACK/OSCILLATOR screen



Talkback and oscillator settings are made in the TALKBACK/OSCILLATOR screen.

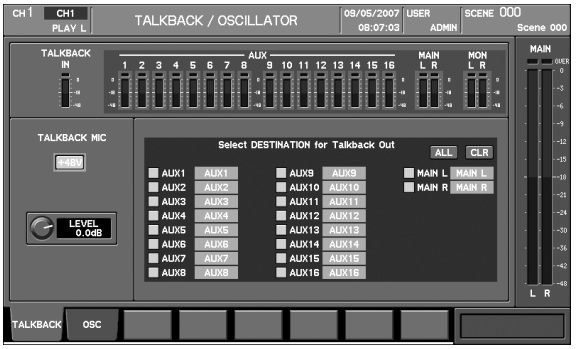
You can switch between tabs to change the content shown in the TALKBACK/OSCILLATOR screen.

In the TALKBACK/OSCILLATOR screen, the function buttons perform the following operations.

[F1 (TALKBACK)]	Accesses the TALKBACK tab, where you can make talkback settings.	p. 151
[F2 (OSC)]	Accesses the OSC tab, where you can make oscillator settings.	p. 152

Accessing the TALKBACK/OSCILLATOR screen

1. In the talkback/oscillator section, press [DISP].
The TALKBACK/OSCILLATOR screen will appear.

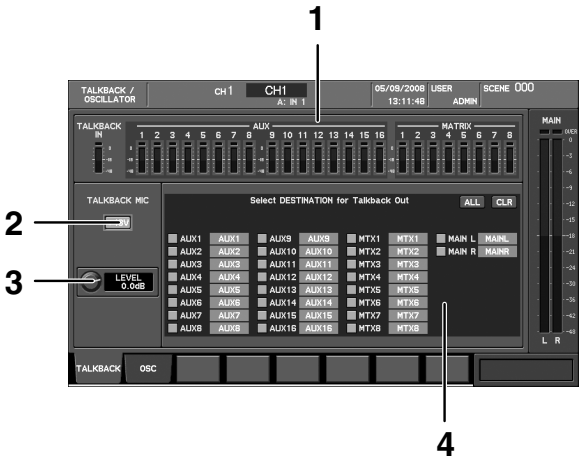


Using talkback

Talkback settings

Talkback settings are made in the TALKBACK tab of the TALKBACK/OSCILLATOR screen.

TALKBACK tab



1. Meters
This area shows the talkback input level, the AUX channel levels, and the MATRIX channel levels.

2. +48V button
This turns +48V phantom power on/off for the TALKBACK MIC IN jack.

NOTE

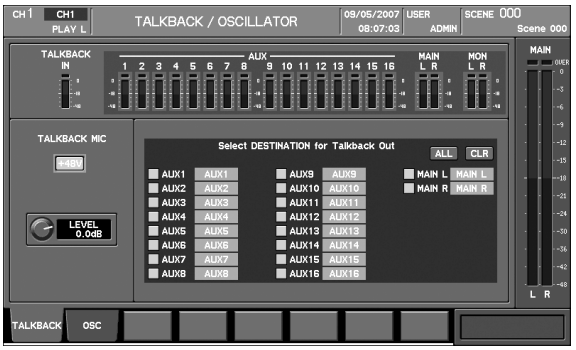
You must turn off phantom power if you've connected a device that does not require +48V phantom power. Inadvertently supplying phantom power to a dynamic microphone, audio playback device, or any other device that does not require phantom power will cause malfunctions. Carefully read the owner's manual included with the microphone or other device you're using, and check its specifications.

3. LEVEL knob
This adjusts the level at which the signal of the TALKBACK MIC IN is sent to the AUX buses, MAIN L/R bus, MATRIX buses or Output patchbay, in a range of -Inf dB–+10.0 dB.

4. Talkback output destination select buttons
These buttons select the buses to which the talkback signal will be sent.

Using talkback

1. **Connect your mic to the TALKBACK MIC IN jack located on the rear panel.**
2. **In the talkback/oscillator section, press [DISP] to access the TALKBACK/OSCILLATOR screen.**
3. **Press [F1 (TALKBACK)] to access the TALKBACK tab.**



4. **In the talkback/oscillator section, use the MIC LEVEL knob to adjust the input gain of the mic.**
   If you've connected a mic that requires +48V phantom power, use the on-screen +48V button to turn on +48V phantom power.
5. **Use the talkback output destination select buttons to select the bus to which the talkback signal will be sent.**
6. **In the talkback/oscillator section, press [TALKBACK] to send the talkback signal to the bus you selected in step 5.**

MEMO

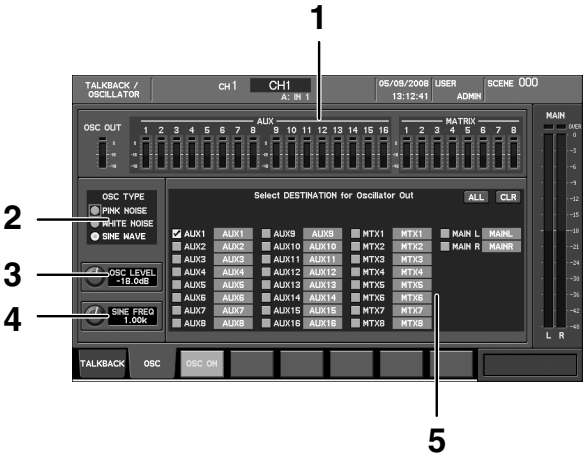
If talkback is on, [TALKBACK] will lit in the talkback/oscillator section.

The way in which [TALKBACK] turns on/off will depend on how you press the button.
If you press and immediately release the button, the button will operate in Latch mode, alternately turning talkback on or off.
If you press and hold down the button, the button will operate in Momentary mode, and talkback will remain on only while you continue holding down the button.

Using the oscillator

Oscillator settings are made in the OSC tab of the TALKBACK/OSCILLATOR screen.

OSC tab



1. **Meters**
   This area shows the oscillator output level, the AUX channel levels and the MATRIX channel levels.
2. **Oscillator type select buttons**
   You can select the type of signal generated by the oscillator from the following choices.

PINK NOISE	Pink noise will be generated.
WHITE NOISE	White noise will be generated.
SINE WAVE	A sine wave will be generated.

3. **OSC LEVEL knob**
   This adjusts the level at which the signal generated by the oscillator is sent to the AUX buses, MAIN L/R bus, MATRIX buses or Output patchbay, in a range of -Inf dB–0.0 dB.
4. **SINE FREQ knob**
   When the oscillator type is SINE WAVE, this adjusts the frequency of the sine wave in a range of 20 Hz–20 kHz.
5. **Oscillator output destination select buttons**
   These buttons select the buses to which the oscillator will be sent.

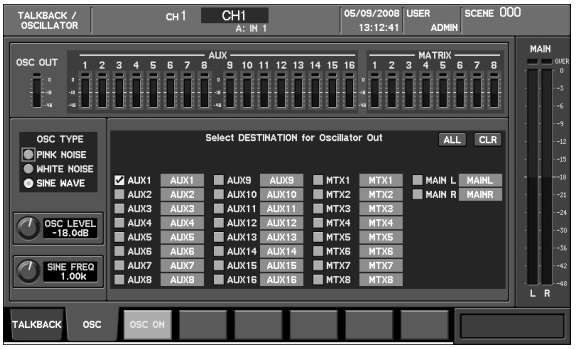
Function buttons specific to the OSC tab perform the following operations.

[F3 (OSC ON)]	Turns the oscillator on/off.

Using the oscillator

1. **In the talkback/oscillator section, press [DISP] to access the TALKBACK/OSCILLATOR screen.**

2. **Press [F2 (OSC)] to access the OSC tab.**



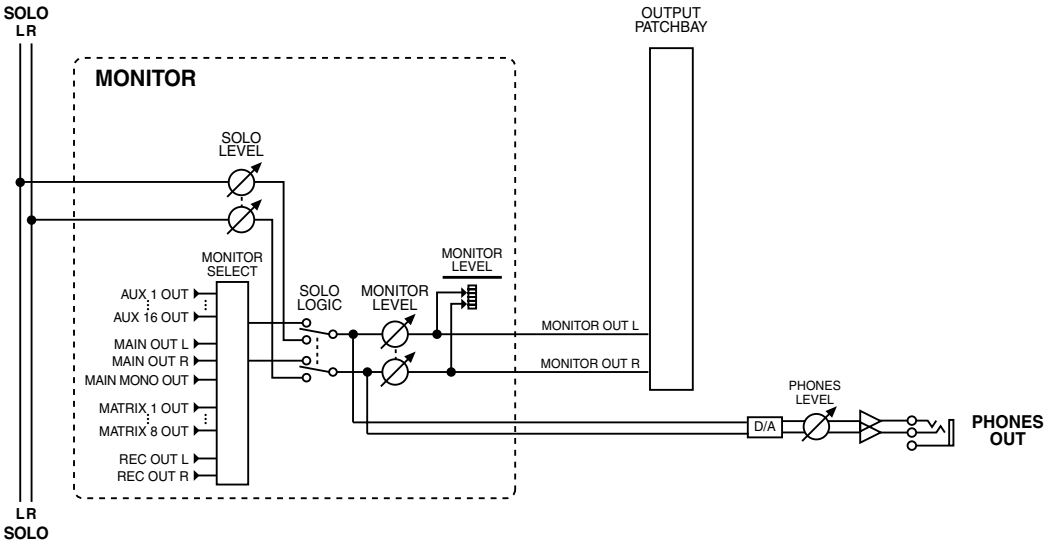
3. **Use the oscillator type select buttons to select the type of signal you want to generate.**

4. **Use the oscillator output destination select buttons to select the bus to which the oscillator will be sent.**

5. **When you press [F3 (OSC ON)] to turn it on, the oscillator signal will be sent to the bus you selected in step 4.**

Monitor/Solo

About monitoring



Monitoring is a function by which the AUX channel, MATRIX channel, MAIN L/R, or USB memory recorder signal that you select as the monitor source can be sent from the output jacks or headphone jack. This is used mainly by a mixing engineer to monitor the signals.

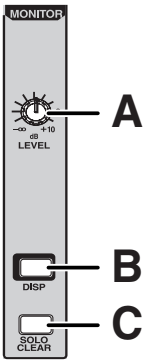
The monitor output is split to the MONITOR OUT L/R and PHONES OUT, and the level of these two can be adjusted independently. You can use the output patchbay to patch MONITOR OUT L/R to any desired output jacks.

Solo is a function by which the channel you select using a [SOLO] button is sent from the MONITOR OUT L/R or PHONES OUT jacks. This is used to monitor a channel temporarily.

Normally, the monitor signal will be output to MONITOR OUT L/R and PHONES. Solo is enabled when you turn on Solo for a channel; the signal of the channel for which Solo was turned on will be automatically sent to the Monitor output.

Operations in the MONITOR section

The top panel MONITOR section is used to perform Monitor/Solo operations.



A. LEVEL knob

This adjusts the monitor output level in a range of -Inf dB–+10.0 dB.

B. DISP button

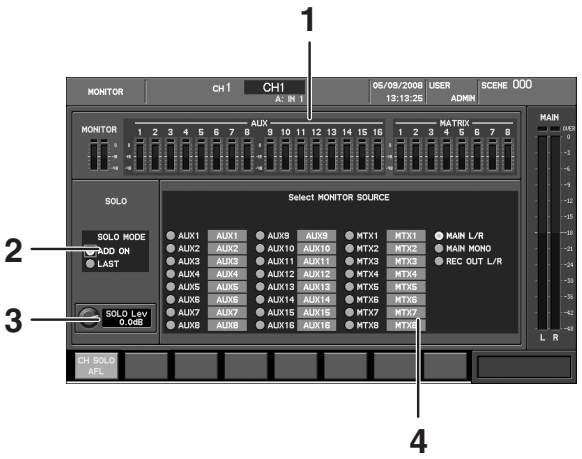
This accesses the MONITOR screen, where you can make monitor and solo settings.

C. SOLO CLEAR button

This turns off the solo settings of all channels.

It will blink if any channels are currently being soloed.

MONITOR screen



1. Meters

These indicate the level of the MONITOR, AUX channels and MATRIX channels.

2. SOLO MODE select buttons

These select the solo mode from the following choices.

ADD ON	Channels whose [SOLO] are on will be mixed for monitoring.
LAST	Only the channel whose [SOLO] was turned on most recently will be monitored.

3. SOLO Lev knob

This adjusts the solo level in a range of -Inf dB–+10.0 dB.

MEMO

The solo output level is affected not only by the SOLO Lev knob, but also by the LEVEL knob in the monitor section or by the LEVEL knob of the PHONES jack.

4. Monitor source select buttons

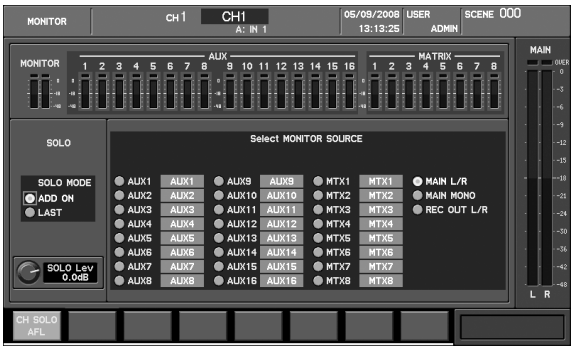
These select the monitor source.

In the MONITOR screen, the function buttons perform the following operations.

[F1 (CH SOLO AFL)]	Selects the point from which the signal will be sent from the input channel to solo. If this is on, the post-pan signal of the channel will be sent. If this is off, the pre-fader signal will be sent.

Accessing the MONITOR screen

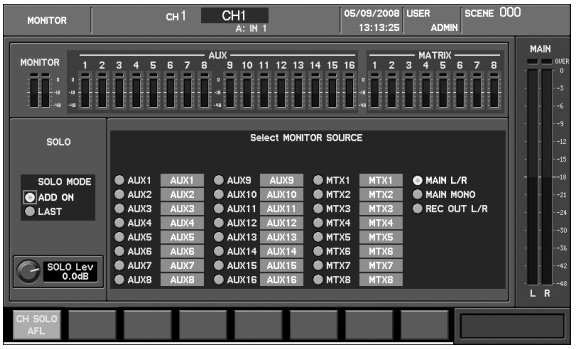
1. In the top panel MONITOR section, press [DISP].



The MONITOR screen will appear.

Using Monitor

1. In the top panel MONITOR section, press [DISP].



The MONITOR screen will appear.

2. Use the monitor source select buttons to select the desired monitor source.

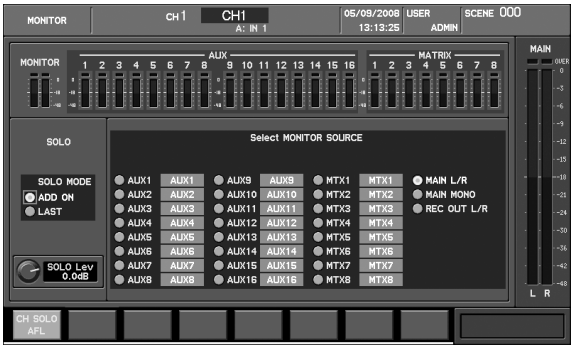
The monitor signal will be output from the output jacks to which MONITOR OUT L/R are patched, and from the PHONES jack.

3. Use the MONITOR section's LEVEL knob or the PHONES LEVEL knob to adjust the monitor output level.

By default, MONITOR L/R is patched to CONSOLE OUT 7/8 and to DIGITAL OUT. You can use the output patchbay to change the output destination. For details, refer to "Output patchbay operations" (p. 118).

Using Solo

1. In the top panel MONITOR section, press [DISP].



The MONITOR screen will appear.

2. Use the SOLO MODE select buttons to select the desired solo mode.

3. Use [F1 (CH SOLO AFL)] to select the point from which the input channel signal will be sent to solo.

4. On the top panel, press [SOLO] for the desired channel.

The signal of that channel will be sent to Solo, and output from the output jacks to which MONITOR OUT L/R are patched, and from the PHONES jack.

5. Use the SOLO Lev knob to adjust the solo level.

6. Use the MONITOR section's LEVEL knob or the PHONES LEVEL knob to adjust the monitor output level.

If the solo mode is ADD ON, soloing will be controlled so that input channels, output channels (AUX channels, MATRIX channels and MAIN L/R channels), and DCA groups are not soloed at the same time. If the Solo mode is ADD ON, the selection will be controlled so that the solo signal does not include both input channels and output channels (AUX channels and MAIN L/R channel). For example, if an input channel is soloed, and you turn on Solo for an AUX channel, the solo setting of the input channel will be defeated and Solo will be turned on for the AUX channel.

Scene memory

About scene memory

Scene memory is a function that lets you store mixer parameters as a scene, and recall them when desired. Scene memory is a function that lets you store and recall mixing parameters as "scenes." The M-400 can store 300 scenes in its internal memory, and you can assign a sixteen-character name to each scene.

The following scene functions are also provided.

- **Lock**
  Prohibits overwriting, deletion, renaming, or editing for the scene. (p. 160)
- **Recall Filter function**
  Specifies the parameters that will be recalled for each scene. (p. 160)
- **Global Scope function**
  Specifies the region (channels, parameters) that will be recalled for all scenes. (p. 163)

The following mixer parameters are stored in a scene.

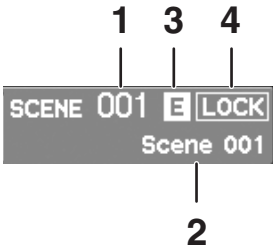
- Preamp (input/output unit, and the M-400's CONSOLE INPUT)
- Input patchbay
- Output patchbay
- CH1–CH48
- AUX1–AUX16, MATRIX1–MATRIX8, MAIN L/R
- Effects
- Talkback/Oscillator
- DCA groups, MUTE groups
- USB memory recorder

MEMO

The following parameter are not stored in a scene.

- The status of the TALKBACL button.
- The position of the TALKBACK MIC LEVEL knob.
- The status of the TALKBACK phantom power.
- The setting of the monitor.
- The statuses of the SOLO buttons.
- The recorder status (eg, playing or recording) of the USB memory recorder.
- The playback mode of the USB memory recorder.
- The song selection of the USB memory recorder.

About the scene indication in the top display area



Basic information about the scene is shown in the top display area.

1. Scene number

This indicates the number of the currently selected scene. If the number is blinking, a number other than the current scene number is selected.

MEMO

The current mixer parameters are referred to as the current scene. The scene number that was most recently recalled or stored is called the "current scene number."

2. Scene name

This indicates the name of the currently selected scene. The scene name is not shown for a blank scene (a scene in which nothing has been stored).

3. E symbol

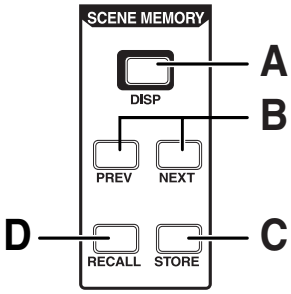
This will be shown if the mixer parameters have been edited after the scene was recalled or stored.

Since this means that the mixer parameters no longer match the data in scene memory, you'll need to store them into a scene memory if you want to keep them.

4. LOCK symbol

This indicates whether the currently selected scene is locked. You cannot store to a locked scene or delete it.

SCENE MEMORY section



The top panel SCENE MEMORY section is used to perform scene memory operations.

A. DISP button
This accesses the SCENE screen, where you can manage the scene list and make scene settings.

B. PREV, NEXT buttons
Use these buttons to return to the previous scene or advance to the next scene.

TIP
Simply changing the scene number does not cause a scene to be recalled or stored.

C. STORE button
This stores the current mixer parameters into the currently selected scene number.

D. RECALL button
This recalls the mixer parameters from the currently selected scene number.

TIP
You can't recall a blank scene.

Storing the mixer parameters into scene memory

1. **Use [PREV] or [NEXT] to select the store-destination scene number.**

2. **Press [STORE].**



A confirmation message will ask you to confirm the scene storage operation.

3. **Press [F8 (STORE)] to execute the Store operation.**

   The operation will be cancelled if you press [F7 (CANCEL)].

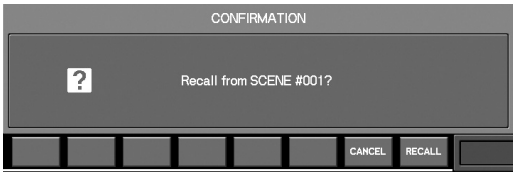
MEMO
If the "SCENE/LIB STORE" button located in the CONFIRMATION area of User Preferences (p.161) is not selected, no confirmation message will appear in step 2.

MEMO
If "LOCK" is indicated next to the scene number, that scene is locked, and you can't store to it. Use the SCENE screen if you want to unlock the scene. For details, refer to "Locking or unlocking a scene" (p. 160).

Recalling a scene memory to the mixer parameters

1. **Use [PREV] or [NEXT] to select the scene number that you want to recall.**

2. **Press [RECALL]**



A confirmation message will ask you to confirm the scene recall operation.

3. **Press [F8(RECALL)] to execute the Recall operation.**

   The operation will be cancelled if you press [F7 (CANCEL)].

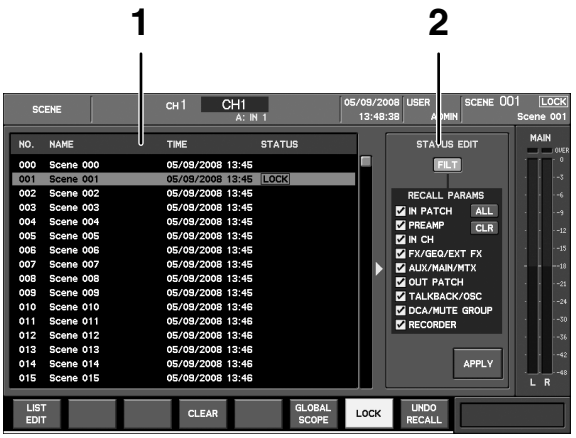
MEMO
If the "SCENE/LIB RECALL" button located in the CONFIRMATION area of User Preferences (p.161) is not selected, no confirmation message will appear in step 2.

NOTE
Noise may occur when you recall a scene, but this is not a malfunction.

Operations in the SCENE screen

The SCENE screen is used to edit the scene list and make various scene settings.

SCENE screen



1. Scene list

This is a list of the scenes. The current scene is shown in green.

The list shows the following items.

Item	Explanation
NO.	Indicates the scene number.
NAME	Indicates the scene name.
TIME	Indicates the date and time at which the scene was stored.
STATUS	If the scene Lock or Recall Filter function is on, this area will indicate LOCK or FILT respectively.

2. STATUS EDIT field

Here you can edit the STATUS items of the scene that is selected in the scene list. The settings in the STATUS EDIT field are applied when you press the APPLY button.

- **FILT button**

  Turns the Recall Filter function on/off.

- **Recall parameter select buttons**

  These buttons select the parameters that will be recalled by the Recall Filter function.

  You can specify the following recall parameters.

IN PATCH	Input patchbay settings
PREAMP	Preamp 1 (gain, +48V phantom power, pad) settings
IN CH	Input channel settings
FX/GEQ/EXT FX	Effect, 31-band GEQ, and external insert settings
AUX/MAIN/MTX	AUX channel, MATRIX channel and MAIN L/R channel settings
OUT PATCH	Output patchbay settings
TALKBACK/OSC	Talkback/Oscillator settings
DCA/MUTE GROUP	DCA group/Mute group settings
RECORDER	USB memory recorder settings

- **APPLY button**

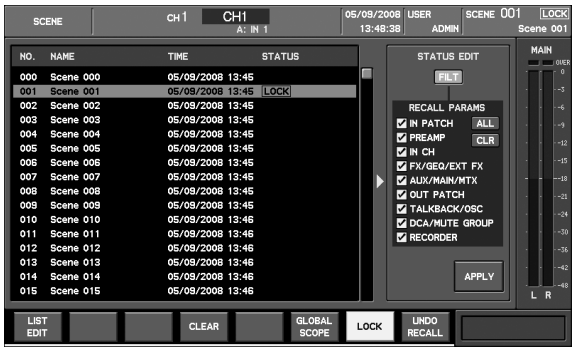
  Applies the settings of the STATUS EDIT field.

In the SCENE screen, the function buttons perform the following operations.

Button	Function	Reference page
[F1 (LIST EDIT)]	Accesses the SCENE LIST EDIT popup, where you can edit the scene list.	p. 161
[F4 (CLEAR)]	Erases the content of the scene selected in the scene list, returning it to a blank scene.	
[F6 (GLOBAL SCOPE)]	Accesses the GLOBAL SCOPE popup.	p. 163
[F7 (LOCK)]	Locks or unlocks the scene that's selected in the scene list.	p. 160
[F8 (UNDO RECALL)]	Undoes (cancels) or redoes the recall operation you last performed.	

Accessing the SCENE screen

1. **In the SCENE MEMORY section, press [DISP].**



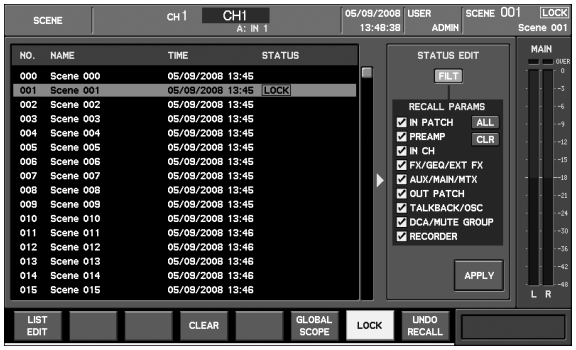
The SCENE screen will appear.

Editing the status of a scene

For each scene you can make Lock and Recall Filter settings.

Locking or unlocking a scene

1. **Access the SCENE screen.**

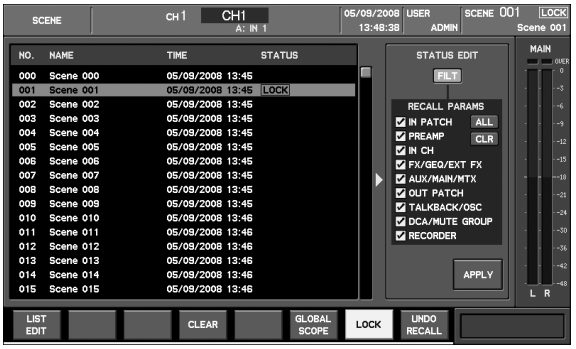


2. **Select the desired scene from the scene list.**

3. **Press [F7 (LOCK)] to lock or unlock the scene.**

Using the Recall Filter function

1. **Access the SCENE screen.**



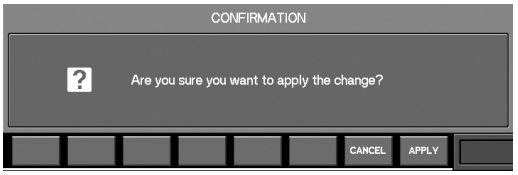
2. **Select the desired scene from the scene list.**

3. **Press the right cursor button to move the cursor to the FILT button of the STATUS EDIT field.**

4. **Press [ENTER] to turn FILT on.**

5. **Use the recall parameter select buttons to select the parameters that you want to recall.**

6. **Move the cursor to the APPLY button and press [ENTER].**

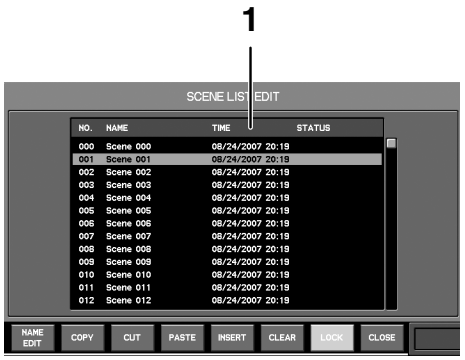


A message will ask you to confirm the Apply operation.
Press [F8 (APPLY)] to apply the change to the scene list.
If you press [F7 (CANCEL)], the operation will be cancelled.

Editing the scene list

The SCENE LIST EDIT popup is used to edit the scene list.

SCENE LIST EDIT popup



In the SCENE LIST EDIT popup you can edit the scene names, and copy, cut, paste, insert, or clear scenes in the list.

1. Scene list

This is a list of the scenes.

cf.

The items shown in the scene list are the same as in the scene list of the SCENE screen (p. 159).

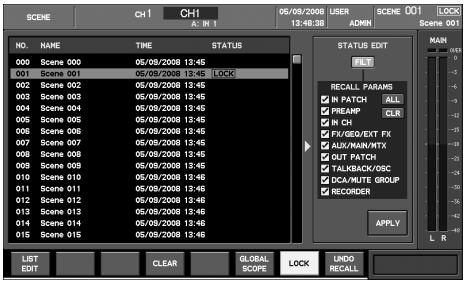
In the SCENE LIST EDIT popup, the function buttons perform the following operations.

Button	Function	Reference page
[F1 (NAME EDIT)]	Accesses the NAME EDIT popup, where you can edit the scene name.	p. 161
[F2 (COPY)]	Copies the scene selected in the scene list.	p. 162
[F3 (CUT)]	Cuts (removes) the scene selected in the scene list.	p. 162
[F4 (PASTE)]	Pastes the copied or cut scene to the selected number.	p. 162
[F5 (INSERT)]	Inserts the copied or cut scene to the selected number.	p. 162
[F6 (CLEAR)]	Erases the content of the scene selected in the scene list, returning it to a blank scene.	p. 162
[F7 (LOCK)]	Locks or unlocks the scene that's selected in the scene list.	
[F8 (CLOSE)]	Closes the popup.	

When you use [F2 (COPY)] or [F3 (CUT)], the contents of the selected scene will be temporarily saved in the clipboard. [F4 (PASTE)] or [F5 (INSERT)] paste or insert the contents that were saved in the clipboard. The contents of the clipboard will disappear when you close the SCENE LIST EDIT popup.

Accessing the SCENE LIST EDIT popup

1. Access the SCENE screen.



2. Press [F1 (LIST EDIT)].

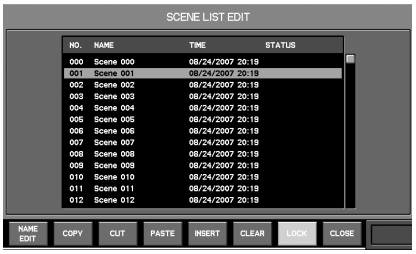


The SCENE LIST EDIT popup will appear.

Editing the name of a scene

You can assign a name of up to sixteen characters to each scene.

1. Access the SCENE LIST EDIT popup.



2. From the scene list, select the scene whose name you want to edit.

3. Press [F1 (NAME EDIT)].



The NAME EDIT popup will appear.

4. Move the cursor to the name edit field, and edit the scene name.

5. Press [F8 (CLOSE)] to close the popup.

cf.

For details on name editing, refer to "Editing a name" (p. 50).

MEMO

You can't edit the name of a scene that is locked.

Copying a scene to another number

1. **Access the SCENE LIST EDIT popup.**
2. **From the scene list, select the copy-source scene, and press [F2 (COPY)].**



A message will ask you to confirm the Copy operation.
Press[F8 (COPY)] to save the selected scene in the clipboard.
If you press [F7 (CANCEL)], the operation will be cancelled.

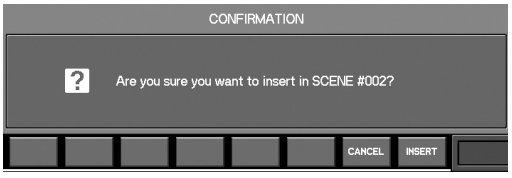
3. **Select the desired copy-destination scene from the scene list.**
4. **Press [F4 (PASTE)] or [F5 (INSERT)] to copy the scene.**

If you press [F4 (PASTE)], a message will ask you to confirm the Paste operation.



Press [F8 (PASTE)] to carry out the Paste operation. The scene you selected in step 2 will be overwritten onto the number you selected in step 3.
If you press [F7 (CANCEL)], the operation will be cancelled.

If you press [F5 (INSERT)], a message will ask you to confirm the Insert operation.



Press [F8 (INSERT)] to carry out the Insert operation. The scene you selected in step 3 and all subsequent scene will be renumbered upward by one, and the scene you copied in step 2 will be copied to the number you selected in step 3.
If you press [F7 (CANCEL)], the operation will be canceled.

MEMO

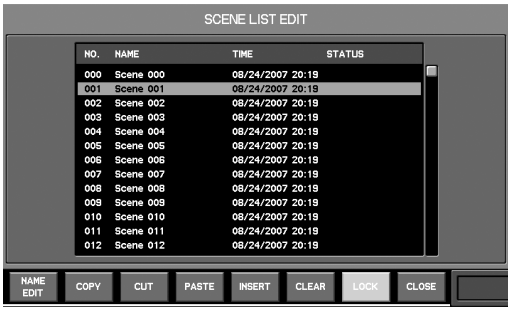
If a scene exists at scene number 299, you won't be able to use [F5 (INSERT)] to insert a scene.

MEMO

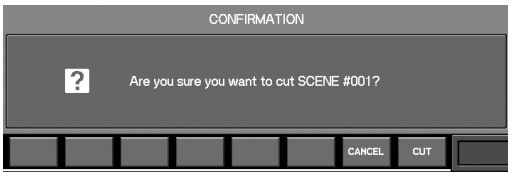
You can't paste to a scene that's locked.

Cutting a scene

1. **Access the SCENE LIST EDIT popup.**



2. **From the scene list, select the scene that you want to cut, and press [F3 (CUT)].**



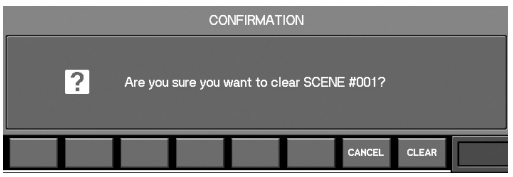
A message will ask you to confirm Cut operation.
Press [F8 (CUT)] to carry out the Cut operation. The selected scene will be cut, and the numbers that follow the selected scene number will be renumbered downward by one.
If you press [F7 (CANCEL)], the operation will be cancelled.

TIP

Following step 2, you can use [F4 (PASTE)] or [F5 (INSERT)] to paste or insert the cut scene to any desired scene number.

Erasing the contents of a scene

1. **Access the SCENE LIST EDIT popup.**
2. **From the scene list, select the scene whose contents you want to erase.**
3. **Press [F6 (CLEAR)].**
   A message will ask you to confirm the Clear operation.



Press [F8 (CLEAR)] to carry out the Clear operation. The contents of the scene you selected in step 2 will be erased.
If you press [F7 (CANCEL)], the operation will be cancelled.

MEMO

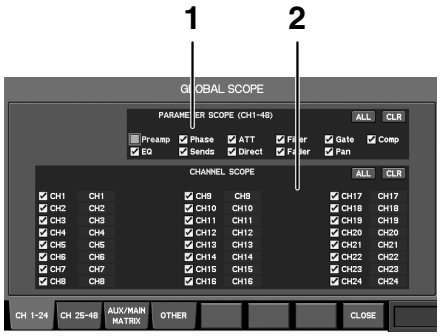
You can't erase a scene that is locked.

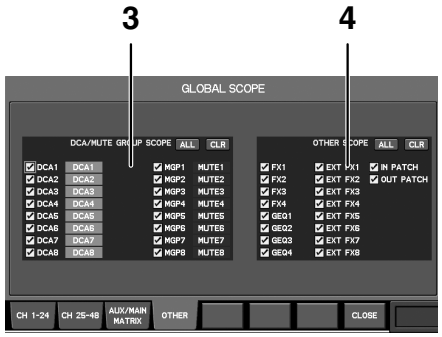
The Global Scope function

Global Scope is a function that lets you limit the channels and parameters that will be recalled; its settings apply to all scenes.

The GLOBAL SCOPE popup is used to make settings for the Global Scope function.

GLOBAL SCOPE popup





1. Parameter recall scope buttons (CH 1–24, CH 25–48, AUX/MAIN/MATRIX tab)

These buttons specify the scope of the parameters that will be recalled for the channels selected by the channel recall scope buttons.

Select the parameters that you want to include in the scope of recall, and de-select the parameters that you don't want to be recalled.

The parameter recall scope buttons correspond to the following parameters.

For CH1–CH48

Item	Explanation
Preamp	Preamp gain, pad, and +48V phantom power
Phase	Phase
ATT	Attenuator
Filter	Filter
Gate	Gate/Expander
Comp	Compressor
EQ	Four-band EQ
Sends	AUX sends
Direct	Direct out point
Fader	Faders
Pan	Pan

For AUX/MAIN/MATRIX

Item	Setting
ATT	Attenuator
EQ	Four-band EQ
Sends	AUX/MAIN sends
Fader	Faders
Balance	Balance
Limiter	Limiter

2. Channel recall scope buttons

These buttons specify the channels that will be included in the recall scope.

Select the channels that you want to include in the scope of recall, and de-select the channels that you don't want to be recalled.

3. DCA/MUTE group recall scope buttons

These buttons specify the DCA/MUTE groups that will be included in the recall scope.

Select the DCA/MUTE groups that you want to include in the scope of recall, and de-select the DCA/MUTE groups that you don't want to be recalled.

4. OTHER parameter recall scope buttons

Use these to specify other parameters that will be included in the scope of recall.

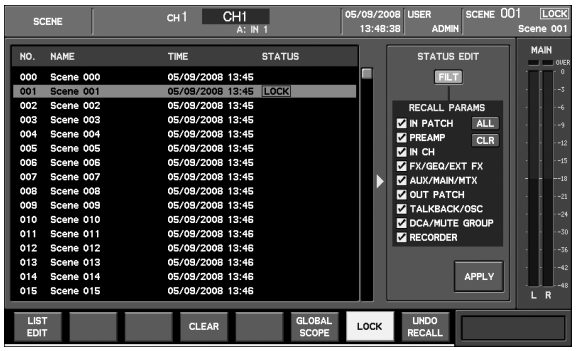
Select the parameters that you want to include in the scope of recall, and de-select the parameters that you don't want to be recalled.

In the GLOBAL SCOPE popup, the function buttons perform the following operations.

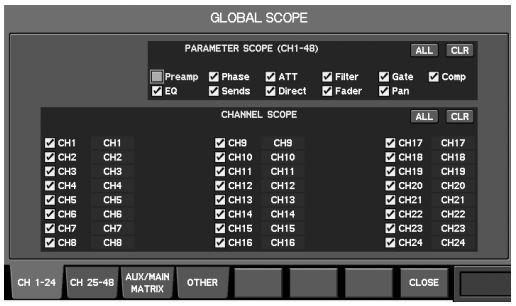
Button	Function
[F1 (CH 1–24)]	Displays CH1–CH24 as the channel recall scope buttons.
[F2 (CH 25–48)]	Displays CH25–CH48 as the channel recall scope buttons.
[F3 (AUX/MAIN/MATRIX)]	Displays AUX1–AUX16, MATRIX1–MATRIX8 and MAIN L/R as the channel recall scope buttons.
[F4 (OTHER)]	Displays the DCA/MUTE group recall scope buttons and the OTHER parameter recall scope buttons.
[F8 (CLOSE)]	Closes the popup.

Using the Global Scope function

1. **Access the SCENE screen.**



2. **Press [F6 (GLOBAL SCOPE)].**



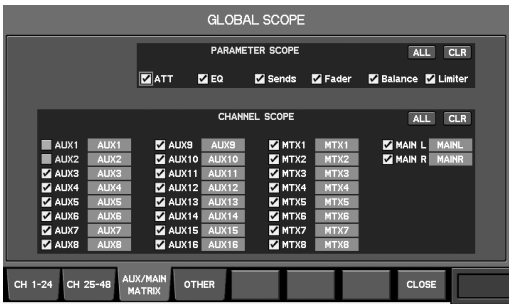
The GLOBAL SCOPE popup will appear.

3. **Use the channel recall scope buttons of [F1 (CH 1–24)] and [F2 (CH 25–48)] to specify the channel recall scope.**



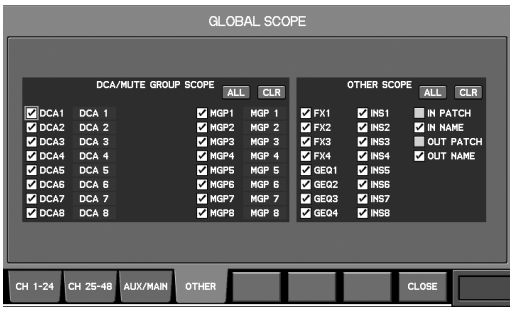
4. **Specify the scope of parameters that will be recalled for the channels you selected in step 3 using the channel recall scope buttons.**

5. **Use the channel recall scope buttons of [F3 (AUX/MAIN/MATRIX)] to specify the channel recall scope.**



6. **Specify the scope of parameters that will be recalled for the channels you selected in step 5 using the channel recall scope buttons.**

7. **Use the DCA/MUTE group recall scope buttons of [F5 (OTHER)] to specify the DCA/MUTE groups that will be recalled.**



8. **Use the OTHER parameter recall scope buttons of [F5 (OTHER)] to specify the other parameters that will be recalled.**

USB memory recorder

About the USB memory recorder

The M-400 provides a two-track recorder function that uses USB memory. This function allows you to choose any two sources from AUX1–AUX16, MAIN L, MAIN MONO, MATRIX1–MATRIX8 and MAIN R and record the audio signal to USB memory as a WAV file, or to play back a WAV file from USB memory.

About WAV files

The recorded WAV files will be in the following formats.
The sampling frequency of the recorded WAV file will be the same as the sampling frequency of the M-400.

Sampling frequency	Bit depth	Number of channels
48 kHz	16 bits	2 channels
44.1 kHz	16 bits	2 channels

WAV files in the following formats can be played.
If the sampling frequency of the WAV file differs from the sampling frequency of the M-400 itself, the file will be resampled and played back.

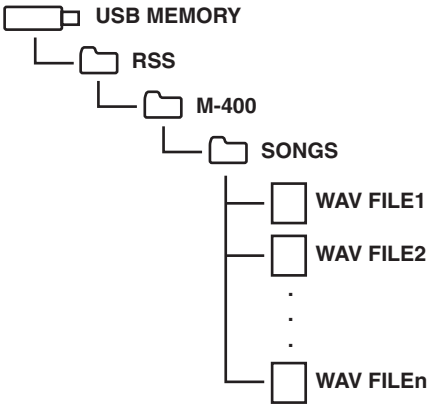
Sampling frequency	Bit depth	Number of channels
48 kHz	16 bits	1 channel
48 kHz	16 bits	2 channels
44.1 kHz	16 bits	1 channel
44.1 kHz	16 bits	2 channels

MEMO

The M-400 cannot display filenames that use multi-byte characters such as Japanese.

Location of the WAV files

WAV files will be recorded in the "/RSS/M-400/SONGS" folder of the USB memory, and WAV files in the same folder can be played.



NOTE

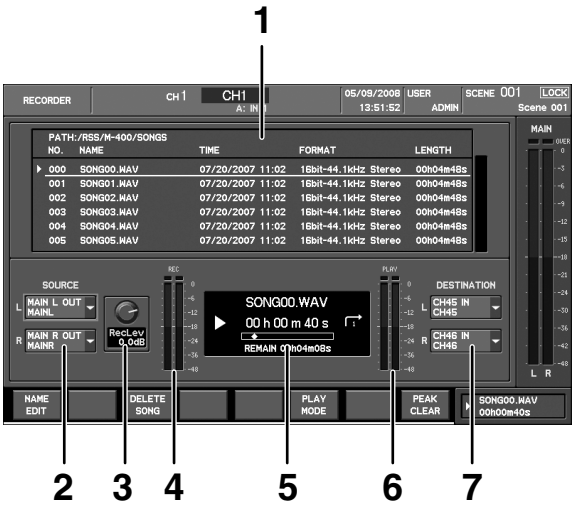
Do not disconnect the USB memory or power-off the M-400 while data is being saved to USB memory. Doing so may damage the data saved on USB memory.

About USB memory
The USB memory used by the USB memory recorder must be able to read or write data with sufficient speed when used with the M-400. To check the speed of USB memory, use the SYSTEM screen USB MEMORY popup (p. 203).

Using the USB memory recorder

USB memory recorder settings are made in the RECORDER screen.

RECORDER screen



The USB memory recorder plays WAV files located in the "/RSS/M-400/SONGS" folder of USB memory in the order of their name.

1. Song list

This area shows the WAV files in the SONGS folder. The WAV file currently being recorded or the WAV file selected for playback will be underlined.

NO.	Indicates the alphabetical order of the WAV files.
NAME	Indicates the name of the WAV file.
TIME	Indicates the date and time that the WAV file was last edited.
FORMAT	Indicates the format of the WAV file.
LENGTH	Indicates the time length of the WAV file.

MEMO

To select songs in the song list, use [I◄◄] and [►►I] of the USB MEMORY RECORDER section.

2. RECORDER SOURCE SELECT popup buttons

These buttons access the RECORDER SOURCE SELECT popup, where you can select the input source for the USB memory recorder. The current input source channel is shown on the button. This can be set separately for the L and R channels.

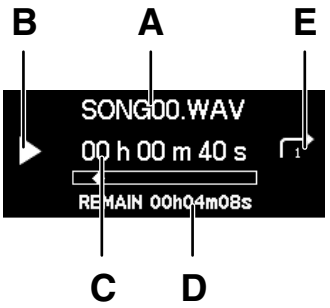
3. RecLev knob

This adjusts the recording level of the USB memory recorder in a range of -Inf dB–+10.0 dB.

4. REC meter

This indicates the recording level of the USB memory recorder.

5. Recorder display



A. WAV file name

This indicates the name of the WAV file currently being recorded or currently selected for playback.

B. Recorder status

This indicates the recording or playback status of the USB memory recorder.



Playing



Record-ready or recording

C. Time indication

This indicates time information for the WAV file currently being recorded or played.

D. REMAIN

If a WAV file is playing, this indicates the remaining playback time of the WAV file.

During recording, this indicates the remaining amount of time that can be recorded to USB memory.

E. Playback mode

This indicates the playback mode. The following playback modes are provided.



Play one song



Repeat one song



Play to the last song



Repeat all songs

6. PLAY meter

This indicates the playback level of the USB memory recorder.

7. RECORDER DESTINATION SELECT popup buttons

These buttons access the RECORDER DESTINATION SELECT popup, where you can select the output destination for the USB memory recorder. The current output destination channel is shown on the button. This can be set separately for the L and R channels.

MEMO

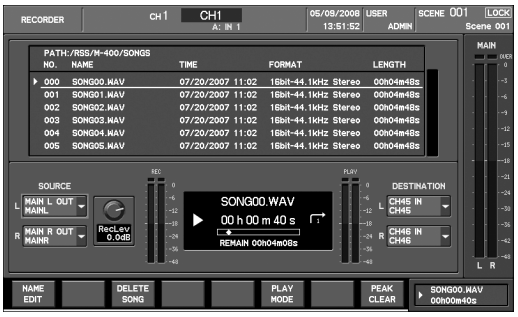
The PLAY meter will not work if no output destination for the USB memory recorder has been specified by the RECORDER DESTINATION SELECT popup buttons.

In the RECORDER screen, the function buttons perform the following operations.

[F1 (NAME EDIT)]	Accesses the NAME EDIT pop-up, where you can edit the name of the WAV file.	p. 169
[F3 (DELETE SONG)]	Deletes the WAV file that's selected in the song list.	p. 169
[F6 (PLAY MODE)]	Cycles through the available playback modes.	
[F8 (PEAK CLEAR)]	Clears the level meter's peak hold or over indication.	

Accessing the RECORDER screen

1. In the USB MEMORY RECORDER section, press [DISP].



The RECORDER screen will appear.

Specifying the input/output for the USB memory recorder

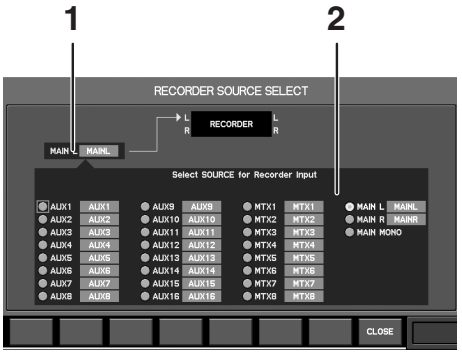
By default, the input and output of the USB memory recorder are specified as follows.

Input	Input source
RECORDER IN L	MAIN L
RECORDER IN R	MAIN R

Output	Output destination
RECORDER OUT L	CH45
RECORDER OUT R	CH46

The RECORDER SOURCE SELECT popup and RECORDER DESTINATION SELECT popup are used to specify the input and output.

RECORDER SOURCE SELECT popup



1. Current source indication

This indicates the current input source.

2. Input source channel select buttons

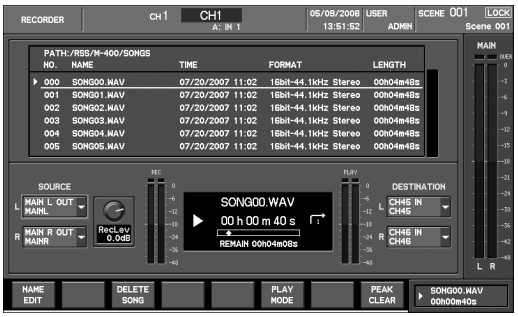
Use these to select the input source channel for the USB memory recorder.

The function buttons perform the following operations.

[F8 (CLOSE)]	Closes the popup.

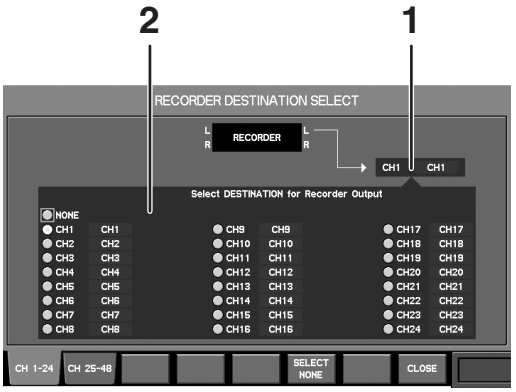
Specifying the input source

1. **Access the RECORDER screen.**



2. **Move the cursor to the L channel of the RECORDER SOURCE SELECT popup, and press [ENTER].**
   The RECORDER SOURCE SELECT popup will appear.
3. **Move the cursor to the channel that you want to use as the input source, and press [ENTER] to select it.**
4. **Press [F8 (CLOSE)] to close the popup.**
5. **Make settings for the R channel in the same way.**

RECORDER DESTINATION SELECT popup



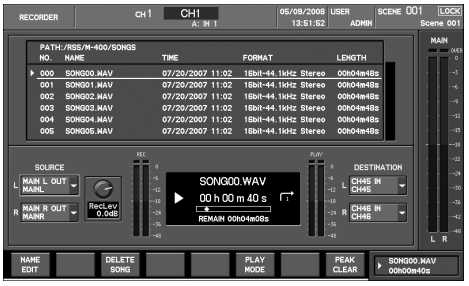
1. **Current destination indication**
   This indicates the current output-destination channel.
2. **Output destination channel select buttons**
   Use these to select the output destination channel for the USB memory recorder.

The function buttons perform the following operations.

[F1 (CH 1–24)]	Displays CH1–CH24 as the output-destination channel select buttons.
[F2 (CH 25–48)]	Displays CH25–CH48 as the output-destination channel select buttons.
[F6 (SELECT NONE)]	Clears the output-destination selection.
[F8 (CLOSE)]	Closes the popup.

Specifying the output destination

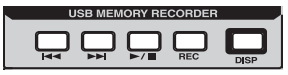
1. **Access the RECORDER screen.**



2. **Move the cursor to the L channel of the RECORDER DESTINATION SELECT popup, and press [ENTER].**
   The RECORDER DESTINATION SELECT popup will appear.
3. **Move the cursor to the channel that you want to use as the output destination, and press [ENTER] to select it.**
4. **Press [F8 (CLOSE)] to close the popup.**
5. **Make settings for the R channel in the same way.**

USB memory recorder operations

The USB MEMORY RECORDER section is used to perform USB memory recorder operations.



Recording to USB memory

1. **Specify the input source for the USB memory recorder (p. 168).**
2. **In the USB MEMORY RECORDER section, press [REC].**
   The USB memory recorder will be in record-ready condition.
3. **In the USB MEMORY RECORDER section, press [►/ ■].**
   Recording to USB memory will begin, and the sub-display area will indicate the recording time.

Playing WAV files from USB memory

1. **Make output-destination settings for the USB memory recorder. (p. 168)**
2. **Press [|◄◄] or [►►|] in the USB MEMORY RECORDER section to select a WAV file.**
   The selected WAV file is shown in the sub-display area.

   MEMO

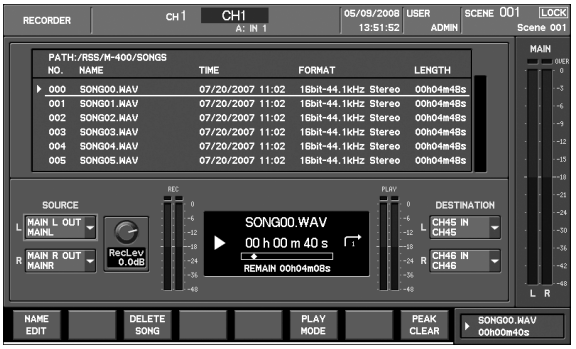
   If you press [DISP] in the USB MEMORY RECORDER section to access the RECORDER screen, you'll be able to see the WAV files in the song list.
3. **In the USB MEMORY RECORDER section, press [► / ■].**
   The selected WAV file will play.
   The sub-display area shows the playback time.



Managing WAV files

Renaming a WAV file

1. **Access the RECORDER screen.**



2. **From the song list, select the desired WAV file.**
3. **Press [F1 (NAME EDIT)].**



   The NAME EDIT popup will appear.

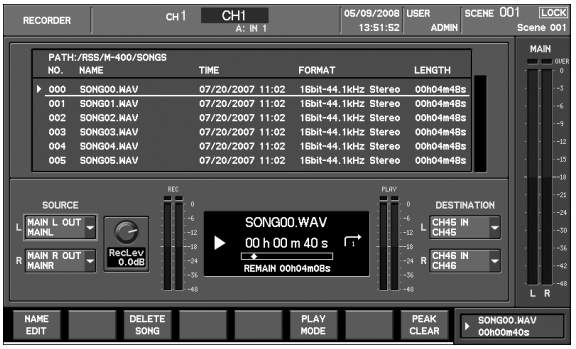
4. **Use the name edit field to edit the USER name.**
5. **Press [F8 (OK)] to finalize the name you edited and close the popup.**
   If you press [F7 (CANCEL)], your edits will be discarded and the popup will close.

   cf.

   For details on name editing, refer to "Editing a name" (p. 50).

Deleting a WAV file

1. **Access the RECORDER screen.**



2. **From the song list, select the WAV file that you want to delete.**
3. **Press [F3 (DELETE SONG)].**



   A message will ask you to confirm that you want to delete the WAV file.

4. **Press [F8 (DELETE)] to delete the WAV file you selected in step 2.**
   If you press [F7 (CANCEL)], the WAV file will not be deleted.

User settings

About user settings

Each user who uses the M-400 can have their own individual user settings. These settings can be used according to the level of the user to restrict the range of channels and parameters that can be operated, and to customize the user buttons, user faders, and preference settings to the user's liking. User settings include the following items.

- **User name**
  A name of up to eight characters.
- **Password**
  The password that will be required in order to use the user settings.
- **User level**
  This setting specifies whether the user has privileges to manage the M-400, and specifies the range of channels and parameters that can be operated.

  MEMO
  The privileges to manage the M-400 are called ADMIN privileges.
- **User preferences**
  This includes user fader, user button, and other preference settings.

Types of user settings

There are three types of user settings as follows.

- **ADMIN**
  These are user settings of a user who manages the M-400. The settings are stored in internal memory. There are no limitations to operation; the GUEST user settings can be edited and users can be created and edited. A password can be specified.
- **GUEST**
  This user setting can be used by anyone. The settings are stored in internal memory. The features available to the GUEST are specified by an ADMIN user. A password cannot be specified.

  TIP
  A user who can use user settings with ADMIN privileges is referred to as an ADMIN user.

  MEMO
  A GUEST cannot be given ADMIN privileges.
- **USER**
  These are user settings that an ADMIN user creates on USB memory. A name of up to eight characters can be assigned. The user level is specified by an ADMIN user. A password can be specified.

  MEMO
  Any user can make their own user preference settings.

  NOTE
  Do not disconnect the USB memory or switch off the M-400's power while data is being saved to USB memory. Doing so may destroy the data saved in USB memory.

Multiple USERs can be created on separate USB memory devices so that the USB memory can be used as a physical user authentication key, or multiple USERs can be created on a single USB memory device, with passwords used to authenticate users.

On the M-400, one setting is in use at all times. The user setting is remembered even when the power is turned off, and the same user settings will be active the next time the power is turned on.

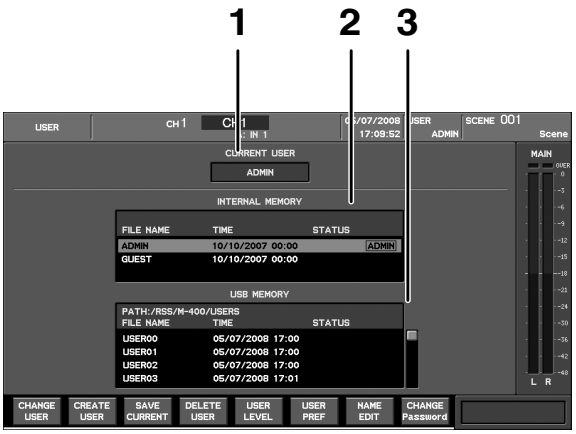
MEMO
The user password will not be requested when the power is turned on. If you want to ensure that the user settings are not used by unauthorized persons, switch to GUEST before you turn off the power.

MEMO
In the default condition, the M-400 will start up with the ADMIN settings without any password.

Creating and editing user settings

The USER screen is used to create and edit user settings.

USER screen



1. Current user indication

This shows the current user name.

2.3. User list

This lists the user settings saved in internal memory and in USB memory.

The following items are shown.

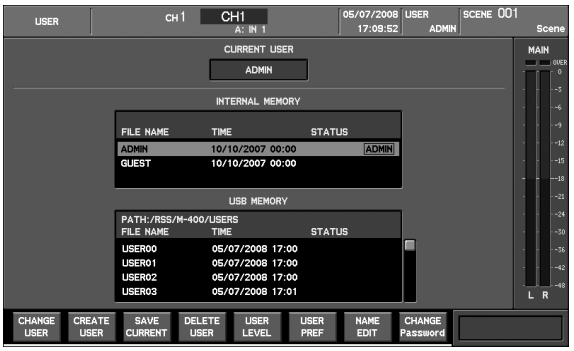
FILE NAME	Indicates the name of the user settings.
TIME	Indicates the date and time at which the settings were last changed.
STATUS	If a password has been specified, the indication PASSWORD appears here. In the case of a user who has ADMIN privileges, ADMIN is indicated.

In the USER screen, the function buttons perform the following operations.

[F1 (CHANGE USER)]	Switches to the user settings selected in the list.	p. 171
[F2 (CREATE USER)]	Creates a new user in USB memory.	p. 173
[F3 (SAVE CURRENT)]	Saves the user settings temporarily held in internal memory to USB memory.	p. 173
[F4 (DELETE USER)]	Deletes the user selected in the USB MEMORY user list.	p. 174
[F5 (USER LEVEL)]	Edits the user level setting.	p. 176
[F6 (USER PREF)]	Edits the user preference settings.	p. 177
[F7 (NAME EDIT)]	Accesses the NAME EDIT popup, where you can edit the name of the user settings selected in the USB memory user list.	p. 174
[F8 (CHANGE Password)]	Changes the password for the user settings selected in the list.	p. 175

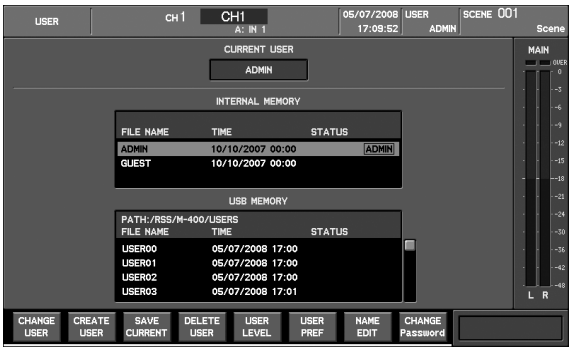
Accessing the USER screen

1. In the USER section, press [DISP].



Switching user settings

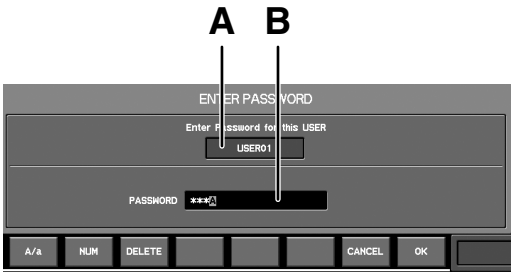
1. Access the USER screen.



2. From the user list, select the desired user.

3. Press [F1 (CHANGE USER)].

If a password has been specified, the ENTER PASSWORD popup will appear.



A. Applicable user indication

This indicates the user settings to which the ENTER PASSWORD popup applies.

B. Password entry field

Enter the password in this field.

Use the left/right cursor buttons to move the cursor, and use the value dial to change the character at the cursor position.

"*" is shown for characters not at the cursor position.

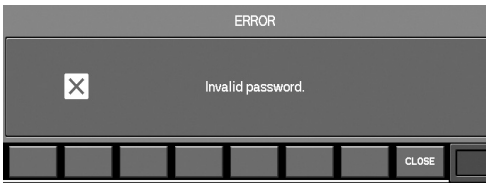
In the ENTER PASSWORD popup, the function buttons perform the following operations.

[F1 (A/a)]	Changes the letter at the cursor location between uppercase and lowercase. If the character is not a letter, it will be replaced by the letter "A."
[F2 (NUM)]	Changes the character at the cursor location to "0."
[F3 (DELETE)]	Deletes the character at the cursor location. The characters to the right of the cursor location will be moved toward the left.
[F7 (CANCEL)]	Cancels password entry and closes the popup.
[F8 (OK)]	Finalizes password entry and closes the popup.

4. When you enter the password and press [F8 (OK)], you will switch to the user settings you selected in step 2.

If you press [F7 (CANCEL)], the user change will be cancelled.

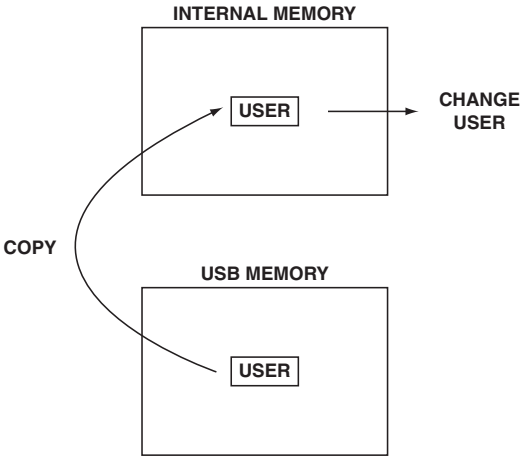
If the password you entered was incorrect, the following error message will appear. Press [F8 (OK)] to return to the ENTER PASSWORD popup.



Switching to user settings in USB memory is performed as follows.

- The user settings in USB memory are copied to internal memory.
- Operation will switch to the user settings that were copied to internal memory.

This means that the current user settings will become the user settings in internal memory.



This allows user settings to be used even after the USB memory has been exchanged; for example, in order to use the USB MEMORY recorder. The user settings copied to internal memory are temporary, and will disappear if you switch to other user settings.

For this reason, a confirmation message like the following will appear when you switch to other user settings, suggesting that you save to USB memory.



In this confirmation message, the function buttons perform the following operations.

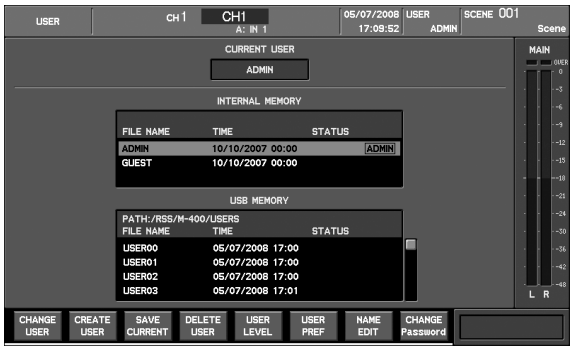
[F6 (DON'T SAVE)]	Discards the user settings in internal memory and switches the user settings.
[F7 (CANCEL)]	Cancels the change in user settings.
[F8 (SAVE)]	Saves the user settings from internal memory to USB memory, and then switches the user settings.

Creating user settings

You can create user settings if the current user setting has ADMIN privileges.
User settings are created on USB memory.

1. Connect USB memory to the USB memory connector.

2. Access the USER screen.



3. Press [F2 (CREATE USER)].



A message will ask whether you want to create user setting.

4. Press [F8 (CREATE USER)] to create user settings.
The user settings will be created in USB memory.
If you press [F7 (CANCEL)], the operation will be cancelled.

MEMO

The created user settings will be as follows:

•Name will be USER (** is a number)**

•User level will be all operations permitted, without ADMIN privileges

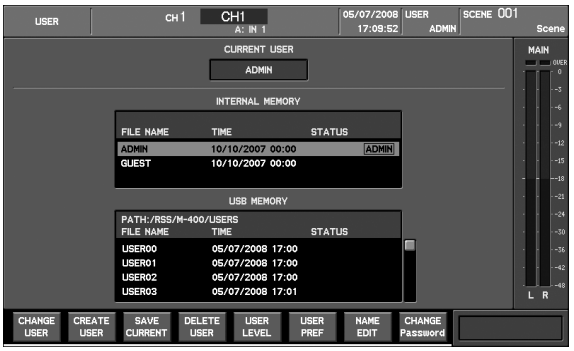
•User preferences will be the default condition

Saving the current user settings in USB memory

Here's how to save the current user settings in USB memory. This can be done if the current user setting is other than ADMIN or GUEST.

1. Connect USB memory to the USB memory connector.

2. Access the USER screen.



3. Press [F3 (SAVE CURRENT)].



A message will ask whether you want to save the current user settings to USB memory.

4. To save the settings, press [F8 (SAVE CURRENT)].
If you press [F7 (CANCEL)], saving to USB memory will be cancelled.
If you save to identically named user settings in USB memory, a caution message will caution you that the previous data will be overwritten.

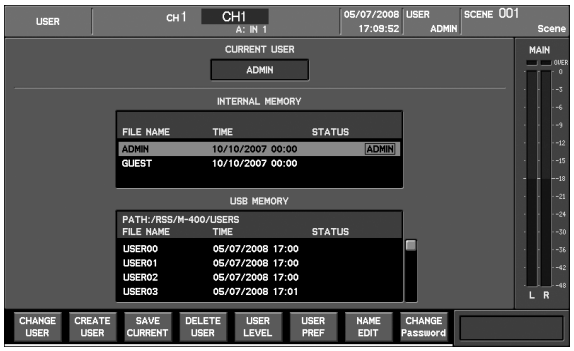


To save and overwrite the old data, press [F8 (REPLACE)].
If you press [F7 (CANCEL)], saving to USB memory will be cancelled.

Deleting user settings

Here's how to delete user settings from USB memory.
You can delete user settings if the current user setting has ADMIN privileges.

1. Access the USER screen.



2. From the USB memory user list, select the user that you want to delete.

3. Press [F4 (DELETE USER)].



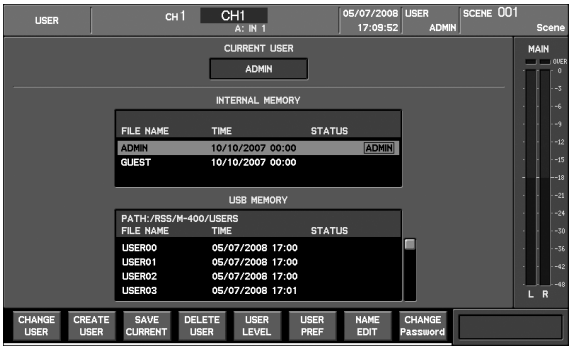
A message will ask you to confirm that you want to delete the user settings.

4. When you press [F8 (DELETE USER)], the user settings you selected in step 2 will be deleted.
If you press [F7 (CANCEL)], deletion of the user settings will be cancelled.

Editing the name of user settings

You can edit the name of a user. A name of up to eight characters can be specified.

1. Access the USER screen.



2. From the user list, select the desired user.

3. Press [F7 (NAME EDIT)].



The NAME EDIT popup will appear.

4. Use the name edit field to edit the user name.

5. Press [F8 (OK)] to finalize the name you edited and close the popup.
If you press [F7 (CANCEL)], the name edit will be cancelled and the popup will close.

cf.

For details on name editing, refer to "Editing a name" (p. 50).

Changing the password of user settings

You can change the password for ADMIN or USER settings.

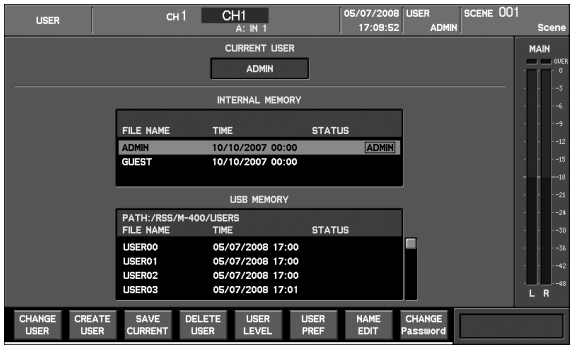
If you have specified a password, an ENTER PASSWORD popup will appear when you switch user settings.

If you don't specify a password, you won't need to enter a password when you switch users.

MEMO

Editing the password for users other than the current one can be done only by a user who has ADMIN privileges.

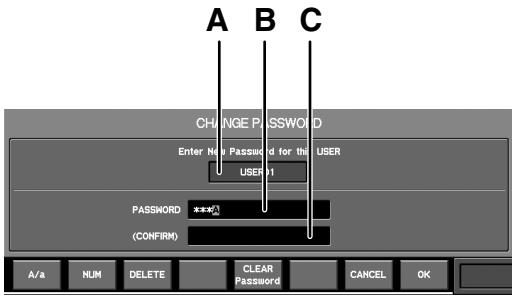
1. Access the USER screen.



2. From the user list, select the desired user name.

3. Press [F8 (CHANGE PASSWORD)].

The CHANGE PASSWORD popup will appear.



A. Applicable user indication

This indicates the user name to which the CHANGE PASSWORD popup applies.

B. PASSWORD entry field

Specify the password in this field.

Use the left/right cursor buttons to move the cursor, and use the value dial to change the character at the cursor position.

The characters at other than the cursor position are displayed as "*."

C. CONFIRM field

This field is used to confirm the entry in the PASSWORD field. Enter the same password as you did in the PASSWORD field.

If the contents entered in the PASSWORD field and the CONFIRM field do not match, the following error message will appear.



In the CHANGE PASSWORD popup, the function buttons perform the following operations.

[F1 (A/a)]	Changes the letter at the cursor location between uppercase and lowercase. If the character is not a letter, it will be replaced by the letter "A."
[F2 (NUM)]	Changes the character at the cursor location to "0."
[F3 (DELETE)]	Deletes the character at the cursor location. The characters to the right of the cursor location will be moved toward the left.
[F5 (CLEAR Password)]	Clears the password.
[F7 (CANCEL)]	Cancels password entry and closes the popup.
[F8 (OK)]	Finalizes password entry and closes the popup.

4. Enter the desired password in password entry fields 1 and 2.

If you don't want to specify a password, press [F5 (CLEAR Password)].

5. Press [F8 (OK)] to finalize the password you specified and close the popup.

If you press [F7 (CANCEL)], the password edit will be cancelled and the popup will close.

Editing user settings

User settings consist of the following two types of settings.

- **User level (**p. 176**)**
  This specifies whether the user has ADMIN privileges, and specifies the range of channels and parameters that the user is allowed to manipulate.
- **User preferences (**p. 177**)**
  These include user fader, user button, and other preference settings.

MEMO

You must have ADMIN privileges in order to edit the user level.

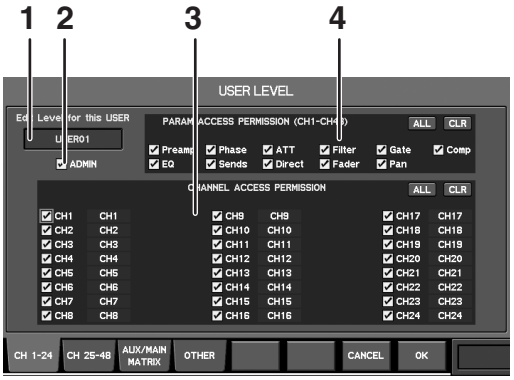
Editing the user level

The USER LEVEL popup is used to edit the user level.

USER LEVEL popup

This has four tabs: [F1 (CH 1–24)], [F2 (CH 25–48)], [F3 (AUX/MAIN/MATRIX)], and [F4 (OTHER)].

- **CH 1–24, CH 25–48, AUX/MAIN/MATRIX tabs**



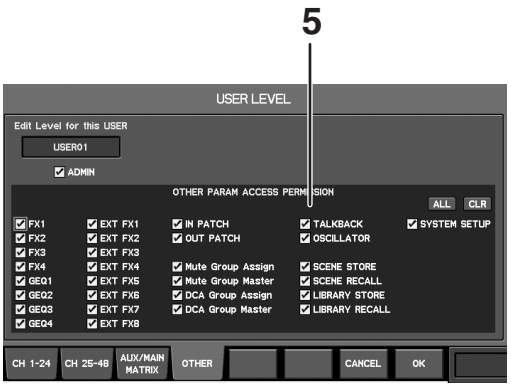
1. Applicable user indication
This indicates the user settings to which the USER LEVEL popup applies.

2. ADMIN button
Select this option if you want to give ADMIN privileges to the user.

3. Channel access permission buttons
These buttons select the channels that the user will be able to operate. The channels that are selected here will be operable.

4. Parameter access permission buttons
These buttons select the parameters that the user will be able to operate for the channels selected by the channel access permission buttons. The parameters that are selected here will be operable.

- **OTHER tab**



5. Other parameter access permission buttons
These buttons select other parameters that the user will be able to operate. The parameters that are selected here will be operable.

MEMO

The "TALKBACK" button in the OTHER PARAMETER ACCESS PERMISSION section enables or disables operation of the talkback output destination select button (p. 151).

MEMO

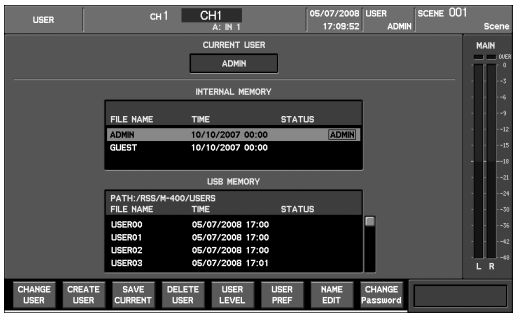
The "OSCILLATOR" button in the OTHER PARAMETER ACCESS PERMISSION section enables or disables operation of the oscillator output destination select button (p. 152).

In the USER LEVEL popup, the function buttons perform the following operations.

[F1 (CH 1–24)]	Accesses the CH 1–24 tab.
[F2 (CH 25–48)]	Accesses the CH 25–48 tab.
[F3 (AUX/MAIN/MATRIX)]	Accesses the AUX/MAIN/MATRIX tab.
[F4 (OTHER)]	Accesses the OTHER tab.
[F7 (CANCEL)]	Cancels the changes and closes the popup.
[F8 (OK)]	Confirms the changes and closes the popup.

Editing the user level

1. Access the USER screen.



2. From the user list, select the desired user.

MEMO

You can't specify the user level for ADMIN.

3. Press [F5 (USER LEVEL)].



The USER LEVEL popup will appear.

4. Use the ADMIN button to specify whether the user will have ADMIN privileges.

5. Use [F1 (CH 1–24)] or [F2 (CH 25–48)] to access the CH 1–24 or CH 25–48 tabs, and specify the channels and parameters to which the user will have access.

6. Press [F3 (AUX/MAIN/MATRIX)] to access the AUX/MAIN/MATRIX tab, and specify the channels and parameters to which the user will have access.

7. Press [F4 (OTHER)] to access the OTHER tab, and specify the parameters to which the user will have access.

8. Press [F8 (OK)] to finalize the changes and close the popup.
If you press [F7 (CANCEL)], the changes will be cancelled and the popup will close.

If a user who does not have ADMIN privileges attempts to access the USER LEVEL popup, an ENTER PASSWORD popup will appear, requesting that the ADMIN password be entered.

- Enter the ADMIN password and press [F8 (OK)] to access the USER LEVEL popup, where you can edit the user level.
- If you press [F7 (CANCEL], the USER LEVEL popup will appear in view-only mode. In view-only mode you can't edit the user level.

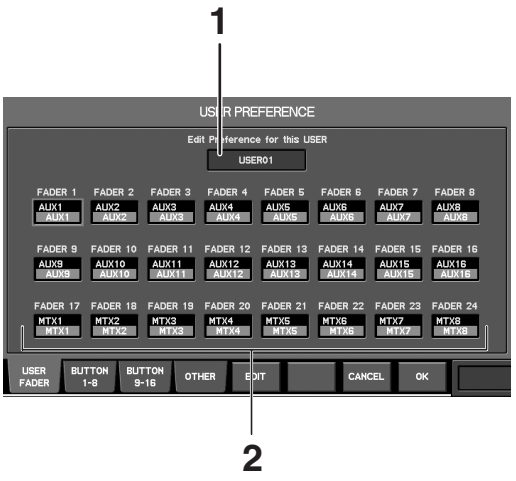
Editing the user preferences

The USER PREFERENCE popup is used to edit the user preferences.

USER PREFERENCE popup

This contains three tabs: [F1 (USER FADER)], [F2 (USER BUTTON)], and [F3 (OTHER)].

- **USER FADER tab**

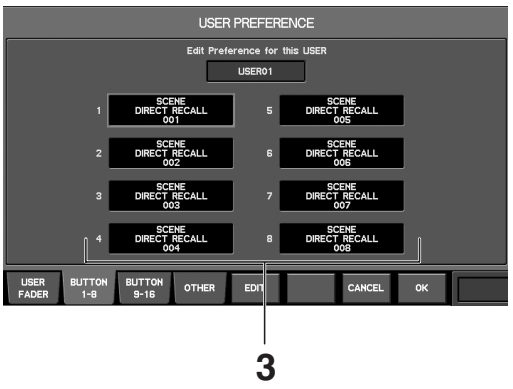


This tab lets you make user fader settings.

1. Applicable user indication
This indicates the user settings to which the USER PREFERENCE popup applies.

2. User fader assign 1–24
This area indicates the channels that are assigned to user faders 1–24.

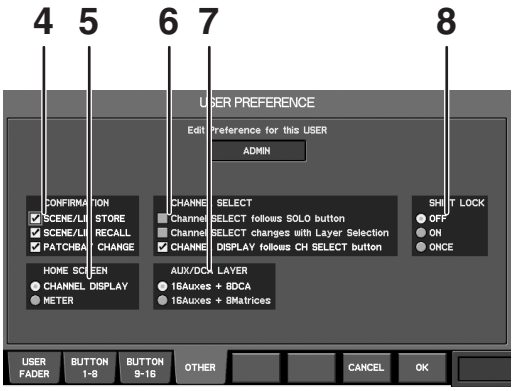
- **BUTTON 1–8 tab (or BUTTON 9-16 tab)**



This tab lets you make user button settings.

3. User button assign 1–8 (or User button assign 9–16)
This area indicates the functions that are assigned to user buttons 1–8.

- **OTHER tab**



This tab lets you make other preference settings.

4. CONFIRMATION select buttons

These buttons select the operations for which a CONFIRM popup will appear. When you perform an operation for which the corresponding button is selected here, a CONFIRM popup will appear, asking you to confirm the operation.

This area contains the following items.

SCENE/LIB STORE	Scene or library store operations
SCENE/LIB RECALL	Scene or library recall operations
PATCHBAY CHANGE	Changes to the input/output patchbay

5. HOME SCREEN select buttons

Use these to select the Home screen (p. 46). You can choose one of the following.

CHANNEL DISPLAY	The CHANNEL DISPLAY screen will be the home screen.
METER	The METER will be the home screen.

6. CHANNEL SELECT operation select buttons

These buttons choose the way in which channel selection will occur. The channel selection mode whose button is selected will be used.

You can choose one of the following two channel select modes.

Channel SELECT follows SOLO button	[SOLO] will select the channel.
Channel SELECT changes with Layer Selection	The selected channel for each layer is remembered, and button operations in the layer section will change the selected channel.
CHANNEL DISPLAY follows CH SELECT button	Pressing [SEL] will access the CHANNEL DISPLAY screen.

7. AUX/DCA LAYER select buttons

These select the channels that will be assigned to the fader module section when you press the AUX/DCA layer button (p. 33).

16Auxes + 8DCA	AUX1–AUX16, DCA1–DCA8
16Auxes + 8Matrices	AUX1–AUX16, MATRIX1–MATRIX8

8. SHIFT LOCK select buttons

These change the behavior of the SHIFT button. [SHIFT] will light if SHIFT is on.

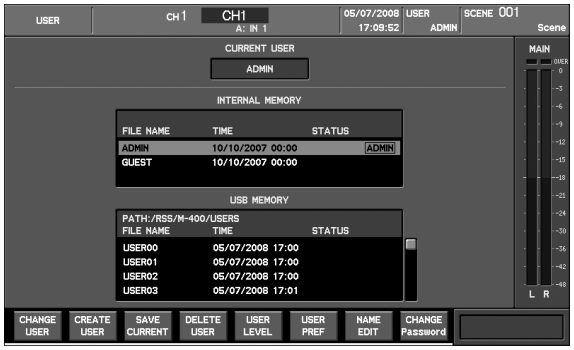
OFF	SHIFT will be on only while you hold down [SHIFT].
ON	SHIFT will alternately turn on or off each time you press [SHIFT].
ONCE	SHIFT will turn on when you press [SHIFT], and will turn off when you execute a function associated with SHIFT.

In the USER PREFERENCE popup, the function buttons perform the following operations.

[F1 (USER FADER)]	Accesses the USER FADER tab.
[F2 (BUTTON 1-8)]	Accesses the BUTTON 1–8 tab.
[F3 (BUTTON 9–16)]	Accesses the BUTTON 9–16 tab.
[F4 (OTHER)]	Accesses the OTHER tab.
[F5 (EDIT)]	If you're in the USER FADER tab, this accesses the USER FADER ASSIGN popup, where you can edit the user fader assignment at the cursor location.
	If you're in the USER BUTTON tab, this accesses the USER BUTTON EDIT popup, where you can edit the user button assignment at the cursor location.
[F7 (CANCEL)]	Cancels the changes and closes the popup.
[F8 (OK)]	Confirms the changes and closes the popup.

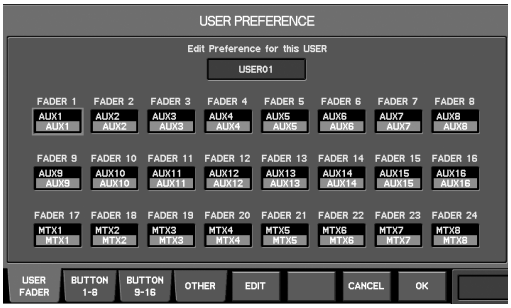
Accessing the USER PREFERENCE popup

1. **Access the USER screen.**



2. **From the user list, select the desired user.**

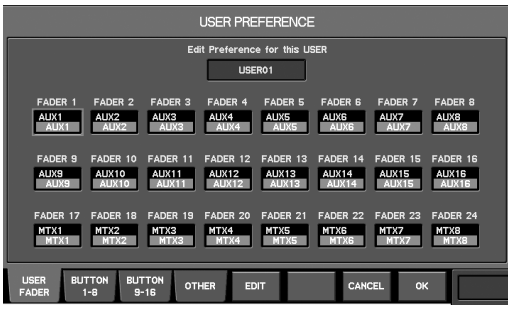
3. **Press [F6 (USER LEVEL)].**



The USER PREFERENCE popup will appear.

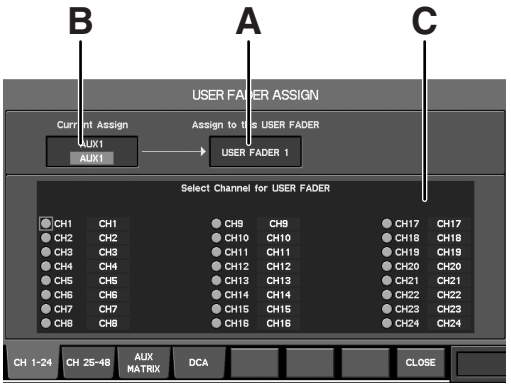
Editing the user fader assignments

1. **Access the USER PREFERENCE popup.**



2. **Press [F1 (USER FADER)] to access the USER FADER tab.**

3. **Move the cursor to the desired user fader assignment, and press [F5 (EDIT)].**



The USER FADER ASSIGN popup will appear.

A. Applicable user fader
This indicates the user fader to which the USER FADER ASSIGN setting applies.

B. Current assignment
This indicates the channel that is currently assigned to the user fader.

C. Assignment channel select buttons
Here you can select the channel that will be assigned to the user fader. The selected channel will be assigned to the user fader.

In the USER FADER ASSIGN popup, the function buttons perform the following operations.

[F1 (CH 1–24)]	Displays CH1–CH24 as the assignment channel select buttons.
[F2 (CH 25–48)]	Displays CH25–CH48 as the assignment channel select buttons.
[F3 (AUX/MATRIX)]	Displays AUX1–AUX16, MATRIX1–MATRIX8 as the assignment channel select buttons.
[F4 (DCA)]	Displays DCA1–DCA8 as the assignment channel select buttons.
[F8 (CLOSE)]	Confirms the changes and closes the popup.

4. **Use [F1 (CH 1–24)], [F2 (CH 25–48)], [F3 (AUX/MATRIX)], or [F4 (DCA)] to access the tab that contains the desired channel.**

5. **Move the cursor to the desired channel, and press [ENTER] to select it.**

6. **Press [F8 (CLOSE)] to finalize the changes and close the USER FADER ASSIGN popup.**

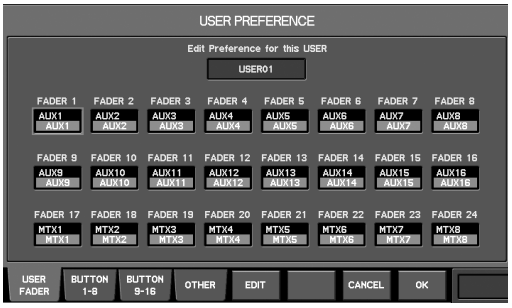
7. **Press [F8 (OK)] to finalize the changes and close the USER PREFERENCE popup.**
If you press [F7 (CANCEL)], the changes will be cancelled and the USER PREFERENCE popup will close.

MEMO

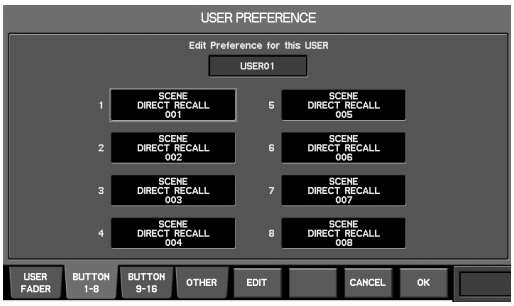
As an alternative to pressing [F5 (EDIT)] in step 3, you can use the value dial to edit the user fader assignment.

Editing the user button assignments

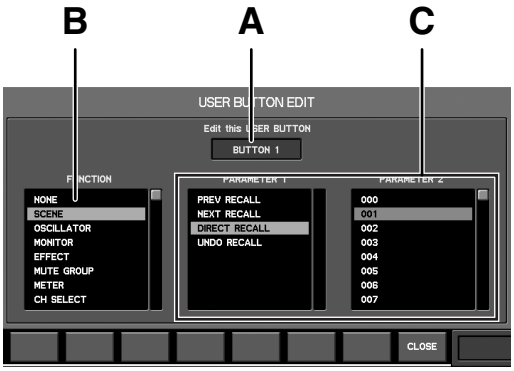
1. Access the USER PREFERENCE popup.



2. Press [F2 (BUTTON 1–8)] (or [F2 (BUTTON 9–16)]) to access the BUTTON 1–8 tab (or the BUTTON 9–16 tab.)



3. Move the cursor to the desired user button assignment, and press [F5 (EDIT)].



The USER BUTTON ASSIGN popup will appear.

A. Applicable user button
This indicates the user button to which the USER BUTTON ASSIGN popup applies.

B. FUNCTION list
You can select a function from this list.

C. PARAMETER 1 and 2 lists
Here you can select the parameters of the function you've selected in the FUNCTION list.

In the USER BUTTON ASSIGN popup, the function buttons perform the following operations.

[F8 (CLOSE)]	Confirms the changes and closes the popup.

4. In the FUNCTION list, select the desired function.

5. Next, use the PARAMETER 1 list and PARAMETER 2 list to select the parameters.

MEMO

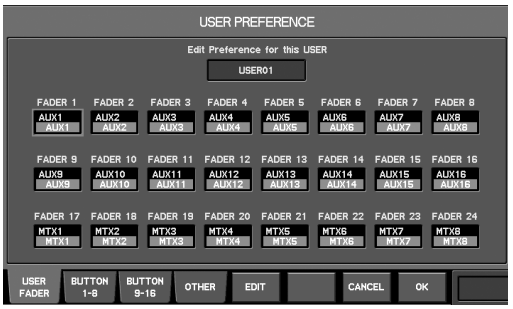
For a list of the functions that can be assigned, refer to "User button functions" (p. 209).

6. Press [F8 (CLOSE)] to finalize the changes and close the USER BUTTON ASSIGN popup.
If you press [F7 (CANCEL)], the changes will be cancelled and the USER BUTTON ASSIGN popup will close.

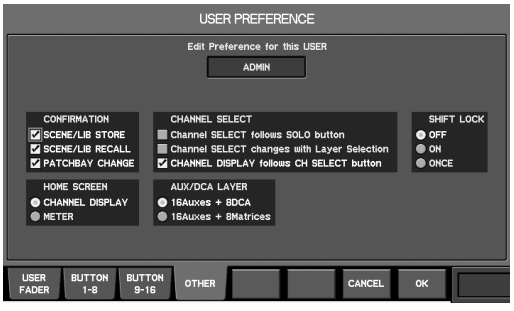
7. Press [F8 (OK)] to finalize the USER PREFERENCE changes and close the popup.
If you press [F7 (CANCEL)], the changes will be cancelled and the USER PREFERENCE popup will close.

Editing other user preferences

1. Access the USER PREFERENCE popup.



2. Press [F3 (OTHER)] to access the OTHER tab.



3. Move the cursor to the desired item, and press [ENTER] to change it.

4. Press [F8 (OK)] to finalize the USER PREFERENCE changes and close the popup.
If you press [F7 (CANCEL)], the changes will be cancelled and the USER PREFERENCE popup will close.

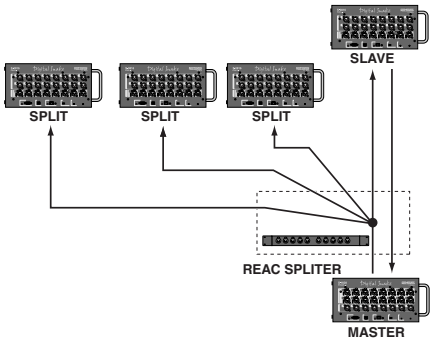
REAC applications and settings

REAC applications

This chapter explains more advanced ways to use REAC.
For basic information about REAC, refer to "Basic knowledge about REAC" (p. 13).

REAC splitting

By connecting a REAC splitter between the REAC master and slave, you can split the output from the master REAC device and distribute it to multiple split REAC devices.



To assign a REAC device to operate in split mode, you must set its REAC mode to Split. The split REAC device will function solely to receive signals from the master REAC device.

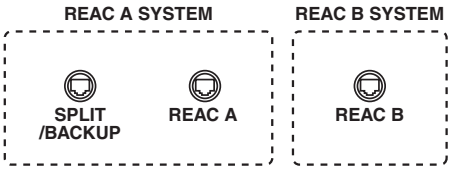
Caution when using a REAC splitter

For a REAC splitter, you can use either the S-4000-SP or an Ethernet switching hub. Switching hubs that meet the following conditions can be used with the M-400.

- **1000BASE-T compatible device (IEEE 802.3ab, Gigabit Ethernet) that supports 100 BASE-TX (IEEE 802.3u, Fast Ethernet)**
- **Full duplex communication (simultaneous bidirectional communication)**

The network transmission time between REAC devices is approximately 375 microseconds, but if the signal passes through a REAC splitter (S-4000-SP or an Ethernet switching hub), approximately 200 microseconds of delay will occur for each device. A maximum of four REAC splitters can be connected in series.

About the M-400's REAC functionality



REAC A port, SPLIT/BACKUP port

The REAC A port and SPLIT/BACKUP port belong to the same REAC A system. From the SPLIT/BACKUP port, you can take the same output as the REAC A port, or create a redundant REAC connection between the M-400 and an S-4000S (p. 182). If you connect an input/output unit to these ports, please observe the following points.

- You cannot connect multiple master REAC devices or multiple slave REAC devices to a single REAC system. For example, you cannot connect a slave REAC device to both the REAC A port and the SPLIT/BACKUP port.
- When receiving input from a REAC device connected to the SPLIT/BACKUP port, it will be treated as input from REAC A.
- The same forty channels will be output from the M-400 to the REAC A port and to the SPLIT/BACKUP port.

The output of REAC A port and SPLIT/BACKUP port

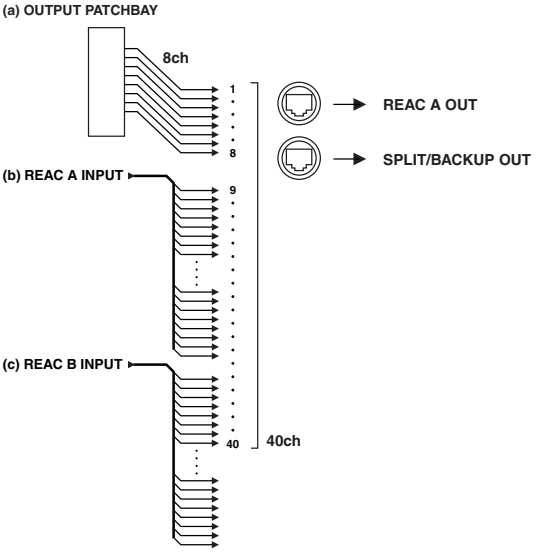
If the M-400's REAC setting is FOH or BACKUP(p. 187), the output to REAC A and the output to SPLIT/BACKUP will include the following signals.

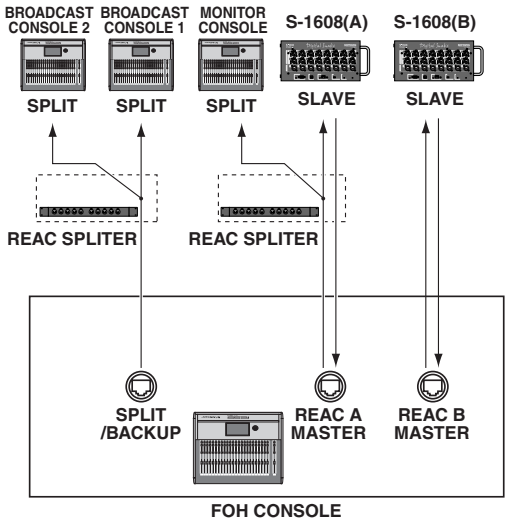
a. 8 channels of output from the output patchbay to REAC A

b. The inputs from the input/output unit connected to REAC A

c. The inputs from the input/output unit connected to REAC B

These will be assigned to the REAC A output in the order of "a," "b," and "c," up to maximum total of 40 channels.





You can split the outputs assigned to REAC A output by connecting a REAC splitter between the REAC A master and slave.

To the SPLIT/BACKUP port, you can either connect the split REAC device directly, or connect a REAC splitter to distribute the REAC A output to multiple split REAC devices.

TIP

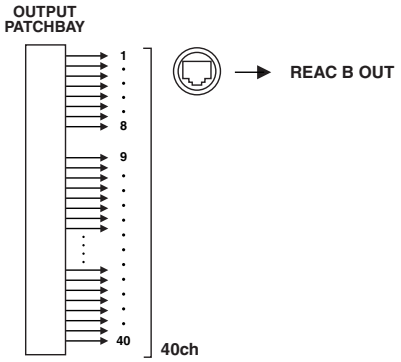
Possible uses include using the REAC A port splits for distribution in the stage area, and SPLIT/BACKUP port for distribution in the FOH (Front Of House) area.

REAC B port

The REAC B port belongs to the REAC B system, which is separate from the REAC A port and SPLIT/BACKUP port. The REAC B port always operates as the master REAC.

REAC B port output

The forty channels from the output patchbay are output to the REAC B port.

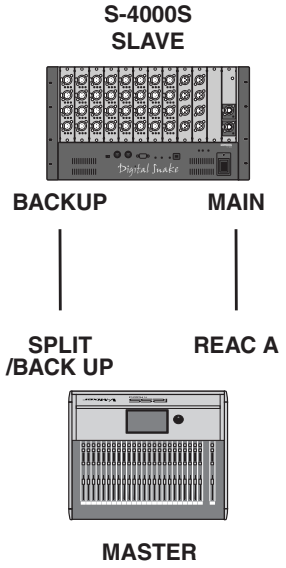


MEMO

If you connect a REAC splitter to the M-400's REAC B port and split REAC B, the signals received by the split REAC devices will be the forty channels of output from the M-400's output patchbay to REAC B.

Redundant REAC connections using the REAC A port and SPLIT/ BACKUP port (Backup Connection)

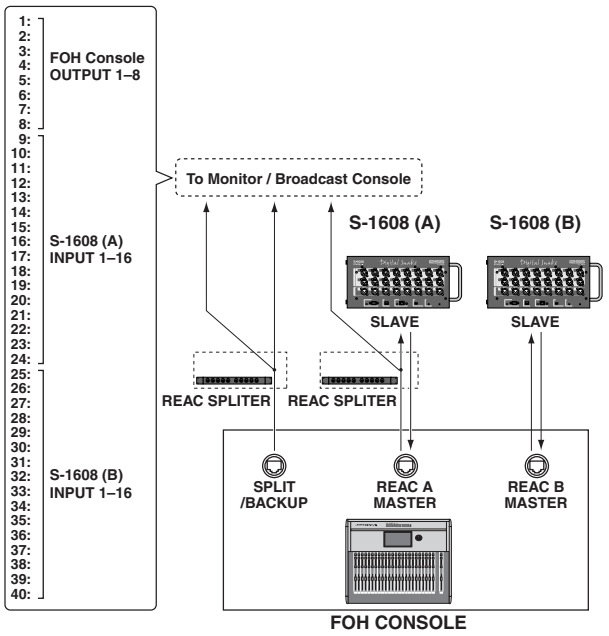
To create a redundant REAC connection between the M-400 and an S-4000S, set the M-400's REAC setting to BACKUP (p. 187). Connect the M-400's REAC A port to the S-4000S' MAIN REAC port, and connect the SPLIT/BACKUP port to the S-4000S' BACKUP REAC port. With these connections, even if the REAC A port — MAIN REAC port cable should be broken, the connection will automatically be switched to the SPLIT/BACKUP port–BACKUP REAC port cable, and the audio will continue nearly without interruption.



REAC connection examples

Here we show some examples of REAC setups and connections. For details on REAC settings for the M-400, refer to "REAC settings" (p. 186).

FOH console setup



Set the M-400's REAC setting to FOH (p. 187). The M-400's REAC A and REAC B will both be the master. Connect the REAC A port split to the monitor console, and connect the SPLIT/BACKUP port to the broadcast console.

The REAC A (split REAC) of the monitor console and the broadcast console will receive the following signals.

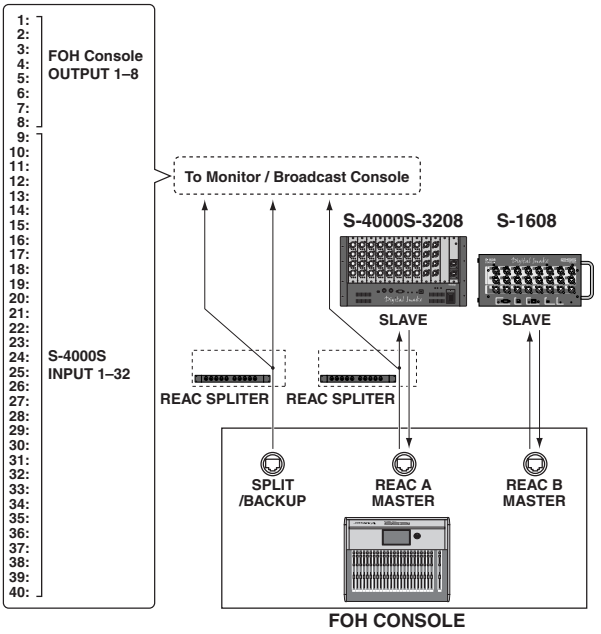
REAC A INPUT 1–8	FOH console REAC A OUTPUT 1–8
REAC A INPUT 9–24	S-1608(A) INPUT 1–16
REAC A INPUT 25–40	S-1608(B) INPUT 1–16

MEMO

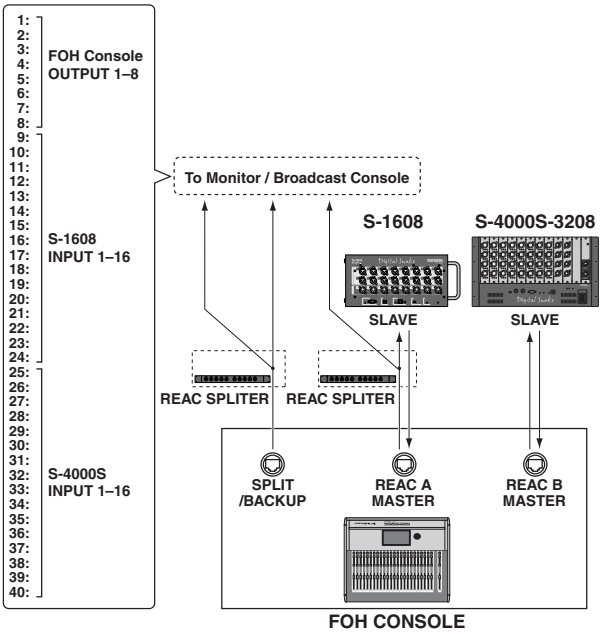
If a slave REAC device is not connected to the REAC A port of the FOH console, you cannot connect a split REAC device to the SPLIT/BACKUP port.

By using the S-1608 and S-4000S-3208 as input/output units, you'll be able to receive forty-eight channels of input from the stage. In this case, the following signals will be received by the monitor console and broadcast console.

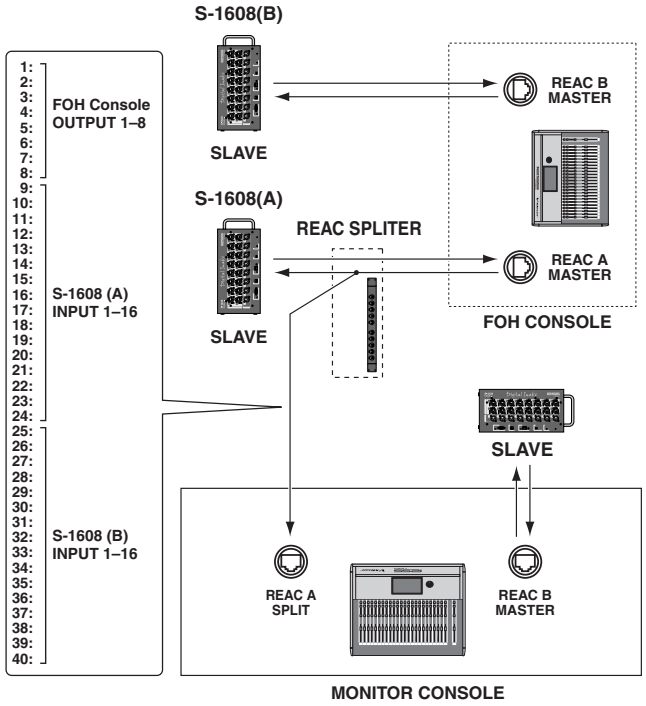
- REAC A port: S-4000S-3208, REAC B port: S-1608



- REAC A port: S-1608, REAC B port: S-4000S-3208



Monitor console setup



Set the M-400's REAC setting to MONITOR/BROADCAST A (p. 187). REAC A will be the split, and REAC B will be the master. The FOH console's REAC A port split is received by the monitor console's REAC A (split). The input/output unit connected to REAC B port and the rear panel CONSOLE OUTPUT jacks are used as the outputs of the monitor console.

The monitor console's REAC A will receive the following signals.

REAC A INPUT 1–8	FOH console REAC A OUTPUT 1–8
REAC A INPUT 9–24	S-1608(A) INPUT 1–16
REAC A INPUT 25–40	S-1608(B) INPUT 1–16

MEMO

You can connect an S-4000S, S-1608, or S-0816 to the REAC B port as input/output units. Connection of an S-4000H FOH unit is not supported.

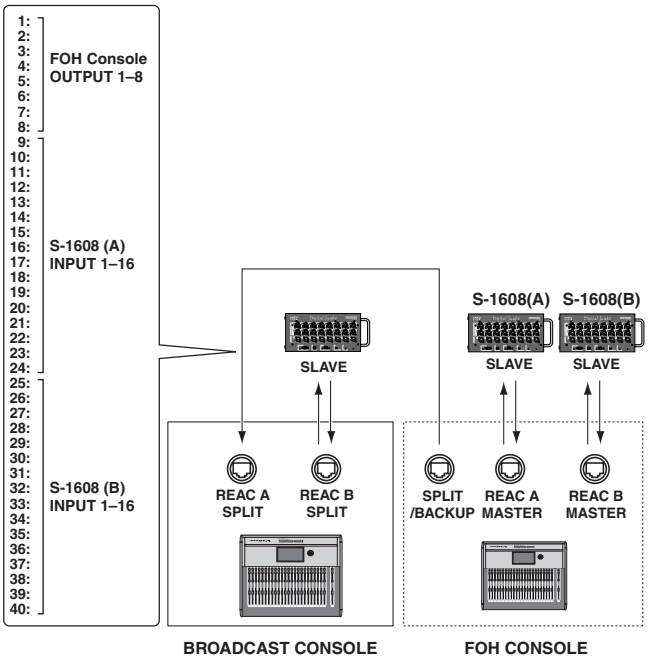
MEMO

The sampling frequency of the monitor console must match the sampling frequency of the FOH console.

MEMO

If the M-400's REAC is set to MONITOR/BROADCAST A, the SPLIT/BACKUP port cannot be used.

Broadcast console setup



Set the M-400's REAC setting to MONITOR/BROADCAST A (p. 187). The M-400's REAC A will be the split and REAC B will be the master. The FOH console's SPLIT/BACKUP port is connected to the broadcast console's REAC A port (split). The input/output unit connected to REAC B port and the rear panel CONSOLE OUTPUT jacks are used as the outputs of the broadcast console.

The broadcast console's REAC A will receive the following signals.

REAC A INPUT 1–8	FOH console REAC A OUTPUT 1–8
REAC A INPUT 9–24	S-1608(A) INPUT 1–16
REAC A INPUT 25–40	S-1608(B) INPUT 1–16

MEMO

You can connect an S-4000S, S-1608, or S-0816 to the REAC A port as input/output units. Connection of an S-4000H FOH unit is not supported.

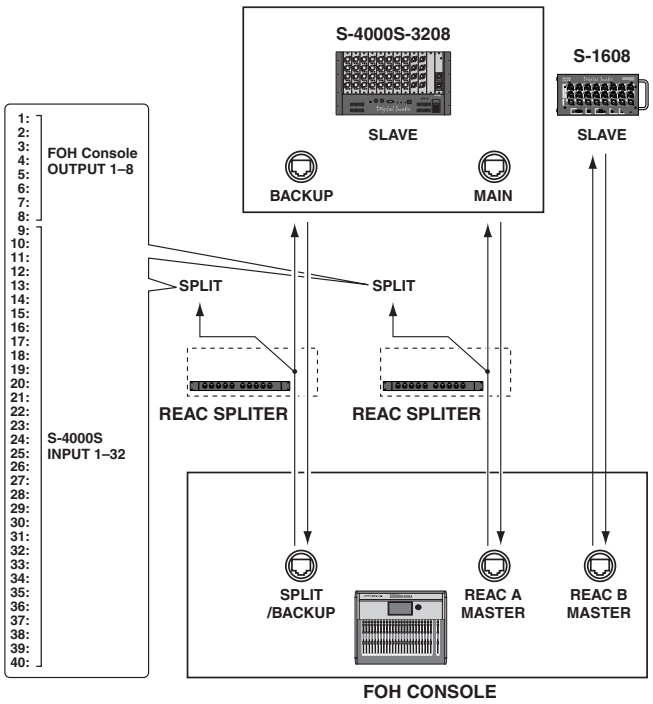
MEMO

The sampling frequency of the monitor console must match the sampling frequency of the FOH console.

MEMO

If the M-400's REAC is set to MONITOR/BROADCAST A, the SPLIT/BACKUP port cannot be used.

Backup connections with the S-4000S



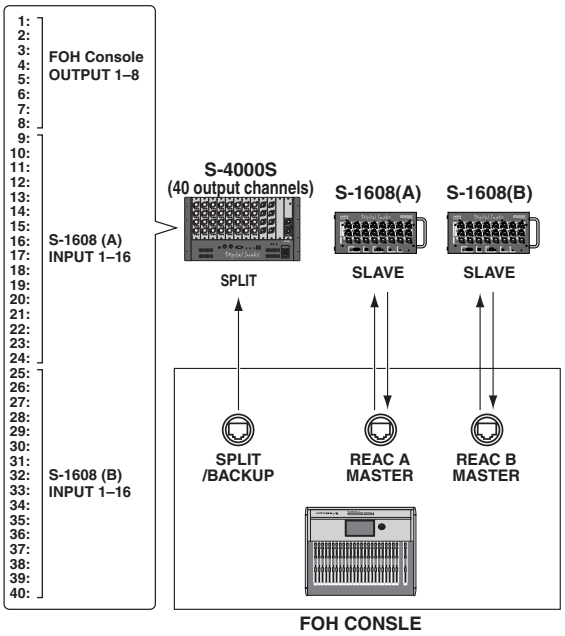
Set the M-400's REAC A to master, and the S-4000S to slave. Connect the M-400's REAC A port to the MAIN REAC port of the S-4000S, and connect the M-400's SPLIT/BACKUP port to the BACKUP REAC port of the S-4000S.

With these connections when a REAC splitter is connected between the M-400 and the S-4000S, and a split REAC device is connected, the split REAC device will receive the following signals.

REAC INPUT 1–8	M-400 REAC A OUTPUT 1–8
REAC INPUT 9–40	S-4000S INPUT 1–32 (when you use S-4000S-3208)

Outputting the FOH split as analog audio signals or AES/EBU

An S-4000S in which a total of ten output modules (SO-DA4 or SOAES4) have been installed (giving it forty output channels) can be connected as a split REAC device, allowing the FOH console's REAC A port split or the SPLIT/BACKUP port output to be output as analog audio signals (SO-DA4) or in AES/EBU format (SO-AES4).



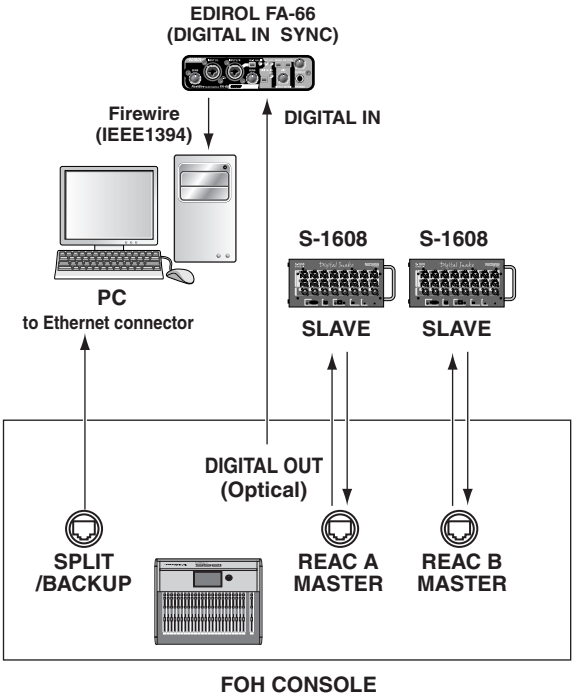
In this case, the S-4000S will output the following signals.

REAC INPUT 1 - 8	FOH console REAC A OUTPUT 1-8
REAC INPUT 9- 24	S-1608(A) INPUT 1 -16
REAC INPUT 25 - 40	S-1608(B) INPUT 1 - 16

Recording to a PC via the SPLIT/BACKUP port

You can use a REAC driver with SONAR DAW software to record from the M-400's SPLIT/BACKUP port to your computer.
For details, refer to the following website.

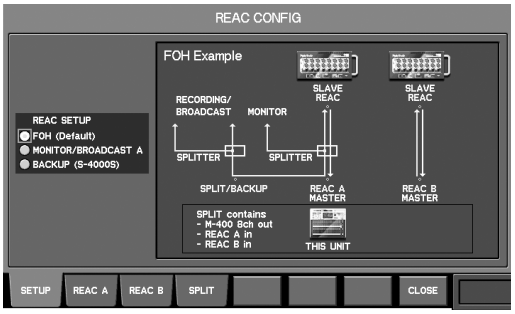
http://www.cakewalk.com/



REAC settings

The REAC CONFIG popup of the SYSTEM screen is used to make REAC settings.

REAC CONFIG popup



The content shown in the REAC CONFIG popup will depend on the tab you've selected.

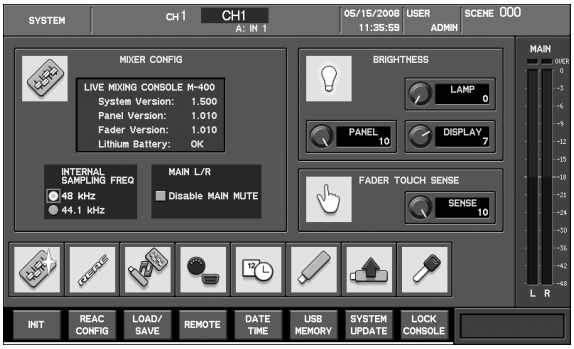
In the REAC CONFIG popup, the function buttons perform the following operations.

[F1 (SETUP)]	Accesses the SETUP tab where you can make REAC settings for the M-400.	p. 187
[F2 (REAC A)]	Accesses the REAC A tab where you can make settings for the device connected to the REAC A port.	p. 188
[F3 (REAC B)]	Accesses the REAC B tab where you can make settings for the device connected to the REAC B port.	p. 188
[F4 (SPLIT/BACKUP)]	Verifies the signals being output to the SPLIT/BACKUP port.	p. 188
[F8 (CLOSE)]	Closes the popup.	

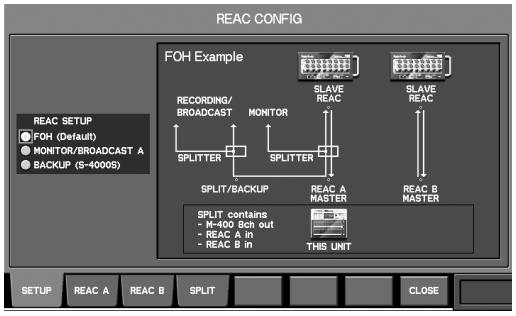
Making REAC settings

The SETUP tab of the REAC CONFIG popup is used to make REAC settings for the M-400.

1. In the SETUP section, press [SYSTEM] to access the SYSTEM screen.

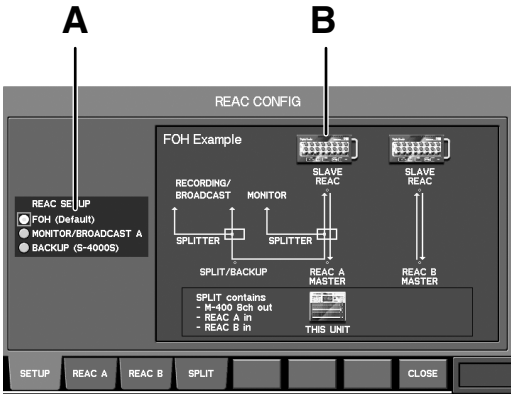


2. Press [F2 (REAC CONFIG)].



The REAC CONFIG popup will appear.

3. Press [F1 (SETUP)] to access the SETUP tab.



A. REAC SETUP select buttons

These buttons select REAC settings appropriate for the desired application.

B. Setup indication

This area shows the content of the REAC SETUP select buttons at cursor location, and the types of connections.

4. Move the cursor to the REAC SETUP select buttons, select the desired application, and press [ENTER].

You can choose from the following applications.

FOH	Use the M-400 as a FOH (Front Of House) console. Normally, you should choose this setting.
MONITOR/BROADCAST A	Use the M-400 as a monitor console or broadcast console. The split (distribution) from FOH will be received at REAC A.
BACKUP (S-4000S)	Connect the S-4000S using back-up connections.

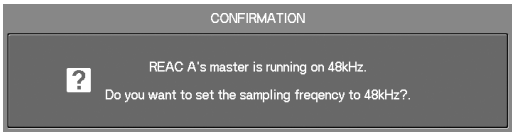
cf.
For details on example connections for various applications, refer to “REAC connection examples” (p. 183).

5. Use the setup display area to check the input/output unit connections, REAC mode settings for the input/output units, and the signal flow.

cf.
For basic knowledge about REAC, refer to “Basic knowledge about REAC” (p. 13).

cf.
For more advanced applications of REAC, refer to “REAC applications” (p. 181).

In some cases, a message like the following may appear after you select MONITOR/BROADCAST A in step 4.



This confirmation message will appear if there is a difference in sampling frequency between the FOH console (master) and the MONITOR/BROADCAST console (split).

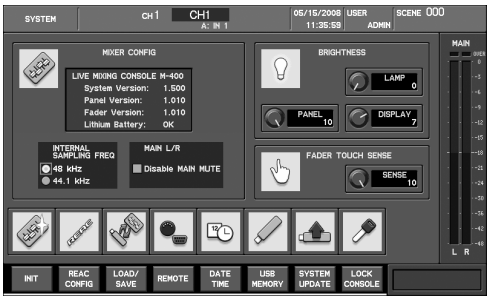
If you press [F8 (SET)], the cutoff frequency of the MONITOR/BROADCAST console will be set to match that of the FOH console.

If you press [F7 (CANCEL)], the current sampling frequency will be maintained. If you cancel, it will not be possible to receive the split from the FOH console.

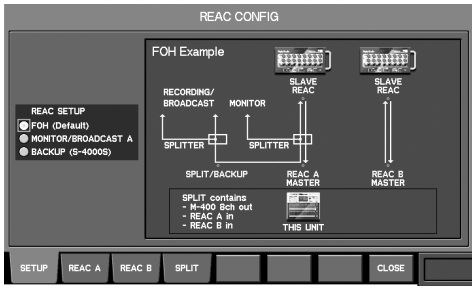
Checking the devices connected to REAC A and REAC B

To view information about the devices connected to REAC A and REAC B, you can use the REAC A tab and REAC B tab of the REAC CONFIG popup.

1. In the SETUP section, press [SYSTEM] to access the SYSTEM screen.

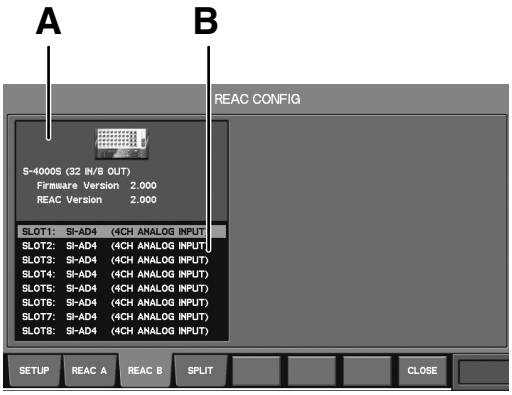


2. Press [F2 (REAC CONFIG)].



The REAC CONFIG popup will appear.

3. Press [F2 (REAC A)] (or [F3 (REAC B)]) to access the REAC A tab (or the REAC B tab).



A. Device indication area

This area shows information on the devices connected to REAC A or REAC B.

The name of the connected device, the number of inputs and outputs, and the following information are shown.

Firmware Version	Firmware version
REAC Version	REAC version

B. List of displayed information

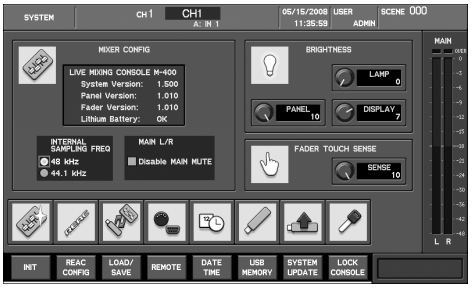
This lists the information that can be viewed for the device connected to REAC A or REAC B. If the S-4000S is connected, you'll be able to view the modules that are installed in SLOT1 - SLOT10.

4. Note the information for the connected REAC device in the device indication and the list of displayed information.

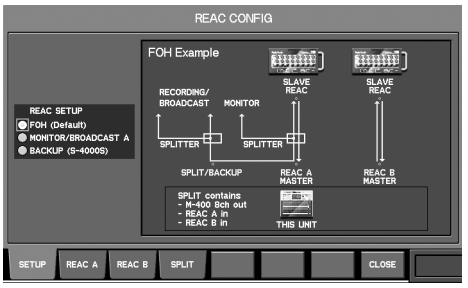
Checking the output to the SPLIT/ BACKUP port

You can use the SPLIT tab of the REAC CONFIG popup to check the output to the SPLIT/BACKUP port.

1. In the SETUP section, press [SYSTEM] to access the SYSTEM screen.

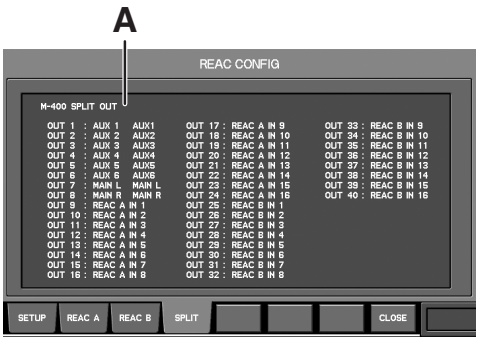


2. Press [F2 (REAC CONFIG)].



The REAC CONFIG popup will appear.

3. Press [F4 (SPLIT)] to access the SPLIT tab.



A. SPLIT output indication

This area shows the signals that are being output to the SPLIT/ BACKUP port.

4. In the SPLIT output indication area, verify the outputs for the SPLIT/BACKUP port.

Remote

This chapter explains remote functionality and settings.

Remote functions

MIDI

You can use the rear panel MIDI IN/OUT connectors to remotely control the M-400 from an external device, or control an external device from the M-400. You can use either MIDI or RS-232C, not both. If you want to use MIDI, set the rear panel RS-232C/MIDI select switch to the MIDI position.

NOTE

Always make sure to switch off the M-400's power before you change the setting of the MIDI/RS-232C select switch.

MIDI can transmit and receive the following messages.

Message	Explanation	Transmitted/ Received
Control change	Control of channel faders and mute	Transmitted/ Received
Program change	Recall scene memories	Transmitted/ Received
System exclusive	Control of mixer parameters	Transmitted/ Received
MMC	Control of the USB memory recorder	Received only

USB MIDI

By connecting the rear panel USB port to a PC, you can use USB MIDI to remotely control the M-400.
USB MIDI can transmit and receive the following messages.

Message	Explanation	Transmitted/ Received
Control change	Control of channel faders and mute	Transmitted/ Received
Program change	Recall scene memories	Transmitted/ Received
System exclusive	Control of mixer parameters	Transmitted/ Received
MMC	Control of the USB memory recorder	Received only

MEMO

You'll need to install the USB MIDI driver on the PC that's to be connected to the M-400 using USB. Download the USB MIDI driver from the Roland website below.

http://www.rolandsystemsgroup.net/

MEMO

The M-400 can be remotely controlled from M-400RCS via its rear panel USB connector. M-400RCS is application software that runs on Microsoft® Windows® XP or Microsoft® Windows Vista™. It allows you to edit M-400 project files and to remotely control the M-400. You can obtain the "M-400RCS" software and the "M-400RCS Users Guide" (PDF version) from the Roland website listed below. For details on using M-400RCS, refer to the "M-400RCS Users Guide."

http://www.rolandsystemsgroup.net/

V-LINK

If you connect a V-LINK compatible video device such as the V-440HD to the rear panel MIDI IN connector, you'll be able to use your video device to control the volume of specific channels.

The M-400 allows up to eight audio sources to be controlled via V-LINK.

The following V-LINK compatible video devices can be connected to the M-400.

V-440HD (Ver. 2.07 or later)

V-44SW (Ver. 1.07 or later)

MEMO

In order to use V-LINK, the MIDI/RS-232C select switch must be set to the MIDI position.

MEMO

The M-400 can use MIDI and USB MIDI simultaneously. If the same message is received via both MIDI and USB MIDI, the last-received message will be used.

RS-232C

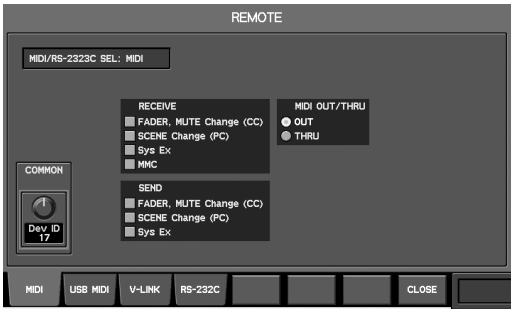
You can use the RS-232C connector located on the rear panel to control the M-400 from an external computer or other device. For details on the RS-232C commands, refer to the "M-400RS-232C Reference" (PDF version), which you can obtain from the Roland website listed below.

http://www.rolandsystemsgroup.net/

Remote settings

The REMOTE popup of the SYSTEM screen is used to make remote settings.

REMOTE popup



You can switch between tabs to change the content shown in the REMOTE popup.

In the REMOTE popup, the function buttons perform the following operations.

[F1 (MIDI)]	Accesses the MIDI tab which lets you make MIDI settings.	p. 191
[F2 (USB MIDI)]	Accesses the USB MIDI tab where you can make USB MIDI settings.	p. 192
[F3 (V-LINK)]	Accesses the V-LINK tab where you can make V-LINK settings.	p. 193
[F4 (RS-232C)]	Accesses the RS-232C tab where you can make RS-232C settings.	p. 194
[F8 (CLOSE)]	Close the popup	

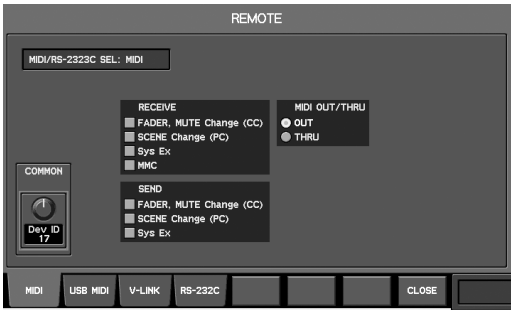
MIDI settings

The MIDI tab of the REMOTE popup is used to make MIDI settings.

1. In the SETUP section, press [SYSTEM] to access the SYSTEM screen.

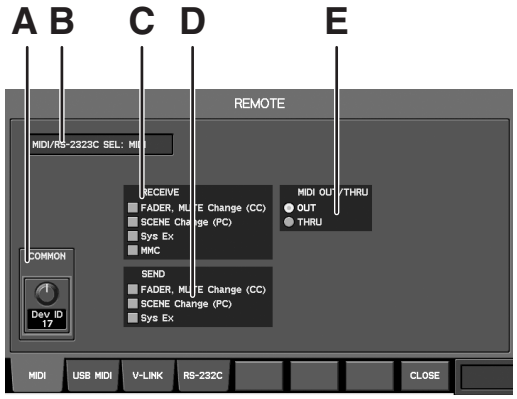


2. Press [F4 (REMOTE)].



The REMOTE popup will appear.

3. Press [F1 (MIDI)].



The MIDI tab will appear.

A. Dev ID knob

This sets the M-400's device ID in a range of 1–32. This setting is common to the MIDI tab, USB MIDI tab, and V-LINK tab.

B. MIDI/RS-232C selection indication

This shows the status of the rear panel MIDI/RS-232C select switch.

The functionality of the selected connector(s) is active.

MIDI	MIDI is selected.
RS-232C	RS-232C is selected.

NOTE

Always make sure to switch off the M-400's power before you change the setting of the MIDI/RS-232C select switch.

C. RECEIVE select buttons

Here you can select the items of MIDI data that the M-400 will receive.

FADER, MUTE Change (CC)	Faders and mute changes (control changes)
SCENE Change (PC)	Scene changes (program changes)
Sys Ex	System exclusive
MMC	MMC for the USB memory recorder

D. SEND select buttons

Here you can select the items of MIDI data that the M-400 will transmit.

FADER, MUTE Change (CC)	Fader and mute changes (control changes)
SCENE Change (PC)	Scene changes (program changes)
Sys Ex	System exclusive

E. MIDI OUT/THRU select buttons

These select the function of the rear panel MIDI OUT/THRU connectors.

OUT	Use as a MIDI OUT connector.
THRU	Use as a MIDI THRU connector.

MEMO

If you select THRU, the settings of the SEND buttons will have no effect.

4. In the MIDI/RS-232C select indication, verify the status of the rear panel MIDI/RS-232C select switch.

5. Move the cursor to the Dev ID knob and specify the device ID.

6. Move the cursor to the RECEIVE select buttons for each item that you want MIDI to receive, and press [ENTER] to select the button.

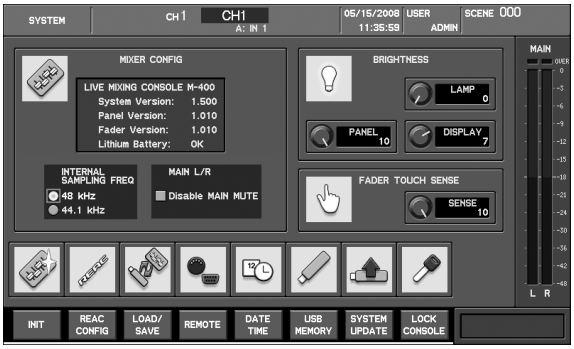
7. Move the cursor to the SEND select buttons for each item that you want MIDI to transmit, and press [ENTER] to select the button.

8. Move the cursor to the desired MIDI OUT/THRU select button, and press [ENTER] to select it.

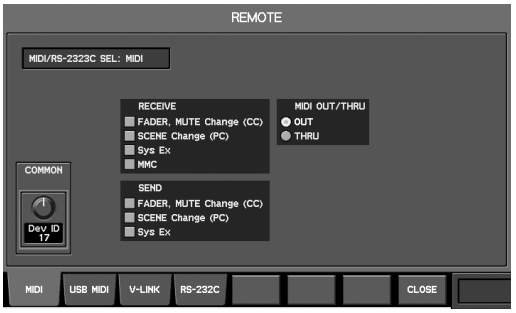
USB MIDI settings

To make USB MIDI settings, use the USB MIDI tab of the REMOTE popup.

1. In the SETUP section, press [SYSTEM] to access the SYSTEM screen.

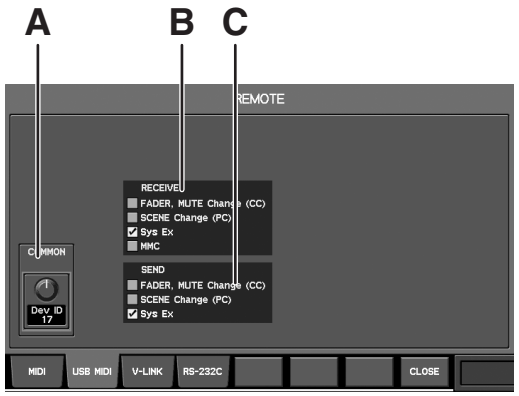


2. Press [F4 (REMOTE)].



The REMOTE popup will appear.

3. Press [F2 (USB MIDI)].



The USB MIDI tab will appear.

A. Dev ID knob

This specifies the device ID of the M-400 in a range of 1–32. This setting is common to the MIDI tab, the USB MIDI tab, and the V-LINK tab.

B. RECEIVE select buttons

These buttons select the items that USB MIDI will receive.

FADER, MUTE Change (CC)	Fader and mute changes (control changes)
SCENE Change (PC)	Scene changes (program changes)
Sys Ex	System exclusive
MMC	MMC for the USB memory recorder

C. SEND select buttons

These buttons select the items that USB MIDI will transmit.

FADER, MUTE Change (CC)	Fader and mute changes (control changes)
SCENE Change (PC)	Scene changes (program changes)
Sys Ex	System exclusive

4. Move the cursor to the Dev ID knob and specify the device ID.

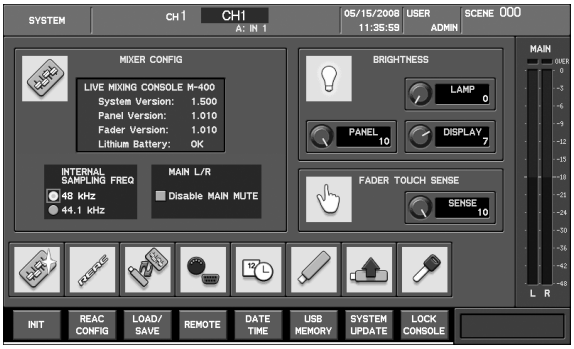
5. Move the cursor to the RECEIVE select buttons for each item that you want USB MIDI to receive, and press [ENTER] to select the button.

6. Move the cursor to the SEND select buttons for each item that you want USB MIDI to transmit, and press [ENTER] to select the button.

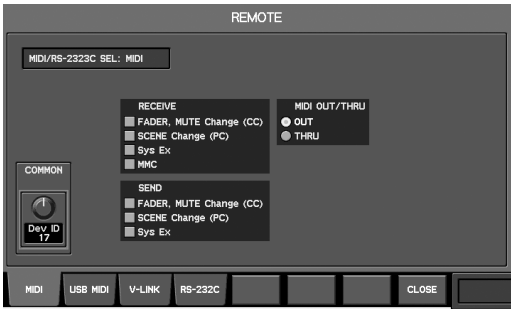
V-LINK settings

To make V-LINK settings, use the V-LINK tab of the REMOTE popup.

1. In the SETUP section, press [SYSTEM] to access the SYSTEM screen.

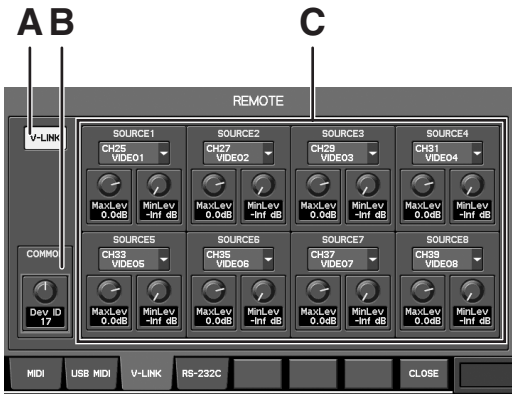


2. Press [F4 (REMOTE)].



The REMOTE popup will appear.

3. Press [F3 (V-LINK)].



The V-LINK tab will appear.

A. V-LINK button
Turns the V-LINK function on/off.

B. Dev ID knob
This specifies the device ID of the M-400 in a range of 1–32. This setting is common to the MIDI tab, the USB MIDI tab, and the V-LINK tab.

C. SOURCE field 1–8
Here you can specify the channels that will correspond to V-LINK sources 1–8, and the maximum level and minimum level for each channel.



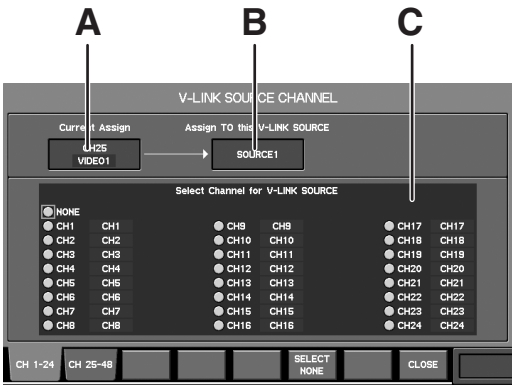
a. V-LINK SOURCE CHANNEL SELECT popup button
This accesses the V-LINK SOURCE CHANNEL SELECT popup, where you can select the channel that corresponds to each source.

b. MaxLev knob
This specifies the level when the source level is at the maximum (100%), in a range of -Inf dB–+10.0 dB.

c. MinLev knob
This specifies the level when the source level is at the minimum (0%), in a range of -Inf dB–+10.0 dB.

4. Move the cursor to the Dev ID knob and specify the device ID.

5. Move the cursor to the V-LINK SOURCE CHANNEL SELECT popup button for the desired source, and press [ENTER].



The V-LINK SOURCE CHANNEL SELECT popup will appear.

A. Current V-LINK source channel indication
This indicates the current V-LINK source channel.

B. Applicable V-LINK source indication
This indicates the V-LINK source to which the settings of the V-LINK SOURCE SELECT popup will apply.

C. SOURCE CHANNEL select buttons

These buttons select the channel that will correspond to the source.

In the V-LINK SOURCE CHANNEL SELECT popup, the function buttons perform the following operations.

[F1 (CH1–24)]	Displays CH1–CH24 as the SOURCE CHANNEL select buttons.
[F2 (CH25–48)]	Displays CH25–CH48 as the SOURCE CHANNEL select buttons.
[F6 (SELECT NONE)]	Clears the source channel selection.
[F8 (CLOSE)]	Closes the popup.

6. Move the cursor to the desired channel, and press [ENTER] to select it.

MEMO

If you're using a stereo source, specify one of the stereo-linked channels.

7. Press [F8 (CLOSE)] to close the V-LINK SOURCE CHANNEL SELECT popup.

8. Move the cursor to MaxLev in the desired SOURCE field, and use the value dial to specify the maximum level of the channel.

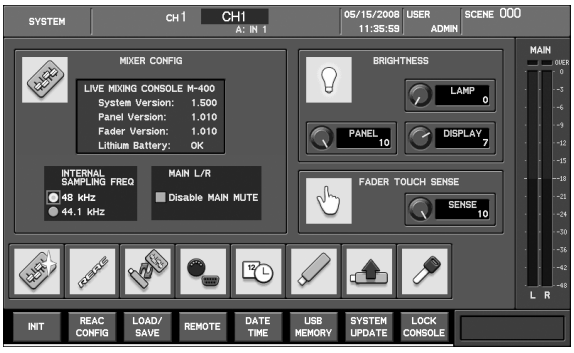
9. Move the cursor to MinLev in the desired SOURCE field, and use the value dial to specify the minimum level of the channel.

10. Move the cursor to the V-LINK button and press [ENTER] to turn it on.

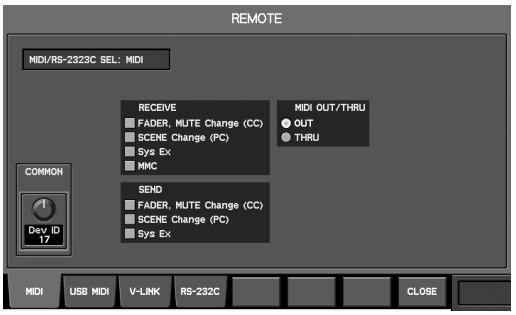
RS-232C settings

The RS-232C tab of the REMOTE popup is used to make RS-232C settings.

1. In the SETUP section, press [SYSTEM] to access the SYSTEM screen.

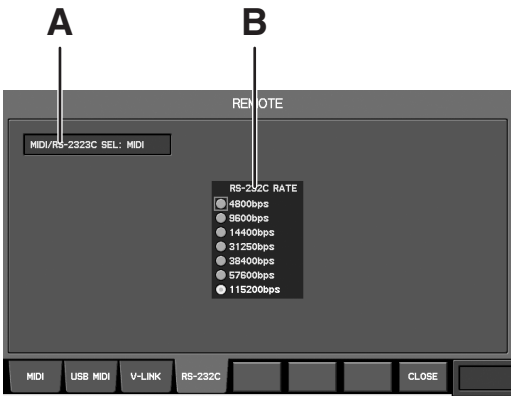


2. Press [F4 (REMOTE)].



The REMOTE popup will appear.

3. Press [F4 (RS-232C)].



The RS-232C tab will appear.

A. MIDI/RS-232C selection indication

This shows the status of the rear panel MIDI/RS-232C select switch.

The functionality of the selected connector(s) is active.

MIDI	MIDI is selected.
RS-232C	RS-232C is selected.

NOTE

Always make sure to switch off the M-400's power before you change the setting of the MIDI/RS-232C select switch.

B. RS-232C rate select buttons

These buttons specify the RS-232C communication speed. Choose the setting that matches the speed setting on your computer. Make sure to switch OFF the M-400's power before operating the MIDI/RS-232C select switch.

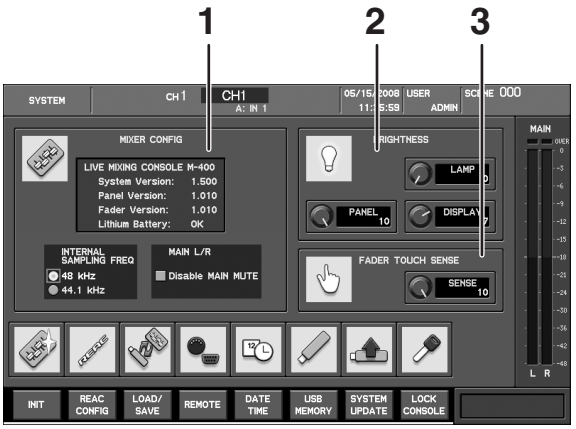
4. In the MIDI/RS-232C select indication, verify the status of the rear panel MIDI/RS-232C select switch.

5. Move the cursor to the RS-232C rate select button that matches the communication speed of your computer, and press [ENTER] to select the button.

Other settings and functions

This chapter explains other settings and functions.

SYSTEM screen



In the SYSTEM screen you can view or edit various types of information.

1. MIXER CONFIG field

Here you can view system information and make basic mixer settings. (p. 196)

2. BRIGHTNESS field

Here you can adjust the brightness of the lamp, panel, and display. (p. 197)

3. FADER TOUCH SENSE field

Here you can adjust the touch sensitivity of the faders. (p. 197)

In the SYSTEM screen, the function buttons perform the following operations.

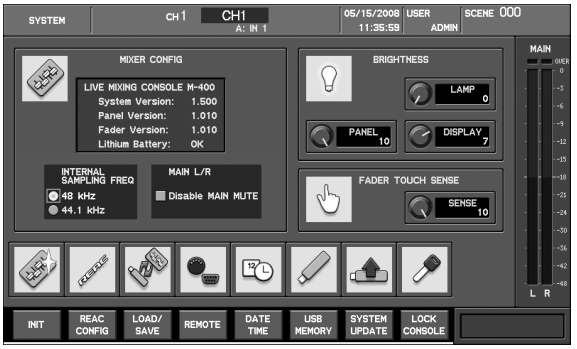
[F1 (INIT)]	Accesses the INITIALIZE popup, where you can initialize the mixer settings.	p. 198
[F2 (REAC CONFIG)]	Accesses the REAC CONFIG popup, where you can make REAC settings.	p. 186
[F3 (LOAD/SAVE)]	Accesses the LOAD/SAVE popup, where you can load or save mixer settings.	p. 199
[F4 (REMOTE)]	Accesses the REMOTE popup, where you can make remote settings.	p. 190
[F5 (DATE TIME)]	Accesses the DATE&TIME popup, where you can specify the date and time.	p. 202
[F6 (USB MEMORY)]	Accesses the USB MEMORY popup, where you can manage USB memory.	p. 203
[F7 (SYSTEM UPDATE)]	Updates the system program.	
[F8 (LOCK CONSOLE)]	Locks the console to prohibit operation.	p. 207

MEMO

SYSTEM UPDATE is for future system program updates. For details on the system update procedure, refer to the operating instructions provided with the updater.

Accessing the SYSTEM screen

1. In the SETUP section, press [SYSTEM].

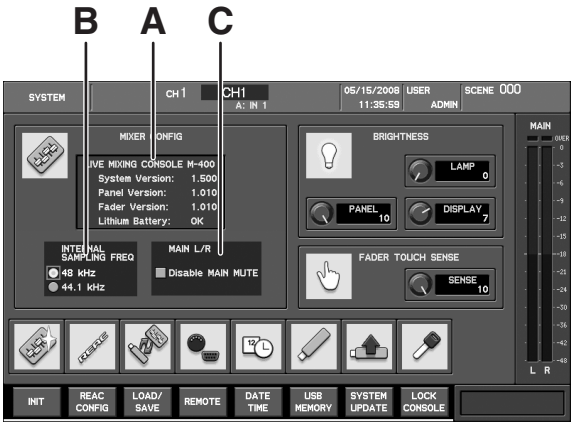


The SYSTEM screen will appear.

Viewing system information and making basic mixer settings

The MIXER CONFIG field of the SYSTEM screen is used to view system information and make basic mixer settings.

1. Access the SYSTEM screen.



A. INFORMATION area

This area shows the firmware version and the state of the internal lithium battery.

B. INTERNAL SAMPLING FREQ select buttons

These buttons select the sampling frequency at which the M-400 will operate.

C. MAIN L/R setting

This specifies the MAIN L/R setting.

Disable MAIN MUTE	Disables MUTE for MAIN L/R.

2. View the system information in the INFORMATION area.

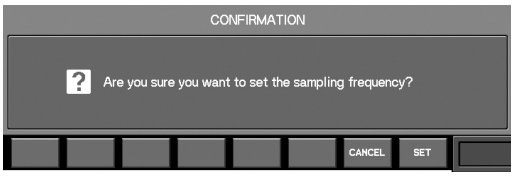
The INFORMATION area shows the following items.

System Version	System firmware version
Panel Version	Panel firmware version
Fader Version	Version of the fader firmware
Lithium Battery	Status of the internal lithium battery

If the Battery indication shows OK, the internal lithium battery voltage is satisfactory.

If this shows LOW or NG, the voltage is low. Replace the internal lithium battery as described in "About the internal lithium battery" (p. 18).

3. Use the INTERNAL SAMPLING FREQ select buttons to select either 44.1 kHz or 48 kHz as the sampling frequency at which the M-400 will operate.



A message will ask you to confirm that you want to change the sampling frequency.

Press [F8 (SET)] to switch to the sampling frequency you selected in step 3.

If you press [F7 (CANCEL)], the change will be cancelled.

MEMO

The internal word clock setting also determines the sampling frequency of the M-400's DIGITAL OUT connector and the sampling frequency for recording and playback on the USB memory recorder.

4. Make the desired MAIN L/R setting.

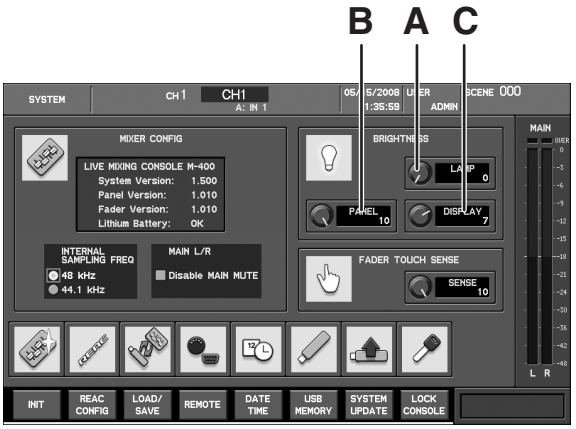
MEMO

If you turn Disable MAIN MUTE on, the MUTE for MAIN L/R will be fixed at off, and cannot be changed by button operations, scene memories, or mute groups.

Adjusting the brightness of the lamp, panel, and display

The BRIGHTNESS field of the SYSTEM screen is used to adjust the brightness of the lamp, panel, and display.

1. Access the SYSTEM screen.



A. LAMP knob
This adjusts the brightness of the lamp connected to the rear panel LAMP connector.

B. PANEL knob
This adjusts the brightness of the panel buttons and meters.

C. DISPLAY knob
This adjusts the brightness of the display.

2. Move the cursor to the LAMP knob, and use the value dial to adjust the brightness of the lamp.
Higher values produce greater brightness.

MEMO
At a setting of 0, the lamp will be off.

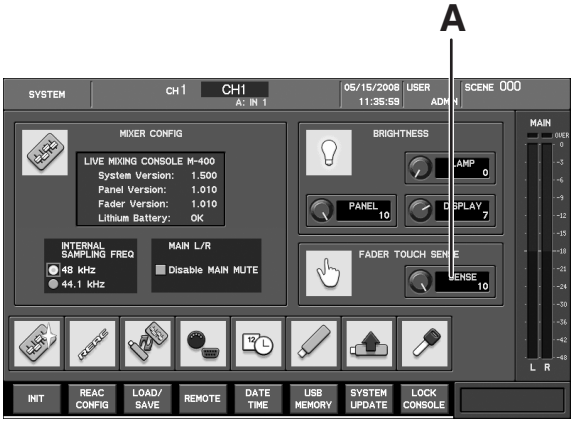
3. Move the cursor to the PANEL knob, and use the value knob to adjust the brightness of the panel buttons and meters.
Higher values produce greater brightness.

4. Move the cursor to the DISPLAY knob, and use the value dial to adjust the brightness of the display.
Higher values produce greater brightness.

Adjusting the fader touch sensitivity

To adjust the touch sensitivity of the faders, use the FADER TOUCH SENS field of the SYSTEM screen.

1. Access the SYSTEM screen.



A. SENSE knob
This adjusts the touch sensitivity of the faders.

2. Move the cursor to the SENSE knob, and use the value dial to adjust the touch sensitivity of the faders.
Higher values produce greater sensitivity.

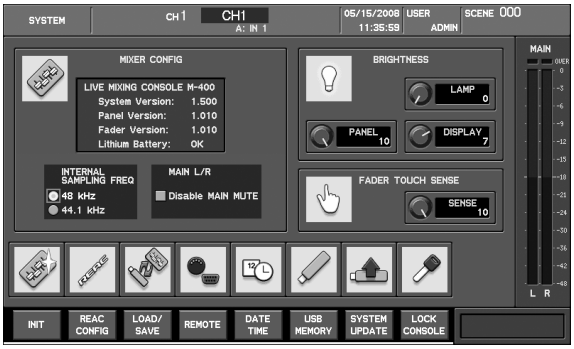
MEMO
If this is set to 0, fader touch sensitivity will be off.

If you turn [TOUCH SELECT] on in the CHANNEL EDIT section, you'll be able to select a channel by touching its fader.
If a channel is not selected when you touch its fader, increase the setting of the SENSE knob.
If the faders are too sensitive, turn down the SENSE knob.

MEMO
Depending on the environment in which you're using the M-400, fader touch sensitivity may not operate correctly, and the fader motor may operate incorrectly while you're operating the fader. If this occurs, use the M-400 with the SENSE knob set to 0 so that touch sensitivity is turned off.

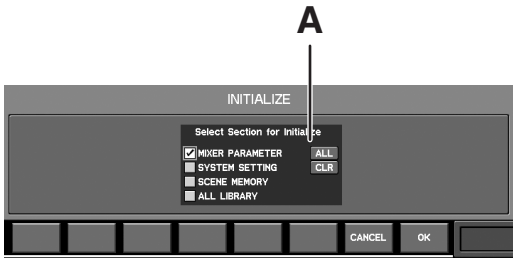
Initializing the mixer settings

1. Access the SYSTEM screen.



2. Press [F1 (INIT)].

The INITIALIZE popup will appear.



A. Initialize section select buttons

These buttons select the section(s) to be initialized.

3. Use the initialize section select buttons to select the section(s) that you want to initialize.

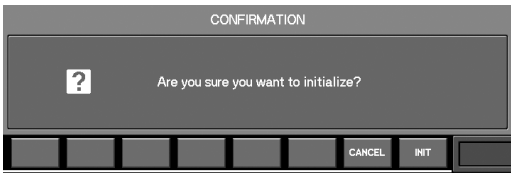
You can select the following sections.

MIXER PARAMETER	The mixer parameters will be initialized.
SYSTEM SETTING	The system settings will be initialized.
SCENE MEMORY	The scene memory will be erased.
ALL LIBRARY	All user libraries will be initialized.

SYSTEM SETTING includes the following items.

- The M-400's sampling frequency setting
- Lamp, panel, and display brightness settings
- Fader touch sensitivity setting
- REAC settings
- Remote settings

4. Press [F8 (OK)].

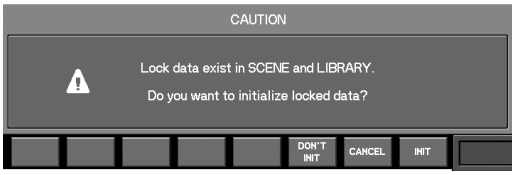


A message will ask you to confirm that you want to initialize the settings.

5. When you press [F8 (INIT)], the section you selected in step 3 will be initialized.

If you press [F7 (CANCEL)], the operation will be cancelled.

If you attempt to initialize the scenes or libraries when a locked scene or library exists, the following caution message will appear.



If you press [F6 (DON'T INIT)], the locked data will not be initialized; only the data that was not locked will be initialized.

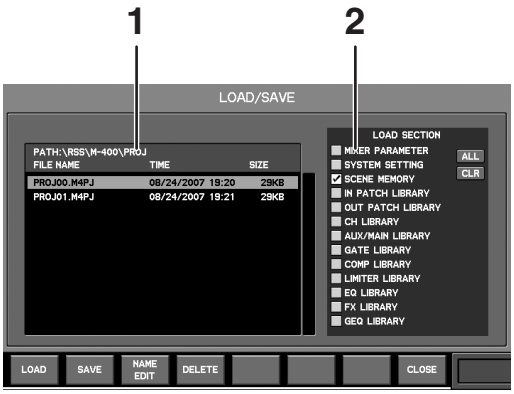
If you press [F7 (CANCEL)], the initialization operation will be cancelled.

If you press [F8 (INIT)], all data (including the locked data) will be initialized.

Saving and loading mixer settings

You can use USB memory to save or load mixer settings as a project file. The LOAD/SAVE popup of the SYSTEM screen is used to save or load mixer settings.

LOAD/SAVE popup



1. Project file list

This lists the project file that are saved in USB memory.

2. LOAD SECTION select buttons

Use these buttons to select the section(s) for which you want to load mixer settings.

You can select the following sections.

MIXER PARAMETER	Mixer parameters
SYSTEM SETTING	System settings
SCENE MEMORY	Scene memories
IN PATCH LIBRARY	Input patchbay library
OUT PATCH LIBRARY	Output patchbay library
CH LIBRARY	Channel library
AUX/MAIN LIBRARY	AUX/MAIN library
GATE LIBRARY	Gate/Expander library
COMP LIBRARY	Compressor library
LIMITER LIBRARY	Limiter library
EQ LIBRARY	EQ library
FX LIBRARY	Effect library
GEQ LIBRARY	GEQ library

MEMO

The libraries that can be selected by the LOAD SECTION select buttons are USER libraries.

In the LOAD/SAVE popup, the function buttons perform the following operations.

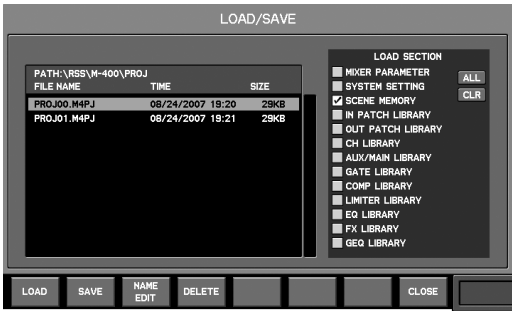
[F1 (LOAD)]	Loads the project file that is selected in the list.	p. 200
[F2 (SAVE)]	Saves the current mixer settings as a project file to USB memory.	p. 200
[F3 (NAME EDIT)]	Opens the NAME EDIT popup where you can edit the name of the project file selected in the list.	p. 201
[F4 (DELETE)]	Deletes the project file that is selected in the list.	p. 201
[F8 (CLOSE)]	Closes the popup.	

Saving mixer settings to USB memory

1. Access the SYSTEM screen.



2. Press [F3 (LOAD/SAVE)].



The LOAD/SAVE popup will appear.

3. Press [F2 (SAVE)].



A confirmation message will ask you to confirm the Save operation.

4. Press [F8 (SAVE)] to execute the Save; a "now processing" message will indicate the progress of the operation. When saving is completed, the progress indication will close.
If you press [F7 (CANCEL)], the operation will be cancelled.

NOTE

Do not disconnect the USB memory or switch off the M-400's power while data is being saved to USB memory. Doing so may destroy the data saved in USB memory.

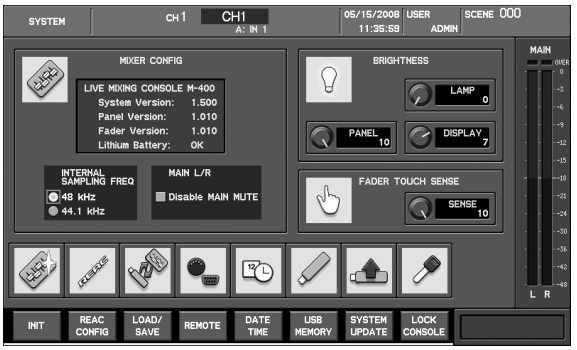
MEMO

Mixer settings are saved in the "RSS/M-400/PROJ" folder of the USB memory. All settings except for user settings are saved.

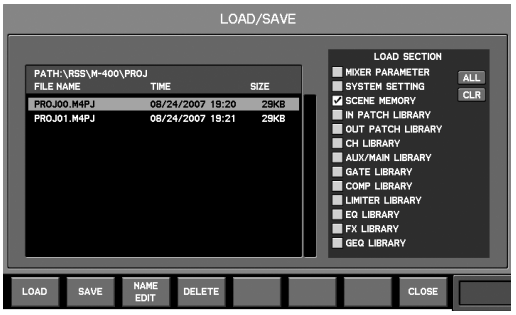
It's a good idea to save your mixer settings, since in the unlikely event that the M-400 should malfunction, this will allow you to move your settings to a backup M-400 unit and continue operating.

Loading mixer settings from USB memory

1. Access the SYSTEM screen.



2. Press [F3 (LOAD/SAVE)].



The LOAD/SAVE popup will appear.

3. Move the cursor to the project file list, and select the file that you want to load.

4. Move the cursor to the LOAD SECTION select buttons, and select the sections that you want to load.

5. Press [F1 (LOAD)].



A message will ask you to confirm that you want to load the mixer settings.

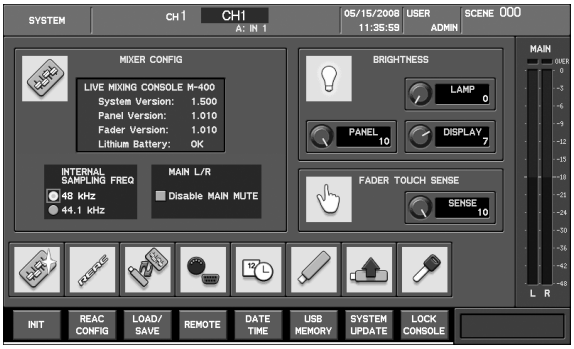
6. Press [F8 (LOAD)] to execute the Load; a "now processing" message will indicate the progress of the operation. When loading is completed, the progress indication will close.
If you press [F7 (CANCEL)], the operation will be cancelled.

NOTE

Do not disconnect the USB memory or switch off the M-400's power while data is being loaded from USB memory. Doing so may destroy the data saved in USB memory.

Renaming a project file

1. Access the SYSTEM screen.



2. Press [F3 (LOAD/SAVE)].



The LOAD/SAVE popup will appear.

3. Move the cursor to the project file list, and select the project file that you want to rename.

4. Press [F3 (NAME EDIT)].



The NAME EDIT popup will appear.

5. Use the name edit field to edit the name of the project files. You can specify a name of up to eight characters.

6. Press [F8 (OK)] to finalize the name you edited and close the popup.

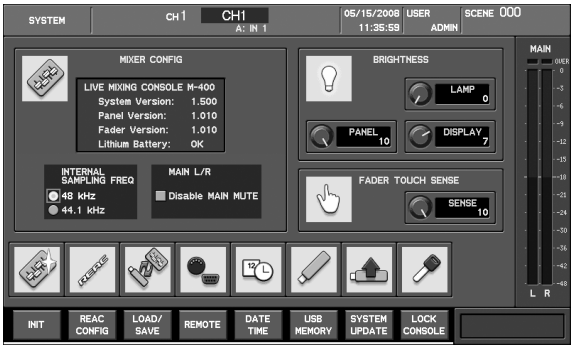
If you press [F7 (CANCEL)], the name edit will be cancelled and the popup will close.

cf.

For details on name editing, refer to “Editing a name” (p. 50).

Delete a project file

1. Access the SYSTEM screen.



2. Press [F3 (LOAD/SAVE)].



The LOAD/SAVE popup will appear.

3. Move the cursor to the project file list, and select the project file that you want to delete.

4. Press [F4 (DELETE)].



A message will ask you to confirm the delete file operation.

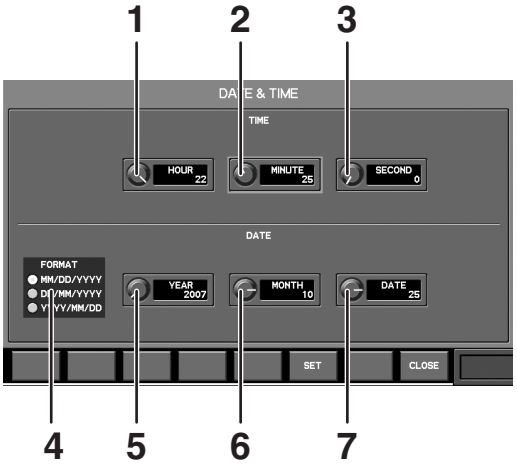
5. Press [F8 (PASTE)] to carry out the delete operation.

If you press [F7 (CANCEL)], the operation will be cancelled.

Date and time settings

Use the DATE&TIME popup of the SYSTEM screen to set the date and time.

DATE&TIME popup



1. HOUR knob
This specifies the current hour in a range of 0–23.

2. MINUTE knob
This specifies the current minute in a range of 0–59.

3. SECOND knob
This specifies the current second in a range of 0–59.

4. FORMAT select buttons
These buttons select the format of the date.
You can choose one of the following formats.

MM/DD/YYYY	Month/Date/Year
DD/MM/YYYY	Date/Month/Year
YYYY/MM/DD	Year/Month/Date

5. YEAR knob
This specifies the year in a range of 2000 to 2099.

6. MONTH knob
This specifies the month in a range of 1–12.

7. DATE knob
This specifies the date in a range of 1–31.

In the DATE&TIME popup, the function buttons perform the following operations.

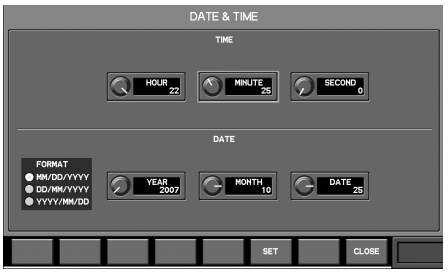
[F6 (SET)]	Finalizes the specified date and time.
[F8 (CLOSE)]	Closes the popup.

Specifying the time

1. Access the SYSTEM screen.



2. Press [F5 (DATE TIME)].



The DATE&TIME popup will appear.

3. Use the HOUR, MINUTE, and SECOND knobs to specify the time.

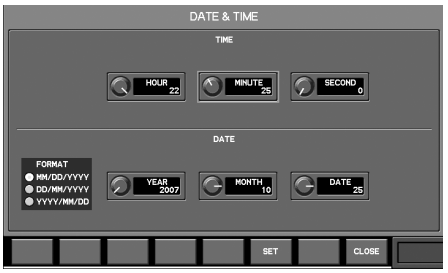
4. Press [F6 (SET)] to finalize the setting.

Specifying the date

1. Access the SYSTEM screen.



2. Press [F5 (DATE TIME)].



The DATE&TIME popup will appear.

3. Use the FORMAT select buttons to select the date format.

4. Use the YEAR, MONTH, and DATE knobs to specify the date.

5. Press [F6 (SET)] to finalize the setting.

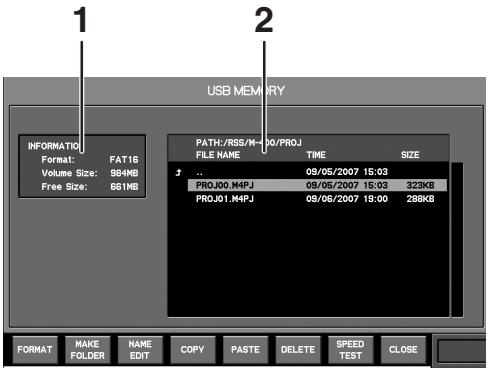
Managing USB memory

The USB MEMORY popup of the SYSTEM SCREEN is used to perform USB memory management.

NOTE

Do not disconnect the USB memory or switch off the M-400's power while data is being saved to USB memory or being loaded from it. Doing so may destroy the data saved in USB memory.

USB MEMORY popup



1. USB memory information

This area shows information about the USB memory.

The following information is shown.

Format	Type of format
Volume Size	Total capacity of USB memory
Free Size	Available space in USB memory

2. File list

This area shows the files in the USB memory.

MEMO

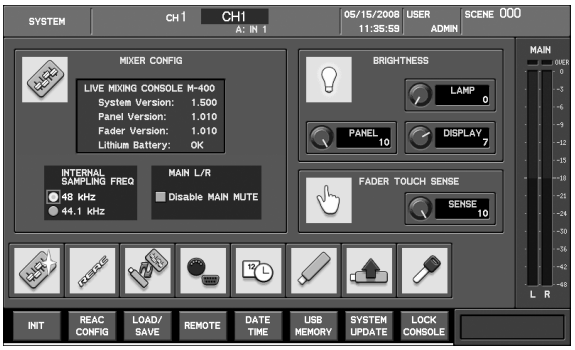
If you move the cursor to a folder and press [ENTER], you'll move to the level below that folder. If you move the cursor to ".." and press [ENTER], you'll move to the level above the current folder.

In the USB MEMORY popup, the function buttons perform the following operations.

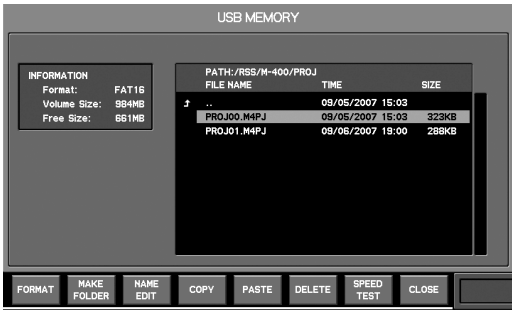
[F1 (FORMAT)]	Formats the USB memory.	p. 204
[F2 (MAKE FOLDER)]	Creates a folder in the list.	p. 204
[F3 (NAME EDIT)]	Accesses the NAME EDIT pop-up, where you can edit the file name.	p. 204
[F4 (COPY)]	Copies the file at the cursor position in the list.	p. 205
[F5 (PASTE)]	Pastes the copied file into the list.	p. 205
[F6 (DELETE)]	Deletes the file at the cursor position in the list.	p. 205
[F7 (SPEED TEST)]	Tests the speed of USB memory.	
[F8 (CLOSE)]	Closes the popup.	

Accessing the USB MEMORY popup

1. Access the SYSTEM screen.



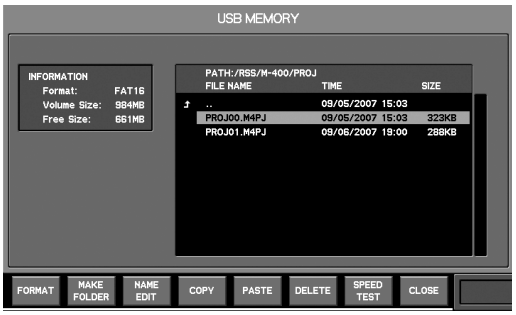
2. Press [F6 (USB MEMORY)].



The USB MEMORY screen will appear.

Formatting USB memory

1. **Access the USB MEMORY screen.**



2. **Press [F1 (FORMAT)].**



A message will ask you to confirm that you want to format the USB memory.

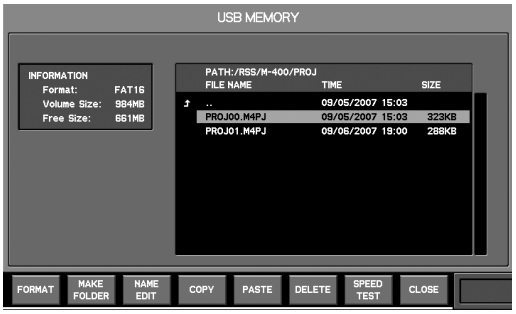
3. **Press [F8 (FORMAT)] to carry out the Format operation.**
If you press [F7 (CANCEL)], the operation will be cancelled.
A progress message will indicate the state of formatting.
When the "Completed" indication appears, formatting is complete.

NOTE

Do not disconnect the USB memory or switch off the M-400's power while USB memory is being formatted.

Creating a folder

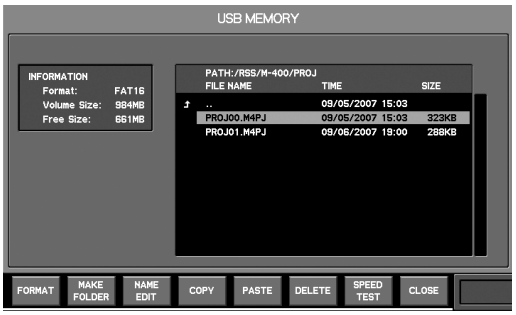
1. **Access the USB MEMORY screen.**



2. **In the file list, move to the level at which you want to create a folder.**
3. **Press [F2 (MAKE FOLDER)].**
4. **A folder named "Folderxx" (xx is a number) will be created in the file list.**

Editing the file or folder name

1. **Access the USB MEMORY screen.**



2. **In the file list, move the cursor to the desired file or folder.**
3. **Press [F3 (NAME EDIT)].**



The NAME EDIT popup will appear.

4. **Use the name edit field to edit the name. You can specify a name of up to twelve characters.**

MEMO

Even if the original name exceeded twelve characters, the name after editing will not exceed twelve characters.

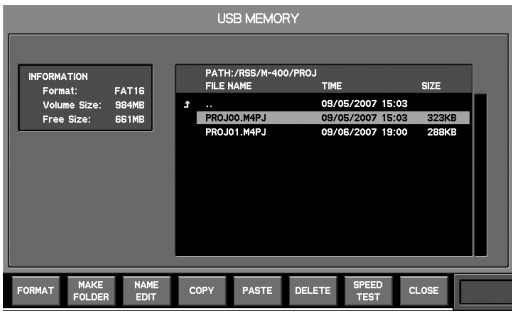
5. **Press [F8 (OK)] to finalize the name you edited and close the popup.**
If you press [F7 (CANCEL)], the name edit will be cancelled and the popup will close.

cf.

For details on name editing, refer to "Editing a name" (p. 50).

Copying a file

1. Access the USB MEMORY screen.

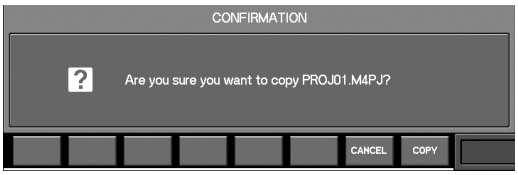


2. In the file list, move the cursor to the desired file.

MEMO

You can't copy a folder.

3. Press [F4 (COPY)].



A message will ask you to confirm the Copy operation.
Press [F8 (COPY)] to carry out the Copy operation. The file you selected in step 2 will be copied to the clipboard.
If you press [F7 (CANCEL)], the operation will be cancelled.

4. In the file list, move to the level at which you want to paste the copied file.

5. Press [F5 (PASTE)].



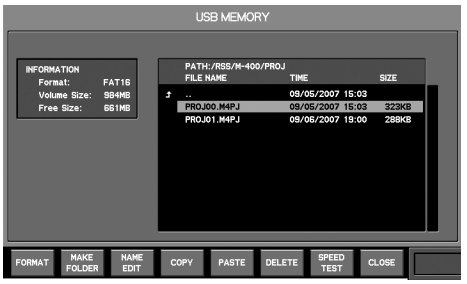
A message will ask you to confirm the Paste operation.
Press [F8 (PASTE)] to carry out the Paste operation.
If you press [F7 (CANCEL)], the operation will be cancelled.

MEMO

You can't paste while you playing/recording the USB memory recorder.

Deleting a file

1. Access the USB MEMORY screen.



2. In the file list, move the cursor to the file you want to delete.

3. Press [F6 (DELETE)].

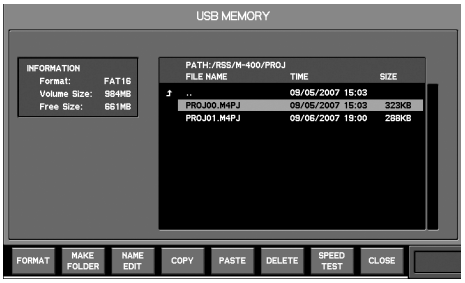


A message will ask you to confirm the Delete operation.
Press [F8 (DELETE)] to carry out the Delete operation.
If you press [F7 (CANCEL)], the operation will be cancelled.

Testing the speed of USB memory

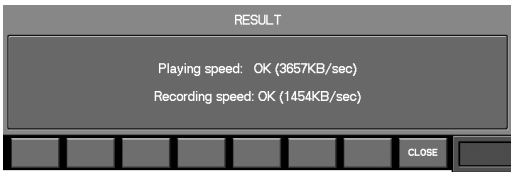
Here's how to test your USB memory's reading and writing speed to verify whether it can be used by the USB memory recorder for playback and recording.

1. Access the USB MEMORY screen.



2. Press [F7 (SPEED TEST)].

A "now processing" message will appear, and the USB memory will be tested. When the test is completed, the results will be displayed.



Playing Speed	Indicates whether the USB memory can be used for playback by the USB memory recorder. If this is OK, the memory can be used.
Recording Speed	Indicates whether the USB memory can be used for recording by the USB memory recorder. If this is OK, the memory can be used.

3. Press [F8 (CLOSE)] to close the popup.

MEMO

If the test result is "NG" (Not Good), we do not recommend that you use this USB memory with the USB memory recorder.

MEMO

In order for the speed of USB memory to be tested, the USB memory must have several MB of free space.

Console Lock

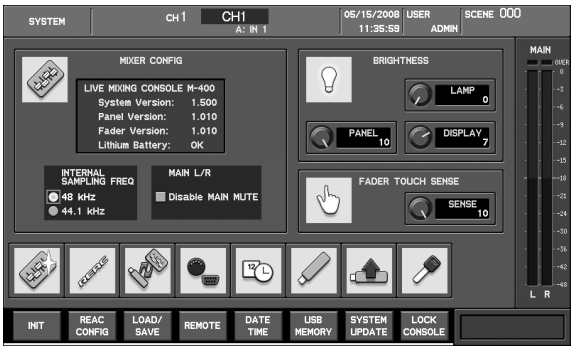
You can lock the console to prevent it from being operated. If a password has been specified for the current user settings, you will need to enter the password in order to unlock the console.

MEMO

If you turn off the power while the console is locked, the console lock setting will be defeated the next time you turn on the power.

Locking the console

1. Access the SYSTEM screen.



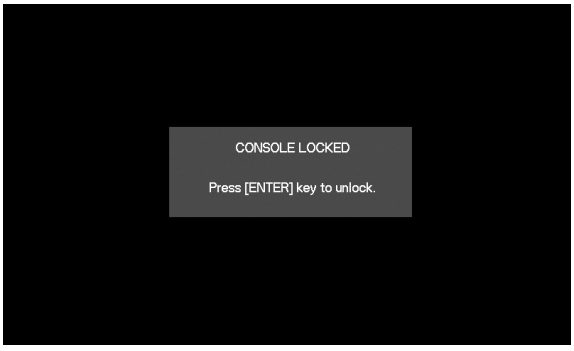
2. Press [F8 (LOCK CONSOLE)].



If a password has been specified for the current user settings, the ENTER PASSWORD popup will appear.

Enter the user password and press [F8 (OK)].

If you press [F7 (CANCEL)], the operation will be cancelled.



The console will be locked.

Unlocking the console

1. When the console is locked, press [ENTER].



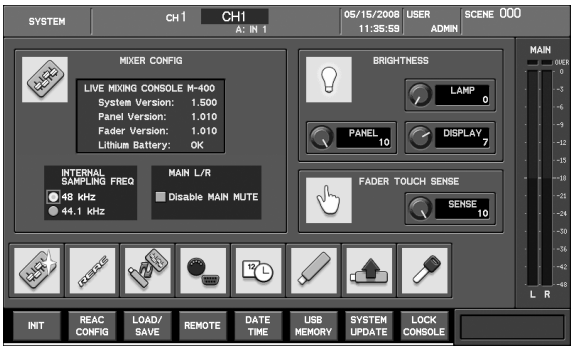


If a password has been specified for the current user settings, the ENTER PASSWORD popup will appear.

Enter the user password and press [F8 (OK)].

If you press [F7 (CANCEL)], the operation will be cancelled.

2. The console will be unlocked.



Help function

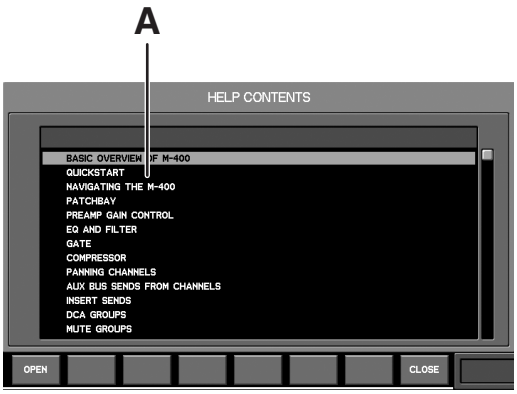
The Help function explains how to use the M-400.

MEMO

The Help contents are provided only in English.

Using the Help function

1. Press [HELP].



The HELP CONTENTS popup will appear.

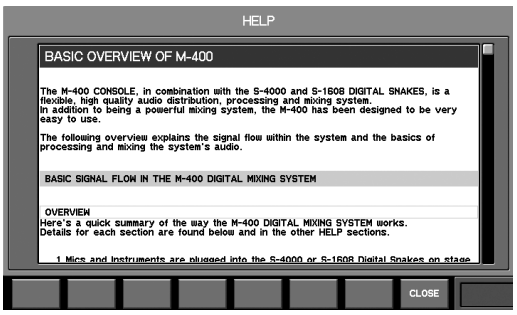
A. CONTENTS list

This lists the Help contents.

In the HELP CONTENTS popup, the function buttons perform the following operations.

[F1 (OPEN)]	Displays the content selected in the list.
[F8 (CLOSE)]	Closes the popup.

2. In the CONTENTS list, select the desired content and press [F1 (OPEN)].



The HELP popup will appear.

Use the up/down cursor buttons or the value dial to scroll the display.

Press [F8 (CLOSE)] to close the HELP popup.

Help shortcuts

By holding down [HELP] and pressing a top panel button, you can access the Help content related to that button.

You can use the following buttons as Help shortcuts.

- [EFFECTS]
- [METER]
- [SYSTEM]
- [PATCHBAY]
- GROUP section [DCA]
- GROUP section [MUTE]
- [COMP]
- [GATE]
- [EQ]
- [AUX SENDS]
- SCENE section [DISP]
- USER section [DISP]
- RECORDER section [DISP]
- TALKBACK/OSC section [DISP]
- MONITOR section [DISP]

Appendix

User button functions

FUNCTION	PARAM1	PARAM2	LED	Explanation
NONE	-	-	Unlit	
SCENE	PREV RECALL	-	Lit while held	Recalls the scene of the previous number
	NEXT RECALL	-	Lit while held	Recalls the scene of the next number
	DIRECT RECALL	-	Lit while held	Recalls the scene of the specified number
	UNDO RECALL	-	Lit if UNDO is available	Cancels the scene recall
OSCILLA-TOR	OSC ON	-	ON: lit, OFF: unlit	Oscillator on/off
MONITOR	SOURCE SELECT	AUX1–16, MAIN L/R, REC L/R	Lit if assignment is identical	Changes the monitor source to the specified source
EFFECT	BYPASS FX	FX1 L–FX4 R	ON: lit, OFF: unlit	Turns Bypass on/off for the specified FX
	BYPASS GEQ	GEQ1–GEQ4	ON: lit, OFF: unlit	Turns Bypass on/off for the specified GEQ
	EDIT FX	FX1–FX4	Lit when the specified screen is displayed	
	EDIT GEQ1	GEQ1–GEQ4	Lit when the specified screen is displayed	
	TAP TEMPO		Blinks in time with the tempo	
MUTE GROUP	1-8		ON: lit, OFF: unlit	Turns the specified mute group on/off
METER	PEAK CLEAR	-	Lit while held	Clears the meter peak hold and Over indications
	CHANGE METER POINT	INPUT CH, AUX/MAIN	Lit while held down	The level detection point of the specified meter will be changed each time you press the button.
CH SELECT	PREV	-	Lit while held	Selects the channel that precedes the current channel
	NEXT	-	Lit while held	Selects the channel that follows the current channel
CH EDIT	+48V SW	-	ON: lit, OFF: unlit	Turns +48V phantom power on/off for the current channel
	PHASE SW	-	ON: lit, OFF: unlit	Turns PHASE on/off for the current channel
	GATE SW	-	ON: lit, OFF: unlit	Turns GATE on/off for the current channel
	COMP SW	-	ON: lit, OFF: unlit	Turns COMP on/off for the current channel
	SET UNITY	-	Lit while held	Sets the fader of the current channel to 0.0 dB

Error message list

Message	Explanation
xxx is directory.	You attempted to copy the xxx directory of the USB memory.
xxx is used for EXT FXx Do you want to disable it?	Port xxx is being used by EXT FXx. Do you want to disable EXT FXx?
Cannot operate the USB memory. It exceeds the power capability.	The device connected to the USB MEMORY connector used more than the maximum allowable electrical current.
Directory is not empty.	You attempted to delete a non-empty directory in USB memory.
Internal battery is low.	The internal lithium battery has run down.
Internal data were damaged. M-400 starts with initialized setting.	Data was initialized because the internal memory data was lost when the internal lithium battery was depleted or was replaced.
Invalid USER NAME.	You attempted to assign a blank user name.
Media is abnormal.	The USB memory has malfunctioned.
Media not formatted.	The USB memory has not been formatted.
MIDI/RS-232C Rx Error Framing.	An inappropriate signal is being input to MIDI/RS-232C.
MIDI/RS-232C Rx Error xxx Buffer Full.	Too much data is being received via MIDI/RS-232C.
Passwords do not match.	The two passwords you entered to change the user password do not match.
REAC x Error Fan Stop.	The cooling fan of the input/output unit connected to REAC x has stopped.
REAC x Error Temp High.	The temperature of the input/output unit connected to REAC x has become abnormally high.
REAC x Error Packet.	A reception error occurred at the M-400's REAC x port.
REAC x Error Packet. (I/O unit Rx)	A reception error occurred at the input/output unit connected to the REAC x port.
REAC x: Wrong sampling frequency.	A REAC device whose sampling frequency is not supported by the M-400 is connected to REAC x.
The data is locked	You attempted to edit a locked scene or library item.
The internal FAN has stopped.	The cooling fan located on the bottom panel has stopped.
This operation is not allowed.	You attempted to perform an operation that is prohibited by your user settings.
USB MIDI Rx Error Buffer Full.	Too much data is being received via USB MIDI.
Now Playing/Now Recording	You attempted to copy a file in USB memory while the USB memory recorder was playing or recording.

Troubleshooting

Overall operation

No sound

- A device is not powered on.
- An input/output unit is not connected correctly.
- The devices are not connected correctly.
- The volume of a connected amp or other device is lowered.
- A volume level setting is lowered.
  - Channel fader
  - MAIN fader, AUX faders
  - MONITOR LEVEL knob
  - PHONES LEVEL knob
  - MAIN or AUX channel attenuator
- Output patchbay settings are incorrect.
- The MUTE ALL OUTPUTS button is turned on for a connected input/output unit.

Sound is not being input

- A device is not powered on.
- An input/output unit is not connected correctly.
- The devices are not connected correctly.
- Input patchbay settings are incorrect.
- The channel fader is lowered.
- The channel is muted.
- The channel's MAIN switch is off.
- The DCA fader to which the channel belongs is lowered.

The preamp of a specific channel is not shown

- The input is not patched in the input patchbay.
- The input that is patched in the input patchbay does not have a preamp.

Sound is noisy or distorted

- The preamp gain is inappropriate

  The sound will be distorted if the preamp gain is too high. The proportion of noise will be greater if the preamp gain is too low.
- The channel's dynamics, EQ, etc. are overloading.

  Check the overload indication or level meter in the CHANNEL DISPLAY to see if any section is overloading. If you find a section that's overloading, adjust the parameters for it.

Can't input successfully from REAC; noise is heard

If REAC devices are connected incorrectly or if the REAC mode setting is incorrect, it will not be possible to input from REAC, and noise may be heard.

In this case, first check the connections between the M-400 and the input/output units.

- Make sure that the input/output units are connected to the correct REAC port
- Make sure that the REAC mode of the input/output units is correct

MEMO

After changing the REAC mode of an input/output unit, you must cycle the power to that input/output unit.

Then initialize the REAC connection.

1. **Disconnect the REAC cable, and wait for about five seconds.**
2. **Reconnect the REAC cable.**

You've forgotten the ADMIN password

- To clear the ADMIN password, switch on the M-400's power while holding down the [DISP] button in the USER section and the [SOLO CLEAR] button in the MONITOR section.

Top panel faders do not work

- SENDS ON FADER is turned on.
- The M-400 is in a mode where the faders are used to control the GEQ.

Fader touch sensitivity does not work

- CHANNEL DISPLAY [TOUCH SELECT] is turned off.
- The fader touch sensitivity is not adjusted appropriately.

cf.

"Adjusting the fader touch sensitivity" (p. 197)

You experience a "sticking" sensation when operating the faders

- The ground is not connected (p. 43)

  If the ground is not connected, the fader touch sensitivity will not operate correctly, and the fader motor may malfunction when you operate a fader.
- The fader touch sensitivity is not working correctly

  Depending on the environment in which you're using the M-400, the fader touch sensitivity may not operate correctly, possibly causing the fader motor to malfunction when you operate a fader.

  If this occurs, use the M-400 with the touch sensitivity set to 0 (p. 197) so that touch sensitivity is disabled.

Can't read or write USB memory

- The USB memory is not formatted
- The USB memory is formatted as other than FAT (e.g., NTFS or HFS)
- The USB memory does not have sufficient free space

Remote

Can't control an external device

- The settings of the external device are incorrect.
- The external device is not connected correctly.
- The cable is broken.
- The MIDI OUT setting is set to THRU.
- The RS-232C baud rate is not set correctly.
- The M-400 is not set to transmit messages.

Can't control the M-400 from an external device

- The settings of the external device are incorrect.
- The external device is not connected correctly.
- The cable is broken.
- The RS-232C baud rate is not set correctly.
- The M-400 is not set to receive messages.

Other

Insufficient volume from a device connected to the output jacks

- You're using a cable that contains a built-in resistor.

Data disappeared from USB memory

- You switched off the power or disconnected the USB memory while writing or reading USB memory.

Settings don't change when you recall a scene

- The recall is being filtered by the RECALL PARAMETER and GLOBAL SCOPE settings.

REAC indicator

The REAC A port, REAC B port, and SPLIT/BACKUP port provide a REAC indicator that shows the REAC communications status.
The following table shows the meaning of the REAC indicator status.

Status	Meaning
Lit	REAC communication is established
Blinking	REAC communication is taking place
Unlit	No communication

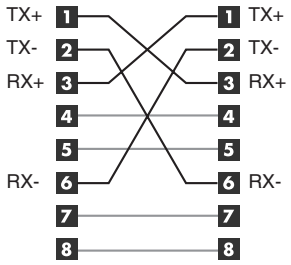
If REAC connection is unsuccessful, check the following points.

- **Make sure that all REAC devices are powered on.**
- **Check the Cat5e cable connections.**
- **Make sure that the Cat5e cables are not damaged.**
- **Verify that you're using the appropriate type of cables. (See "About cables" (p. 13))**
- **If you're using a switching hub, is it operating?**
- **If you're using a switching hub, is it connected correctly?**
- **If you're using a switching hub, does it have the correct specifications? (See "Requirements for switching hubs" (p. 214))**

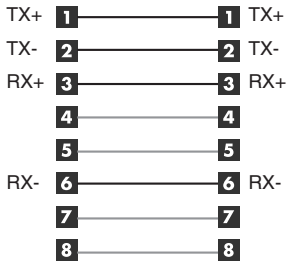
Pin configuration diagrams

Cat5e Ethernet cables (RJ45 EtherCon type connectors)

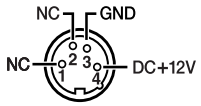
Cat5e crossover cables (REAC cables SC-W100S)



Cat5e straight cables



LAMP connector



[DC+12V/500 mA]

LAMP

Pin number	Signal name
1	NC
2	NC
3	GND
4	DC +12V

Lamps rated up to 6W (12V/500mA) are supported.

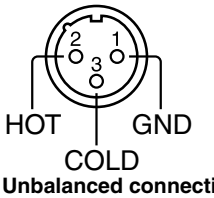
Audio jacks (XLR)

INPUT and OUTPUT

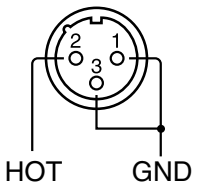
Balanced connections are recommended.

If you use unbalanced connections, connect the cold and ground.

- **Balanced connection**



- **Unbalanced connection**



INPUT jacks provide phantom power (+48V/14mA).

Requirements for switching hubs

Switching hubs used to connect REAC devices must meet the following conditions.

- **We recommend a switching hub that supports 1000BASE-T (IEEE 802.3ab, Gigabit Ethernet)**
- **100BASE-TX interface must be supported (IEEE 802.3u, Fast Ethernet)**
- **Full duplex communication (simultaneous bidirectional communication) must be supported**

Caution when using a switching hub

- **The network propagation time between REAC devices is approximately 375 microseconds, but if the signal passes through a switching hub, there will be approximately 200 microseconds of delay for each unit.**
- **Up to four switching hubs can be connected in series.**
- **Connect REAC devices to a switching hub that supports 100BASE-TX.**
- **Carefully read the owner's manual of the switching hub you use.**

Main specifications

M-400: LIVE MIXING CONSOLE

Number of Channels

48 in, 18 BUS, 8 MATRIX, 58 out

AD/DA Conversion

Sample Rate: 48.0 kHz or 44.1 kHz
Signal Processing: 24 bits

Internal processing

56 bits

Frequency Response

CONSOLE OUTPUT jacks (1 to 8): -2 dB / +0 dB (20k ohms load, +4 dBu)
PHONES jack: -3 dB / +0 dB (40 ohms load, 150 mW)
* Sample Rate: 48.0 kHz or 44.1 kHz
* Input Connector: CONSOLE INPUT (Pad: ON, Input gain: +4 dBu, 20 Hz to 20 kHz)

Total Harmonic Distortion + Noise

CONSOLE OUTPUT jacks (1 to 8): 0.05 % (typ., +4 dBu)
PHONES jack: 0.05 % (typ., 40 ohms load, 150 mW)
* Sample Rate: 48.0 kHz or 44.1 kHz
* Input Connector: CONSOLE INPUT (Pad: ON, Input gain: +4 dBu, 20 Hz to 20 kHz)

Dynamic Range

CONSOLE OUTPUT jacks (1 to 8): 110 dB (typ.)
* Sample Rate: 48.0 kHz or 44.1 kHz
* Input Connector: CONSOLE INPUT (Pad: ON, Input gain: +4 dBu)

Crosstalk@ 1 kHz

CONSOLE INPUT jacks (1 to 8): -80dB (Pad: ON, Input gain: +10 dBu, typ.)
CONSOLE OUTPUT jacks (1 to 8): -100 dB (typ.)
* Sample Rate: 48.0 kHz or 44.1 kHz

Nominal Input Level (Variable)

CONSOLE INPUT jacks (1 to 8): -65 to -10 dBu (Pad: OFF) or -45 to +10 dBu (Pad: ON)
STEREO IN jacks (L / R): -18 to 0 dBu
TALKBACK MIC IN jack: -50 to -10 dBu

Pad

20 dB ON / OFF

Input Impedance

CONSOLE INPUT jacks (1 to 8): 14 k ohms
STEREO IN jacks (L / R): 10 k ohms
TALKBACK MIC IN jack: 41 K ohms

Non Clip Maximum Input level

CONSOLE INPUT jacks (1 to 8): +8 dBu (Pad: OFF) or +28 dBu (Pad: ON)
STEREO IN jacks (L / R): +18 dBu
TALKBACK MIC IN jack: +8 dBu

Nominal Output Level

CONSOLE OUTPUT jacks (1 to 8): +4 dBu (Load impedance: 10 k ohms)

Output Impedance

CONSOLE OUTPUT jacks (1 to 8): 600 ohms
PHONES jack: 100 ohms

Recommended Load Impedance

CONSOLE OUTPUT jacks (1 to 8): 10 k ohms or greater
PHONES jack: 8 ohms or greater

Non Clip Maximum Output level

CONSOLE OUTPUT jacks (1 to 8): +22 dBu (1 kHz, 10 k ohms load)
PHONES jack: 150 mW + 150 mW (1 kHz, 40 ohms load)

Residual Noise Level (IHF-A, typ.)

-88 dBu (All faders: Min)
-80 dBu (Main Fader: Unity, Channel faders: Unity only one CONSOLE IN channel, Preamp gain: Min)
-61 dBu (Main Fader: Unity, Channel faders: Unity only one CONSOLE IN channel, Preamp gain: Max)
-73 dBu (All faders: Unity, Preamp gain: Min, S-1608 + S-4000S-3208, Total 48CH)
-41 dBu (All faders: Unity, Preamp gain: Max, S-1608 + S-4000S-3208, Total 48CH)
* Input 150 ohms terminate
* Output Connector: CONSOLE OUTPUT jacks (1 to 8)
* Sample Rate: 48.0 kHz or 44.1 kHz

Equivalent Input Noise Level (E.I.N.)

-126 dBu (Main Fader: Unity, Channel faders: Unity only one CONSOLE IN channel, Preamp gain: Max)
* Output Connector: CONSOLE OUTPUT jacks (1 to 8)
* Sample Rate: 48.0 kHz or 44.1 kHz

Network Latency

2.8 mS (typ.) *1
* Total System Latency of audio signal from S-1608 inputs to outputs via M-400's REAC ports (A or B).
* Sample Rate: 48.0 kHz
* Effects : No insert effects

Connectors

CONSOLE INPUT jacks (1 to 8): XLR-3-31 type (balanced, phantom power)
TALKBACK MIC IN jack: XLR-3-31 type (balanced, phantom power)
STEREO IN jacks (L / R): RCA phono type
CONSOLE OUTPUT jacks (1 to 8): XLR-3-32 type (balanced)
PHONES jack: Stereo 1/4 inch phone type
DIGITAL OUT jacks x 2: Optical type, Coaxial type
REAC ports Å~3: RJ-45 EtherCon type
RS-232C connector: 9-pin D-sub type
MIDI connectors (OUT/THRU, IN): 5-pin DIN type
USB connectors: USB Type A and Type B
LAMP connector: XLR-4-31 type
Grounding terminal
AC INPUT connector

* XLR type: 1 GND, 2 HOT, 3: COLD
* phantom power: DC+48V(unloaded maximum), 14mA(maximum load) (All XLR type inputs)
* LAMP power: DC+12V/500mA

Display

800 x 480 dots Wide VGA backlit TFT color screen

Power Supply

AC 115 V, AC 117 V, AC 220 V, AC 230 V, AC 240 V (50/60 Hz)

Power Consumption

95 W

Dimensions

749.0 (W) x 626.0 (D) x 229.0 (H) mm
29-1/2(W) x 24-11/16(D) x 9-1/16(H) inches

Weight

19.8 kg
43 lbs 11 oz

Operation Temperature

+5 to +40 degrees Celsius
+41 to +104 degrees Fahrenheit

Accessories

Power Cord
REAC Connector Covers x 3
Ferrite Core x 3
Cover
Channel number sticker
Owner's Manual

Options

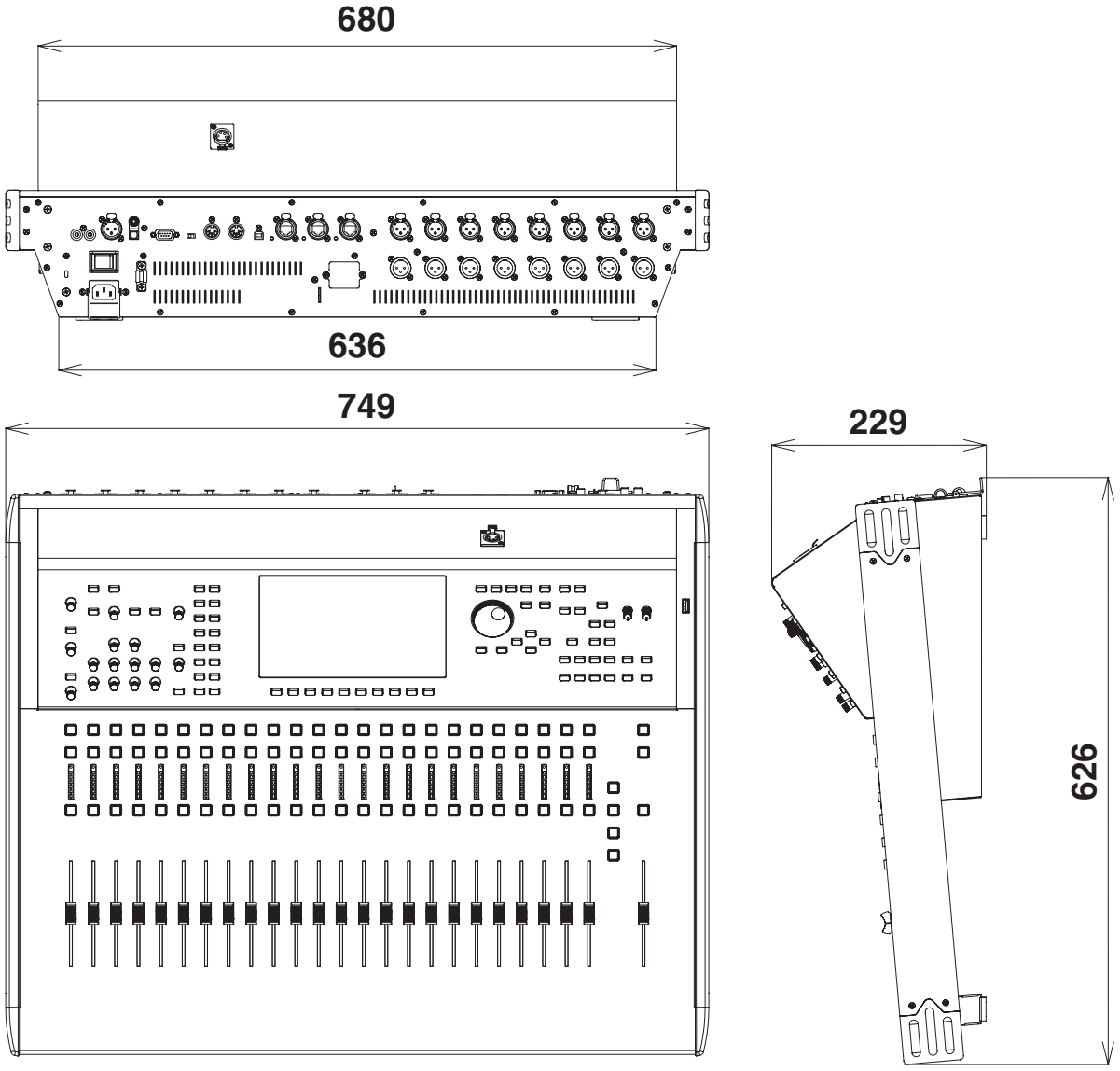
Stage unit: S-1608
Stage unit: S-4000S-3208
FOH unit: S-0816
REAC Splitter: S-4000-SP
REAC Optical Converter: S-OPT
Cat5e Ethernet Crossover Cable with Neutrik(R) EtherCon(R) Plug: SC-W100S (100 m)
Cat5e Ethernet Crossover Cable with Neutrik(R) EtherCon(R) Plug and reel: W100S-R (100 m)

* 0dBu = 0.775Vrms
* In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.

***1: When a REAC Splitter S-4000-SP or a switching hub is used in-line with REAC cables, the network latency will increase by the amount of processing delay introduced by the splitting device itself.**

The actual delay is dependant upon the specifications of the splitting device, though the maximum delay amount for a single splitting device should be about 200 microseconds.

Dimensions



Dimensions are shown in millimeters.

Preset libraries

FX library

Number	Name	Type	Description
P000	St.REVERB	St.REVERB	Default settings for St.REVERB.
P001	REVERB+GATE	REVERB+GATE	Default settings for REVERB+GATE.
P002	DELAY x2	DELAY x2	Default settings for DELAY x2.
P003	LONG DELAY	LONG DELAY	Default settings for LONG DELAY.
P004	M.TAP DELAY	M.TAP DELAY	Default settings for M.TAP DELAY.
P005	X.MOD DELAY	X.MOD DELAY	Default settings for X.MOD DELAY.
P006	St.CHORUS	St.CHORUS	Default settings for St.CHORUS.
P007	St.FLANGER	St.FLANGER	Default settings for St.FLANGER.
P008	St.PHASER	St.PHASER	Default settings for St.PHASER.
P009	P.SHIFTER x2	P.SHIFTER x2	Default settings for P.SHIFTER x2.
P010	CH STRIP x2	CH STRIP x2	Default settings for CH STRIP x2.
P011	Small Hall1	St.REVERB	Small size hall using HALL1 setting of St.REVERB. 1 second reverb time.
P012	Med Hall1	St.REVERB	Medium size hall using HALL1 setting of St.REVERB. 1.3 second reverb time.
P013	Large Hall1	St.REVERB	Large size hall using HALL1 setting of St.REVERB. 2.3 second reverb time.
P014	Concert Hall1	St.REVERB	Large size hall using HALL1 setting of St.REVERB. 3.4 second reverb time.
P015	Small Hall2	St.REVERB	Small size hall using HALL2 setting of St.REVERB. 1.2 second reverb time.
P016	Med Hall2	St.REVERB	Medium size hall using HALL2 setting of St.REVERB. 1.5 second reverb time.
P017	Large Hall2	St.REVERB	Large size hall using HALL2 setting of St.REVERB. 2.4 second reverb time.
P018	Long Hall2	St.REVERB	Long, large size hall using HALL2 setting of St.REVERB. 3.3 second reverb time.
P019	Small Plate	St.REVERB	Small size PLATE setting of St.REVERB. 1.2 second reverb time.
P020	Med Plate	St.REVERB	Medium size PLATE setting of St.REVERB. 1.9 second reverb time.
P021	Long Plate	St.REVERB	Large size PLATE setting of St.REVERB. 2.6 second reverb time.
P022	PracticeRoom	St.REVERB	Medium size room using ROOM1 setting of St.REVERB. 1.8 second reverb time.
P023	Garage	St.REVERB	Small room using ROOM1 setting of St.REVERB. 0.6 second reverb time.
P024	Bathroom	St.REVERB	Small, hard room using ROOM1 setting of St.REVERB. 1.3 second reverb time.
P025	Tiny Room	St.REVERB	Small tight room using ROOM2 setting of St.REVERB. 0.9 second reverb time.
P026	Small Club	St.REVERB	Small room using ROOM2 setting of St.REVERB. 0.8 second reverb time.
P027	Med Club	St.REVERB	Medium room using ROOM2 setting of St.REVERB. 1.0 second reverb time.
P028	Large Club	St.REVERB	Large room using ROOM2 setting of St.REVERB. 1.6 second reverb time.
P029	Cave	St.REVERB	Long space using HALL2 setting of St.REVERB. 6.8 second reverb time.
P030	Pipe	St.REVERB	Hard ringing chamber using ROOM2 setting of St.REVERB. 6.8 second reverb time.
P031	Ambient Gate	REVERB+GATE	Gated reverb with 1.7 second reverb time, -30.0dB gate threshold, 94ms release time.
P032	Soft Gate	REVERB+GATE	Gated reverb with 2.2 second reverb time, -30.0dB gate threshold, 125ms release time.
P033	Hard Gate	REVERB+GATE	Gated reverb with 1.7 second reverb time, -30.0dB gate threshold, 0ms release time.
P034	SimpleEchoLR	DELAY x2	Stereo Echo with both sides at 400ms delay time, feedback level at 40.
P035	Dual Echo LR	DELAY x2	Stereo Echo with right side at 233ms delay time and feedback level at 60, left side at 330ms delay time and feedback level at 40.
P036	LongDelay LR	LONG DELAY	Long Echo with right side at 2400ms delay time, left side at 1200ms delay time, feedback level at 0.
P037	Accelerate	LONG DELAY	Long Echo right side at 1100ms delay time, left side at 700ms delay time, feedback with 300ms time and level at 40.
P038	Accelerando	M.TAP DELAY	Multitap echo with 12 taps ranging from 500ms to 2625ms, panning from left to right.
P039	1 + 3 = 4	M.TAP DELAY	Multitap Delay for Echo with 3 repeats added to original signal.
P040	1 + 4 = 5	M.TAP DELAY	Multitap Delay for Echo with 4 repeats added to original signal.
P041	Warmth	X.MOD DELAY	Cross Modulation Delay uses vibrato to add warm detuned sound behind piano, guitar, or other instruments.
P042	Send Chorus	St.CHORUS	Basic Stereo Chorus setting designed to be used on an effects loop via AUX send
P043	InsertChorus	St.CHORUS	Basic Stereo Chorus setting designed to be inserted into a channel.
P044	Send Flange	St.FLANGER	Basic Stereo Flanger setting designed to be used on an effects loop via AUX send
P045	InsertFlange	St.FLANGER	Basic Stereo Flanger setting designed to be inserted into a channel.
P046	Send Phaser	St.PHASER	Basic Stereo Phaser setting designed to be used on an effects loop via AUX send
P047	InsertPhaser	St.PHASER	Basic Stereo Phaser setting designed to be inserted into a channel.
P048	Sweep	St.PHASER	Stereo Phaser with 8stages, Rate at 0.06Hz, and Feedback at 77.

GEQ library

Number	Name	Description
P000	Flat	Flat setting.

Channel library

Number	Name	Description
P000	Default	Default channel settings.
P001	Kick	Kick
P002	Snare	Snare
P003	HiHat	HiHat
P004	Toms	Toms
P005	DrumOverHead	Drum Over Head
P006	Percussion	Percussion
P007	Bass	Bass
P008	AGuitar Band	Acoustic Guitar Band
P009	EGuitar Band	Electric Guitar Band
P010	Synthesizer	Synthesizer
P011	Piano Band	Piano Band
P012	Female Vocal	Female Vocal
P013	Male Vocal	Male Vocal
P014	Spoken Word	Spoken Word
P015	Choir	Choir
P016	Brass & Wind	Brass and Wind

AUX/MAIN library

Number	Name	Description
P000	Default	Default settings for aux/main.

GATE/EXP library

Number	Name	Description
P000	Gate	Default settings for gate.
P001	Expander	Default settings for expander.
P002	Ducking	Default settings for ducking.
P003	Gate 1	Gate 1
P004	Gate Kick	Gate Kick
P005	Gate Snare	Gate Snare
P006	Expand Toms	Expander Toms
P007	Expander 1	Expander 1
P008	Expander 2	Expander 2
P009	Noise Gate	Noise gate

COMP library

Number	Name	Description
P000	Comp	Default settings for compressor.
P001	Vocalist 1	Vocalist 1
P002	Vocalist 2	Vocalist 2
P003	Narrator	Narrator
P004	Spoken Word	Spoken Word
P005	Kick	Kick
P006	Snare	Snare
P007	Bass	Bass
P008	Slap Bass	Slap Base
P009	Piano	Piano
P010	Guitar	Guitar
P011	Synthesizer	Synthesizer
P012	Strings	Strings
P013	Brass & Wind	Brass & Wind
P014	Choir	Choir
P015	Limiter	Limiter
P016	Hard Limiter	Hard Limiter
P017	Heavy Comp	Heavy Comp

LIMITER library

Number	Name	Description
P000	Limiter	Default settings for limiter.

EQ library

Number	Name	Description
P000	EQ Flat	Default settings for EQ.
P001	Hi Pass	Hi Pass
P002	Notch	Notch
P003	Band Pass	Band Pass
P004	Lo Pass	Lo Pass
P005	Kick 1	Full bass sound suitable for bass drum. Enhances lows and highs with reduction of frequencies around 280Hz. No Filter.
P006	Deep Kick	Extra boost on low end and frequencies around 3kHz to enhance sound of bass drum. No Filter.
P007	Snare 1	Boosted frequencies around 2.00kHz, enhanced highs for snare drum. Hi Pass Filter to reject rumble and leakage from bass drum.
P008	Snare 2	Enhanced highs, reduction of frequencies around 266Hz for snare drum. No Filter.
P009	Toms	For tom tom drums, reduced frequencies around 560kHz to avoid ringing, enhanced highs for clarity. No Filter.
P010	Crash Cymbal	Boosted high frequencies to enhance cymbal sounds. Hi Pass Filter to reject rumble and leakage from drums.
P011	Ride Cymbal	Boosted mid and high frequencies to enhance cymbal sounds. Hi Pass Filter to reject rumble and leakage from drums.
P012	Shaker	Boosted mid and high frequencies to enhance handheld shaker and other high pitched percussion instruments. Hi Pass Filter to reject rumble and leakage from drums.
P013	Percussion	Enhanced frequencies around 3kHz for percussion instruments. Hi Pass Filter to reject rumble and leakage from drums.
P014	Bass 1	Boosted frequencies around 100Hz for Bass. Enhanced high mids for clarity, Hi Pass Filter at 30Hz.
P015	Deep Bass	Boosted low frequencies, reduced frequencies around 190kHz for deeper bass sound. No Filter.
P016	Piano Solo	Full and rich sound for solo piano or to accompany another instrument or vocalist. No Filter.
P017	Piano Band	Allows piano to fit well in a typical pop band. Enhanced frequencies above 3.0kHz to add clarity. Low end reduced to avoid clash with bass player. Hi Pass Filter at 80Hz.
P018	AGuitar Solo	Full and rich sound for solo Guitar or to accompany another instrument or vocalist in small group. Hi Pass Filter at 50Hz.
P019	AGuitr Band	Allows guitar to blend in a typical pop band. Low end reduced to avoid clash with bass player. Hi Pass Filter at 100Hz.
P020	Nylon Guitar	Lightly enhances frequencies above 3.0kHz for Nylon Guitar. Hi Pass Filter at 100Hz.
P021	EGuitr Band	Boosted frequencies around 3.0kHz to help guitar cut through and blend in a typical pop band, using various guitar sounds and effects. Hi Pass Filter at 50Hz.
P022	EGuitr Jazz	Lightly enhanced bass for full and rich sound for jazz guitar in solo or ensemble. Hi Pass Filter at 50Hz.
P023	EGuitr Clean	Clear sound for Electric Guitar with no overdrive or distortion. Hi Pass Filter at 50Hz.
P024	EGuitr Disto	Enhances Electric Guitar with overdrive or distortion. Hi Pass Filter at 50Hz.
P025	EGuitr Heavy	Big sound for heavy metal style Electric Guitar with distortion. Boosts frequencies around 170Hz and above 3.5kHz. Hi Pass Filter at 67Hz.
P026	Synthesizer	Good for wide range of synthesizers sounds, solo or in a typical pop band. No Filter.
P027	Female Voc 1	Near flat EQ for female singing voice. Hi Pass Filter at 100Hz to reduce rumble.
P028	Female Voc 2	Reduced bass, enhanced frequencies around 315Hz and above 5kHz for female singing voice. Hi Pass Filter at 80Hz to reduce rumble.
P029	Male Voc 1	Enhanced frequencies around 2.0kHz for clarity of Male singing voice. Hi Pass Filter at 80Hz to reduce rumble.
P030	Male Voc 2	Reduced 400Hz, enhanced bass and frequencies above 2.0kHz for clarity of Male singing voice. Hi Pass Filter at 80Hz to reduce rumble.
P031	Narrator	Enhances clarity for Narration occurring over music or other background sounds. Bass reduced to avoid muddiness. Hi Pass Filter at 80Hz to reduce rumble.
P032	Radio Voice	Boosted bass, reduced frequencies around 422Hz, and enhanced frequencies above 2.0kHz sound for spoken word. Hi Pass Filter at 80Hz to reduce rumble.
P033	Spoken Word	Basic setting for voice for solo spoken word. Enhanced high mid for added clarity. Hi Pass Filter at 80Hz to reduce rumble.
P034	HiHat	EQ to enhance the sound of hihat cymbals. Bass reduced to avoid leakage from kick and other drums. Hi Pass Filter at 100Hz to reduce rumble.
P035	DrumOverHead	Lightly enhanced high mids adds clarity for overhead mic on drum kit. Hi Pass Filter at 100Hz to reduce rumble.
P036	Brass & Wind	Lightly enhanced high mids adds clarity for brass or wind instruments. Hi Pass Filter at 80Hz to reduce rumble.
P037	Choir	Reduced frequencies below 600Hz to help clarity for choir. Hi Pass Filter at 80Hz to reduce rumble.

Patchbay library

Input patchbay library

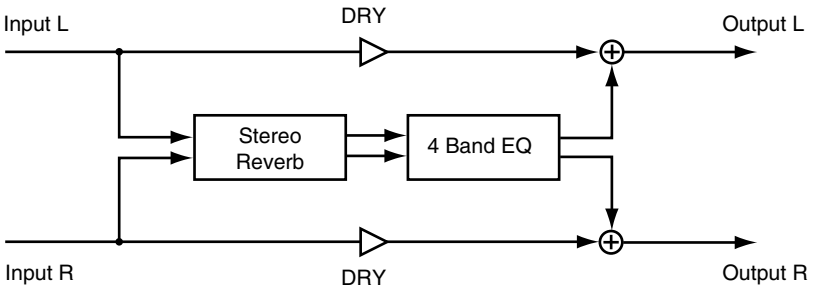
Number	Name	Description
P000	Default	Default settings for input patchbay. CH1–16 from INPUT1–16 of REAC A. CH17–32 from INPUT1–16 of REAC B. CH33–40 from CONSOLE IN1-8. CH41–48 from FX3 OUT L/R, FX4 OUT L/R, PLAY L/R, and STEREO IN L/R.
P001	16A + 32B	CH1–16 from INPUT1–16 of REAC A. CH17–48 from INPUT1–32 of REAC B.
P002	16A + 24B + 8C	CH1–16 from INPUT1–16 of REAC A. CH17–40 from INPUT 1–24 of REAC B. CH41–48 from FX3 OUT L/R, FX4 OUT L/R, PLAY L/R, and STEREO IN L/R.
P003	Monitor	CH1–32 from INPUT9–40 of REAC A. CH33–40 from CONSOLE IN 1–8. CH41-48 from FX3 OUT L/R, FX4 OUT L/R, PLAY L/R, and STEREO IN L/R.

Output patchbay library

Number	Name	Description
P000	Default	Default settings for output patchbay. AUX1–6 to OUTPUT1–6 of REAC A. MAIN L/R to OUTPUT7–8 of REAC A. AUX9–14 to OUTPUT1–6 of REAC B. MAIN L/R to OUTPUT7–8 of REAC B. AUX1–6 to CONSOLE OUT1-6. MONITOR L/R to CONSOLE OUT 7–8 and DIGITAL OUT.
P001	1-8A 9-14LRB	AUX1–8 to OUTPUT1–8 of REAC A. AUX9–14 to OUTPUT1–6 of REAC B. MAIN L/R to OUTPUT 7–8 of REAC B. MAIN L/R to CONSOLE OUT1–2 and DIGITAL OUT. MONITOR L/R to CONSOLE OUT 3–4. REC L/R to CONSOLE OUT5–6. AUX15–16 to CONSOLE OUT7–8.

Reverb

St.REVERB (Stereo Reverb)



This is a stereo-in, stereo-out reverb. It adds reverberation without impairing the position of the sound image that's been set for the stereo input, by panning or other means.

Reverb

Parameter (name)	Setting	Explanation
TYPE		Type of reverb
	ROOM1	Typical room reverb
	ROOM2	Room reverb with a softer tone than ROOM1
	HALL1	Typical hall reverb
	HALL2	Room reverb with a softer tone than HALL1
	PLATE	Plate reverb
SIZE (Room size)	5–40 m	Size of the room or hall
TIME (Reverb time)	0.1–32.0 s	Length of the reverberation
PreDly (Pre-delay time)	0–200 ms	Time until the reverb is heard
ER Lev (Early reflection level)	-INF–0.0 dB	Level of the early reflections
Diffus (Diffusion)	0–100	Amount of scattering for the early reflections
Density	0–100	Density of the reverb sound
LO FREQ DAMP GAIN	-36.0–0.0 dB	Low-frequency attenuation of the reverb sound
LO FREQ DAMP FREQ	20 Hz–2.00 kHz	Frequency at which the low-frequency region of the reverb sound begins to be attenuated
HI FREQ DAMP GAIN	-36.0–0.0 dB	High-frequency attenuation of the reverb sound
HI FREQ DAMP FREQ	200 Hz–20.00 kHz	Frequency at which the high-frequency region of the reverb sound begins to be attenuated
HI CUT FREQ	200 Hz–20.00 kHz	Frequency at which the high-frequency region of the reverb sound will be cut
WET (Wet Level)	-INF–+6.0 dB	Level of the reverb sound
DRY (Dry Level)	-INF–+6.0 dB	Level of the original sound
BAL (Balance)	L63-C-R63	L/R output level balance of the reverb

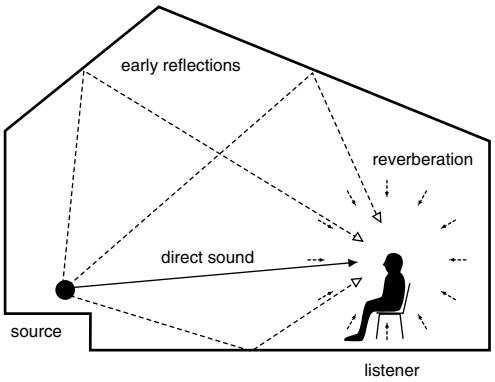
EQ

Parameter (name)	Setting	Explanation
EQ SW (EQ switch)	OFF, ON	Turns the EQ on/off
EQ ATT (EQ attenuator)	-42.0–+6.0 dB	Attenuator for the EQ
LOW TYPE	PEAK, LSV, HSV, LPF1, HPF1 LPF2, HPF2, BPF, BEF, THRU	Filter type for the Lo band (*1)
LO GAIN	-15.0–+15.0 dB	Gain of the Lo band (*1)
LO FREQ	20 Hz–20.00 kHz	Center frequency of the Lo band (*1)
LO Q	0.36–16.00	Steepness of the frequency response curve at the Lo band center frequency (*1)
LO-MID TYPE	PEAK, LSV, HSV, LPF1, HPF1 LPF2, HPF2, BPF, BEF, THRU	Filter type for the Lo-Mid band (*1)
LO-MID GAIN	-15.0–+15.0 dB	Gain of the Lo-Mid band (*1)
LO-MID FREQ	20 Hz–20.00 kHz	Center frequency of the Lo-Mid band (*1)
LO-MID Q	0.36–16.00	Steepness of the frequency response curve at the Lo-Mid band center frequency (*1)
HI-MID TYPE	PEAK, LSV, HSV, LPF1, HPF1 LPF2, HPF2, BPF, BEF, THRU	Filter type for the Hi-Mid band (*1)
HI-MID GAIN	-15.0–+15.0 dB	Gain of the Hi-Mid band (*1)
HI-MID FREQ	20 Hz–20.00 kHz	Center frequency of the Hi-Mid band (*1)
HI-MID Q	0.36–16.00	Steepness of the frequency response curve at the Hi-Mid band center frequency (*1)
HI TYPE	PEAK, LSV, HSV, LPF1, HPF1 LPF2, HPF2, BPF, BEF, THRU	Filter type for the Hi band (*1)
HI GAIN	-15.0–+15.0 dB	Gain of the Hi band (*1)
HI FREQ	20 Hz–20.00 kHz	Center frequency of the Hi band (*1)
HI Q	0.36–16.00	Steepness of the frequency response curve at the Hi band center frequency (*1)

(*1) Depending on the Type setting of each band, there are certain combinations for which the Freq, Gain, and Q values will have no effect, as listed below.

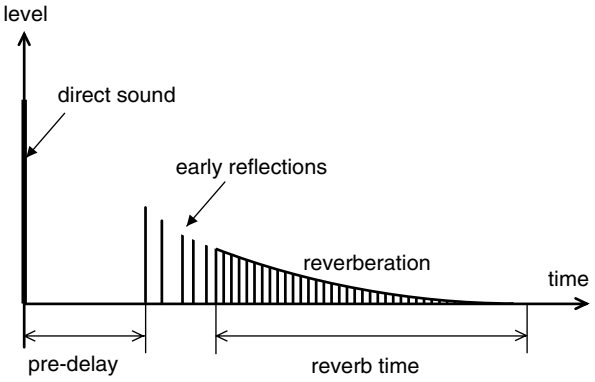
Type	Operation	Freq	Gain	Q
PEAK (Peaking)	Creates a hill or valley in the region of FREQ.	Valid	Valid	Valid
LSV (Low Shelving)	Boosts/cuts the region below FREQ.	Valid	Valid	-
HSV (High Shelving)	Boosts/cuts the region above FREQ.	Valid	Valid	-
LPF1 (Low-Pass Filter 1)	Passes the frequency region below FREQ.	Valid	-	-
HPF1 (High-Pass Filter 1)	Passes the frequency region above FREQ.	Valid	-	-
LPF2 (Low-Pass Filter 2)	A sharper response curve than LPF1.	Valid	-	Valid
HPF2 (High-Pass Filter 2)	A sharper response curve than HPF1.	Valid	-	Valid
BPF (Band Pass Filter)	Passes the frequency region around FREQ.	Valid	-	Valid
BEF (Band Eliminate Filter)	Removes the frequency region around FREQ.	Valid	-	Valid
THRU (Thru)	Passes all frequency regions.	-	-	-

Types of sound



The sound you normally hear is divided into three types: “direct sound,” “early reflections,” and “reverberation.” The “direct sound” is the sound that reaches the listener directly from the source. “Early reflections” are sounds that have reflected one to several times from the walls or other surfaces of the room. “Reverberation” is sound that has reflected many times before reaching the listener.

How sound and time are related



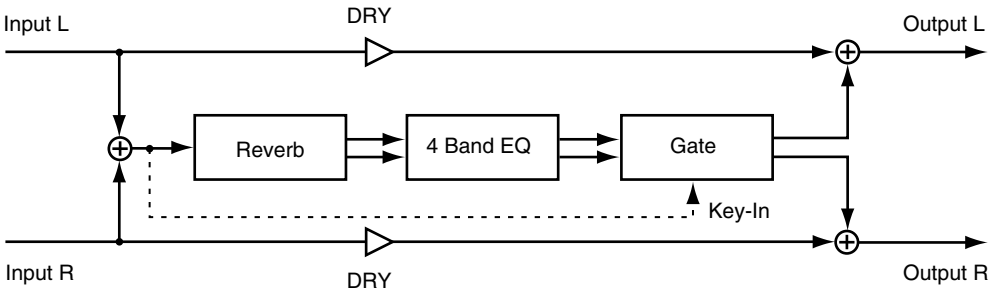
The reflected sounds reach the listener in the following order. The pre-delay is the time from when the direct sound is heard until the reverb arrives. The reverb time is the duration until the reverb disappears.

Tonal character of reverb

The tonal character of reverb is affected by the material of the walls and other reflective surfaces. This is because the reflectivity of the surfaces will affect the proportion of high and low frequencies that are reflected. You can use the DFP (Damp Filter) to vary this property of the sound. The high-frequency range or low-frequency range of the reverb will be attenuated as you decrease the value of the HI FREQ DAMP GAIN or LO FREQ DAMP GAIN parameters, respectively.

If you want to produce soft-sounding reverb, lower the HI FREQ DAMP FREQ. If you want to produce crisp-sounding reverb, raise the LO FREQ DAMP FREQ.

REVERB+GATE



This is a mono-in, stereo-out reverb. It provides a gate that can be used for gating or ducking, allowing you to cut the reverb during its decay, or to cut the reverb when the level of the original sound is high.

Reverb

Parameter (name)	Setting	Explanation
SIZE (Room size)	5–40 m	Size of the room or hall
TIME (Reverb time)	0.1–32.0 s	Length of the reverberation
PreDly (Pre-delay time)	0–200 ms	Time until the reverb is heard
ER Lev (Early reflection level)	-INF–0.0 dB	Level of the early reflections
Diffus (Diffusion)	0–100	Amount of scattering for the early reflections
Density	0–100	Density of the reverb sound
LO FREQ DAMP GAIN	-36.0–0.0 dB	Low-frequency attenuation of the reverb sound
LO FREQ DAMP FREQ	20 Hz–2.00 kHz	Frequency at which the low-frequency region of the reverb sound begins to be attenuated
HI FREQ DAMP GAIN	-36.0–0.0 dB	High-frequency attenuation of the reverb sound
HI FREQ DAMP FREQ	200 Hz–20.00 kHz	Frequency at which the high-frequency region of the reverb sound begins to be attenuated
HI CUT FREQ	200 Hz–20.00 kHz	Frequency at which the high-frequency region of the reverb sound will be cut
WET (Wet Level)	-INF–+6.0 dB	Level of the reverb sound
DRY (Dry Level)	-INF–+6.0 dB	Level of the original sound

EQ

Parameter (name)	Setting	Explanation
EQ SW (EQ switch)	OFF, ON	Turns the EQ on/off
EQ ATT (EQ attenuator)	-42.0–+6.0 dB	Attenuator for the EQ
LOW TYPE	PEAK, LSV, HSV, LPF1, HPF1 LPF2, HPF2, BPF, BEF, THRU	Filter type for the Lo band (*1)
LO GAIN	-15.0–+15.0 dB	Gain of the Lo band (*1)
LO FREQ	20 Hz–20.00 kHz	Center frequency of the Lo band (*1)
LO Q	0.36–16.00	Steepness of the frequency response curve at the Lo band center frequency (*1)
LO-MID TYPE	PEAK, LSV, HSV, LPF1, HPF1, LPF2, HPF2, BPF, BEF, THRU	Filter type for the Lo-Mid band (*1)
LO-MID GAIN	-15.0–+15.0 dB	Gain of the Lo-Mid band (*1)
LO-MID FREQ	20 Hz–20.00 kHz	Center frequency of the Lo-Mid band (*1)
LO-MID Q	0.36–16.00	Steepness of the frequency response curve at the Lo-Mid band center frequency (*1)
HI-MID TYPE	PEAK, LSV, HSV, LPF1, HPF1 LPF2, HPF2, BPF, BEF, THRU	Filter type for the Hi-Mid band (*1)
HI-MID GAIN	-15.0–+15.0 dB	Gain of the Hi-Mid band (*1)
HI-MID FREQ	20 Hz–20.00 kHz	Center frequency of the Hi-Mid band (*1)
HI-MID Q	0.36–16.00	Steepness of the frequency response curve at the Hi-Mid band center frequency (*1)
HI TYPE	PEAK, LSV, HSV, LPF1, HPF1 LPF2, HPF2, BPF, BEF, THRU	Filter type for the Hi band (*1)
HI GAIN	-15.0–+15.0 dB	Gain of the Hi band (*1)
HI FREQ	20 Hz–20.00 kHz	Center frequency of the Hi band (*1)
HI Q	0.36–16.00	Steepness of the frequency response curve at the Hi band center frequency (*1)

(*1) Depending on the Type setting of each band, there are certain combinations for which the Freq, Gain, and Q values will have no effect, as listed below.

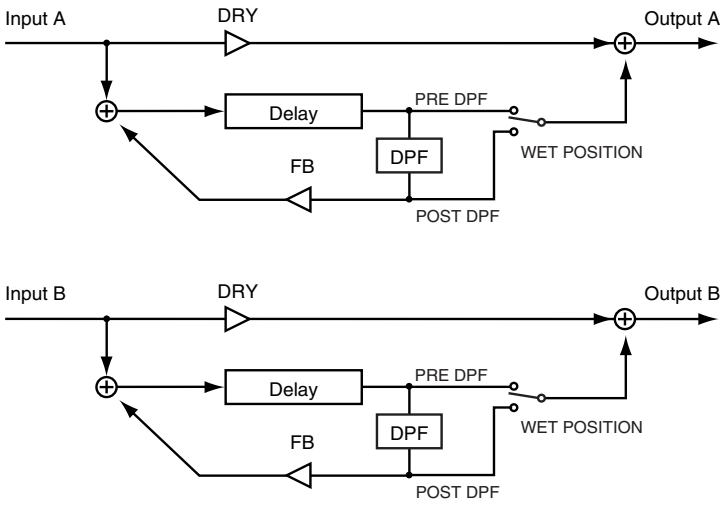
Type	Operation	Freq	Gain	Q
PEAK (Peaking)	Creates a hill or valley in the region of FREQ.	Valid	Valid	Valid
LSV (Low Shelving)	Boosts/cuts the region below FREQ.	Valid	Valid	-
HSV (High Shelving)	Boosts/cuts the region above FREQ.	Valid	Valid	-
LPF1 (Low-Pass Filter 1)	Passes the frequency region below FREQ.	Valid	-	-
HPF1 (High-Pass Filter 1)	Passes the frequency region above FREQ.	Valid	-	-
LPF2 (Low-Pass Filter 2)	A sharper response curve than LPF1.	Valid	-	Valid
HPF2 (High-Pass Filter 2)	A sharper response curve than HPF1.	Valid	-	Valid
BPF (Band Pass Filter)	Passes the frequency region around FREQ.	Valid	-	Valid
BEF (Band Eliminate Filter)	Removes the frequency region around FREQ.	Valid	-	Valid
THRU (Thru)	Passes all frequency regions.	-	-	-

GATE

Parameter (name)	Setting	Explanation
GT SW (GATE switch)	OFF, ON	Turns the gate on/off
GT MODE (Gate mode)	GATE	Sound lower than the THRESHOLD level will be attenuated by the amount specified by RANGE
	DUCK	Sound that exceeds the THRESHOLD level will be attenuated by the amount specified by RANGE
THRE (Threshold level)	-80.0 dB–0.0 dB	Threshold level of the gate
RANGE (Range)	-INF–0.0 dB	Range of the gate
ATK (Attack time)	0.0–800.0 ms	Attack time of the gate
REL (Release time)	0–8000 ms	Release time of the gate
HOLD (Hold time)	0–8000 ms	Hold time for the gate

Delay

DELAY x2



This is a dual-mono delay.

Delay A/B

Parameter (name)	Setting	Explanation
DELAY UNIT	msec, Meter, Feet, Frame (24, 25, 29.97, 30), Note	Specifies the units for delay
TIME	0.0–1350 ms	Time between the original sound and when the delay is heard
FB (Feedback)	0–100	Amount of delayed sound returned to the input of the delay
LO FREQ DAMP GAIN	-36.0–0.0 dB	Low-frequency attenuation of the delay sound
LO FREQ DAMP FREQ	20Hz–2.00 kHz	Frequency at which the low-frequency region of the delay sound begins to be attenuated
HI FREQ DAMP GAIN	-36.0–0.0 dB	High-frequency attenuation of the delay sound
HI FREQ DAMP FREQ	200 Hz–20.00 kHz	Frequency at which the high-frequency region of the delay sound begins to be attenuated
WET POSITION	PRE DAMP	Takes the wet sound from before the damp filter
	POST DAMP	Takes the wet sound from after the damp filter
WET (Wet level)	-INF–+6.0 dB	Level of the delay sound
DRY (Dry level)	-INF–+6.0 dB	Level of the original sound

In a delay processor, “feedback” refers to returning the delayed sound back to the input of the delay. The feedback level specifies the amount of sound that is returned. Increasing this setting will increase the number of delay repetitions.

The wet position specifies how the delay's wet signal is related to the position of the DPF (Damp Filter).

With the PRE DPF (Pre-damp filter) setting, the signal before passing through the damp filter is used as the wet signal. In this case, the damp filter is applied only to the delay feedback.

With the POST DPF (Post damp filter) setting, the signal after passing through the damp filter is used as the wet signal. In this case, the damp filter is applied to all of the delay sound.

As delay units, you can use msec, Meter, Feet, Frame (24, 25, 29.97, 30fps), or Note. The M-400's delay is based on msec units, and simply changing the delay unit parameter will not change the delay time in msec units. This means that after changing the delay unit, there may be a discrepancy between the msec value and the value that is displayed in the specified units. If this occurs, the value is shown in green. To correct this discrepancy, please re-specify the delay time.

The relationship between Meter, Feet, Frame, and msec is shown below. (Rounded values are shown as the calculated results.)

Meter

Delay [msec] = Delay [Meter] x 1000 / 343.59 [Meter/sec]

Feet

Delay [msec] = Delay [Feet] x 1000 / 1127.26 [Feet/sec]

Frame (24, 25, 29.97, 30fps)

Delay [msec] = Delay [Frame] x 1000 / FrameRate (24, 25, 29.97, 30) [Frame/sec]

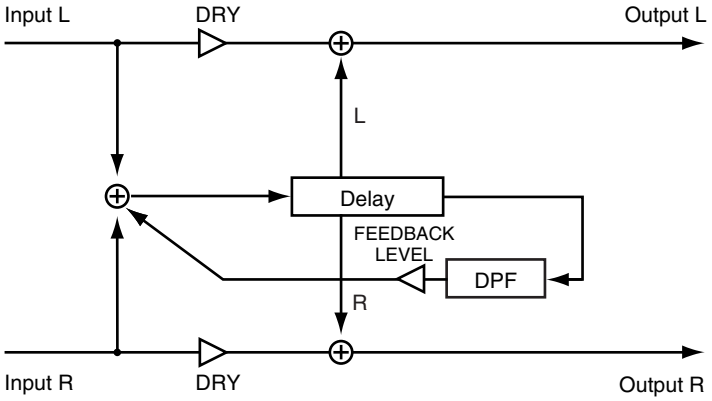
If you specify Note as the delay unit, the delay time will be determined by the relation between Tempo and Note. In some cases, the relation between Tempo and Note may mean that the result would exceed the maximum allowable delay time. If this occurs, the value is shown in red.

The Note values are as follows.

Off, 1/64T, 1/64, 1/32T, 1/64D, 1/32, 1/16T, 1/32D, 1/16, 1/8T, 1/16D, 1/8, 1/4T, 1/8D, 1/4, 1/2T, 1/4D, 1/2, 1/1T, 1/2D, 1/1

* *T signifies Triplet, and D signifies Dotted. For example, 1/4 means quarter note, 1/4T means quarter-note triplet, and 1/4D means dotted quarter note.*

LONG DELAY

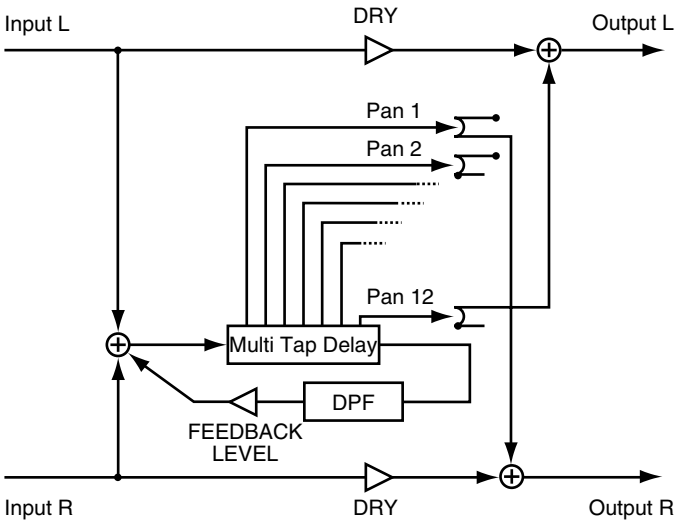


This is a mono-in, stereo-out long delay.

Delay

Parameter (name)	Setting	Explanation
DELAY UNIT	msec, Meter, Feet, Frame (24, 25, 29.97, 30), Note	Specifies the units for delay
L TIME	0.0–2700 ms	Time from the original sound until the left-channel delay is heard
R TIME	0.0–2700 ms	Time from the original sound until the right-channel delay is heard
FEEDBACK TIME (Feedback time)	0.0–2700 ms	Time until the delayed sound is returned to the input of the delay
FEEDBACK LEVEL (Feedback level)	0–100	Amount of delayed sound returned to the input of the delay
LO FREQ DAMP GAIN	-36.0–0.0 dB	Low-frequency attenuation of the delay sound
LO FREQ DAMP FREQ	20 Hz–2.00 kHz	Frequency at which the low-frequency region of the delay sound begins to be attenuated
HI FREQ DAMP GAIN	-36.0–0.0 dB	High-frequency attenuation of the delay sound
HI FREQ DAMP FREQ	200 Hz–20.00 kHz	Frequency at which the high-frequency region of the delay sound begins to be attenuated
WET (Wet Level)	-INF–+6.0 dB	Level of the delay sound
DRY (Dry Level)	-INF–+6.0 dB	Level of the original sound

M.TAP DELAY (Multi Tap Delay)

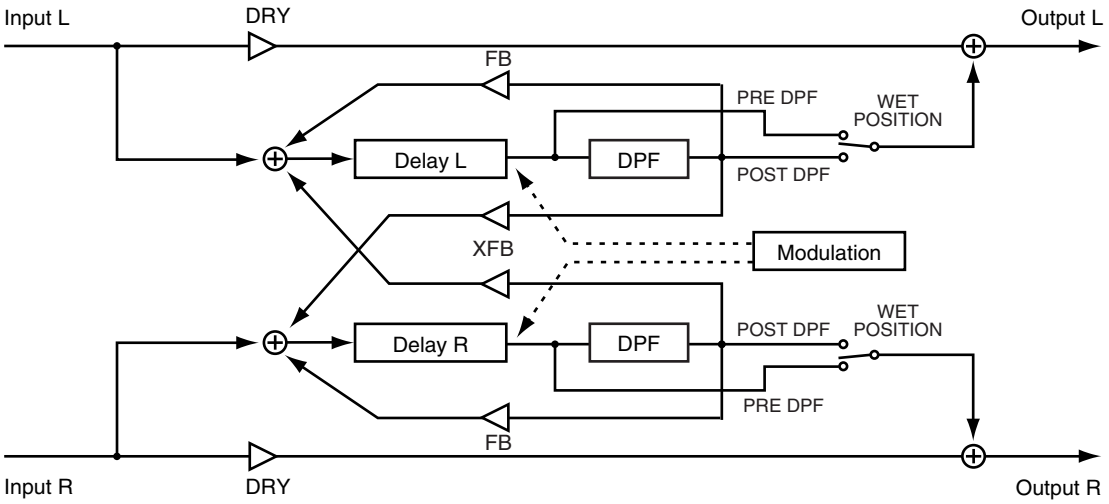


This is a mono-in, stereo-out twelve-stage tap delay.

Delay

Parameter (name)	Setting	Explanation
DELAY UNIT	msec, Meter, Feet, Frame (24, 25, 29.97, 30), Note	Specifies the units for delay
DELAY 1–12 TIME	0.0–2700 ms	Time from the original sound until the delay is heard
DELAY 1–12 LEVEL	-INF–+6.0 dB	Level of the delay sound
DELAY 1–12 PAN	L63-C-R63	Panning of the delay sound
FEEDBACK TIME (Feedback time)	0.0–2700 ms	Time until the delayed sound is returned to the input of the delay
FEEDBACK LEVEL (Feedback level)	0–100	Amount of delayed sound returned to the input of the delay
LO FREQ DAMP GAIN	-36.0–0.0 dB	Low-frequency attenuation of the delay sound
LO FREQ DAMP FREQ	20 Hz–2.00 kHz	Frequency at which the low-frequency region of the delay sound begins to be attenuated
HI FREQ DAMP GAIN	-36.0–0.0 dB	High-frequency attenuation of the delay sound
HI FREQ DAMP FREQ	200 Hz–20.00 kHz	Frequency at which the high-frequency region of the delay sound begins to be attenuated
WET (Wet Level)	-INF–+6.0 dB	Level of the delay sound
DRY (Dry Level)	-INF–+6.0 dB	Level of the original sound

X.MOD DELAY (Cross-modulation Delay)



This is a stereo-in, stereo-out cross-modulation delay.

Delay

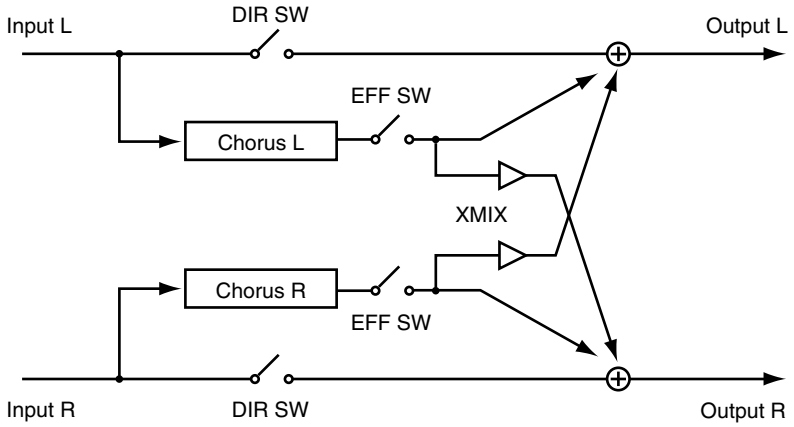
Parameter (name)	Setting	Explanation
DELAY UNIT	msec, Meter, Feet, Frame (24, 25, 29.97, 30), Note	Specifies the units for delay
MODULATION WAVE	SIN, SQR, EXP+, EXP-	Waveform used for modulation
MODULATION RATE	0.1–10.0 Hz	
MODULATION DEPTH	0–100	Depth of modulation
MODULATION PHASE	-180–180 deg	Phase difference between modulation L and R
L TIME	0.0–1000 ms	Time from the original sound until the left-channel delay is heard
R TIME	0.0–1000 ms	Time from the original sound until the right-channel delay is heard
FB (Feedback)	-100–100	Amount of delayed sound returned to the input of the delay
XFB (Cross feedback)	-100–100	Amount of delayed sound returned to the input of the delay of the opposite side
LO FREQ DAMP GAIN	-36.0–0.0 dB	Low-frequency attenuation of the delay sound
LO FREQ DAMP FREQ	20 Hz–2.00 kHz	Frequency at which the low-frequency region of the delay sound begins to be attenuated
HI FREQ DAMP GAIN	-36.0–0.0 dB	High-frequency attenuation of the delay sound
HI FREQ DAMP FREQ	200 Hz–20.00 kHz	Frequency at which the high-frequency region of the delay sound begins to be attenuated
WET POSITION	PRE DAMP	Takes the wet sound from before the damp filter
	POST DAMP	Takes the wet sound from after the damp filter
WET (Wet Level)	-INF–+6.0 dB	Level of the delay sound
DRY (Dry Level)	-INF–+6.0 dB	Level of the original sound

TIP

Cross feedback will feed back the effect sound to the opposite input (left or right).

Modulation

St.CHORUS (Stereo Chorus)

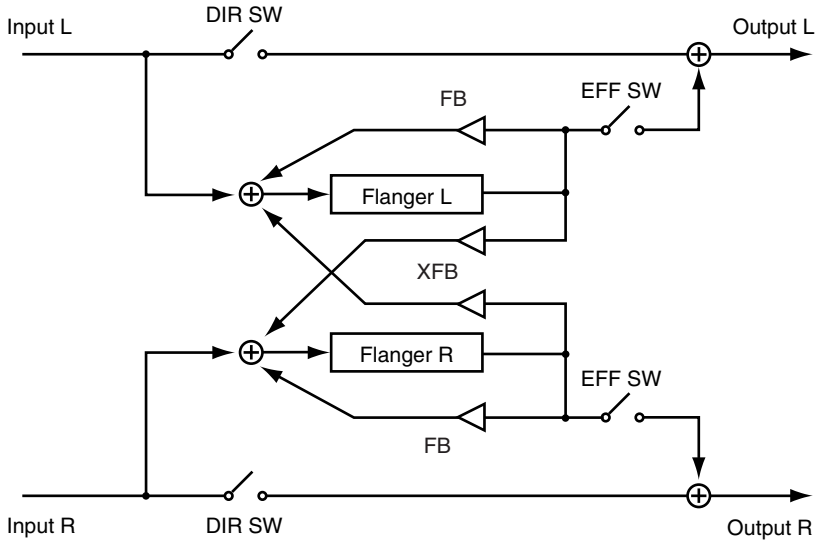


This is a stereo-in, stereo-out chorus. It lets you apply chorus without impairing the position of the sound image that's been set for the stereo input, by panning or other means.

Chorus

Parameter (name)	Setting	Explanation
RATE	0.1–10.0 Hz	Chorus rate
DEPTH	0–100	Chorus depth
PreDly (Pre-delay)	0–100 ms	Time until the chorus sound is output
XMIX (Cross mix)	-100–100	Mix amount for the opposite-side chorus
LEVEL	0–100	Chorus level
DIR SW (Direct switch)	OFF, ON	Turns the unprocessed sound on/off
EFF SW (Effect switch)	OFF, ON	Turns the effect sound on/off

St.FLANGER (Stereo Flanger)



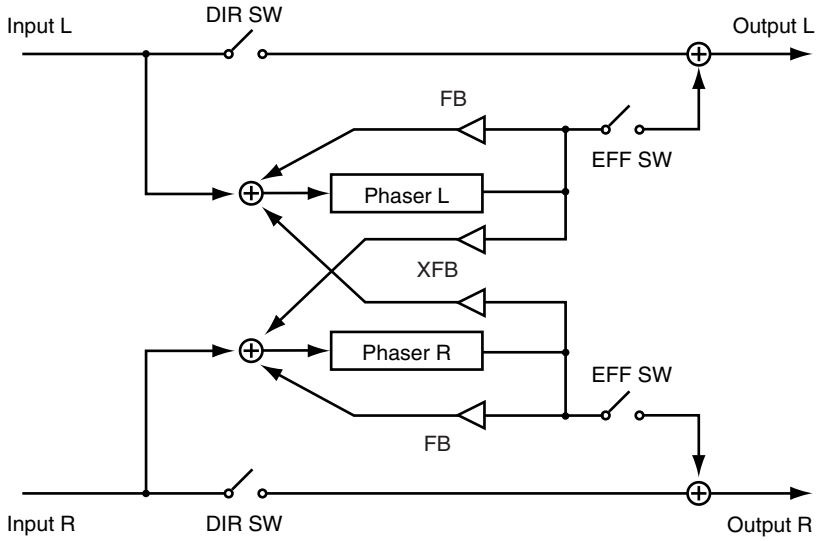
This is a stereo-in, stereo-out flanger. It lets you apply flanging without impairing the position of the sound image that's been set for the stereo input, by panning or other means.

Flanger

Parameter (name)	Setting	Explanation
RATE	0.01–10.0 Hz	Flanger rate
DEPTH	0–100	Flanger depth
Manual	0–100	Center frequency at which the flanger effect is applied
LFO PHASE	-180–180 deg	Phase difference between L and R for the LFO (Low-Frequency Oscillator)
FB (Feedback)	-100–100	Amount of flanger sound that is returned to the input of the flanger
XFB (Cross feedback)	-100–100	Amount of flanger sound that is returned to the opposite-side input of the flanger
LEVEL	0–100	Flanger level
DIR SW (Direct switch)	OFF, ON	Turns the unprocessed sound on/off
EFF SW (Effect switch)	OFF, ON	Turns the effect sound on/off

Feedback means returning the effect sound back into the input. The feedback level specifies the amount of sound that is returned. Cross-feedback is when the effect sound is returned back to the opposite-side (left or right) input. The cross-feedback level specifies the amount of sound that is returned. In modulation-type effects, raising the feedback value will make the sound richer and more spacious. Negative values will invert the phase.

St.PHASER (Stereo Phaser)



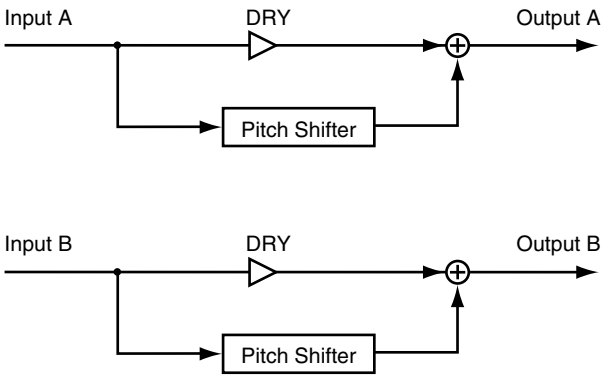
This is a stereo-in, stereo-out phaser. It lets you apply a phaser effect without impairing the position of the sound image that's been set for the stereo input, by panning or other means.

Phaser

Parameter (name)	Setting	Explanation
RATE	0.01–10.0 Hz	Phaser rate
DEPTH	0–100	Phaser depth
Manual	0–100	Center frequency at which the phaser effect is applied
LFO PHASE	-180–180 deg	Phase difference between L and R for the LFO (Low-Frequency Oscillator)
FB (Feedback)	-100–100	Amount of phaser sound that is returned to the input of the phaser
XFB (Cross feedback)	-100–100	Amount of phaser sound that is returned to the opposite-side input of the phaser
LEVEL	0–100	Phaser level
MODE	4STAGE, 8STAGE	Type of phaser
DIR SW (Direct switch)	OFF, ON	Turns the unprocessed sound on/off
EFF SW (Effect switch)	OFF, ON	Turns the effect sound on/off

Pitch shift

P.SHIFTER x2 (Pitch Shifter x2)



This is a dual-mono pitch shifter.

Pitch Shift A/B

Parameter (name)	Setting	Explanation
MODE	MONO VOICE	This mode is suitable for a monophonic voice
	MONO INST	This mode is suitable for a monophonic instrument
	POLY FAST, POLY MID, POLY SLOW	These modes are suitable for polyphonic instruments (*2)
COARSE	-12–12	Amount of pitch shift (in semitone steps)
FINE	-100–100	Amount of pitch shift (in one-cent steps)
WET (Wet level)	-INF–+6.0 dB	Level of the pitch-shifted sound
DRY (Dry level)	-INF–+6.0 dB	Level of the original sound

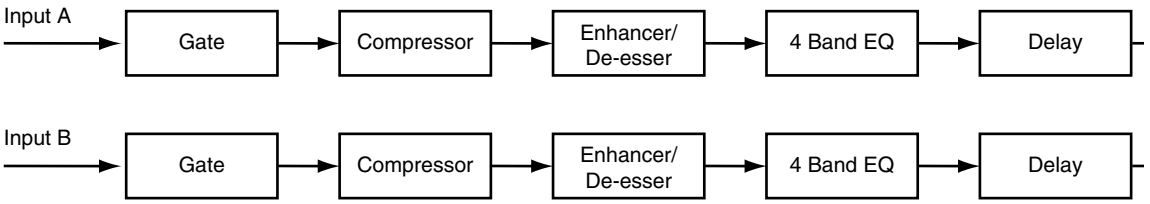
(*2) The difference between Poly Fast, Poly Mid, and Poly Slow is in the length of time (delay) it takes before the pitch-shifted sound is produced. Poly Fast offers a shorter time until the pitch-shifted sound is heard, but the pitch-shifted sound will be less stable. Poly Slow takes a longer time until the pitch-shifted sound is heard, but the pitch-shifted sound will be more stable. Poly Mid has a response time for the pitch-shifted sound that is between Poly Fast and Poly Slow.

TIP

Use the Coarse setting to specify the approximate pitch, and make fine adjustments using Fine.

Channel strip

CH STRIP x2 (Channel Strip x2)



This is a dual-mono channel strip. It provides gate, compressor, enhancer/de-esser, EQ, and delay.

GATE A/B

Parameter (name)	Setting	Explanation
GATE SW (Gate switch)	OFF, ON	Turns the gate on/off
MODE	EXPANDER, GATE, DUCKING	Mode
THRE (Threshold level)	-80.0–0.0 dB	Threshold level
RATIO	1.00:1–INF:1	Expander ratio
KNEE	HARD, SOFT1–SOFT9	Expander knee
RANGE	-INF–0.0 dB	Range of GATE or DUCKING
ATK (Attack time)	0.0–800.0 ms	Attack time
REL (Release time)	0–8000 ms	Release time
HOLD (Hold time)	0–8000 ms	GATE or DUCKING hold time

COMPRESSOR A/B

Parameter (name)	Setting	Explanation
COMP SW (GATE switch)	OFF, ON	Turns the compressor on/off
THRE (Threshold level)	-40.0–0.0 dB	Threshold level of the compressor
RATIO	1.00:1–INF:1	Compression ratio
KNEE	HARD, SOFT1–SOFT9	Compressor knee
ATK (Attack time)	0.0–800.0 ms	Compressor attack time
REL (Release time)	0–8000 ms	Compressor release time
GAIN	-40.0–+40.0 dB	Compressor gain
AUTO GAIN	OFF, ON	Turns compressor auto gain on/off

ENHANCER/DE-ESSER A/B

Parameter (name)	Setting	Explanation
ENHANCER/DE-ESSER SW (Enhancer/De-esser switch)	OFF, ON	Turns the enhancer/de-esser on/off
MODE	ENHANCER, DE-ESSER	Selects the mode (*3)
SENS (Enhancer sensitivity)	0–100	Enhancer sensitivity
FREQ (Frequency)	200 Hz–20.00 kHz	Frequency above which is handled as the high-frequency region
MIX (Enhancer mix)	0.0–12.0 dB	Enhancer mix level
THRE (De-esser threshold)	-36.0–0.0 dB	Threshold level for the de-esser

(3) The mode of operation depending on the ENHANCER/DE-ESSER select setting, and the parameters that will be invalid, are described below.

Select	Operation
ENHANCER	Enhances the harmonic content of the sound, giving the sound greater clarity. If the high-frequency region is weak, it will be strengthened. The DE-ESSER threshold setting is not used.
DE-ESSER	Restrains the sibilants, softening the sound. If the high-frequency region is excessive, it will be moderated. The ENHANCER sensitivity and ENHANCER mix level are not used.

EQ A/B

Parameter (name)	Setting	Explanation
EQ SW (EQ switch)	OFF, ON	Turns the EQ on/off
EQ ATT (EQ attenuator)	-42.0–+6.0 dB	Attenuator for the EQ
LOW TYPE	PEAK, LSV, HSV, LPF1, HPF1 LPF2, HPF2, BPF, BEF, THRU	Filter type for the Lo band (*1)
LO GAIN	-15.0–+15.0 dB	Gain of the Lo band (*1)
LO FREQ	20 Hz–20.00 kHz	Center frequency of the Lo band (*1)
LO Q	0.36–16.00	Steepness of the frequency response curve at the Lo band center frequency (*1)
LO-MID TYPE	PEAK, LSV, HSV, LPF1, HPF1 LPF2, HPF2, BPF, BEF, THRU	Filter type for the Lo-Mid band (*1)
LO-MID GAIN	-15.0–+15.0 dB	Gain of the Lo-Mid band (*1)
LO-MID FREQ	20 Hz–20.00 kHz	Center frequency of the Lo-Mid band (*1)
LO-MID Q	0.36–16.00	Steepness of the frequency response curve at the Lo-Mid band center frequency (*1)
HI-MID TYPE	PEAK, LSV, HSV, LPF1, HPF1 LPF2, HPF2, BPF, BEF, THRU	Filter type for the Hi-Mid band (*1)
HI-MID GAIN	-15.0–+15.0 dB	Gain of the Hi-Mid band (*1)
HI-MID FREQ	20 Hz–20.00 kHz	Center frequency of the Hi-Mid band (*1)
HI-MID Q	0.36–16.00	Steepness of the frequency response curve at the Hi-Mid band center frequency (*1)
HI TYPE	PEAK, LSV, HSV, LPF1, HPF1 LPF2, HPF2, BPF, BEF, THRU	Filter type for the Hi band (*1)
HI GAIN	-15.0–+15.0 dB	Gain of the Hi band (*1)
HI FREQ	20 Hz–20.00 kHz	Center frequency of the Hi band (*1)
HI Q	0.36–16.00	Steepness of the frequency response curve at the Hi band center frequency (*1)

(*1) Depending on the Type setting of each band, there are certain combinations for which the Freq, Gain, and Q values will have no effect, as listed below.

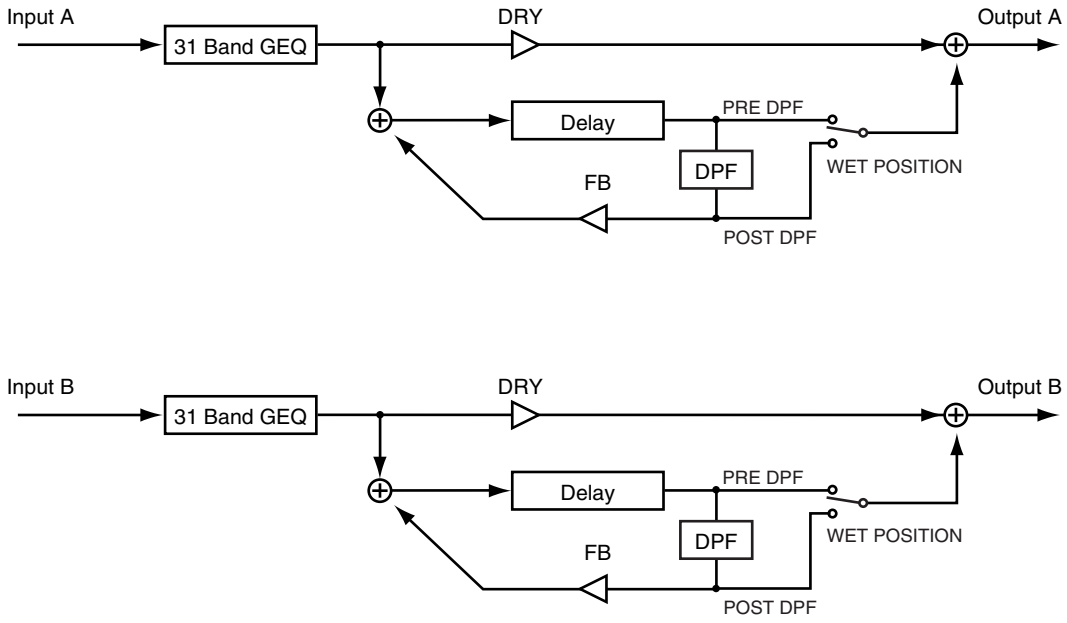
Type	Operation	Freq	Gain	Q
PEAK (Peaking)	Creates a hill or valley in the region of FREQ.	Valid	Valid	Valid
LSV (Low Shelving)	Boosts/cuts the region below FREQ.	Valid	Valid	-
HSV (High Shelving)	Boosts/cuts the region above FREQ.	Valid	Valid	-
LPF1 (Low-Pass Filter 1)	Passes the frequency region below FREQ.	Valid	-	-
HPF1 (High-Pass Filter 1)	Passes the frequency region above FREQ.	Valid	-	-
LPF2 (Low-Pass Filter 2)	A sharper response curve than LPF1.	Valid	-	Valid
HPF2 (High-Pass Filter 2)	A sharper response curve than HPF1.	Valid	-	Valid
BPF (Band Pass Filter)	Passes the frequency region around FREQ.	Valid	-	Valid
BEF (Band Eliminate Filter)	Removes the frequency region around FREQ.	Valid	-	Valid
THRU (Thru)	Passes all frequency regions.	-	-	-

Delay A/B

Parameter (name)	Setting	Explanation
DELAY UNIT	msec, Meter, Feet, Frame (24, 25, 29.97, 30), Note	Specifies the units for delay
DELAY SW (Delay switch)	OFF, ON	Turns the delay on/off
TIME	0.0–1350 ms	Time from the original sound until when the delay is heard
FB (Feedback)	0–100	Amount of delayed sound returned to the input of the delay
LO FREQ DAMP GAIN	-36.0–0.0 dB	Low-frequency attenuation of the delay sound
LO FREQ DAMP FREQ	20 Hz–2.00 kHz	Frequency at which the low-frequency region of the delay sound begins to be attenuated
HI FREQ DAMP GAIN	-36.0–0.0 dB	High-frequency attenuation of the delay sound
HI FREQ DAMP FREQ	200 Hz–20.00 kHz	Frequency at which the high-frequency region of the delay sound begins to be attenuated
WET POSITION	PRE DAMP	Takes the wet sound from before the damp filter
	POST DAMP	Takes the wet sound from after the damp filter
WET (Wet level)	-INF–+6.0 dB	Level of the delay sound
DRY (Dry level)	-INF–+6.0 dB	Level of the original sound

GEQ

Dual GEQ



This is a dual-mono 31-band GEQ. A delay is provided after the GEQ.

GEQ A/B

Parameter (name)	Setting	Explanation
ATT (Attenuator)	-42.0–+15.0 dB	Attenuator for the GEQ
20 Hz Gain–20 kHz Gain	-15.0–+15.0 dB	Gain of each band

Delay A/B

Parameter (name)	Setting	Explanation
DELAY UNIT	msec, Meter, Feet, Frame (24, 25, 29.97, 30), Note	Specifies the units for delay
DELAY SW (Delay switch)	OFF, ON	Turns the delay on/off
TIME	0–1350 ms	Time from the original sound until when the delay is heard
FB (Feedback)	0–100	Amount of delayed sound returned to the input of the delay
LFD GAIN (LF damp gain)	-36.0–0.0 dB	Low-frequency attenuation of the delay sound
LFD FREQ (LF damp frequency)	20 Hz–2.00 kHz	Frequency at which the low-frequency region of the delay sound begins to be attenuated
HFD GAIN (HF damp gain)	-36.0–0.0 dB	High-frequency attenuation of the delay sound
HFD FREQ (HF damp frequency)	200 Hz–20.00 kHz	Frequency at which the high-frequency region of the delay sound begins to be attenuated
WET POSITION	PRE DAMP	Takes the wet sound from before the damp filter
	POST DAMP	Takes the wet sound from after the damp filter
WET (Wet level)	-INF–+6.0 dB	Level of the delay sound
DRY (Dry level)	-INF–+6.0 dB	Level of the original sound

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MEMO

MEMO

MEMO

For EU Countries



UK This symbol indicates that in EU countries, this product must be collected separately from household waste, as defined in each region. Products bearing this symbol must not be discarded together with household waste.

DE Dieses Symbol bedeutet, dass dieses Produkt in EU-Ländern getrennt vom Hausmüll gesammelt werden muss gemäß den regionalen Bestimmungen. Mit diesem Symbol gekennzeichnete Produkte dürfen nicht zusammen mit den Hausmüll entsorgt werden.

FR Ce symbole indique que dans les pays de l'Union européenne, ce produit doit être collecté séparément des ordures ménagères selon les directives en vigueur dans chacun de ces pays. Les produits portant ce symbole ne doivent pas être mis au rebut avec les ordures ménagères.

IT Questo simbolo indica che nei paesi della Comunità europea questo prodotto deve essere smaltito separatamente dai normali rifiuti domestici, secondo la legislazione in vigore in ciascun paese. I prodotti che riportano questo simbolo non devono essere smaltiti insieme ai rifiuti domestici. Ai sensi dell'art. 13 del D.Lgs. 25 luglio 2005 n. 151.

ES Este símbolo indica que en los países de la Unión Europea este producto debe recogerse aparte de los residuos domésticos, tal como esté regulado en cada zona. Los productos con este símbolo no se deben depositar con los residuos domésticos.

PT Este símbolo indica que nos países da UE, a recolha deste produto deverá ser feita separadamente do lixo doméstico, de acordo com os regulamentos de cada região. Os produtos que apresentem este símbolo não deverão ser eliminados juntamente com o lixo doméstico.

NL Dit symbool geeft aan dat in landen van de EU dit product gescheiden van huishoudelijk afval moet worden aangeboden, zoals bepaald per gemeente of regio. Producten die van dit symbool zijn voorzien, mogen niet samen met huishoudelijk afval worden verwijderd.

DK Dette symbol angiver, at i EU-lande skal dette produkt opsamles adskilt fra husholdningsaffald, som defineret i hver enkelt region. Produkter med dette symbol må ikke smides ud sammen med husholdningsaffald.

NO Dette symbolet indikerer at produktet må behandles som spesialavfall i EU-land, iht. til retningslinjer for den enkelte regionen, og ikke kastes sammen med vanlig husholdningsavfall. Produkter som er merket med dette symbolet, må ikke kastes sammen med vanlig husholdningsavfall.

SE Symbolen anger att i EU-länder måste den här produkten kasseras separat från hushållsavfall, i enlighet med varje regions bestämmelser. Produkter med den här symbolen får inte kasseras tillsammans med hushållsavfall.

FI Tämä merkintä ilmaisee, että tuote on EU-maissa kerättävä erillään kotitalousjätteistä kunkin alueen voimassa olevien määräysten mukaisesti. Tällä merkinnällä varustettuja tuotteita ei saa hävittää kotitalousjätteiden mukana.

HU Ez a szimbólum azt jelenti, hogy az Európai Unióban ezt a terméket a háztartási hulladéktól elkülönítve, az adott régióban érvényes szabályozás szerint kell gyűjteni. Az ezzel a szimbólummal ellátott termékeket nem szabad a háztartási hulladék közé dobni.

PL Symbol oznacza, że zgodnie z regulacjami w odpowiednim regionie, w krajach UE produktu nie należy wyrzucać z odpadami domowymi. Produktów opatrzonych tym symbolem nie można utylizować razem z odpadami domowymi.

CZ Tento symbol udává, že v zemích EU musí být tento výrobek sbírán odděleně od domácího odpadu, jak je určeno pro každý region. Výrobky nesoucí tento symbol se nesmí vyhazovat spolu s domácím odpadem.

SK Tento symbol vyjadruje, že v krajinách EÚ sa musí zber tohto produktu vykonávať oddelene od domového odpadu, podľa nariadení platných v konkrétnej krajine. Produkty s týmto symbolom sa nesmú vyhadzovať spolu s domovým odpadom.

EE See sümbol näitab, et EL-i maades tuleb see toode olemprügist eraldi koguda, nii nagu on igas piirkonnas määratletud. Selle sümboliga märgitud tooteid ei tohi ära visata koos olmeprügiga.

LT Šis simbolis rodo, kad ES šalyse šis produktas turi būti surenkamas atskirai nuo buitinių atliekų, kaip nustatyta kiekviename regione. Šiuo simboliu paženklinti produktai neturi būti išmetami kartu su buitinėmis atliekomis.

LV Šis simbols norāda, ka ES valstīs šo produktu jāievāc atsevišķi no mājsaimniecības atkritumiem, kā noteikts katrā reģionā. Produktus ar šo simbolu nedrīkst izmest kopā ar mājsaimniecības atkritumiem.

SI Ta simbol označuje, da je treba proizvod v državah EU zbirati ločeno od gospodinjskih odpadkov, tako kot je določeno v vsaki regiji. Proizvoda s tem znakom ni dovoljeno odlagati skupaj z gospodinjskimi odpadki.

GR Το σύμβολο αυτό υποδηλώνει ότι στις χώρες της E.E. το συγκεκριμένο προϊόν πρέπει να συλλέγεται χωριστά από τα υπόλοιπα οικιακά απορρίμματα, σύμφωνα με όσα προβλέπονται σε κάθε περιοχή. Τα προϊόντα που φέρουν το συγκεκριμένο σύμβολο δεν πρέπει να απορρίπτονται μαζί με τα οικιακά απορρίμματα.

For China

有关产品中所含有害物质的说明

本资料就本公司产品中所含的特定有害物质及其安全性予以说明。

本资料适用于 2007 年 3 月 1 日以后本公司所制造的产品。

环保使用期限



此标志适用于在中国国内销售的电子信息产品，表示环保使用期限的年数。所谓环保使用期限是指在自制造日起的规定期限内，产品中所含的有害物质不致引起环境污染，不会对人身、财产造成严重的不良影响。

环保使用期限仅在遵照产品使用说明书，正确使用产品的条件下才有效。

不当的使用，将会导致有害物质泄漏的危险。

产品中有毒有害物质或元素的名称及含量

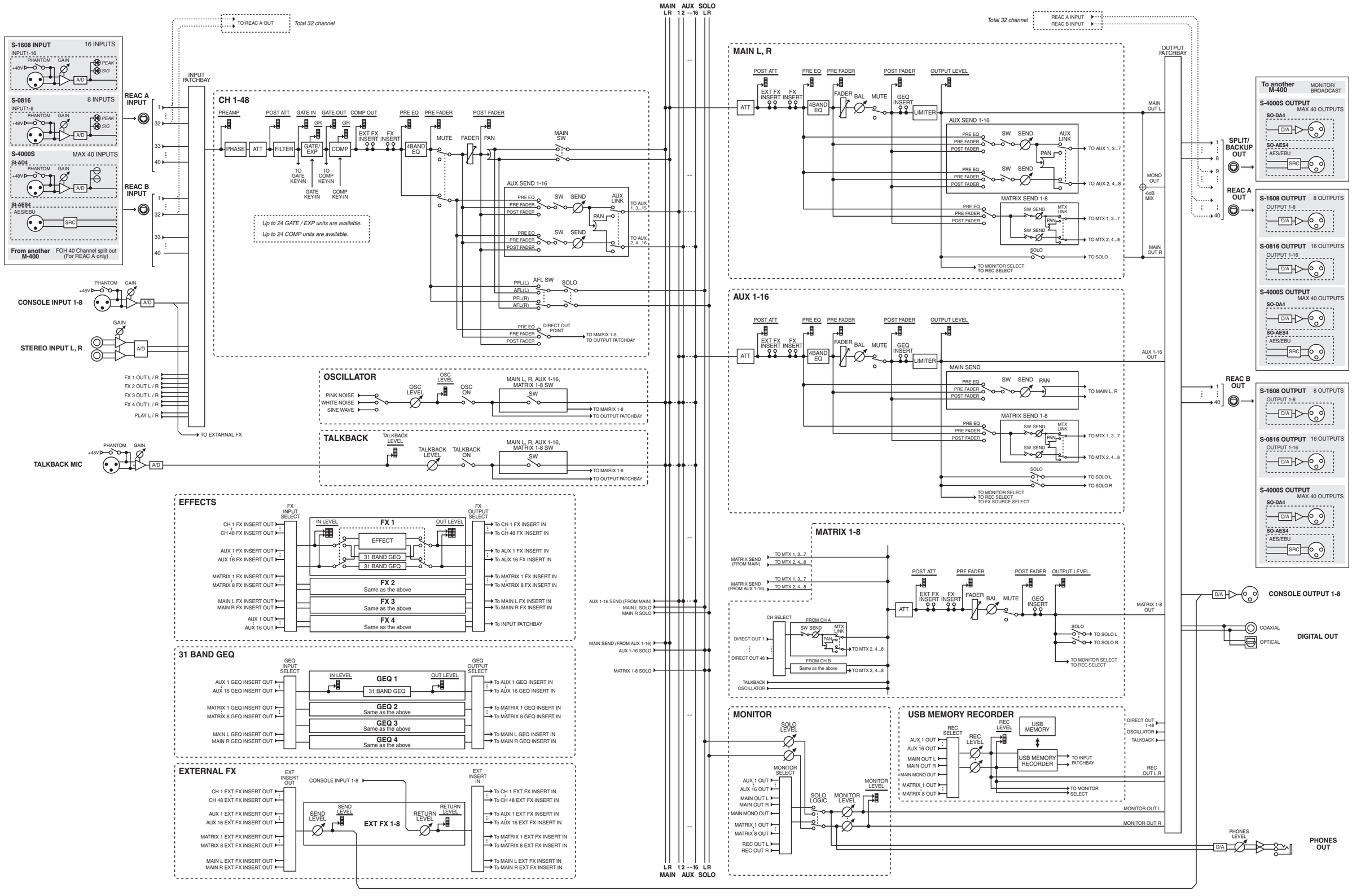
部件名称	有毒有害物质或元素					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬(Cr(VI))	多溴联苯(PBB)	多溴二苯醚(PBDE)
外壳（壳体）	×	○	○	○	○	○
电子部件（印刷电路板等）	×	○	×	○	○	○
附件（电源线、交流适配器等）	×	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。

×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。

因根据现有的技术水平，还没有什么物质能够代替它。

Block Diagram



For EU Countries

Apparatus containing Lithium batteries

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
Discard used batteries according to the manufacturer's instructions.

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL

Eksplosjonsfare ved feilaktig skifte av batteri.
Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten.
Brukte batterier kasseres i henhold til fabrikantens instruks joner.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

For EU Countries

CE

This product complies with the requirements of EMCD 2004/108/EC and LVD 2006/95/EC.

For the USA

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

Unauthorized changes or modification to this system can void the users authority to operate this equipment.
This equipment requires shielded interface cables in order to meet FCC class B Limit.

For Canada

NOTICE

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

AVIS

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

For the USA

DECLARATION OF CONFORMITY Compliance Information Statement

Model Name :	M-400
Type of Equipment :	Digital Mixer
Responsible Party :	Roland Systems Group U.S.
Address :	425 Sequoia Drive, Suite 114, Bellingham, WA 98226
Telephone :	(360) 594-4282

Information

When you need repair service, call your nearest Roland Service Center or authorized Roland distributor in your country as shown below.

ASIA

INDONESIA
PT. Citra IntiRama
JL. Cideng Timur No. 15J-15O
Jakarta Pusat
INDONESIA
TEL: (021) 632-4170

TAIWAN
ROLAND TAIWAN ENTERPRISE CO., LTD.
Room 5, 9fl. No. 112 Chung Shan N.Road Sec.2, Taipei, TAIWAN, R.O.C.
TEL: (02) 2561 3339

SINGAPORE/ MALAYSIA
Roland Asia Pacific Sdn. Bhd.
45-1, Block C2, Jalan PJU 1/39,
Dataran Prima, 47301 Petaling Jaya, Selangor, MALAYSIA
TEL: 3-7805-3263

CENTRAL/LATIN AMERICA

BRAZIL
Roland Brasil Ltda.
Rua San Jose, 780 Sala B
Parque Industrial San Jose
Cotia - Sao Paulo - SP, BRAZIL
TEL: (011) 4615 5666

Other CENTRAL/ LATIN AMERICA
Roland Systems Group U.S.
425 Sequoia Drive Suite 114,
Bellingham, Washington,
98226 USA
TEL: 360-594-4282

EUROPE

AUSTRIA/BELGIUM/ FRANCE/GERMANY/ HOLLAND/ LUXEMBOURG/ PORTUGAL/SPAIN/ SWITZERLAND
Roland Iberia, S.L.
Paseo García Faria, 33-35
08005 Barcelona SPAIN
TEL: 93 493 91 00

CROATIA
ART-CENTAR
Degenova 3.
HR - 10000 Zagreb
TEL: (1) 466 8493

CZECH REP.
CZECH REPUBLIC DISTRIBUTOR s.r.o
Voctárova 247/16
CZ - 180 00 PRAHA 8,
CZECH REP.
TEL: (2) 830 20270

DENMARK
Roland Scandinavia A/S
Nordhavnsvej 7, Postbox 880,
DK-2100 Copenhagen
DENMARK
TEL: 3916 6200

FINLAND
Roland Scandinavia As, Filial Finland
Elannontie 5
FIN-01510 Vantaa, FINLAND
TEL: (0)9 68 24 020

HUNGARY
Roland East Europe Ltd.
Warehouse Area 'DEPO' Pf.83
H-2046 Torokbalint, HUNGARY
TEL: (23) 511011

NORWAY
Roland Scandinavia Avd. Kontor Norge
Lilleakerveien 2 Postboks 95
Lilleaker N-0216 Oslo
NORWAY
TEL: 2273 0074

POLAND
ROLAND POLSKA SP. Z O.O.
UL. Gibraltarska 4.
PL-03664 Warszawa POLAND
TEL: (022) 679 44 19

ROMANIA
FBS LINES
Piata Libertatii 1,
535500 Gheorgheni, ROMANIA
TEL: (266) 364 609

RUSSIA
MuTek
Dorozhnaya ul.3,korp.6
117 545 Moscow, RUSSIA
TEL: (095) 981-4967

SLOVAKIA
DAN Acoustic s.r.o.
Povazská 18.
SK - 940 01 Nové Zámky
TEL: (035) 6424 330

SWEDEN
Roland Scandinavia A/S SWEDISH SALES OFFICE
Danvik Center 28, 2 tr.
S-131 30 Nacka SWEDEN
TEL: (0)8 702 00 20

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EURHYTHMICS Ltd.
P.O.Box: 37-a.
Nedecey Str. 30
UA - 89600 Mukachevo,
UKRAINE
TEL: (03131) 414-40

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Atlantic Close, Swansea
Enterprise Park, Swansea
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As of Oct. 1, 2007 (RSS)

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