

 YAMAHA

# AW4416

**PROFESSIONAL AUDIO WORKSTATION**



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Owner's Manuals:**

- [AW4416 Operation Guide](#)
- [AW4416 Reference Guide](#)
- [AW4416 Tutorial](#)



# AW4416

PROFESSIONAL AUDIO WORKSTATION

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## Operation Guide

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

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

The above statements apply **ONLY** to those products distributed by Yamaha Corporation of America or its subsidiaries.

### ADVARSEL!

Lithiumbatteri—Eksplodingsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandoren.

### VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

### VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

### 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

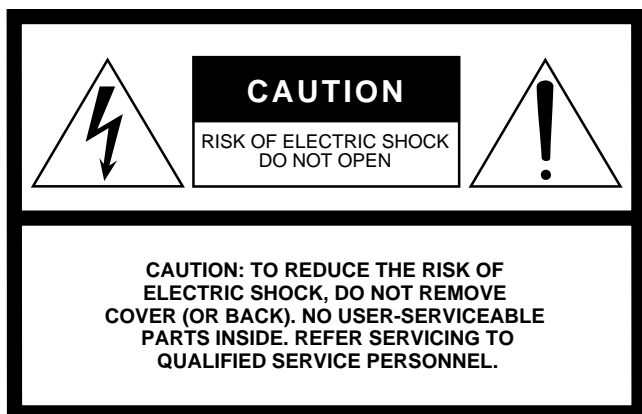
As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

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  $\perp$  or coloured GREEN and YELLOW.

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

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

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

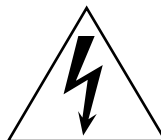


The above warning is located on the rear of the unit

### • Explanation of Graphical Symbols



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.



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.

## NEDERLAND

- Dit apparaat bevat een lithium batterij voor geheugen back-up.
- Raadpleeg uw leverancier over de verwijdering van de batterij op het moment dat u het apparaat aan het einde van de levensduur afdankt of de volgende Yamaha Service Afdeling:  
Yamaha Music Nederland Service Afdeling  
Kanaalweg 18-G, 3526 KL UTRECHT  
Tel. 030-2828425
- Gooi de batterij niet weg, maar lever hem in als KCA.

## THE NETHERLANDS

- This apparatus contains a lithium battery for memory back-up.
- For the removal of the battery at the moment of the disposal at the end of the service life please consult your retailer or Yamaha Service Center as follows:  
Yamaha Music Nederland Service Center  
Address: Kanaalweg 18-G, 3526 KL  
UTRECHT  
Tel: 030-2828425
- Do not throw away the battery. Instead, hand it in as small chemical waste.

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# Important

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## Read the following before operating the AW4416

### ☐ Warnings

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

### ☐ Cautions

- When rack-mounting the unit, allow enough free space around the unit for normal ventilation. This should be: 10 cm at the sides, 20 cm behind, and 30 cm above.  
For normal ventilation during use, remove the rear of the rack or open a ventilation hole.  
If the airflow is not adequate, the unit will heat up inside and may cause a fire.
- This unit has ventilation holes at the bottom to prevent the internal temperature rising too high. Do not block them. Blocked ventilation holes are a fire hazard.
- Hold the power cord plug when disconnecting it from an AC outlet. Never pull the cord. A damaged power cord is a potential fire and electrical shock hazard.

- Do not touch the power plug with wet hands. Doing so is a potential electrical shock hazard.
- Use only the included power supply cable for this unit. Using other types may be a fire hazard.
- Always touch a well-grounded metal surface or the like to fully discharge any static electric charge on your body and clothing before handling an I/O card or hard disk.  
Neglecting this precaution can cause damage to the unit from static electricity.
- Be careful not to touch the leads (metal feet) on the rear side when handling an I/O card or hard disk. Touching the leads can cause contact defects.

## □ Operating Notes

- Using a mobile telephone near this unit may induce noise. If noise occurs, use the telephone away from the unit.
- XLR-type connectors are wired as follows: pin 1: ground, pin 2: hot (+), and pin 3: cold (-).
- Insert TRS phone jacks are wired as follows: sleeve: ground, tip: send, and ring: return.
- If the message “LOW BATTERY” appears when you turn on this unit, contact your dealer as soon as possible about replacing the internal data backup battery. The unit will still operate correctly, but data other than the presets will be lost.  
We recommend that you save the data on CD-RW drive or external SCSI device before replacing the battery.
- The performance of components with moving contacts, such switches, rotary controls, faders, and connectors, deteriorates over time. The rate of deterioration depends on the operating environment and is unavoidable. Consult your dealer about replacing defective components.

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## Handling the CD-R/RW media

Please observe the following points when handling the disk.

Failure to do so may cause problems such as the recorded data being lost, the drive to malfunction, or the printed label to become blurred.

- Do not place the disk in locations of direct sunlight, high temperature, or high humidity.
- Do not touch either surface of the disk.
- Hold the disk at the edges. Gently wipe dust or dirt off of the recording surface of the disk.
- Do not wipe the disk with chemicals or detergents.
- Do not bend or drop the disk.
- Use an air duster or cleaner to remove dust. Vigorously rubbing the surface of the disk with a dry cloth may scratch the disk.
- Do not write on the disk or affix labels to it.

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## Storing produced data

Produced data can be lost due to breakdown or mistaken operation. We recommend that you store all important data on CD-R or CD-RW disks or other external storage medium.

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## Responsibility for loss of data, etc.

- Yamaha will accept no responsibility for any damages (including consequential or incidental) incurred by the customer or any third party as a result of loss or impairment of the data stored on the CD-R media, regardless of whether such loss could have been or actually was foreseen by Yamaha.
- Nor does Yamaha guarantee the media against any defect that may render it unusable.

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## Cautions for handling optional equipment

- For inquiries concerning I/O card, hard disk, or CD-RW drive handling, please consult your Yamaha dealer.
- Always switch off the power for the main unit and all peripherals, unplug the power cord for the main unit from the outlet, then disconnect the cables connecting the main unit with the peripherals before starting installation work.
- Wear thick gloves when working on this equipment to avoid cutting your hands on metal fittings or the like on the main unit, I/O card, hard disk, or CD-RW drive.
- Always touch a well-grounded metal surface or the like to fully discharge any static electric charge on your body and clothing before starting to work on this equipment.
- Take extreme care to avoid touching any terminals or board surface parts.
- In order to protect the electronic circuits of the I/O card, hard disk, CD-RW drive, etc. from damage due to static electricity, when handling any of this equipment, take the most extreme care to avoid touching IC leads or other electronic parts.
- Be careful not to drop any screws into the main unit. If you switch the power on with a dropped screw still in the main unit, the main unit may malfunction or break down. If a dropped screw can not be retrieved, consult your Yamaha dealer.
- If the hard disk or CD-RW drive breaks down, contact the store where you purchased that equipment.

Except for duplication for personal use or when there is no copyright problem, the duplication or transfer of commercially sold music/sound data without the permission of the copyright holder is prohibited. When using this equipment, please consult with a copyright specialist.

**○ Warning**

The Yamaha Professional Audio Workstation is designed to be used professionally and responsibly by recording industry professionals. The reproduction, distribution, or, in some instances, the public performance, of all or a portion of a sound recording or musical composition protected by copyright, without having obtained a proper license from the relevant copyright holders, may constitute copyright infringement and may otherwise violate copyright laws and other laws. In addition, laws (such as the Audio Home Recording Act and the Digital Millennium Copyright Act in USA) contain certain restrictions and requirements that may apply to your use of works protected by copyright and related information and data that may accompany such works. Violation of such laws may result in civil remedies and, in some cases, criminal liability.

Because violations of copyright laws may be serious offenses, you should consult a lawyer familiar with the law of copyright, including all laws that may be applicable to your use of the Workstation (such as the Audio Home Recording Act and the Digital Millennium Copyright Act in USA), if you have any questions regarding your intended use of all or parts of sound recordings or musical compositions protected by copyright.



Thank you for purchasing the Yamaha AW4416 audio workstation. In order to take full advantage of the AW4416's functionality and enjoy trouble-free operation, please carefully read the "Operation Guide" (this manual) and the separate "Reference Manual" and "Tutorial."

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# Before you begin

This chapter explains preparations you need to make before using the AW4416, such as checking the included items and installing options.

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## Checking the included items

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Please make sure that the package contains the following items. If any items are missing, please contact your dealer.

- AW4416 mixer/recorder unit: 1
- Operation guide (this document): 1
- Reference guide: 1
- Tutorial: 1
- Power supply cable: 1
- CD-ROM: 1
- Red and white cable for CD-RW drive (four conductor): 1
- Screws for installing 2.5 inch hard disk/CD-RW drive: 8
- ADP25H 2.5 inch hard disk adapter: 1 (pre-installed in the 2.5" HARD DISK DRIVE slot on the rear panel of the AW4416)

### ○ Trademarks

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### ○ Yamaha website

<<http://www.yamaha.co.jp/product/proaudio/homeenglish/>>



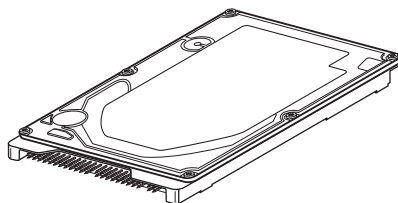
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# Installing an internal hard disk

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**You must install a hard disk in the AW4416 before using it. If you attempt to use the AW4416 without installing a hard disk, the recorder section and mixer section will fail to operate correctly, and the AW4416 will be damaged as well.**

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## About the internal hard disk

On the AW4416, all data necessary for reproducing a composition (mixer settings, recorder settings, audio data etc.) is stored on the hard disk as a “song.”

An internal hard disk is attached to the ADP25H 2.5 inch hard disk adapter and installed in the 2.5" HARD DISK DRIVE slot located on the rear panel. Hard disks with the following specifications can be used.

- Type: IDE 2.5 inch (attachment location conforms to SFF-8201)
- Thickness: no particular limitation
- Capacity: no particular limitation (however, the AW4416 can use a maximum capacity of 64 GB)
- Models known to work: consult your local Yamaha distributor or refer to the website at the following URL.  
<<http://www.aw4416.com/>>



- .....
- *By “models known to work,” we mean commercially available models that Yamaha has obtained, installed in the AW4416, and successfully tested by means of various operational tests. However, we cannot take into account slight differences in performance that may occur due to the manufacturing tolerances of each manufacturer.*
  - *Hard disks are precision devices. Strong physical shock, magnetism, static electricity, or excessive current etc. can damage the data on a hard disk. You must use media such as an external SCSI device or CD-RW to backup your important musical data.*
  - *Please be aware that Yamaha Corporation will accept no responsibility for any damages, neither direct nor indirect, resulting from the use of any of the above hard disks.*

## Installation

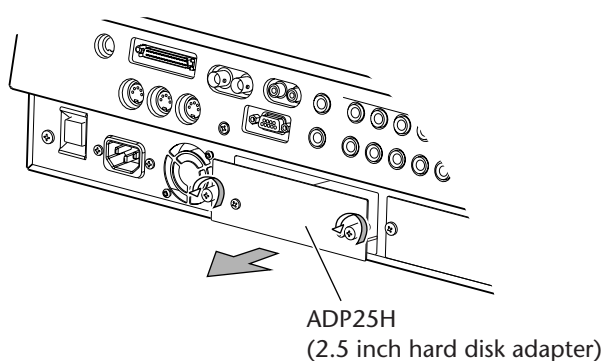
Please read and observe the cautions on installing optional equipment listed at the beginning of this manual.

Here's how to attach a 2.5 inch IDE hard disk to the ADP25H hard disk adapter included with the AW4416, and install it into the appropriate slot of the AW4416.

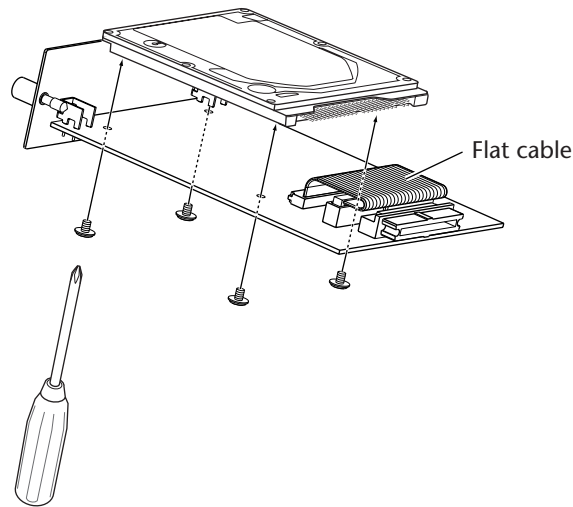


- *Hard disks are precision devices. Do not subject them to physical shock or static electricity, etc.*
- *Do not place a hard disk nearby devices that produce a strong magnetic field, or in locations of extreme cold, heat, or moisture.*
- *Before you handle a hard disk, touch your hand to a grounded metallic object to release any static charge that may be present in your body or clothing. If you fail to do so, static electricity may damage the hard disk.*
- *Never attempt to disassemble a hard disk or apply excessive force to it.*
- *The AW4416 is shipped with four screws for attaching a 2.5 inch hard disk, and four screws for attaching a CD-RW drive, making a total of eight included screws of the same type.*

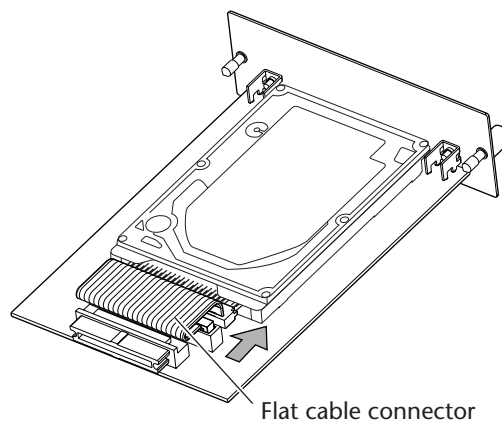
1. You will need the following items.
  - The AW4416 itself
  - A 2.5 inch IDE hard disk (sold separately) for installation
  - Four screws included with the AW4416 for attaching the 2.5 inch hard disk
  - A philips (+) screwdriver
2. Make sure that the power of the AW4416 is turned off. For safety's sake, disconnect the power cable from the AC outlet.
3. On the rear panel of the AW4416, remove the two screws that hold the ADP25H 2.5 inch hard disk adapter to the 2.5" HARD DISK DRIVE slot.



- Place the hard disk on the ADP25H as shown in the diagram below, align the screw holes of the hard disk and the ADP25H, and use your screwdriver to fasten the screws at the four locations shown.



- Plug the connector of the flat cable extending from the ADP25H into the connector of the hard disk.



- Even if it is difficult to plug in the connector, do not use excessive pressure to force it in. This may damage the hard disk, or you may injure yourself.

- Aligning the ADP25H (with the hard disk attached) with the rails inside the 2.5" HARD DISK DRIVE slot, push it in until it clicks into place.
- Use the screws that you removed in step 3 to fasten the ADP25H into the 2.5" HARD DISK DRIVE slot.

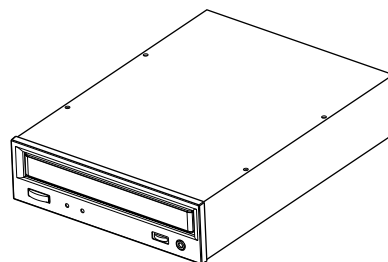


- If you fail to tighten the screws all the way, the hard disk may vibrate and fail to operate correctly.



- Do not turn on the power of the AW4416 until all options have been installed.
- When you turn on the power of the AW4416 after installing a new hard disk, formatting of the hard disk will begin automatically (→ P.15).

# Installing a CD-RW drive



## About the CD-RW drives

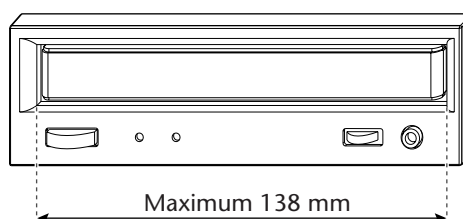
A CD-RW drive is an option that allows you to create music CD's, to backup/restore internal hard disk data, to play a music CD or to read a CD-ROM. An internal-type CD-RW drive can be installed by removing the CD-RW drive cover from the front panel. CD-RW drives with the following specifications can be used.

- Interface: SCSI-2
- Models known to work: consult your local Yamaha distributor or refer to the website at the following URL.  
<<http://www.aw4416.com/>>



- *By "models known to work," we mean commercially available models that Yamaha has obtained, installed in the AW4416, and successfully tested by means of various operational tests. However, we cannot take into account slight differences in performance that may occur due to the manufacturing tolerances of each manufacturer.*
- *Please be aware that Yamaha Corporation will accept no responsibility for any damages, neither direct nor indirect, resulting from the use of any of the above CD-RW drives.*

- \* Note that the cover panel of the AW4416 cannot be attached to a CD-RW drive with a lid-type tray. The AW4416's cover panel can be attached to a CD-RW drive with a tray of the following dimensions.



### □ The SCSI ID of the CD-RW drive

- The SCSI ID of the AW4416 itself is fixed at "6." For this reason, you must set the SCSI ID of the CD-RW drive to "6" before installing it.

- In the various screens of the AW4416, the SCSI ID of the internal CD-RW drive has been set to “3” by default. For this reason, you will find it convenient to set the ID of the CD-RW to “3.” (For details on setting the SCSI ID, refer to the manual for your CD-RW drive.)
- If you are installing a CD-RW drive manufactured by Yamaha, the SCSI ID will be set to “3” at the factory, and we recommend that you leave it at this setting.

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## Installation procedure

Please carefully read the cautions for installing optional equipment given at the beginning of this manual.

1. You will need the following items.

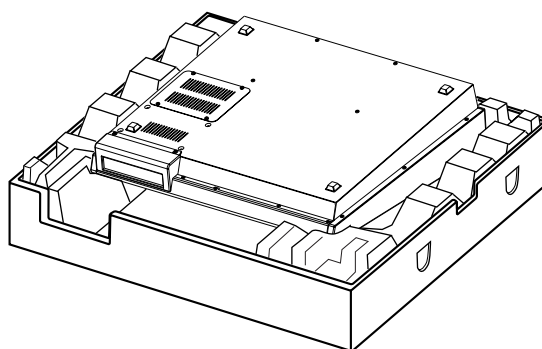
- The AW4416 itself
- Internal CD-RW drive (option)
- Screws (included with the AW4416) for attaching the CD-RW drive
- Red and white cable for CD-RW drive (four conductor)
- Philips (+) screwdriver
- Work surface



- .....
- *In order to install the CD-RW drive you will need to turn the AW4416 on its back. Make sure that you have a sufficiently broad work surface.*
  - *The AW4416 is shipped with four screws for attaching the 2.5 inch hard disk, and four screws for attaching the CD-RW drive, making a total of eight screws of the same type.*

2. Make sure that the power of the AW4416 is turned off. For safety's sake, disconnect the power cable from the AC outlet.

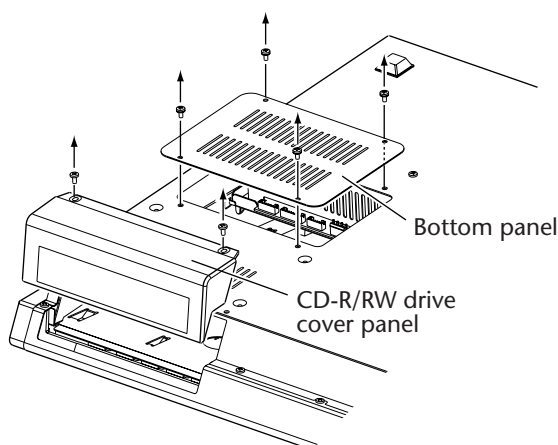
3. Turn the AW4416 upside down on the work surface.



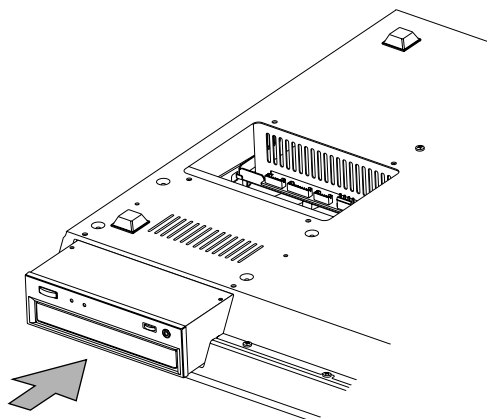
.....

*When turning the AW4416 upside down, we recommend that you use the packing foam from the AW4416's shipping carton as shown in the diagram at above, so that the controls of the top panel are not damaged. If the packing foam is not available, please spread out a soft cloth, and support each of the four corners of the AW4416 with a stack of magazines etc.*

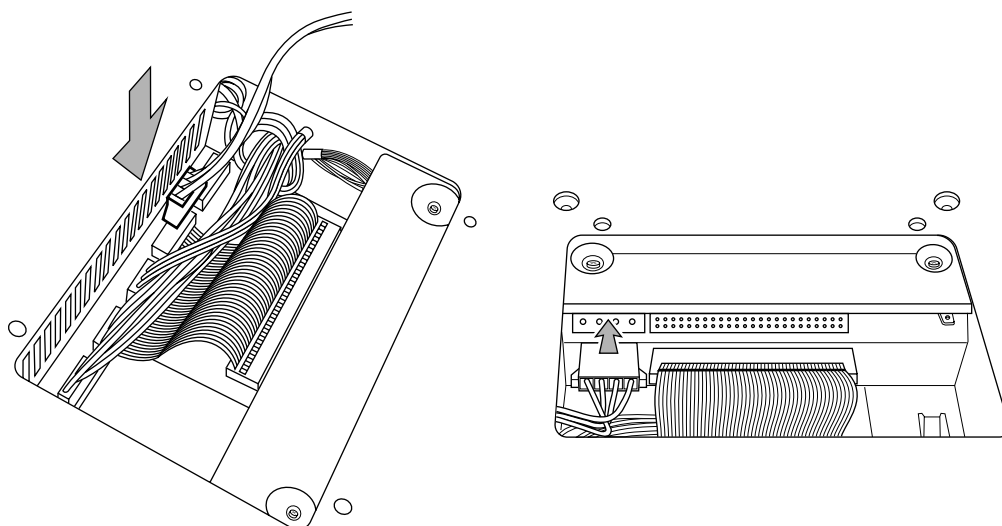
4. Remove the CD-RW drive cover from the front panel, and remove the bottom panel.



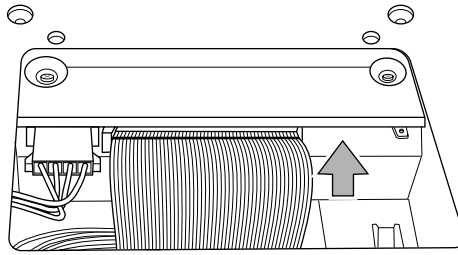
5. Turn the CD-RW drive over, and insert it little by little, stopping when the connector end of the CD-RW drive enters the opening in the bottom of the AW4416.



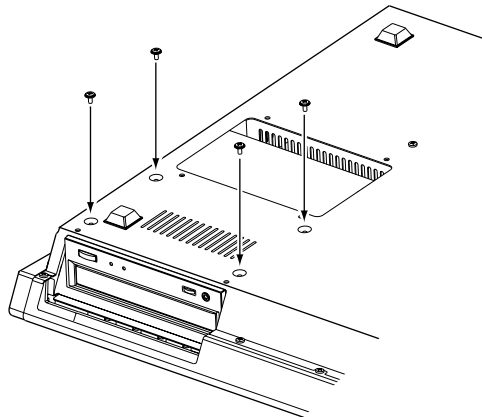
6. Connect the red and white four-conductor cable included with the AW4416 to the internal connector of the AW4416 as shown in the diagram. Then connect the cable to the connector of the CD-RW drive.



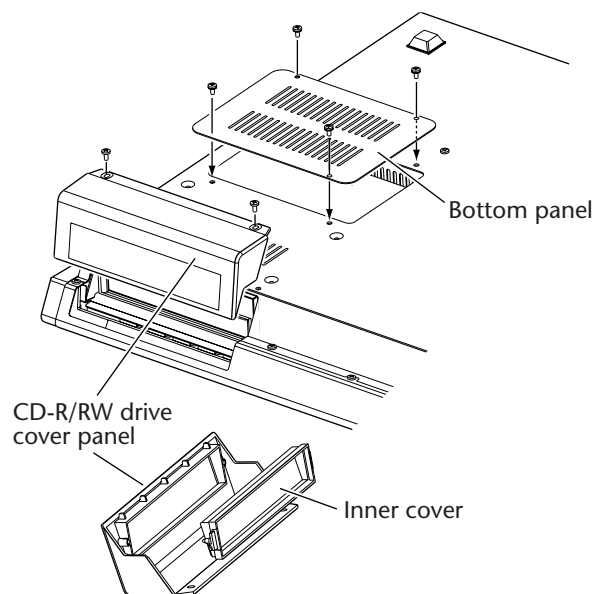
7. Plug the connector of the flat cable (extending from inside the AW4416) into the connector of the CD-RW drive.



8. Align the screw holes in the bottom of the CD-RW drive with the screw holes of the AW4416, and use a screwdriver to fasten the drive with the four included screws.



9. Re-attach the CD-RW drive cover and the bottom panel that you removed in step 3. At this time, remove the inner cover from the CD-RW drive cover.

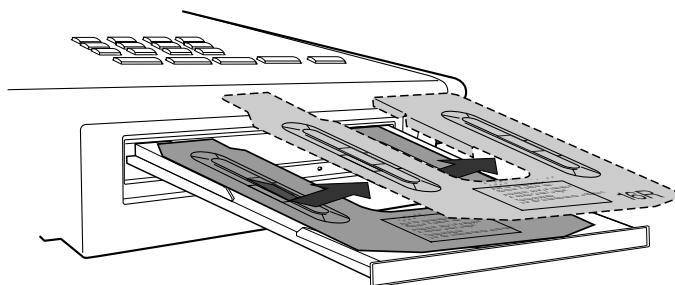


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# Removing the transport protection pad

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When CD-RW drives are shipped, the disc tray contains a transport protection pad that protects the internal mechanism from physical shock suffered during shipment. Please remove this protective pad before use.



\* This diagram shows a CD-RW drive manufactured by Yamaha Corporation.



.....  
*Be sure to save the transport protection pad for the next time you need to transport the unit.*

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## How to remove the transport protection pad

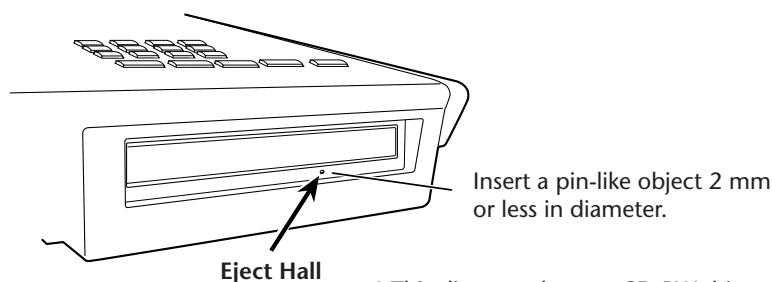
1. Install the CD-RW drive in the AW4416.
2. Turn on the power of the AW4416.  
Set the SCSI ID number as necessary (→ P.259).
3. Press the [CD PLAY] key, and then press the [SHIFT] + [F2] keys to open the disc tray.
4. Remove the transport protection pad.  
Before transporting the unit, reverse this procedure to insert the pad.



## Manual eject (emergency disc removal)

Manual eject allows you to remove the disc manually in the case of an emergency such as a malfunction of the disc tray mechanism (usually temporary) or a power failure. Please be aware that using this method frequently can cause the CD-RW drive to malfunction. For the location of the eject hole and the procedure, refer to the manual of your CD-RW drive.

In order to perform this operation, you will need a pin-like object 2 mm or less in diameter, such as a straightened paper clip.



\* This diagram shows a CD-RW drive manufactured by Yamaha Corporation.

## Attaching an external SCSI device

### About external SCSI devices

The external SCSI devices referred to here are storage devices used to backup/restore the internal data of the AW4416, and can be connected to the SCSI connector on the rear panel of the AW4416. The following types of storage device can be used.

- Type of drive: MO drives (128 MB, 230 MB, 540MB, 640 MB 1.3 GB), hard disk drives, CD-RW drives
- Interface: SCSI-2
- Models known to work: consult your local Yamaha distributor or refer to the website at the following URL.  
<<http://www.aw4416.com/>>



- By "models known to work," we mean commercially available models that Yamaha has obtained, connected to the AW4416, and successfully tested by means of various operational tests. However, we cannot take into account slight differences in performance that may occur due to the manufacturing tolerances of each manufacturer.
- Please be aware that Yamaha Corporation will accept no responsibility for any damages, neither direct nor indirect, resulting from the use of any of the above storage devices.



It is not possible to directly record or play back audio signals in realtime on an external storage device connected to the SCSI connector.

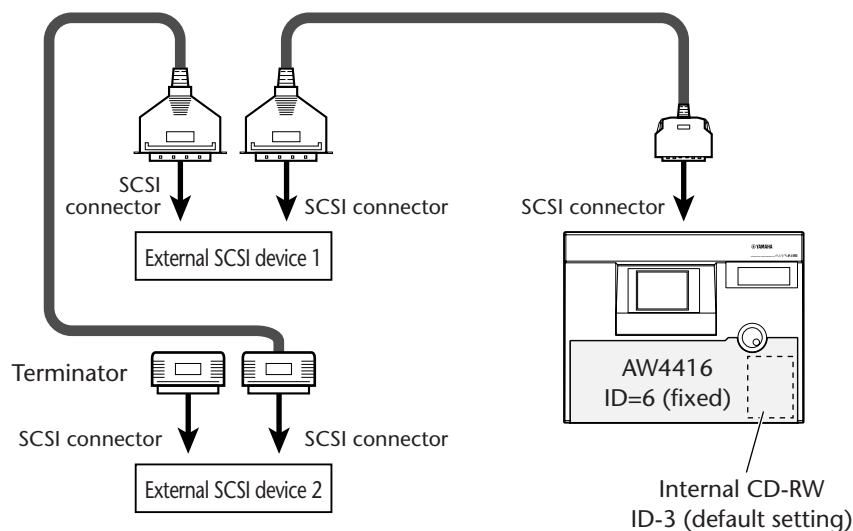
## Connection procedure

1. Make sure that the power is turned off for the AW4416 and for the external SCSI device(s), and use a SCSI cable to connect the SCSI connectors of each device.

When connecting an external SCSI device, use only high impedance SCSI cables of 100 ohms ( $\pm 10$  ohms) impedance that are 1 meter or shorter in length.



Use only good-quality SCSI cables.



- A maximum of seven SCSI devices (SCSI ID= 0–5,7) can be connected in a daisy-chain (including the internal CD-RW drive).
- When connecting multiple SCSI devices, you must make sure that the SCSI ID of each device (including the internal CD-RW drive) does not conflict with any other device. (For details on how to set the SCSI ID, refer to the manuals for your SCSI devices.)
- The SCSI ID of the AW4416 itself is fixed at "6."
- In the various screens of the AW4416, the SCSI ID of the internal CD-RW drive has been set to "3" by default. For this reason, if you install a CD-RW drive, you will find it convenient to set its ID to "3." (For details on setting the SCSI ID, refer to the manual for your CD-RW drive.)
- If you install a CD-RW drive manufactured by Yamaha, the SCSI ID will be set to "3" at the factory, and we recommend that you leave it at this setting.

2. Attach a terminator to the last SCSI device in the chain.

A "terminator" is a device that terminates the SCSI signal at the end of the chain, and is normally attached to the vacant SCSI connector of the last device in the daisy chain. If the SCSI device has an active terminator (a circuit that terminates the signal electrically), turn it on. (For details of how to turn on the active terminator, refer to the manual of your SCSI device.)



Before using an external SCSI device, you will need to format it. For details on this procedure, refer to page 250.

## □ About terminators

“Termination” refers to the process of applying a resistor appropriate for the impedance of the SCSI bus to terminate the end of the circuit. The resistor required for this is called the “terminator.” Normally, a terminator must be installed at the beginning and end of the SCSI bus (in the case of the example shown above, this would be the AW4416 itself, and the SCSI device connected to the end of the daisy chain).

However, this is only a general principle, and is not an absolute. Depending on the combination of SCSI devices, the order of connection, or on the length of the SCSI cables, there may be cases in which better results are obtained by terminating only one end of the chain. If problems occur such as the AW4416 failing to start up when an external SCSI device is connected, try defeating one of the terminators. (For details on how to defeat the internal terminator of the AW4416, refer to “UTILITY screen → Prefer. 3 page” in the Reference Guide.)

## □ About SCSI errors

The SCSI bus is able to transfer data in a stable manner only if all connected SCSI devices are operating correctly. If the SCSI bus of the AW4416 is connected to a device whose operation is unstable or which produces noise, errors may occur in other devices, or the AW4416 may fail to start up correctly. If such problems occur, check the following points.

### ○ Check the SCSI ID

Make sure that the SCSI ID of each SCSI device (including the AW4416 and the internal CD-RW drive) does not conflict with the SCSI ID of any other device. The SCSI ID of the AW4416 is fixed at “6.”

### ○ Check the terminator

Check the location of the terminator. Under certain conditions, better results may be obtained by terminating only one end of the SCSI chain.

### ○ Check the SCSI cables

Since errors are often caused by low-quality SCSI cables or unnecessarily long SCSI cables, you should avoid using such cables. Please use double-shielded cables that are as short as possible. It is also important that the shield within the cable is grounded to the connector.

### ○ External SCSI devices with 25-pin connectors

Most SCSI cables with 25-pin connectors at both ends do not meet SCSI specifications. For this reason if the system includes a SCSI device that uses a 25-pin connector, the problems may be due to this type of cable.

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# Installing I/O cards

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## About I/O cards

I/O cards compatible with the Yamaha mini-YGDAI format can be installed in the OPTION I/O slots 1/2 located on the rear panel of the AW4416 in order to add input/output ports. For example by installing an ADAT format compatible I/O card into an OPTION I/O slot, you can transmit/receive eight channels of digital audio to/from an ADAT format digital recorder.

At present, the following types of I/O cards can be used.

○ **MY8-AT**

This card transmits and receives eight channels of Alesis ADAT format digital signals.

○ **MY8-TD**

This card transmits and receives eight channels of TASCAM format digital signals.

○ **MY8-AE**

This card transmits and receives eight channels of AES/EBU format digital signals.

○ **MY8-AD**

This is an A/D card with eight channels of analog input jacks (balanced TRS phone jacks).

○ **MY4-AD**

This is an A/D card with four channels of analog input jacks (balanced XLR jacks).

○ **MY4-DA**

This is a D/A card with four channels of analog output jacks (balanced XLR jacks).

For up-to-date information on available MY cards, contact your local Yamaha distributor or check the following website.

<<http://www.aw4416.com/>>

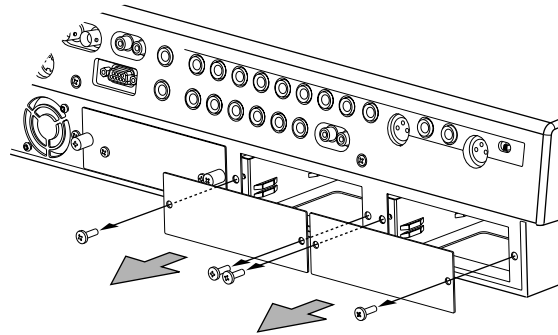


.....  
*Some types of MY card sold by other manufacturers may be usable only in SLOT 1 or 2.*

## Installation procedure

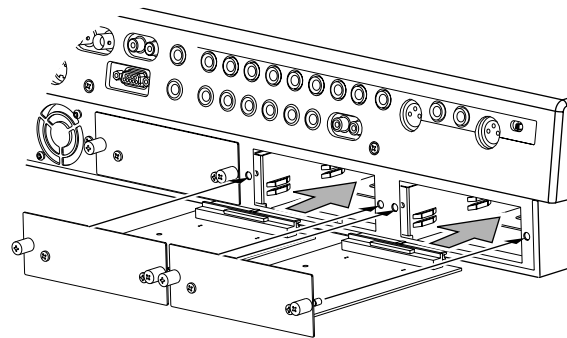
Please carefully read the cautions for installing optional devices, given at the beginning of this manual.

1. Make sure that the power of the AW4416 is turned off. For safety's sake, disconnect the power cable from the AC outlet.
2. From the OPTION I/O slot located on the rear panel of the AW4416, remove the two screws that hold the cover in place.



.....  
*Please keep the cover and screws you removed in a safe place.*

3. Slide the I/O card along the rails inside the slot until it clicks into place.
4. Tighten the two screws included with the I/O card to fasten the card securely.



.....  
*Please note that if the screws are loose, the card may not be grounded correctly.*

# Important points you must observe

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## Turning the power on or off

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You must use the following procedure to turn the power of the AW4416 on or off.

### □ Turning the power on

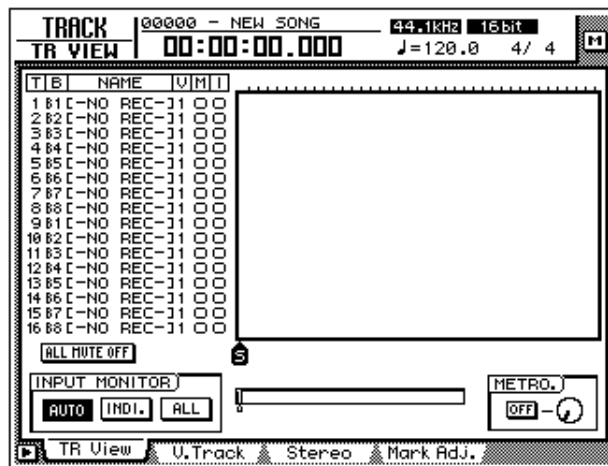
To turn on the power of a system that includes the AW4416, you must turn on the power switches in the following order.

- ① Storage devices connected to the AW4416's SCSI connector, and external sound sources connected to the input/output jacks
- ② The AW4416 itself
- ③ The monitor system connected to the output jacks of the AW4416



.....  
*If the SCSI device is turned on after the AW4416 is turned on, it will not function correctly.*

After the opening screen appears in the display of the AW4416, a TRACK screen like the following will appear.



When the AW4416 is first turned on after a new internal hard disk has been installed, the display will ask "Format OK? [Y (Enter)/N (Any)]." If you now press the [ENTER] key, formatting of the hard disk will begin automatically. When formatting is completed, the screen shown above will appear.



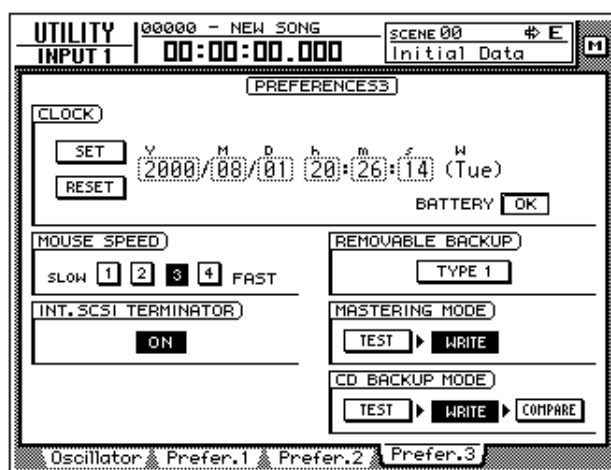
.....  
*Never turn off the power of the AW4416 while formatting is in progress. Doing so may damage the hard disk itself.*

## Setting the internal clock

When the AW4416 is shipped from the factory, its internal clock is set to Japan time. When you create a song on the AW4416, the song will store the date and time using this internal time.

If it becomes necessary to reset the internal clock after replacing a run-down battery or for any other reason, use the following procedure.

1. Press the [UTILITY] key → [F4] key.  
The UTILITY screen Prefer.3 page will appear.



Use the CURSOR [▶] key to move the cursor to the square frame of the Y (year) field in the CLOCK area, and use the [DATA/JOG] dial to input the year. In the same way, input M (month), D (date), h (hour), m (minute), and s (second). (W is the day of the week, and will be set automatically.)

The time you specified will blink. Move the cursor to the SET button to confirm the setting, or to the RESET button to cancel, and then press the [ENTER] key. The internal clock of the AW4416 will be set to the specified time. If you select the RESET button and press the [ENTER] key, the clock will return to the previous state.

## □ Turning the power off

To turn off the power of a system that includes the AW4416, you must turn off the power switches in the following order.

- ① The monitor system connected to the output jacks of the AW4416
- ② The AW4416 itself
- ③ Storage devices connected to the AW4416's SCSI connector, and external sound sources connected to the input/output jacks

Before turning off the power of the AW4416 itself, you must perform the following shut-down procedure.

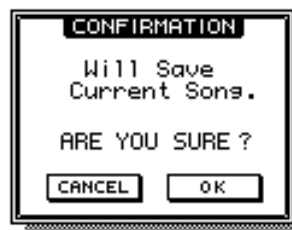
### ○ Shut-down operation

1. In the WORK NAVIGATE section located in the upper left of the AW4416's top panel, press the [SONG] key.
2. Below the display, press the [F5] (Shut Down) key.
3. The CURRENT SONG STATUS screen will appear, allowing you to check the content of the last-saved song.

The data for the current song (date, size, quantization bits, protect) shown here in the song list is the data for when the song was last saved. When you perform the following Save procedure and press the [ENTER] key, it will be overwritten by the new data.

Move the cursor to the EXECUTE button and press the [ENTER] key.

A message will ask you whether you wish to save the current song.



4. Use the CURSOR [◀]/[▶]/[▲]/[▼] keys in the center right of the top panel to move the cursor (the blinking rectangle) to the OK button, and press the [ENTER] key located immediately below.
5. When the "Now safe to turn off" message appears, turn off the [POWER] switch located on the rear panel.



- If you turn off the power of the AW4416 without performing the shut-down procedure described at the above, the audio data on the hard disk may be lost.
- Never turn off the power while the access indicator in the level meter/counter is lit, since this may damage the hard disk itself.
- If lightning is occurring nearby, disconnect the power cable from the AC outlet. The AW4416 can be damaged by lightning.



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## Transporting the AW4416

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When transporting the AW4416, you must disconnect all cables, and pack it in the packing foam in which the unit was shipped (or the equivalent). If a CD-RW drive (option) is installed, insert the protective pad that was included with it into the drive.



- *If you transport the AW4416 without packing it as described at the above, any damage or malfunctions that occur during transport may not be covered under warranty.*
- *Even if the AW4416 is packed as described at the above, any damage or malfunctions that occur due to dropping the unit etc. may not be covered under warranty. Please handle the AW4416 with care.*

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## Vibration during use

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The internal hard disk or CD-RW drive of the AW4416 are very sensitive to vibration. Do not allow them to be subject to vibration or shock during operation, and do not move the AW4416 while its power is turned on.

In particular, you must never apply physical shock or vibration while the access indicator of the level meter/counter is lit, since this may damage the hard disk itself.

# 1

# Welcome to the world of the AW4416

This chapter explains the features and basic concepts of the AW4416, and outlines the signal flow.

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## Features of the AW4416

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The AW4416 is an audio workstation that combines a digital mixer, hard disk recorder, multi-effects, and sampling pads. It is the only equipment you need to perform the entire music production process, from multi-track recording, mixing, audio editing, effect processing, and creating a final CD<sup>(\*1)</sup>. In the following pages of this manual, the functionality of each section is described separately.

\*1. An optional internal/external CD-RW drive is required.

### □ Mixer section

#### ○ Professional-quality audio with 32 bit internal processing

The AW4416 carries on the technology made famous on the de-facto standard for digital consoles — the Yamaha 02R. Internal processing is performed with 32 bit precision (54 bit precision for EQ) to guarantee the highest possible audio quality.

#### ○ Up to 44 input channels and 20 buses, rivaling even large consoles

A total of 44 mixing inputs are provided, with 8 analog inputs, digital stereo input, 16 (maximum) digital/analog inputs via the OPTION I/O slot, in addition to 16 recorder monitor channels, and 2 return channels. Output buses total 20, with 8 group buses, 8 AUX buses, stereo bus, and SOLO bus (stereo). With a bus configuration that rivals large consoles, the AW4416 can handle a wide variety of applications.

#### ○ Four-band EQ and dynamics processing on each channel

Every input as well as the stereo output channel provides the same powerful four-band full-parametric EQ and dynamics processor as on the 02R. (The two return channels are excepted.)

Each band of the EQ is fully adjustable in the range of  $\pm 18$  dB/f= 20 Hz–20 kHz/ Q= 41 points. The dynamics processor provides compressor, gate, ducking, expander, and compander functionality. Key-in and stereo link are also supported for precise control of the input signals.

#### ○ Two high-quality multi-effect processors are built-in

Two multi-effect processors provide spatial effects such as reverb and delay, modulation effects such as chorus and flanger, and guitar effects such as distortion and amp simulator.

In addition to using these via the AUX bus send/return, they can be inserted into a channel or the stereo bus. A high-impedance jack for direct connection of an electric guitar is also provided.

### ○ Scenes and libraries

Faders locations and mix parameters for each channel, together with effect settings, can be stored as a scene.

Up to 96 scenes can be used for each song. Scenes that you save can be recalled instantly using the top panel keys, or by transmitting program change messages from an external MIDI device. Libraries for storing EQ, dynamics processor, and channel settings are also provided.

### ○ Full mixing automation

The AW4416 features seventeen 60 mm motorized faders.

In addition to the ability to recall scene memories and libraries, the AW4416 provides fully automated mixing that records fader/pan/EQ movements in realtime.

## □ Recorder section

### ○ High capacity hard disk up to 64 GB<sup>(\*2)</sup>

An internal hard disk (2.5 inch IDE type) of up to 64 GB (maximum 6.4 GB per song) is supported.

A hard disk attached to the ADP25H cartridge (sold separately) can be inserted into the hard disk slot of the AW4416, allowing you to exchange hard disks as easily and conveniently as if you were using removable media.

\*2. Hard disks are sold separately.

### ○ Efficient data management

All of the audio data (multi-track and stereo track), scene memories, libraries, and automix data used in a song are managed on the internal hard disk as a “Song.”

A desired song can be recalled from disk at any time. Songs can also be backed up on an external hard disk, MO disk, or CD-R/RW disc.

### ○ 16×8 virtual tracks + stereo track

A single song consists of 16 tracks × 8 virtual tracks + stereo track (total of 130 tracks).

The quantization (16 bit/24 bit) and sampling frequency (44.1 kHz/48 kHz) can be selected for each song. 16 tracks can be recorded simultaneously, or 16 tracks played back while recording 8 tracks simultaneously, making the AW4416 an ideal choice for live recording or for re-recording or ping-ponging from an external recorder. The 16 tracks can also be mixed down directly to the stereo track. This has the advantage not only of making a master recorder unnecessary, but also of allowing multi-track and two-track mix data to be managed together.

### ○ Versatile editing functionality

Data can be edited freely at every level — song, track, part, and region.

Editing functions include “time compression” that allows you to compress or expand time over a range of 50%–200%, and “pitch change” that can modify the pitch as far as an octave upward or downward. Editing is non-destructive, allowing up to fifteen levels of undo/redo.

### ○ Locate functions, and auto punch-in/out

A total of eight locate keys are provided: start, end, RTZ, A, B, in, out, and roll-back. In addition, you can set 99 markers for each song, making it fast and easy to locate to any desired point. Auto punch-in/out at the specified punch-in and punch-out points is also provided. The AW4416 also has a built-in click metronome linked with the tempo map.

## □ Sampling pad section

### ○ Assign 16 sounds to the sampling pads

Sixteen sounds can be assigned to the eight pads with switchable A/B banks.

Sounds can be sampled into these pads at the same 16 bit/24 bit and 44.1 kHz/48 kHz audio quality as for recording. Sampling sources can be taken from a sound file on hard disk, an external input from the mixer, or from a WAV file on a SCSI device. The playback timing can be recorded on a special sequencer track, and edited later. Pad polyphony is eight notes, and a total of approximately 90 seconds can be sampled in the pads (16 bit/44.1 kHz).

## □ CD-RW drive (option)

### ○ CD-RW drive<sup>(\*3)</sup> can be installed internally

You can produce an audio CD off-line, using stereo tracks from the hard disk. This allows entire process from recording to CD production to be completed within a single unit. The CD-RW drive can also be used to store recorded data, making backups easy. Playback of audio CD's and loading from CD-ROM is also supported, allowing these to be used as sources for the sampling pads.

\*3. A CD-RW drive is optional.

## □ Other features

### ○ Simple panel layout and efficient operation

The AW4416 features a large backlit LCD and a three-color FL display, providing a graphic user interface that can be used intuitively and efficiently. A serial mouse (9 pin D-sub connector) can also be connected.

### ○ Two I/O card option slots

Two slots support a variety of formats including ADAT, TASCAM, AES/EBU, and analog. The AW4416 is designed with an open architecture for superb expandability.

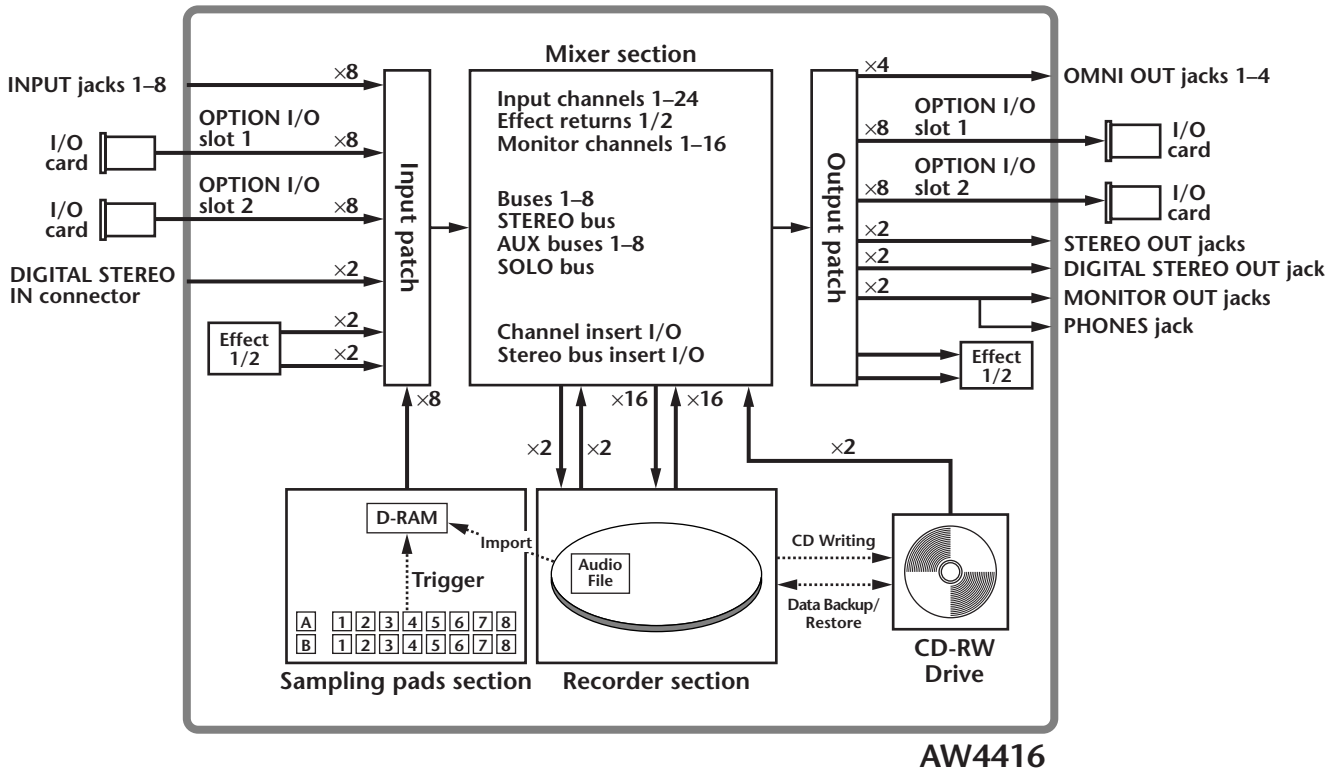
### ○ Sophisticated connectivity

TO HOST connector and SCSI connector (SCSI-2) are standard, ensuring easy connection to computers, external SCSI devices<sup>(\*4)</sup>, and MIDI devices. WORD CLOCK IN/OUT connectors are also provided to allow the construction of digital systems for a variety of applications. In addition, MTC/MIDI clock can be used for synchronization, and MMC commands can control the AW4416 from an external device.

\*4. External SCSI devices can be used only to back up data. They cannot be used to record audio data directly.

# Signal flow within the AW4416

The following diagram shows the general signal flow of the AW4416. As you can see from this diagram, the AW4416 consists of several sections: input patch, output patch, mixer, sampling pads, recorder, and CD-RW drive (optional).



The signal flow within each section is explained in detail in the pages that follow.

## Input patch

The input patch section is where input signals are assigned to input channels 1–24 and return channels 1/2. The following types of input signal can be selected.

**MIC/LINE INPUT**

Input signals from analog INPUT jacks 1–8.

**OPTION IN**

Input signals from an I/O card installed in rear panel OPTION I/O slots 1/2. Up to 8 channels of signal can be input simultaneously from a single I/O card.

**SAMPLING PAD**

Output signals of pads 1–8 in the sampling pad section.

**EFFECT 1/2**

Return signals from internal effects 1/2.

**DIGITAL STEREO IN**

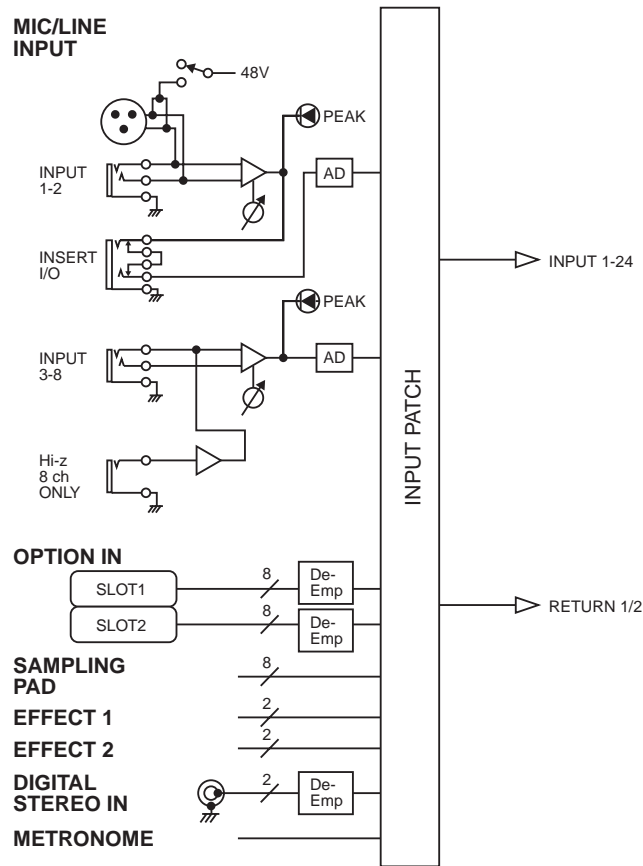
Input signals from the DIGITAL STEREO IN jack.

**METRONOME**

The playback of the internal metronome.

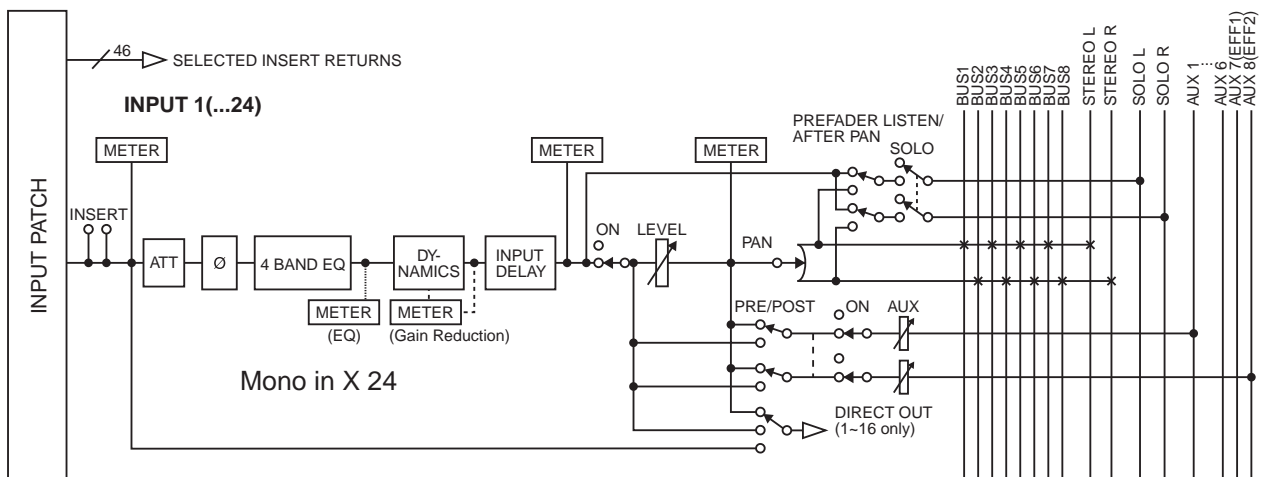
The following input signals can be assigned to each channel.

	Input channel 1–24 (mono)	Return channel 1 (stereo)	Return channel 2 (stereo)
MIC/LINE INPUT	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
OPTION IN	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SAMPLING PAD	<input type="radio"/>		
EFFECT 1		<input type="radio"/>	
EFFECT 2			<input type="radio"/>
DIGITAL STEREO IN	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
METRONOME	<input type="radio"/>		



## Input channels 1–24

There are monaural input channels used mainly for inputting mics or line level instruments. The signals input to input channels 1–24 are routed through an attenuator, phase switch, four-band EQ, dynamics processor, and delay, and are sent to buses 1–8, the stereo bus, or AUX buses 1–8. Input channels 1–16 have a direct output (DIRECT OUT) function that allows their signal to be output directly to an output jack or to the recorder section.



## Return channels 1/2

These are stereo input channels used mainly to input the return signals from internal effects 1/2. However they can also be used as supplementary input channels by changing the input signal assignments of the input patch section.

The structure of these channels is identical to that of the input channels, with the exception of the following differences:

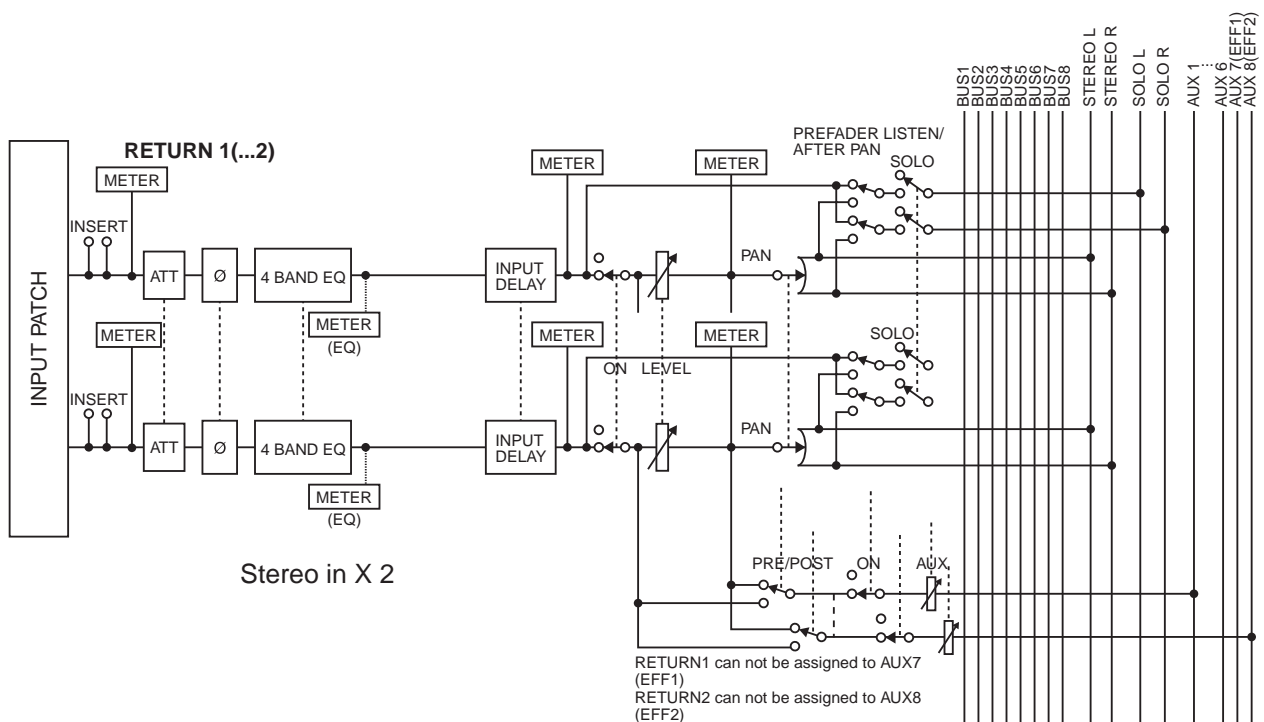
- ① **Stereo**
- ② **No dynamics processor**
- ③ **No direct output**
- ④ **No AUX 7 send level from return channel 1**
- ⑤ **No AUX 8 send level from return channel 2**



Since return channels 1/2 are stereo, selecting MIC/LINE INPUT or OPTION IN as input signals will cause two adjacent odd-numbered/even-numbered signals to be assigned. Also if DIGITAL STEREO IN is selected, the signals of both L/R will be assigned.



- The reason that return channel 1 (2) has no send level to AUX 7 (8) is to prevent the feedback loop that would occur if the signal returned from internal effect 1 (2) were sent back to the same internal effect.
- Be aware that the AUX 7 (8) send level is not available even if a different input signal is assigned to return channel 1 (2).





## Recorder input patching

This section assigns the signals that are input to tracks 1–16 of the recorder section. The following types of signal can be selected.

### ○ STEREO

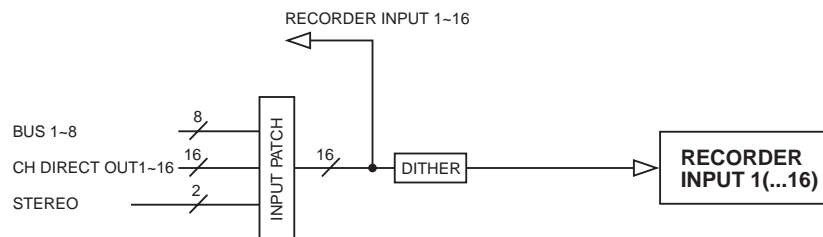
The stereo bus output signal that has passed through the stereo output channel.

### ○ BUS 1–8

The output signal of buses 1–8.

### ○ DIRECT OUT 1–16

The direct output signal of input channels 1–16.

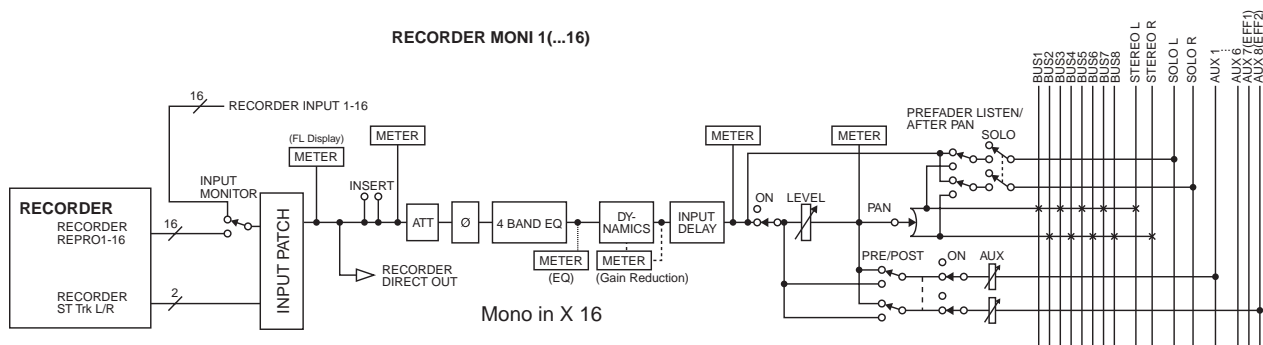


## Monitor channels 1–16

These are monaural channels that are assigned to the track 1–16 outputs of the recorder section. According to the input monitor settings or the state of the transport, they will input either the signals being input to tracks 1–16, or the playback signals of tracks 1–16.

As an exception, the stereo track will be patched to monitor channels 1/2 when the stereo track of that song is being played back, and the remainder of the monitor channels 3–16 will be muted.

The structure of these channels is the same as that of the input channels, with the exception that the direct output is fixed at a point immediately before the attenuator.



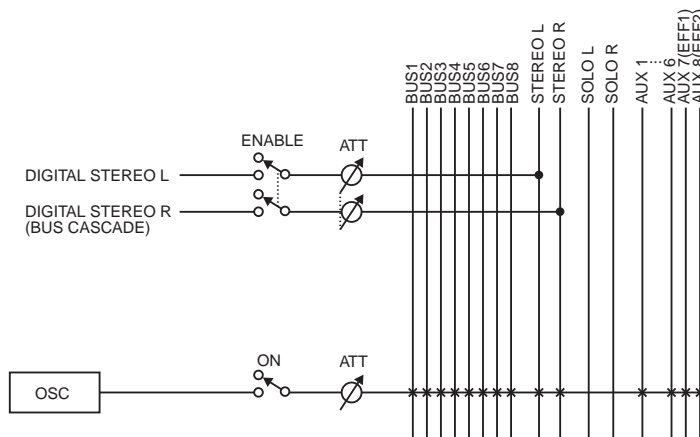
## Digital cascade connections

The input signal from the rear panel DIGITAL STEREO IN jack can be cascaded directly into the stereo bus, instead of being sent via the input patch section and patched to a pair of input channels. This is convenient when you wish to use an external digital mixer without linking it to the mixer section of the AW4416. Settings for cascade connection are made in the SET UP screen D.InSetup page.

\* For the signal flow diagram, refer to Oscillator, below.

## Oscillator

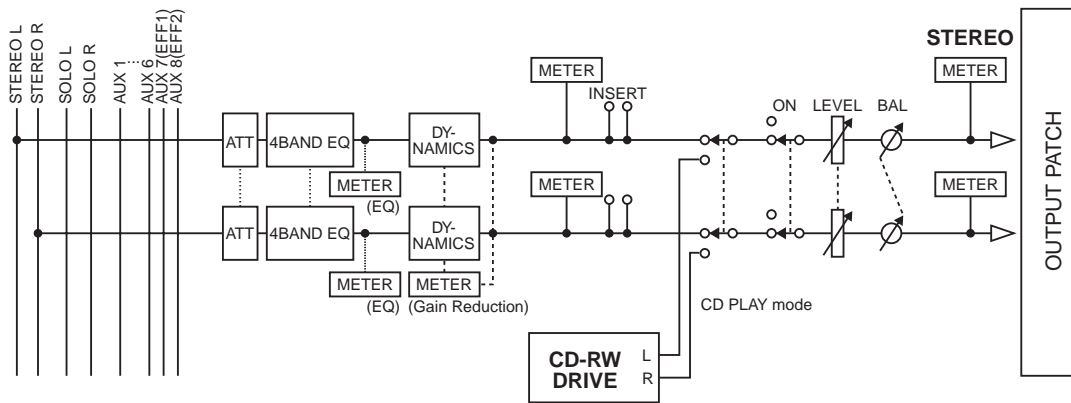
The AW4416 has a built-in oscillator section that allows you to select a sine wave (100 Hz, 1 kHz, 10 kHz) or white noise. The signal of the oscillator can be output from one of the following buses: buses 1–8, AUX buses 1–8, or the stereo bus. Oscillator settings are made in the UTILITY screen Oscillator page.



## Stereo output channel

This is the stereo output channel that processes the signals sent from each channel to the stereo bus. It provides the same four-band EQ and dynamics processor as do the input channels. The output signal of the stereo output channel is sent via the output patch section to the various output jacks, and is simultaneously output from the MONITOR OUT jacks and the PHONES jack.

When an internal or external CD-RW drive is used to play back an audio CD, the CD audio signal is patched to a point before the fader of the stereo output channel.



## Buses 1–8

The signals sent from each channel to buses 1–8 pass through the master level, and are sent to the output patch section. The master level is adjusted in the HOME screen Bus page ([HOME] key → [F3] key).

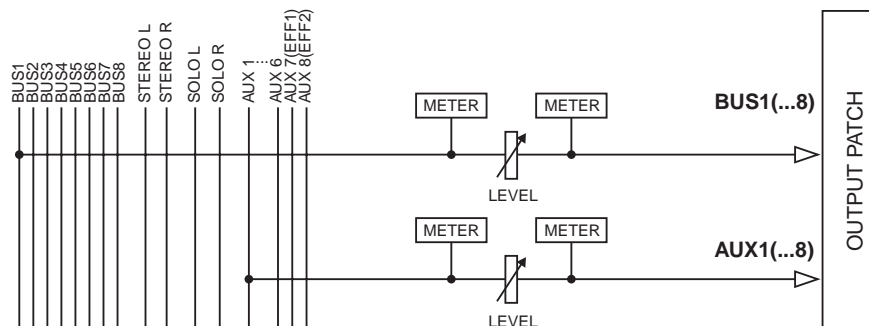
\* For the signal flow diagram, refer to AUX buses 1–8, below.

## AUX buses 1–8

The signals sent to AUX buses 1–8 from each channel pass through the master level, and are sent to the output patch section. The master level is adjusted in the HOME screen Bus page ([HOME] key → [F3] key).



*When the AW4416 is in its default state, the output of AUX buses 7/8 is sent to the output patch section, and simultaneously assigned to the inputs of internal effects 1/2 as well.*



## Output patch

This section assigns the output signals to the STEREO OUT jacks, DIGITAL STEREO OUT jack, I/O cards installed in OPTION I/O slots 1/2, and OMNI OUT jacks 1–4. The following types of signals can be selected.

**STEREO**

The stereo bus output signal that has passed through the stereo output channel.

**BUS 1–8**

The output signals of buses 1–8.

**AUX 1–8**

The output signals of buses 1–8.

**CH DIRECT OUT 1–16**

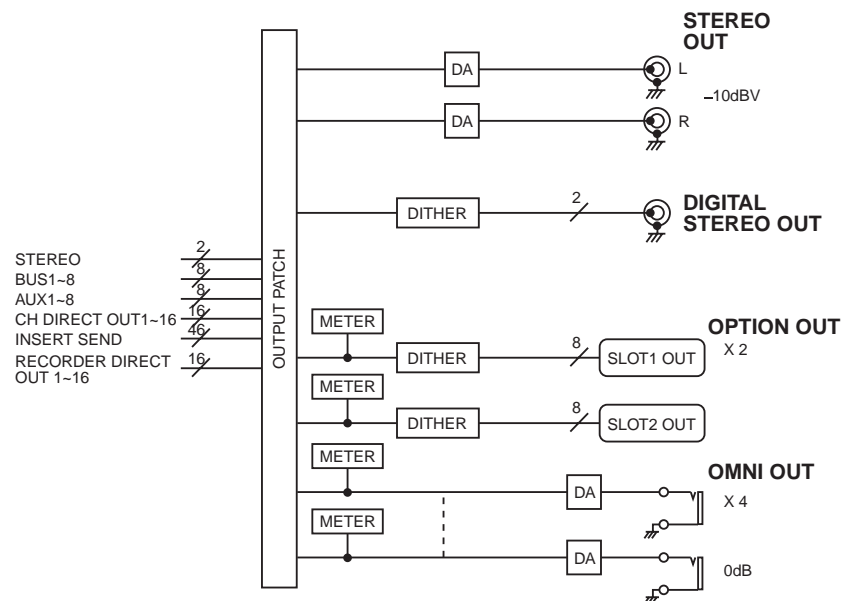
The direct output of input channels 1–16.

**INSERT SEND**

An insertion output for inserting an external effect into each channel.

**RECORDER DIRECT OUT 1–16**

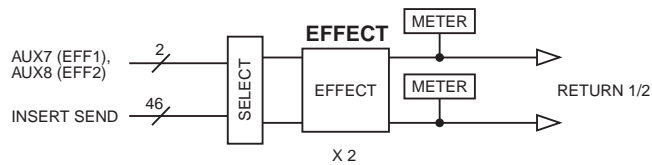
The direct output of tracks 1–16 of the recorder section.



## Internal effects 1/2

When the AW4416 is in its default state, the output of AUX bus 7/8 is sent to the output patch section, and simultaneously assigned to the inputs of internal effects 1/2 as well. The outputs of effects 1/2 are respectively assigned to return channels 1/2.

By defeating these assignments, you can insert internal effects 1/2 into any desired channel, or use AUX bus 7/8 or return channels 1/2 for other purposes.



## Monitor output/headphone output

As monitoring jacks, the AW4416 provides MONITOR OUT jacks and a PHONES jack. The types of signal that are output from these jacks will change as follows, depending on the state of the AW4416.

### ① Initial state

The signal of the stereo output channel will be output without change from the MONITOR OUT jacks/PHONES jack.

### ② When the [SOLO] key is on

The signal of the channel selected by the [ON] key will be sent to the SOLO bus, and output from the MONITOR OUT jacks/PHONES jack. At this time, all other signals will be muted.

### ③ When the TRACK [CUE] key is on

The direct output signal of the track selected by the [REC TRACK SELECT] key will be output from the MONITOR OUT jacks/PHONES jack.

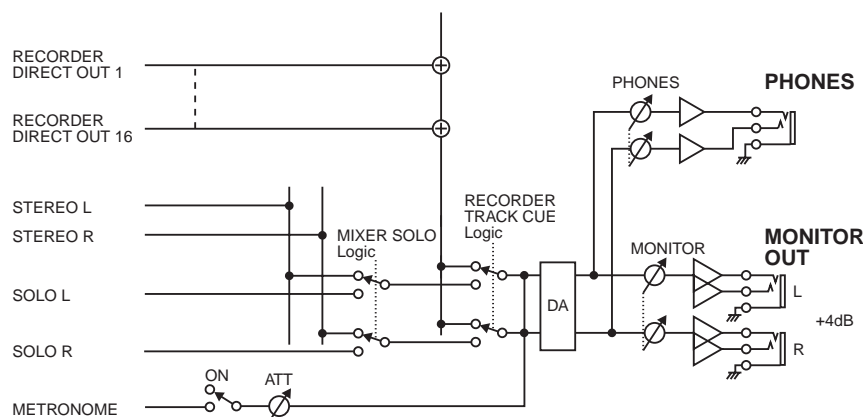
### ④ When the internal metronome function is on

The metronome signal will be mixed with the output signals of ①–③.



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- The same signal is always sent from the MONITOR OUT jacks and the PHONES jack. However, the level adjustment is independent; the output level of the MONITOR OUT jacks is adjusted by the [MONITOR OUT] control, and the output level of the PHONES jack is adjusted by the [PHONES] control.
- Whenever the [SOLO] key and the TRACK [CUE] key are both on, only the TRACK [CUE] key will be valid.



# 2 Parts and their functions

This chapter explains the names and functions of the various objects on the top panel, rear panel, and front panel.

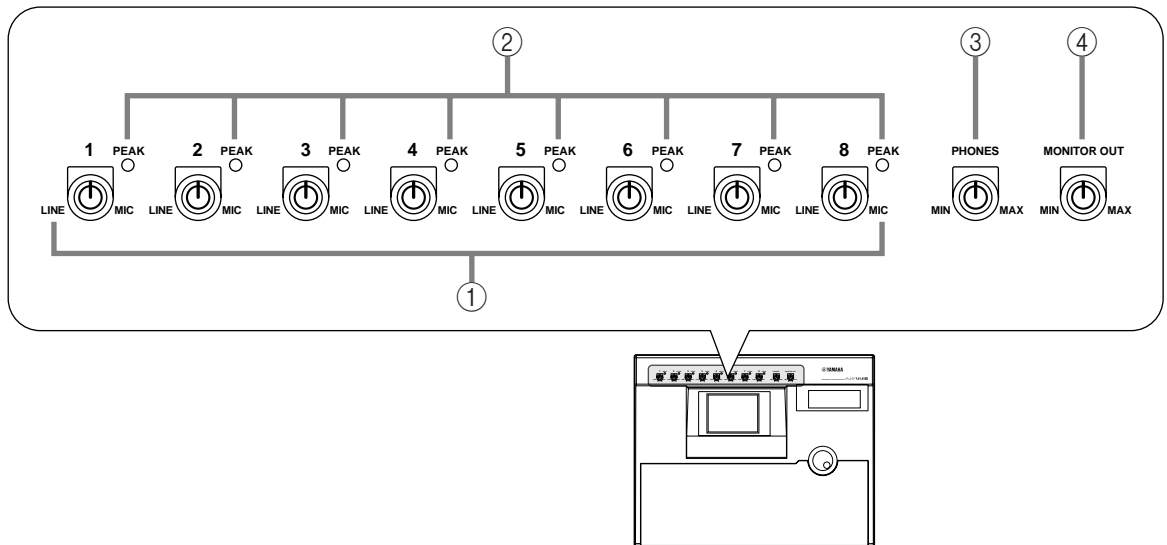


Names of the controllers on the top panel are enclosed in square brackets [ ], in order to distinguish them from the “software” knobs or buttons displayed in the display.

Example: [SEL] key, EQ [Q] control

## Top panel

### Analog input/output section



#### ① [GAIN] controls

These controls adjust the input sensitivity of INPUT jacks 1–8. The supported input level range is  $-46\text{ dB}$ – $+4\text{ dB}$ .

#### ② PEAK indicators

These LEDs will light red when the input signal of INPUT jacks 1–8 reaches a level 3 dB below the clipping point.

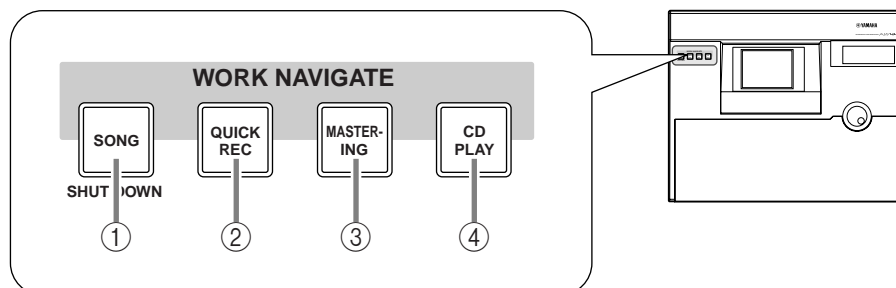
#### ③ [PHONES] control

This control adjusts the output level of the signal that is sent from the rear panel PHONES jack.

④ **[MONITOR OUT] control**

This control adjusts the output level of the signal that is sent from the rear panel MONITOR OUT jacks.

## WORK NAVIGATE section

① **[SONG] key**

This key is used for song settings and editing, and to access the SONG screen where you can perform the shut-down operation.

② **[QUICK REC] (quick record) key**

At one touch, this key assigns the physical input jacks to the channels of the mixer section and the tracks of the recorder section, and accesses the QUICK REC screen in which you can record 16 tracks simultaneously.

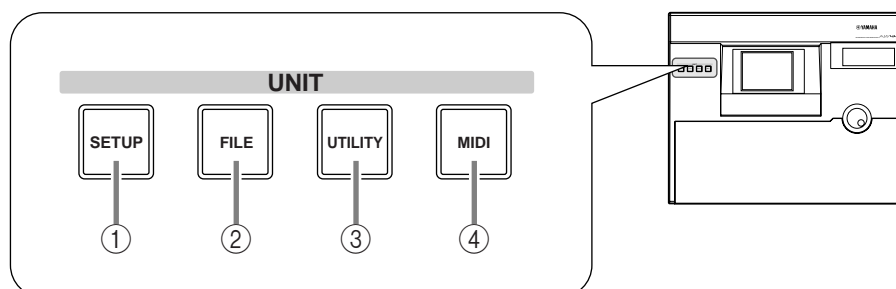
③ **[MASTERING] key**

This key accesses the MASTERING screen, where the audio data of the stereo tracks can be recorded as CD-DA (CD audio) on a CD-R/RW disc inserted in the CD-R/CD-RW drive (optional).

④ **[CD PLAY] key**

This key accesses the CD PLAY screen, where you can play a music CD or the audio tracks of a CD-ROM/CD-R inserted in the CD-R/CD-RW drive (optional).

## UNIT section

① **[SETUP] key**

This key accesses the SETUP screen, where you can make settings such as external input/output patching, word clock, dither, and the solo function.

② **[FILE] key**

This key accesses the FILE screen, where you can backup/restore songs and format external storage devices connected to the SCSI connector.

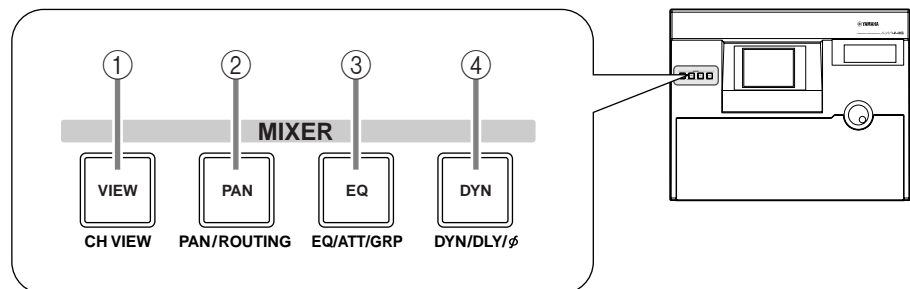
③ **[UTILITY] key**

This key accesses the UTILITY screen, where you can operate the built-in oscillator, and make various system settings.

④ **[MIDI] key**

This key accesses the MIDI screen, where you can make MIDI-related settings.

## MIXER section

① **[VIEW] key**

This key accesses the VIEW screen, where you can view all the mix parameters of the currently selected channel.

② **[PAN] key**

This key accesses the PAN screen, where you can set the pan and routing of each channel.

③ **[EQ] (equalizer) key**

This key accesses the EQ/ATT/GRP screen, where you can make equalizer/attenuator settings for the currently selected channel, and make fader group and mute group settings.

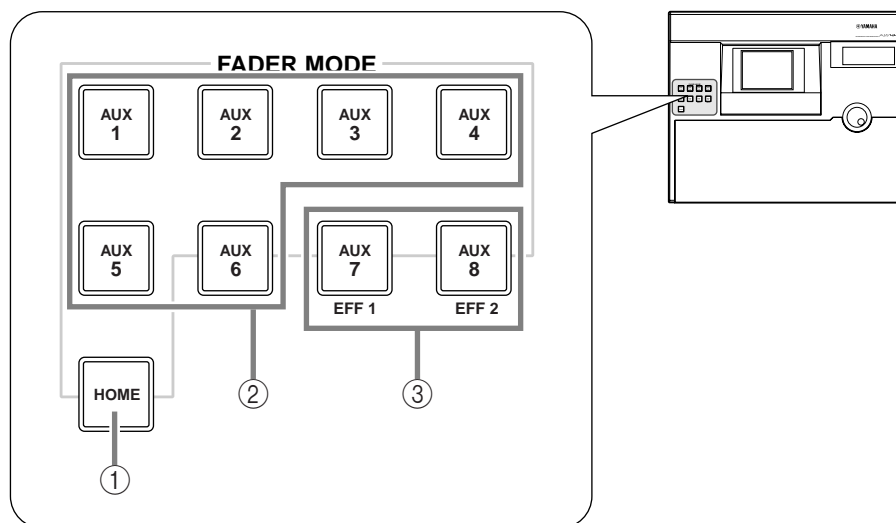
④ **[DYN] key**

This key accesses the DYN/DLY screen, where you can make dynamics processor and delay settings for the currently selected channel.



## FADER MODE section

In this section you can select the items that will be controlled by faders 1–16 of the top panel.



### ① [HOME] key

When this key is on, faders 1–16 will adjust the input levels of the channels selected in the MIXING LAYER section. The HOME page will appear in the display, showing meters to indicate the input/output levels of each channel.

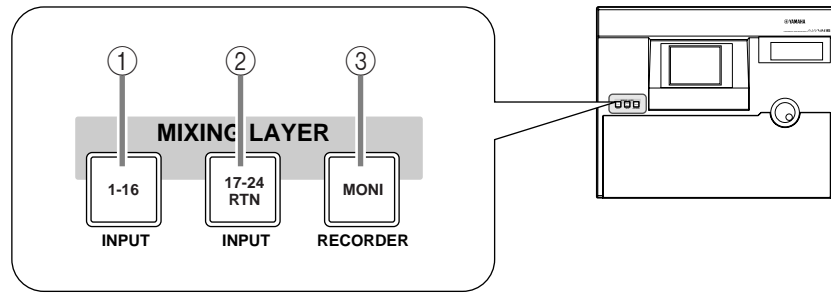
### ② [AUX 1]–[AUX 6] keys

When these keys are on, faders 1–16 will adjust the send levels of the signals sent to AUX 1–6 from the channels selected in the MIXING LAYER section. The AUX 1–AUX 6 pages will appear in the display, allowing you to switch the pre or post setting for the signals sent from each channel to AUX 1–6.

### ③ [AUX 7]/[AUX 8] keys

When these keys are on, faders 1–16 will adjust the send levels of the signals sent to internal effects 1/2 from the channels selected in the MIXING LAYER section. The AUX7/EFF1 screen or AUX8/EFF2 screen will appear in the display, allowing you to switch the pre or post setting for the signals sent from each channel to internal effects 1 and 2, and to set the effect parameters.

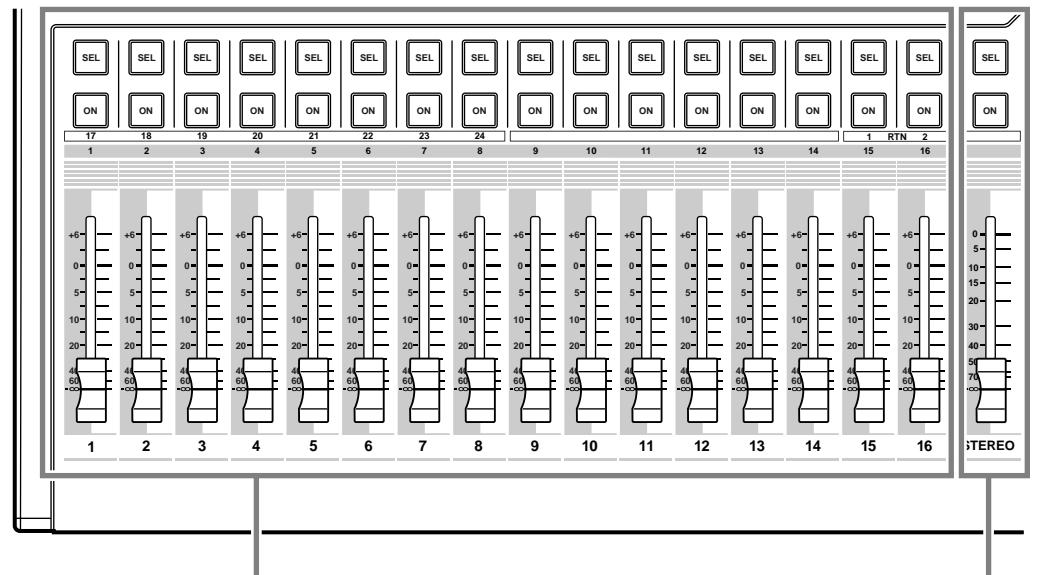
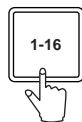
## MIXING LAYER section



- ① [1-16] key
- ② [17-24] key
- ③ [MONI] key

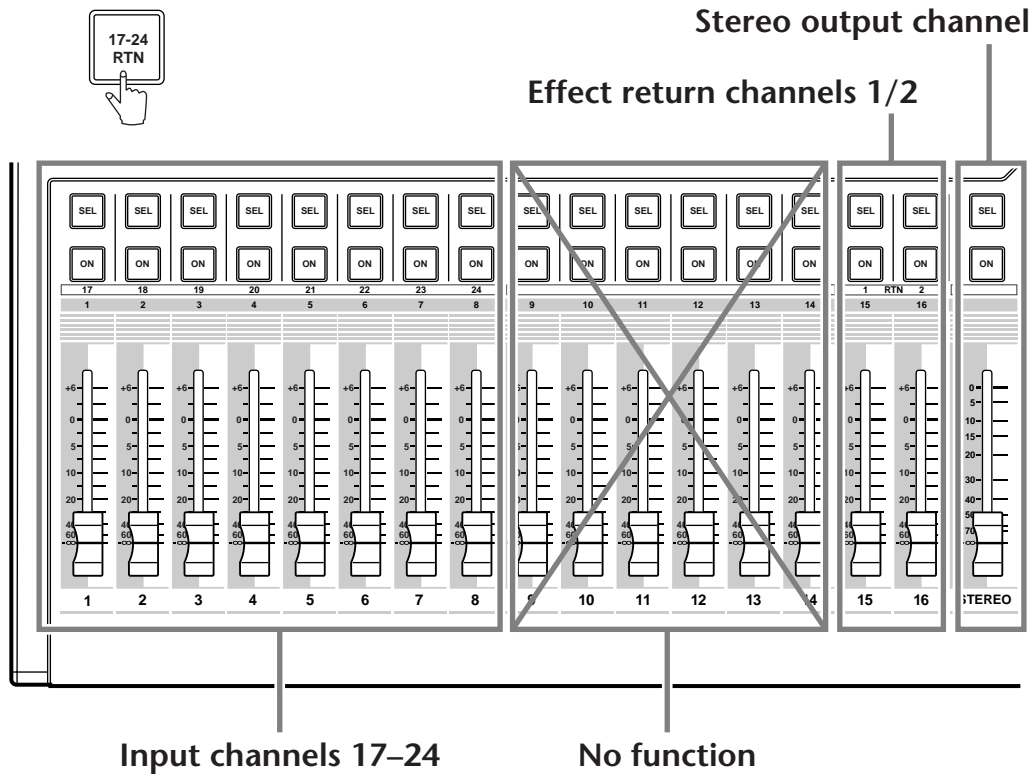
In this section you can select the mixing layer that will be controlled by the top panel [SEL] keys 1–16, [ON] keys 1–16 and faders 1–16.

These keys correspond to mixing layers as follows.

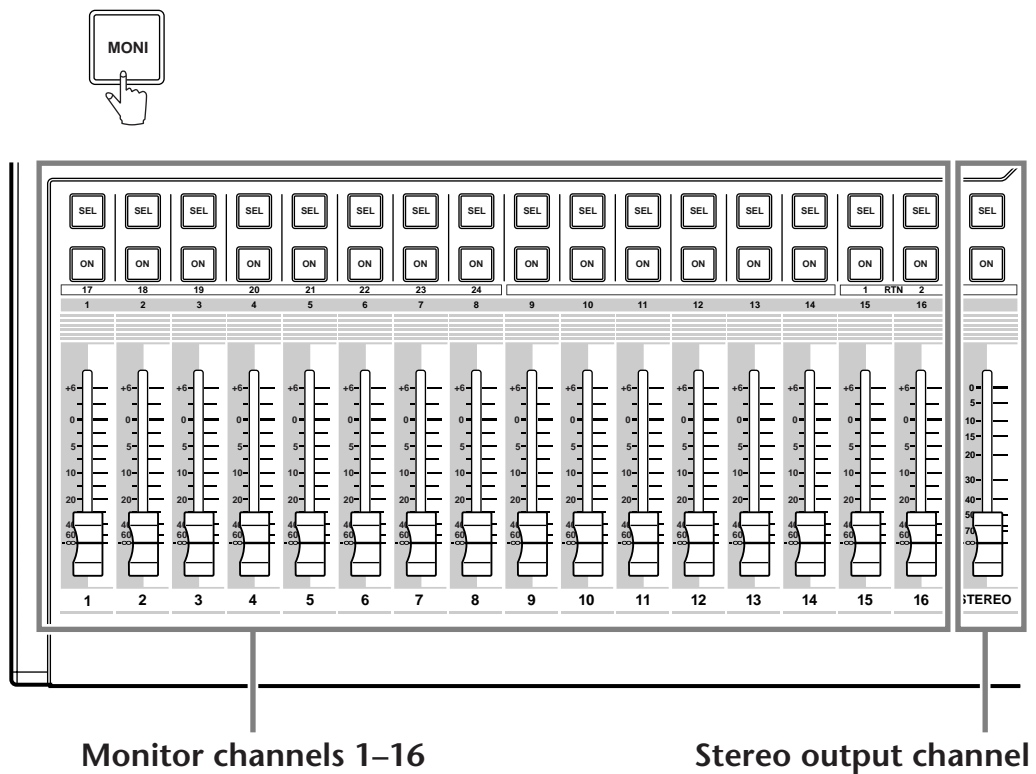


Input channels 1–16

Stereo output channel

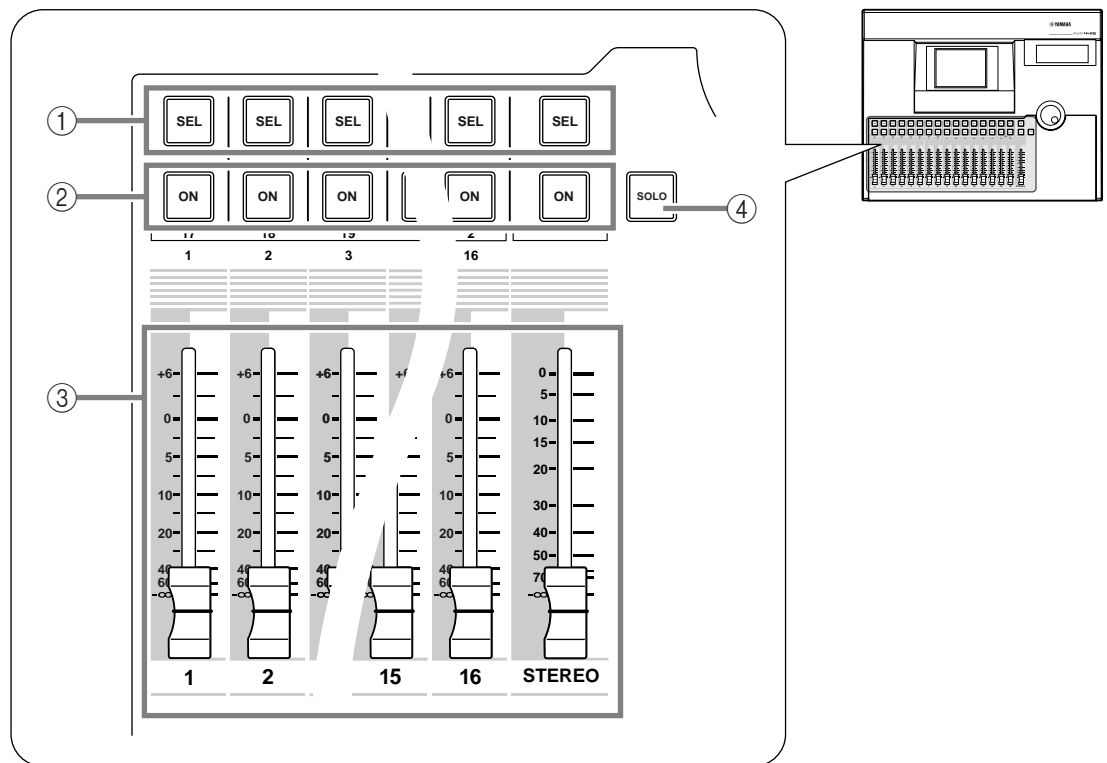


*The faders will not be operable. Attempting to move them by force will cause malfunctions.*



*The parameters controlled by faders 1–16 will also change depending on the settings of the FADER MODE section.*

## [SEL] keys, [ON] keys, faders



### ① [SEL] (select) keys

These keys select the channel to be operated. The [SEL] key of the currently selected channel will light. When using automix, the [SEL] keys are used to select the channels that will be recorded.

### ② [ON] key

These keys turn each channel on/off. The [ON] key will be lit for channels that are currently on; the [ON] key will be dark for channels that are off (muted). When the solo function is on, the [ON] keys will function as solo keys.

### ③ Faders

Depending on the settings of the FADER mode section, these moving faders adjust the input level or send levels to AUX 1–8 for each channel.

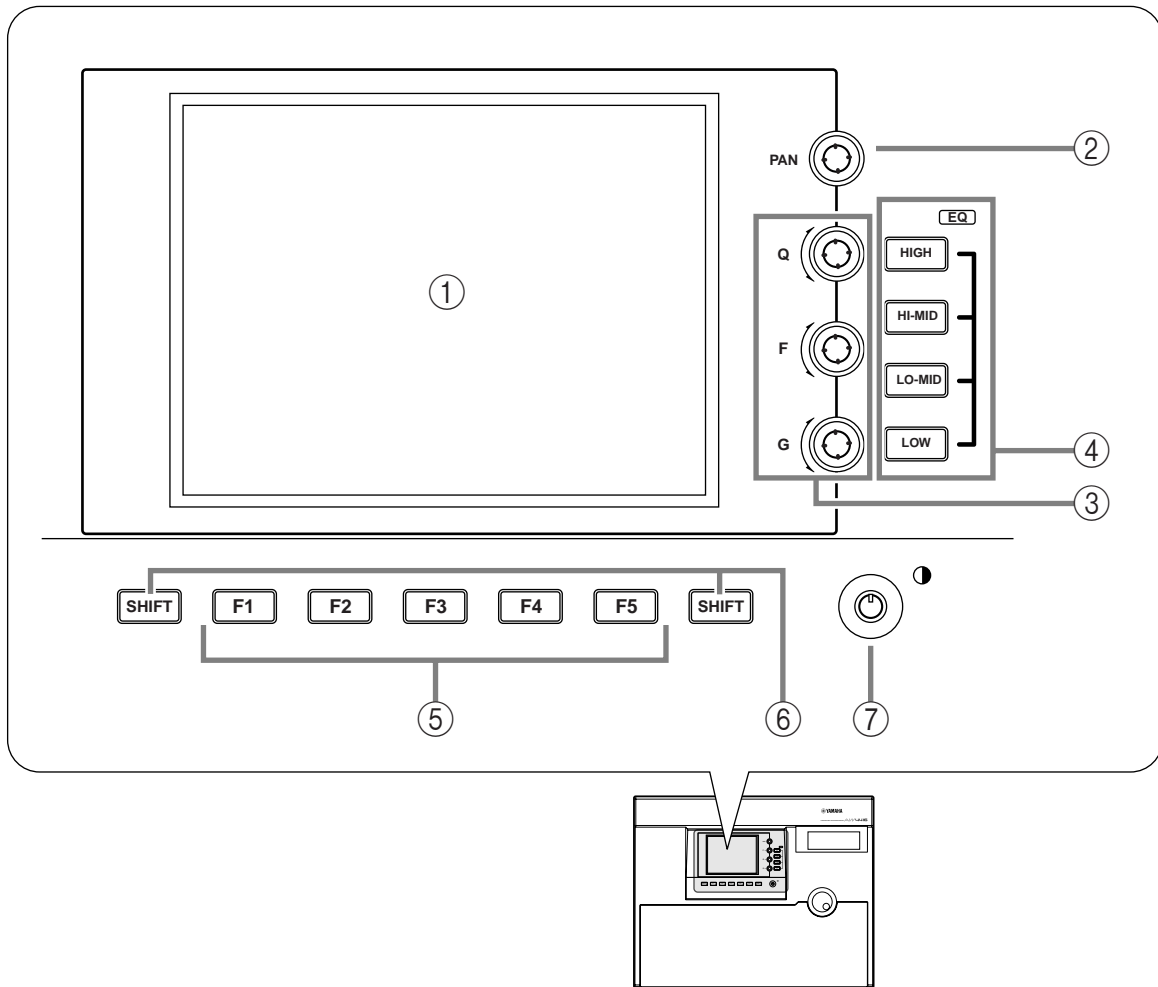


- The channels that correspond to the [SEL] keys 1–16, [ON] keys 1–16, and faders 1–16 will change depending on the setting of the MIXING LAYER section.
- The STEREO [SEL] key, STEREO [ON] key, and STEREO fader always control the stereo output channel. They are not affected by the MIXING LAYER section.

### ④ [SOLO] key

This key turns the Solo function on/off.

## Display section



### ① Display

This is a 320×240 pixel liquid crystal display with backlight, that displays the values of the mix parameters and the current operating status.

### ② [PAN] control

This controls the pan of the channel currently selected by the [SEL] key. If the stereo output channel is selected, this controls the L/R channel balance.

### ③ EQ [Q]/EQ [F] (EQ frequency)/EQ [G] (EG gain) controls

These are controls for manually operating the EQ of the channel currently selected by the [SEL] key. From above, they adjust the Q (steepness), F (center frequency), and G (gain) parameters. Use the ④ EQ [HIGH]–EQ [LOW] keys to select the band that will be controlled.

### ④ EQ [HIGH]/EQ [HI-MID]/EQ [LO-MID]/EQ [LOW] keys

These keys select the band that will be controlled by the ③ controls.


### ⑤ [F1]–[F5] (function 1–5) keys

These keys are used to access pages or to execute specific functions, according to the tabs or buttons shown at the bottom of the display.

⑥ **[SHIFT] key**

This key is used to switch the tabs or buttons shown at the bottom of the display. You can use a variety of additional functions by holding down the [SHIFT] key and pressing the [F1]–[F5] keys.

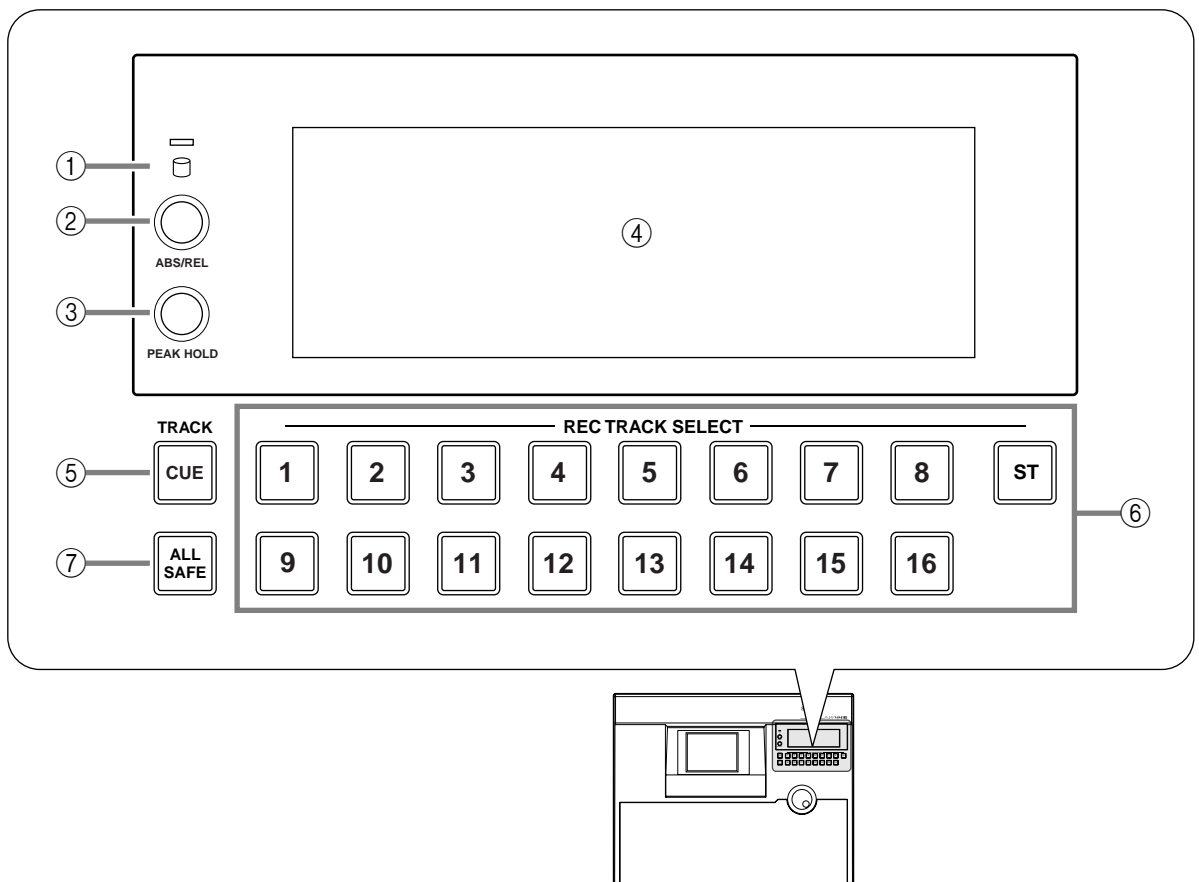


**Note** .....  
 The  symbol is displayed in the lower left of the screen to indicate a page that supports the [SHIFT] key.

⑦ **Contrast**

This adjusts the contrast of the display.

## Level meter/counter section

① **Access indicator**

This indicator shows that the internal hard disk is being accessed. This indicator will light red while the hard disk is being read or written.



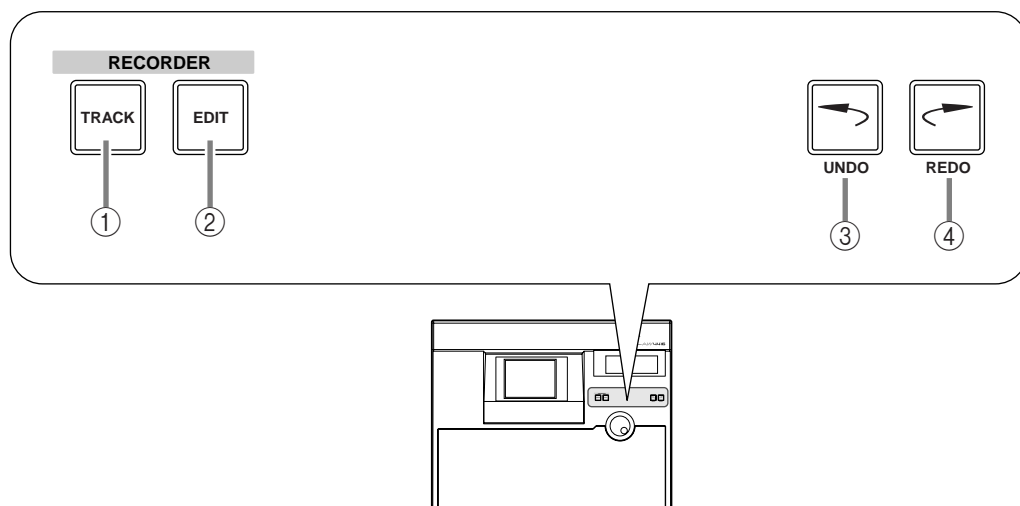
**Note** .....  
 Turning off the power while the access indicator is lit may not only result in loss of the data on disk, but may also destroy the disk itself. You must perform the shut-down process (→ P.17) before turning the power off.

② **[ABS/REL] switch**

This switches the counter display between absolute time (ABS) or relative time (REL).

- ③ **[PEAK HOLD] switch**  
This switch sets/defeats the peak hold function of the level meters.
- ④ **Level meters/counter**  
This area displays various information necessary when operating the recorder section of the AW4416, such as level meters for each track of the recorder section, a time counter, and the number of the currently selected scene memory.
- ⑤ **TRACK [CUE] key**  
This key is used to output the signal of the desired track directly to the MONITOR OUT jacks for monitoring. Use the [REC TRACK SELECT] keys to select the track.
- ⑥ **[REC TRACK SELECT] keys**  
Use these keys to select the track(s) to be recorded. When the TRACK [CUE] key is on, these keys select the track to be monitored.
- ⑦ **[ALL SAFE] key**  
This key cancels all record-ready settings of the [REC TRACK SELECT] keys.

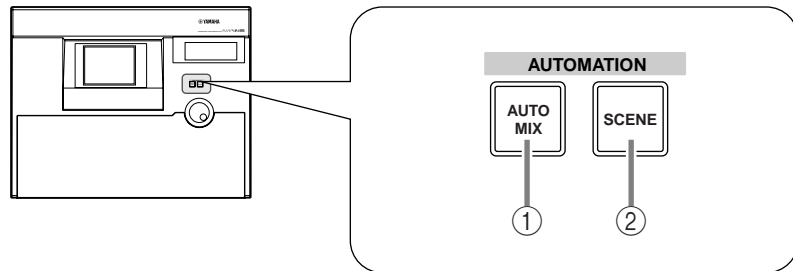
## RECORDER section



- ① **[TRACK] key**  
This key accesses the TRACK screen, where you can view the recorded status of each track and make virtual track assignments.
- ② **[EDIT] key**  
This key accesses the EDIT page, where you can edit tracks and virtual tracks.
- ③ **[UNDO] key**  
This key cancels the recording or editing operation that was last executed in the recorder section, restoring the data to its previous state. By repeatedly pressing the [UNDO] key, you can return through as many as sixteen previous operations.
- ④ **[REDO] key**  
This key re-executes the recording or editing operation that was cancelled by the [UNDO] key.

## AUTOMATION section

The keys of this section access screen pages where you can operate the automix and scene memory functions.

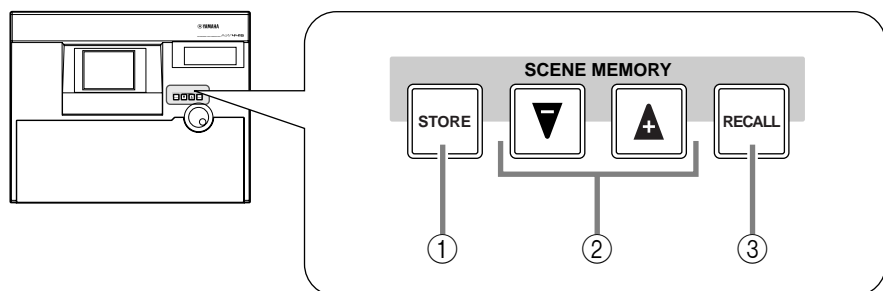


The following screens correspond to these keys.

- ① **[AUTOMIX] key**  
This key accesses the AUTOMIX screen, where you can operate and edit auto-mix.
- ② **[SCENE] key**  
This key accesses the SCENE screen, where you can perform scene memory operations.

## SCENE MEMORY section

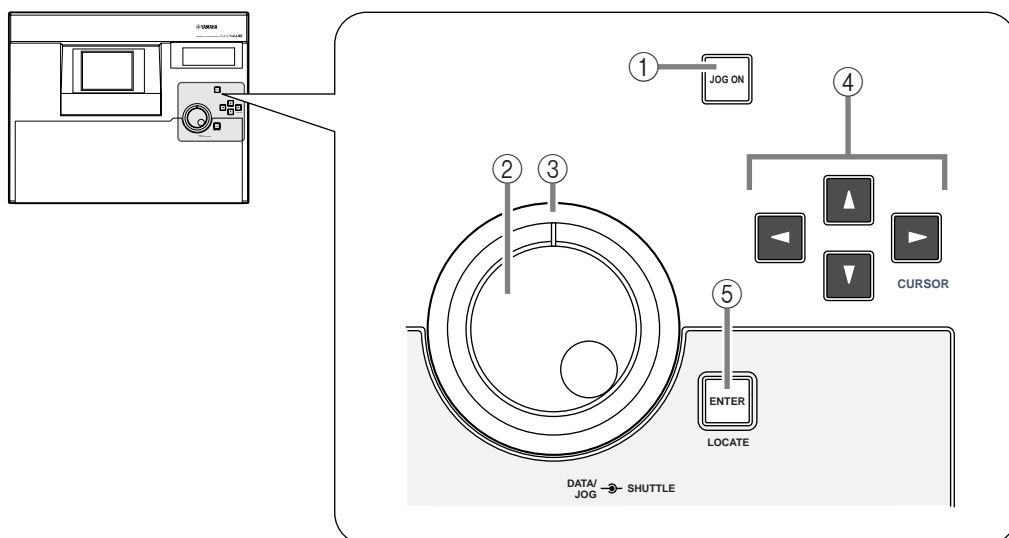
In this section you can directly store or recall scene memories.



- ① **[STORE] key**  
This key stores the state of the mixer section and input/output patching into the scene number shown in the display or the level meter/counter.
- ② **[▼]/[▲] keys**  
These keys select the scene number for storing or recalling.
- ③ **[RECALL] key**  
This key recalls the scene whose number is shown in the display or in the level meter/counter.



## CURSOR/JOG & SHUTTLE section



### ① [JOG ON] key

This key turns the “nudge” function on/off for the [DATA/JOG] dial and [SHUTTLE] dial. (“Nudge” is a function that repeatedly plays back a fixed region starting at the current location, either forward or backward.) When this is turned on, the key will light.

### ② [DATA/JOG] dial

The function of this dial will depend on the on/off status of the [JOG ON] key, and on the on/off status of the [NUM LOCATE] key in the locate section.

#### ○ When the [JOG ON] key is off

The dial will adjust the value of the parameter currently selected in the display, or select an item from a list.

#### ○ When the [JOG ON] key is on

Depending on the direction in which you turn the dial, playback of a fixed region will occur repeatedly in the forward or reverse direction, allowing you to search for a desired location.

#### ○ When the [NUM LOCATE] key is on

The dial will advance the time counter in the display.

### ③ [SHUTTLE] dial

The function of this dial will depend on the on/off status of the [JOG ON] key.

#### ○ When the [JOG ON] key is on

The current nudge playback region will be moved either forward or backward, depending on the direction in which you turn the dial.

#### ○ When the [JOG ON] key is off

Depending on the direction and angle to which you turn the dial, reverse (review) or fast-forward (cue) playback will occur at a variety of speeds.

### ④ CURSOR [◀]/[▶]/[▲]/[▼] keys

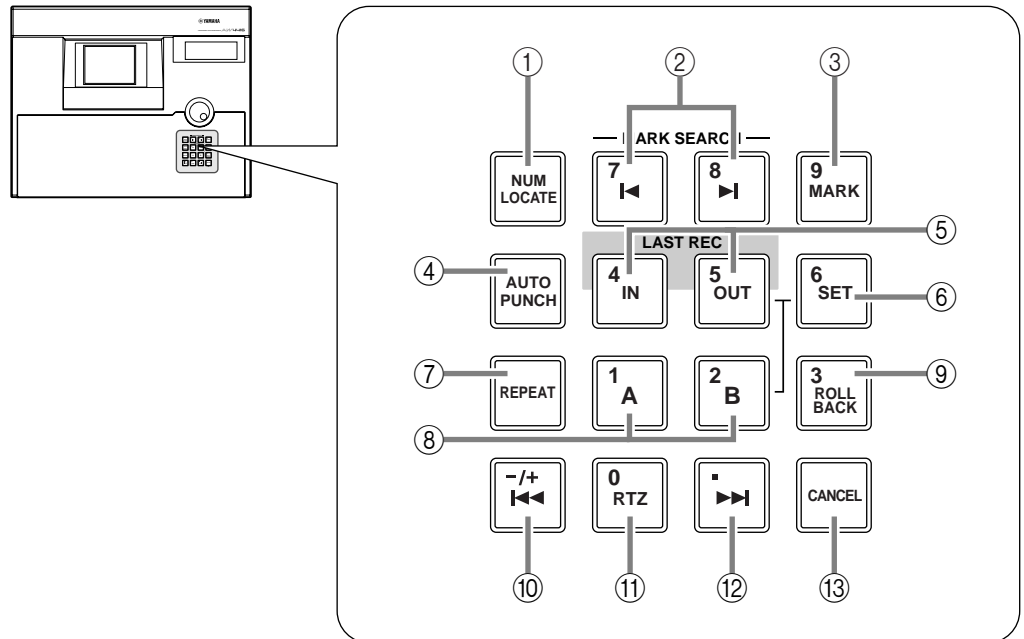
These keys move the cursor (the blinking box) in the display.

⑤ **[ENTER] key**

This key is used to finalize a value, execute a function, or move to the specified locate point.

## Locate section

In this section you can perform locate operations for the recorder.

① **[NUM LOCATE] (number locate) key**

This key is used to specify a locate point as a numerical value. When this key is lit, you can use the numeric keys or the [DATA/JOG] dial to input a locate position, and press the [ENTER] key to execute the Locate operation.

② **MARK SEARCH [I◀]/[▶I] keys**

These keys are used to move to the nearest pre-specified mark point.

③ **[MARK] key**

When you press this key, the current location will be memorized as a mark point.

④ **[AUTO PUNCH] key**

This key turns the auto punch-in/out function on/off.

⑤ **LAST REC[IN]/[OUT] (last record in/out) keys**

These keys move to the point at which recording was last begun (the IN point) or ended (the OUT point).

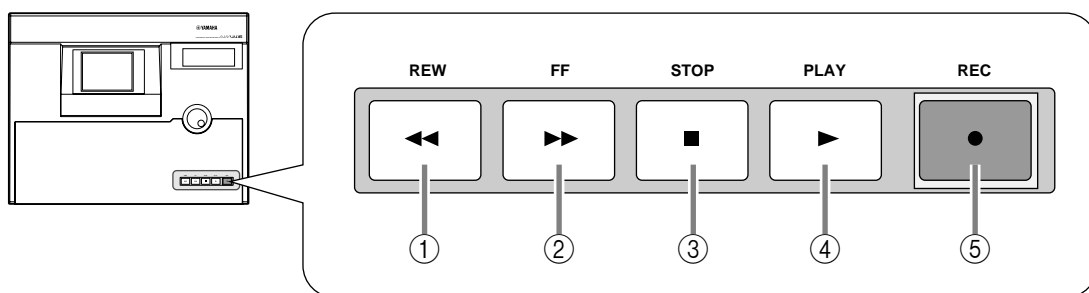
⑥ **[SET] key**

This key is used in conjunction with the LAST REC[IN]/[OUT] keys and the [A]/[B] keys to set the last record in/out points or the A/B points. It is also used in conjunction with the [◀◀] key to set the zero point of relative time (REL).

- ⑦ **[REPEAT] key**  
When this key is on, the area from the A point → B point will be played repeatedly. To cancel repeat playback, press the [REPEAT] key once again, or press the [STOP] key in the transport section.
- ⑧ **[A]/[B] keys**  
These keys move to the pre-specified A or B points.
- ⑨ **[ROLL BACK] key**  
When this key is pressed, you will move backward from the current location by the length of time specified in the UTILITY screen → Prefer.2 page.
- ⑩ **[⏮] key**  
Pressing this key will move to the start point of the song.
- ⑪ **[RTZ] (return to zero) key**  
Pressing this key will move to the zero location of absolute time (if the counter indicates ABS) or the zero location of relative time (if the counter indicates REL).
- ⑫ **[⏭] key**  
Pressing this key will move to the end point of the song.
- ⑬ **[CANCEL] key**  
This key is used to discard a numerical value that you input, or to cancel operation of a function.

## Transport section

In this section you can operate the transport of the recorder.

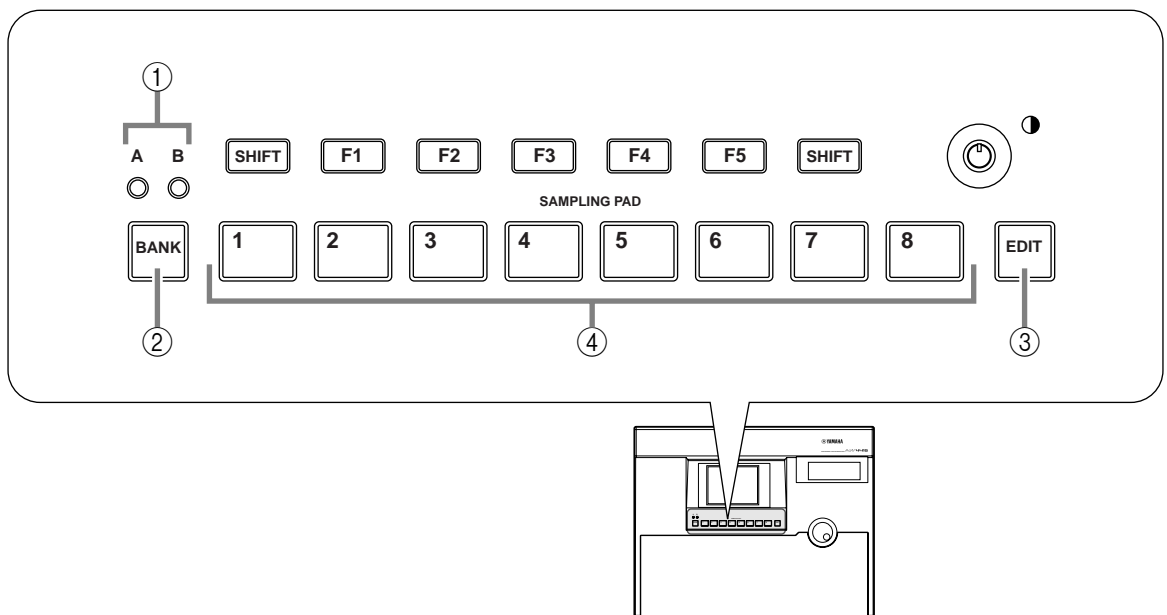


- ① **[REW] (rewind) key**  
This key rewinds the current location. By repeatedly pressing this key, you can switch between 8x and 16x speeds. To stop rewind, press the [STOP] key or the [PLAY] key.
- ② **[FF] (fast-forward) key**  
This key fast-forwards the current location. By repeatedly pressing this key, you can switch between 8x and 16x speeds. To stop fast-forward, press the [STOP] key or the [PLAY] key.

- ③ **[STOP] key**  
This key interrupts playback, recording, rewind, or fast-forward, and stops the recorder.
- ④ **[PLAY] key**  
If the recorder is stopped, pressing this key will begin playback (if the key is pressed by itself) or record (if the key is pressed with the [REC] key). If this key is pressed during rewind or fast-forward, the respective operation will be interrupted, and normal-speed playback will begin. If this key is pressed during recording, recording will be interrupted and playback will continue (punch-out).
- ⑤ **[REC] key**  
If the recorder is stopped, pressing this key holding down the [PLAY] key will begin recording. Pressing this key during playback will begin recording from that point (punch-in).

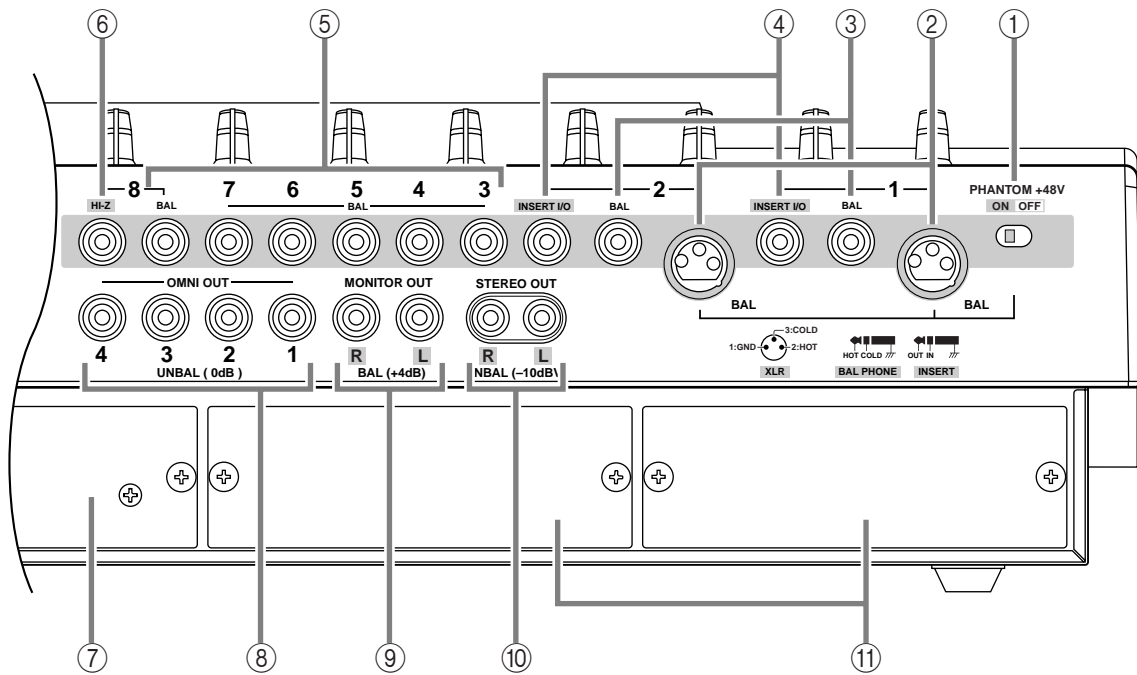
## SAMPLING PAD section

In this section you can operate the built-in sampler.



- ① **A/B bank indicators**  
These will light to indicate the currently selected bank (A or B) of sampling pads.
- ② **[BANK] pad**  
This pad selects the pad bank (A or B).
- ③ **[EDIT] pad**  
This pad accesses the SAMP.PAD screen, where you can assign sampled sounds or tracks to each pad.
- ④ **Pads 1–8**  
These pads play back the sampled sounds that have been assigned to each pad.

# Rear panel

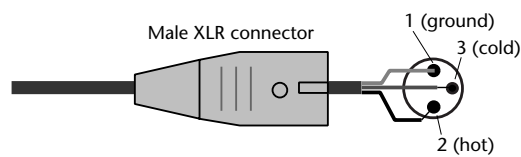


## ① [PHANTOM +48V ON/OFF] switch

This switch supplies +48 V phantom power to the INPUT (XLR) 1/2 jacks.

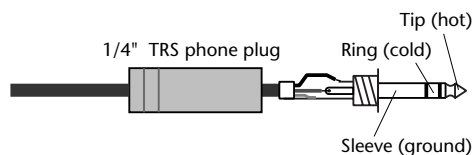
## ② INPUT 1/2 (XLR) jacks

These are balanced XLR-3-31 type input jacks. Nominal input level is  $-46\text{ dB} +4\text{ dB}$ . Pin connections are as follows.



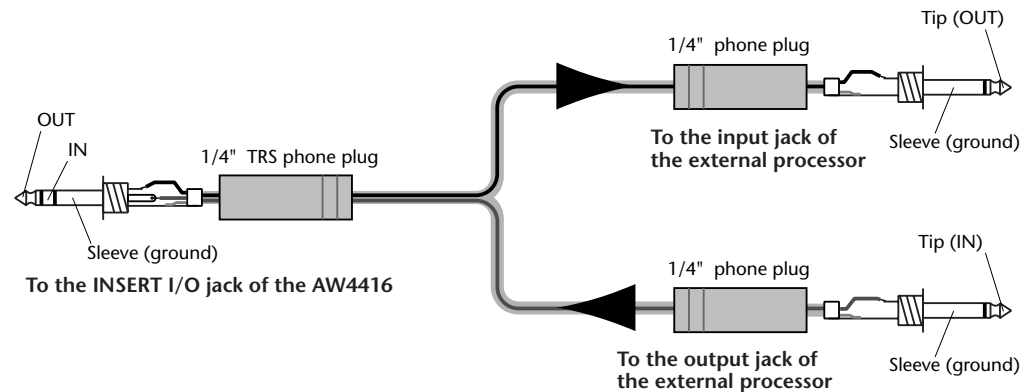
## ③ INPUT 1/2 (phone) jacks

These are balanced TRS phone type input jacks. Nominal input level is  $-46\text{ dB} +4\text{ dB}$ . Pin connections are as follows.



#### ④ INSERT I/O 1/2 jacks

These are TRS phone jacks that allow an external effect etc. to be inserted into the input signal of INPUT jacks 1/2. Nominal input level is 0 dB. Pin connections are as follows.



#### ⑤ INPUT 3–8 (phone) jacks

These are balanced TRS phone type input jacks. The specifications are the same as for ③ INPUT 1/2 (phone) jacks.

#### ⑥ INPUT 8 (HI-Z) jack

This is a high impedance unbalanced phone type input jack. Instruments with a high output impedance such as passive type electric guitars can be directly connected here. Nominal input level is  $-46\text{ dB} - +4\text{ dB}$ .



*If plugs are inserted into both the normal INPUT 8 (BAL) jack and the INPUT 8 (HI-Z) jack, the INPUT 8 (HI-Z) jack will take priority.*

#### ⑦ 2.5" HARD DISK DRIVE slot

This slot allows an IDE 2.5 inch hard disk to be installed.



- For the procedure of installing the hard disk, refer to page 2.
- For a list of manufacturers and models of hard disk that are known to work when installed in the AW4416, please refer to the website <http://www.aw4416.com>

#### ⑧ OMNI OUT 1–4 jacks

These are unbalanced phone jacks that output the analog signal assigned to OMNI OUT 1–4 in the SETUP screen → Patch OUT page (→ P.136). Nominal output level is 0 dB.

#### ⑨ MONITOR OUT jacks

These are balanced TRS phone jacks that output analog monitor signals such as the stereo bus, internal metronome, solo signal, or direct output from recorder tracks 1–16. Nominal output level is  $+4\text{ dB}$ .

#### ⑩ STEREO OUT jacks

These are unbalanced RCA phono jacks that output the analog signal assigned to ST OUT in the SETUP screen → Patch OUT page (→ P.136). Nominal output level is  $-10\text{ dBV}$ .

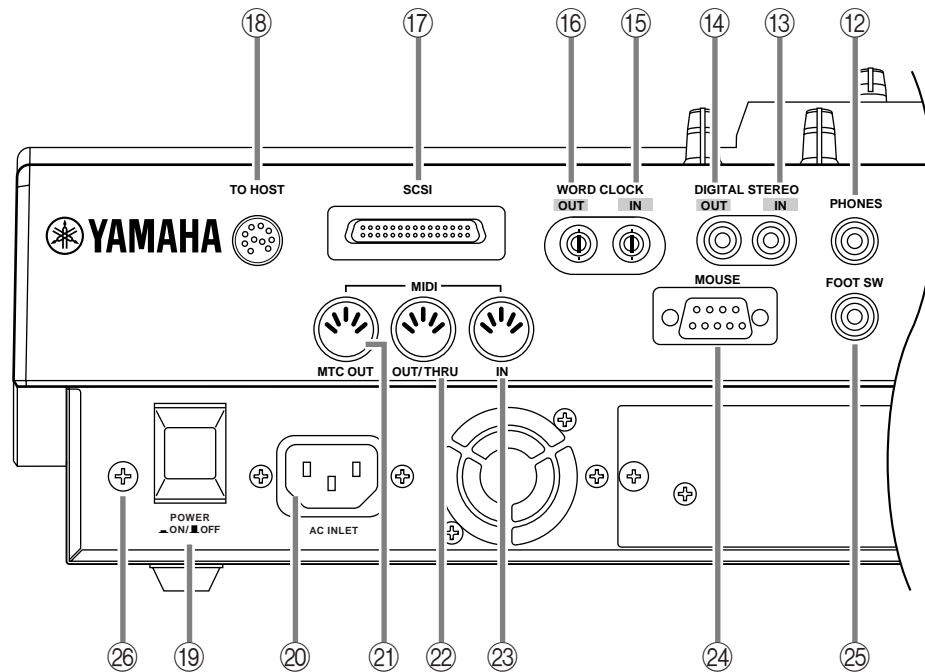
## ⑪ OPTION I/O slots 1/2

These slots allow optional I/O cards to be installed. Assignments for the signals input or output via the I/O cards are made in the SETUP screen → Patch IN page (→ P.133), and in the SETUP screen → Patch OUT page (→ P.136).



**Note**

For details on installing an I/O card, refer to page 14.



## ⑫ PHONES jack

This is a stereo headphone jack that allows a set of stereo headphones to be connected. This jack will always output the same signal as the MONITOR OUT jacks.

## ⑬ DIGITAL STEREO IN jack

This is a coaxial jack that digitally inputs a stereo signal. It is compatible with the IEC958 consumer format. The channel to which this signal will be input is assigned in the SETUP screen → Patch IN page (→ P.133).

## ⑭ DIGITAL STEREO OUT jack

This is a coaxial jack that digitally outputs the stereo signal assigned to D.ST OUT in the SETUP screen → Patch OUT page (→ P.136). It is compatible with the IEC958 consumer format.

## ⑮ WORD CLOCK IN jack

## ⑯ WORD CLOCK OUT jack

These are BNC type jacks for input/output of a word clock signal. They are used to synchronize the digital audio signal processing with an external device.

## ⑰ SCSI connector

This is a D-sub half-pitch 50 pin SCSI connector that is compatible with the SCSI-2 standard. SCSI-2 compatible storage devices can be connected for data backup.



- To connect the AW4416 to an external device, use only high-impedance SCSI cables shorter than 1 meter and with an impedance of 100 ohms ( $\pm 10$  ohms).
- Storage devices connected to the SCSI connector are used for data backup. They cannot be used directly for recording or playback.
- The only types of SCSI-2 storage devices that can be connected are MO, HD, and CD-R/W drives. For a list of manufacturers and models of storage device that are known to work with the AW4416, please refer to the website <<http://www.aw4416.com>>

⑱ **TO HOST connector**

This is an 8-pin mini-DIN connector that can be connected directly to the serial port of a PC or Macintosh, allowing MIDI applications programs to be used.

⑲ **POWER switch**

This switch turns the power on/off.

⑳ **AC INLET connector**

Connect the included power supply cable here to supply power to the unit.



*Use only the included power supply cable.*

㉑ **MTC OUT connector**

These connectors are used to send and receive MIDI messages to and from external MIDI devices. The MIDI IN connector receives messages. The MIDI OUT/THRU jack can function either as a MIDI OUT or MIDI THRU connector, depending on the setting of the MIDI screen → MIDI Setup page MIDI OUT SELECT. parameter. The MTC OUT connector is an output connector dedicated to MTC (MIDI Time Code) messages.

㉒ **MIDI OUT/THRU connector**

㉓ **MIDI IN connector**

㉔ **MOUSE connector**

This is a D-sub 9-pin (male) connector for connecting a serial mouse. By using this connector, you can use a mouse to select parameters within the display or to change pages.

㉕ **FOOT SW jack**

An optional foot switch (Yamaha FC5) can be connected to this jack, and used to play/stop the transport, or to manually punch-in/out.



*If a foot switch of the wrong format is connected, the unit may not operate correctly.*

㉖ **Grounding connector**

To reduce the risk of electrical shock, connect this to a grounding connection (earth) before you connect the power cable. This unit comes with a three-conductor power cable. In this case, the same result will be obtained if the ground pin of the electrical outlet is connected to ground. This will also reduce hum and noise.



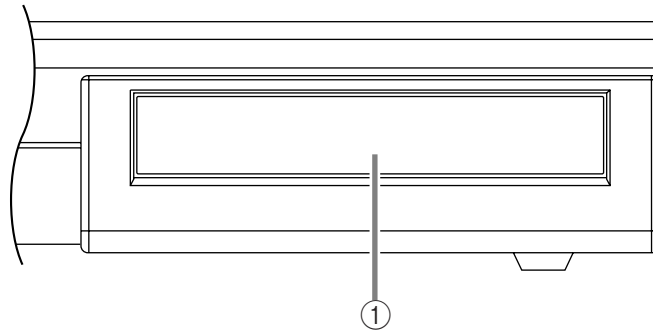
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# Front panel

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① **CD-RW drive cover**

This covers the CD-RW drive (option) installation bay.



**Note**

.....

*For details on installing a CD-RW drive, refer to page 5.*

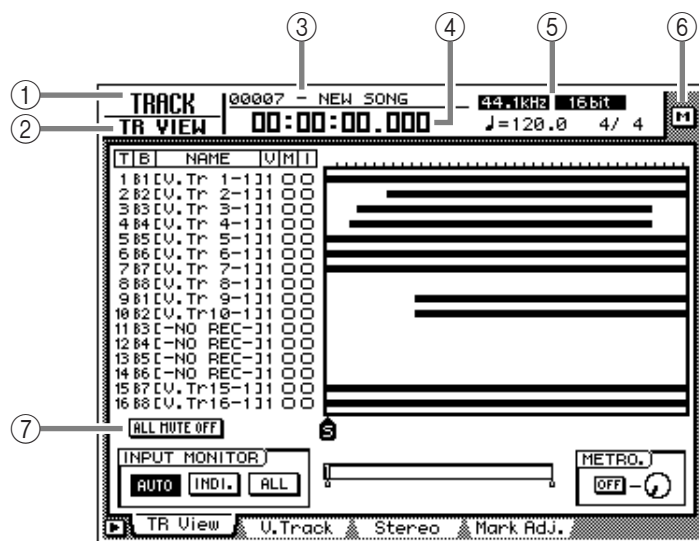
# 3

# The user interface of the AW4416

This chapter explains the various parts of the AW4416's user interface, and basic operation of the AW4416.

## Display

The display in the top panel shows the following information.



① **Screen name**

This is the name of the currently selected screen.

② **Page name/channel**

The information shown here will depend on the screen. It will show either the name of the page selected within the screen, or the channel that is selected for operation.

③ **Song name**

This is the name of the currently selected song.

④ **Current location**

This shows the current time location of the song, and the remaining available recording time. The units of the current location can be selected from the following. (Refer to Reference Guide “SONG screen/Setting page.”)

- **Time display** (SECOND) ..... Hours:minutes:seconds:milliseconds
- **Time code display** (TIME CODE) .. Hours:minutes:seconds:frames:sub-frames
- **Measure display** (MEASURE) ..... Measures/beats/ticks (1/960th of a quarter note)

The remaining recording time will be displayed in the TRACK screen TR View page when you press the [SHIFT] + [F1] key.

### ⑤ Song/scene information

The information shown in this location will depend on the screen: the sampling frequency, quantization, and tempo/meter of the currently selected song, or the number and name of the currently selected scene.

### ⑥ M (menu) button

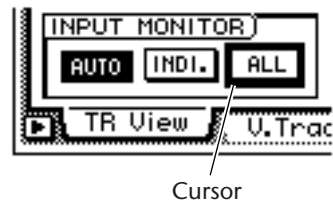
This button selects the display access menu. The display access menu lets you switch screens using the mouse instead of the keys of the top panel (→ P.56).

### ⑦ Main screen

The information shown here will depend on the key that was pressed last. The following user interface components are used in the main screen.

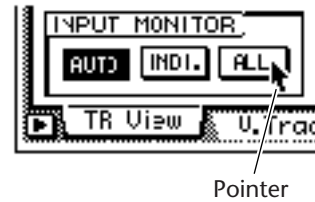
#### ○ Cursor

The blinking rectangular frame in the display is called the “cursor.” When the cursor surrounds an on-screen item, that item is selected for operation.

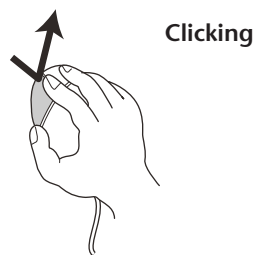


#### ○ Pointer

If a serial mouse is connected to the MOUSE connector on the rear panel, a black arrow will appear in the display. This arrow is called the “pointer.” The pointer is used to select the item that will be manipulated by the mouse.

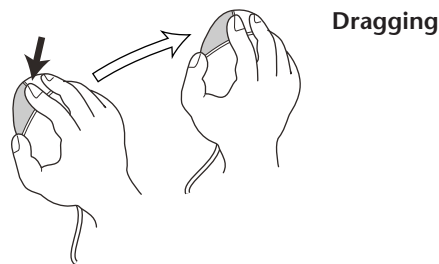


The action of moving the pointer to the desired item pressing the left button or right button of the mouse is called “clicking.”



.....  
 When clicking the mouse to adjust a parameter value, the value will increase by one each time you click the right button, and decrease by one each time you click the left button.

The action of moving the pointer to the desired item, then pressing and holding the left button or right button of the mouse and moving the mouse is called “dragging.”



**Tip!**

When dragging the mouse to continuously adjust a parameter value, the value will change more rapidly if you hold down the right button while dragging. The value will change at the usual rate if you hold down the left button while dragging.

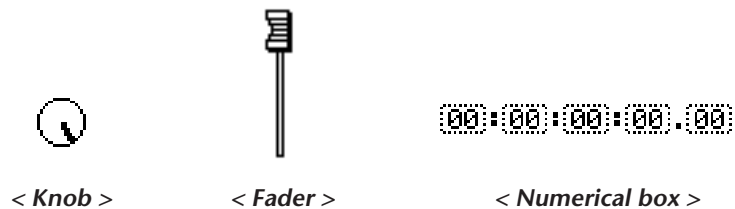
### ○ Buttons

Buttons in the display are used to turn parameters on/off, or to select one of multiple possibilities. Buttons that are currently on are displayed as white text on a black background, and buttons that are currently off are displayed as black text on a white background.



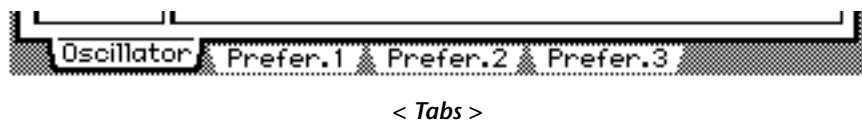
### ○ Knobs/faders/numerical boxes


Knobs/faders/numerical boxes in the display are used to modify the value of the corresponding parameter. The value of a knob or fader is displayed below or at the right.




### ○ Tab

If a screen includes multiple pages, the name of each page will be shown at the bottom of the display. The areas where these names appear are called “tabs.” Tabs are used to switch pages within a screen.



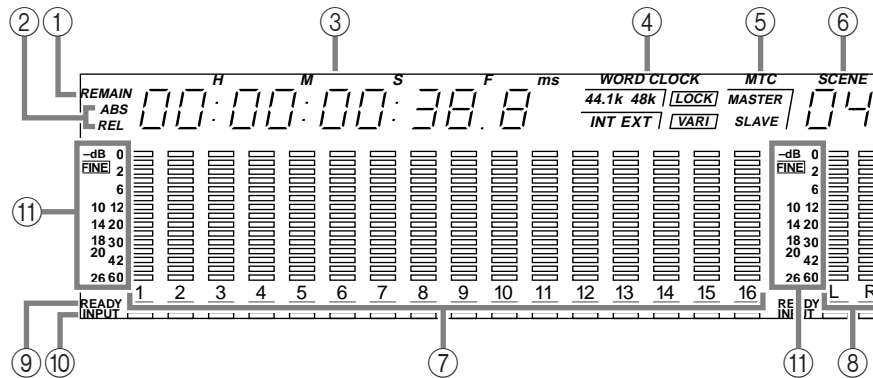
In some screens, you can access additional items or buttons in this area. Such screens are indicated by a  symbol in the lower left of the display.



<  symbol indicating that there are additional tabs or buttons >

# Level meters/counter

The level meters/counter in the upper right of the top panel show the following information.



## ① REMAIN indicator

This will light when the counter ③ shows the remaining recording time. In the TRACK screen TR View page, this will appear when you press [SHIFT] + [F1].

## ② ABS/REL indicator

One of these indicators will light when the time/timecode shown in the counter ③ is either absolute time (ABS) or relative time (REL). To switch between absolute time and relative time, use the ABS/REL switch located at the right of the level meter/counter.

## ③ Counter

This is the current time in the song. You can select from the following units for display (Refer to Reference Guide “SONG screen/Setting page”).

- **Time display** (SECOND) ..... Hours:minutes:seconds:milliseconds
- **Time code display** (TIME CODE) .. Hours:minutes:seconds:frames:sub-frames
- **Measure display** (MEASURE) ..... Measures/beats/ticks (1/960th of a quarter note)

## ④ Word clock

This shows the source (INT=internal clock or EXT=external clock) of the clock according to which the AW4416 is operating, and the frequency (44.1 k or 48 k). This will indicate “LOCK” if the AW4416 is locked to the clock source, and “VARI” if the vari-pitch function (Refer to Reference Guide “SET UP screen/D.in Setup page”) is enabled.

## ⑤ MTC

This shows the status of MTC synchronization. If the AW4416 is following MTC messages from an external device, this will indicate “SLAVE.” If the AW4416 is transmitting MTC to an external device, this will indicate “MASTER”

## ⑥ Scene

This is the number of the currently selected scene (the current scene). When the mix parameters of the last stored or recalled scene are modified, an “E” (edited) character will be displayed at the lower right.

**⑦ Level meters 1–16**

These level meters show the input level and output level for each track 1–16 of the recorder section.

**⑧ Level meter L/R**

These level meters show the output level (the signal after passing through EQ and dynamics processing) of the stereo output channel.

**⑨ REC READY indicator**

This indicator will light red for tracks that are in record-ready mode.

**⑩ INPUT MONITOR indicator**

This indicator will light white for tracks whose input is being monitored.

**⑪ Level display**

The range of the display can be switched between two ranges: 0 to –60 dB (normal) and 0 to –26 dB (fine).

# Basic operation of the AW4416

This section explains basic operation of the AW4416.

## Accessing a screen/page

To operate the mix parameters of the AW4416 or to edit the internal settings, you must first access the desired screen in the display. If a screen contains two or more pages, you must then select the desired page.

### □ Using the controls of the top panel

1. Press the key for the desired screen.

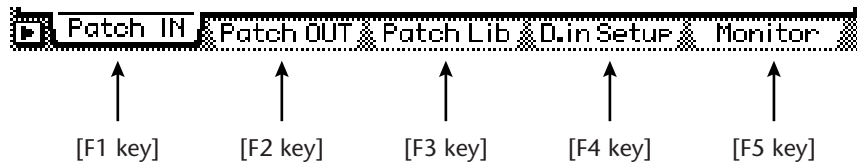
The keys of the WORK NAVIGATE, UNIT, MIXER, FADER MODE, RECORDER, and AUTOMATION sections of the top panel, and the [EDIT] key of the sample pad section each correspond to their own screens, which you can access by pressing the appropriate key.



.....  
If a screen contains multiple pages, the most recently operated page will appear.

2. To switch pages within a screen, press the function key ([F1]–[F5] keys) that corresponds to the tab for the desired page.

Each tab corresponds to the following function key.

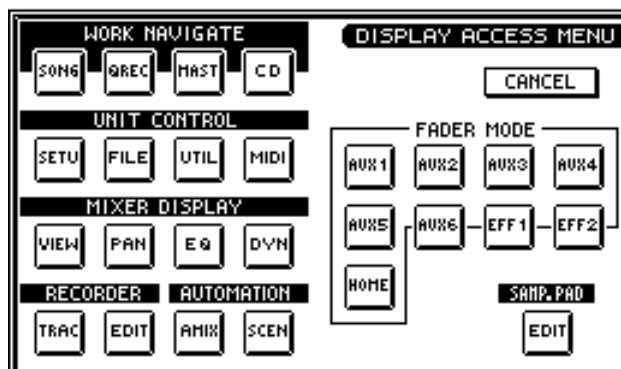


.....  
By repeatedly pressing the same key you pressed in step 1, you can cycle through the pages of the screen.

### □ Using the mouse

1. Click the M (menu) button in the upper right of the screen.

The display access menu will appear. From this menu you can use the mouse to select screens.



2. In the display access menu, click the button that corresponds to the desired screen.
3. To changes pages within the same screen, move the pointer to one of the tabs in the bottom of the screen, and click the left or right mouse button.

The corresponding page will appear.



< Click a tab >

## Turning a button on/off

Here's how a button displayed in the screen can be turned on/off.

### Using the controls of the top panel

1. Use the CURSOR [◀]/[▶]/[▲]/[▼] keys to move the cursor to the desired button.



< Move the cursor >

2. Press the [ENTER] key.  
The button will be turned on or off.



< Switch on/off >

### Using the mouse

1. Move the pointer to the desired button.



< Move the pointer >

2. Click the left or right button of the mouse.



< Switch on/off >

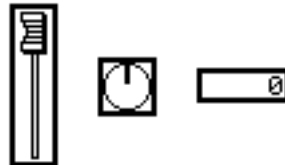


## Editing the value of a fader/knob/numerical box

Here's how to edit the value of an on-screen fader/knob/numerical box.

### □ Using the controls of the top panel

1. Use the CURSOR [◀]/[▶]/[▲]/[▼] keys to move the cursor to the desired fader/knob numerical box.



< Move the cursor >

2. Rotate the [DATA/JOG] dial to edit the value.



< Edit the value >

### □ Using the mouse

1. Move the pointer to the desired fader/knob/numerical box, and click the left or right mouse button.

The cursor will change to a  shape.



< Click the fader/knob/numerical box >




*The amount by which the value changes will differ depending on whether you clicked the left or right mouse button. If you wish to change the value in large steps, click the right button. If you wish to change the value in fine steps, click the left mouse button.*

2. Continue to hold down the mouse button, and drag the mouse up or down. The value will increase or decrease depending on the direction in which you drag the mouse.




< Drag the fader/knob/numerical box up or down >

## Using the additional function buttons

In screens where the  symbol is displayed in the lower left, you can access additional buttons or tabs in the bottom of the display to use various additional functions.

### □ Using the controls of the top panel

1. In a screen where the  symbol is displayed in the lower left, press the [SHIFT] key.

While you continue holding the [SHIFT] key, buttons for the additional functions will appear in the tab area at the bottom of the display.



< Additional function buttons >

2. Continue to hold down the [SHIFT] key, and press the function key ([F1]–[F5]) that corresponds to the desired button.

The function assigned to the corresponding button will be executed.

### □ Using the mouse

1. In a screen where the  symbol is displayed, click the  symbol.

Buttons for the additional functions will appear in the tab area at the bottom of the display.



< Additional function buttons >



**Tip!**

When using the mouse, the additional function buttons will continue to be displayed even after you take your finger off of the mouse button.

2. Directly click one of the additional function buttons.

The function assigned to the corresponding button will be executed.

## Inputting text

When you create a new song, or when you save the settings of a scene memory or library, a popup window will appear, allowing you to assign a name to the song or the settings. Here's how to input text into the popup window.

### □ Using the controls of the tab page

1. Perform the scene or library Save operation, or create a new song.

If you perform the scene or library Save operation, a TITLE EDIT popup window will appear, allowing you to assign a name to the scene or library.

If you create a new song, a NAME EDIT popup window will appear, allowing you to assign a name to the song. Then a COMMENT EDIT popup window will appear, allowing you to add a comment to the song.



< TITLE EDIT popup window >



< NAME EDIT popup window >



< COMMENT EDIT popup window >

The items in each popup window and their function are as follows.

① **Text input box**

Characters, numerals, and symbols can be input in this box. When you create a new song or save for the first time, a default name will be input. The highlighted text indicates that it is being changed.



.....  
*Scene and library names can be up to 16 characters long. Song names and song comments can be up to 64 characters long.*

② **CANCEL button**

If you move the cursor to this button and press the [ENTER] key, the procedure will be cancelled and you will return to the previous screen.

③ **OK button**

If you move the cursor to this button and press the [ENTER] key, the text you entered will be finalized. (If you are creating a new song, you will proceed to the next step of the procedure.)

④ **Text palette**

Here you can select the character to input in the text input box. The following characters, symbols, and numerals can be used.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z  
 a b c d e f g h i j k l m n o p q r s t u v w x y z  
 spc (space) 1 2 3 4 5 6 7 8 9 0 , . ! " # & / \* - + < > ;

2. Use the CURSOR [◀]/[▶]/[▲]/[▼] keys to move the cursor in the text palette to the button for the desired character, and press the [ENTER] key.

The corresponding character/symbol/numeral will be input into the text input box, and the highlighted area will move to the right.



.....  
*If you wish to correct a character that was input by mistake, you can use the [DATA/ JOG] dial to move the highlighted area to left or right.*

3. Input the remaining characters in the same way.

While inputting text, you can use the following buttons in the text palette.



button..... Insert a space (blank) at the highlighted area. Subsequent characters will be moved backward.



button..... Delete the character at the highlighted area. Subsequent characters will be moved forward.



buttons..... Move the highlighted area to left or right.



buttons

(NAME EDIT, COMMENT EDIT windows only)..... Move the highlighted area upward or downward.



button.. Switch between uppercase alphabet + numerals and lowercase alphabet + symbols. When this button is on, you can input uppercase alphabetical characters and numerals.

4. When you have finished inputting the desired text, move the cursor to the OK button, and press the [ENTER] key.

## □ Using the mouse

1. Perform the scene or library Save operation, or create a new song.  
If you perform the scene or library Save operation, a TITLE EDIT popup window will appear, allowing you to assign a name to the scene or library.  
If you create a new song, a NAME EDIT popup window will appear, allowing you to assign a name to the song. Then a COMMENT EDIT popup window will appear, allowing you to add a comment to the song.
2. In the text palette, click the mouse on the button for the character that you wish to input.  
The corresponding character/symbol/numeral will be input into the text input box, and the highlighted area will move to the right.



< Click a character button >



**Tip!** .....  
If you wish to correct a character that you input by mistake, click the incorrect character to move the highlighted area to that location.

3. Input the remaining characters in the same way.



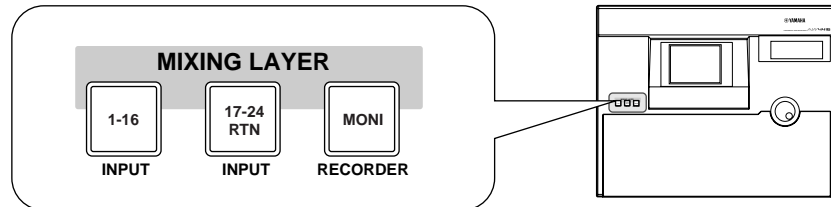
**Tip!** .....  
When using the mouse, you can use the **INS** button, **DEL** button, **←/→** buttons, **↑/↓** (NAME EDIT/COMMENT EDIT windows only), or **SHIFT LOCK** button by clicking the corresponding button in the text palette.

4. When you have finished inputting the desired text, move the cursor to the OK button, and press the [ENTER] key.

## Selecting channels

When editing the channel mix parameters on the AW4416, you must first select the channel that you wish to control. Here's how to select channels.

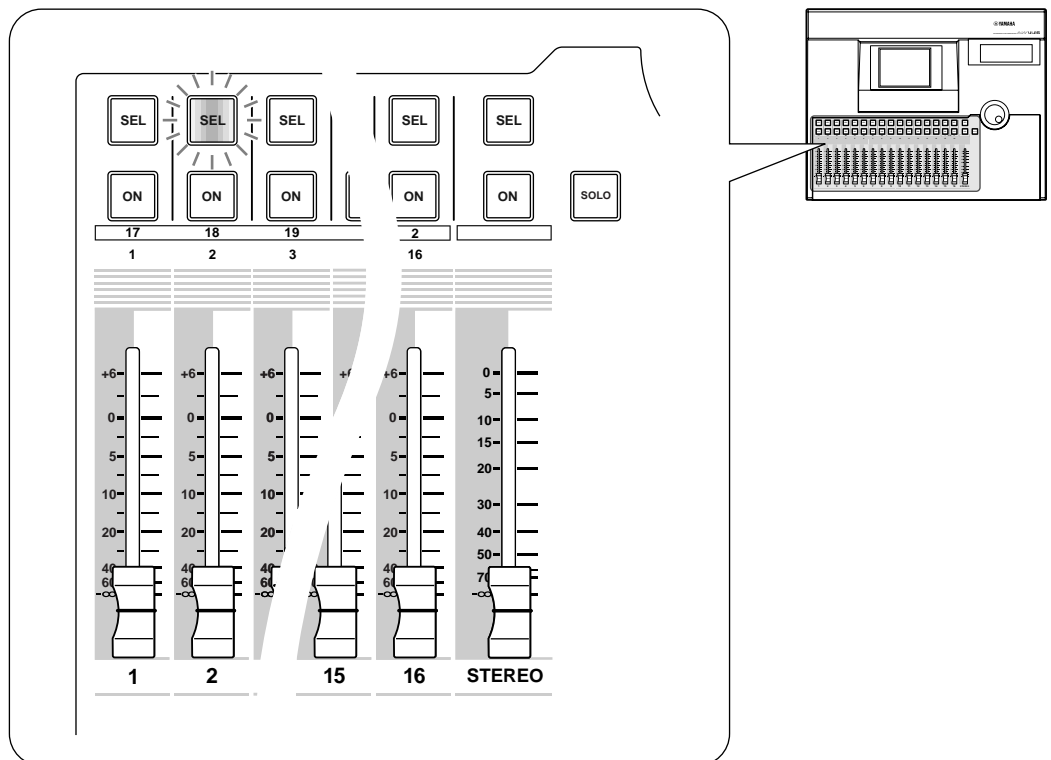
1. Use the keys of the MIXING LAYER section to select the mixing layer that you wish to control



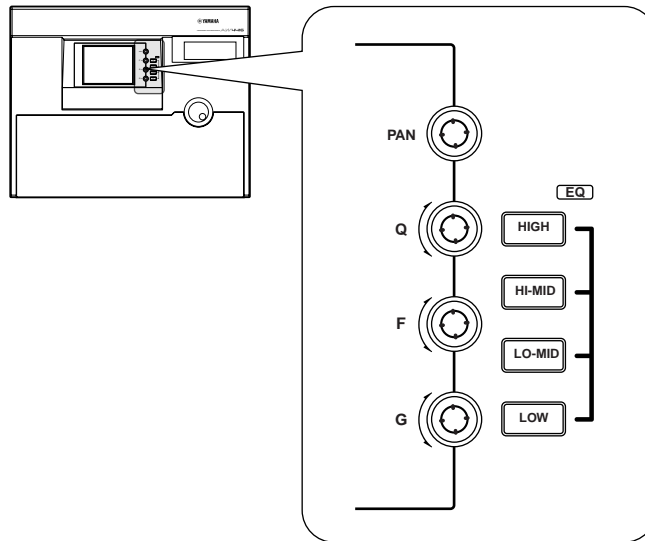
According to the selected key of the MIXING LAYER section, the channels controlled by the [SEL] keys, [ON] keys, and faders of the top panel will change as follows.

	1-8	9-14	15/16	STEREO
[1-16]	Input channels 1-16			Stereo output channel
[17-24 RTN]	Input channels 17-24	—	Effect return 1/2	
[MONI]	Monitor channels 1-16			

2. Press the [SEL] key of the channel you wish to control.  
The [SEL] key of the corresponding channel will light.



- Use the [PAN] control, EQ [Q]/[F]/[G] controls, and EQ [HIGH]–EQ[LOW] keys at the right of the display to adjust the pan and EQ of the channel that you selected by pressing its [SEL] key.

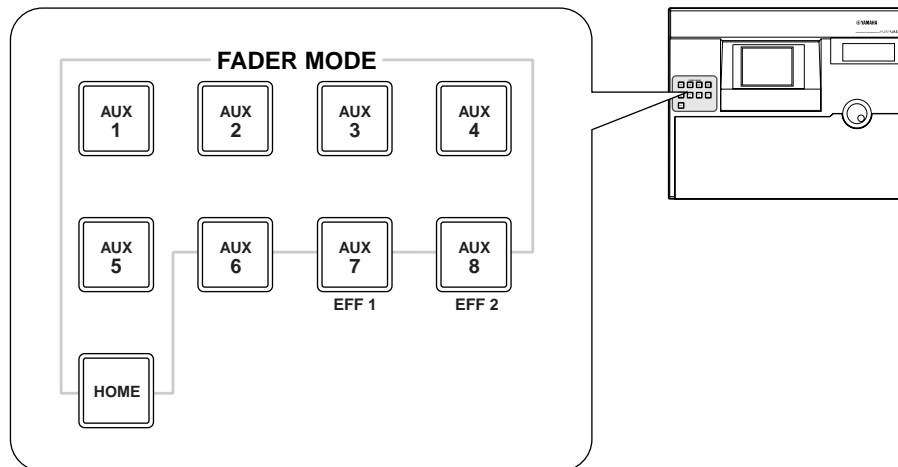


The controls and keys at the right of the display apply only to the channel that was last-selected by its [SEL] key.



**Tip!** .....  
 If the VIEW, PAN, EQ, or DYN screens are shown in the display, you can control the parameters of the channel selected by its [SEL] key.

- To operate the faders, use the [HOME] key or [AUX 1]–[AUX 8] keys of the FADER MODE section to select the fader mode (the parameters that will be controlled by the faders).



The table on the following page shows the parameters controlled by each fader will change.

## ○ If the mixing layer is [1-16]

Fader mode	Fader				
	1–8	9–14	15	16	STEREO
HOME	Input level of input channels 1–16				Output level of the stereo output channel
AUX1	Send level from input channels 1–16 to AUX 1				
AUX2	Send level from input channels 1–16 to AUX 2				
AUX3	Send level from input channels 1–16 to AUX 3				
AUX4	Send level from input channels 1–16 to AUX 4				
AUX5	Send level from input channels 1–16 to AUX 5				
AUX6	Send level from input channels 1–16 to AUX 6				
AUX7	Send level from input channels 1–16 to effect 1				
AUX8	Send level from input channels 1–16 to effect 2				

## ○ If the mixing layer is [17-24 RTN]

Fader mode	Fader				
	1–8	9–14	15	16	STEREO
HOME	Input level of input channels 17–24	—	Input level of effect return 1	Input level of effect return 2	Output level of the stereo output channel
AUX1	Send level from input channels 17–24 to AUX 1		Send level from effect return 1 to AUX 1	Send level from effect return 2 to AUX 1	
AUX2	Send level from input channels 17–24 to AUX 2		Send level from effect return 1 to AUX 2	Send level from effect return 2 to AUX 2	
AUX3	Send level from input channels 17–24 to AUX 3		Send level from effect return 1 to AUX 3	Send level from effect return 2 to AUX 3	
AUX4	Send level from input channels 17–24 to AUX 4		Send level from effect return 1 to AUX 4	Send level from effect return 2 to AUX 4	
AUX5	Send level from input channels 17–24 to AUX 5		Send level from effect return 1 to AUX 5	Send level from effect return 2 to AUX 5	
AUX6	Send level from input channels 17–24 to AUX 6		Send level from effect return 1 to AUX 6	Send level from effect return 2 to AUX 6	
AUX7	Send level from input channels 17–24 to effect 1		—	Send level from effect return 2 to effect 1	
AUX8	Send level from input channels 17–24 to effect 2		Send level from effect return 1 to effect 2	—	



## ○ If the mixing layer is [MONI]

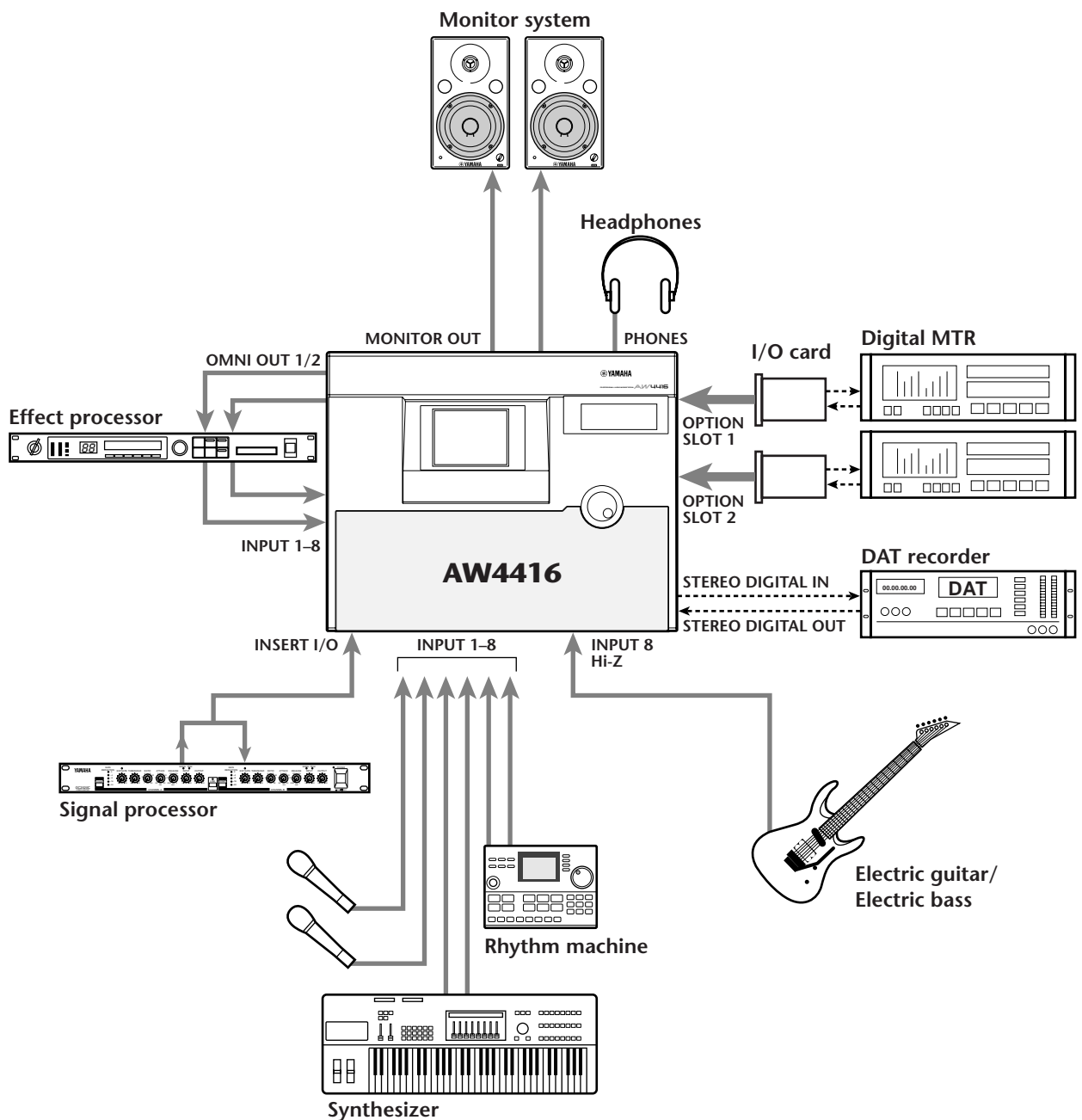
Fader mode	Fader				
	1-8	9-14	15	16	STEREO
<b>HOME</b>	Input level of monitor channels 1-16				Output level of the stereo output channel
<b>AUX1</b>	Send level from monitor channels 1-16 to AUX 1				
<b>AUX2</b>	Send level from monitor channels 1-16 to AUX 2				
<b>AUX3</b>	Send level from monitor channels 1-16 to AUX 3				
<b>AUX4</b>	Send level from monitor channels 1-16 to AUX 4				
<b>AUX5</b>	Send level from monitor channels 1-16 to AUX 5				
<b>AUX6</b>	Send level from monitor channels 1-16 to AUX 6				
<b>AUX7</b>	Send level from monitor channels 1-16 to effect 1				
<b>AUX8</b>	Send level from monitor channels 1-16 to effect 2				

# 4 Connections and setup

This chapter explains how to connect external devices and set up your system before you begin using the AW4416.

## Connections

The following diagram shows typical audio connections for the AW4416.



# Word clock settings

If a device such as a digital MTR or DAT recorder is digitally connected to the AW4416, the clock that controls the timing at which digital audio is processed (referred to as the “word clock”) must be synchronized. To do so, you must select one of the devices as the word clock master, and set the remaining devices so that they will follow the word clock supplied from the master device. Here we will explain how to select the clock source to which the AW4416 will synchronize.



Be aware that if the system includes an unsynchronized device, drop-outs and click noise will occur.

1. Turn on the power of the external digital device and of the AW4416.



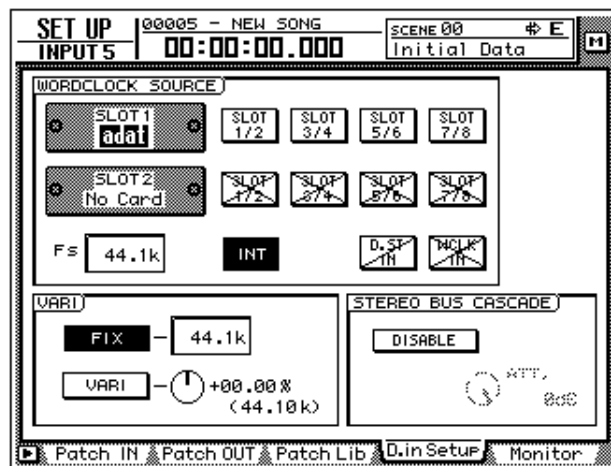
If an external device is connected to the SCSI connector of the AW4416, you must turn on the power in the order of external SCSI device → AW4416. If the power of the external SCSI device is off when you turn on the AW4416, it may not start up correctly.



If the D.in Setup tab is not assigned to the [F4] key when you press the [SETUP] key, press the [SHIFT] key + [F1] key to switch the tab, and then press the [F4] key.

2. Press the [SETUP] key → [F4] key.

The SETUP UP screen D.in Setup page will appear, allowing you to make word clock settings.



In the WORD CLOCK SOURCE area of this screen you can select one of the following as the clock source to which the AW4416 will synchronize.

- SLOT 1 1/2–7/8
- SLOT 2 1/2–7/8

An input signal from a digital I/O card installed in OPTION I/O slot 1/2 will be the clock source. You can select one pair from input channels 1/2–7/8 of the digital I/O card, and the AW4416 will synchronize to the word clock data included in the input signal of the corresponding channel.

### ○ D.ST IN

The word clock data included in the input signal from the DIGITAL STEREO IN jack will be the clock source.

### ○ WCLK IN

The word clock data included in the input signal from the WORD CLOCK IN jack will be the clock source.

### ○ INT

The internal clock of the AW4416 will be the clock source.



The currently highlighted button is selected as the word clock source.



Buttons marked with an × symbol indicate that no digital audio signal is being input from the corresponding slot/jack.



Buttons marked with a / symbol indicate that either no digital audio signal is being input from the corresponding slot/jack, or that it is not synchronized with the AW4416's internal clock.



Buttons without an × or / symbol indicate that a digital audio signal is being input from the corresponding slot/jack, and that it is synchronized with the AW4416's internal clock.



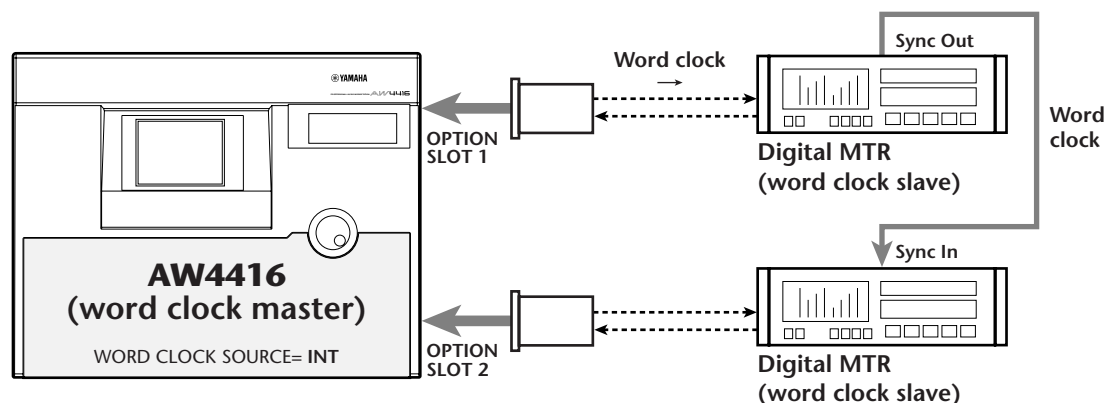
.....  
If the AW4416 is set to be an MTC slave, it is not possible for the AW4416 to simultaneously be set as the word clock slave.

3. Select the desired clock source in the WORD CLOCK SOURCE area by using the CURSOR [◀]/[▶]/[▲]/[▼] keys to move the cursor to the corresponding button.

The clock source you should select will depend on the system in which you are using the AW4416. Here we will explain some typical situations.

#### ○ Using the AW4416 as the word clock master

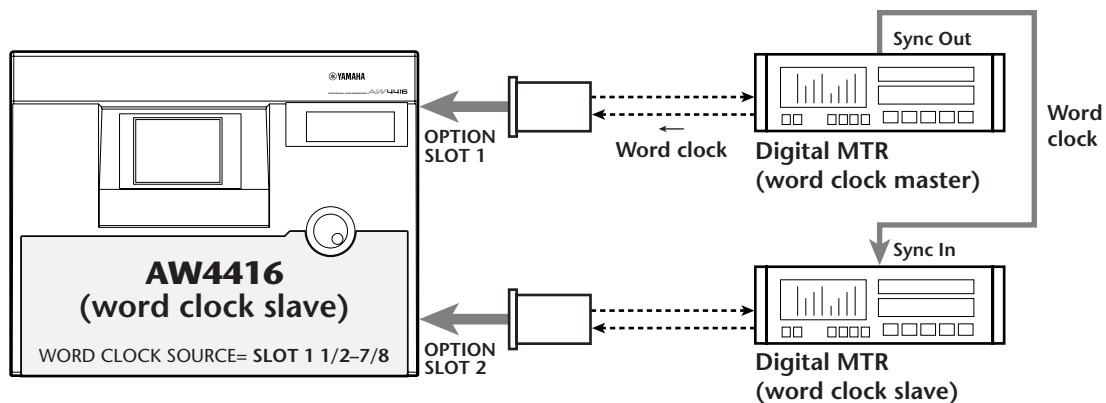
If no external digital device is connected to the AW4416, or if you wish to use the AW4416 as the word clock master so that external devices such as a digital MTR will follow it, turn on the INT button of the WORD CLOCK SOURCE area.



- Set the digital MTR so that it will synchronize to the word clock included in the input signal from the AW4416.
- If you are using two digital MTR units, connect the Sync Out jack of the first to the Sync In jack of the second as shown here, so that the second digital MTR will follow the first.

### ○ Using a digital MTR as the word clock master (1)

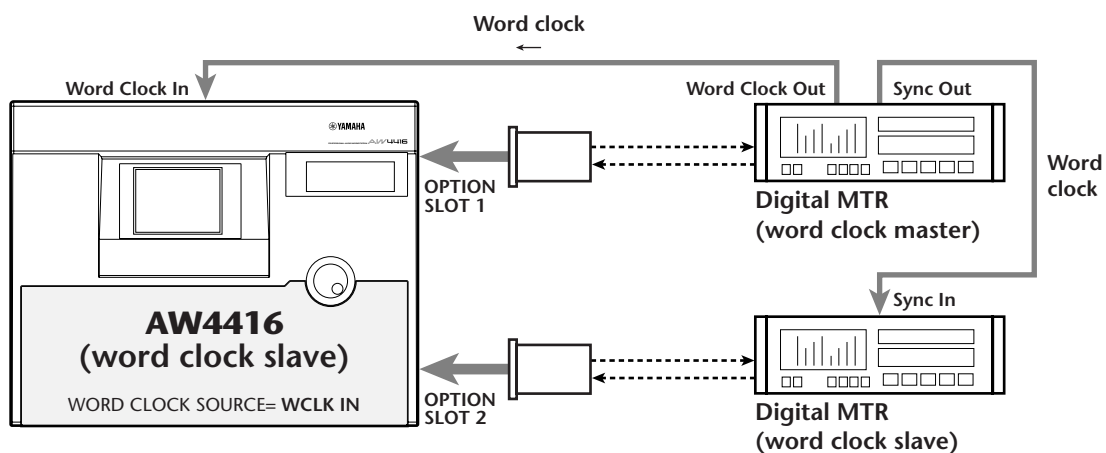
This method uses a digital MTR as the word clock master, and causes the AW4416 to synchronize to the word clock included in the input signal from the digital I/O card. For this method, turn on one of the 1/2–7/8 buttons for the slot to which that digital MTR is connected.



- Set the digital MTR so that it will operate according to its own internal clock.
- If you are using two digital MTR units, connect the Sync Out jack of the first to the Sync In jack of the second as shown here, so that the second digital MTR will follow the first.

### ○ Using a digital MTR as the word clock master (2)

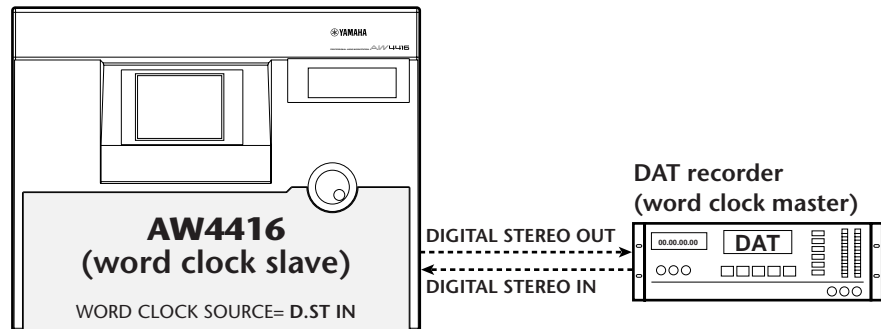
This method uses a digital MTR as the word clock master, and causes the AW4416 to synchronize to the word clock supplied from the word clock output jack of the digital MTR to the WORD CLOCK IN jack of the AW4416. For this method, turn on the WCLK IN button.



- Set the digital MTR so that it will operate according to its own internal clock.
- If you are using two digital MTR units, connect the Sync Out jack of the first to the Sync In jack of the second as shown here, so that the second digital MTR will follow the first.

### ○ Using a DAT recorder as the word clock master

If you wish to input a digital signal from a DAT recorder or sampler etc. into the AW4416 via the DIGITAL STEREO IN jack, turn on the D.ST IN button.



- Set the DAT recorder so that it will operate according to its own internal clock.



.....

*Most consumer DAT recorders are designed to forcibly follow the word clock of the input signal when recording. This type of DAT recorder can be used as the word clock master only when it is playing back.*

#### 4. After selecting the desired button, press the [ENTER] key.

The AW4416 will switch to the specified clock source.



- .....
- A slight interval of time is required for the AW4416 to select clock sources, and the sound may be muted during this time.
  - After switching the clock source, verify that the button you selected in step 3 is not marked with an X symbol or / symbol. If an X symbol or / symbol appears on the button, or if an error message is displayed, check the connections or the clock setting of the external device.



# 5 Recording on the AW4416

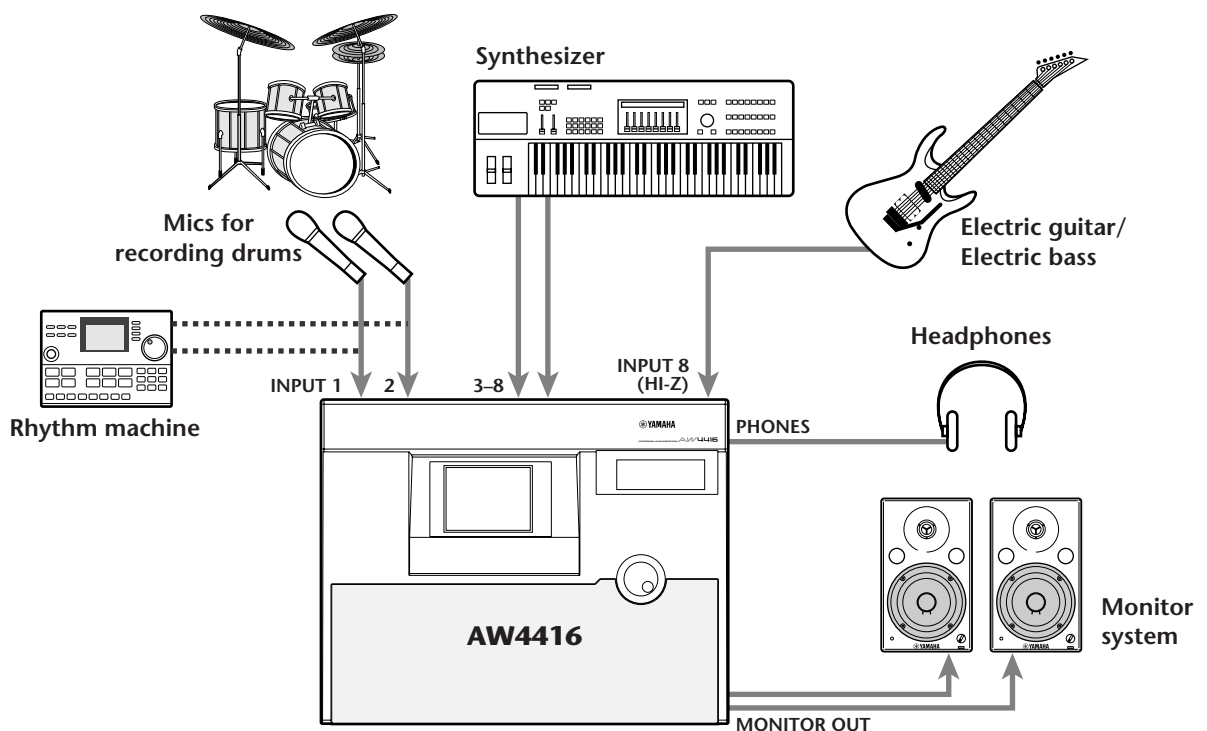
This chapter explains basic operation for performing multitrack recording and mixdown on the AW4416, using the example of recording instruments such as rhythm machine (drums), bass, guitar, and keyboard on their own tracks.

## Preparations for recording

### Connections and start-up

Here's how to connect your instruments and monitor system, and start up the AW4416.

1. Connect your instruments, mics, and monitor system to the AW4416 as shown in the following diagram.



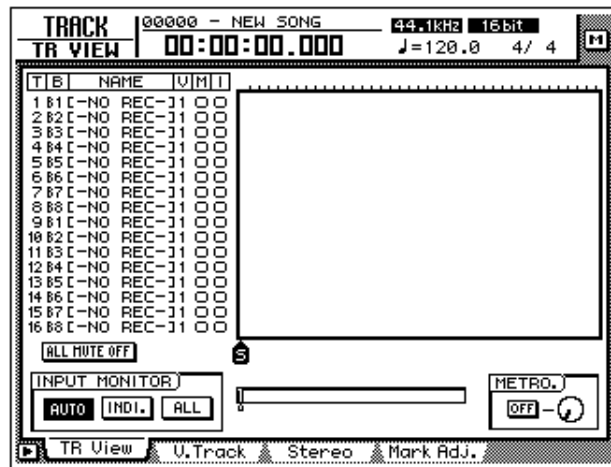
Connect mics, synthesizers or rhythm machines, direct boxes, or guitar/bass preamps to the INPUT 1/2 (XLR) jacks or INPUT 1–8 (phone) jacks, according to the type of their output connector.

When directly connecting instruments with a high output impedance, such as passive type electric guitars or electric basses, connect them to the INPUT 8 (HI-Z) jack.



- Turn on the power in the following order: audio sources/SCSI devices connected to the AW4416 → the AW4416 → monitor system.

The display of the AW4416 will show the opening screen, and will then change to the TRACK screen TR View page.



When the power of the AW4416 is turned on, the song you were last operating will be loaded automatically.



- If the internal hard disk of the AW4416 has not been formatted, a message of "Format OK? [Y (Enter)/N (Any)]" will appear instead of the above screen when the power is turned on.
- If a SCSI device is connected to the AW4416, and you turn on the power of the AW4416 when the SCSI device is turned off, it may not start up correctly. If the SCSI device is turned on after the AW4416 is turned on, it will not function correctly.

## Creating a new song

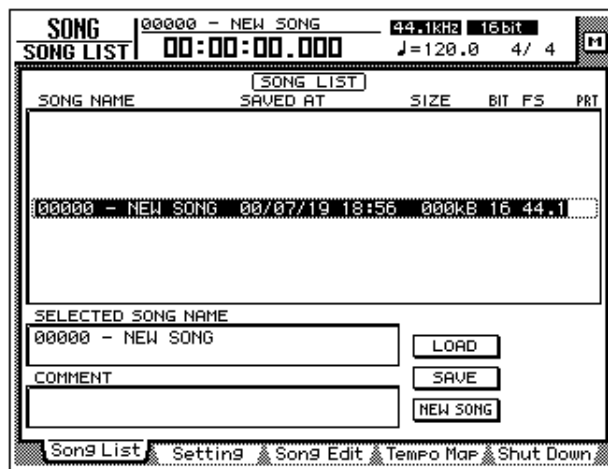
On the AW4416, all data (mixer settings, recorder settings, audio data etc.) necessary for reproducing a musical work are stored on the hard disk as a unit called a “song.” In order to record, you must begin by creating a new song.



.....  
*A new 44.1 kHz/16 bit song is created when the internal hard disk is formatted, and will automatically be loaded the next time you turn on the power of the AW4416. If you wish to use this song, the following procedure is not necessary.*

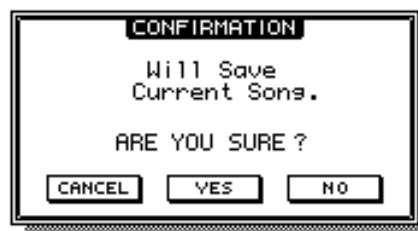
1. Press the [SONG] key → [F1] key.

The SONG screen Song List page will appear. In this page you can create a new song, and save/load existing songs.



2. Use the CURSOR [◀]/[▶]/[▲]/[▼] keys to move the cursor to the NEW SONG button in the lower right of the screen, and press the [ENTER] key.

A popup window will appear, asking you whether you wish to save the song you are now working on (referred to as the “current song”).



3. Move the cursor to the YES button to save the current song, or to the NO button if you do not wish to save it. Then press the [ENTER] key. The NEW SONG SETTING popup window will appear. In this popup window you can specify the basic settings for the new song.



#### ○ Fs

This is the sampling frequency at which the input signals are converted into digital form. Move the cursor to either the 44.1 kHz or 48 kHz button, and press the [ENTER] key to make your selection.

#### ○ Recbit

This is the number of quantization bits for the audio data recorded on the hard disk. Move the cursor to either 16 BIT or 24 BIT, and press the [ENTER] key to make your selection.



- It is not possible to change the sampling frequency or quantization after creating a song.
- The number of tracks that can be simultaneously played or recorded will depend on the specified quantization.
- If you intend to use a CD-RW drive to create an audio CD of your song when it is completed, you must select 44.1 kHz as the sampling frequency. A song with a sampling frequency of 48 kHz cannot be recorded on an audio CD.

4. After you have selected the sampling frequency and the quantization, move the cursor to the OK button and press the [ENTER] key.

If you selected 48 kHz as the sampling frequency, the display will indicate “Not for Audio CD -48 kHz- ARE YOU SURE?”, warning you that an audio CD cannot be produced from this song. Move the cursor to either the OK button or the CANCEL button, and press the [ENTER] key.

The MIXER DATA IMPORT popup window will appear. This popup window allows you to import mixer data from an existing song. For this example, it is not necessary to make any settings.



5. Make sure that the cursor is located at the OK button, and press the [ENTER] key.  
The NAME EDIT popup window will appear, allowing you to assign a name to the song.



6. Use the character palette to assign a song name of up to 64 characters. (For details on inputting characters, refer to page 60.) When you have finished inputting the song name, move the cursor to the OK button and press the [ENTER] key.  
The COMMENT EDIT popup window will appear, allowing you to assign a comment to the song.



7. As desired, input a comment in the same way as the song name. Then move the cursor to the OK button and press the [ENTER] key.  
The new song will be created. (If you selected YES in step 3, the song you had been operating will be saved before the new song is created.)

# Recording the first tracks

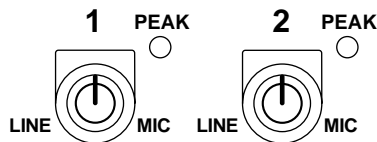
This section explains the procedure for recording a rhythm machine (or drum mics) connected to INPUT jacks 1/2 onto tracks 1/2 of the recorder.



The explanation in this section assumes that the AW4416's mixer and patching settings are in their initial state. If you have already modified the mixer parameters or the input/output patching, please recall the default scene (scene number 00) from the scene memory (→ P.206).

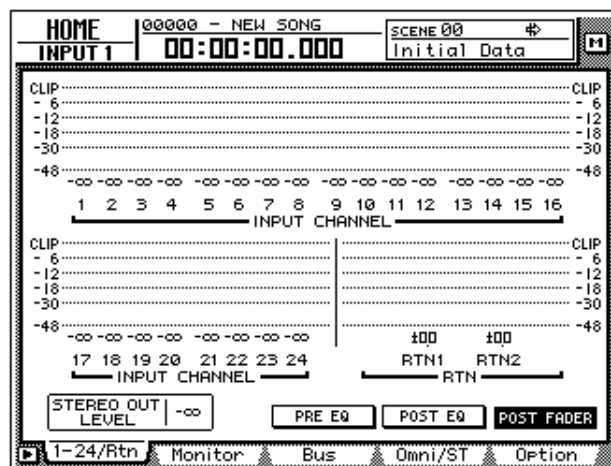
## Set the input level

1. While producing sound on your instrument, adjust [GAIN] controls 1/2 so that the PEAK indicators of INPUT jacks 1/2 light briefly when the loudest sounds are played.



The [GAIN] control adjusts the sensitivity of the analog input. In order to record the sound cleanly and with the widest possible range, you should adjust the [GAIN] as high as possible without allowing clipping to occur.

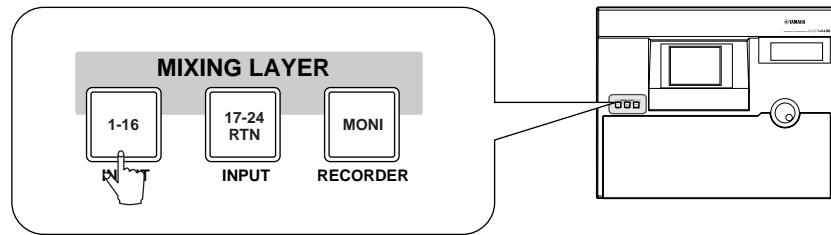
2. Press the [HOME] key → [F1] key  
The HOME screen 1–24/Rtn page will appear. This page shows the input levels of input channels 1–24 and return channels 1/2.



3. In the MIXING LAYER section, press the [1–16] key to select input channels 1–16 as the mixing layer.



When you switch mixing layers, the faders will move instantly to new positions. Be careful not to place objects near the faders.



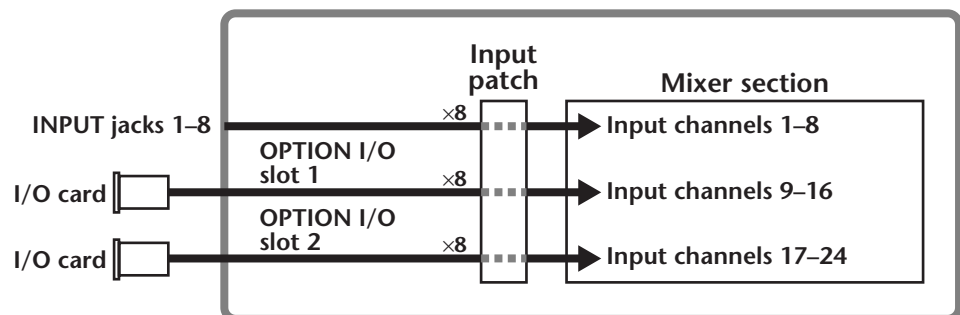
The “mixing layer” is the group of channels controlled by the top panel [ON] keys 1–16, [SEL] keys 1–16, and faders 1–16. The AW4416 has the following three mixing layers:

- ① **Input channels 1–16**
- ② **Input channels 17–24 + return channels**
- ③ **Monitor channels**

Even when you switch to a different mixing layer, the fader locations and [ON] key settings of the previous mixing layer are remembered, and will return when that mixing layer is selected once again.

4. Make sure that [ON] keys 1/2 are turned on, and raise faders 1/2 to the 0 dB position.
5. While playing your instrument, watch the level meters displayed in the screen and adjust the input level of inputs 1/2.

When the AW4416 is in the initial state, the input jacks are patched to input channels as follows. As you can see from this diagram, the rhythm machine (or drum mics) connected to INPUT jacks 1/2 are patched to input channels 1/2.



Now raise the faders of input channels 1/2 and check that the signals are being input. If the level meters reach the “CLIP” position, you should lower [GAIN] controls 1/2.

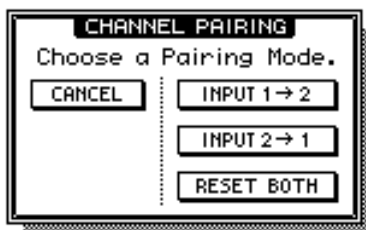


The patching of the input jacks and input channels can be changed freely. For details refer to page 133.

6. If you wish to set the input signals of INPUT jacks 1/2 as a stereo pair, hold down [SEL] key 1 and press [SEL] key 2.

Adjacent odd-numbered → even-numbered input channels can be specified as a stereo pair. You will find it convenient to pair two channels that are inputting a stereo source, so that all mix parameters except for attenuation and pan will be linked.

When you simultaneously press the two [SEL] keys, a CHANNEL PAIRING popup window will appear, allowing you to specify how pairing will occur.



7. Move the cursor to either the “INPUT 1→2,” “INPUT 2→1,” or “RESET BOTH” button, and press the [ENTER] key.

One of the following can be selected as the pairing method.

**INPUT  $x \rightarrow y$  ( $x$ =odd number,  $y$ =even number)**

The parameters (except for attenuation and pan) of the odd-numbered channel will be copied to the even-numbered channel.

**INPUT  $y \rightarrow x$  ( $x$ =odd number,  $y$ =even number)**

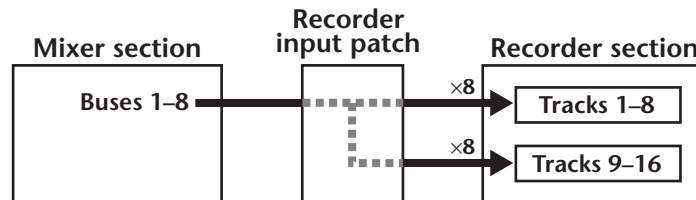
The parameters (except for attenuation and pan) of the even-numbered channel will be copied to the odd-numbered channel.

**RESET BOTH**

The parameters of both channels will be reset to their initial settings.

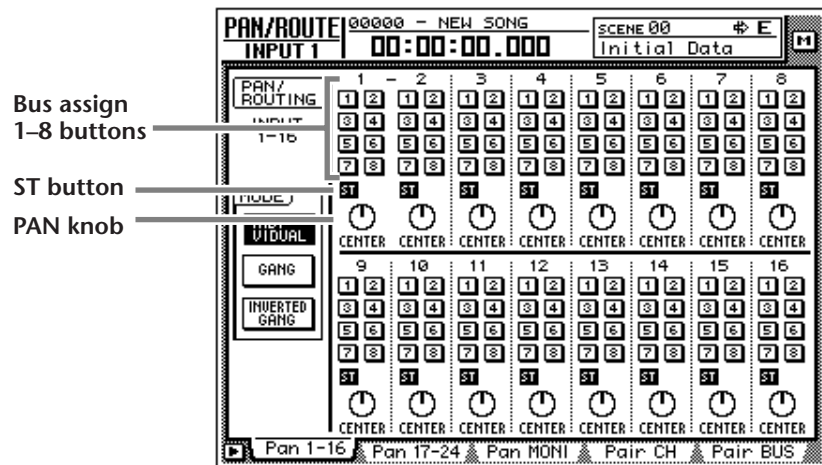
## Assign the signals to buses

When the AW4416 is in the initial state, bus outputs 1–8 of the mixer section are patched as follows to tracks 1–16 of the recorder. In our example here, we will assign the signal from the rhythm machine (or drum mics) input via input channels 1/2 to buses 1/2 and send them to tracks 1/2 of the recorder.



1. Press the [PAN] key → [F1] key.

The PAN/ROUTE screen Pan 1–16 page will appear. In this page you can assign input channels 1–16 to buses (stereo bus, buses 1–8) and make pan settings.



2. Use the CURSOR [◀]/[▶]/[▲]/[▼] keys to move the cursor to the input channel 1 area. Turn the ST button off, and turn the bus assign 1/2 buttons on.

With these settings, the signal of input channel 1 will not be sent to the stereo bus, but will be sent instead to buses 1–2. The ST button and bus assign 1/2 buttons of input channel 2 (which is paired with input channel 1) will follow these settings.



*To switch an on-screen button on/off, move the cursor to the button and press the [ENTER] key.*

3. Move the cursor to the PAN knob of input channel 1, and set the pan to far left (L16).

The PAN knob sets the stereo position between the L/R channels of the stereo bus, and pans between odd-numbered buses and even-numbered buses of bus 1–8. In this example, the signal will be sent only to bus 1 if you rotate the PAN knob to the far left.





Note that the level when the PAN knob is positioned at full left or full right will differ between paired and unpaired channels.  
The level of a channel that is not paired will rise 3 dB when the PAN knob is positioned at full left (L16) or full right (R16).

- In the same way, move the cursor to the input channel 2 area, and set the PAN knob to far right (R16).

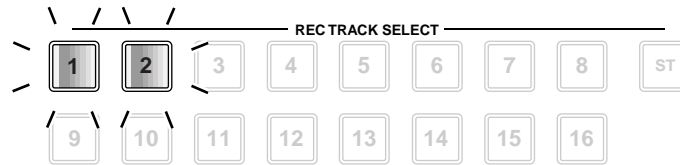


Even for paired channels, the PAN knobs will not operate in tandem if the MODE area Pan parameter is set to INDIVIDUAL (default setting). The PAN knobs will move in tandem if this parameter is set to GANG or INVERTED GANG.

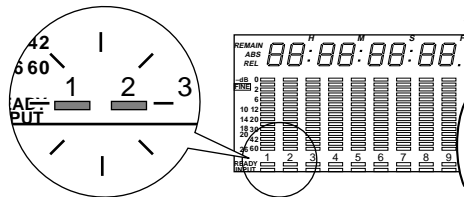
## Set the tracks to record-ready mode

Next we will set tracks 1/2 of the recorder to record-ready mode, and adjust the input level of each track.

- In the level meters/counter section, press [REC TRACK SELECT] keys 1 and 2.



[REC TRACK SELECT] keys 1 and 2 will begin blinking. In the level meters/counter section, REC READY indicators 1 and 2 will blink red. This indicates that tracks 1/2 are in record-ready mode.



- While producing sound on your instrument, watch level meters 1/2 in the level meters/counter section.

The level of the signals being input to tracks 1/2 (which are in record-ready mode) will be shown in level meters 1/2. If the red segment at the 0 dB position lights for level meters 1/2, lower faders 1/2 (input channel 1/2 input levels).

In this example, tracks 1/2 are paired, so be sure to operate only one of the faders.



When the AW4416 is in its initial state, the input monitor mode of each track is set to "AUTO." For tracks that are currently in record-ready mode, the level meters will show the level of the input signal while the recorder is stopped, and the level of the track playback signal when the recorder is playing back.



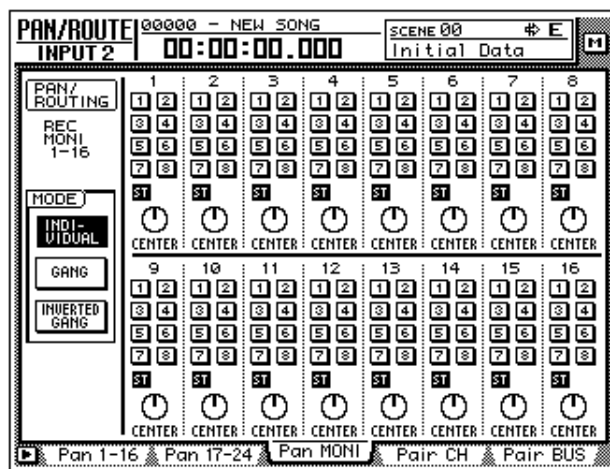
When tracks are paired, you must operate only one of the faders. Attempting to move both faders simultaneously will place a strain on the motor, and may cause malfunctions.

## Make monitor settings

Now we will send the signal of monitor channels 1/2 to the stereo bus, so that it can be monitored via the MONITOR OUT jacks or the PHONES jack.

1. Press the [PAN] key → [F3] key.

The PAN/ROUTE screen Pan MONI page will appear. In this page you can make bus assignments and pan settings for monitor channels 1–16.

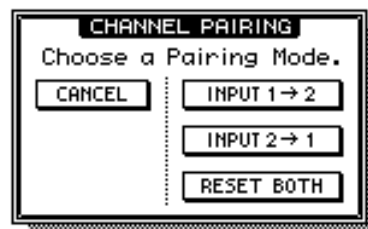


2. Press the [MONI] key.

Monitor channels 1–16 will be selected as the mixing layer.

3. Hold down [SEL] key 1, and press [SEL] key 2.

Just as we did for input channels 1/2, we will also pair monitor channels 1/2. When you simultaneously hold down the monitor channel 1/2 [SEL] keys, the CHANNEL PAIRING popup window will appear.



4. Move the cursor to one of the three buttons and press the [ENTER] key. Monitor channels 1/2 will be paired.

5. In the monitor channel 1/2 area, make sure that the ST buttons are on and the 1–8 buttons are off.

With these settings, the signal of the monitor channels will be sent to the stereo bus.

6. In the same way as for the input channels, set the PAN knobs of monitor channels 1/2 to far left (L16) for channel 1 and far right (R16) for channel 2.
7. Make sure that [ON] keys 1/2 and the STEREO [ON] key are on, and raise faders 1/2 and the STEREO fader to the 0 dB position.

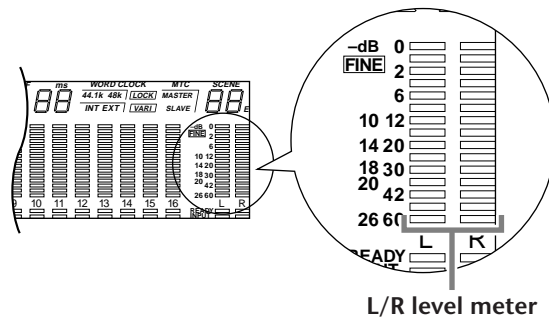


.....

*When tracks are paired, you must operate only one of the faders. Attempting to move both faders simultaneously will place a strain on the motor, and may cause malfunctions.*

8. While producing sound on your instrument, watch the L/R level meters of the level meter/counter.

The signal from the rhythm machine (or drum mics) will be sent via tracks 1/2 → monitor channels 1/2 to the stereo bus. If the red 0 dB segment lights, lower faders 1/2 (input level of monitor channels 1/2).



L/R level meter

9. Raise the MONITOR OUT control/PHONES control.

You can monitor the input signal via your monitor system or headphones.

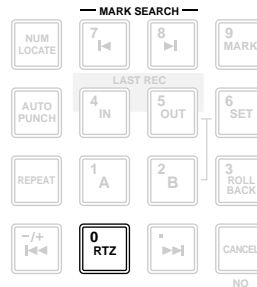


.....

*Note that the signals being controlled here are not the signals recorded on the recorder; rather, they are the signals passing through the recorder. Operating the pan, fader, or [ON] key of a monitor channel will not affect the signal that is recorded.*

## Let's record!

1. Press the Locate section [RTZ] key.



The level meter/counter and the display counter will rewind to zero (00:00:00.000).



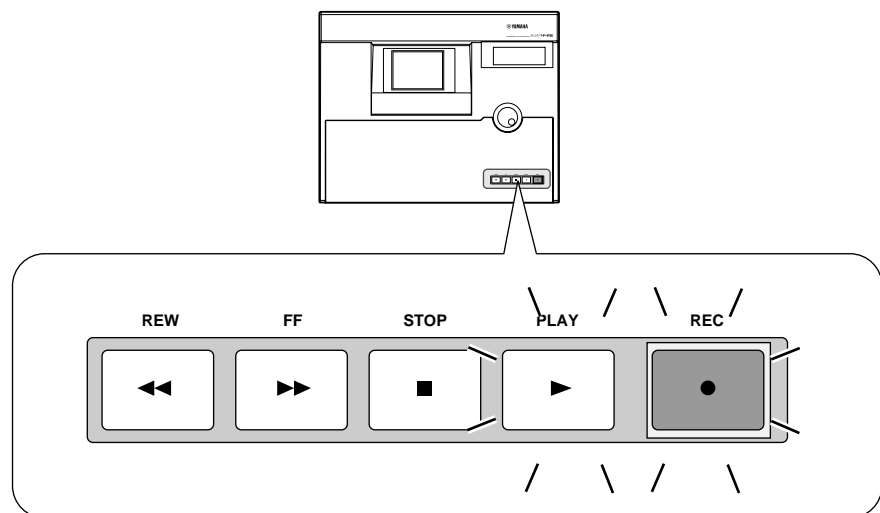
With the default settings of the song, hours (hours/minutes/seconds/milliseconds) are selected as the counter unit of the level meter/counter and display counter. However you may switch this to time code display (hours/minutes/seconds/frames/sub-frames) or measure display (measure/beat/tick) if desired.

2. To begin recording, hold down the Transport section [REC] (●) key and press the [PLAY] (▶) key.

The [REC] key and [PLAY] key will light, and the red REC READY indicators of the [REC TRACK SELECT] keys 1/2 and the level meter/counter will change from blinking to lit.



When you attempt to record the signal being input from the DIGITAL STEREO IN jack, the display may sometimes indicate "DIGITAL-ST-IN-PROHIBIT," and you will be unable to perform step 2. In this case, go to UTILITY screen Prefer.2 page ([UTILITY] key → [F3] key), and set CD/DAT DIGITAL REC to ENABLE. (For details refer to Reference Guide "UTILITY" screen.)





.....

*If the following keys are on, the keys of the Locate section and the Transport section will have no effect. (Alternatively, the functions assigned to the keys will change.) Select a different key before you continue with this procedure.*

- *WORK NAVIGATE section: [SONG] key, [MASTERING] key, [CD PLAY] key*
- *UNIT section: [FILE] key*
- *RECORDER section: [EDIT] key*
- *SAMPLING PAD section: [EDIT] pad (except for when the Trig.List page is displayed)*

3. Start the rhythm machine (drum) performance.
4. When the performance is finished, press the [STOP] (■) key.
5. To listen to the recorded content, press the Locate section [RTZ] key, and then press the Transport section [PLAY] (▶) key.
6. When you are satisfied with the recorded content, press the [STOP] (■) key to stop the transport. Then press [REC TRACK SELECT] keys 1/2 to defeat record-ready mode for tracks 1/2.



**Tip!**

- .....
- *By using the [ALL SAFE] key instead of step 6, you can cancel record-ready mode in one operation.*
  - *If you wish to re-do the recording, repeat steps 1–4.*
  - *We recommend that you save the song whenever you take a break from your work. (→ P.106)*

# Overdubbing

In this section we will explain how to record an electric bass connected to INPUT 8 (HI-Z) jack while monitoring the rhythm machine (or drums) recorded on tracks 1/2.

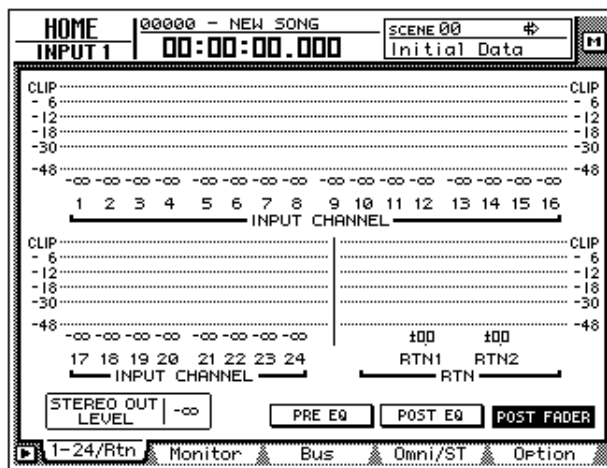
## Set the input level

1. While producing sound on your instrument, adjust [GAIN] control 8 so that the PEAK indicator of INPUT 8 (HI-Z) lights briefly when you play most loudly.



The INPUT 8 (HI-Z) jack is an input jack designed for high impedance instruments. It cannot be used simultaneously with the conventional INPUT 8 (phone) jack.

2. Press the [HOME] key → [F1] key.  
The HOME screen 1–24/Rtn page will appear.



3. Press the MIXING LAYER section [1–16] key to select input channels 1–16 as the mixing layer.
4. Make sure that [ON] key 8 is turned on, and raise fader 8 to the 0 dB position.



To avoid confusion, turn off the [ON] keys for all input channels that you are not using.

5. While producing sound on your instrument, watch the input level of input channel 8 that is displayed in the on-screen level meter.  
If the AW4416 is in the initial state, the electric bass connected to the INPUT 8 (HI-Z) jack will be sent to input channel 8. If the level meter reaches the “CLIP” position, lower [GAIN] control 8.

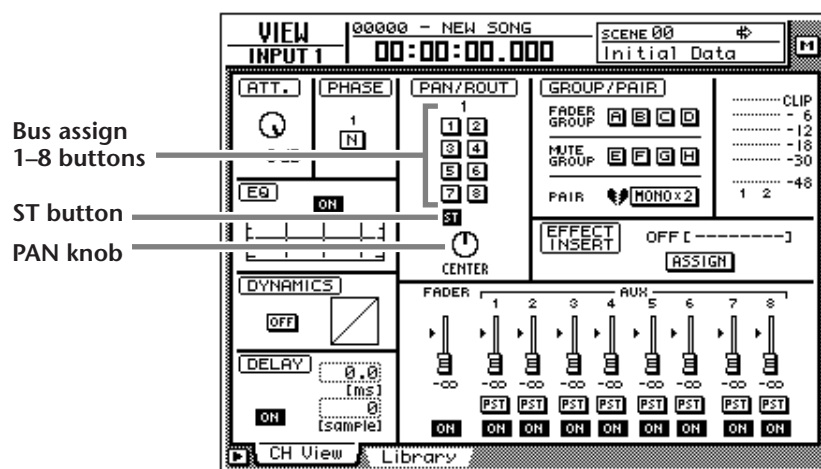
## Assign the signal to a bus

Here we will make settings so that the electric bass signal being input from input channel 8 will be sent to recorder track 3 via bus 3.

1. Press the [VIEW] key → [F1] key.

The VIEW screen CH View page will appear. The CH View page shows all mix parameters of the currently selected channel. (Major parameters can also be operated here.) It is convenient to use this page when you wish to control all the mix parameters of a specific channel.

In the preceding section “Recording the first track,” we used the PAN/ROUTE screen to set bus assignments and pan for multiple channels at once. Here, however, we are going to use the VIEW screen CH View page to perform the same operations.



2. In the MIXING LAYER section, press the [1-16] key → [SEL] key 8.

On the AW4416, you select the channel to be controlled by selecting a mixing layer in the MIXING LAYER section, and then pressing a [SEL] key to select a channel. When you are using the CH View page, the currently selected channel will be shown in the upper left of the display. The corresponding [SEL] key will also light.



3. Move the cursor to the PAN/ROUTE area. Turn the ST button off and the bus assign 3 button on.
4. Make sure that the PAN/ROUTE area PAN knob is positioned in the center (CENTER).

With these settings, the signal of input channel 8 will no longer be sent to the stereo bus, but will be sent to bus 3 instead.

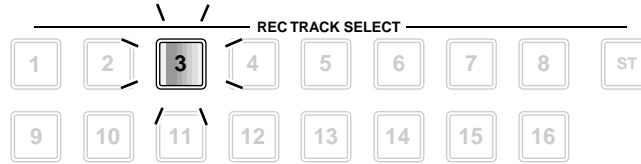


Note that the level of a channel that is not paired will rise 3 dB when the PAN knob is positioned at full left (L16) or full right (R16).

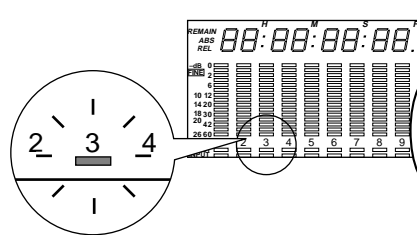
## Put the track in record-ready mode

Next we will put track 3 of the recorder in record-ready mode, and adjust the input level.

1. In the level meters/counter section, press [REC TRACK SELECT] key 3.



[REC TRACK SELECT] key 3 and REC READY indicator 3 in the level meter/counter will blink, indicating that track 3 is in record-ready mode.



2. Make sure that [ON] key 8 is lit, and while producing sound on your instrument, watch level meter 3 in the level meters/counter section. Level meter 3 will show the level of the input signal of track 3. If the red 0 dB segment lights, lower fader 8 (input level of input channel 8).

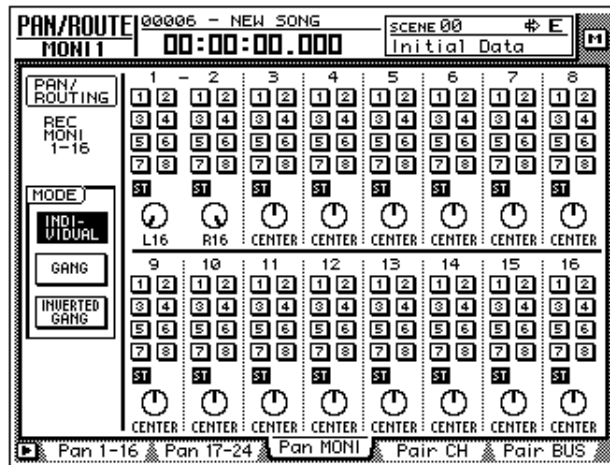


## Make monitor settings

We will make settings so that the signal of the rhythm machine (drums) that were earlier recorded on tracks 1/2 and the bass signal being recorded on track 3 will be sent to the stereo bus, and can be monitored via the MONITOR OUT jacks or PHONES jack.

1. Press the [PAN] key → [F3] key.

The PAN/ROUTE screen PAN Moni page will appear, allowing you to make pan and bus assignment settings for monitor channels 1–16.



2. For monitor channel 3, turn the ST button on and the bus assign 1–8 buttons off.

At this time, verify that the ST button is on and the bus assign 1–8 button is off for monitor channels 1–2 as well.

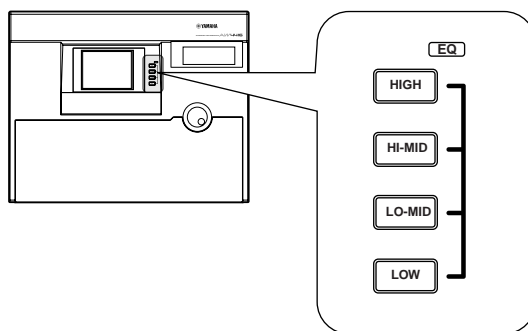
3. Move the cursor to the PAN knob of monitor channel 3, and pan the bass where you can monitor it most comfortably.
4. Make sure that [ON] key 3 is turned on. Then produce sound on your bass, and raise fader 3 to a volume that is comfortable for monitoring.

## Using EQ and the dynamics processor

By using the four-band EQ and dynamics processor that are provided for each input channel, you can process the bass sound as you record it on a track.

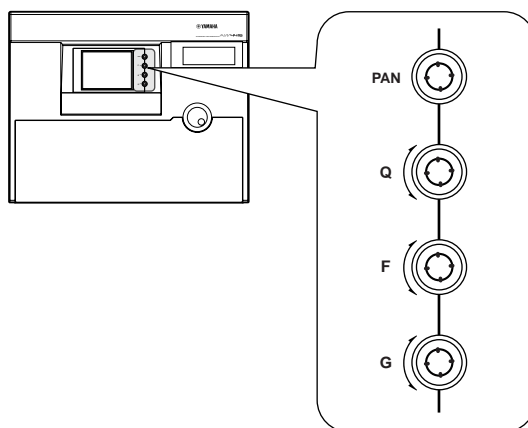
### □ Using the four-band EQ

1. In the MIXING LAYER section, press the [1–16] key → [SEL] key 8. [SEL] key 8 will light, and input channel 8 will be selected for control.
2. Press one of the EQ [HIGH]/[HI-MID]/[LO-MID]/[LOW] keys in the row at the right of the display to select the band that you wish to control. When you press a key, the settings of that band will appear for a time in the upper right of the display.



*The keys/controls at the right of the display can be used as dedicated controls for the channel that is currently selected by the [SEL] key. As with EQ, you can also use the [PAN] control located at the right of the display to adjust the panning of the currently selected channel.*

3. Use the EQ [Q]/[F]/[G] controls to adjust the band that you selected in step 2. The function of each control is described below.



- [Q] ..... Adjust the steepness of each band. The range is 10.0–0.10, and higher settings will produce a steeper EQ curve. The [Q] control of the HIGH band can also be used as a switch to change the EQ type between shelving and LPF. The [Q] control of the LOW band can also be used as a switch to change the EQ type between shelving and HPF.

- **[F]** ..... Set the center frequency of each band. For each band, the range is 21 Hz–20.1 kHz.
- **[G]** ..... Set the amount of boost/cut for each band. For each band, the range is  $\pm 18$  dB.

When you operate the EQ **[Q]/[F]/[G]** controls, the parameter values of that band will briefly appear in the upper right of the display.



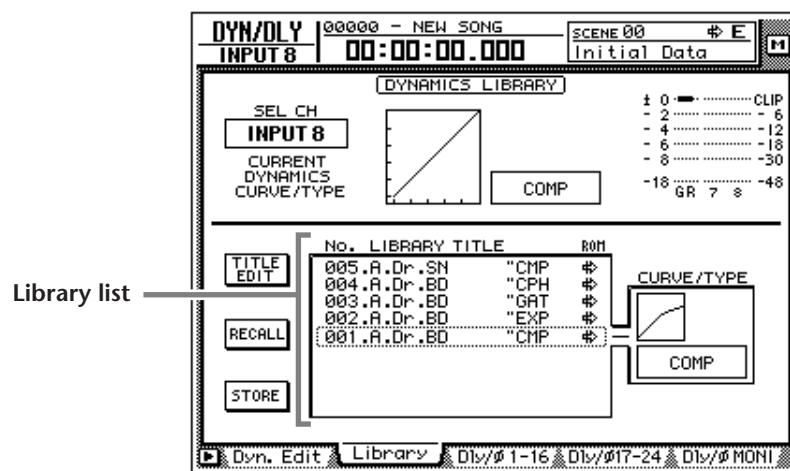
As an alternative way to make EQ settings, you can also use the EQ/ATT/GRP screen EQ/Att page (**[EQ]** key  $\rightarrow$  **[F1]** key). The EQ/Att page displays all EQ parameters of the currently selected channel.



If the sound does not change when you operate the EQ, check whether the EQ ON button is turned on in the EQ/ATT/GRP screen EQ/ATT page.

## □ Using the dynamics processor

1. In the MIXING LAYER section, press the **[1–16]** key  $\rightarrow$  **[SEL]** key 8. **[SEL]** key 8 will light, and input channel 8 will be selected for control.
2. Press the **[DYN]** key  $\rightarrow$  **[F2]**.  
The DYN/DLY screen Library page will appear.



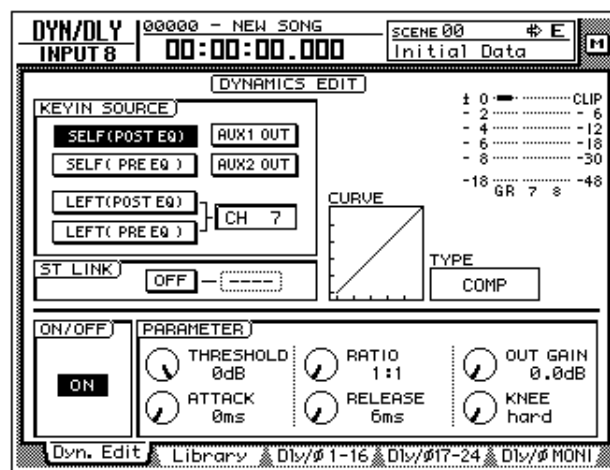
In this page you can load or save dynamics programs from or to the dynamics library. From the library list in the center of the screen, you can select the dynamics program that you wish to load or save.

3. Move the cursor to the library list, and rotate the **[DATA/JOG]** dial to move the cursor location to "011.E.B.Finger."  
Dynamics library numbers 000–040 are read-only programs, and contains standard dynamics settings for frequently used instruments. For this example, we will select a program named "E.B. Finger."
4. Move the cursor to the **RECALL** button at the left of the library list, and press the **[ENTER]** key.

- A CONFIRMATION popup window will appear, asking you confirm the recall operation.



- Move the cursor to the OK button and press the [ENTER] key. The “E.B.Finger” dynamics program will be loaded into input channel 8.
- Press the [F1] key. The DYN/DLY screen Dyn.Edit page will appear. In this page you can set the parameters of the dynamics processor.
- Press the [ENTER] key, and turn on the ON/OFF button located in the lower left of the screen. As the name suggests, the ON/OFF button turns the dynamics processor on/off.



- While playing the bass, move the cursor to the PARAMETER area in the lower right of the screen, and adjust the parameters of the dynamics processor.
  - Five types of dynamics processor are provided: CMP (compressor), EXP (expander), GAT (gate), CPS (compander S), and CPH (compander H). Each type has different parameters. (For details on the parameters of each type, see the Reference Guide.)
  - It is not possible to change the type of the dynamics processor in the Dyn.Edit page. For this reason if you wish to use a specific type, you must first load a program that uses that type from the dynamics library, and then modify its parameters as necessary.

## Let's overdub!

1. Press the Locate section [RTZ] key.
2. To begin recording, hold down the Transport section [REC] (●) key and press the [PLAY] (▶) key.  
The [REC] key and [PLAY] key will light, and the red REC READY indicator of track 3 will change from blinking to lit.
3. Play the bass while listening to the rhythm machine (drum) performance recorded on tracks 1/2.

**Tip!**

.....  
If you wish to adjust the volume at which you are monitoring the rhythm machine (drums) and bass, press the MIXING LAYER section [MONI] key, and adjust faders 1–3.

4. When you are finished playing, press the [STOP] (■) key.
5. To listen to the recorded performance, press the Locate section [RTZ] key, and then press the Transport section [PLAY] (▶) key.
6. If you are satisfied with the recorded performance, press [REC TRACK SELECT] key 3 to defeat record-ready mode for track 3.

If you wish to continue overdubbing more instrumental tracks, simply use the same procedure. Go ahead and record the remaining instruments.

**Tip!**

.....  
If you wish to try the recording again, press the [UNDO] key and repeat steps 1–4. It is also possible to re-record from the middle of the song. If you will be re-recording repeatedly from the same location, it is convenient to assign a marker (→ P.121) to that location so that you can move rapidly to it, or to use the auto punch-in/out function (→ P.130).

# Mixdown

In this section we will explain the procedure for creating a stereo mix of the signals recorded on tracks 1–16, applying internal effects, and recording the stereo track on the hard disk.

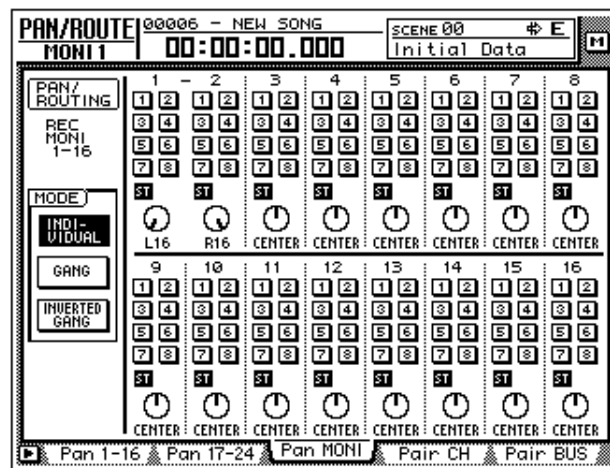
## Creating the mix balance of the tracks

1. Make sure that [REC TRACK SELECT] keys 1–16 are dark (record-ready mode is defeated). Also make sure that the [ON] key is dark for all input channels 1–24.



.....  
 If necessary, the input signals from input channels 1–24 can be mixed down together with the signals of tracks 1–16. In this case, turn on the [ON] keys of the input channels that you wish to use, so that they are lit.

2. Press the [MONI] key.  
 Monitor channels 1–16 will be selected as the mixing layer.
3. Press the [PAN] key → [F3] key.  
 The PAN/ROUTE screen Pan MONI page will appear, allowing you to make pan settings and bus assignments for monitor channels 1–16.



4. For monitor channels 1–16, turn the ST button on and the bus assign 1–8 buttons off.  
 With these settings, all monitor channels will be sent to the stereo bus.
5. Use the PAN knobs of monitor channels 1–16 to set the stereo position of each track.



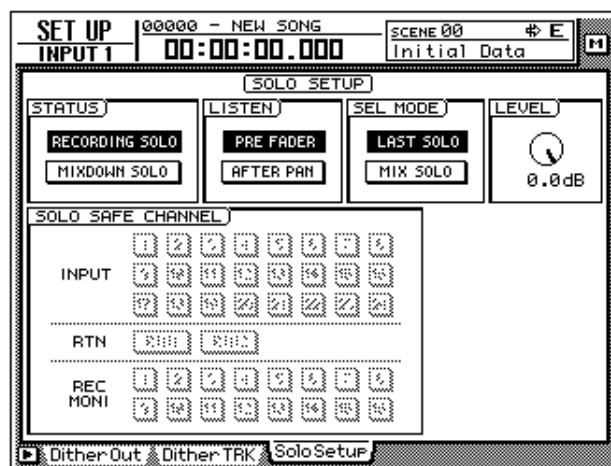
.....  
 You can also use the [SEL] keys to select a channel and use the [PAN] control at the right of the display to set the pan of the corresponding monitor channel.

6. Raise the STEREO fader to the 0 dB position.
7. Make sure that [ON] keys 1–16 and the STEREO [ON] key are lit, play back the song from the beginning, and use faders 1–16 to set the level of each track.  
At this time, watch the L/R level meter of the level meter/counter, and do not allow the red 0 dB segment to light.
8. To adjust the EQ of a specific channel, use the [SEL] key to select the channel and operate the EQ [HIGH]/[HI-MID]/[LO-MID]/[LOW] keys and the EQ [Q]/[F]/[G] controls.
9. To use the dynamics processor of a specific channel, use the [SEL] key to select the channel and press [DYN] key → [F2] key to load the desired dynamics program.  
For the procedure of loading a dynamics program, refer to page 92. To edit the dynamics processor parameters, press the MIXER section [DYN] key → [F1] key to access the DYN/DLY screen Dyn.Edit page.

## Using the Solo function

The AW4416 provides a flexible Solo function. By pressing the top panel [SOLO] during recording or playback and using one of the [ON] keys to select a desired channel, you can monitor only the corresponding channel. Here we will explain how you can use the Solo function to monitor only the desired track during mix-down.

1. Press the [SETUP] key → [F3] key.  
The SET UP screen Solo Setup page will appear. In this page you can make various settings for the Solo function.



*If the Solo Setup tab is not assigned to the [F3] key, press the [SHIFT] key + [F1] key to switch the tab, and then press the [F3] key.*



As an alternative to using the Solo function, you can also monitor just a specific track by pressing the TRACK [CUE] switch in the level meters/counter section, and then using [REC TRACK SELECT] keys 1–16 to select a track. By using this method, the direct output of the recorder (the signal that has not passed through the monitor channel) can be sent directly to the MONITOR OUT jacks and the PHONES jack.

2. Move the cursor to the SOLO STATUS area, and select one of the following two modes for the Solo function.

#### ○ RECORDING SOLO

In this mode, the solo signal is routed through the dedicated SOLO bus and output from the MONITOR OUT jacks and PHONES jack. The stereo bus and buses 1–8 will not be affected. You can monitor even channels that are not assigned to the stereo bus or to buses 1–8, or channels whose [ON] key is turned off.



If you will be using the Solo function during multitrack recording, it is convenient to select RECORDING SOLO so that specific channels can be monitored without affecting the stereo bus or buses 1–8.

#### ○ MIXDOWN SOLO

In this mode, the solo signal is routed through the stereo bus and output from the MONITOR OUT jacks and PHONES jack. When the Solo function is turned on, only the soloed channels will be sent to the stereo bus, and the remaining channels will be muted. It will not be possible to monitor channels whose [ON] key is turned off, nor channels that are not assigned to the stereo bus.



If MIXDOWN SOLO mode is selected, the Solo Setup page LISTEN settings and LEVEL settings will be ignored (they will be grayed out).

In this example, we will use MIXDOWN SOLO mode. Move the cursor to the MIXDOWN SOLO button, and press the [ENTER] key.

3. Move the cursor to the SEL MODE area, and choose one of the following ways in which the channel(s) to be monitored in Solo mode will be selected.

#### ○ LAST SOLO

When the [SOLO] key is on, only the channel whose [ON] key was pressed last will be monitored.

#### ○ MIX SOLO

When the [SOLO] key is on, all channels selected by their [ON] key will be monitored.

Move the cursor to one of these buttons, and press the [ENTER] key.

4. Move the cursor to the SOLO SAFE CHANNEL section, and select the channel(s) that you wish to set to Solo Safe mode.

Solo Safe is a function that excludes specified channels from the Solo function when MIXDOWN SOLO mode is selected. Move the cursor to the button(s) for the channel(s) that you wish to set to Solo Safe, and press the [ENTER] key. (You may select more than one channel.)

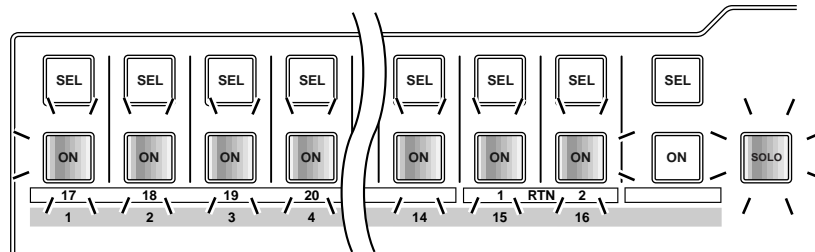




For example if the SOLO SAFE CHANNEL section RTN1/RTN2 buttons are on, the Solo function will not affect return channels 1/2. This allows you to monitor the soloed channel with an effect such as reverb still applied.

- To use the Solo function, play back the recorder and press the [SOLO] key.

The [SOLO] key and [ON] keys 1–16 will blink.



- Press the MIXING LAYER section [MONI] key, and press the [ON] key for the monitor channel corresponding to the track you wish to monitor. If you selected LAST SOLO in step 3, only the channel whose [ON] key was last pressed will be monitored. If you selected MIX SOLO, all channels selected by their [ON] key will be monitored.

At this time, all [ON] keys 1–16 other than the selected key(s) will go dark.

- To defeat the Solo function, press the [SOLO] key once again.



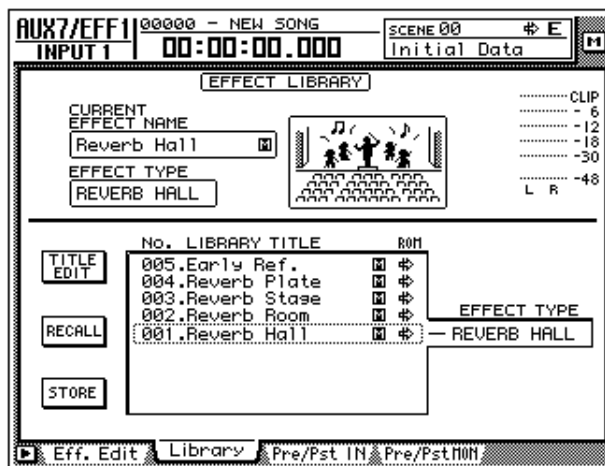
Solo operations using the [ON] keys are also linked for paired channels.

## Using the internal effects

The AW4416 provides two internal effects, which can be used either via AUX send/return or by being inserted into a specific channel. Here we will explain how to use the AUX bus to apply reverb to the signals of the tracks.

1. Press the [AUX 7] key → [F2] key.

The AUX7/EFF1 screen Library page will appear. In this page you can load or save effect programs from or to the effect library. The list in the display shows the effect programs that have been saved.



**Tip!**

When the AW4416 is in the initial state, the outputs of AUX buses 7/8 are patched to the inputs of internal effects 1/2, and the outputs of internal effects 1/2 are patched to return channels 1/2.

2. Move the cursor to the library list, and rotate the [DATA/LOG] dial to display "002.Reverb Room" at the cursor location.

In this example we will select a reverb room program.



**Tip!**

If desired, you can recall the effect program directly without having to reply to the recall confirmation popup window. To make this setting, access the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key), and turn RECALL CONFIRMATION off.

3. Move the cursor to the RECALL button and press the [ENTER] key.

A CONFIRMATION popup window will appear, asking you to confirm the recall operation.

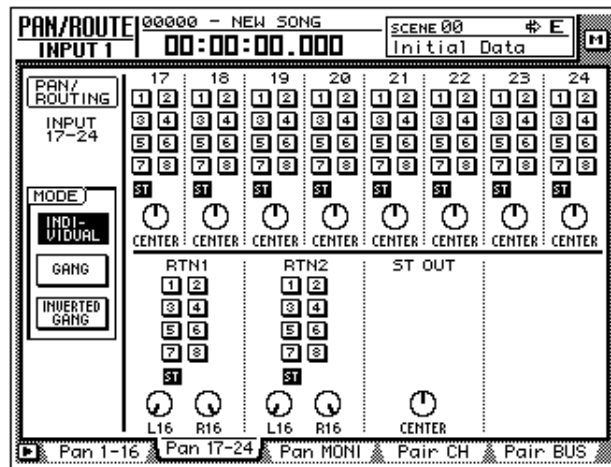


4. Move the cursor to the OK button and press the [ENTER] key.

The "Reverb Room" effect program will be loaded into internal effect 1.

5. Press [PAN] key → [F2] key.

The PAN/ROUTE screen Pan 17–24 page will appear, allowing you to make pan settings and bus assignments for input channels 17–24 and return channels 1/2.



6. Make sure that the RTN1 (return channel 1) area ST button is on, and that the two PAN knobs are turned to the far left and right.

With these settings, the return signal from effect 1 will be sent to the stereo bus and mixed with the signals of the monitor channels.

7. Press the [MONO] key → [AUX 7] key.

Monitor channels 1–16 will be selected as the mixing layer. In this state, faders 1–16 will adjust the send level of the signals sent from monitor channels 1–16 to AUX 7 (effect 1).

8. Play back the song from the beginning, and use faders 1–16 to adjust the send level of each monitor channel.
9. If necessary, press the [HOME] key → [17–24 RTN] key and use fader 15 to readjust the effect return level.



.....

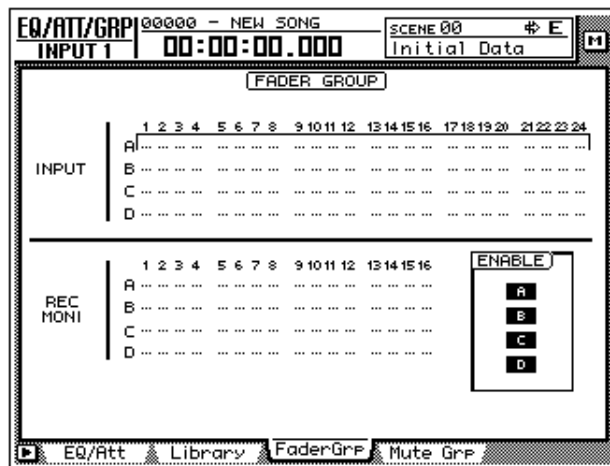
*When the AW4416 is in the initial state, the faders of return channels 1/2 are set to nominal level (0 dB).*

## Other convenient functions

The mixer section of the AW4416 provides other convenient functions as described below. You can use them as needed.

### ❑ Fader groups

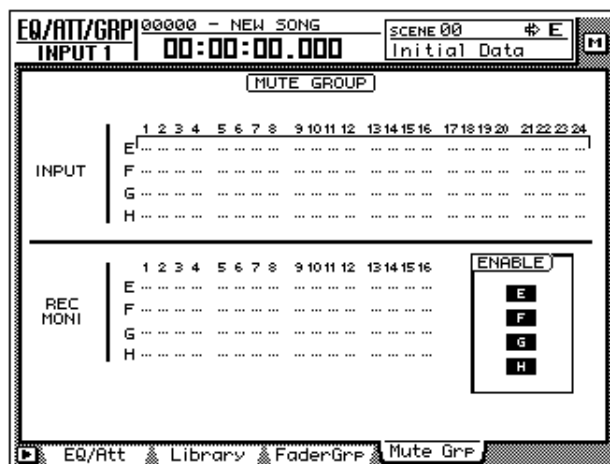
This function groups fader operations for multiple channels. By moving a single fader, you can adjust all faders in that group while preserving the current balance. To set or cancel fader groups, use the EQ/ATT/GRP screen FaderGrp page ([EQ] key → [F3] key). (Refer to Reference Guide “EQ/ATT/GRP screen/FaderGrp page.”)



Faders in the same group must not be moved manually at the same time. Doing so will strain the motors and cause malfunctions.

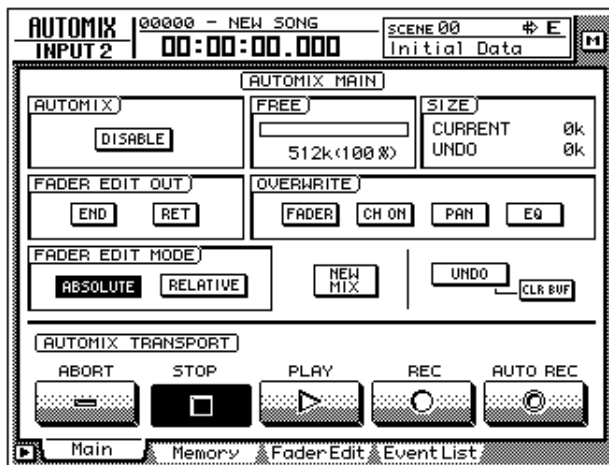
### ❑ Mute groups

This function groups [ON] key operations for multiple channels. (On and off statuses can be mixed.) By operating a single [ON] key, you can switch the on/off status of each channel in the group. To set or cancel mute groups, use the EQ/ATT/GRP screen MuteGrp page ([EQ] key → [F4] key). (Refer to Reference Guide “EQ/ATT/GRP screen/MuteGrp page.”)



## □ Automix

By using this function, fader and [ON] key operations, changes in mix parameters such as EQ and pan, and events such as scene memory or library selection can be recorded and played back in realtime in synchronization with the song. You can also record operations in multiple stages, or edit recorded events later. To record or play back scene memories, you can use the AUTOMIX screen Main page ([AUTOMIX] key → [F1] key), etc.

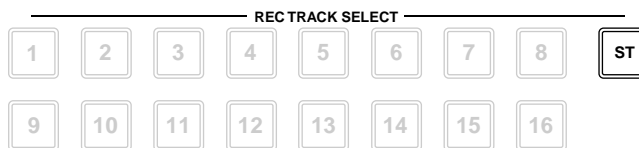


## Recording the stereo track

The recorder section of the AW4416 provides a stereo track that is independent of audio tracks 1–16, and which is used mainly as a master track for creating a two-track mix.

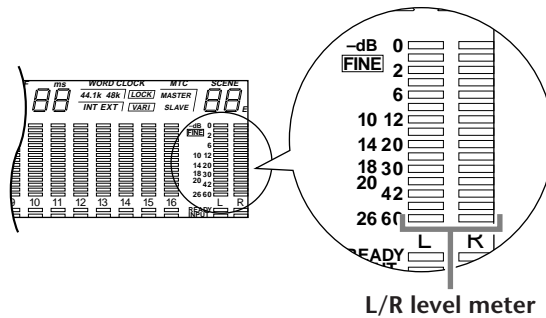
Here we will explain the procedure of mixing the signals of tracks 1–16 and the return signals from the internal effects into a stereo track to create a finished song.

1. Press the REC TRACK SELECT [ST] key.  
The stereo track will be in record-ready mode.



The input of the stereo track is internally connected to the stereo output channel of the mixer. This means that the L/R level meter in the level meters/counter section can be used as the input level meter for the stereo track.

- Play back the song from the beginning, and watch the L/R level meter in the level meters/counter section.  
If the red 0 dB segment lights, lower faders 1–16 and/or the STEREO fader.



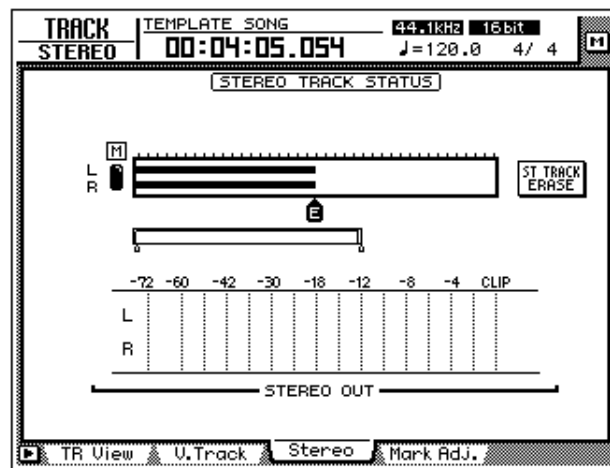
- After you have set the level, rewind the song to the beginning. Then hold down the Transport section [REC] (●) key and press the [PLAY] key (▶).  
Recording on the stereo track will begin.



*In order to create an audio CD (44.1 kHz), there must be at least four seconds of data in the stereo track.*

- When you are finished recording, press the [STOP] (■) key.
- To listen to the newly recorded stereo track, press the Recorder section [TRACK] key → [F3] key.

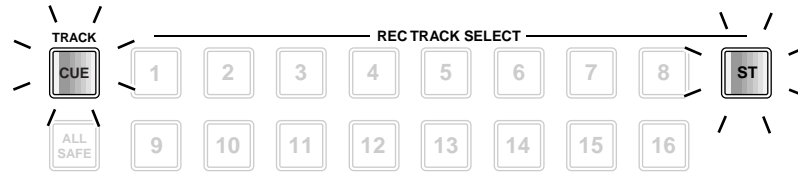
The TRACK screen Stereo page will appear, allowing you to play back or erase the stereo track. When the AW4416 is in the initial state, the M (mute) button in the upper left of the screen will be turned on, muting the stereo track.



- Move the cursor to the M (mute) button and press the [ENTER] key.  
Muting of the stereo track will be defeated, allowing the stereo track to play back. At this time, the stereo track will automatically be assigned to monitor channels 1/2, and the remaining monitor channels will be muted. If you play back the song in this state, the stereo track can be monitored via monitor channels 1/2 → stereo bus.

However with this monitoring method, the signal will pass through the monitor channel and the output channel, meaning that you will not necessarily be monitoring in a “flat” state. Here’s how you can output the stereo track directly from the MONITOR OUT jacks.

- In the level meters/counter section, turn the TRACK [CUE] key on.



The TRACK [CUE] key is used to output the signal of the desired track directly to the MONITOR OUT jacks. If you press the TRACK [CUE] key when the stereo track is not muted, the TRACK [CUE] key will blink and the REC TRACK SELECT [ST] key will blink red. This indicates that only the stereo track can be selected as the signal for monitoring.

- Press the REC TRACK SELECT [ST] key.

The TRACK [CUE] key and REC TRACK SELECT [ST] key will change from blinking to lit. This indicates that the stereo track is selected as the signal for monitoring.



.....  
*When you use the TRACK [CUE] key, the signal will be output directly to the MONITOR OUT jacks, and therefore the fader cannot be used to adjust the level. To avoid sudden loud sounds, lower the MONITOR OUT control beforehand.*

- Press the Locate section [RTZ] key, and then press the Transport section [PLAY] (▶) key.

The signal of the stereo track will be sent directly to the MONITOR OUT jacks.

- If you are satisfied with the recorded result, turn off the TRACK [CUE] key.

The REC TRACK SELECT [ST] key will go dark simultaneously. To defeat muting for audio tracks 1–16, access the TRACK screen Stereo page and turn the M (mute) button on once again.



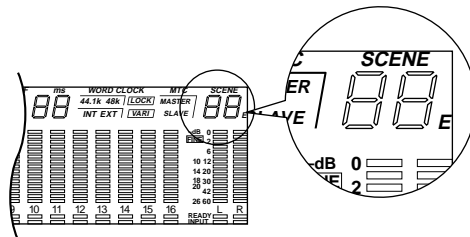
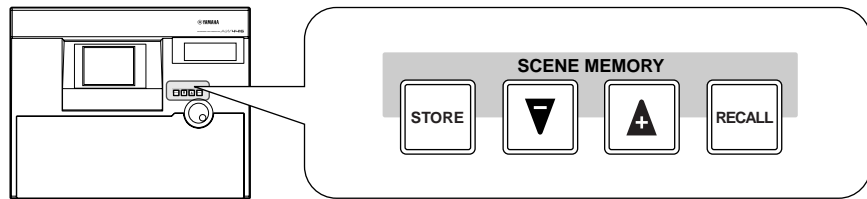
.....  
*Only one stereo track can be used for each song. If you wish to try the mixdown again, perform the Undo operation. If Undo is not possible, access the TRACK screen Stereo page, move the cursor to the ST TRACK ERASE button in the right side of the screen, and press the [ENTER] key to erase the stereo track. Then record it once again.*

# Saving a scene/song

## □ Saving a scene

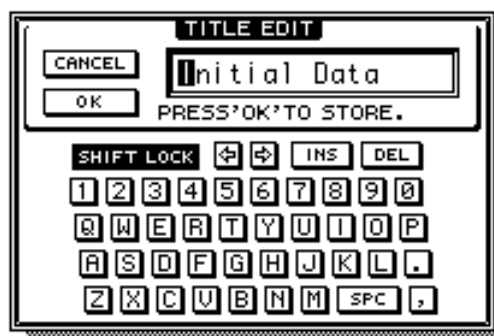
If you wish to reproduce the mixer settings as well when you recall the current song at a later time, you must store the current mix parameters as a Scene.

1. Use the [▼]/[▲] keys in the SCENE MEMORY section of the top panel to select the store destination scene number (01–96).  
The currently selected scene number will appear in the upper right of the level meter/counter.



Scene number 00 contains a preset recall-only scene that returns all mix parameters to their default state. For this reason, it is not possible to store a scene into number 00.

2. Press the SCENE MEMORY section [STORE] key.  
The TITLE EDIT popup window will appear, allowing you to assign a name to the scene memory.



If STORE CONFIRMATION is turned "OFF" in the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key), the scene will be stored directly to the specified scene number without displaying this confirmation popup window. This is more convenient if you will be repeatedly overwriting a scene onto the same scene number.



- As desired, assign a scene name of up to 16 characters. (For details on inputting characters, refer to page 60.) When you are finished, move the cursor to the OK button and press the [ENTER] key.

The scene will be stored.

## □ Saving a song

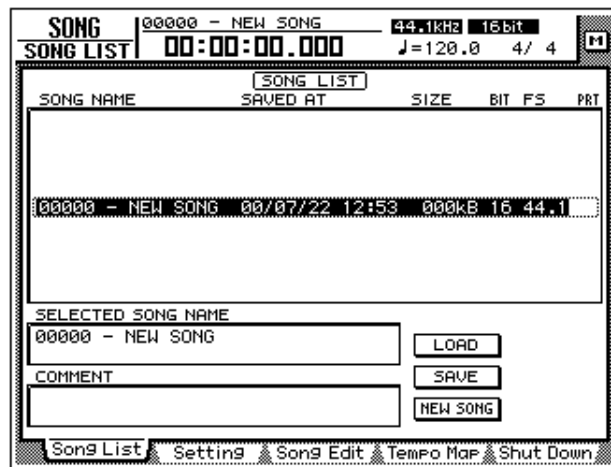
The current song will be saved automatically when you create a new song, load an existing song, or perform the shut-down procedure. However as a precaution against the power being accidentally turned off while you are working, it is a good idea to save your song frequently, and not just after completing the mix-down.



- When you save a song, the scene memory contents and only the scene number (i.e., not the settings) of the most recently stored/recalled scene will be saved together with the song. Be aware that the current mix parameters are not saved.
- When an existing song is loaded, the scene number that was most recently stored/recalled for that song will be displayed in the upper right of the level meter/counter. If you wish to reproduce both the song and the mix parameters, you must press the SCENE MEMORY section [RECALL] key and recall that scene immediately after loading the song.

- Press the WORK NAVIGATE section [SONG] key → [F1] key.

The SONG screen Song List page will appear.



The data for the current song (date, size, quantization bits, protect) shown here in the song list is the data for when the song was last saved. When you perform the following Save procedure and press the [ENTER] key, it will be overwritten by the new data.

- Move the cursor to the SAVE button at the bottom of the screen, and press the [ENTER] key.

A CONFIRMATION popup window will appear, asking you to confirm the Save operation.



.....

*When you shut down the AW4416, the current song will be saved automatically. However, we recommend that you save the song manually when you are finished recording (→ P.176). If you fail to do this, the song will revert to the last-saved state if the power of the AW4416 is turned off accidentally.*

3. Move the cursor to the OK button and press the [ENTER] key.  
The song will be saved.









# 6

# Transport/locate operations

This chapter explains transport and locate operations on the AW4416.

## Table of transport key operations

The function of the keys in the transport section of the AW4416 will change depending on the status (current operating mode) of the transport. The following table shows how the transport keys change function according to the status of the transport.

Status/ Transport keys	Stopped	Playing	Rewinding	Fast- forwarding	Recording	A-B repeating
	—	Stop	Stop	Stop	Stop	Stop
	Play	—	Play	Play	Play (punch-out)	—
	Rewind (8X)	Rewind (8X)	Switch rewind speeds (8X↔16X)	Rewind (8X)	—	Defeat repeat, and rewind (8X)
	Fast-for- ward (8X)	Fast-for- ward (8X)	Fast-forward (8X)	Switch fast- forward speeds (8X↔16X)	—	Defeat repeat, and fast-forward (8X)
 + 	Record*	Record* (punch-in)	Play	Play	—	—

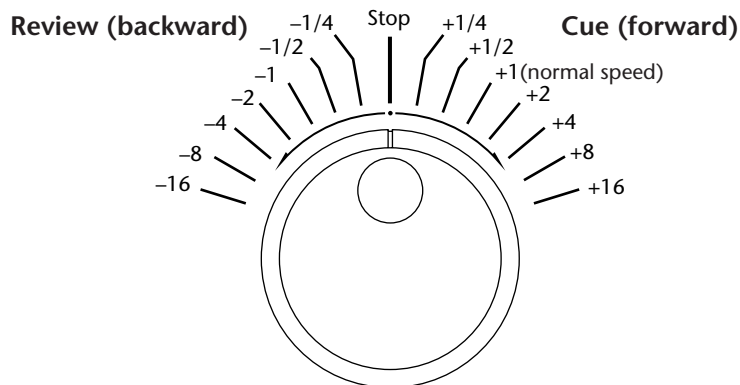
\* : Recording will occur only if any of the [REC TRACK SELECT] keys are blinking.

— : Key has no function.

## Shuttle function (cue/review operation)

While the transport is stopped or playing, you can operate the [SHUTTLE] dial to play forward (cue) or play backward (review) at various speeds.

The cue or review speed will change according to the angle of the [SHUTTLE] dial, as shown in the following diagram. When the [SHUTTLE] dial is returned to the center, the shuttle function is defeated, and the transport will return to the state in which it was before you operated the dial (i.e., stopped or playing).



## Nudge function

“Nudge” is a function that repeatedly plays back a short region before and after the current location, and lets you move the current location forward or backward in small steps so that you can search for a desired point. This lets you accurately specify a point in the song, such as when setting the auto punch-in/out points, or setting the range for a track editing operation.

### □ Using the Nudge function

1. Use normal transport operations or the shuttle function to locate to the general area of the desired point in the song.

2. Press [JOG ON].

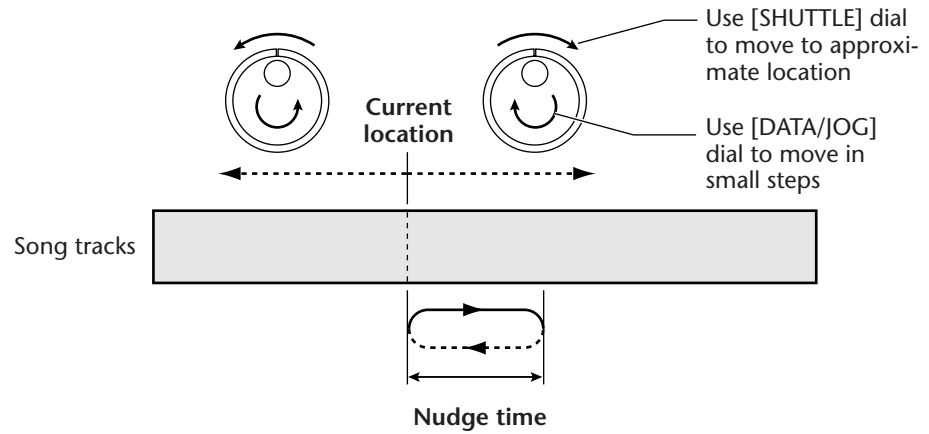
The [JOG ON] key will light, and playback will repeat over a fixed region (the default setting is 100 milliseconds) starting at the current location.



.....  
*The result may sound different depending on the number of tracks that are being played back simultaneously.*

- To move the current location forward, turn the [DATA/JOG] dial toward the right. To move the current location backward, turn the [DATA/JOG] dial toward the left.

If time display (SECOND) is selected as the counter display mode, the current location will move in millisecond steps. If time code display (TIME CODE) is selected as the counter display mode, the current location will move in sub-frame steps.



.....  
 If you use the Nudge function when the counter display is set to MEASURE, turning the [DATA/JOG] dial will move only in steps of one beat, meaning that you will not be able to set the location precisely. Before using the Nudge function, you should switch the counter display to either the Time display or the Time Code display (Refer to Reference Guide "SONG screen/Setting page").



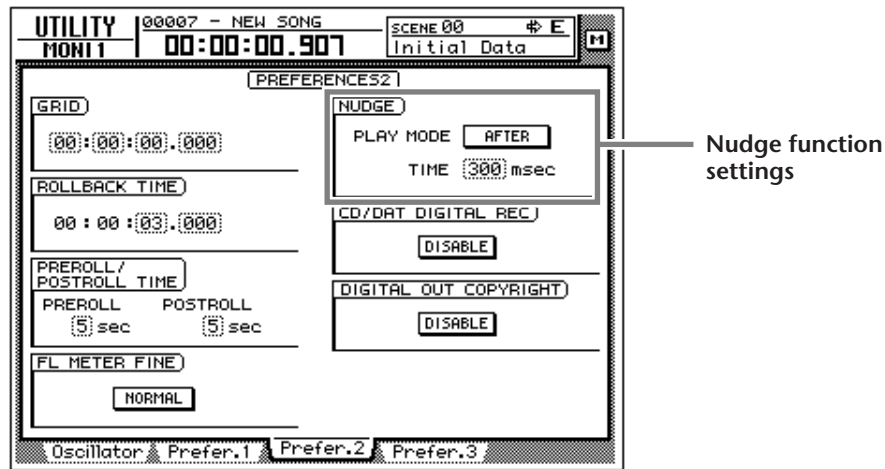
.....  
 Normally, turning the Nudge function on will repeatedly play a 100 msec region starting at the current location. However, you can change the play mode of the Nudge function so that the repeated region ends at the current location, or adjust the length ("nudge time") of the repeated region. For details on play mode and nudge time settings, refer to the section below, "Nudge function settings."

- To defeat the Nudge function, press the [JOG ON] key or the [STOP] key of the transport section.

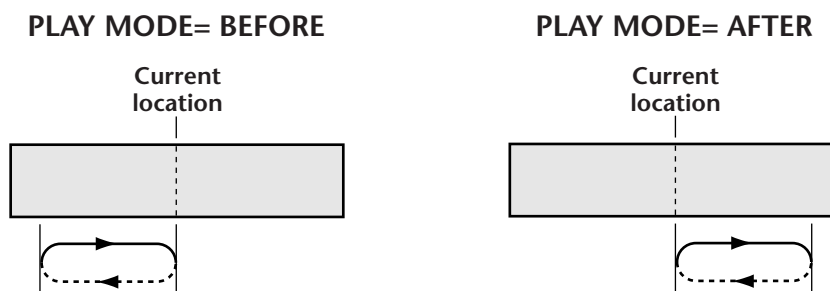
## □ Nudge function settings

Here's how to adjust the nudge time and play mode of the Nudge function.

1. With the song stopped, press the [UTILITY] key → [F3] key.

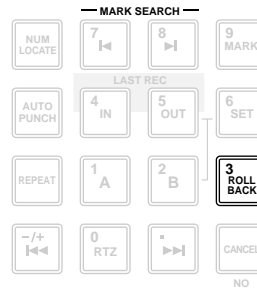


2. To set the nudge time, move the cursor to the TIME field of the NUDGE area, and rotate the [DATA/JOG] dial to set the nudge time (25–800 msec).
3. To change the play mode of the nudge function, move the cursor to the PLAY MODE field of the NUDGE area, and press the [ENTER] key to switch between the following two play modes.
  - **AFTER**.....Repeatedly play back a range starting at the current location and extending the length of the nudge time setting.
  - **BEFORE**.....Repeatedly play back a range corresponding to the length of the nudge time setting and ending at the current location.

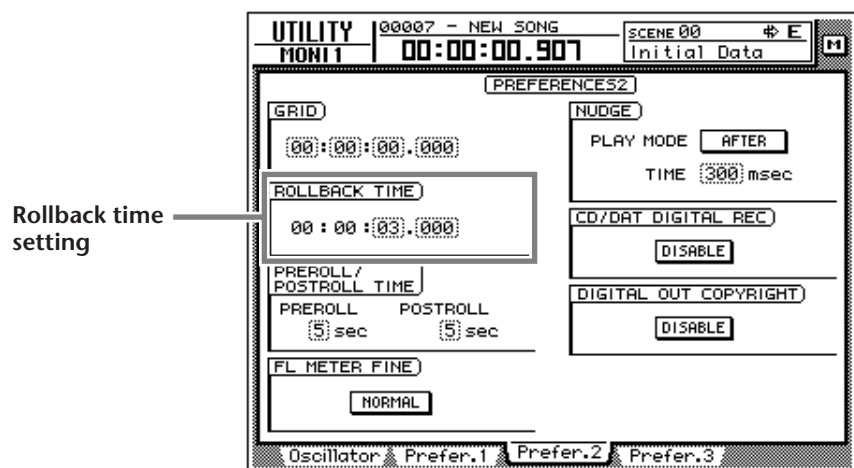


# Rollback function

While the song is stopped or playing, you can press the [ROLL BACK] key of the Locate section to move the current location back by a fixed length. This is convenient when you are playing back, and come to a location that you wish to listen to once again. The rollback time is set to 5 seconds by default, but can be adjusted as desired.



1. With the song stopped, press the [UTILITY] key → [F3] key.



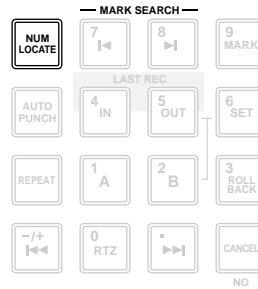
2. Move the cursor to the ROLLBACK TIME field, and use the [DATA/JOG] dial to set the rollback time.  
The rollback time can be adjusted in millisecond steps over a range of 0–5 seconds (default setting is 5 seconds).
3. When the song is stopped or playing, press the [ROLL BACK] key.  
If the [ROLL BACK] key is pressed while stopped, the current location will simply move back by the length of the rollback time. If pressed while playing, playback will resume immediately after the rollback occurs.



# Locating to a specific point

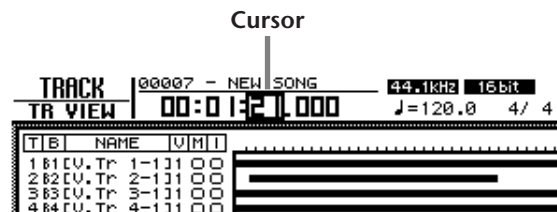
You can directly specify a locate point as a numerical value, and locate to it. Here's how.

1. With the transport stopped, press the [NUM LOCATE] key of the Locate section.



If you have selected a screen where normal transport operations cannot be performed, such as the SONG screen or the MASTERING screen, the [NUM LOCATE] key cannot be used even if the cursor is displayed at the counter in the upper part of the display.

The cursor will move to the counter in the upper part of the display.



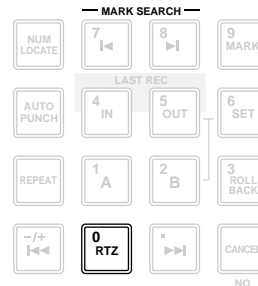
2. To specify the locate point using the [DATA/JOG] dial, use the CURSOR [◀]/[▶] keys to move the cursor to the digit that you wish to change, and rotate the [DATA/JOG] dial to specify the value.
3. To specify the locate point using the numeric keys (keys 0–9 of the locate section), move the cursor to the lowest digit of the value you wish to input, and use the numeric keys to directly input the value.

If the time display (SECOND) is selected as the counter display type, you can specify the value as hours/minutes/seconds/milliseconds; if time code display (TIME CODE) is selected, you can specify hours/minutes/seconds/frames/sub-frames; if measure display (MEASURE) is selected, you can specify measures/beats.

4. To execute the Locate operation, press the [ENTER] key.

# Locating to the zero location of the counter

When the song is stopped or playing, you can press the [RTZ] key of the Locate section to locate to the zero location of the currently displayed counter. (If the counter is displaying measures, you will locate to the beginning of the first measure.)



If the counter display type is set to Time (SECOND) or Time Code (TIME CODE), the point to which the [RTZ] key will locate will depend on whether absolute time or relative time is being displayed.

## ○ If the counter shows absolute time (ABS)

Pressing the [RTZ] key will locate to the 00:00:00.00 position if the counter shows the time code, or to the start point (zero absolute time) if the counter shows the time.

## ○ If the counter shows relative time (REL)

Pressing the [RTZ] key will locate to the point that the user specified as zero relative time. (For details on setting the zero relative time, refer to the section below.)

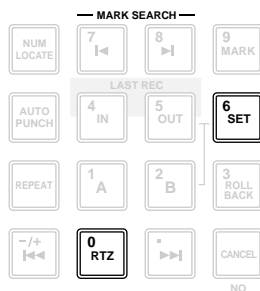


.....  
*If Measure display (MEASURE) is selected for the counter, you cannot switch between absolute time and relative time; pressing the [RTZ] key will always locate to the start point of the song.*

## □ Setting the zero relative time location

You can use the following procedure to set the relative (REL) zero point that is displayed by the counter.

1. Locate the song to the point that you wish to set as relative zero.
2. Hold down the Locate section [SET] key, and press the [RTZ] key.  
 If the counter had been displaying the relative time (REL), the counter display will be reset to zero (00:00:00.000). If the counter had been displaying the absolute time (ABS), it will automatically switch to relative time, and will be reset to zero (00:00:00.000).



3. If you wish to return the counter to the absolute time display, press the [ABS/REL] key.

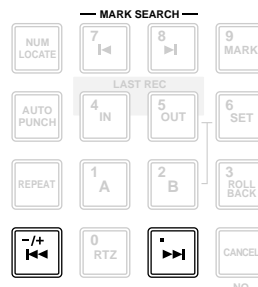
The specified relative zero location will be displayed as follows in the TRACK screen → TR View page that appears when you press the [TRACK] key → [F1] key.



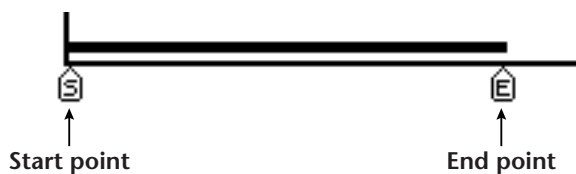
*The zero relative time location is saved on the hard disk as part of the currently selected song.*

## Locating to the start/end points

The start point and end point normally correspond to the beginning and end of the song. When you create a new song, absolute time 00:00:00.000 will be set as the default start point. When you record a song, the last point in the song will automatically be set as the end point. (If you extend the length of the song, the end point will move accordingly.) You can locate to the start point by pressing the [◀◀] key of the Locate section, or to the end point by pressing the [▶▶] key.



The start point and end point will be displayed as follows in the TRACK screen TR View page that appears when you press the [TRACK] key → [F1] key.



**Tip!**

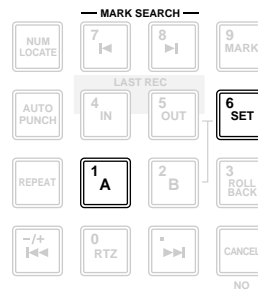
The locations of the start point and end point can be adjusted as desired (→ P.123).

# A-B repeat

A-B Repeat is a function that repeatedly plays back the region between the point A and point B that you specify. The A/B points can be set when the song is either stopped or playing.

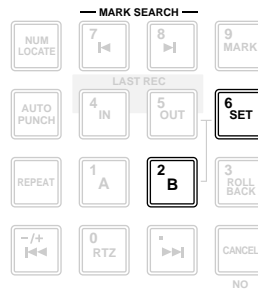
## □ Setting the A/B points

1. Locate the song to the location where you wish to set point A (the beginning of the repeated playback).
2. Hold down the Locate section [SET] key and press the [A] key.



The [A] key will light, indicating that point A has been set.

3. Locate the song to the location where you wish to set point B (the end of the repeated playback).
4. Hold down the [SET] key and press the [B] key.



The [B] key will light, indicating that point B has been set.



You can also use the [A]/[B] keys to locate directly to points A/B.

## □ Performing A-B repeat playback

5. To perform repeat playback, press the Locate section [REPEAT] key when the transport is stopped. The transport will automatically locate to point A.

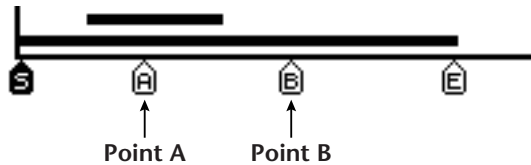


If you press the [REPEAT] key during playback, repeated playback between points A/B will begin automatically. If you press the [REPEAT] key during repeat playback, you will return to normal playback.

6. Press the [PLAY] key. Repeated playback between points A/B will begin.
7. To defeat A-B repeat, press the [REPEAT] key.

The [REPEAT] key will go dark, indicating that A-B repeat has been defeated. If you pressed the [REPEAT] key to defeat A-B repeat, normal playback will resume from that point.

The A/B points that you specify will be displayed as follows in the TRACK screen TR View page that appears when you press the [TRACK] key → [F1] key.



**Tip!**

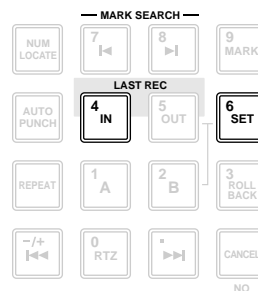
- If you set point B earlier than point A and press the [REPEAT] key, playback will repeat from B → A.
- The A/B points you set can be deleted (→ P.126) or moved (→ P.123) as desired.
- The A/B point settings are saved on the hard disk as part of the currently selected song.

# In/out points

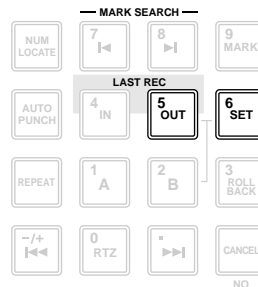
The AW4416 remembers the locations at which recording was last begun and ended as the In point and the Out point. When the In and Out points are memorized, the [IN] and [OUT] keys will light. In this state, you can press the [IN] key or the [OUT] key to locate to the In or Out points. You can also set the In or Out points manually.

## □ Setting the In point/Out point

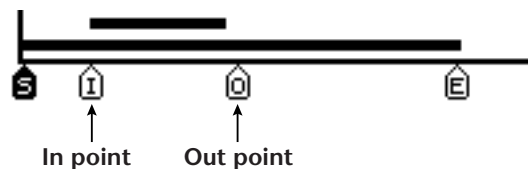
1. Locate the song to the location where you wish to set the In point.
2. Hold down the Locate section [SET] key and press the [IN] key.



3. Locate the song to the location where you wish to set the Out point.
4. Hold down the [SET] key and press the [OUT] key.



The In point and Out point that you specify will be displayed as follows in the TRACK screen TR View page that appears when you press the [TRACK] key → [F1] key.



- The In/Out points are also used as the auto punch-in/out points used by auto punch-in/out (→ P.130).
- The In/Out point settings are saved on the hard disk as part of the currently selected song.



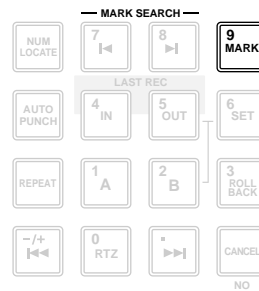
You must set the In point ahead of the Out point.

# Markers

The AW4416 allows you to set up to 99 markers at any desired locations in the song. You can use the [◀]/[▶] keys to search/locate these markers. Markers are convenient when you wish to locate repeatedly to specific points in the song.

## □ Setting a marker

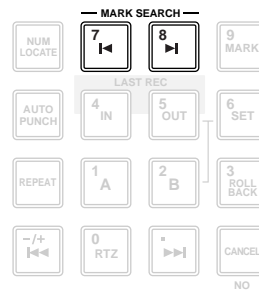
1. Locate the song to the point where you wish to set a marker.
2. Press the Locate section [MARK] key.



Marker settings can be made when the song is either playing or stopped. When you press the [MARK] key, a message of “MARK SET” will be displayed briefly at the bottom of the display, indicating that marker has been inserted at that point. Each time you press the [MARK] key, a new marker will be inserted.

## □ Locating to a marker

3. To locate to the marker immediately before the current location, press the Locate section [◀] key. To locate to the marker immediately following the current location, press the [▶] key.



The [◀] key will light if a marker exists before the current location, and the [▶] key will light if a marker exists after the current location.



A number in the range of 1–99 will be assigned to each marker you set, and these will be displayed as follows in the TRACK screen TR View page that appears when you press the [TRACK] key → [F1] key.



.....  
*Please note that the numbers 1–99 do not indicate the order in which you specified the markers; they indicate the order from the beginning of the song. For example if you insert a new marker between two existing markers, the subsequent markers will be renumbered.*

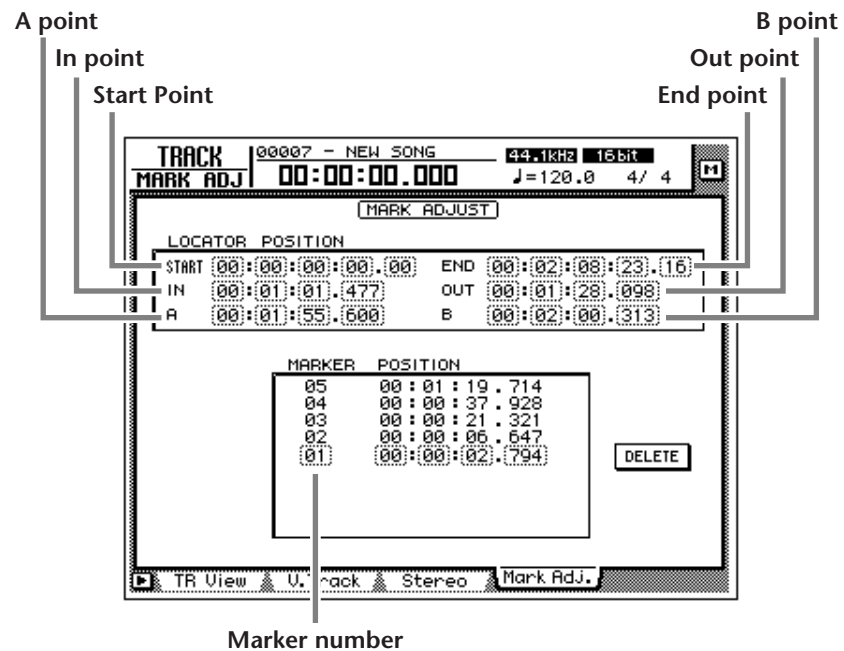


- .....
- Marker settings are saved on the hard disk as part of the currently selected song.
  - The markers you set can be deleted (→ P.125) or moved (→ P.123) as desired.

# Adjusting the location of a locate point

The location of the Start/End points, A/B points, In/Out points, and Markers can be adjusted as desired.

1. Press the [TRACK] key → [F4] key.  
A screen will appear in which you can adjust the various locate points.



- Except for the Start/End points, the displayed location of the locate points will differ depending on the currently selected counter display type (Time, Time Code, Measure). The Start point and End point are always displayed as time code, regardless of the currently selected display method.
- The automix of the AW4416 operates according to the absolute time of the song. Be aware that if you change the start point after recording events in the automix, the song will no longer be synchronized with the automix.

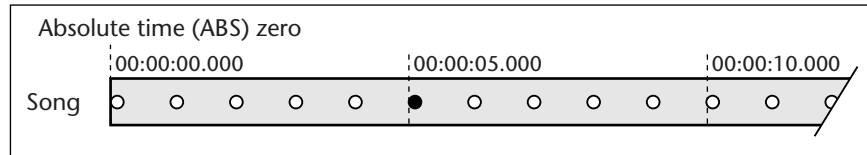
2. Use the CURSOR [◀]/[▶]/[▲]/[▼] keys to move the cursor, and use the [DATA/JOG] dial to adjust the location of each locate point.

When you change the Start point, the absolute time zero of the song will change. For example if you change the Start point to "00:00:05:00.00," the location five seconds after the beginning of the song will be specified as absolute time zero. (If you press the [RTZ] key when absolute time is displayed, you will move to this point.)

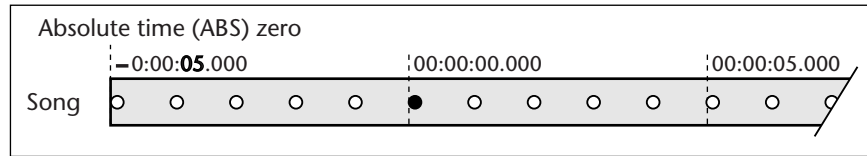


- The smallest unit of adjustment will be a "millisecond" if time (SECOND) is selected as the counter display method, "sub-frame" if time code display (TIME CODE) is selected, or "beats" if measure display (MEASURE) is selected.
- When adjusting the location of a marker, it is not possible to move the marker beyond the preceding or following marker.

**Start point= 00:00:00.00**

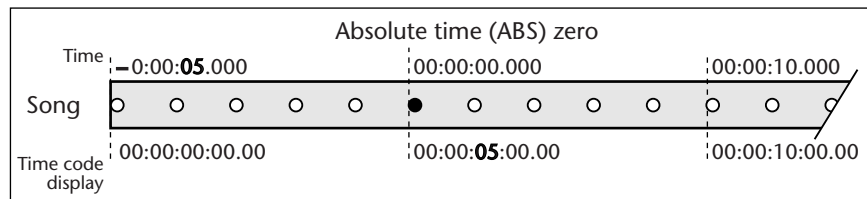


**Start point = 00:00:05.00.00**



However, please be aware that changing the Start point will not affect the time code display of the counter. If you want the time code display to match the absolute time display, set the time code top to the Start point (Refer to Reference Guide "SONG screen/Setting page.").

**Start point = 00:00:05.00.00**



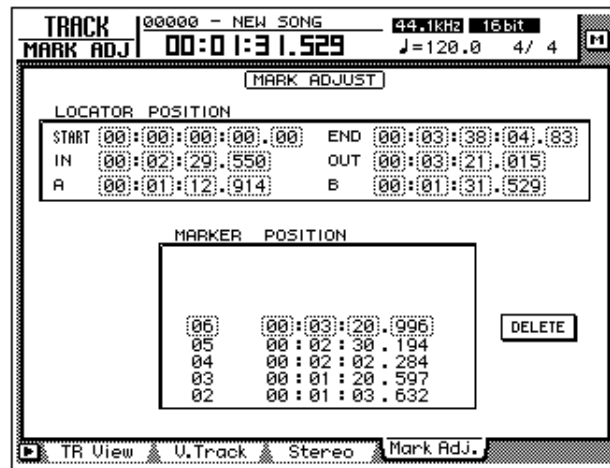
# Deleting a locate point

A locate point (except for the Start/End points) can be deleted as follows.



Be aware that a locate point you delete cannot be recovered.

1. Press the [TRACK] key → [F4] key.



2. Move the cursor to the display area of the locate point you wish to delete, and press the [ENTER] key.

The selected locate point will be deleted. When you delete the In/Out point or the A/B point, the corresponding key ([IN]/[OUT] key or [A]/[B] key) will go dark.



- If using the mouse, you can delete a locate point by clicking it in the locate point display and then clicking the DELETE button in the lower right of the display.
- The DELETE button is used only when operating the mouse. When using the top panel keys, you can delete simply by moving the cursor to the desired locate point or marker and pressing the [ENTER] key.

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## Deleting a locate point using the panel keys

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A locate point (except for the Start/End points) can be deleted as follows using only the panel keys.

### Deleting an In/Out point or A/B point

Hold down the [CANCEL] key, and press the key for the locate point that you wish to delete ([A]/[B] key or [IN]/[OUT] key). The locate point will be deleted, and the corresponding key will go dark.

### Deleting a marker

Use the [◀]/[▶] keys to locate to the marker that you wish to delete. Then hold down the [CANCEL] key and press the [MARK] key. A message of “MARK ERASE” will briefly appear at the bottom of the display, indicating that the selected marker has been erased.

# 7

# Punch-in/out

This chapter explains how to use punch-in/out.

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## About punch-in/out

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Punch-in/out is a method for re-recording a portion of a previously recorded track. There are two types of punch-in/out.

### Manual punch-in/out (→ P.128)

In this method you can punch in or out manually, using the transport keys of the AW4416 or a separately sold foot switch (Yamaha FC-5). If a foot switch is used, the entire procedure of playback → punch-in → punch-out → stop can be performed using your foot, which is convenient when you are playing an instrument while operating the AW4416.

### Auto punch-in/out (→ P.130)

In this method, punch-in/out will occur automatically at the points that you specify ahead of time (the auto punch-in/out points). This method allows the location to be specified with sub-frame or millisecond accuracy, and lets you punch-in/out repeatedly. You can also practice (rehearse) the auto punch-in/out.

# Manual punch-in/out

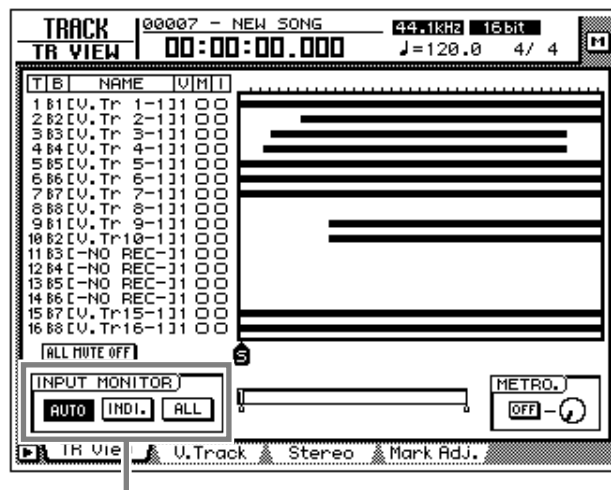
Here's how to perform manual punch-in/out.

## Preparations

### □ Make input monitor settings

For the track on which you wish to punch-in/out, you will need to monitor the track playback up to the punch-in point, and then monitor the input signal of the track (the recording source) after you punch-in. To do this, set the input monitor setting to “auto input monitor,” as explained below.

1. Press the [TRACK] key → [F1] key.



Input monitor setting

2. In the INPUT MONITOR area, move the cursor to the AUTO button and press the [ENTER] key.  
The AUTO button will be turned on, and Auto Input Monitor will be selected as the input monitor setting.

### □ Connect a foot switch

If you will be using a separately sold foot switch (Yamaha FC-5) to perform manual punch-in/out, connect the foot switch to the FOOT SW jack on the rear panel.



.....  
*If a foot switch other than the Yamaha FC-5 is connected, it may not operate correctly.*

## Manual punch-in/out recording

1. Locate the song to a location earlier than where you wish to punch-in.



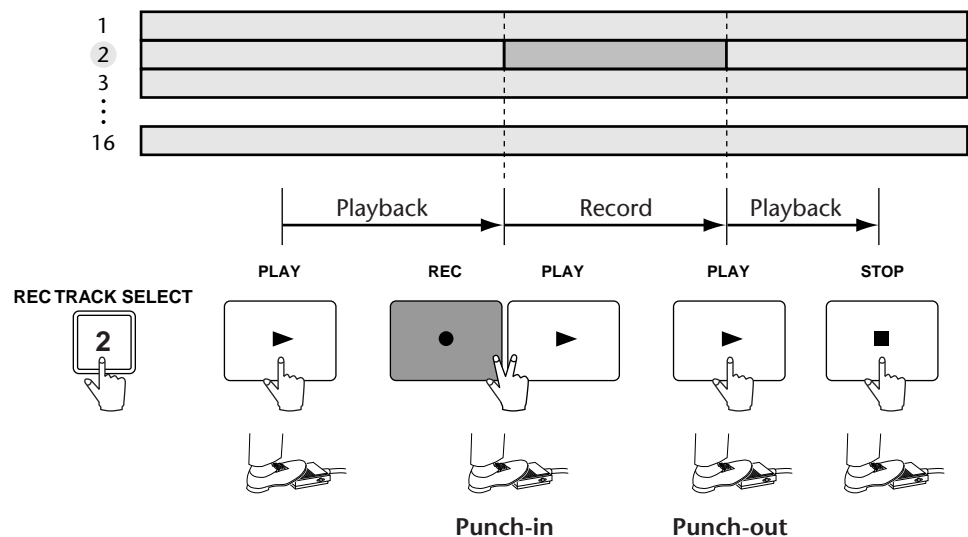
.....  
 If you set a locate point such as a marker or the A/B point at this location, it will be convenient when you later check the recorded result or perform punch-in/out again.  
 For details on setting a locate point, refer to page 114.

2. Press the [REC TRACK SELECT] key for the track that you wish to record. The [REC TRACK SELECT] key will blink, and the track will be in record-ready mode.
3. Press the [PLAY] key. (If you are using a foot switch, press the foot switch.)  
The song will begin playing.
4. At the location where you wish to punch-in, hold down the [REC] key and press the [PLAY] key (or press the foot switch).  
The [REC] key will light, and recording will begin on the track you selected in step 2.
5. At the location where you wish to punch-out, press the [PLAY] key (or press the foot switch).  
The [REC] key will go dark, and you will return to normal playback mode.
6. To stop the song, press the [STOP] key (or press the foot switch).  
The song will stop.
7. To check the recorded result, locate to the location of step 1, and press the [PLAY] key.



.....  
 If you make a mistake during punch-in/out recording, stop the transport and press the [UNDO] key to cancel the previous recording and return the data to the state before recording.

The following diagram shows the manual punch-in/out procedure.





# Auto punch-in/out

Here's how to use auto punch-in/out.

## Preparations

### ❑ Make input monitor settings

To perform punch-in/out recording, you will need to select “auto input monitor” as the input monitor setting. For details refer to page 128.

### ❑ Set the auto punch-in/out points

Specify the location at which punch-in/out will start (Auto Punch In point) and end (Auto Punch Out Point). Auto punch-in/out uses the in/out point settings (→ P.120).

1. At the location where you wish to punch-in, hold down the [SET] key and press the [IN] key.  
The [IN] key will light, indicating that the In point has been set.
2. At the location where you wish to punch-out, hold down the [SET] key and press the [OUT] key.  
The [OUT] key will light, indicating that the Out point has been set.



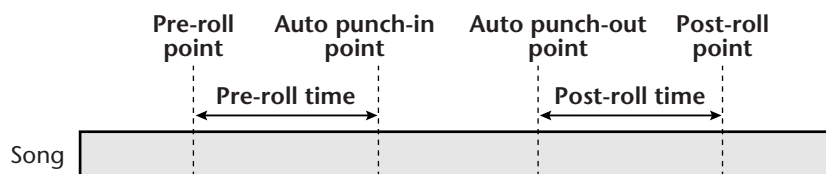
Be aware that auto punch-in/out will not occur if the Out point is earlier than the In point.



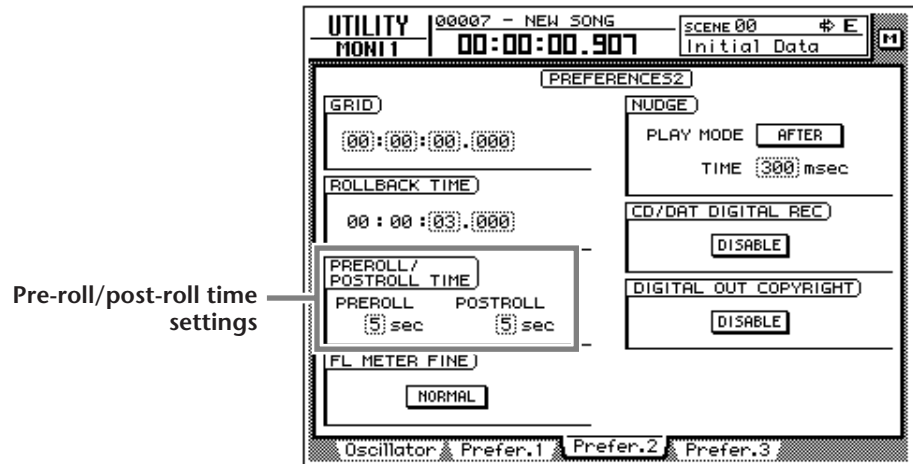
The auto punch-in/out points (in/out points) can be precisely adjusted in milliseconds or in sub-frame units. For details refer to page 123.

### ❑ Set the pre-roll/post-roll times

When executing auto punch-in/out, you can specify intervals of playback before the punch-in and after the punch-out. The playback before punch-in is called the “pre-roll time,” and the playback after punch-out is called the “post-roll time.” With the factory settings, these are set to five seconds, but you can change this as desired. The beginning of the pre-roll is called the “pre-roll point,” and the end of the post-roll is called the “post-roll point.”



1. Press the [UTILITY] key → [F3] key.



2. Move the cursor to the pre-roll (PREROLL) or post-roll (POSTROLL) fields, and use the [DATA/JOG] dial to set the pre-roll time and post-roll time.

## Rehearsing and recording with auto punch-in/out

### Rehearsing with auto punch-in/out

1. Press the [REC TRACK SELECT] key for the track that you wish to record using auto punch-in/out.  
The [REC TRACK SELECT] key will blink, and the track will be in record-ready mode.
2. Make sure that the Locate section [IN]/[OUT] keys are lit, and press the [AUTO PUNCH] key.  
The [AUTO PUNCH] key will light, and you will locate to the pre-roll point.



.....  
While the [AUTO PUNCH] key is lit, transport/locate operations other than the [STOP]/[PLAY]/[REC] keys cannot be used.

3. To begin rehearsing the auto punch-in/out, press the [PLAY] key.
  - ① The [PLAY] key will light, and playback will begin from the pre-roll point.
  - ② When you reach the auto punch-in point, the [REC] key will begin blinking, and the monitor signal of the track you selected in step 1 will change from the track playback to the input signal (recording source). However, recording will not actually occur.
  - ③ When you reach the auto punch-out point, the [REC] key will go dark, and the monitor signal will return to the track playback. (During rehearsal, recording will not actually occur.)
  - ④ When you reach the post-roll point, the transport will locate to the pre-roll point and stop.

4. If you wish to rehearse once again, press the [PLAY] key once again while the transport is stopped.



.....  
 If you press the [REHEARSAL] key before or during rehearsal, operations ①–④ of step 3 will continue repeating. (In this case, the A-B Repeat function will be defeated.) To stop repeating the rehearsal, press the [REPEAT] key once again, or press the [STOP] key.

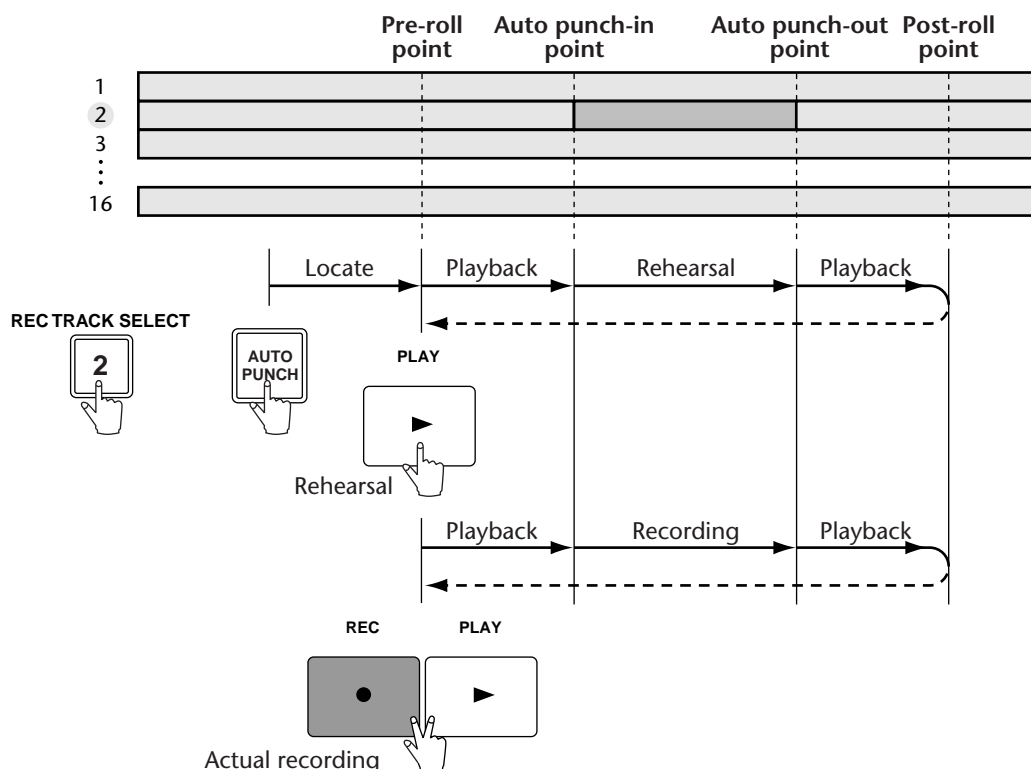
## □ Recording with auto punch-in/out

5. To actually record using auto punch-in/out, stop the transport, and hold down the [REC] key and press the [PLAY] key.
  - ① The [PLAY] key will light and the [REC] key will blink, then playback will begin from the pre-roll point.
  - ② When you reach the auto punch-in point, the [REC] key will light, and recording will begin on the track you selected in step 1 (punch-in).
  - ③ When you reach the auto punch-out point, the [REC] key will blink, recording will end, and playback will resume (punch-out).
  - ④ When you reach the post-roll point, the transport will locate to the pre-roll point and stop.
6. If you wish to listen to the recorded result, press the [AUTO PUNCH] key to make it go dark, and then press the [PLAY] key.



.....  
 If you make a mistake during auto punch-in/out recording, stop the transport and press the [UNDO] key to cancel the previous recording and return the data to the state before recording.

The following diagram shows the operating procedure for auto punch-in/out.



# 8 Patching

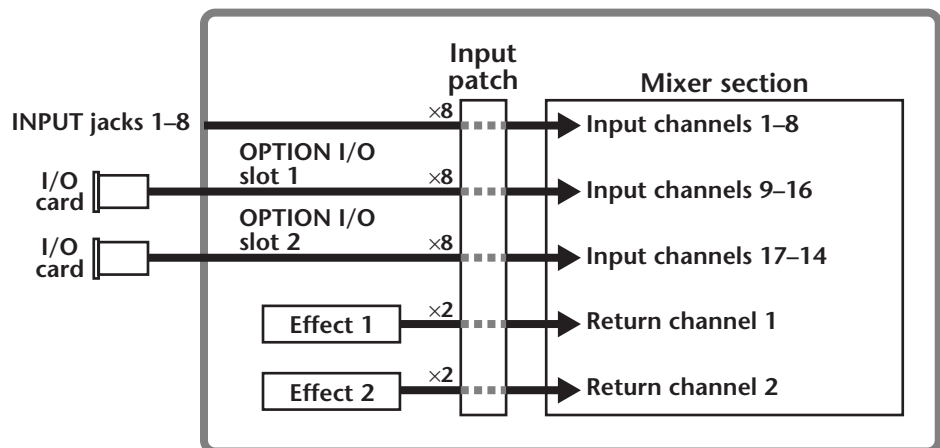
This chapter explains how to patch the inputs and outputs, and how to use the Quick Rec function to simultaneously record sixteen channels of input sources.

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## Patching to the input channels

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When the AW4416 is in the default state, input signals are patched to input channels 1–24 as shown in the following diagram. However, you can change the input signals assigned to each input channel as necessary.



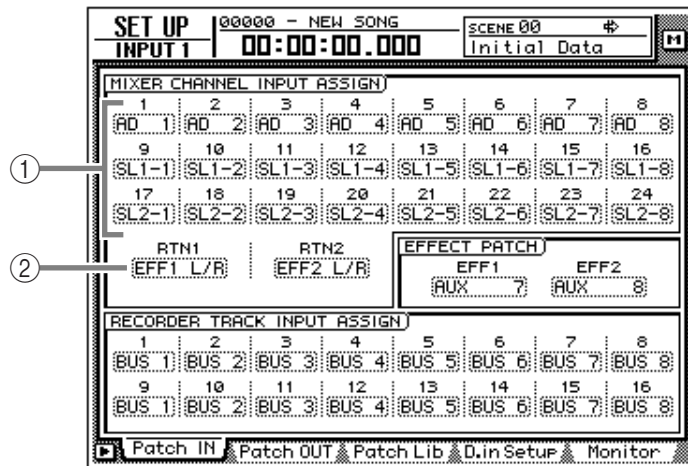
Here's how to patch input signals to input channels 1–24 and return channels 1/2.

1. Press the [SETUP] key → [F1] (Patch IN) key.

The display will show the SETUP screen Patch IN page, where you can patch signals to the input channels and recorder inputs. In this page, the MIXER CHANNEL INPUT ASSIGN column shows the patched status of input channels 1–24 and return channels 1/2.



.....  
*If the Patch IN tab is not assigned to the [F1] key, press the [SHIFT] key + [F1] key to switch the tabs, and then press the [F1] key.*



- ① Input channels 1–24
  - ② Return channels 1/2
2. Move the cursor to the channel that you wish to patch, and use the [DATA/JO] dial to select the signal that you wish to assign. The following signals can be assigned to each channel.

○ Input channels 1–24

Display	Type of signal
AD 1 – AD 8	INPUT jacks 1–8
SL1-1 – SL1-8	INPUT 1–8 of an I/O card (slot 1)
SL2-1 – SL2-8	INPUT 1–8 of an I/O card (slot 2)
DIN L/DIN R	L/R channels of the DIGITAL STEREO IN jack
SMP 1 – SMP 8	Sampling pads 1–8
MET	Internal metronome

○ Return channels 1/2

Display	Type of signal
EFF 1 L/R	Return from internal effect 1* <sup>1</sup>
EFF 2 L/R	Return from internal effect 2* <sup>2</sup>
AD 1/2 – AD 7/8	INPUT jacks 1/2–7/8
SL1-1/2 – SL1-7/8	INPUT 1/2–7/8 of an I/O card (slot 1)
SL2-1/2 – SL2-7/8	INPUT 1/2–7/8 of an I/O card (slot 2)
DIN L/R	DIGITAL STEREO IN jack (stereo)

\*1. Selectable only for return 1

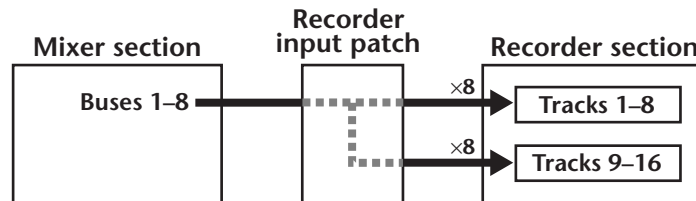
\*2. Selectable only for return 2



You can use the patch library to save the state of the patch settings you make. For details refer to page 138.

# Patching to the recorder inputs

When the AW4416 is in the default state, buses 1–8 are assigned respectively to recorder inputs 1–8 and 9–16, but you can assign the direct signals from the input channels as desired.

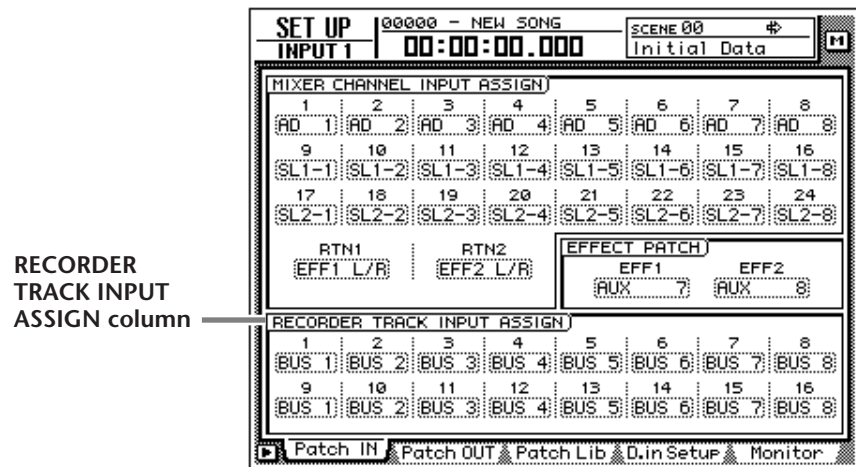


Here's how to assign the desired signals to recorder inputs 1–16.

1. Press the [SETUP] key → [F1] (Patch IN) key to access the SETUP screen Patch IN page.  
The RECORDER TRACK INPUT ASSIGN column will indicate the patched status of recorder inputs 1–16.



*If the Patch IN tab is not assigned to the [F1] key, press the [SHIFT] key + [F1] key to switch the tabs, and then press the [F1] key.*



2. Move the cursor to the recorder input whose patching you wish to change, and use the [DATA/JOG] dial to select the signal that you wish to assign.

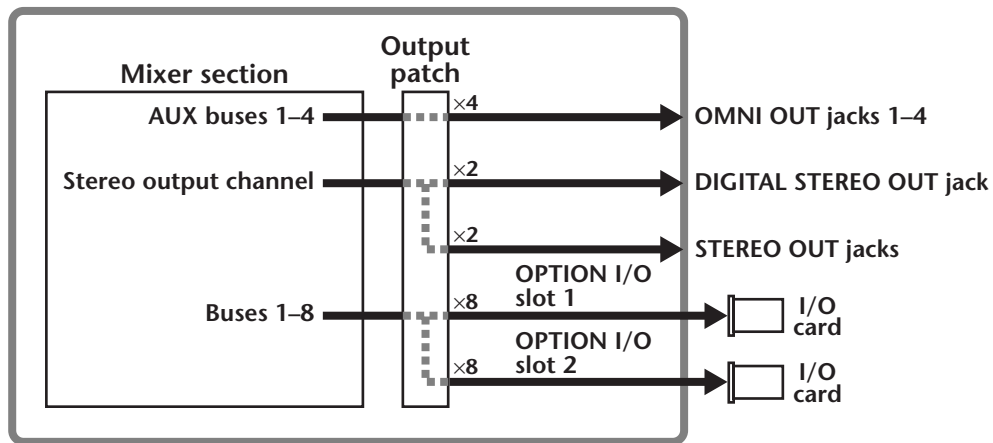
The following types of signal can be assigned to each input.

## ○ Recorder inputs 1–16

Display	Type of signal
BUS 1 – BUS 8	Buses 1–8
DIR 1 – DIR16	Input channel direct out 1–16

# Patching to the outputs

When the AW4416 is in the default state, the following signals are assigned to the OMNI OUT jacks, STEREO OUT jacks, and digital I/O card outputs. If necessary, you can change the output signals that are assigned to these output jacks.



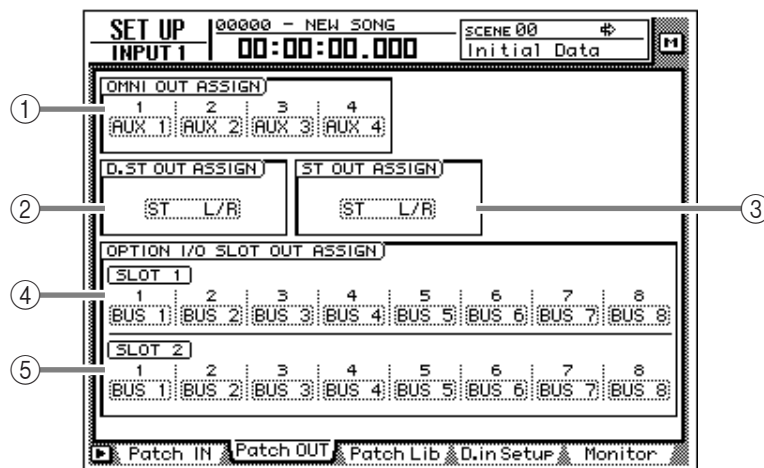
Here's how to assign the desired signal to each output jack.

1. Press the [SETUP] key → [F2] (Patch OUT) key.

The display will show the SETUP screen Patch OUT page. The various fields of the display will show the patched status of each output jack.



*If the Patch OUT tab is not assigned to the [F2] key, press the [SHIFT] key + [F1] key to switch the tabs, and then press the [F2] key.*



- ① OMNI OUT jack 1-4
- ② DIGITAL STEREO OUT jack
- ③ STEREO OUT jack
- ④ OUTPUT 1-8 of an I/O card (slot 1)
- ⑤ OUTPUT 1-8 of an I/O card (slot 2)

2. Move the cursor to the output jack whose patching you wish to change, and use the [DATA/JOG] dial to select the signal that you wish to assign. The following types of signal can be assigned to each output jack.

○ **OMNI OUT jacks 1–4**

Display	Type of signal
AUX 1 – AUX 8	AUX buses 1–8
RDR 1 – RDR16	Recorder direct out 1–16
ST L/ST R	L/R channels of the stereo output channel
BUS 1 – BUS 8	Buses 1–8
DIR 1 – DIR16	Input channel direct out 1–16

○ **DIGITAL STEREO OUT jack**

○ **STEREO OUT jacks**

Display	Type of signal
ST L/R	Stereo output channel
BUS 1/2 – BUS 7/8	Buses 1/2–7/8
DIR 1/2 – DIR15/16	Input channel direct out 1/2–15/16
AUX 1/2 – AUX 7/8	AUX buses 1/2–7/8
RDR 1/2 – RDR15/16	Recorder direct out 1/2–15/16

○ **Digital I/O card (slot 1) OUTPUT 1–8**

○ **Digital I/O card (slot 2) OUTPUT 1–8**

Display	Type of signal
BUS 1 – BUS 8	Buses 1–8
DIR 1 – DIR16	Input channel direct out 1–16
AUX 1 – AUX 8	AUX buses 1–8
RDR 1 – RDR16	Recorder direct out 1–16
ST L/ST R	L/R channels of the stereo output channel



When selecting a signal for assignment to an output jack, selections beginning with "I-" such as "I-I8" or "I-M16" may be displayed in gray. Selections beginning with "I-" indicate insert-out points of each channel. The gray display indicates that this insert point is invalid. (For details on insert I/O patching, refer to page 140.)



# Patch library

Patch settings that you make in the SETUP screen Patch IN page and Patch OUT page can be stored in the patch library as one of twenty patch programs. The contents of the patch library are saved on the internal hard disk as part of the song. Here's how to use the patch library.

## □ Storing to the patch library

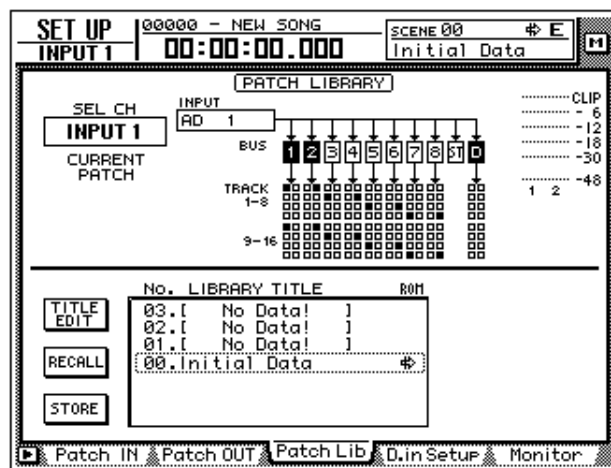
Here's how to assign a name to your patch settings, and store them in the patch library.

1. Press the [SETUP] key → [F3] (Patch Lib) key.

The display will show the PATCH screen Patch Lib page. The list in the lower part of the display shows the contents of the patch library.



- If the Patch Lib tab is not assigned to the [F3] key, press the [SHIFT] key + [F1] key to switch the tabs, and then press the [F3] key.
- Patch library numbers in which no data has been stored will be displayed with a title of "[No Data!]".



2. Use the [DATA/JOG] dial to select the patch library number (01–20) in which you will store the settings.



Patch library number 00 contains a preset patch program (recall-only) that returns all patch settings to the initial state. For this reason, your settings cannot be stored in patch number 00.

3. Move the cursor to the STORE button, and press the [ENTER] key.  
A TITLE EDIT popup window will appear, allowing you to assign a name to the patch program.
4. Use the CURSOR [◀]/[▶]/[▲]/[▼] keys and the [ENTER] key to specify the name for the patch program.  
For details on inputting characters, refer to page 60.



.....

You can also write the patch program directly, without accessing the TITLE EDIT popup window. To do so, turn off the STORE CONFIRMATION setting in the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key). In this case, your settings will be saved in a library named "New Data" when you execute step 3.

5. To execute the Store operation, move the cursor to the OK button and press the [ENTER] key.



.....

If you decide to cancel without storing, move the cursor to the CANCEL button and press the [ENTER] key.

## □ Recalling a patch program

Here's how to recall a patch program that you saved in the patch library.

1. Press the [SETUP] key → [F3] (Patch Lib) key to access the SETUP screen Patch Lib page.
2. Use the [DATA/JOG] dial to select the patch program that you wish to recall.
3. Move the cursor to the RECALL button and press the [ENTER] key.  
A popup window will ask you to confirm the Recall operation.



.....

You can also recall the patch program directly, bypassing the confirmation popup window. To do so, turn off the RECALL CONFIRMATION setting in the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key).

4. To execute the Recall, move the cursor to the OK button and press the [ENTER] key.



.....

If you decide to cancel without recalling, move the cursor to the CANCEL button and press the [ENTER] key.

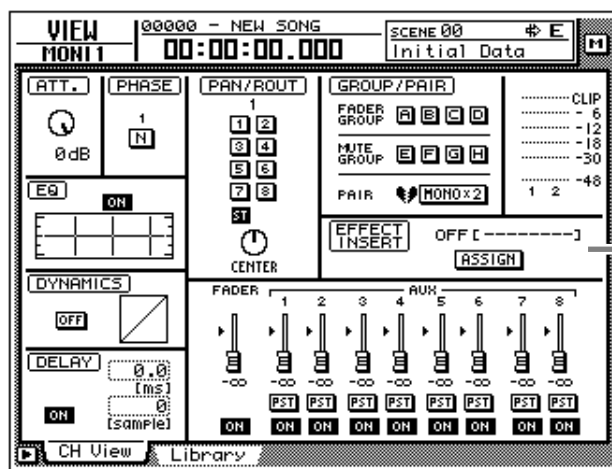
# Patching input/output jacks to an insert I/O point

You can patch various input/output jacks to the insert I/O point of a channel. This patching method allows you to apply an external effect to a monitor channel during mixdown.

1. Use the MIXING LAYER section keys and the [SEL] keys to select the channel whose insert I/O point you wish to patch to input/output jacks.

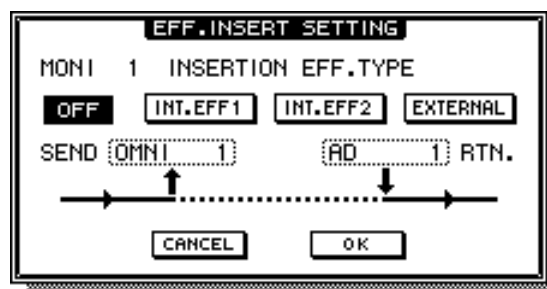
2. Press the [VIEW] key → [F1] key.

The display will show the VIEW screen CH View page. In the example shown here, monitor channel 1 is selected.



3. Move the cursor to the ASSIGN button of the EFFECT INSERT field, and press the [ENTER] key.

The EFF.INSERT SETTING popup window will appear. The SEND and RTN. fields of the popup window will respectively show the types of output jack and input jack that are patched.



4. Move the cursor to the EXTERNAL button and press the [ENTER] key.

5. Move the cursor to the SEND field, and use the [DATA/JOG] dial to select the insert send jack.

You can select from the following jacks.

○ When selecting for an input channel 1–24 or a monitor channel 1–16

Display	Jack
OMNI 1 – OMNI 4	OMNI OUT jacks 1–4
SL1-1 – SL1-8	OUTPUT 1–8 of an I/O card (slot 1)
SL2-1 – SL2-8	OUTPUT 1–8 of an I/O card (slot 2)
D STO L <sup>*1</sup>	L channel of the DIGITAL STEREO OUT jack
D STO R <sup>*2</sup>	R channel of the DIGITAL STEREO OUT jack
STOUT L <sup>*1</sup>	L channel of the STEREO OUT jack
STOUT R <sup>*2</sup>	R channel of the STEREO OUT jack

\*1. Selectable only for odd-numbered channels

\*2. Selectable only for even-numbered channels

○ When selecting for a return channel 1/2 or the stereo output channel

Display	Jack
OMNI 1/2 – OMNI 3/4	OMNI OUT jacks 1/2–3/4
SL1-1/2 – SL1-7/8	OUTPUT 1/2–7/8 of an I/O card (slot 1)
SL2-1/2 – SL2-7/8	OUTPUT 1/2–7/8 of an I/O card (slot 2)
D STOUT	DIGITAL STEREO OUT jack (L/R)
STOUT	STEREO OUT jack (L/R)

6. Move the cursor to the RTN. field, and use the [DATA/JOG] dial to select the inert return jack.

You can select from the following jacks.

○ When selecting for an input channel 1–24 or monitor channel 1–16

Display	Jack
AD 1 – AD 8	INPUT jacks 1–8
SL1-1 – SL1-8	INPUT 1–8 of an I/O card (slot 1)
SL2-1 – SL2-8	INPUT 1–8 of an I/O card (slot 2)
D STIN L/D STIN R	L/R channels of the DIGITAL STEREO IN jack

○ When selecting for a return channel 1/2 or the stereo output channel

Display	Jack
AD 1/2 – AD 7/8	INPUT jacks 1/2–7/8
SL1-1/2 – SL1-7/8	INPUT 1/2–7/8 of an I/O card (slot 1)
SL2-1/2 – SL2-7/8	INPUT 1/2–7/8 of an I/O card (slot 2)
D ST L/R	DIGITAL STEREO IN jack (L/R)

7. When you have finished making patching settings, move the cursor to the OK button and press the [ENTER] key.

The EFFECT INSERT field will indicate “ON [EXTERNAL] ,” indicating that the selected input/output jacks have been patched to the insert I/O point.



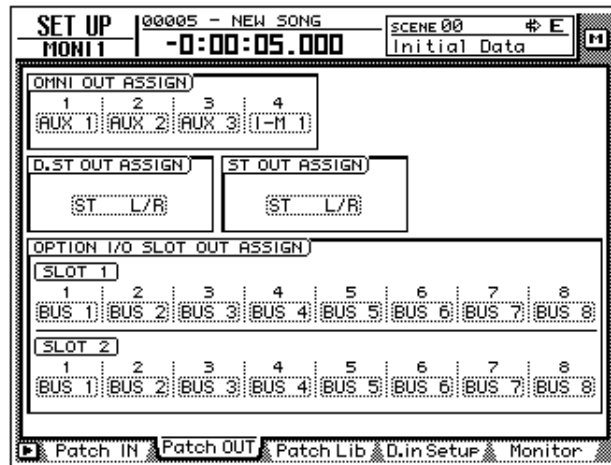
To defeat the patching of an insert I/O point, use the ASSIGN button of the EFFECT INSERT field to access the EFF.INSERT SETTING popup window, turn on the OFF button, and select the OK button.



The procedure described above can be made for multiple channels. However, it is not possible for multiple insert sends to share the same output jack.

8. Press the [SETUP] key → [F2] (Patch OUT) key.

The display will show the SETUP screen Patch OUT page. Notice that OMNI OUT ASSIGN field 4 shows “I-M 1”. This means that OMNI OUT jack 4 is being used as an insert send jack for monitor channel 1.



- In this case, changing the patching of OMNI OUT jack 4 in the Patch OUT page will defeat the insert I/O patching as well.
- If you wish to save the patching and insert I/O point settings that you made here, you must store the current settings in a scene memory (not in the patch library or channel library).
- The patch library cannot store insert I/O point settings. (When a patch program is recalled from the patch library, the insert I/O points of all channels will be reset to “OFF.”)
- Patching information cannot be stored in the channel library.

# Using the Quick Rec function

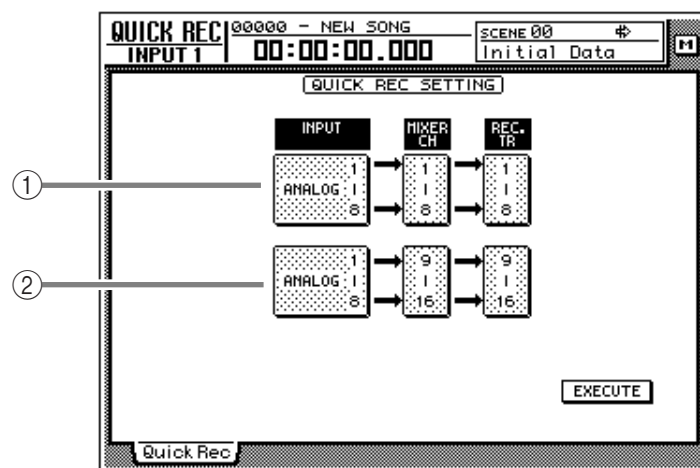
Quick Rec is a function that rapidly makes the appropriate settings so that you can simultaneously record sixteen input sources to audio tracks 1–16. When you execute Quick Rec, groups of eight input sources will be assigned directly to tracks 1–16, and input patch and mix parameter settings will also be reset. All that remains for you to do is to press the [REC] key + [PLAY] key, and you will be ready to record sixteen tracks simultaneously. This is convenient when you wish to transfer multiple tracks from an external MTR to the AW4416.

Here we will explain the procedure by which the input signals from I/O cards installed in slots 1 and 2 can be recorded simultaneously on tracks 1–16.



*When you execute Quick Rec, patching settings and mix parameters will be reset. If you will need to reproduce the current patching or mix settings, we recommend that you store the current scene into a scene memory before you execute Quick Rec. (→ P.211)*

1. Press the [QUICK REC] key.  
The display will show the QUICK REC screen.



- ① Input jacks sent to track 1–8 inputs
  - ② Input jacks sent to track 9–16 inputs
2. Move the cursor to fields ①/② in the above screen, and use the [DATA/JOG] dial to select the input jacks that will be sent to the inputs of tracks 1–8/9–16.

You can select from the following choices. For this example, we will select “SLOT1 1–8” for tracks 1–8, and “SLOT2 1–8” for tracks 9–16.

- **ANALOG 1–8** ..... INPUT jacks 1–8
- **SLOT1 1–8** ..... INPUT 1–8 of an I/O card (slot 1)
- **SLOT2 1–8** ..... INPUT 1–8 of an I/O card (slot 2)

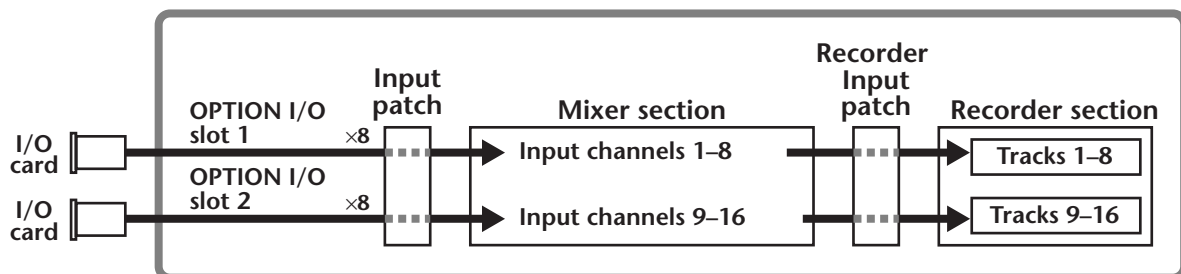
3. Move the cursor to the EXECUTE button in the lower right of the display, and press the [ENTER] key.

A popup window will appear, asking you to confirm execution of Quick Rec.



4. To execute the Quick Rec settings, move the cursor to the OK button and press the [ENTER] key.

All [REC TRACK SELECT] keys will blink, and the input patch settings and mix parameters of each channel will be reset. At this time, the signal flow will be as follows.

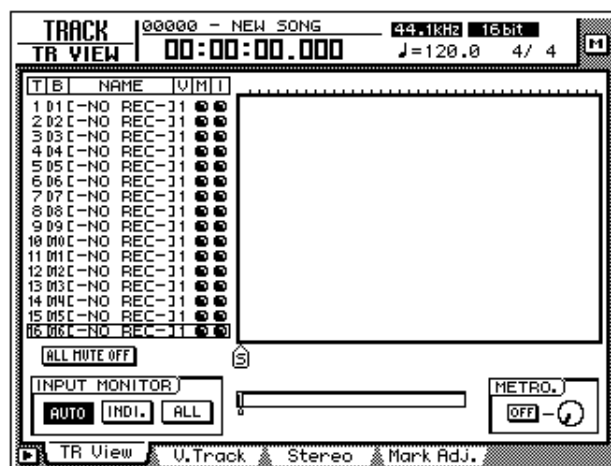


**Tip!**

- If you decide to cancel without executing Quick Rec, move the cursor to the CANCEL button and press the [ENTER] key.
- At this time, you can also turn off the blinking [REC TRACK SELECT] buttons to limit the number of recording tracks, or re-adjust the mix parameters and input patch settings of each channel.

5. Press the [TRACK] key → [F1] key.

The display will show the TRACK screen TR View page. As you can see from the display shown below, executing Quick Rec will turn input monitor on (I field= ●) for all tracks, and will mute (M field= ●) all tracks.



6. Play back the audio source connected to the input jacks of the I/O cards (slots 1/2).

The levels of the signals sent from the I/O card INPUT to tracks 1–16 (i.e., recording levels) will be displayed in the level meter/counter.

7. As necessary, use the faders of input channels 1–16 to adjust the recording level of tracks 1–16.

The faders of input channels 1–16 will be reset to nominal level (0 dB) when Quick Rec is executed. Adjust the recording level if necessary.



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*If you wish to use the faders to adjust the recording level, the POST FADER button must be turned on in the DIRECT OUT EXTRACT POSITION field of the UTILITY screen → Prefer.1 page.*

8. When you finish recording on the AW4416, press the [ALL SAFE] key. Record-ready and mute status will be canceled for all tracks.





# 9

# Track and virtual track operations

This chapter explains the track structure of the recorder section, and how to perform editing and other operations.

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## The track structure of the AW4416

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The recorder section of the AW4416 handles three types of tracks: audio tracks, virtual tracks, and the stereo track.

### ○ Audio tracks

These are physical tracks that are used for actual recording and playback, and are also referred to simply as “tracks.” When the AW4416 is in its initial state, the output of buses 1–8 is patched to the inputs of tracks 1–8/9–16, and the output of tracks 1–16 is patched to monitor channels 1–16. This allows a maximum of 16 tracks to be recorded simultaneously.

However, the number of tracks that can be played back simultaneously is limited by the number of tracks that are being recorded simultaneously. Be aware that tracks will automatically be muted depending on the number of simultaneously recorded tracks. The tables below show the numbers of tracks that can be recorded simultaneously and played back simultaneously, and the number of tracks that will be muted in each case.

#### • 16 bit song

Simultaneously recordable tracks	Simultaneously playable tracks	Automatically muted tracks
0–8	16	0
9–16	0	16

#### • 24 bit song

Simultaneously recordable tracks	Simultaneously playable tracks	Automatically muted tracks
0	16	0
1–2	14	2
3–4	12	4
5–8	8	8
16	0	16

For example if you simultaneously record nine or more tracks in a 16 bit song, no tracks can be played back simultaneously, meaning that the moment you put the ninth track in record-ready mode (the instant you turn on the ninth [REC TRACK SELECT] key), tracks 1–16 will all be muted automatically.

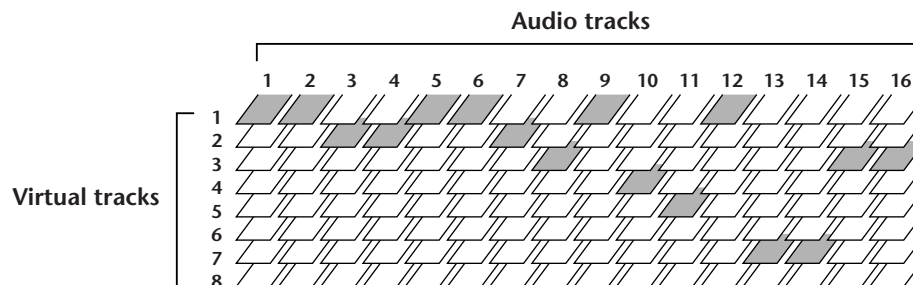
To defeat muting of tracks 1–16, you must first reduce the number of record-ready tracks to eight tracks or fewer, and then use the TRACK screen TR View page ([TRACK] key → [F1] key) to manually un-mute each track. (For details refer to Reference Guide “TRACK screen.”)

By pressing the [ALL SAFE] button in the level meter/counter section, you can cancel record-ready/mute status for all tracks at once. It is convenient to use this method as a shortcut when you wish to quickly cancel the mute settings and redo the settings.

### ○ Virtual tracks

These are “virtual” tracks from which you can select. On the AW4416, recording and playback will occur on the virtual track 1–8 that you select for each audio track 1–16.

The following diagram shows the concept of virtual tracks. The horizontal rows represent audio tracks 1–16, and the vertical columns represent virtual tracks 1–8. The shaded areas indicate the virtual tracks that are currently selected for recording and playback.



For example if you are recording a solo part on a certain track, you can switch virtual tracks to record multiple takes, and select the best take later.



*In the initial state of the AW4416, virtual track 1 is selected for all tracks.*

### ○ Stereo track

This is a stereo track that is independent of the audio tracks, and is used mainly as a master track to create a two-track mix. The AW4416 provides one stereo track for each song.

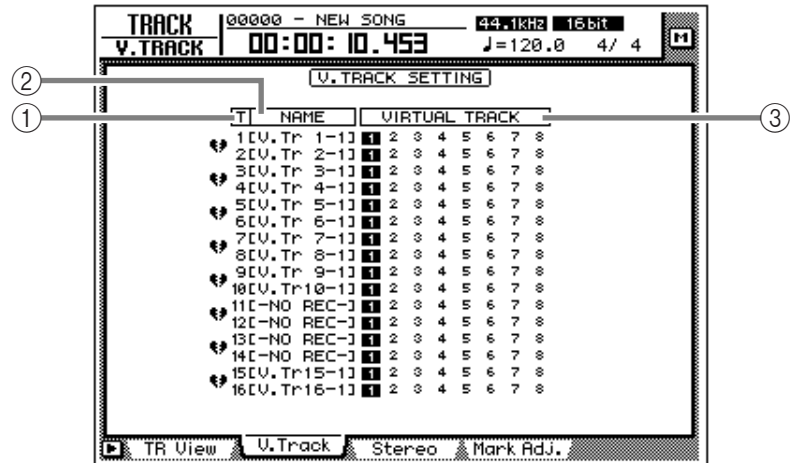
The input of the stereo track is internally connected to the stereo bus, so that you can record the signal of the stereo bus at any time simply by putting the stereo track in record mode. At this time, recording on the normal audio tracks 1–16 will not be possible. These tracks will only play back.

When you play back the stereo track, the output of the stereo track is automatically assigned to monitor channels 1/2. At this time, all of the normal audio tracks will be muted.

# Switching virtual tracks

Here's how to switch the virtual track that a specific track will use.

1. Press the [TRACK] key → [F2] key.  
The TRACK screen V.Track page will appear in the display.



This page shows the following information.

① **Track number**

These are the track numbers 1–16.

② **Track name**

These are the names assigned to the virtual track currently selected for each track. By default, virtual tracks that have already been recorded will be named “V.Tr x-y” (“x” will be a track number 1–16, and “y” will be a virtual track number 1–8). This name can be changed later as desired (→ P.153). Virtual tracks that have not yet been recorded will be displayed as “-NO REC-”.

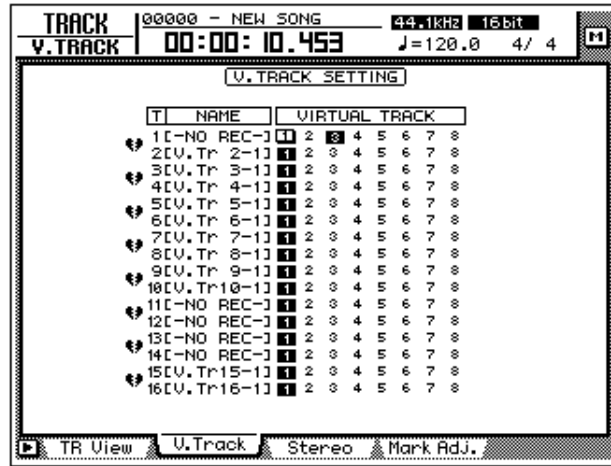
③ **Virtual track**

The highlighted number is the virtual track number currently selected for track 1–16. In the screen shown above, virtual track 1 is assigned to all tracks 1–16 (default setting).

Of the currently selected virtual tracks, the numbers of tracks that have already been recorded will be enclosed by a square; e.g., **1**.

2. Move the cursor to the virtual track number that you wish to assign to track 1, and press the [ENTER] key.

The virtual track number you select will be highlighted. Now you can record and play back the newly selected virtual track without affecting the previous virtual track.



# Pairing tracks

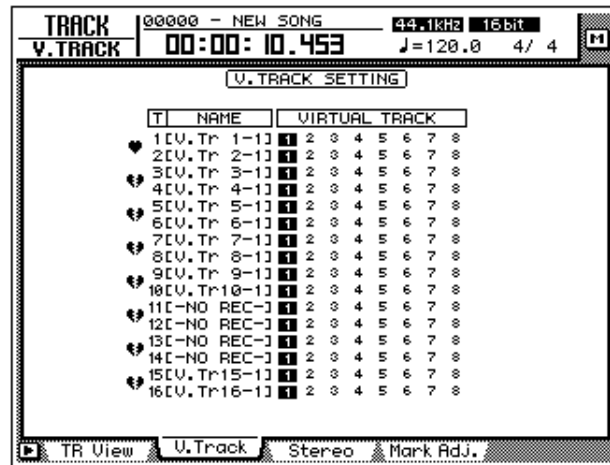
Adjacent odd-numbered → even-numbered tracks (tracks 1/2, tracks 3/4 ... tracks 15/16) can be set as a stereo pair. Paired tracks will always operate in tandem, such as when tracks are selected for editing, or when you switch virtual tracks. For example if you pair two tracks on which a stereo source was recorded, both tracks can be processed by a single operation, for greater convenience.



Even if tracks are paired, this will not affect the pairing settings of the monitor channels. If necessary, you can make separate settings to pair the monitor channels of these tracks as well.

1. Press the [TRACK] key → [F2] key.

The TRACK screen V.Track page will appear. The heart symbols in the left of the display indicate the current pairing status. Paired tracks are connected by a heart symbol.



2. To create a pair, move the cursor to the corresponding heart symbol (♥), and press the [ENTER] key.

The heart symbol will be connected, and the two tracks will be paired. To cancel pairing, move the cursor to the heart symbol once again, and press the [ENTER] key.

# Editing tracks and virtual tracks

A variety of editing operations can be performed on the audio data recorded on tracks 1–16 of the AW4416, such as copying data between tracks, moving data to an earlier or later location within the same track, or changing the pitch. In the same way, you can also copy or move data between the virtual tracks 1–8 that are included in each track. The following pages explain how to edit tracks and virtual tracks.

## Tracks, parts, and regions

Track and virtual track editing can be performed in three editing units.

### ○ Track

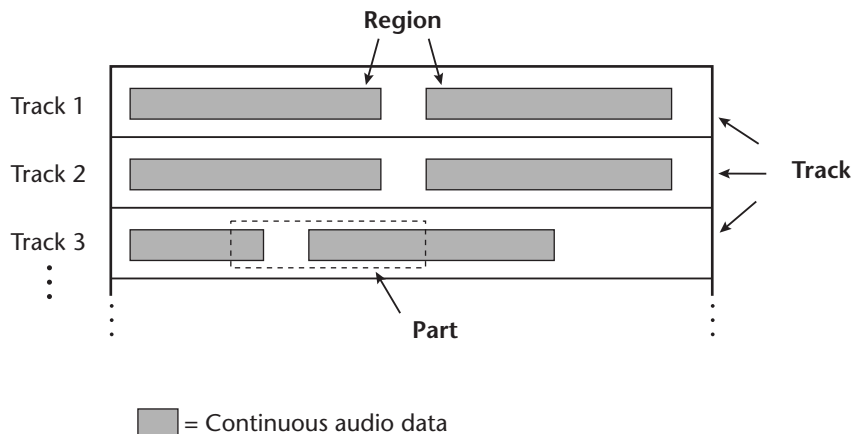
The entire currently selected track (1–16) or virtual track (1–8) will be affected by the editing operation. When editing in units of a track, tracks that contain no audio data cannot be selected.

### ○ Part

Within the currently selected track (1–16) or virtual track (1–8), the currently selected range is called the “part.” Unlike the case when editing tracks, portions that contain no audio data can be selected as a part.

### ○ Region

A continuous piece of audio that was recorded on a track in a single operation is called a “region.” When editing in units of a region, portions that contain no audio data cannot be selected.



It is possible for a single track or a single part to include multiple regions.

## Naming a virtual track or region

When you record something on a track, the following default name will be assigned to that virtual track.

- **Default virtual track name** .. V.Tr x-y (x=track number, y=virtual track number)
- **Default region name** ..... VTxy (x=track number, y=virtual track number)

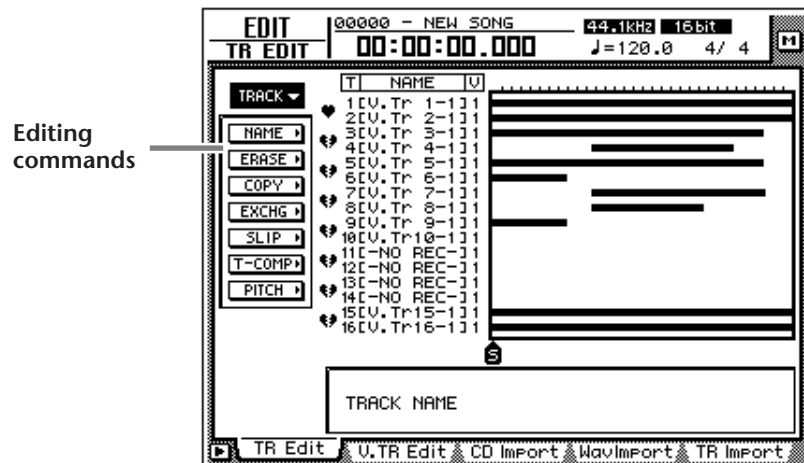


.....  
If multiple regions exist in the same track (i.e., if you recorded the track in more than one stage), all the default region names will be the same.

These track names and region names can be modified using the following procedure.

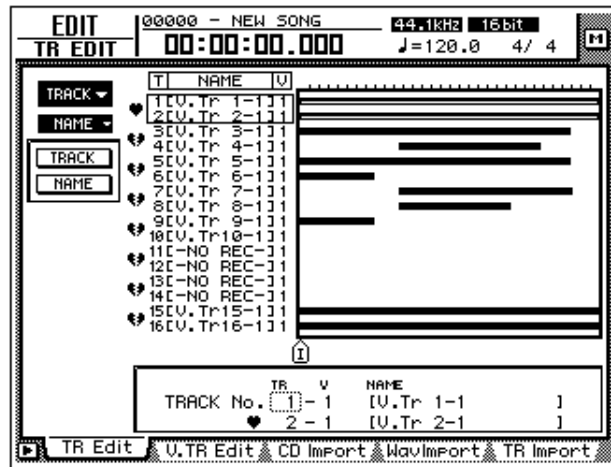
### □ Naming a virtual track

1. In the RECORDER section, press the [EDIT] key → [F1] key.  
The EDIT screen TR Edit page will appear.
2. Move the cursor to the TRACK menu and press the [ENTER] key.  
The TRACK menu will show the available editing commands.

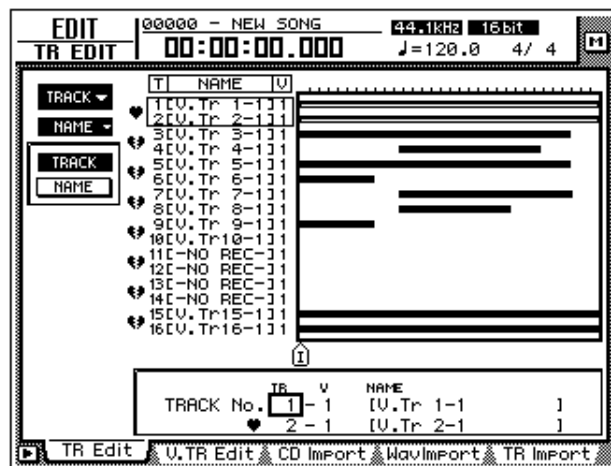




3. Move the cursor to the NAME menu and press the [ENTER] key. Buttons to specify NAME menu options will appear.



4. Move the cursor to the TRACK button and press the [ENTER] key. The cursor will move to the area at the bottom of the screen.



5. Use the [DATA/JOG] dial to select the track that you wish to name, and press the [ENTER] key.

- Move the cursor to the NAME button and press the [ENTER] key.  
A NAME EDIT popup window will appear, allowing you to assign a name to the track/region.



- When you have finished inputting the name, move the cursor to the OK button and press the [ENTER] key. (For details on inputting characters, refer to page 60.)

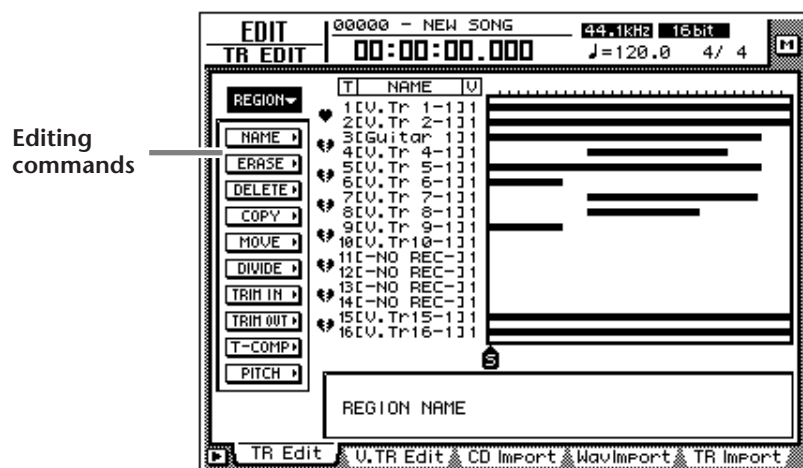
You will return to the screen of step 1.



*You can assign a track name of up to 16 characters. In the TRACK screen etc., the first eight characters of the name will be displayed.*

## □ Naming a region

- In the RECORDER section, press the [EDIT] key → [F1] key.  
The EDIT screen TR Edit page will appear.
- Move the cursor to the REGION menu and press the [ENTER] key.  
The REGION menu will show the available editing commands.



- Move the cursor to the NAME menu and press the [ENTER] key.  
Buttons to specify NAME menu options will appear.
- Move the cursor to the REGION button and press the [ENTER] key.  
The cursor will move to the area at the bottom of the screen.

5. Use the CURSOR [**◀**]/[**▶**]/[**▲**]/[**▼**] keys to select the region that you wish to name, and press the [ENTER] key.
6. Move the cursor to the NAME button and press the [ENTER] key.  
A NAME EDIT popup window will appear, allowing you to assign a name to the region.
7. When you have finished inputting the name, move the cursor to the OK button and press the [ENTER] key. (For details on inputting characters, refer to page 60.)  
You will return to the screen of step 1.

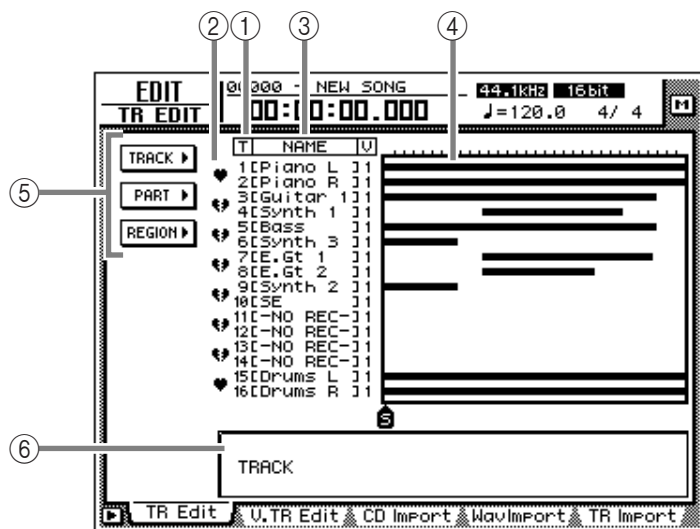


You can assign a region name of up to 16 characters.

## Track editing procedure

Here's the basic procedure for editing tracks, parts, or regions for audio tracks 1–16.

1. In the RECORDER section, press the [EDIT] key → [F1] key.  
The EDIT screen TR Edit page will appear.



This screen shows the following information.

- ① **Track number**  
This is the track number 1–16.
- ② **Pair**  
This shows the pairing status for adjacent odd-numbered → even-numbered tracks. Pairing can also be set or defeated in this screen.
- ③ **Track name**  
This is the name assigned to each virtual track.
- ④ **Bar graph**  
Bar graphs indicate the presence or absence of audio data for each track.

### ⑤ TRACK/PART/REGION menus

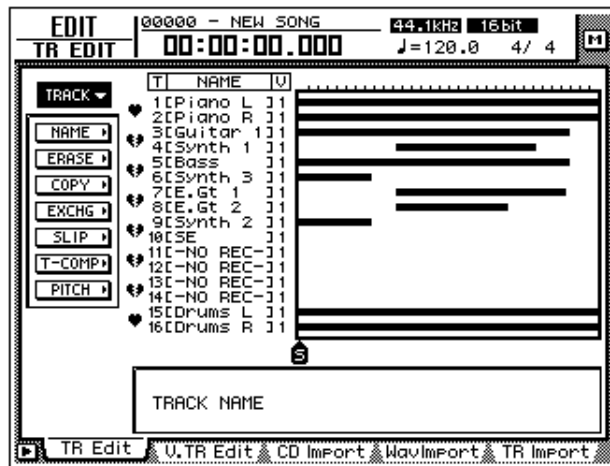
These respectively access editing commands for editing entire tracks, parts, or regions. Move the cursor to the desired menu, and press the [ENTER] key to view the list of editing commands.

### ⑥ Parameter setting area

In this area you can make the necessary parameter settings when executing the editing command.

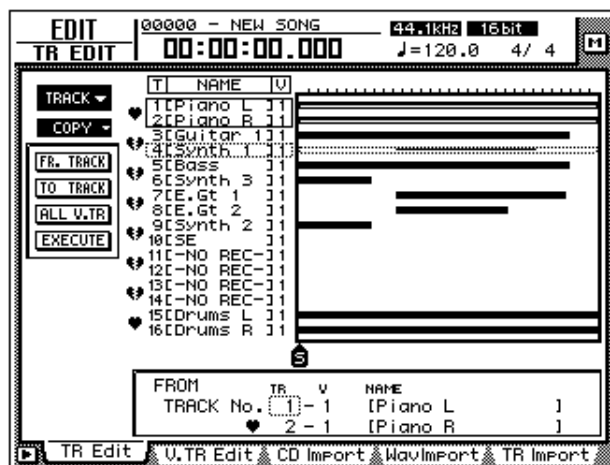
2. According to the smallest unit (track/part/region) that you wish to edit, move the cursor to the TRACK, PART, or REGION menu and press the [ENTER] key.

The selected menu of editing commands will appear. The following screen shows the commands that appear when the TRACK menu is selected.



3. Move the cursor to the desired editing command and press the [ENTER] key.

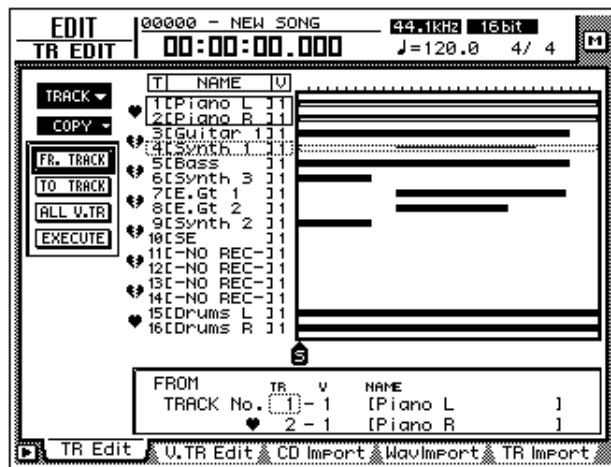
Buttons to set the parameters for the selected editing command will appear. The screen shown below is an example of when the TRACK menu COPY command is selected.



Page 161 provides brief explanations of the editing commands of each menu. For details of each command, refer to the Reference Guide.

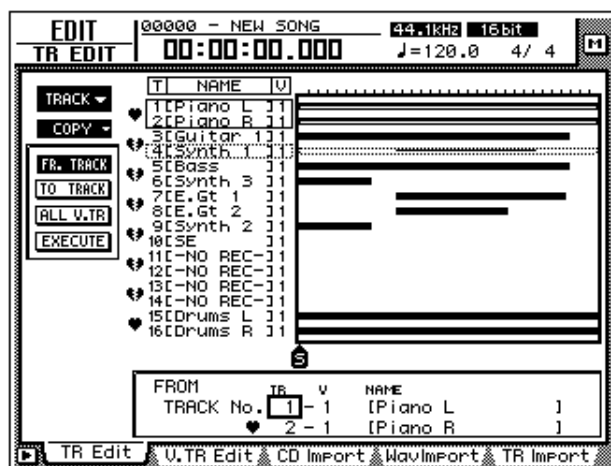
- To change the parameter settings, move the cursor to the corresponding button.

The lower part of the display will show the settings of the parameter at which the cursor is currently located.



- Press the [ENTER] key.

The cursor will move to the setting area in the lower part of the display. The screen shown below is an example of when the COPY command is selected.



- Use the [DATA/JOG] dial to modify the parameter value, and press the [ENTER] key.

The cursor will return to the button selected in step 4.



*If you decide to cancel without executing the editing command, move the cursor from here to a button at a higher level, and press the [ENTER] key.*

- Repeat steps 4–6 to make settings for the remaining parameters.

- To execute the editing command, move the cursor to the EXECUTE button, and press the [ENTER] key.

The editing command you selected in step 3 will be executed.

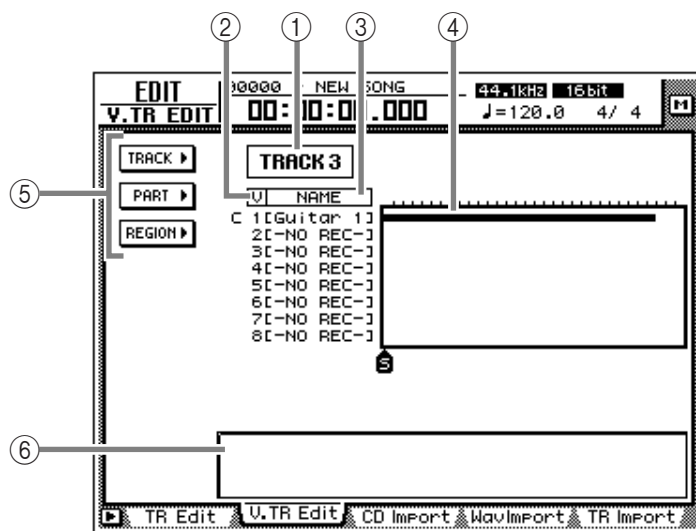


- If you wish to halt the editing operation, move the cursor to a button in the top level, and press the [ENTER] key.
- As exceptions, the TRACK menu NAME command and the REGION menu NAME command do not require you to use the EXECUTE button.
- Even after executing an editing command, you can use the [UNDO] button to cancel the results of the operation. (The TRACK menu NAME command and the REGION menu NAME command are exceptions to this.)

## Virtual track editing procedure

Here's the basic procedure for editing entire tracks, parts, or regions for virtual tracks 1–8 of the desired track.

- In the RECORDER section, press the [EDIT] key → [F2] key. The EDIT screen V.TR Edit page will appear, where you can edit virtual tracks.



This screen shows the following information.

① **Track number**

This is the track number (1–16) currently selected for editing.

If this track is paired, a heart symbol and the other track of the pair will be displayed.

② **Virtual track number**

This is the virtual track number 1–8.

③ **Track name**

This is the name assigned to the virtual track.

④ **Bar graph**

Bar graphs indicate the presence or absence of audio data for each virtual track.

⑤ **TRACK/PART/REGION menus**

These respectively access editing commands for editing entire tracks, parts, or regions. Move the cursor to the desired menu, and press the [ENTER] key to view the list of editing commands.

⑥ **Parameter setting area**

In this area you can make the necessary parameter settings when executing the editing command.

2. Move the cursor to the track number area and use the [DATA/JOG] dial to select the track (1–16) that you wish to edit.

When you switch tracks, the track names and bar graph display of virtual tracks 1–8 will change accordingly.

3. According to the smallest unit (entire virtual track/part/region) that you wish to edit, move the cursor to the TRACK, PART, or REGION menu and press the [ENTER] key.

The selected menu of editing commands will appear.



Page 161 provides brief explanations of the editing commands of each menu. For details of each command, refer to the Reference Guide.

4. Move the cursor to the desired editing command and press the [ENTER] key.

Buttons to set the parameters for the selected editing command will appear.

5. To change the parameter settings, move the cursor to the corresponding button.

The lower part of the display will show the settings of the parameter at which the cursor is currently located.

6. Press the [ENTER] key.

The cursor will move to the setting area in the lower part of the display.



If you decide to cancel without executing the editing command, move the cursor from here to a button at a higher level, and press the [ENTER] key.

7. Use the [DATA/JOG] dial to modify the parameter value, and press the [ENTER] key.

The cursor will return to the button selected in step 4.

8. Repeat steps 5–7 to make settings for the remaining parameters.

9. To execute the editing command, move the cursor to the EXECUTE button, and press the [ENTER] key.

The editing command you selected in step 4 will be executed.



- If you wish to halt the editing operation, move the cursor to a button in the top level, and press the [ENTER] key.
- As exceptions, the TRACK menu NAME command and the REGION menu NAME command do not require you to use the EXECUTE button.
- Even after executing an editing command, you can use the [UNDO] button to cancel the results of the operation. (The TRACK menu NAME command and the REGION menu NAME command are exceptions to this.)

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## Editing command list

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This section provides brief explanations for the editing commands of the TRACK/PART/REGION menus for tracks and virtual tracks. Details and parameters for each command are given in the Reference Guide.

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### TRACK menu

These commands edit entire tracks or entire virtual tracks.

○ **NAME (Track Name)**

Assign a name to an already-recorded virtual track.

○ **ERASE**

Erase the audio data of the selected track.

○ **COPY**

Copy the audio data of the selected track to another track. The Fr.Track (From Track) parameter specifies the copy source track, and the To Track parameter specifies the copy destination track.

○ **EXCHG (Exchange)**

Exchange the audio data of two selected tracks. The Fr.Track (From Track) and To Track parameters specify the tracks to be exchanged.

○ **SLIP**

Move all audio data of the selected track forward or backward. The SLIP parameter specifies the distance of the movement (maximum  $\pm 5$  hours).

○ **T-COMP (Time Compression/Expansion)**

Compress or expand the length of the audio data in the selected track. (As the length changes, the pitch will change correspondingly.) The RATIO parameter specifies the amount of compression or expansion (50%–200%).

○ **PITCH (Pitch Change)**

Change only the pitch without affecting the length of the audio data. The PITCH parameter specifies the change in semitones (maximum  $\pm 12$  semitones) and the FINE parameter specifies the change in one-cent steps (maximum  $\pm 50$  cents).



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## PART menu

These commands edit data in units of parts. When using these commands, you will need to specify not only the track for editing, but also the editing start location (START) and end location (END).

### ○ ERASE

Erase the audio data of the selected part. Audio data following that part will not be affected.

### ○ DELETE

Delete the audio data of the selected part. Audio data following that part will move forward by the length of the deleted data.

### ○ COPY

Copy the audio data of the selected part to the specified location of the specified track. You can also specify the number of times the data will be copied, and the interval between copies. If audio data exists at the destination, you can specify whether the copied data will be inserted or overwritten.

### ○ MOVE

Move the audio data of the selected part to the specified location of the specified track. At this time, the audio data of the move source will be erased. If audio data exists at the destination, you can specify whether the moved data will be inserted or overwritten.

### ○ INSERT

Insert silence into the selected part. Audio data following that part will move backward by the length of the inserted data.

### ○ T-COMP (Time Compression/Expansion)

Compress or expand the length of the audio data in the selected part. (As the length changes, the pitch will change correspondingly.) The RATIO parameter specifies the amount of compression or expansion (50%–200%).

### ○ PITCH (Pitch Change)

Change only the pitch without affecting the length of the audio data of the selected part. The PITCH parameter specifies the change in semitones (maximum  $\pm 12$  semitones) and the FINE parameter specifies the change in one-cent steps (maximum  $\pm 50$  cents).

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## REGION menu

These commands edit data in units of regions.

**○ NAME**

Assign a name to a region.

**○ ERASE**

Erase the selected region. Audio data following that region will not be affected.

**○ DELETE**

Delete the selected region. Audio data following that region will move forward by the length of the deleted data.

**○ COPY**

Copy the selected region to the specified location of the specified track. You can also specify the number of times the data will be copied, and the interval between copies. If audio data exists at the copy destination, you can specify whether the copied data will be inserted or overwritten.

**○ MOVE**

Move the selected region to the specified location of the specified track. At this time, the move source region will be erased. If audio data exists at the move destination, you can specify whether the moved data will be inserted or overwritten.

**○ DIVIDE**

Divide the selected region into two at the location you specify.

**○ TRIM IN**

Trim the starting location of the selected region toward the end in sample units.

**○ TRIM OUT**

Trim the ending location of the selected region toward the beginning in sample units.

**○ T-COMP (Time Compression/Expansion)**

Compress or expand the length of the audio data in the selected region. (As the length changes, the pitch will change correspondingly.) The **RATIO** parameter specifies the amount of compression or expansion (50%–200%).

**○ PITCH (Pitch Change)**

Change only the pitch without affecting the length of the audio data of the selected region. The **PITCH** parameter specifies the change in semitones (maximum  $\pm 12$  semitones) and the **FINE** parameter specifies the change in one-cent steps (maximum  $\pm 50$  cents).



# 10 Internal effects

This chapter explains the two built-in effects of the AW4416.

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## About the internal effects

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The AW4416 contains two multi-effect units (respectively called “effect 1” and “effect 2”). In general, the internal effects can be used in the following two ways.

### Using AUX send/return

In this method, the two AUX sends are used to send signals from each channel to the inputs of effects 1/2, and the outputs of effects 1/2 are mixed with the signals of the stereo bus or buses 1–8. When the AW4416 is in the default state, AUX send 7/8 are patched to the inputs of effects 1/2, and the outputs of effects 1/2 are patched to return channels 1/2.

The signals sent from input channels 1–24 and monitor channels 1–16 to AUX buses 7/8 are input to effects 1/2 respectively. For each channel, you can adjust the AUX 7/8 send levels and switch between pre- or post-fader.

The output signals from effects 1/2 are sent to return channels 1/2. By routing the return channels to buses 1–8 or the stereo bus, they can be mixed with the original sound of each channel.

### Inserting an effect into a channel

If you defeat the assignment of effect 1/2 to AUX send 7/8, you can insert an effect into the desired channel (immediately before the attenuator). In this case, the mixed effect and direct signals will be input to the corresponding channel. An effect that is used for insertion cannot be inserted into another channel, or used via send/return.

Effects can be inserted into the following channels.

- **Input channels 1–24**
- **Monitor channels 1–16**
- **Return channels 1/2**
- **Stereo output channel**

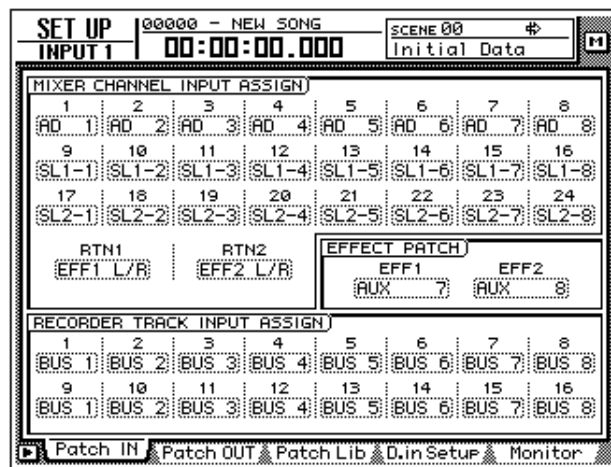
# Using AUX send/return to apply an effect

As an example of using an effect with AUX send/return, here's how to apply effect 1 via AUX bus 7.

## □ Patching

Make sure that the AUX send/return patching for effect 1 is appropriate.

1. Press the [SETUP] key → [F1] (Patch IN) key.  
The SETUP screen Patch IN page will appear.



.....  
If the Patch IN tab is not assigned to the [F1] key, press the [SHIFT] key + [F1] key to switch the tab, and then press the [F1] key.

2. Make sure that the EFFECT PATCH parameter EFF1 is set to "AUX 7."  
The EFFECT PATCH parameters select whether effects 1/2 will be used via AUX or inserted into a specific channel. By default, EFF1 (effect 1) is assigned to AUX 7 and EFF2 (effect 2) is assigned to AUX 8, as shown above.



.....  
If EFF1 is set to "INSERT," move the cursor to the "INSERT" field and use the [DATA/JOG] dial to change it to "AUX 7." Then move the cursor to the OK button and press the [ENTER] key.

3. Make sure that the MIXER CHANNEL INPUT ASSIGN parameter RTN1 is set to "EFF1 L/R."  
The MIXER CHANNEL INPUT ASSIGN area switches the signal that is assigned to the input channel/return channel of the mixer. By default, "EFF1 L/R" (L/R output of effect 1) is assigned to RTN1 (return channel 1).



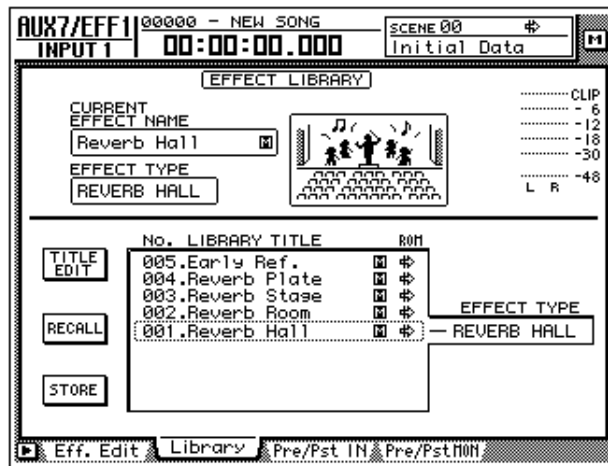
.....  
If RTN1 has been changed to another setting, move the cursor to the setting area, and rotate the [DATA/JOG] dial to change the setting to "EFF 1 L/R."

## □ Recalling an effect program from the library

The AW4416 provides 41 effect types such as Reverb Hall, Gate Reverb, and Stereo Delay. The effect type library contains factory-set effect programs that use these effect types. Here's how to recall an effect program of the effect type you wish to use.

1. Press the [AUX 7] key → [F2] key.

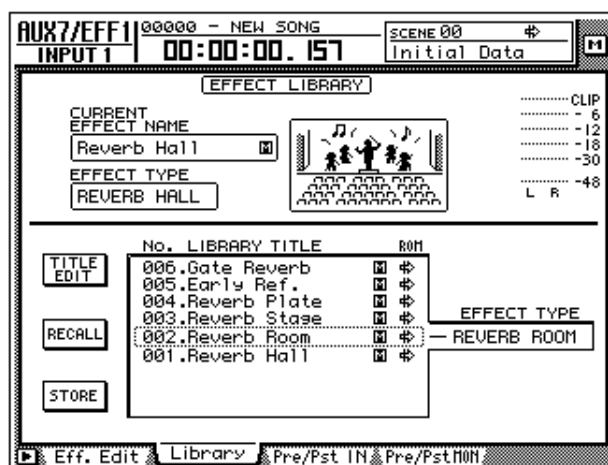
The AUX7/EFF1 screen Library page will appear. A list of effect programs will be displayed.



- In general, the effect library is common to both effects 1 and 2. However, effect program no. 19 "HQ-Pitch" can be used only by effect 2.
- Effect library 001–041 contain read-only effect programs using the corresponding effect type.
- It is not possible to change the effect type of the currently used effect program. For this reason, you must load a program that uses the desired effect type from the library even if you wish to create an effect program from scratch.

2. Move the cursor to the list, and rotate the [DATA/JOG] dial to select the program that you wish to recall.

When you select a program, the effect type used by that program will be displayed at the right of the list. For this example, let's select the room reverb program "Reverb Room."



3. Move the cursor to the RECALL button, and press the [ENTER] key. A popup window will appear, asking you to confirm the recall operation.



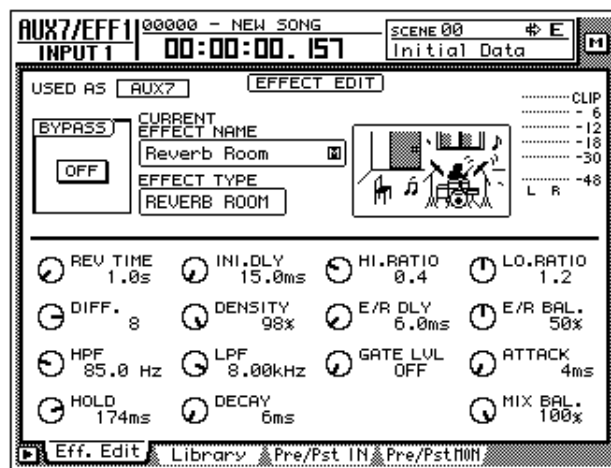
It is also possible to recall the effect program directly, without displaying the popup window that asks you to confirm the recall operation. To do so, access the UTILITY screen Pref. 1 page ([UTILITY] key → [F2] key), and turn RECALL CONFIRMATION off.

4. To recall the program, move the cursor to the OK button and press the [ENTER] key.

The effect program will be recalled. The name of the recalled program will appear in the “CURRENT EFFECT NAME” area in the upper left of the display.

5. Press the [F1] key.

The Eff.Edit page will appear in the display.



6. Make sure that the MIX BAL knob located in the lower right of the display is set to 100%.

The Eff.Edit page allows you to edit the effect parameters. Regardless of the effect type that is selected, the MIX BAL (a parameter that adjusts the balance between the dry and effect sounds) knob will be located in the lower right of the Eff.Edit page.

When using an effect via AUX send/return, you will need to set this parameter to 100% so that the effect will output only the “wet” (processed) sound. To adjust this setting, move the cursor to the MIX BAL knob, and rotate the [DATA/JOG] dial.



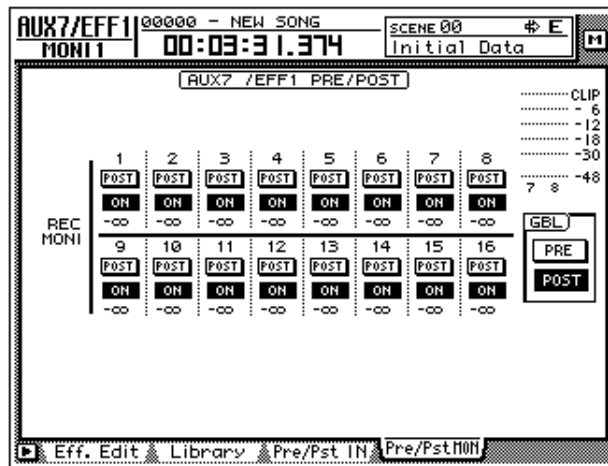
- Other effect parameters can be edited in the same way by moving the cursor to them and rotating the [DATA/JOG] dial.
- For the type and function of the effect parameters of each effect type, refer to the Reference Guide.

## □ Switching between pre-fader and post-fader

For each monitor channel, you can select the location (pre-fader or post-fader) from which the signal will be sent to AUX 7.

1. Press the [AUX 7] → [F4] key.

The Pre/PstMON page will appear, where you can make pre-/post-fader settings for monitor channels 1–16.



When the AW4416 is in the initial state, this will be set to post-fader.

2. To switch a specific channel between pre-fader (PRE) and post-fader (POST), move the cursor to the button for that channel and press the [ENTER] key.



To switch all monitor channels between pre-fader/post-fader, move the cursor to the PRE/POST button in the GBL (global) section at the right of the display, and press the [ENTER] key.



## □ Adjusting the send level/return level

Here's how to adjust the send level for each monitor channel, and the return level of the return channel.

1. Press the [HOME] key → [17-24 RTN] key.

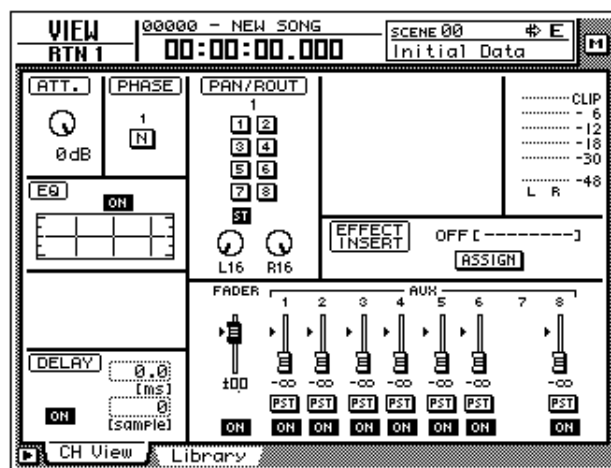
[SEL] keys 15/16, [ON] keys 15/16, and faders 15/16 will be assigned to return channels 1/2. At this time, faders 15/16 will adjust the input level of the return signals from effects 1/2.



When the AW4416 is in the initial state, the faders of return channels 1/2 will be set to nominal level (0 dB).

2. Press the [VIEW] key → [SEL] key 15.

The VIEW screen of return channel 1 will appear in the display.



3. Make sure that the ST button of the PAN/ROUT area is on.

In this state, the return signal from effect 1 will be sent to the stereo bus and mixed with the signals of the monitor channels.



If the ST button is off, move the cursor to the button and press the [ENTER] key.

## □ Adjusting the send level

1. Press the [AUX 7] key → [MONI] key.

[SEL] keys 1–16, [ON] keys 1–16, and faders 1–16 will be assigned to monitor channels 1–16. At this time, faders 1–16 will adjust the send level of the signals sent from monitor channels 1–16 to AUX 7 (effect 1).

2. While the song plays back, use faders 1–16 to adjust the send level of each monitor channel.
3. As necessary, press the [HOME] key → [17-24] RTN key, and use fader 15 to readjust the return level.

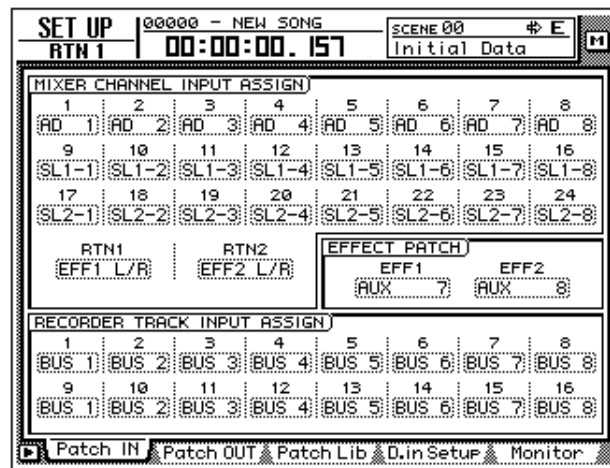
# Inserting an effect into a desired channel

If you defeat their assignment to AUX 7/8, the AW4416's internal effects can be inserted into a desired channel. As an example, here's how effect 2 can be inserted into monitor channel 1.

## □ Patching

Here's how to release effect 2 from its assignment to AUX send 8, and use it as an insertion effect.

1. Press the [SETUP] key → [F1] (Patch IN) key.  
The SETUP screen Patch IN page will appear in the display.



If the Patch IN tab is not assigned to the [F1] key, press the [SHIFT] key + [F1] key to switch the tab, and then press the [F1] key.

2. Move the cursor to the EFF2 parameter of the EFFECT PATCH area, and rotate the [DATA/JOG] dial.  
A popup window will appear, asking you to confirm that you wish to disconnect effect 2 from AUX bus 8 and use it for insertion.



3. Move the cursor to the OK button and press the [ENTER] key.  
In the EFFECT PATCH area, EFF2 will change to "INSERT." Now the effect can be inserted into the desired channel.



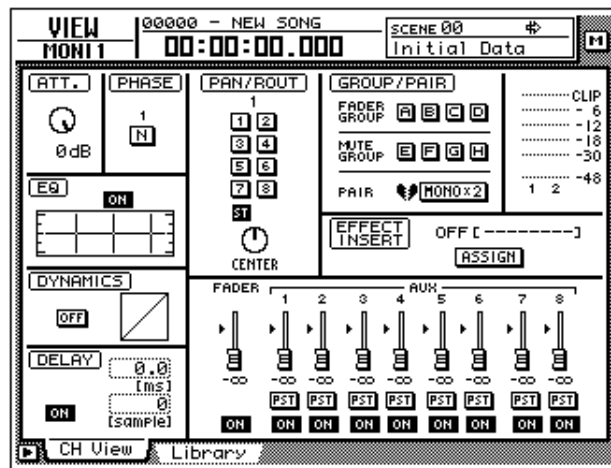
.....  
 An effect that has been specified for insertion cannot again be used via AUX send/return until you reassign it to the AUX bus in the EFFECT PATCH area.



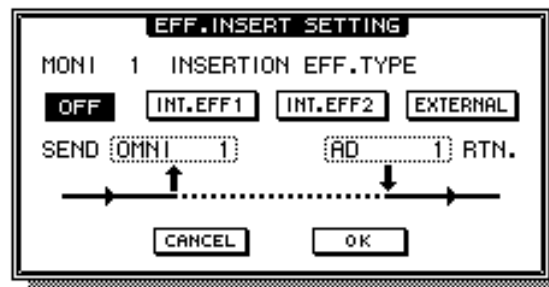
.....  
 If RTN 2 is set to "EFF 2 L/R" in the Patch IN page, performing this step will automatically cancel the assignment.

## □ Inserting an effect into monitor channel 1

1. Press [MONI] key → [SEL] key 1.  
 Monitor channel 1 will be selected.
2. Press the [VIEW] key → [F1] key.  
 The VIEW screen CH View page will appear in the display.



3. Move the cursor to the ASSIGN button in the EFFECT INSERT area, and press the [ENTER] key.  
 The EFF.INSERT SETTING popup window will appear. In this popup window, you can use the following four buttons to select the type of effect that will be inserted.



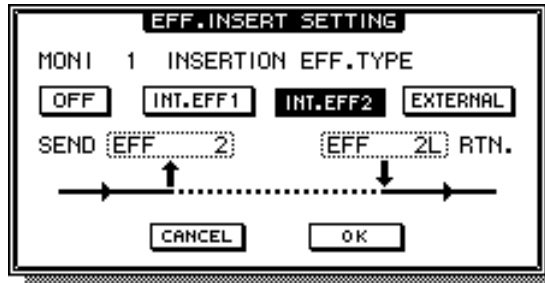
- **OFF** .....Effect insertion will be cancelled.
- **INT.EFF1** .....Insert internal effect 1.
- **INT.EFF2** .....Insert internal effect 2.
- **EXTERNAL** .....Insert an external effect.



.....  
 The INT.EFF1 and INT.EFF2 buttons cannot be turned on if the respective internal effect 1/2 has not been disconnected from AUX send.

4. To insert effect 2, move the cursor to the INT.EFF2 button and press the [ENTER] key.

In the popup window, SEND will change to “EFF2,” and RTN. will change to “EFF 2L.” This indicates that the input of effect 2 has been patched to the insert send of monitor channel 1, and the L output of effect 2 has been patched to the insert return.



- Regardless of the channel, the effect will be inserted at a position immediately after the attenuator.
- If you move the cursor to the RTN. field and rotate the [DATA/JOG] dial, you can switch between “EFF 2L” and “EFF 2R.”
- If an effect is inserted into a stereo channel (return channels 1/2, stereo output channel), the L/R outputs of the effect will be returned to the L/R of that channel.

5. When you have finished making settings in the EFF.INSERT SETTING popup window, move the cursor to the OK button and press the [ENTER] key.

The EFFECT INSERT field of the CH View page will be displayed as “ON [INT.EFF2].” This indicates that effect 2 has been inserted into the corresponding channel (in this case, monitor channel 1).



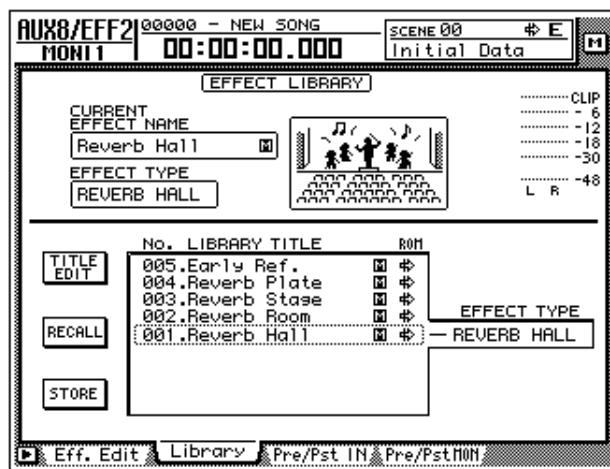
An effect that has been inserted into a channel will be usable only for that channel until you insert the same effect into a different channel or turn on the OFF button in the EFF.INSERT SETTING popup window.

## □ Recalling an effect program

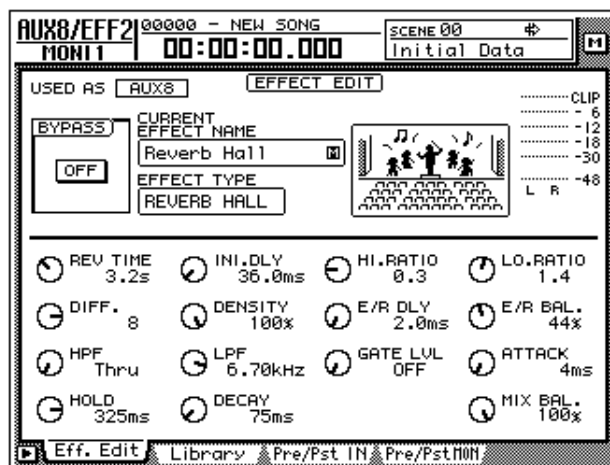
Here's how you can recall the desired program for effect 2 from the effect library.

1. Press the [AUX 8] key → [F2] key.

The AUX8/EFF2 screen Library page will appear in the display.



2. Move the cursor to the list at the bottom of the display, and use the [DATA/JOG] dial to select the effect program that you wish to recall.
3. Move the cursor to the RECALL button, and press the [ENTER] key.  
The selected program will be recalled to effect 2.
4. Press the [F1] key.  
The Eff.Edit page will appear.



5. As necessary, move the cursor to the MIX BAL. knob and rotate the [DATA/JOG] dial to adjust the balance between the “wet” (processed) and “dry” (unprocessed) sound.



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Immediately after an effect program is recalled, MIX BAL. will be reset to 100% (only “wet” sound).

# 11 Song management

This chapter explains song management operations such as saving, loading, deleting, or copying songs.

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## About songs

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On the AW4416, all the data necessary to reproduce a musical composition you create (i.e., mixer settings, recorder settings, audio data, etc.) is saved in the internal hard disk as a “song.” By loading a song into internal memory, you can return to the saved state at any time. A song includes the following data.

- Audio data for all virtual tracks
- TRACK screen settings (including locate point settings)
- Tempo map settings
- Scene memories
- Automix memory
- Patch library
- EQ library
- Dynamics library
- Channel library
- Data and settings for the Sampling Pad function
- Song name and comment
- Counter display method (SECOND/TIME CODE/MEASURE)
- Song Protect setting
- Time Code Top setting
- Region Fade Time setting
- Undo data



**Tip!**

- *Multiple songs can be saved on the internal hard disk. However, only the single song currently being controlled on the AW4416 (the “current song”) can be handled at any given time.*
- *When the power of the AW4416 is turned on, the most-recently saved song will be loaded automatically.*



*Be aware that if you turn off the power of the AW4416 without saving the current song, any changes in the current song will be lost. When you wish to turn off the power of the AW4416, you must perform the shut-down procedure (→ P.17).*

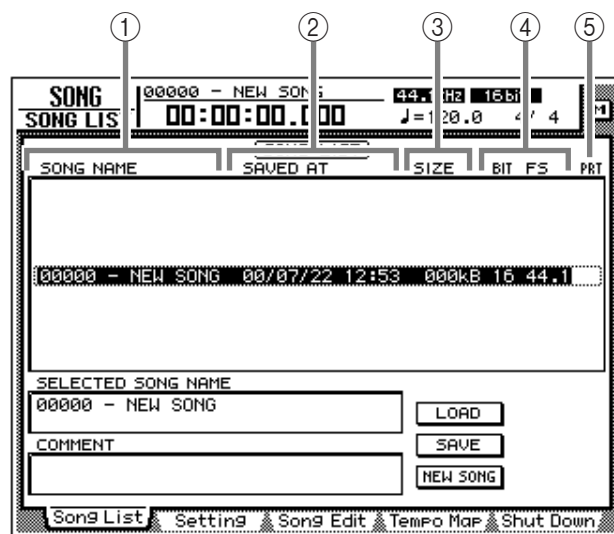
# Saving/loading a song

Here's how to save the current song on the internal hard disk, and how to load a song from the internal hard disk into the current song.

## □ Saving the current song

1. Press the [SONG] key → [F1] key.

The SONG screen Song List page will appear in the display. A list of information on the songs currently saved on the internal hard disk will appear in the upper part of the display. The current song will be highlighted in the list.



- ① Song name
  - ② Date and time when the song was saved
  - ③ Song size
  - ④ Song quantization/sampling frequency
  - ⑤ Song protect
2. To save the current song, move the cursor to the SAVE button in the lower right of the screen and press the [ENTER] key.  
A popup window will appear, asking you to confirm that you wish to save the current song.



- To execute the Save operation, move the cursor to the OK button and press the [ENTER] key.

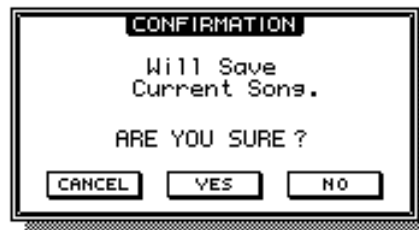


.....

- If you decide to cancel without saving, move the cursor to the CANCEL button and press the [ENTER] key.
- If the free space on the internal hard disk is running low, execute the Song Optimize operation (→ P.182). You can also back up desired songs on an external device such as CD-RW or MO (→ P.246).

## □ Loading a song

- Press the [SONG] key → [F1] key.  
The SONG screen Song List page will appear.
- Use the [DATA/JOG] dial to select the song that you wish to load. Then move the cursor to the LOAD button and press the [ENTER] key.  
A popup window will appear, asking you whether you wish to save the current song first.



- If you wish to save the current song before loading another song, move the cursor to the YES button. If you wish to load the song without saving the current song, move the cursor to the NO button. Then press the [ENTER] key.

If you selected the YES button, the current song will be saved and then the selected song will be loaded immediately. If you selected the NO button, any changes to the current song will be discarded, and the selected song will be loaded.



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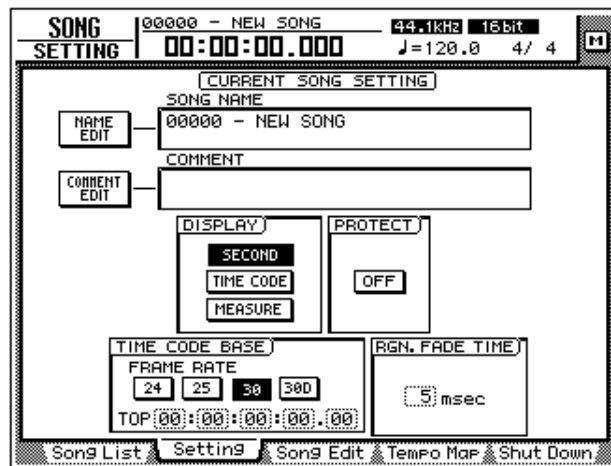
- If you decide to cancel the Load operation, move the cursor to the CANCEL button and press the [ENTER] key.



# Editing the song name/comment

When you create a new song, a default song name “xxxx - NEW SONG -” (xxxxx will be a serial number) will be assigned unless you specify otherwise, and the comment will be blank. You can edit the song name and comment afterward.

1. Press the [SONG] key → [F2] key.  
The SONG screen Setting page will appear.



The SONG NAME field in the upper part of the screen will show the song name of the current song, and the COMMENT field will show the comment. (If no comment has been assigned, this will be displayed as “No Description.”)

2. To edit the song name, move the cursor to the NAME EDIT button in the upper left of the screen, and press the [ENTER] key.  
The NAME EDIT window will appear, allowing you to assign a name to the song.
3. Use the character palette to modify the name. Then move the cursor to the OK button and press the [ENTER] key. (For details on inputting characters, refer to page 60.)  
You will return to the SONG screen Setting page.
4. To edit the comment, move the cursor to the COMMENT EDIT button in the upper left of the screen, and press the [ENTER] key.  
The COMMENT EDIT window will appear, allowing you to assign a comment to the song.
5. Use the character palette to modify the comment. Then move the cursor to the OK button and press the [ENTER] key. (For details on inputting characters, refer to page 60.)  
You will return to the SONG screen Setting page.



.....  
Simply modifying the song name in this page will not change the song name shown in the list of the SONG screen Song List page. The new name will be reflected in the list when you save the current song.

# Deleting/copying a song

Here's how to delete a song saved on the internal hard disk, or copy (duplicate) a song within the hard disk.

## □ Deleting a song

1. Press the [SONG] key → [F3] key.

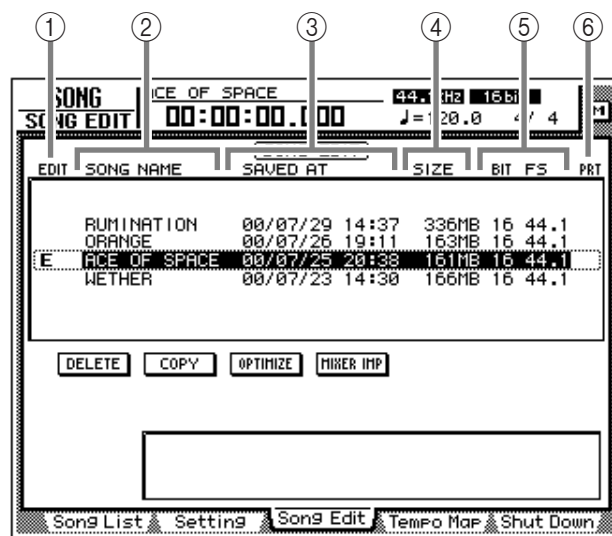
The SONG screen Song Edit page will appear in the display. The upper part of the display will show a list of the songs currently saved on the hard disk. The current song will be highlighted in the list. The song currently selected for editing will be indicated by an “E” symbol at the left of the list.



.....  
Songs you delete will be lost forever. Use this procedure with caution.



.....  
When you delete, copy, or optimize a song, the current song will be saved automatically.



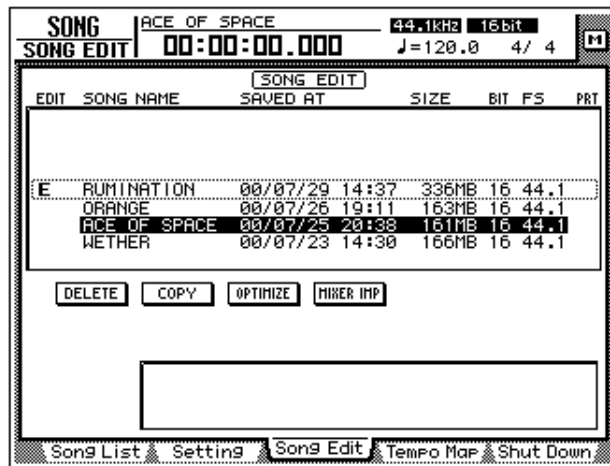
- ① The song currently selected for editing
- ② Song name
- ③ Date and time when the song was saved
- ④ Song size
- ⑤ Song quantization/sampling frequency
- ⑥ Song protect



.....  
It is not possible to delete a protected song. You must load the song, and turn off the PROTECT button in the SONG screen Setting page before performing the Delete operation.

2. Move the cursor to the list in the upper part of the display, use the [DATA/JOG] dial to select the song that you wish to delete, and press the [ENTER] key.

An “E” symbol will appear at the left within the list, indicating that the corresponding song is selected for deletion.



- If you select a song that is already marked with an “E” and press the [ENTER] key, the “E” symbol will disappear, and the song will be excluded from the Delete operation.
- You can select multiple songs for deletion.



It is not possible to delete the current song. If you execute Song Delete with an “E” symbol displayed for the current song, an error message will appear. Load a different song to change the current song. Then execute the operation.

3. Move the cursor to the DELETE button and press the [ENTER] key. A popup window will appear, asking you to confirm the Delete operation.
4. To execute the Delete operation, move the cursor to the OK button and press the [ENTER] key. The current song will automatically be saved, and the specified song(s) will be deleted.



If you wish to cancel without deleting, move the cursor to the CANCEL button and press the [ENTER] key.

## □ Copying a song

1. Press the [SONG] key → [F3] key to access the SONG screen Song Edit page.
2. Move the cursor to the list in the upper part of the display. Use the [DATA/JOG] dial to select the song that you wish to copy, and press the [ENTER] key.

An “E” symbol will appear in the left edge of the list, indicating that the corresponding song is selected for the Copy operation.



**Tip!**

*You may select multiple songs (including the current song) for copying.*

3. Move the cursor to the COPY button, and press the [ENTER] key. A popup window will ask you to confirm the Copy operation.



**Tip!**

- *If you decide to cancel the Copy operation, move the cursor to the CANCEL button and press the [ENTER] key.*
- *After the Copy operation is executed, the hard disk will contain two songs with identical song name, date, and size. To avoid confusion, we recommend that you change the song name immediately.*

4. To execute the Copy operation, move the cursor to the OK button and press the [ENTER] key.

The current song will be saved automatically, and then the Copy operation will be executed.

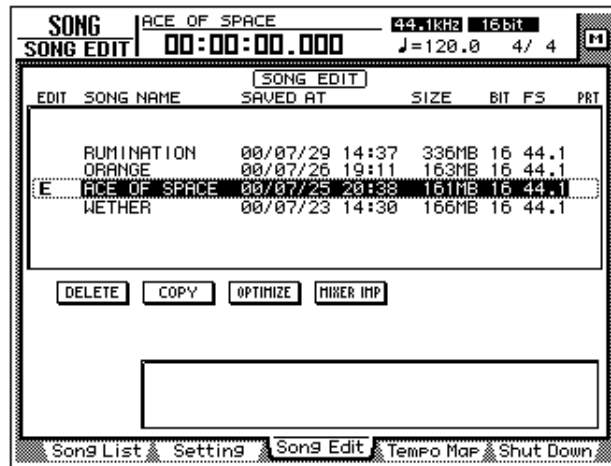
## Optimizing a song

By using the top panel [UNDO] key and [REDO] key, you can cancel or re-execute the last-performed recording or track editing operation. By repeatedly pressing the [UNDO] key, you can retrace as many as 15 previous operations. Undo/redo can be a very convenient function, but when you record or perform a track editing operation, data for the corresponding number of Undo operations must be maintained, and this data will occupy space on the hard disk.

The “Optimize” command deletes any audio data that is not currently being used by the song; i.e., it deletes the Undo data. In order to recover this space, we recommend that you execute the Song Optimize command when you are finished recording and editing.

1. Press the [SONG] key → [F3] key.

The SONG screen Song Edit page will appear in the display. The upper part of the display will show a list of the songs currently saved on the hard disk.



2. Move the cursor to the list in the upper part of the display, use the [DATA/JOG] dial to select the song that you wish to optimize, and press the [ENTER] key.

An “E” symbol will appear in the left edge of the list, and the corresponding song will be selected optimization.



.....  
It is not possible to execute Optimize with more than one song selected. If Optimize is executed when the “E” symbol is displayed for more than one song, an error message will be displayed.

3. Move the cursor to the OPTIMIZE button, and press the [ENTER] key.  
A popup window will ask you to confirm the Optimize command.
4. To execute the Optimize command, move the cursor to the OK button and press the [ENTER] key.  
The current song will be saved automatically, and then the Optimize command will be executed.



If you decide to cancel the Optimize command without executing, move the cursor to the CANCEL button and press the [ENTER] key.

## Importing mixer data of an existing song

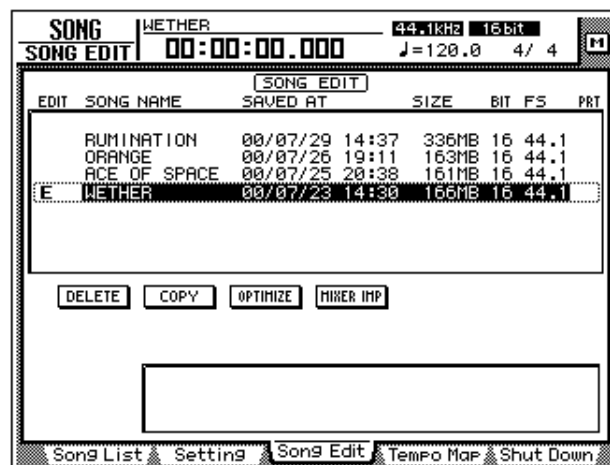
You can extract the scene memory, automix, tempo map, and library data (referred to as “mixer data”) of a previously-saved song, and import it into the current song. For example, this function is convenient when an existing song has a special effect library that you wish to use in a newly created song.



- Be aware that when you execute the mixer data import command, the corresponding mixer data of the import destination song (the current song) will be erased, and replaced by the imported mixer data.
- Library mixer data includes all libraries: channel, EQ, dynamics, and effect.

1. If necessary, load the import destination song as the current song.
2. Press the [SONG] key → [F3] key.

The SONG screen Song Edit page will appear in the display. The upper part of the display will show a list of the songs currently saved in the hard disk. The current song will be highlighted in the list.



3. Move the cursor to the list in the upper part of the display, and use the [DATA/JOG] dial to select the import source song from which you wish to import mixer data.
4. Press the [ENTER] key.

An “E” symbol will appear at the left edge of the list, and the corresponding song will be selected as the import source for mixer data.



- *The current song cannot be selected as the import source. If you execute Import when the current song is marked with an “E” symbol, an error message will be displayed.*
- *It is not possible to select two or more songs as the import source.*

5. Move the cursor to the MIXER IMP button and press the [ENTER] key. The MIXER DATA IMPORT popup window will appear.



6. Turn on the button(s) for the type(s) of mixer data that you wish to import. (You may select more than one.)
  - **SCENE MEM. button** ....Scene memories
  - **AUTOMIX button** .....Automix
  - **TEMPO MAP button** .....Tempo map
  - **LIBRARY button** .....Libraries (channel/EQ/dynamics/effect)
7. To execute the Import, move the cursor to the OK button and press the [ENTER] key.



*If you decide to cancel the Import command without executing, move the cursor to the CANCEL button and press the [ENTER] key.*

# 12 Sampling pads

This chapter explains the sampling pads of the AW4416.

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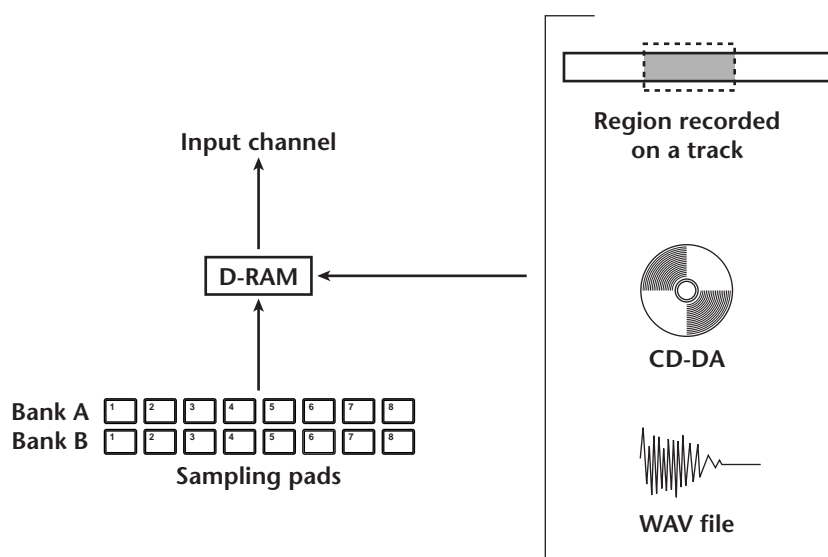
## About the sampling pads

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The AW4416 has a sampling pad function that allows you to play samples by striking pads. By striking the eight pads in the SAMPLING PAD section you can play up to sixteen samples held in RAM, and record your playing on a simple sequencer that is linked with the recorder.

A sample can be assigned to a pad on one of three ways. You can directly assign a region (a piece of continuous audio data that was recorded in a single operation) that was recorded earlier on a track, import CD-DA data from an audio CD, or import a WAV file from a CD-ROM or MO disk.



**Tip!**

- The eight sampling pads can be used as sixteen pads by switching between two banks A and B.
- Sampling pad settings and the samples in RAM are saved as part of the song.



The samples that can be assigned to the pads must be the same audio format as that song. For example in the case of a song that was created as 24 bit/48 kHz, CD-DA (16 bit/44.1 kHz) data cannot be imported. In the case of a 16 bit/44.1 kHz song, 16 bit/48 kHz WAV files cannot be imported.

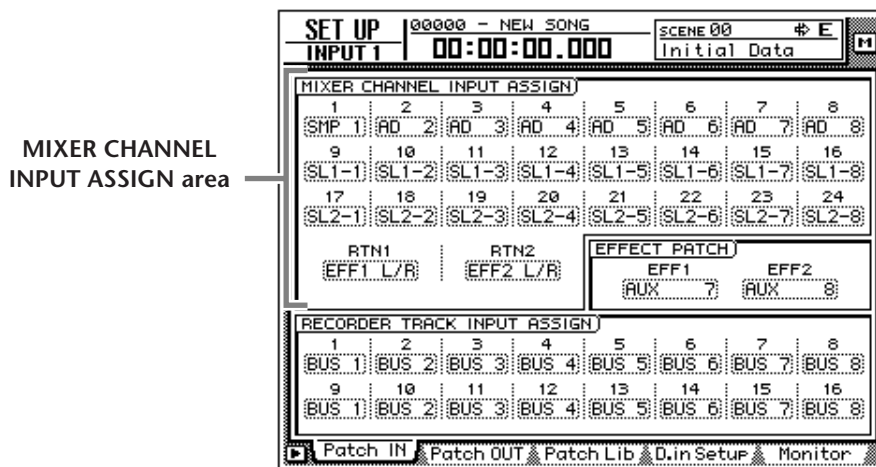


# Assigning the pad outputs to channels

In order to use the sampling pads, you must first assign each pad output to an input channel 1–24. The output of a pad that is assigned to a channel can be controlled by attenuation, phase, EQ, and dynamics in the same way as a conventional input, and can be recorded on a track of the recorder.

1. Press the [SETUP] key → [F1] key.

The SETUP screen Patch In page will appear, allowing you to select the input signal for each input channel.



2. In the MIXER CHANNEL INPUT ASSIGN area, move the cursor to the input channel to which you will assign the pad output.
3. Rotate the [DATA/JOG] dial to make a selection in the range of “SMP 1”–“SMP 8.”

The output of the selected pad will be assigned to the input channel.



- Pad assignments are common to banks A and B. If “SMP 1” is selected for a channel, the output of pad 1 for both banks A and B will be assigned to it.
- All sounds assigned to pads will be monaural output.

4. Turn on the [ON] key of the input channel to which the pad is assigned, and raise the fader.

Now the signal of the pad you selected in step 3 will be sent to the corresponding input channel, and can be recorded or monitored.

# Assigning a region to a sampling pad

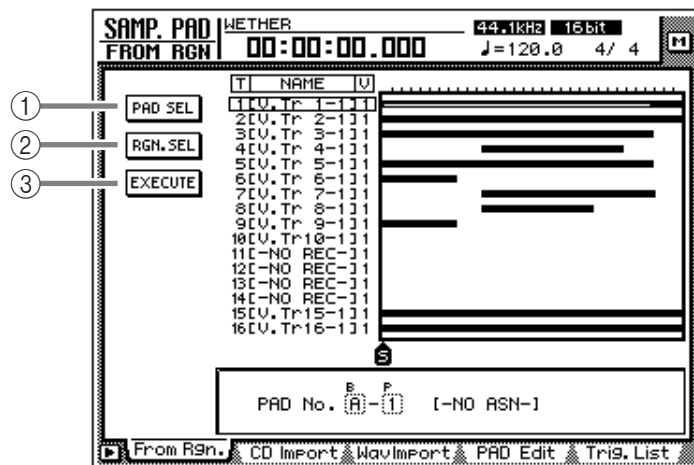
In order to use the pads to play samples, you must first assign the desired samples to those pads. There are three ways to assign samples to pads.

- ① **Assign a desired region from tracks 1–16 of the recorder section**
- ② **Import an audio CD track from an internal/external CD-RW drive**
- ③ **Import a WAV file from a SCSI device**

As an example, here's how to assign a region that was previously recorded on a track.

1. In the SAMPLING PAD section, press the [EDIT] pad → [F1] key.

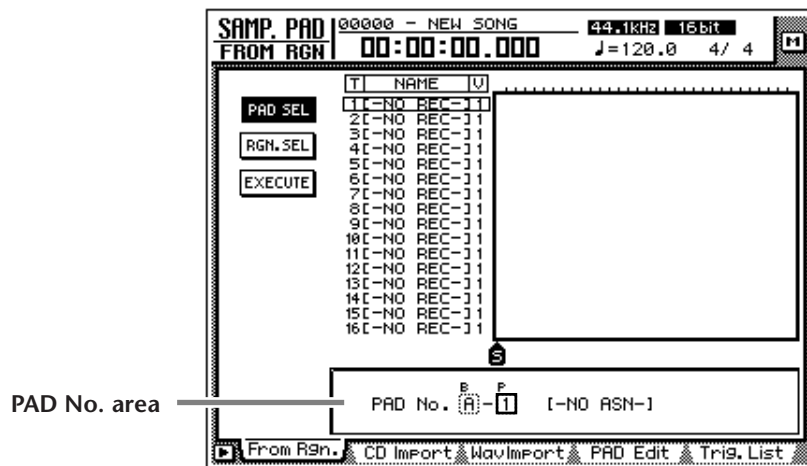
The SAMP.PAD screen From Rgn. page will appear, allowing you to assign a desired region to a pad. This page shows three buttons and the regions recorded on each track.



The three buttons have the following functions.

- ① **PAD SEL button**  
Selects the pad to which the region will be assigned.
- ② **RGN. SEL button**  
Selects the region.
- ③ **EXECUTE button**  
Executes the assignment of the region to the pad.

- Move the cursor to the PAD SEL button in the upper left of the display, and press the [ENTER] key.  
The cursor will move to the PAD No. area in the lower right of the display. Pads to which nothing is assigned will be displayed as “-NO ASN-”.



- Use the [CURSOR] keys and the [DATA/JOG] dial to select the pad bank (A/B) and pad number (1–8) to which a region will be assigned.
- Press the [ENTER] key.  
The cursor will return to the PAD SEL button.
- Move the cursor to the RGN. SEL button and press the [ENTER] key.  
The currently selected region will blink.



.....  
If you perform this step when no region exists (i.e., when nothing has been recorded on any track), an message of “ERROR SELECTED SONG HAS NO REGION” will appear, and it will not be possible to make settings.

- Use the [CURSOR] keys to move the cursor to select the region.  
The currently selected region will be highlighted, and its size will be displayed at the bottom of the screen.



.....  
The sample size that can be assigned to the sampling pads are limited to a total of approximately 8 MB (approximately 90 seconds at 16 bit/44.1 kHz). If you wish to assign only a portion of a long region to a pad, you should first use the EDIT screen TR Edit page to divide the region (→ P.156).

- Press the [ENTER] key.  
The selected region will be highlighted, and the cursor will return to the RGN. SEL button.

8. Move the cursor to the EXECUTE button, and press the [ENTER] key. A popup window will appear, asking you to confirm the assignment to the pad.



9. To execute the assignment, move the cursor to the OK button and press the [ENTER] key.

When the assignment is completed, the display will indicate "COMPLETE."



.....

*When you assign a region to a pad, a name of "Smpltr" will automatically be assigned to that pad. If you wish to change this name, refer to page 193.*



.....

*For the procedure of importing CD-DA data or a WAV file to a pad, refer to the Reference Guide.*



.....

*If you attempt to assign a sample that would exceed the memory capacity, an error message of "Memory Full" will be displayed, and the assignment will not be executed.*



.....

*You can check the approximate amount of sample pad memory in the SMPL. PAD screen PAD Edit page ([EDIT] pad → [F4] key).*

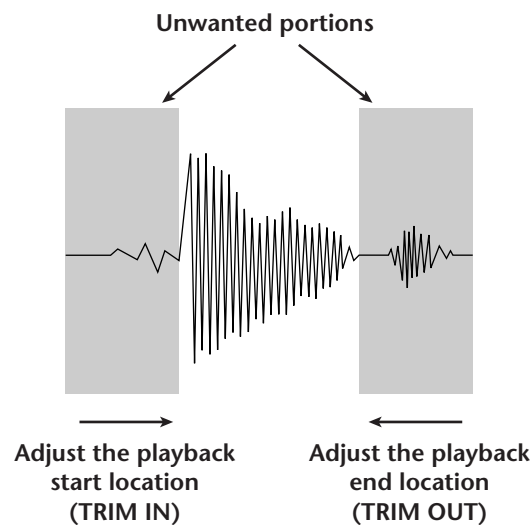
# Trimming a sample

You can make fine adjustments to the playback start location and playback end location of a sample assigned to a pad in order to eliminate unwanted portions at the beginning and end.

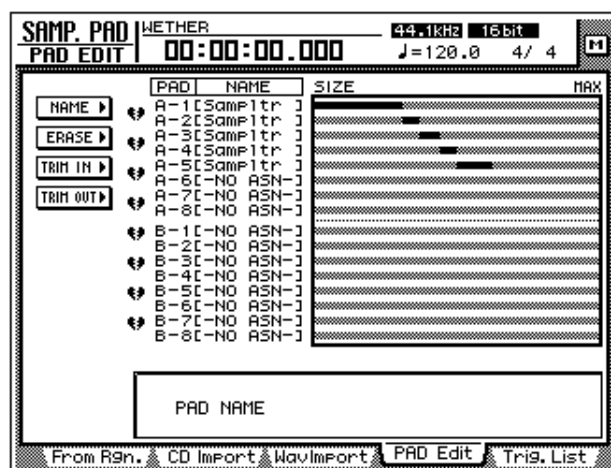
Use the TRIM IN command to adjust the playback start location, and use the TRIM OUT command to adjust the playback end location.



Trimming a sample will not increase the sample size that can be assigned to the sampling pads.

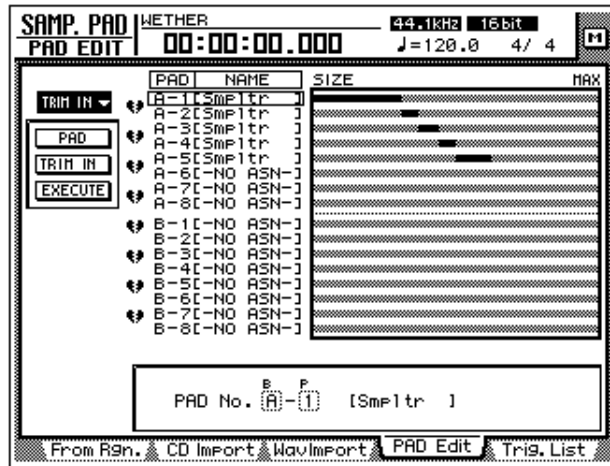


1. In the SAMPLING PAD section, press the [EDIT] pad → [F4]. The PAD Edit page will appear.

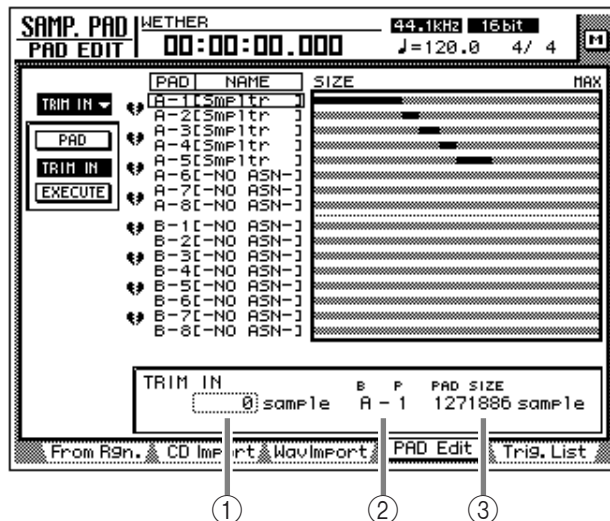


2. Move the cursor to the TRIM IN menu (if you wish to edit the playback start location) or the TRIM OUT menu (if you wish to edit the playback end location), and press the [ENTER] key.

Buttons for setting the TRIM IN/TRIM OUT command parameters will appear.



3. Move the cursor to the PAD button, and press the [ENTER] key.  
The cursor will move to the PAD No. area in the lower right.
4. Use the [CURSOR] keys and the [DATA/JOG] dial to select the pad bank and pad number that you wish to trim.
5. Press the [ENTER] key.  
The cursor will return to the PAD button.
6. Move the cursor to the TRIM IN button (if editing the playback start location) or the TRIM OUT button (if editing the playback end location), and press the [ENTER] key.  
The cursor will move to the trim value field.



① **TRIM IN/TRIM OUT**

Here you can specify the amount of trimming in units of a sample.

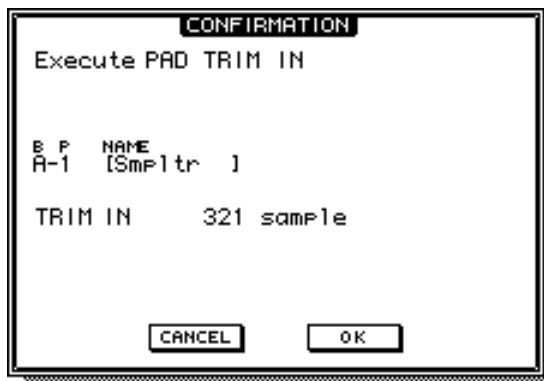
② **Bank/pad number**

This displays the bank and pad number of the currently selected pad.

③ **PAD SIZE**

This displays the length of the currently assigned sample, in units of one sample.

7. Use the [DATA/JOG] dial to specify the amount of trimming in sample units.
8. Press the [ENTER] key.
9. Move the cursor to the EXECUTE button, and press the [ENTER] key. A popup window will appear, asking you to confirm the trimming operation.



10. To execute the trimming operation, move the cursor to the OK button and press the [ENTER] key.

The beginning or end of the sample will be deleted as you specified. Strike the pad to hear the results.

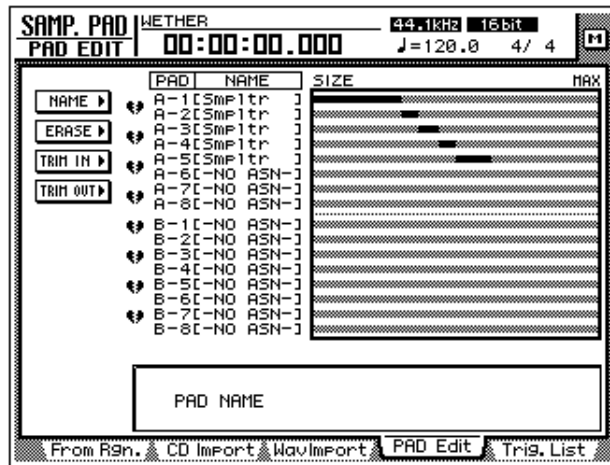


.....  
*Once you execute the trimming operation, it cannot be reversed by pressing the [UNDO] key. If you wish to make fine adjustments again, you must re-assign the region.*

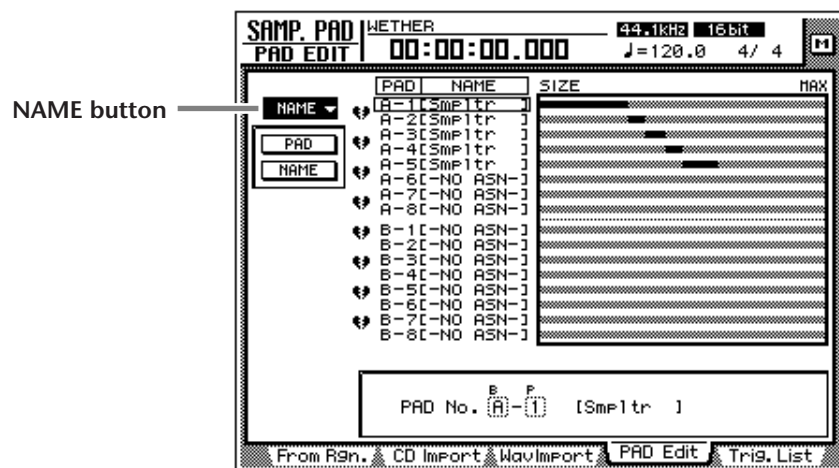
# Naming a pad

You can name each pad to which a sample is assigned.

1. In the SAMPLING PAD section, press the [EDIT] pad → [F4] key.  
The PAD Edit page will appear.



2. Move the cursor to the NAME menu and press the [ENTER] key.  
The display will show the PAD button used to select a pad, and the NAME button used to assign a name.



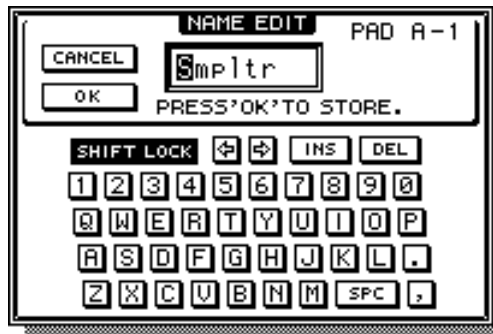
3. Move the cursor to the PAD button and press the [ENTER] key.  
The cursor will move to the PAD No. area at the lower right.
4. Use the [CURSOR] keys and the [DATA/JOG] dial to select the bank and number of the pad that you wish to name.
5. Press the [ENTER] key.  
The cursor will return to the PAD button.



- Move the cursor to the NAME button and press the [ENTER] key. The NAME EDIT popup window will appear, allowing you to input the name.



A name of up to eight characters can be input.



- After assigning the desired name, move the cursor to the OK button and press the [ENTER] key.

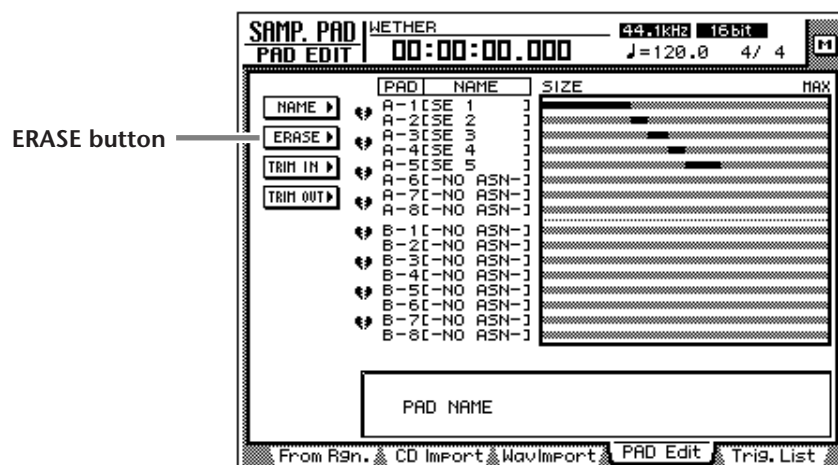


For details on inputting characters, refer to page 60.

## Erasing a pad sample and name

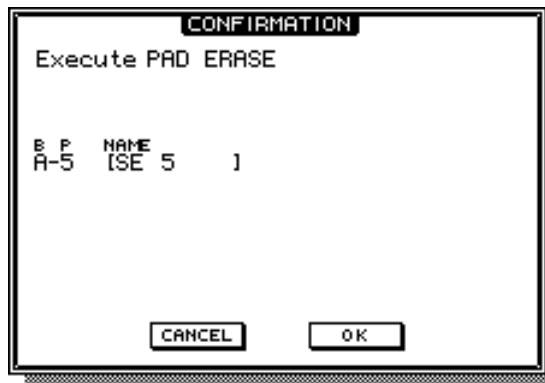
Here's how to erase the sample and name assigned to a pad, returning that pad to the initial state.

- In the SAMPLING PAD section, press the [EDIT] pad → [F4] key. The SAMP.PAD screen PAD Edit page will appear.



- Move the cursor to the ERASE button and press the [ENTER] key. The display will show the PAD button used to select the pad, and the EXECUTE button used to execute the Erase command.

3. Move the cursor to the PAD button and press the [ENTER] key.  
The cursor will move to the PAD No. area at the lower right.
4. Use the [CURSOR] keys and the [DATA/JOG] dial to select the bank and pad number of the pad that you wish to erase.
5. Press the [ENTER] key.  
Press the [ENTER] key.  
The pad will be selected, and the cursor will return to the PAD button.
6. Move the cursor to the EXECUTE button, and press the [ENTER] key.  
A popup window will appear, asking you to confirm that you wish to erase the pad settings.



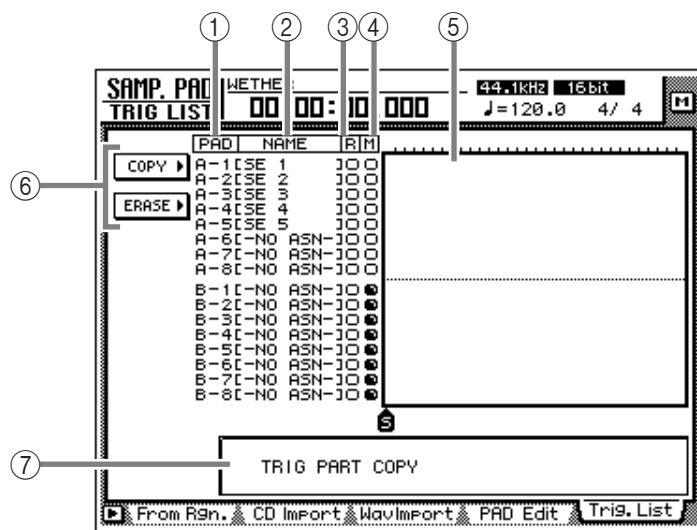
7. To execute the Erase command, move the cursor to the OK button and press the [ENTER] key.

# Recording your performance on the sampling pads

The AW4416 provides a simple sequencer dedicated to the sampling pads which operates in conjunction with the recorder. This simple sequencer records the timing of the trigger events that occur when you strike a pad, and can be used to layer kick or snare sounds on the audio tracks, or to add sound effects. Events in a specified area can also be copied repeatedly as a pattern, or erased.

Here's how to record your pad performance on the simple sequencer.

1. In the SAMPLING PAD section, press the [EDIT] pad → [F5] key.  
The Trig. List page will appear, allowing you to record your pad performance.



This screen shows the following information.

① **PAD**

The bank and number of the pads that will be recorded/played.

② **NAME (pad name)**

This is the name assigned to each pad. Pads to which no sample has been assigned will be displayed as “-NO ASN-”.

③ **R button**

This is the recording switch for each pad. When you move the cursor and press the [ENTER] key to change the button display from O to ●, that pad can now be recorded.

④ **M button**

This is the mute switch for each pad. When you move the cursor and press the [ENTER] key to change the button display from O to ●, that pad will be muted.



.....  
It is not possible to play bank A and B pads simultaneously. The M buttons will automatically switch to ● for the bank that is not currently selected by the [BANK] switch, and will be muted.

⑤ **Pad tracks**

These tracks record the timing of the trigger events for each pad. The time from while you press the pad until you release it is shown as a bar graph.

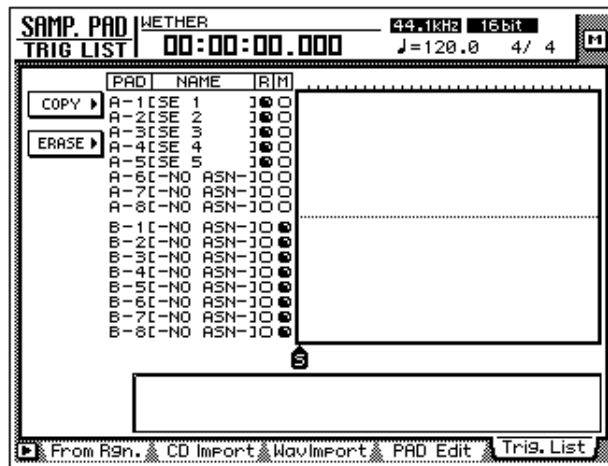
⑥ **COPY/ERASE menu**

This menu accesses commands for copying/erasing previously-recorded trigger events. Move the cursor to the desired menu and press the [ENTER] key to access the list of commands.

⑦ **Parameter value area**

In this area you can set the parameters required to execute the command.

- Use the [CURSOR] keys and the [ENTER] key to switch the R column of the pad(s) you wish to record from O to ●.



- Start the recorder, and strike the pads while listening to the playback of the audio tracks.

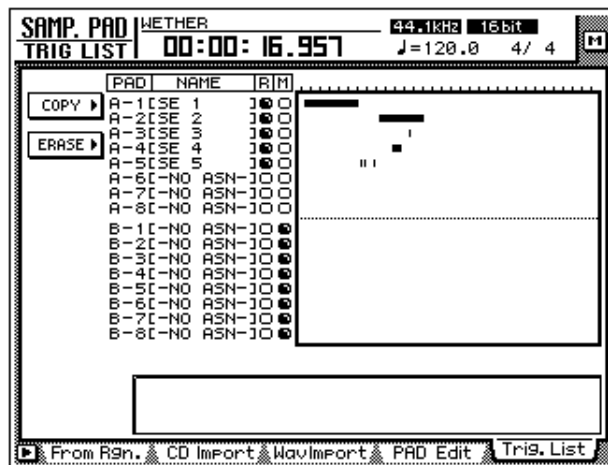
Trigger events will be recorded on the corresponding pad track.

- When you are finished performing, stop playback on the recorder.



**Tip!**

- You can also begin recording from the middle of the song.
- Immediately after recording, you can press the [UNDO] key to cancel trigger event recording.



- Use the [CURSOR] keys and the [ENTER] key to change the R column from ● back to O, and play back the recorder to hear the playback of the trigger events.



Be aware that if you play back the recorder when the R column still displays ● and strike the pads, your new performance will be recorded.

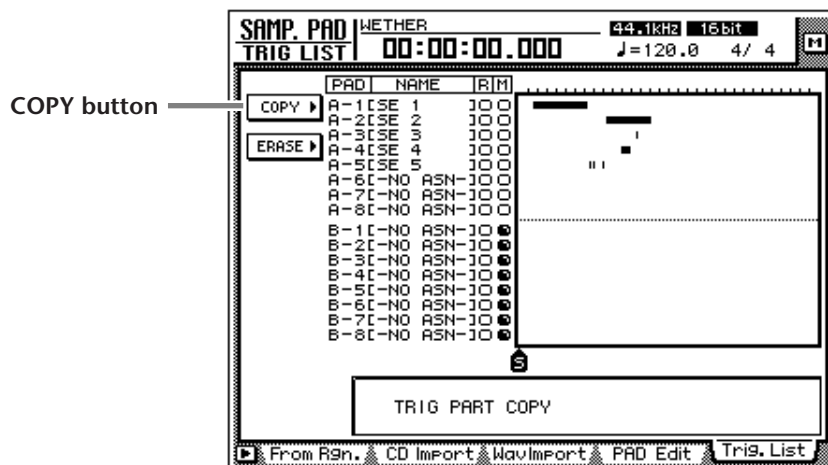


If you switch the M column of a pad from O to ●, that pad track will be muted even if you play back the recorder.

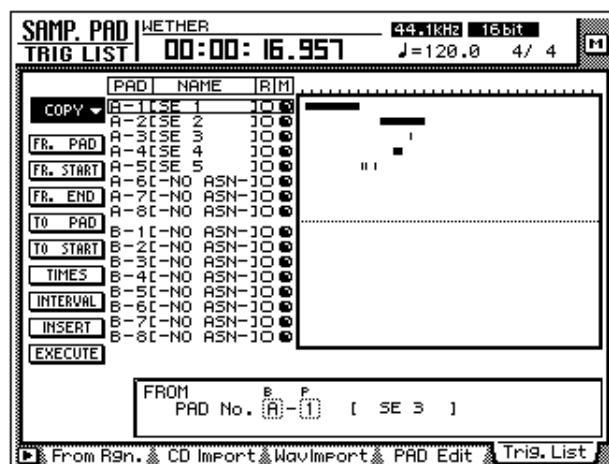
## Copying a pad performance

Here's how to copy a recorded pad performance to another location.

- In the SAMPLING PAD section, press the [EDIT] pad → [F5] key. The Trig. List page will appear.



- Move the cursor to the COPY menu and press the [ENTER] key. The parameters for the copy command will appear. These parameters have the following functions.



**FR. PAD (from pad)**

Specify the copy source pad track.

**FR. START (from start)**

**FR. END (from end)**

Specify the beginning (FR. START) and end (FR. END) of the area that will be copied from the pad track specified by FR. PAD. The specified area will be selected as a pattern.

**TO PAD**

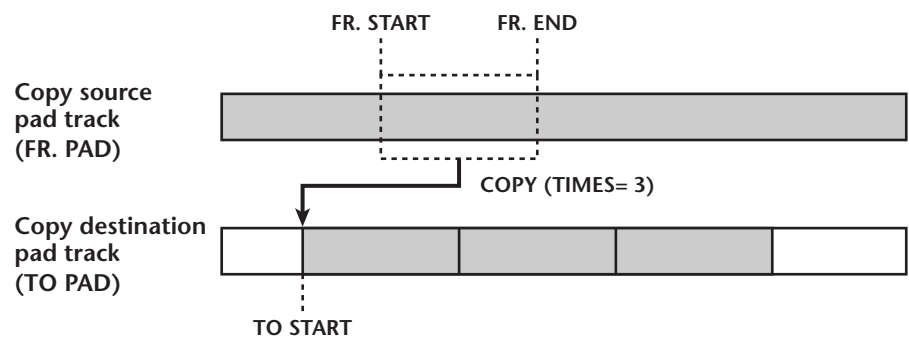
Select the copy destination pad track.

**TO START**

Specify the location in the pad track selected by TO PAD at which the data will be copied.

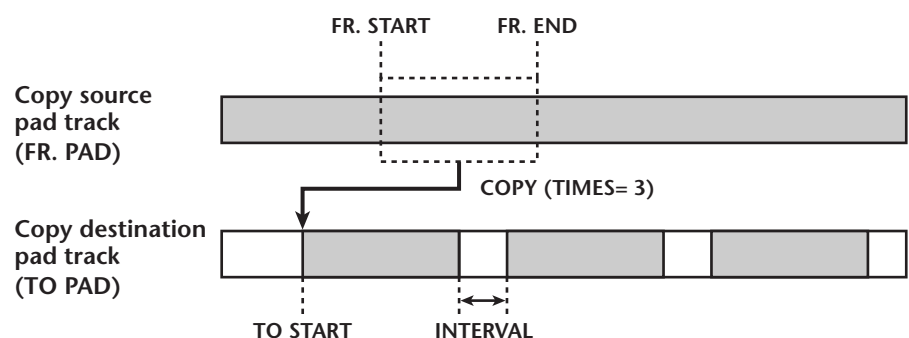
**TIMES (copy times)**

Specify the number of times that the data will be copied. The pattern selected as the copy source will be copied repeatedly.



**INTERVAL**

When copying multiple times, this parameter specifies the interval between copy destination patterns.



**INSERT**

Specify whether the pattern will be inserted (Insert) or overwritten (OverWrite) at the copy destination.

**EXECUTE**

This button executes the Copy operation.



- If you set the counter to measure units, you can set the FR. START, FR. END, and TO START parameters in measure/beat units.
- Instead of using the [DATA/JOG] dial to vary a location continuously, you can use the keys of the locate section to move instantly to a desired locate point or marker.

3. Move the cursor to the parameter whose setting you wish to change, and press the [ENTER] key.

The cursor will move to the parameter setting, and the value of the selected parameter will be displayed.

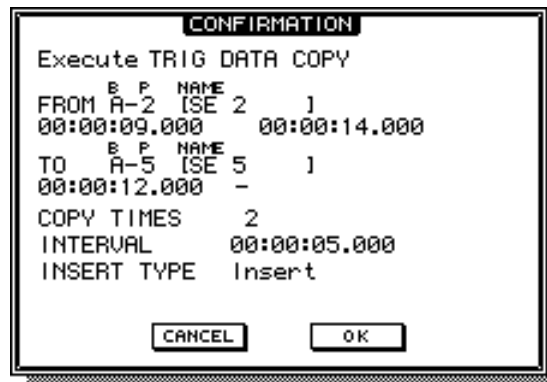
4. Use the [DATA/JOG] dial to set the parameter, and press the [ENTER] key.

The setting will change, and the cursor will return to the parameter location of step 3.

5. Repeat steps 3–4 to set the remaining parameters.

6. Move the cursor to the EXECUTE button and press the [ENTER] key.

A popup window will appear, asking you to confirm the Copy command.



7. To execute the Copy, move the cursor to the OK button and press the [ENTER] key.

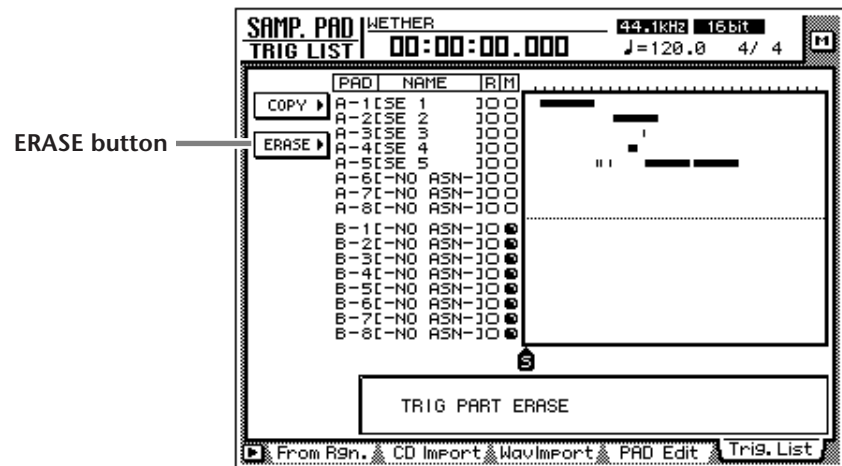


- You can undo the result of the copy by pressing the [UNDO] key immediately after executing Copy.

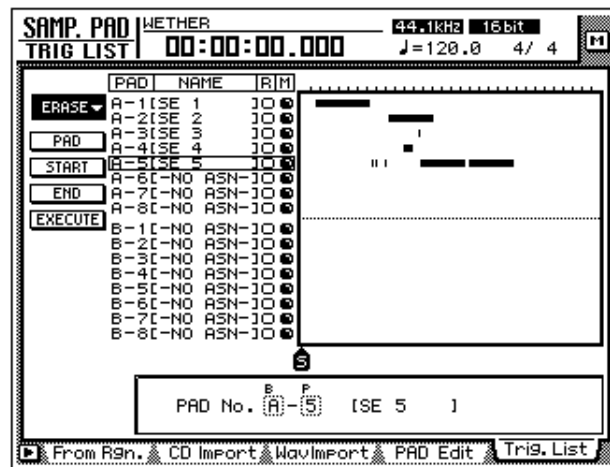
# Erasing a pad performance

Here's how to erase a pad performance that you recorded.

1. In the SAMPLING PAD section, press the [EDIT] pad → [F5] key. The Trig. List page will appear.



2. Move the cursor to the ERASE menu, and press the [ENTER] key.



The parameters for the Erase command will appear. Each parameter has the following function.

**○ PAD**

Select the pad track that will be erased.

**○ START**

**○ END**

Specify the beginning (START) and end (END) of the area that will be erased from the pad track selected by PAD.

**○ EXECUTE**

This button executes the Erase command.



**Tip!**

- If you set the counter to measure units, you can set the *START* and *END* parameters in measure/beat units.
- Instead of using the [DATA/JOG] dial to vary a location continuously, you can use the keys of the locate section to move instantly to a desired locate point or marker.

3. Move the cursor to the parameter whose setting you wish to change, and press the [ENTER] key.

The cursor will move to the parameter setting, and the value of the selected parameter will be displayed.

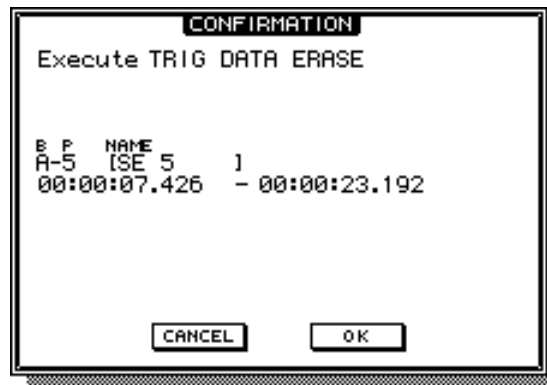
4. Use the [DATA/JOG] dial to set the parameter, and press the [ENTER] key.

The setting will change, and the cursor will return to the parameter location of step 3.

5. Repeat steps 3–4 to set the remaining parameters.

6. Move the cursor to the EXECUTE button and press the [ENTER] key.

A popup window will appear, asking you to confirm the Erase command.



7. To execute the Erase command, move the cursor to the OK button and press the [ENTER] key.

**Tip!**

You can undo the result of the erasure by pressing the [UNDO] key immediately after executing Erase.

# 13 Scene memory

This chapter explains the scene memory function and how to use it.

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## About scene memory

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On the AW4416, settings such as the mix parameters of each channel, external input/output patching, and effect 1/2 parameters can be assigned a name and stored in internal memory as a “scene.” The memory area in which these scenes are stored is called “scene memory.” Up to 96 scenes can be stored for a single song, and can be recalled by operations of the AW4416’s keys or by the automix function. All scenes stored in scene memory are saved on the hard disk as part of the song.

### □ Parameters included in a scene

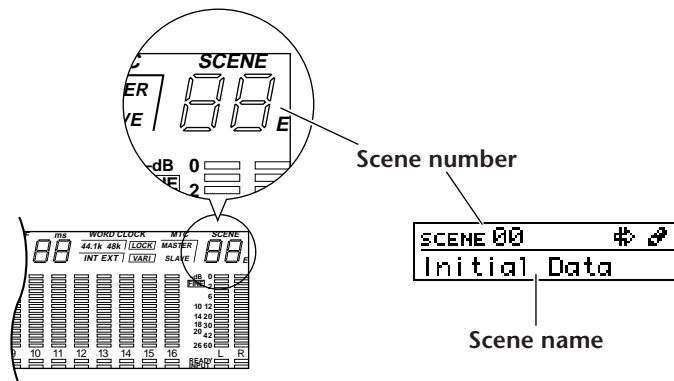
The following parameters are included in a scene.

<b>Mix parameters</b>	Fader locations for all channels and buses (input channels 1–24, recorder monitor channels 1–16, AUX send levels 1–8, effect returns 1/2, stereo)
	ON key settings of all channels
	Attenuation settings of all channels
	Phrase settings of all channels
	EQ settings of all channels
	Pan settings of all channels
	Routing settings of all channels
	Fader group settings of all channels
	Pair settings of all channels
	Dynamics settings of all channels
	Delay settings of all channels
<b>Effect parameters</b>	Parameter settings of effects 1/2
<b>Other</b>	Scene name settings
	Fader recall fade time settings
	Internal input/output patching and insert settings

### □ About scene numbers

There are 97 scene numbers, numbered 00–96. Of these, scenes can be stored in scene numbers 01–96. Scene number 00 contains a scene that returns the parameters to the initial state of the AW4416, and is for recall only.

The currently recalled scene number is displayed at the upper right of the level meter/counter. When a key of the MIXER section, FADER MODE section, AUTOMATION section, or UNIT section (except for the [FILE] key) is pressed, the upper right of the display will show the number and name of the currently recalled scene.



• Level meter/counter

• Display

If an “E” character is displayed at the right of the scene number, this means that the currently operated scene (the “current scene”) is different than the previously recalled or saved contents.



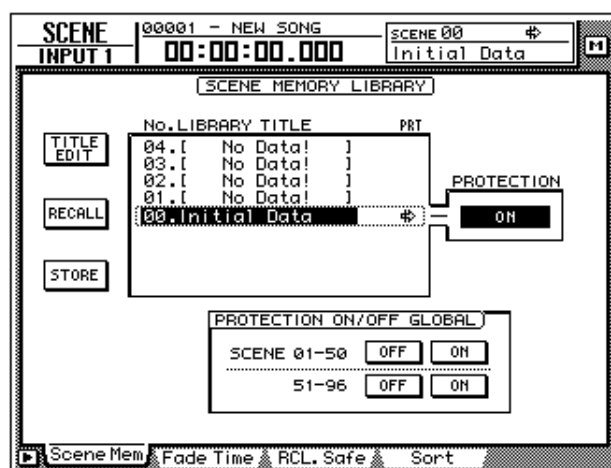
When the read-only scene number 00 is recalled, a # symbol will appear, indicating that the scene is read-only.

## Storing a scene

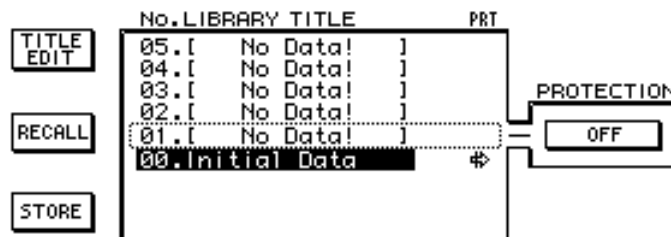
Here’s how to assign a name to the current scene and store it in a scene memory.

1. Press the [SCENE] key → [F1] key.

The Scene Mem page of the SCENE screen will appear. A list of the scenes (scene numbers and scene names) stored in scene memory will be shown in the center of the display. The last-recalled scene will be highlighted in the list. For scene numbers in which no data has been stored, the scene number field will indicate “[ No Data ! ].”

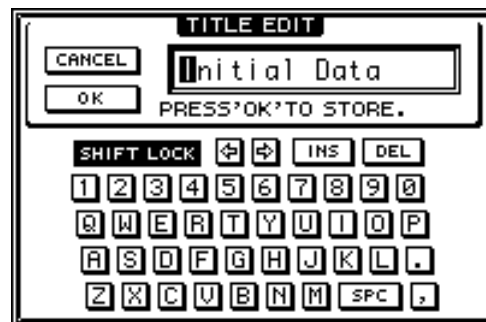


- Use the [DATA/JOG] dial to select the store destination scene number (01–96).



- Scene number 00 is for recall only, and cannot be stored.
- Be aware that if you select a previously-stored scene number and execute the Store operation, the previous scene will be lost.

- Use the CURSOR [◀]/[▶]/[▲]/[▼] keys to move the cursor to the STORE button in the screen, and press the [ENTER] key. The TITLE EDIT popup window will appear, allowing you to specify the name of the scene (scene name).



- Use the CURSOR [◀]/[▶]/[▲]/[▼] keys and the [DATA/JOG] dial to specify the name of the scene. For details on inputting characters, refer to page 60.
- To store the scene, move the cursor to the OK button in the screen and press the [ENTER] key. The scene will be stored, and the AW4416 will be in the same state as when the store destination scene number of step 2 is recalled. To cancel without storing the scene, move the cursor to the CANCEL button and press the [ENTER] key.



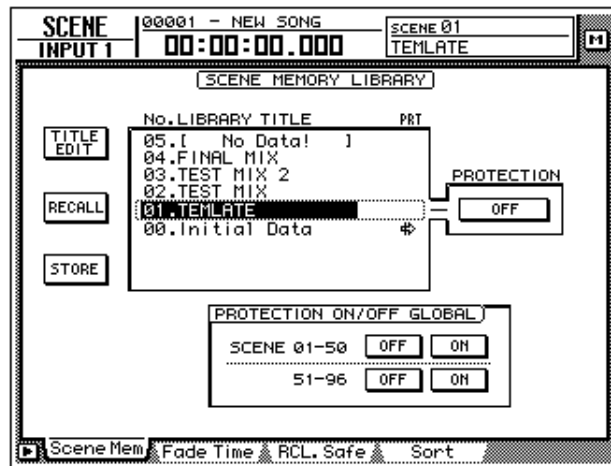
- To prevent a stored scene from accidentally being overwritten, you can make memory protect settings for each scene number. For details refer to page 208.
- You can use the keys of the SCENE MEMORY section to store a scene even when you are in a screen other than the SCENE screen Scene Mem page. For details refer to page 211.

# Recalling a scene

Here's how to recall the scene data stored in a scene memory.

1. Press the [SCENE] key → [F1] key.

The Scene Mem page of the SCENE screen will appear.



2. Use the [DATA/JOG] dial to select the scene that you wish to recall.
3. Use the CURSOR [◀]/[▶]/[▲]/[▼] keys to move the cursor to the RECALL button and press the [ENTER] key.

A popup window will appear, asking you to confirm the recall.



4. To execute the recall, move the cursor to the OK button and press the [ENTER] key.

To cancel without recalling, move the cursor to the CANCEL button and press the [ENTER] key.



.....  
When you execute the recall, the data of the current scene will be discarded. If you will need to reproduce the current scene, you must save it before recalling another scene.

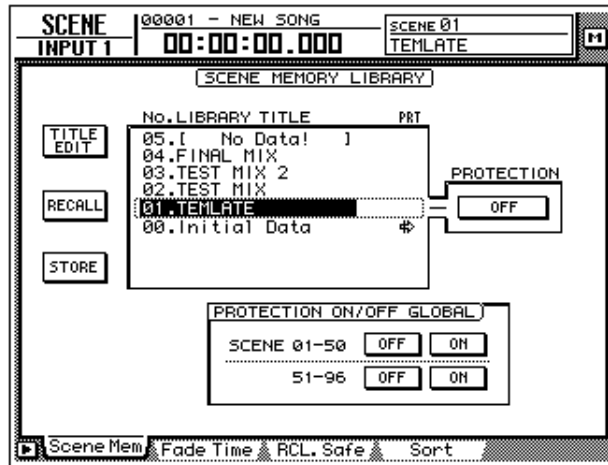


- .....
- You can use the keys of the SCENE MEMORY section to recall a scene even when you are in a screen other than the SCENE screen Scene Mem page. For details refer to page 212.
  - You can use program changes to recall AW4416 scenes from an external device (→ P.235), or use the automix function to recall scenes (→ P.225).
  - If desired, you can specify the time (fade time) over which the faders will move to their new locations when a scene is recalled, or exclude specific faders from the recall. For details on these settings, refer to the Reference Guide "SCENE screen/Fade Time page", "SCENE screen/RCL. Safe page".

# Editing the name of a scene

Here's how you can edit just the name of a stored scene.

1. Press the [SCENE] key → [F1] key.  
The Scene Mem page of the SCENE screen will appear.



2. Use the [DATA/JOG] dial to select the scene whose scene name you wish to edit.



.....  
*It is not possible to select a scene that has not been stored, a scene whose protect setting is on, or scene number 00.*

3. Use the CURSOR [◀]/[▶]/[▲]/[▼] keys to move the cursor to the TITLE EDIT button in the upper left of the display, and press the [ENTER] key.  
The TITLE EDIT popup window will appear, allowing you to edit the scene name.



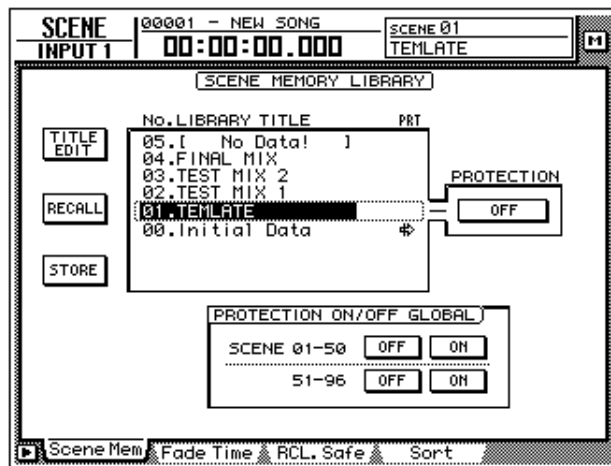
4. Use the CURSOR [◀]/[▶]/[▲]/[▼] keys and the [ENTER] key to input the new scene name.
5. To finalize the edited scene name, move the cursor to the OK button and press the [ENTER] key.

The scene name will be updated. If you wish to cancel without changing the scene name, move the cursor to the CANCEL button and press the [ENTER] key.

## Protecting a scene

You can memory-protect each individual scene that has been stored. A scene number for which protect is turned on can only be recalled.

1. Press the [SCENE] key → [F1] key.  
The Scene Mem page of the SCENE screen will appear.



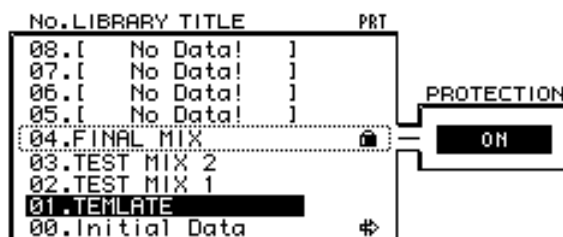
2. Use the [DATA/JOG] dial to select the scene number that you wish to protect.



.....  
*It is not possible to select a scene number that has not been stored or scene number 00.*

3. Use the CURSOR [◀]/[▶]/[▲]/[▼] keys to move the cursor to the PROTECTION field and press the [ENTER] key.

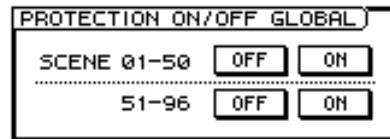
The button display will change from “OFF” to “ON,” indicating that the selected scene is protected. Scenes that are protected will be indicated by a lock icon (🔒) displayed in the PRT column of the list.



4. To turn protect off, use the [DATA/JOG] dial to select a protected scene in the same page, move the cursor to the PROTECTION button, and press the [ENTER] key.

The button display will change from “ON” to “OFF,” indicating that protect has been turned off.

By using the PROTECTION ON/OFF GLOBAL buttons in the Scene Mem page, you can turn protect on/off for entire groups of scene memories.



○ **SCENE 01–50 ON/OFF buttons**

Turn protect on/off for scene numbers 01–50.

○ **SCENE 51–96 ON/OFF buttons**

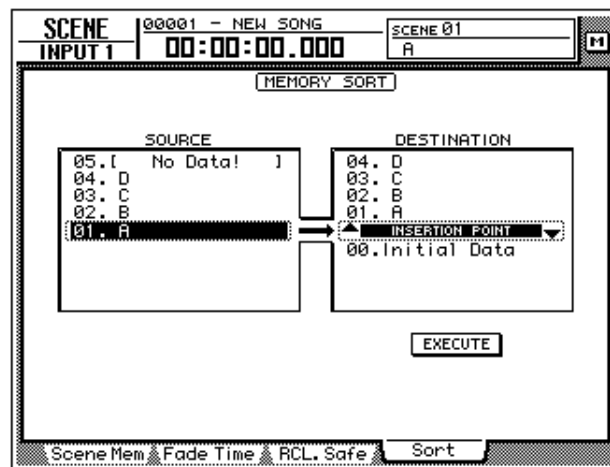
Turn protect on/off for scene numbers 51–96.

## Changing the order of scenes

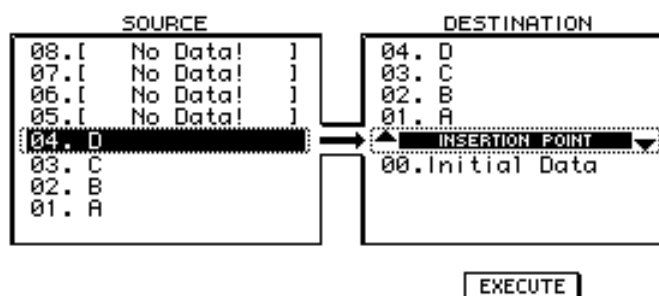
Any scene saved in scene numbers 01–96 can be moved to a different scene number.

1. Press the [SCENE] key → [F4] key.

In this example, scene names “A,” “B,” “C,” and “D” have been saved in scene numbers 01–04.

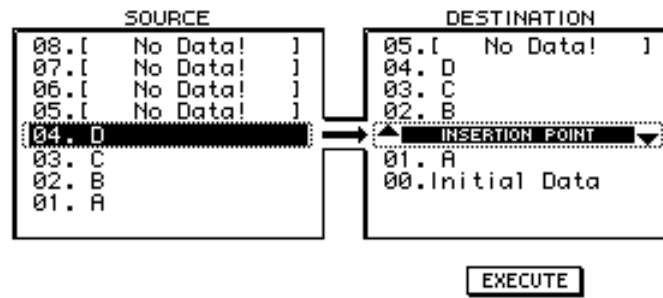


2. Press the CURSOR [◀] key to move the cursor to the list at left (SOURCE), and use the [DATA/JOG] dial to select the move source scene. In this example, we will select scene “D” which is stored in scene number 04.

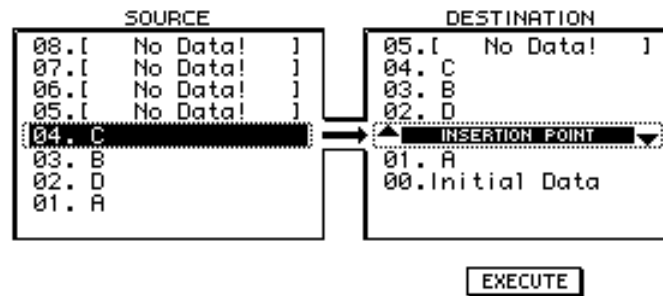




- Press the CURSOR [▶] key to move the cursor to the list at right (DESTINATION), and use the [DATA/JOG] dial to select the move destination. In this example, we will select a location between scene numbers 01 and 02.



- To move the scene, press the CURSOR [▼] key to move the cursor to the EXECUTE button and press the [ENTER] key. Scene "D" will move to scene number 02, and the scene numbers of scenes "B" and "C" will be incremented. In this example, scene numbers 01–04 will be rearranged in the order of scenes "A," "D," "B," and "C."

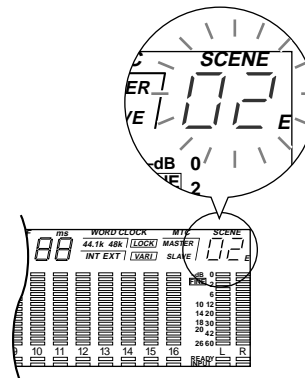


# Using keys to store/recall a scene

You can also store/recall a scene by using the keys of the SCENE MEMORY section. By using this method, you can perform these operations even when you are in a screen other than the Scene Mem page of the SCENE screen. For example, this method is convenient when you are editing mix parameters, and wish to overwrite the same scene repeatedly.

## Storing a scene

1. Use the [▼]/[▲] keys to select the store destination scene number. The scene number is displayed in the upper right of the level meter/counter.



2. Press the [STORE] key. The TITLE EDIT popup window will appear in the display, allowing you to specify the scene name.
3. As desired, use the CURSOR [◀]/[▶]/[▲]/[▼] keys and the [ENTER] key to specify the scene name.
4. To execute the Store operation, move the cursor to the OK button and press the [ENTER] key.



.....  
*If desired, you can cause the Store operation to be executed immediately when you press the [STORE] key, instead of accessing the popup window. For details on this setting, refer to the Reference Guide "UTILITY screen/Prefer.1 page."*

## Recalling a scene

1. Use the [▼]/[▲] keys to select the scene number that you wish to recall.  
The scene number is displayed in the upper right of the level meter/counter.
2. Press the [RECALL] key.  
A popup window will appear in the display, asking you to confirm the recall.
3. To execute the recall, move the cursor to the OK button and press the [ENTER] key.



*If desired, you can cause the Recall operation to be executed immediately when you press the [RECALL] key, instead of accessing the popup window. For details on this setting, refer to the Reference Guide "UTILITY screen/Prefer.1 page."*

# 14 Automix

This chapter explains how to record and play back automix, and how to edit a recorded automix.

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## What is automix?

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The AW4416 provides an “automix function” that allows controller operations and parameter changes to be recorded in realtime along with the song. Scene recall operations or movements of the channel faders and [ON] keys can be recorded into the automix to completely automate the mix. You will find this particularly valuable when performing ping-pong recording or during mixdown.

The following items can be recorded in the automix.

- Fader operations of each channel
- [ON] key operations of each channel
- Pan operations of each channel
- EQ operations of each channel
- AUX send operations of each channel
- Scene memory/library recall operations

You can record fader operations, pan operations, EQ operations, and scene memory recall operations etc. in separate passes, or use punch-in/out to re-record specific items. The timing and values of individual pieces of recorded data (referred to as “events”) can be edited off-line (i.e., with automix stopped).

Up to sixteen different automixes can be stored in internal memory for a song, and you can recall and use any one of these automixes as desired. (The currently selected automix is called the “current automix.”) The sixteen automixes saved in internal memory are saved on the hard disk as part of the currently selected song (the current song).



.....

*The automix of the AW4416 is always linked to the absolute time of the song. When you play back the song, automix will start playing or recording at the same absolute time, and when you stop the song, automix will also stop. It is not possible to use the automix function by itself with the song stopped, or to change the alignment between the starting location of the song and the starting location of automix.*

# Creating a new automix

In order to record an automix, you must first create a new automix.



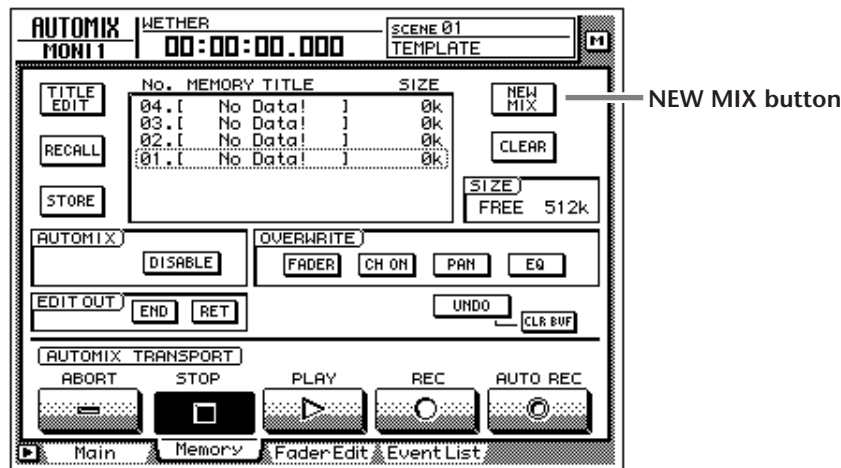
When you create a new automix, the contents of the current automix will be erased. If you wish to save the contents of the current automix, refer to page 228 “Storing an automix.”

1. While playing back the beginning of the song, set the channel faders, pan, EQ, and effect send/return etc., and save the settings in a scene memory.

The scene you save here will be the starting point for recording the automix. Alternatively, if you wish to use a previously-recorded scene as the starting point for the automix, recall that scene.

2. Press the [AUTOMIX] key → [F2] key.

The following display will appear.



3. Move the cursor to the NEW MIX button in the upper right of the screen, and press the [ENTER] key.

A message of “Will Make New Automix, ARE YOU SURE?” will appear.



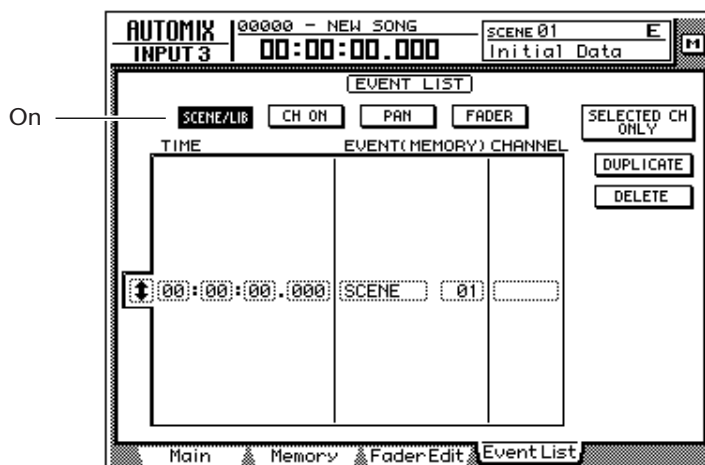
4. Move the cursor to the OK button and press the [ENTER] key. The current automix will be erased, and the automix will be initialized.



If you decide to cancel without creating a new automix, move the cursor to the CANCEL button after step 3, and press the [ENTER] key.

## 5. Press the [F4] key.

The Event List page will appear, where you can edit the events recorded in the current automix.



Notice that data for the scene number you saved in step 1 is entered at the “00:00:00.000” location in the TIME column. This event recalls a scene at absolute time location “00:00:00.000” of the song. When you create a new automix, data recalling the current scene (the last recalled or stored scene) will be written into this location. This scene number or time can be modified later if desired.

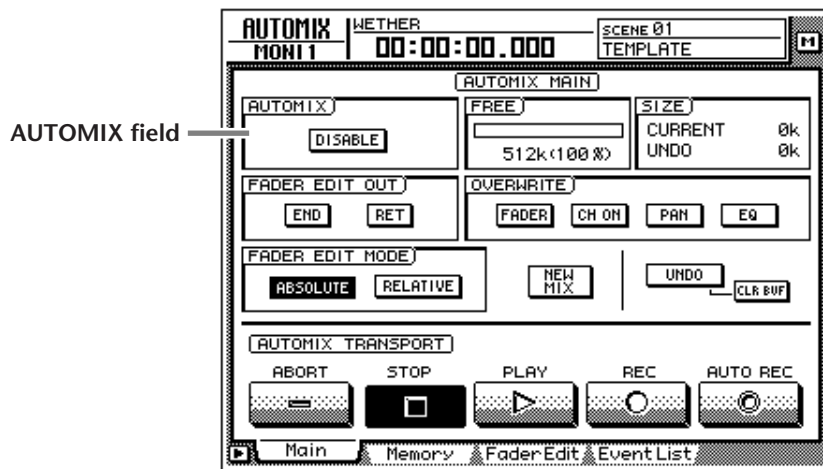
**Note**

.....  
 If an event recalling the scene memory is not displayed when you press the [F4] button, make sure that the SCENE/LIB button in the upper left of the screen is on (highlighted).


# Recording the first section

Here we will explain the procedure for recording fader operations of the monitor channels.

1. Press the [HOME] key of the FADER MODE section, and the [MONI] key of the MIXING LAYER section.  
Faders 1–16 will function as the channel faders for monitor channels 1–16.
2. Locate the song to a point slightly earlier than where you wish to begin recording the automix.
3. Press the [AUTOMIX] key → [F1] key.



4. Move the cursor to the DISABLE button of the AUTOMIX field, and press the [ENTER] key.

The button will be turned on (highlighted), and its title will change to ENABLE. Now automix is on (i.e., can be recorded or played). Whenever automix is on, the  icon will always be displayed at the left of the on-screen counter.



5. Move the cursor to the OVERWRITE field. Turn the FADER button on, and turn off the remaining buttons (CH ON, PAN, EQ).

The FADER/CH ON/PAN/EQ buttons in the OVERWRITE field are used to select the events that will be recorded in the automix. If a button is on (highlighted), the corresponding type of event can be recorded in the automix. The following events correspond to each button.

- **FADER**.....Operations of the faders and AUX send 1–8 faders of each channel
- **CH ON**.....Operations of the [ON] switches of each channel
- **PAN**.....Pan operations of each channel
- **EQ**.....EQ operations of each channel



Scene and library recall operations can be recorded at any time, regardless of these settings.

6. Move the cursor to the REC button in the screen, and press the [ENTER] key.


The REC button will blink, indicating that the AW4416 is ready to record automix.



7. Use the [SEL] keys to select the channels whose fader operations you wish to record.

When automix is in record-ready mode, you can use the [SEL] keys to select the channel that will be recorded. At this time, the [SEL] keys will blink.

8. Press the [PLAY] key on the top panel to begin song playback.

When you press the [PLAY] key, the REC button in the screen will turn on (highlighted), and automix recording will begin. While automix is being recorded, the  symbol at the left of the on-screen counter will be highlighted (■).

on (highlighted)

AUTOMIX | 00000 - NEW SC  
INPUT 3 | AMX 00:00:02.



9. While listening to the song, operate the faders of each channel.
10. When you have finished your operations, press the [STOP] key on the top panel to stop the song.

The on-screen REC button will turn off (normal display), and automix recording will stop. A message will ask whether you wish to update the automix with the newly recorded content.





11. If you wish to update the automix with the newly recorded content, move the cursor to the OK button and press the [ENTER] key.

The automix will be updated. If you move the cursor to the CANCEL button and press the [ENTER] key, the recorded content will be discarded, and the automix will return to its previous state.



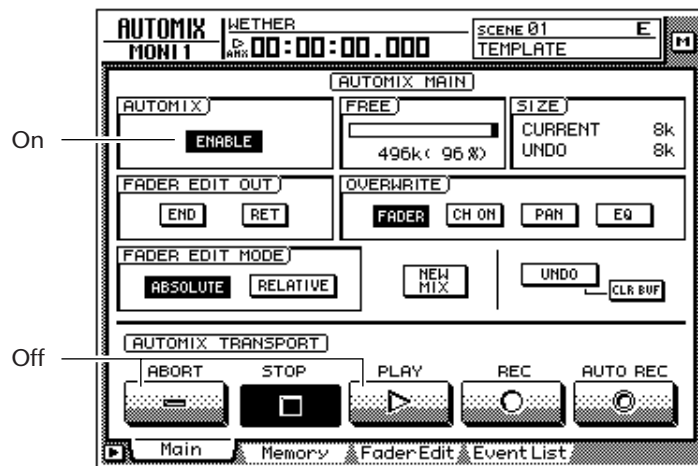
.....

- If in step 10 you move the cursor to the ABORT button and press the [ENTER] key, the recorded content will be discarded in the same way, and the automix will return to its previous state.
- Automix recording can also be stopped by using the on-screen STOP button instead of the [STOP] key. In this case, automix recording will stop, but the song will continue playing.
- Even after updating the automix content, you still move the cursor to the UNDO button in the right side of the screen, and press the [ENTER] key to return the automix to its state before recording (Undo). The front panel [UNDO] key cannot be used to undo automix.

## Playing back automix

Here's how to play back the recorded automix.

1. Press the [AUTOMIX] key → [F1] key.



2. Make sure that the button in the AUTOMIX field is displayed as "ENABLE."  
If the button is displayed as "DISABLE," move the cursor to the button, and press the [ENTER] key.
3. Make sure that the on-screen REC button and AUTO REC button are turned off.  
If they are on, move the cursor to the corresponding button, and press the [ENTER] key.
4. Locate the song to a point slightly earlier than where you began recording automix, and press the top panel [PLAY] key.

The on-screen PLAY button will turn on (the STOP button will turn off), and automix will begin playing automatically.



*If you begin playback from the middle of the song, automix will also begin playing from the same location. At this time if any automix events exist before the playback start location, automix will begin playback from a state of having executed all of these earlier events (i.e., the mix will be updated before playback begins).*

- To stop automix playback, move the cursor to the on-screen STOP button and press the [ENTER] key, or press the top panel [STOP] key. Even if automix is not stopped manually in this way, it will stop automatically after all of the recorded automix events have been played.

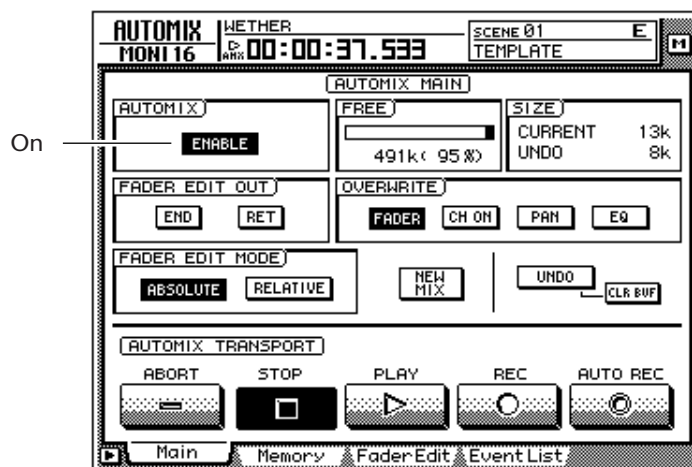
## Overwriting events

New data can be overwritten (added or rewritten) onto a previously-recorded automix, either on a different channel or different mix element on the same channel. For example after recording fader operations for monitor channel 1, you can then record fader operations for monitor channel 2, or record pan operations on the same channel. The following explanation shows pan or EQ operations can be overwritten onto an automix that already contains previously-recorded operations of the monitor channel faders.



*You can use the same procedure to overwrite (rewrite) the previously-recorded events of a previously-recorded channel. In this case, the previously-recorded content will be erased when you begin overwrite-recording.*

- Press the [HOME] key of the FADER MODE section, and the [MONI] key of the MIXING LAYER section.
- Locate the song to a point slightly before the location where you wish to begin overwriting.
- Press the [AUTOMIX] key → [F1] key.



4. Make sure that the button in the AUTOMIX field is displayed as "ENABLE."
5. Move the cursor to the OVERWRITE field. Turn the PAN button and EQ button on, and the remaining buttons (FADER, CH ON) off.
6. Move the cursor to the on-screen REC button, and press the [ENTER] key.
7. Press [SEL] key 1.  
Monitor channel 1 will be selected for recording.



.....  
*You can use the [SEL] keys to select multiple channels for overwriting. However, operations of the [PAN]/[EQ] controls will be recorded only for the channel that you selected last by pressing the [SEL] key.*

8. Press the top panel [PLAY] key to begin song playback.  
Simultaneously with the start of song playback, the previously-recorded automix will also play back.
9. While listening to the song, operate the [PAN] control.  
When recording pan or EQ operations in the automix, it is convenient to use the [PAN]/[EQ] controls at the right of the display.



.....  
*When you operate the [PAN] control and [EQ] controls, the pan and EQ settings of the corresponding channel will be displayed briefly in the upper part of the screen.*

10. When you are finished, press the top panel [STOP] key.  
Automix recording will stop, and a message will ask whether you wish to update the automix with the newly recorded content.
11. To update the automix with the newly recorded content, move the cursor to the OK button and press the [ENTER] key.

# Automix punch-in/out

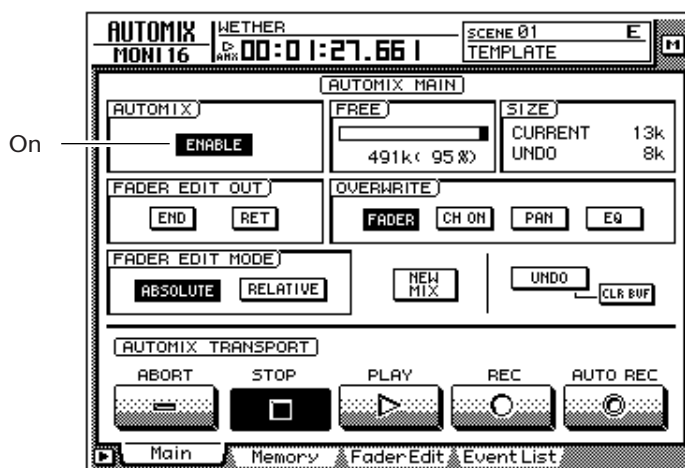
If you make a mistake while recording the automix, you can re-record just the location of your error (punch-in/out). As an example here, we will explain how to punch-in/out to re-record the pan operations of monitor channel 1 that you already recorded. When punching-in/out on only a specific channel, it is convenient to use the on-screen AUTO REC button instead of the on-screen REC button.

1. Press the [HOME] key in the FADER MODE section, and the [MONI] key in the MIXING LAYER section.
2. Locate the song to a point slightly earlier than the location where you wish to punch-in.



*If you will be punching-in/out repeatedly on the automix, it is convenient to set a locate point at a location earlier than the intended punch-in. For details on locate points, refer to page 109.*

3. Press the [AUTOMIX] key → [F1] key.  
Make sure that the AUTOMIX button is displayed as “ENABLE.”



4. Move the cursor to the OVERWRITE field. Turn the PAN button on, and the remaining buttons (FADER, CH ON, EQ) off.
5. Move the cursor to the AUTO REC button in the lower right of the screen, and press the [ENTER] key.  
The AUTO REC button will turn on.



*When you use the AUTO REC button instead of the REC button, you can select the recording channel after placing automix in record-ready mode. It is not necessary to use the [SEL] keys to select the channel beforehand.*

6. Press the top panel [PLAY] key to play back the song.  
When song playback is started with the AUTO REC button on, the REC button will be turned on automatically, and automix will be in record mode. However, recording will not actually occur since the recording channel has not yet been selected.
7. When the song arrives at the punch-in location, press [SEL] key 1 (monitor channel 1).  
Recording of pan operations on the corresponding channel will begin at the moment you press the [SEL] key (punch-in). At this time, the corresponding [SEL] key will blink.
8. While listening to the song, operate the [PAN] control.
9. When you are finished, press the [SEL] key of the same channel once again.  
The [SEL] key of the corresponding channel will go dark, and recording will end (punch-out). Automix will still be in a recordable state, but recording will not actually occur since no recording channel is selected.

**Note**

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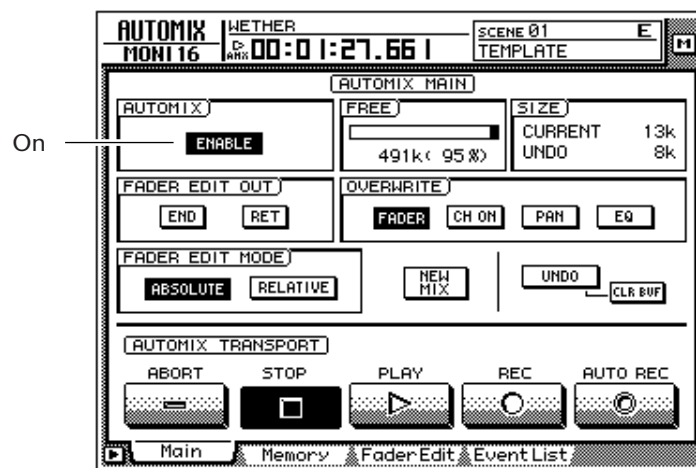
*If you did not operate the [PAN] control in step 8, the currently-recorded pan operation events between the punch-in and punch-out locations will be erased. This method can be used to erase specific events from the corresponding section of the song.*

10. Press the top panel [STOP] key.  
A message will ask whether you wish to update the automix with the newly recorded content. If you wish to update the automix, move the cursor to the OK button and press the [ENTER] key.  
When you stop the song, the on-screen REC will return to the Off state. However, since the AUTO REC button will remain on, you can punch-in on the automix again by pressing the [PLAY] key. If you wish to turn off the AUTO REC button, move the cursor to the AUTO REC button, and press the [ENTER] key.

# Editing the fader movements

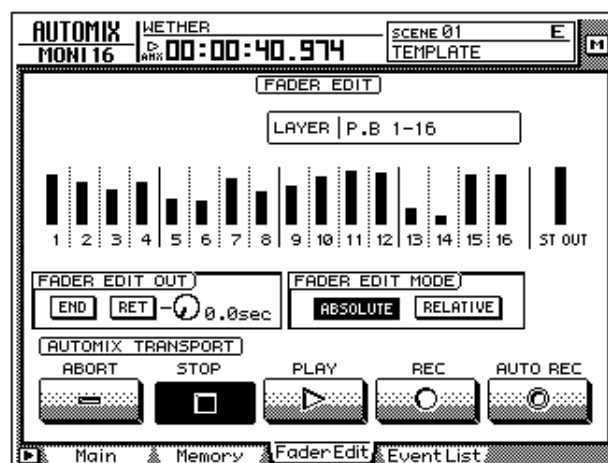
Fader operation events recorded in the automix can be precisely edited in real-time while watching the fader movements in a special screen. As an example here, we will explain how to edit the previously-recorded fader movements of monitor channel 1.

1. Press the [HOME] key of the FADER MODE section, and the [MONI] key of the MIXING LAYER section.
2. Locate the song to a point slightly earlier that where you wish to punch-in.
3. Press the [AUTOMIX] key → [F1] key.  
Make sure that the button in the AUTOMIX field is displayed as “ENABLE.”



4. Move the cursor to the OVERWRITE field. Turn the FADER button on, and the other buttons (CH ON, PAN, EQ) off.
5. Press the [F3] key.

A page will appear in which the current locations for the faders of each channel (monitor channels 1–16) are shown as a bar graph. When you wish to make detailed edits to the fader movements recorded in the automix, it is convenient to do so while viewing this screen.



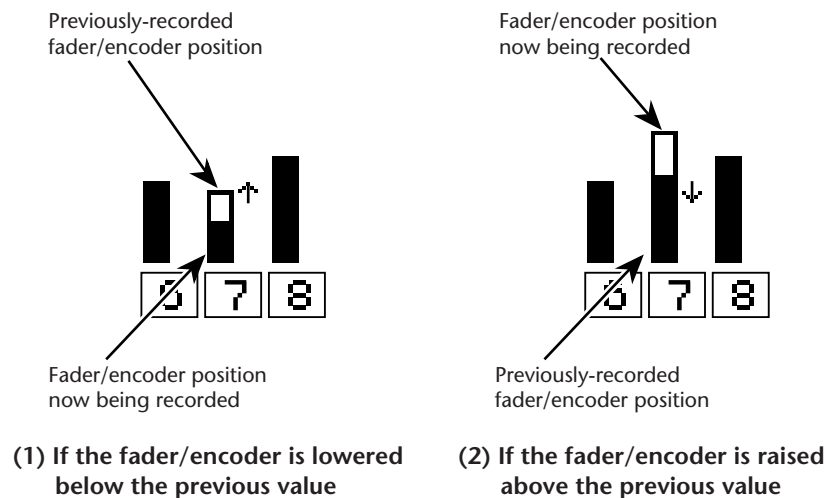
6. Make sure that the ABSOLUTE button in the FADER EDIT MODE field is turned on.

The two buttons of the FADER EDIT MODE field in the screen are used to select the fader editing method. When the ABSOLUTE button is on, previously-recorded events will be erased, and new events will be recorded.



**Note** .....  
Use the RELATIVE button when you wish to make relative changes to the previously-recorded fader events. For details refer to the Reference Guide "AUTOMIX screen/Main page."

7. Move the cursor to the on-screen AUTO REC button, and press the [ENTER] key.
8. Press the top panel [PLAY] key to play back the song.  
When song playback is started with the AUTO REC button on, the REC button will be turned on automatically, and automix will be in record mode. However, recording will not actually occur, since a recording channel has not yet been selected.
9. While listening to the song, press [SEL] key 1 (monitor channel 1) at the point where you wish to punch-in, and begin operating the fader.  
Punch-in will begin at the instant you press the [SEL] key. When you operate the fader, the previously-recorded position of the fader and the position currently being recorded will both be displayed in the bar graph. The upward or downward arrow shown beside the bar graph indicates the direction in which you can move the fader to return to the previously-recorded position.



10. When you are finished operating the fader, press the [SEL] key of the same channel to punch-out.



**Note** .....  
If you turn on the RET button in the FADER EDIT OUT field before you begin punch-in, the faders will automatically return to the previously-recorded positions as soon as you punch-out. This is convenient when you wish to change the level only for the punch-in/out area. You can use the knob located at the right of the RET button to adjust the time over which faders will return to the previously-recorded positions. For details refer to the Reference Guide "AUTOMIX screen/Main page."

11. When you are finished with punch-in/out, press the top panel [STOP] key.

A message will ask you whether you wish to update the automix with the newly recorded content. If you wish to update the automix, move the cursor to the OK button and press the [ENTER] key.

## Editing automix off-line

While the AW4416 is off-line, you can adjust the timing or value of previously-recorded events, or delete unwanted events. The following types of event can be edited off-line.

- Fader operations for each channel
- [ON] key operations for each channel
- Pan operations for each channel
- Scene memory or library recall operations

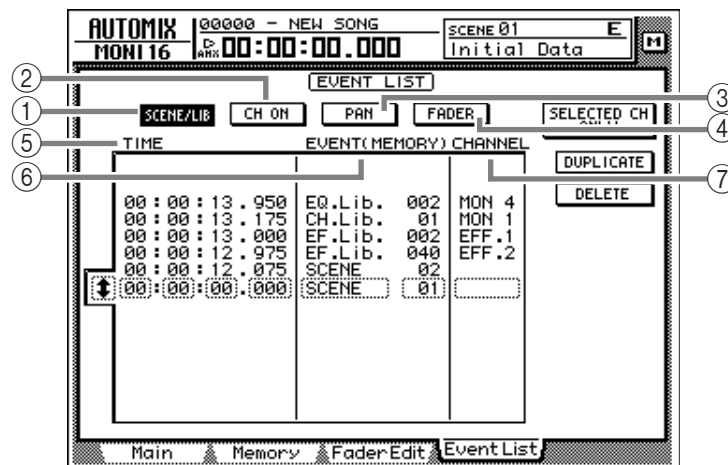


Event times are always displayed as absolute song time. For this reason, we recommend that you display the absolute song time in the counter when editing events off-line (→ P.39).

As an example, we will explain how to edit a scene recall or library recall event.

1. Press the [AUTOMIX] key → [F4] key.


The EventList page will appear, displaying a list of the events recorded in automix.




Use the SCENE/LIB, CH ON, PAN, and FADER buttons in the upper part of the screen to select the type of events that will be displayed. The following events correspond to each button.

- ① **SCENE/LIB button**.....Scene or library recall operations
- ② **CH ON button**.....[ON] key operations for each channel
- ③ **PAN button**.....Pan operations for each channel
- ④ **FADER button**.....Fader operations for each channel



2. Move the cursor to the SCENE/LIB button, and press the [ENTER] key.  
The scene/library recall events recorded in the automix will be displayed in the list. The event enclosed by the dashed line in the center of the list is the event currently selected for editing.
3. Move the cursor to the  at the left of the list, and rotate the [DATA/JOG] dial to scroll the list and select the event that you wish to edit.
4. Use the CURSOR [◀]/[▶] keys to move the cursor to the data item within that event that you wish to edit.

	00:00:13.950	EQ.Lib.	002	MON 4
	00:00:13.175	CH.Lib.	01	MON 1
	00:00:13.000	EF.Lib.	002	EFF.1
	00:00:12.975	EF.Lib.	040	EFF.2
	00:00:12.075	SCENE	02	
	00:00:00.000	SCENE	01	

#### ⑤ TIME

The timing at which the event will be executed is displayed as “hours:minutes:seconds:milliseconds.”

#### ⑥ EVENT


This area shows the type and value of the event. The type of events that can be selected in this area will depend on which of the buttons above has been pressed. When the SCENE/LIB button is on, the following events can be selected.

- **SCENE** .....Scene memories. The value at the right is the number of the scene that will be recalled.
- **EQ.Lib.** .....EQ libraries. The value at the right is the number of the EQ library that will be recalled.
- **DY.Lib.** .....Dynamics libraries. The value at the right is the number of the dynamics library that will be recalled.
- **EF.Lib.** .....Effect libraries. The value at the right is the number of the effect library that will be recalled.
- **CH.Lib.** .....Channel libraries. The value at the right is the number of the channel library that will be recalled.

#### ⑦ CHANNEL

This shows the channel (input channels 1–24, monitor channels 1–16, stereo output channel, return channels 1/2) for which the event will be recalled. This will be blank if scene memory has been selected in ⑥.

5. Rotate the [DATA/JOG] dial to modify the value of the item where the cursor is located.

	00:00:13.950	EQ.Lib.	005	MON 4
	00:00:13.175	CH.Lib.	01	MON 1
	00:00:13.000	EF.Lib.	002	EFF.1
	00:00:12.975	EF.Lib.	040	EFF.2
	00:00:12.075	SCENE	02	
	00:00:00.000	SCENE	01	



.....

*When you change the timing of an event, the cursor may jump one or more rows of the list to another location. This is because events are sorted in order of time, and is not a malfunction. The timing of events can be adjusted in fine steps of 25 msec.*



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*If the **SELECTED CH ONLY** button in the upper right of the screen is turned on, the screen will display only events of the channel selected by the [SEL] key.*

6. To add a new event, move the cursor to the **DUPLICATE** button in the upper right of the screen, and press the [ENTER] key.  
The event currently selected for editing will be duplicated. Modify its timing, event type, and value as desired.
7. To delete an unwanted event, move the cursor to the **DELETE** button in the upper right of the screen, and press the [ENTER] key.  
The event currently selected for editing will be deleted.



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*AUX 1–8 send level or EQ operations cannot be performed off-line. You must use punch-in/out to overwrite or delete these operations in the specified range.*

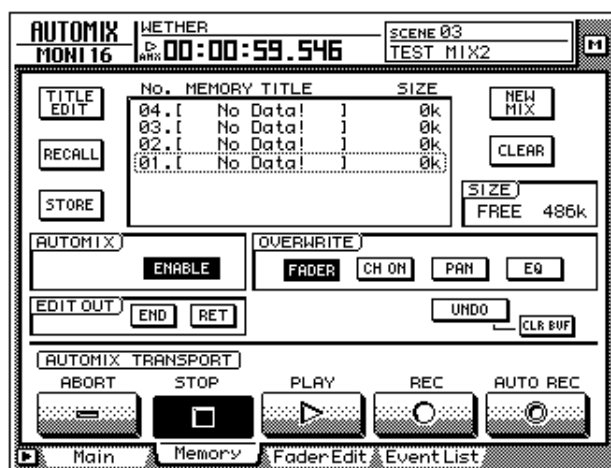
## Storing an automix

When you have completed the current automix, you should assign a name and store it in automix memory. Sixteen automixes can be stored in internal memory.



*Automix data that you store is saved on the hard disk as part of the current song. This means that you can create up to sixteen different automix versions for one song, and compare them at any time.*

1. Press the [AUTOMIX] key → [F2] key.



2. Move the cursor to the list in the center of the screen, and rotate the [DATA/JOG] dial to select the store destination automix number. You can select automix numbers 01–16. Vacant automix numbers will be displayed in the list as “[ No Data! ].”
3. Move the cursor to the STORE button located at the left of the list, and press the [ENTER] key. A screen will appear where you can input the automix name. Assign a name of up to sixteen characters. (For details on inputting characters, refer to page 60.)



4. After you have input the automix name, move the cursor to the OK button and press the [ENTER] key. The current automix data will be stored in the selected automix number.

**Tip!**

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If you turn STORE CONFIRMATION "OFF" in the Prefer.1 page of the UTILITY screen ([UTILITY] key → [F2] key), the automix will be stored in the specified automix number without this screen appearing. This method is convenient when you wish to repeatedly overwrite an automix into the same automix number.



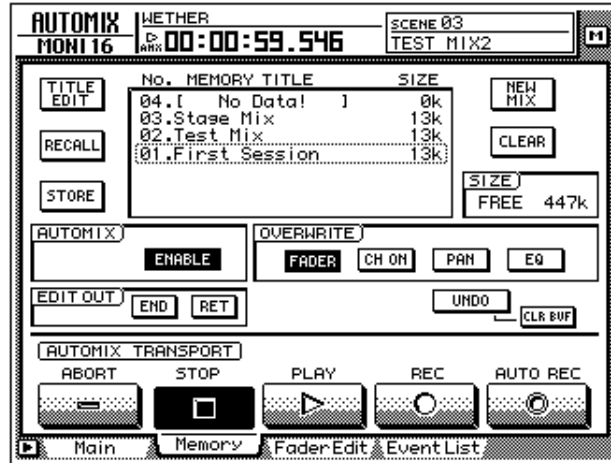
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The internal automix memory is shared between the current automix and a maximum of sixteen stored automixes. This means that if the current automix occupies a large amount of automix memory, it may be impossible to store the automix even if there are vacant automix numbers in the list. If this occurs, clear previously-saved automix data that you no longer need (Refer to the Reference Guide "AUTOMIX screen/Memory page"), and then execute the Store operation once again.

# Recalling an automix

Here's how to recall an automix that was saved in memory.

1. Press the [AUTOMIX] key → [F2] key.



2. Move the cursor to the list in the center of the screen, and rotate the [DATA/JOG] dial to select the automix number that you wish to recall.

No.	MEMORY TITLE	SIZE
06.	[ No Data! ]	0k
05.	[ No Data! ]	0k
04.	[ No Data! ]	0k
03.	Stage Mix	1k
02.	Test Mix	1k
01.	First Session	1k

3. Move the cursor to the RECALL button located at the left of the list, and press the [ENTER] key.

A message will ask you to confirm that you wish to recall the automix number selected in step 2.



4. Move the cursor to the OK button and press the [ENTER] key.

The recall will be executed, and the current automix will be replaced by the automix data that you recalled.

# 15 MIDI

This chapter explains how you can use MIDI when operating the AW4416.

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## What you can do using MIDI

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On the AW4416, MIDI can be used to perform the following operations.

○ **Change scenes by remote control**

By transmitting program changes from an external device to the AW4416, you can switch AW4416 scenes by remote control. You can also cause program changes to be transmitted to an external device when you select scenes on the AW4416.

○ **Synchronize with an external device via MTC/MIDI Clock**

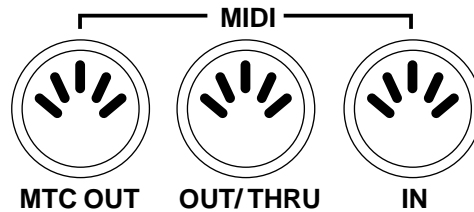
Synchronization messages such as MTC (MIDI Time Code) or MIDI Clock can be transmitted from the AW4416 to an external device such as a MIDI sequencer, so that it will operate in synchronization with the AW4416 song. (MTC can also be received by the AW4416.)

○ **Remote control via MMC**

MMC (MIDI Machine Control) messages from a computer or other external device can be received to remotely control the operation of the AW4416's transport, or to select/defeat recording tracks.

# MIDI connectors and the TO HOST connector

The AW4416 provides the following connectors used to convey MIDI messages.



## ○ MIDI IN connector

MIDI messages such as program change, MMC, and MTC are received at this connector.

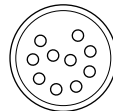
## ○ MIDI OUT/THRU connector

By changing the setting of an internal parameter, this connector can function either as a MIDI OUT connector or a MIDI THRU connector. When used as a MIDI OUT connector, it will transmit MIDI messages such as program change, MMC, and MIDI Clock. When used as a MIDI THRU connector, it will re-transmit the messages received at the MIDI IN connector without change.

## ○ MTC OUT connector

This is a dedicated output connector for MTC.

## TO HOST



## ○ TO HOST connector

A separately sold cable can be used to connect this to the serial port of your computer, allowing MIDI messages to be exchanged directly between the AW4416 and your computer. In order to use this connector, you will need to set the MIDI port setting to "TO HOST PC1," "TO HOST PC 2," or "TO HOST MAC," depending on the computer you are using (→ P.233).



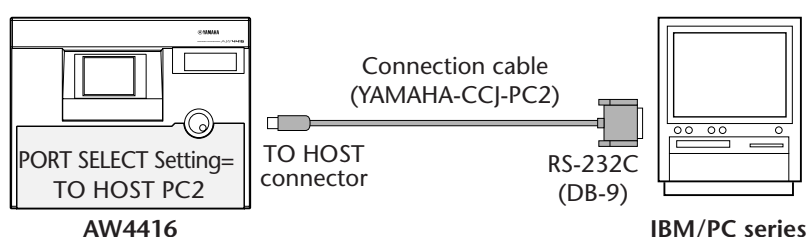
- The TO HOST connector cannot be used simultaneously with the MIDI IN connector and MIDI OUT/THRU connector.
- MTC cannot be transmitted via the TO HOST connector. If you need to transmit MTC to your computer, use the MTC OUT connector.
- Regardless of the port setting, the OUT/THRU connector will function as THRU if MIDI THRU is selected.

# Using the TO HOST connector for direct connection to your computer

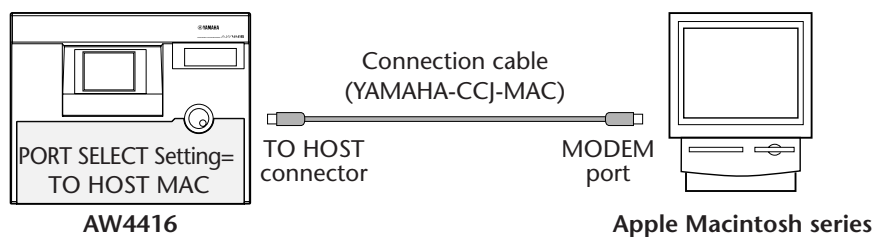
## Connections

To exchange MIDI messages directly between the AW4416 and your computer, use a separately sold cable to connect the TO HOST connector of the AW4416 to the serial port of your computer.

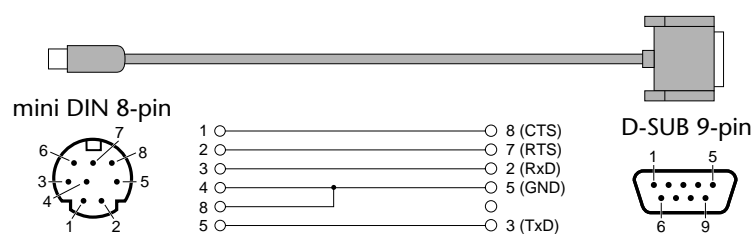
### Connection to an IBM/PC series computer



### Connection to an Apple Macintosh series computer



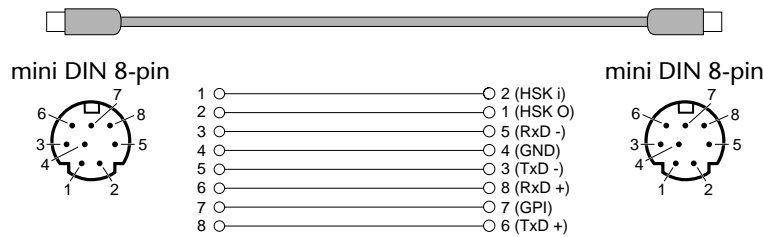
### ○ IBM/PC series: D-SUB9P → mini DIN8P cross cable



If your PC has a D-SUB 25-pin connector, use a Yamaha CCJ-PC1 cable together with a male/female conversion adapter.



### ○ Apple Macintosh series: 8-pin system peripheral cable



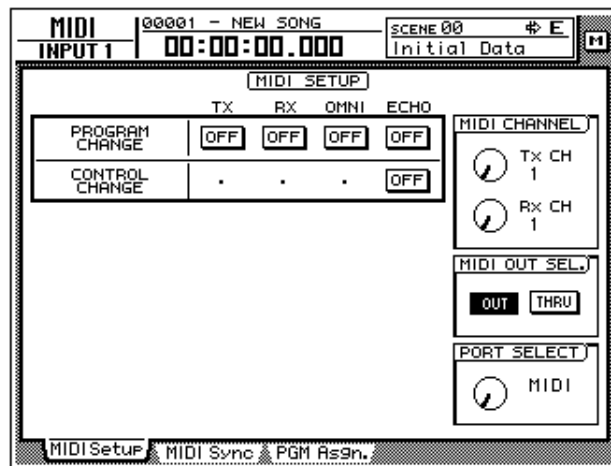
*In the case of some Macintosh computers that have no modem/printer cable, it is not possible to make direct connections to the AW4416's TO HOST connector.*

## Setting the PORT SELECT parameter

In order to use the TO HOST connector, the AW4416's PORT SELECT parameter must be set appropriately for the type of computer that is selected.

1. Press [MIDI], and then press the [F1] key.

The MIDI Setup page will appear, allowing you to make MIDI-related settings for the AW4416.



2. Move the cursor to the PORT SELECT knob, and use the [DATA/JOG] dial to select the setting appropriate for your computer.

The following types of computer require the following PORT SELECT parameter settings.

- IBM/PC series: TO HOST PC 2 (38.4 kbps)
- Apple Macintosh series (models with modem/printer port): TO HOST MAC

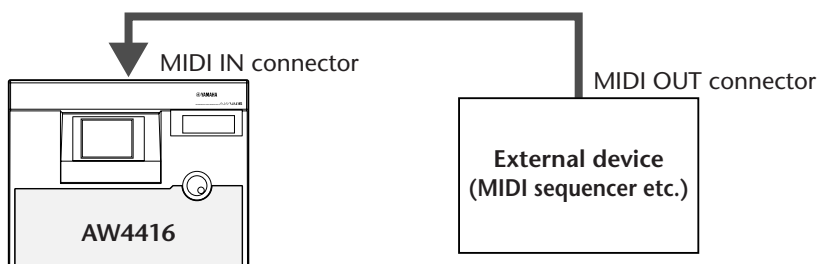


- Depending on your system, you may need separate driver software in order to make serial port connections.
- When connecting to a Macintosh, you must set the MIDI interface clock setting of your application to 1 MHz.

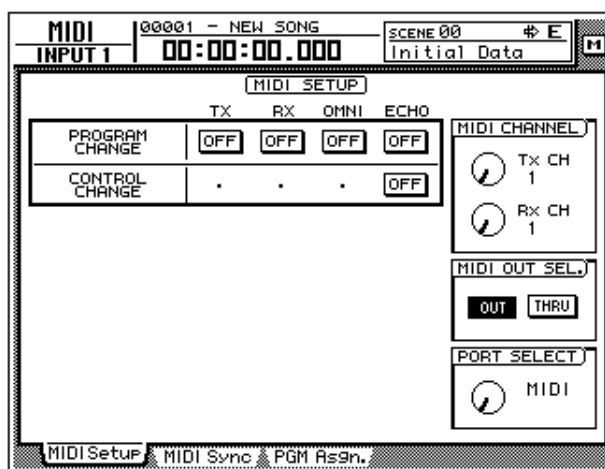
# Switching AW4416 scenes from an external device

By transmitting program changes from an external device to the AW4416, you can recall AW4416 scene memories by remote control.

1. Connect the MIDI OUT connector of the external device to the MIDI IN connector of the AW4416.



2. Press the [MIDI] key, and then press the [F1] key.  
The MIDI Setup page will appear in the display. In this page you can select the MIDI channel on which the AW4416 will transmit and receive, and specify whether program changes and control changes will be transmitted and received.



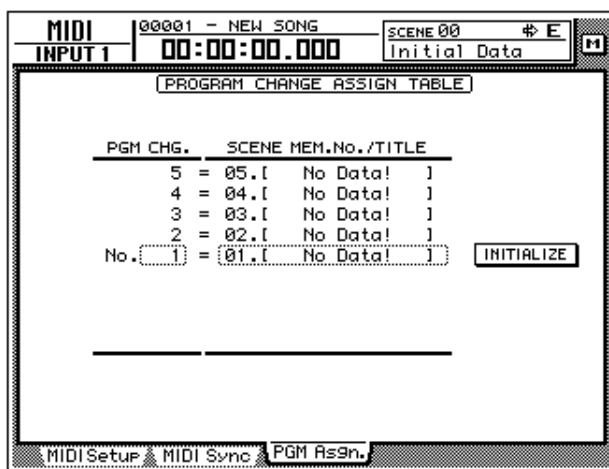
3. Move the cursor to the RX (receive) button in the PROGRAM CHANGE area, and press the [ENTER] key.  
The button will change from “OFF” to “ON.” With this setting, program changes can be received.
4. Move the cursor to the Rx CH knob in the MIDI CHANNEL area, and rotate the [DATA/JOG] dial to select the MIDI receive channel of the AW4416.



*If you turn on the OMNI button in the PROGRAM CHANGE area, program changes of all channels will be received.*

## 5. Press the [F3] key.

The PGM Asgn. page will appear, allowing you to assign AW4416 scene numbers to each program number 1–128. The “PGM CHG.” column is the program change number, and the “SCENE MEM.No./TITLE” column is the scene number and title.



*If you move the cursor to the INITIALIZE button located in the right of the screen and press the [ENTER] key, the scene number assignments will be initialized; scene numbers 01–96 will be assigned to program numbers 1–96, and scene number 00 will be assigned to program change 100. (All other program change numbers will be “-NO ASSIGN-.”)*

## 6. Move the cursor to the PGM CHG. column, and use the [DATA/JOG] dial to select a program change number (1–128).

PGM CHG.	SCENE MEM.No./TITLE
14	= 14.[ No Data! ]
13	= 13.[ No Data! ]
12	= 12.[ No Data! ]
11	= 11.[ No Data! ]
No. 10	= 10.[ No Data! ]
9	= 09.[ No Data! ]
8	= 08.[ No Data! ]
7	= 07.[ No Data! ]
6	= 06.[ No Data! ]

INITIALIZE

## 7. Move the cursor to the right, and use the [DATA/JOG] dial to select the scene number (00–96) that will be assigned to the program change number you selected in step 6.

If you select “–NO ASSIGN–,” no scene number will be assigned to that program change number. If you select a scene number which has not been stored in the AW4416’s internal memory, the title area will indicate “[ No Data! ].”

PGM CHG.	SCENE MEM.No./TITLE
14 =	14.[ No Data! ]
13 =	13.[ No Data! ]
12 =	12.[ No Data! ]
11 =	11.[ No Data! ]
No. 10 =	01.Initial Mix
9 =	09.[ No Data! ]
8 =	08.[ No Data! ]
7 =	07.[ No Data! ]
6 =	06.[ No Data! ]

**INITIALIZE**



.....

*If the same scene number is assigned to multiple program change numbers, recalling the corresponding scene will cause only the lowest of the assigned program change numbers to be transmitted. When you recall a scene number to which no program change is assigned, no program change will be transmitted.*

#### 8. Transmit a program change message from the external device.

The AW4416 will recall the scene corresponding to the program change that was received.



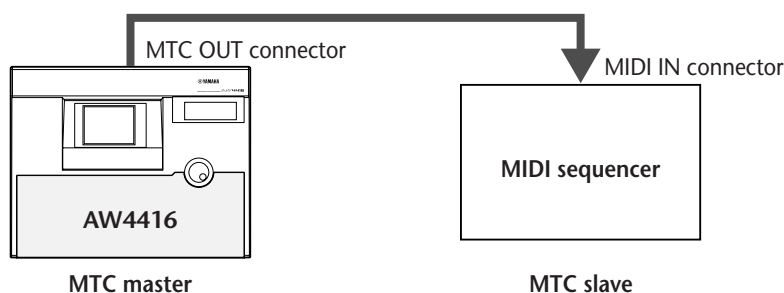
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*When you use the AW4416’s keys to recall a scene, you can cause a program change corresponding to that scene to be transmitted. To do so, turn on the Tx button in the PROGRAM CHANGE area in the screen for step 2.*

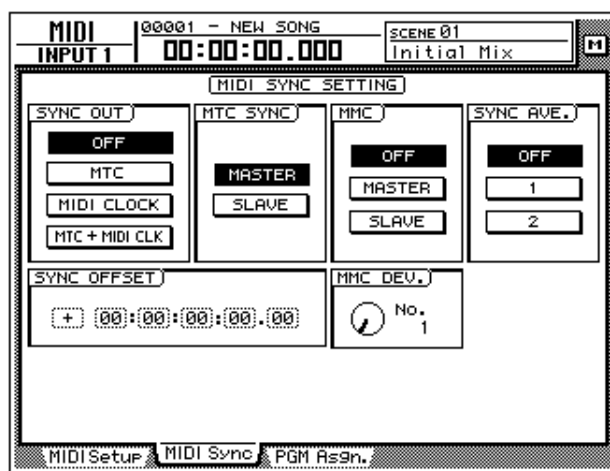
# Using MTC to synchronize the AW4416 and a MIDI sequencer

MTC can be transmitted from the MTC OUT connector of the AW4416 to an external device such as a MIDI sequencer or computer, causing the MIDI sequencer (or computer-based sequencer program) to synchronize to the AW4416 song.

1. Use a MIDI cable to connect the AW4416's MTC OUT connector to the MIDI IN connector of your MIDI sequencer.

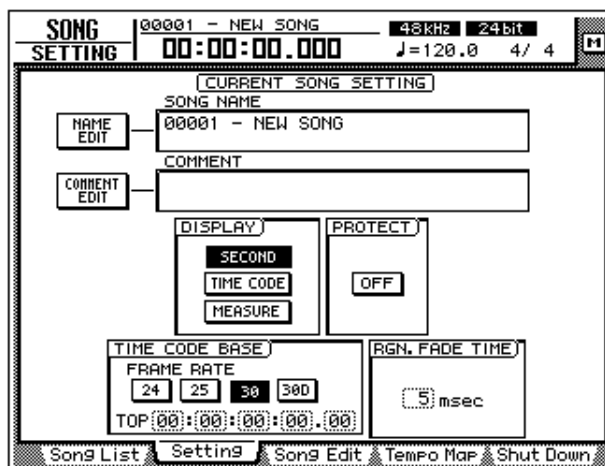


2. Press the [MIDI] key, and then press the [F2] key.  
The following screen will appear in the display.



3. Move the cursor to the MASTER button in the MTC SYNC area, and press the [ENTER] key.  
With this setting, the AW4416 will function as the MTC master (the device that transmits MTC).
4. Move the cursor to the MTC button in the SYNC OUT area, and press the [ENTER] key.  
With this setting, MTC will be transmitted from the MTC OUT connector when the AW4416 is running.
5. If you need to set the MTC frame rate, press the [SONG] key and then press the [F2] key.

The following screen will appear in the display.



6. Move the cursor to the TIME CODE area, and turn on one of the 24/25/30/30D (drop) buttons to select the frame rate.

By default, a frame rate of 30 is selected. The frame rate you select here will also affect the time code that is displayed in the counter.

7. If you wish to display time code in the counter, move the cursor to the TIME CODE button in the DISPLAY area, and press the [ENTER] key.
8. Set your MIDI sequencer so that it will follow MTC messages that it receives, and put it in playback mode. At this time, make sure that the frame rate setting of the sequencer matches the setting that you selected in step 6.

With these settings, the MIDI sequencer will be the MTC slave (the device that receives MTC).

9. Record or play back the AW4416 song.

When the AW4416 begins running, MTC will be transmitted from the MTC OUT connector to the external MIDI sequencer, causing it to begin synchronized operation from the same location.

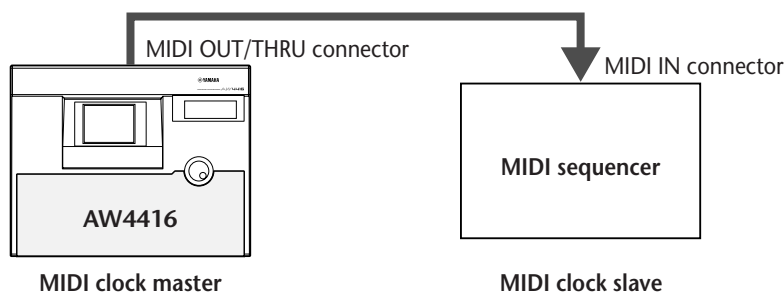


- It is possible to use the AW4416 as the MTC slave. However in order to ensure that the recorder section operates with maximum stability, we recommend that you use the AW4416 as the MTC master whenever possible.
- For the MTC time that is transmitted by the AW4416, you can specify an offset value that will be applied to the internal absolute time (ABS time). For details refer to the Song screen/Setting page in the Reference Guide.

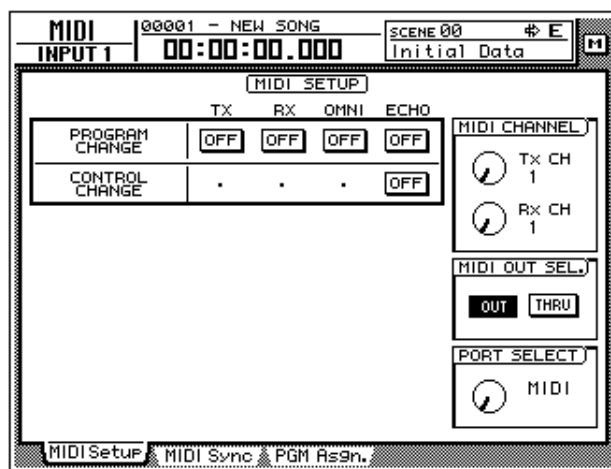
# Using MIDI Clock to synchronize the AW4416 and a MIDI sequencer

Here we will explain how MIDI Clock (and Song Position Pointer) messages can be transmitted from the AW4416 instead of MTC, and used to synchronize an external MIDI sequencer. Use this method if the MIDI sequencer or rhythm machine you wish to synchronize with the AW4416 does not support MTC, or if you wish to specify the locate positions in terms of measures/beats.

1. Use a MIDI cable to connect the AW4416's MIDI OUT connector to the MIDI IN connector of your MIDI sequencer.



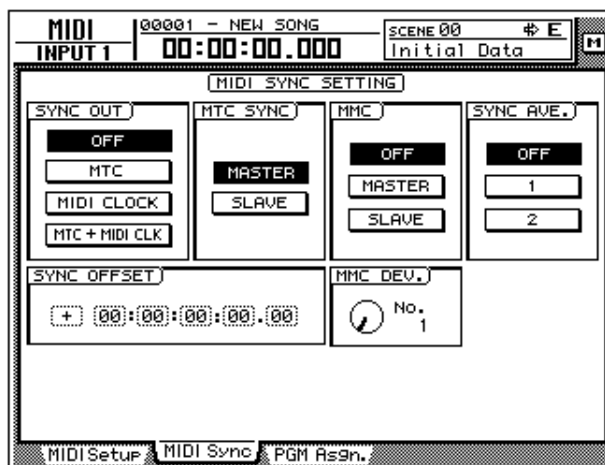
2. Press the [MIDI] key, and then press the [F1] key.  
The MIDI Setup screen will appear in the display.



3. Move the cursor to the OUT button of the MIDI OUT SEL. area, and press the [ENTER] key.

The MIDI OUT SEL. buttons select whether the MIDI OUT/THRU connector will function as a MIDI OUT connector (when the OUT button is on) or as a MIDI THRU connector (when the THRU button is on). In this example we will turn on the OUT button, in order to output the MIDI clock that is generated inside the AW4416.

4. Press the [F2] key.  
The MIDI Sync page will appear in the display.

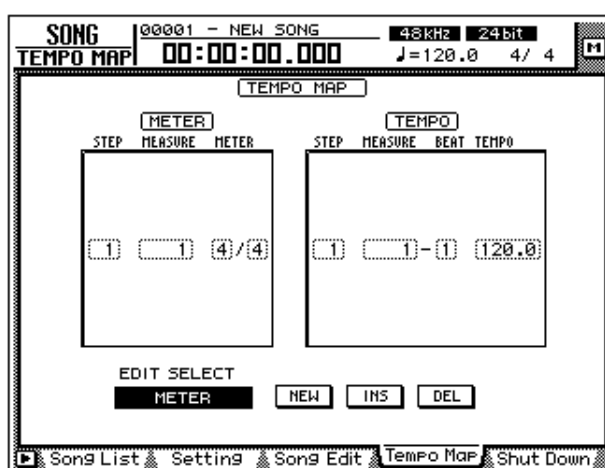


5. Move the cursor to the MIDI CLOCK button in the SYNC OUT area, and press the [ENTER] key. Also make sure that the MASTER button in the MTC SYNC area is on.  
With these settings, MIDI Clock messages will be transmitted from the MIDI OUT/THRU connector when the AW4416 is running.
6. Press the [SONG] key → [F2] key, and turn on the MEASURE button in the DISPLAY area.

The counter display will be in measure/beat/tick (1/960th of a quarter note) units. With this setting, you will be able to specify locate positions in measure/beat units.

7. Press the [SONG] key, and then press the [F4] key.

The left side of the screen will show the beat map in which you can input time signature data for the song, and the right side of the screen will show the tempo map in which you can input tempo data. With the default settings for a song, a time signature of 4/4 and a tempo of BPM=120.0 will be input at measure 1.



*In order for a MIDI sequencer to synchronize to the MIDI Clock messages send from the AW4416, tempo settings and time signature settings must be made on the AW4416. You can input this tempo data and time signature data in the Tempo Map page described above.*



8. Move the cursor to the METER area of the beat map, and use the [DATA/JOG] dial to specify the time signature for measure 1.  
The time signature can be specified in a range of 1/2–8/8.
9. If you wish to change time signatures in the middle of the song, switch the EDIT SELECT buttons at the bottom of the screen to METER. Then move the cursor to the NEW button and press the [ENTER] key.  
New time signature data will be added, allowing you to specify the new location (measure) and time signature. (For details refer to the Song screen/Tempo Map page in the Reference Guide.)
10. Move the cursor to the TEMPO column of the tempo map, and use the [DATA/JOG] dial to specify the tempo for the first measure.  
The tempo (BPM) can be set in 0.1 units over a range of 20.0–300.0.
11. If you wish to change tempo in the middle of the song, switch the EDIT SELECT buttons at the bottom of the screen to TEMPO. Then move the cursor to the NEW button and press the [ENTER] key.  
New tempo data will be added, allowing you to specify the new location (measure/beat) and tempo. (For details refer to the Song screen/Tempo Map page in the Reference Guide.)
12. Make settings on your MIDI sequencer so that it will synchronize to an external MIDI clock, and put it in playback-ready mode.
13. Record/play back the AW4416 song.  
When you specify a location on the AW4416 in measure/beat units, the external MIDI sequencer will also move to the same location. When the AW4416 begins running, the MIDI sequencer will begin running in synchronization according to the MIDI clock that is being transmitted.



.....  
*The internal metronome of the AW4416 will sound according to the tempo data and time signature data you specify here.*

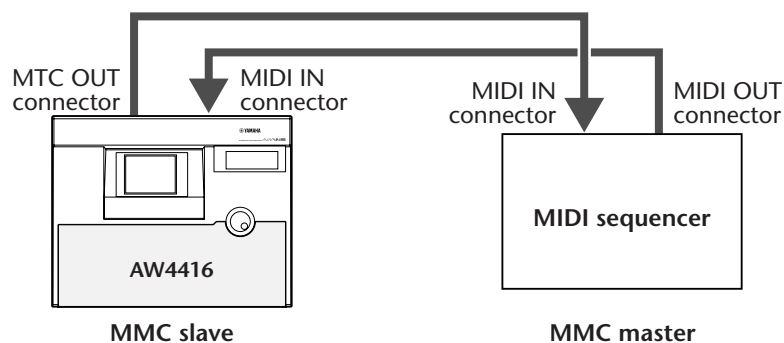
# Using MMC to control the AW4416

MMC (MIDI Machine Control) is a group of MIDI messages used to control the transport of an audio recorder etc. from an external MIDI device. The AW4416 supports MMC transmission and reception. This means that an external MIDI device can control AW4416 transport operations, locate operations, selection and disabling of recording tracks, or conversely that the AW4416 can control transport and other operations on another MMC-compatible device.

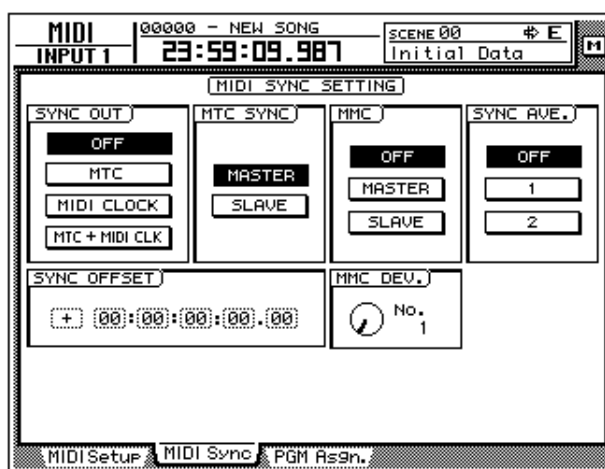
In this section we will explain how MMC can be used to control various operations of the AW4416 from an external MIDI sequencer while MTC is being used to synchronize the AW4416 and MIDI sequencer.

1. Connect the AW4416's MIDI IN connector to the MIDI OUT connector of the MIDI sequencer, and connect the AW4416's MTC OUT connector to the MIDI IN connector of the MIDI sequencer.

In this case, the MIDI sequencer will be the MMC master (the device transmitting MTC) and MTC slave, and the AW4416 will be the MMC slave (the device receiving MMC) and MTC master.



2. As described in "Using MTC to synchronize the AW4416 and a MIDI sequencer" (→ P.238), make settings on both devices so that the AW4416 and MIDI sequencer will run in synchronization.
3. Press the [MIDI] key, and then press the [F2] key.



4. Move the cursor to the SLAVE button in the MMC area, and press the [ENTER] key.  
With this setting the AW4416 will function as an MMC slave device.
5. Move the cursor to the MMC DEV. knob, and use the [DATA/JOG] dial to set the MMC device ID.  
The device ID is a number in the range of 1–127 that is used to distinguish the device to be controlled when a single system contains multiple MMC-compatible devices. By default, the AW4416 is set to device ID = 1.



6. On your MIDI sequencer, set the device ID of the MMC device to be controlled to the same setting as in step 5.

**Note**

.....  
*If necessary, you can specify the AW4416 recording track after step 6, and control recording operations in step 7. For details on selecting the recording track and on controlling record operations, refer to the manual for your MIDI sequencer.*

7. Start playback on your MIDI sequencer.

When you start the MIDI sequencer, MMC commands will be transmitted to the AW4416, and the AW4416 will begin running. At this time, MTC will be transmitted from the AW4416's MTC OUT connector to the MIDI sequencer, and the sequencer will synchronize to the AW4416.

# 16 Backing up and restoring songs

This chapter explains how part or all of the song data on the internal hard disk can be backed up to a SCSI device (such as a CD-RW drive or MO drive), and how backed-up data can be restored to the internal hard disk. This chapter also explains how to re-format the internal hard disk, and how to erase CD-RW media.

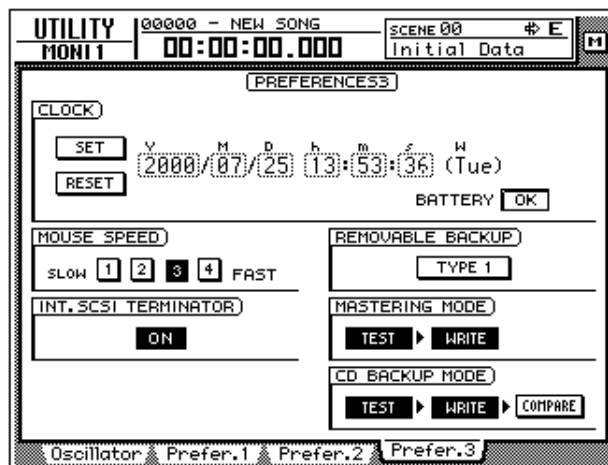
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## Selecting the backup format

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When using removable media such as MO as the backup destination, you must first select the backup format.

1. Press the [UTILITY] key → [F4] key.  
The UTILITY screen Prefer.3 page will appear in the display.



2. Move the cursor to the button in the REMOVABLE BACKUP area, and select either "TYPE1" or "TYPE2" as the backup format.  
Each time you press the [ENTER] key, the button display will alternate between "TYPE1" and "TYPE2." The difference between these formats is described below.



.....  
*When you backup on CD-RW media, TYPE 1 will be selected as the backup format regardless of this setting. If the song being backed up will not fit on a single piece of CD-RW media, the backup can extend across multiple volumes of media.*

### ○ TYPE1

This is the usual backup format, in which part or all of the songs are backed up using the full capacity of the removable media. This format has the advantage that even if the size of the song(s) being backed up exceeds the capacity of one volume of media, the backup can be performed using multiple volumes of media.

If this format is selected, the media will be formatted/erased automatically before backup is performed.

### ○ TYPE2

This backup format stores the specified song(s) or all songs as individual files on removable media. This format has the advantage that new files can be stored on a volume of media that already contains data backed up in the same format. However, it is not possible to backup data that extends across multiple volumes.

Before you can use this format to backup on newly purchased media, you must first manually format the media.

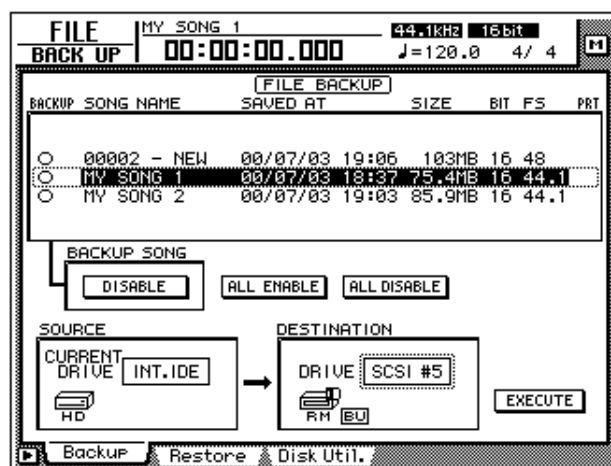
## Backing up a song



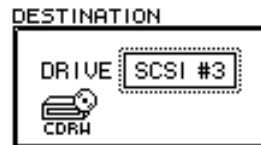
- If "TYPE1" is selected as the backup format, the media will automatically be formatted before the backup is performed.
- If "TYPE2" is selected as the backup format, the media will not be formatted automatically. If necessary, you must format the media manually.
- If you are backing up on removable media such as CD-RW or MO, insert the CD-RW media or MO media into the drive before you begin this procedure.

### 1. Press the [FILE] key → [F1] key.

The FILE screen Backup page will appear in the display. The list in the upper part of the display shows the songs that are currently saved on the internal hard disk. The current song is highlighted in the list.



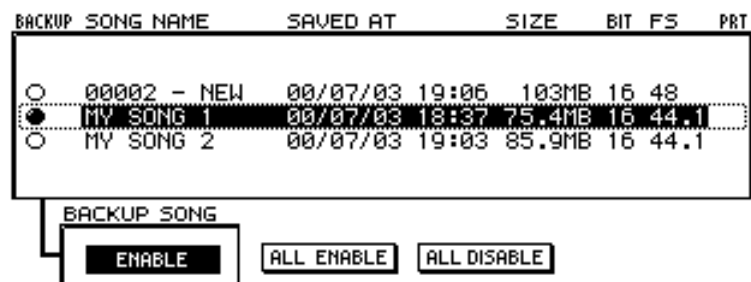
- Move the cursor to the DESTINATION area in the lower right of the display, and use the [DATA/JOG] dial to select the ID number of the backup destination SCSI device (e.g., internal CD-RW drive or external hard disk or MO drive).



It is also possible to backup on CD-R media using an internal or external CD-RW drive. However, you should be aware that CD-R media on which a backup has been created cannot be erased or added to.

- Move the cursor to the list in the upper part of the display, and use the [DATA/JOG] dial to select the sound that you wish to backup.
- Move the cursor to the button in the BACKUP SONG area and press the [ENTER] key.

The button display will change from "DISABLE" to "ENABLE," and the song will be selected for backup. The "O" symbol at the left edge of the list will change to "●" for songs that are selected for backup.



- You can repeat steps 3 and 4 to select multiple songs for backup.
- If you wish to backup all songs, move the cursor to the ALL ENABLE button located in the center of the display, and press the [ENTER] key.
- Conversely if you wish to exclude all songs from backup, move the cursor to the ALL DISABLE button and press the [ENTER] key.

- Move the cursor to the EXECUTE button in the lower right of the display, and press the [ENTER] key.

A popup window will appear, asking you to confirm the backup operation.



- To execute the backup, move the cursor to the OK button and press the [ENTER] key.

If “TYPE2” was selected as the backup format, the backup will begin immediately.

If “TYPE1” was selected as the backup format, the media will be formatted automatically (in the case of CD-RW media, all data will be erased). Then the backup will begin. If the selected song(s) will not fit on a single volume of media, a message will ask you to insert the next volume. Eject the media and insert a new volume of media.

When backing up on a hard disk or MO disk, the disk will be formatted before the backup is performed.

When backing up on a CD-RW disc, a popup window will ask you to confirm that it is OK to erase the media. Move the cursor to the OK button and press the [ENTER] key, and the media will first be erased and then the backup will be performed.



*If you decide to cancel the backup, move the cursor to the CANCEL button and press the [ENTER] key.*



- In the case of removable media such as MO, make sure that write protect is defeated.
- If the backup extends across multiple volumes of media, be sure to note the order of volumes on the label of the media.
- Once backup has begun, the operation cannot be cancelled.

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## Restoring a song

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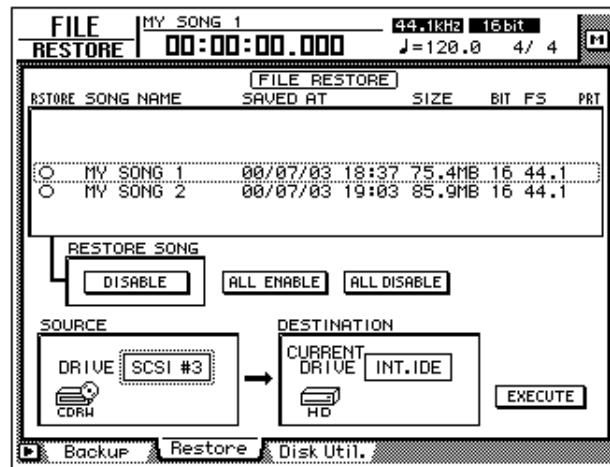
Here’s how data for the selected song(s) or all songs previously backed up to a SCSI device (e.g., internal CD-RW drive, or external hard disk or MO drive) can be restored to the AW4416’s internal hard disk.



- Before you begin, insert the disk (e.g., CD-RW or MO) containing the backed-up data into the appropriate device. If the backup extended across multiple volumes of media, make sure that the first volume of media is inserted.
- Once the restore operation has begun, it cannot be cancelled.

- Press the [FILE] key → [F2] key.  
The FILE screen Restore page will appear in the display.
- Move the cursor to the SOURCE area in the lower left of the display, and use the [DATA/JOG] dial to select the ID number of the SCSI device on which the backup data is saved.
- Press the [ENTER] key.  
The FILE RESTORE in the upper part of the display will show the song data that was backed up to the selected SCSI device.

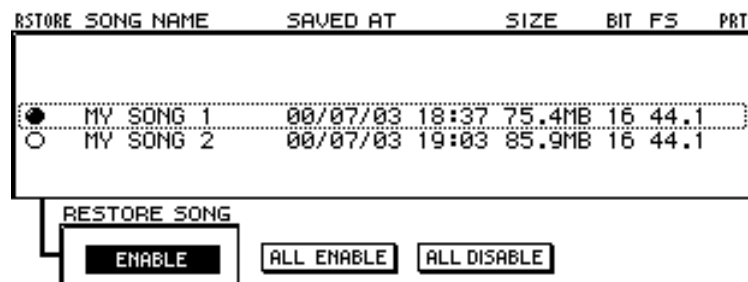
4. Move the cursor to the FILE RESTORE area in the upper part of the display, and use the [DATA/JOG] dial to select the song(s) that you wish to restore, then press the [ENTER] key.



The button in the RESTORE SONG area will change from DISABLE to ENABLE, indicating that the corresponding song has been selected for restore. The “O” symbol at the left edge of the list will change to “●” for songs that are selected for restore.



.....  
You can select multiple songs for restoring.



If you wish to restore all songs, move the cursor to the ALL ENABLE button in the center of the display, and press the [ENTER] key.

Conversely, if you wish to exclude all songs from the restore operation, move the cursor to the ALL DISABLE button and press the [ENTER] key.

5. Move the cursor to the EXECUTE button in the lower right of the display, and press the [ENTER] key.  
A popup window will appear, asking you to confirm the restore operation.





- To execute the restore operation, move the cursor to the OK button and press the [ENTER] key.

To cancel the restore operation, move the cursor to the CANCEL button and press the [ENTER] key.



- Even when you restore from a SCSI device to the internal hard disk, the songs that were previously recorded on the internal hard disk will remain unaffected. Be aware that if songs of identical song names exist both in the backup and on the internal hard disk at this time, the internal hard disk will end up containing two identically-named songs.
- If the internal hard disk does not have sufficient free space to load the backup data, the restore operation will not be executed.

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## Disk utilities

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This section explains the disk utility functions, such as formatting the internal hard disk or external SCSI device, and erasing CD-RW media.

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### Formatting the internal hard disk/external SCSI device

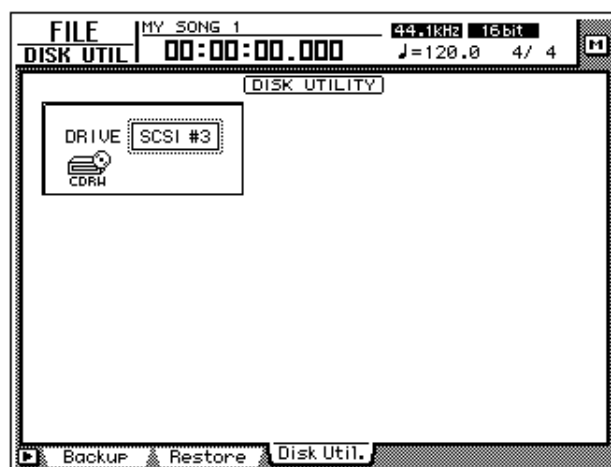
Here's how to format the internal hard disk/external SCSI device (hard disk, MO disk drive).



*When you execute the format operation, all songs saved on the device will be lost forever. In particular, be very careful about formatting the internal hard disk. Be sure to create a backup of important song data before you proceed.*

- Press the [FILE] key → [F3] key.

The FILE screen Disk Util. page will appear in the display.

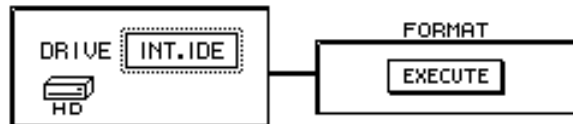


2. Rotate the [DATA/JOG] dial to select the drive that you wish to format, and press the [ENTER] key.

To format the internal hard disk, select “INT.IDE.” To format an external SCSI device, select the SCSI ID of that device.

The rest of the procedure will differ depending on the type of drive you are formatting.

### □ Formatting the internal hard disk



3. Move the cursor to the EXECUTE button in the FORMAT area, and press the [ENTER] key.

A popup window will appear, asking you to confirm the Format operation.



4. Move the cursor to the OK button and press the [ENTER] key.

A popup window will appear once again, asking you to confirm that you really want to format the internal hard disk.



**Tip!**

.....  
If you decide to cancel the format operation, move the cursor to the CANCEL button and press the [ENTER] key.

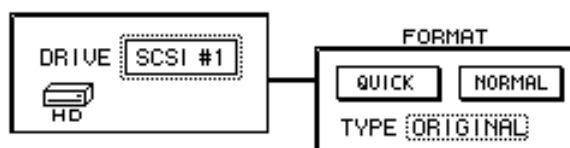
5. Once again, move the cursor to the OK button and press the [ENTER] key.

Formatting will begin. When formatting of the internal disk is completed, an empty song (16 bit/44.1 kHz) will be created automatically, and selected as the current song.

### □ Formatting an external hard disk

3. Select the SCSI ID of the external hard disk, and press the [ENTER] key.

A popup window will appear, allowing you to select the type of file system and the formatting method.



4. Move the cursor to either the QUICK or the NORMAL button, and press the [ENTER] key.

The formatting method will depend on the button you select.

○ **QUICK (quick format)**

Use this when you wish to quickly erase data from a previously-formatted hard disk.

○ **NORMAL (normal format)**

Use this when formatting a newly purchased hard disk. Depending on the capacity of the hard disk, this may require several minutes or several-ten minutes.

After selecting one or the other button, press the [ENTER] key, and a popup window will appear, asking you to confirm the Format operation.

5. Move the cursor to the TYPE area, and rotate the [DATA/JOG] dial to select one of the following two types of file system that will be created during the formatting operation.

- **ORIGINAL** ..... This is the native file system of the AW4416. Select this file system if you have selected TYPE2 as the backup format.
- **FAT 16** ..... This is the file system used on PC-type computers (e.g., Windows 95 or Windows 98 machines). Select this file system if you wish to exchange files with a PC.



.....  
*The AW4416 does not support the "FAT32" file system used on Windows 95 OSR2 and subsequent operating systems.*

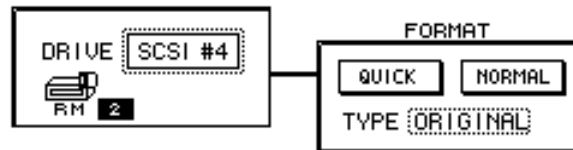
A popup window will appear, asking you to confirm the Format operation.



6. Move the cursor to the OK button and press the [ENTER] key. Formatting will be performed.

## □ Formatting removable media such as an MO drive

A FORMAT window will appear, allowing you to select the type of file system and the formatting method.



3. Move the cursor to the TYPE area, and rotate the [DATA/JOG] dial to select one of the following two types of file system that will be created during the formatting operation.
  - **ORIGINAL** ..... This is the native file system of the AW4416. Select this file system if you have selected TYPE2 as the backup format.
  - **FAT 16** ..... This is the file system used on PC-type computers (e.g., Windows 95 or Windows 98 machines). Select this file system if you wish to exchange files with a PC.
4. Move the cursor to either the QUICK or the NORMAL button, and press the [ENTER] key.

The formatting method will depend on the button you select.

### ○ QUICK (quick format)

Use this when you wish to quickly erase data from a previously-formatted MO disk.

### ○ NORMAL (normal format)

Use this when formatting a newly purchased MO disk. Depending on the capacity of the MO disk, this may require several minutes or several-ten minutes.

After selecting one or the other button, press the [ENTER] key, and a popup window will appear, asking you to confirm the Format operation.



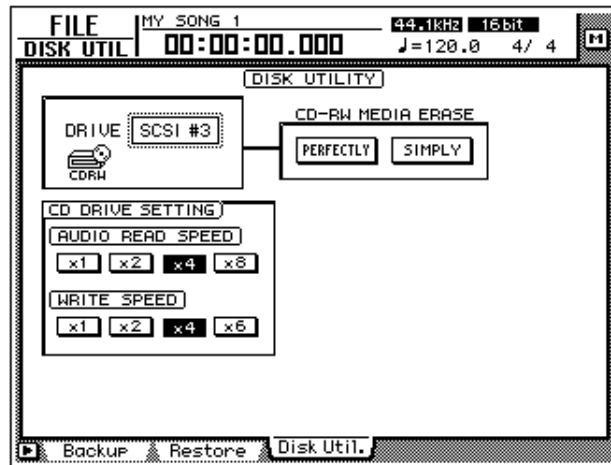
5. Move the cursor to the OK button and press the [ENTER] key. Formatting will begin.

## Erasing CD-RW media

Here's how to erase CD-RW media inserted in the CD-RW drive.

1. Press the [FILE] key → [F3] key.

The FILE screen Disk Util. page will appear in the display.



2. Use the [DATA/JOG] dial to select the SCSI ID number of the CD-RW drive, and press the [ENTER] key.
3. Use the two buttons (PERFECTLY/SIMPLY buttons) in the CD-RW MEDIA ERASE area to select the method by which the CD-RW media will be erased.

The CD-RW media can be erased in one of the following two ways.

- **SIMPLE** ..... Only the table of contents (TOC) of the data written on the CD-RW will be erased. This method has the advantage of being fast.
- **PERFECT** ..... All data written on the CD-RW media will be erased. This will take significantly longer than SIMPLE, but can be selected when you want to be sure that the data is completely erased.

Move the cursor to one of these methods and press the [ENTER] key. A popup window will ask you to confirm the erasure.

4. To execute the Erase operation, move the cursor to the OK button and press the [ENTER] key.



.....  
 When you execute the Erase operation, all data that was saved on the CD-RW media will be lost forever. Please use caution.

# 17 Mastering

This chapter explains the “mastering function” which allows you to use the internal CD-RW drive (option) of the AW4416 to create an audio CD.

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## About mastering

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By installing a CD-RW drive in the AW4416 (or connecting an external CD-RW drive to the SCSI connector), you can write the audio data of the stereo track (included in each song) onto CD-R/RW media in CD-DA format. This function is called “mastering.” The CD-R/RW media to which the data is written can be played back on the internal CD-RW drive or on conventional CD players in the same way as an audio CD.



.....  
*Some CD players and CD-ROM drives which do not support CD-R/RW may be unable to play back audio data that was written on CD-R/RW media.*

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## Stereo tracks that can be mastered

To master a song, you will select the desired stereo track from the stereo track included in each song on the internal hard disk, and write it to a track on the CD-R/RW media. However, only stereo tracks (more than four seconds) from songs recorded as 16 bit/24 bit and a 44.1 kHz sampling frequency can be mastered.



- .....
- *Mastering cannot be performed from the stereo track of a song whose sampling frequency is 48 kHz.*
  - *When mastering is performed from a 24 bit/44.1 kHz stereo track, the lower 8 bits will be discarded when the data is written, converting it into 16 bit/44.1 kHz format.*

## CD-R and CD-RW

CD-RW drives support two types of media: “CD-R” and “CD-RW.” These two types of media differ in the following ways.

### ○ CD-R

CD-R media can only be recorded or added to. Previously-recorded data cannot be erased and rewritten.

CD-R media to which audio data has been written by the AW4416’s mastering function can be played back on a CD-RW drive or on most CD players if the media has been “finalized.” Additional audio data can be recorded on CD-R media only if the disc has not yet been finalized.

### ○ CD-RW

CD-RW media allows previously-recorded data to be entirely erased and rewritten. (CD-RW does not allow data to be added as on a CD-R.) CD-RW media to which audio data has been written by the AW4416’s mastering function can be played back on a CD-RW drive or on some CD players. However caution is necessary, since many CD players do not support CD-RW at the present time.

The following table shows compatibility between CD-R/CD-RW media on which audio data has been recorded, and CD-RW drives and CD players.

Recording/Playback		CD-RW drives	CD players
CD-R	Disc At Once (finalized automatically)	● No silence between tracks	○ No silence between tracks
	Track At Once	● Two seconds of silence between tracks	○ Two seconds of silence between tracks
		Not finalized	× (data can be added)
CD-RW	Disc At Once (finalized automatically)	● No silence between tracks	△ No silence between tracks
	Track At Once	CD-RW media does not support Track At Once	

● : playable

○ : playable on most devices

△ : playable on some devices

× : not playable

## Track At Once and Disc At Once

Data can be written to CD-R/RW media in one of the following two ways.

### ○ Track At Once

In this method, data is written in units of tracks (individual regions of audio data). This method can be used only for CD-R media.

When the Track At Once method is used to write data to a CD-R, approximately two seconds of silence will be created between tracks each time a track is written. Additional audio data can be recorded later on CD-R media that was written using this method.



- *In order for CD-R media written using Track At Once to be played on a CD-RW drive or on a conventional CD player, you must perform the Finalize operation to write track location data etc. on the disc after all tracks have been written.*
- *No further recording is possible on CD-R media that has been finalized.*

### ○ Disc At Once

This method writes the data for all tracks in one operation, and can be used for either CD-R or CD-RW media. Unlike the Track At Once method, the operation will not stop until all data has been written, meaning that there will be no silent sections between tracks.



- *CD-R/CD-RW media written using Disc At Once will automatically be finalized, and can therefore be played immediately on a CD player.*
- *No further data can be recorded on media written using Disc At Once. (However in the case of CD-RW media, you can erase all of the audio data and then rewrite.)*



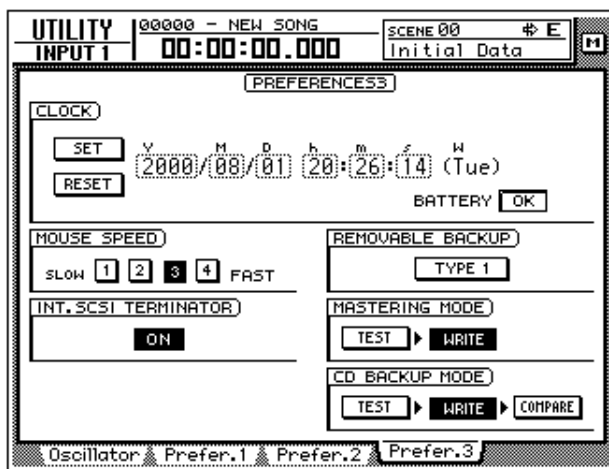
## Preparations for mastering

Here we will explain the preparations that you will need to make before writing audio data to CD-R/CD-RW media.

### □ Mastering mode settings

The AW4416 has a “writing test” function that checks before mastering to see whether errors will occur during data transmission. By default, the AW4416 will not perform this test before mastering, but you may perform the test if desired, or execute only the test by itself. Here’s how to make these settings.

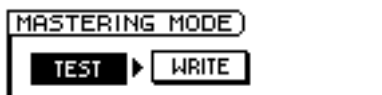
1. Press the [UTILITY] key → [F4] key.  
The UTILITY screen Prefer.3 page will appear.



2. To perform the writing test, turn the TEST button on and the WRITE button on in the MASTERING MODE area.



3. To execute only the writing test, turn the TEST button on and the WRITE button off in the MASTERING MODE area.

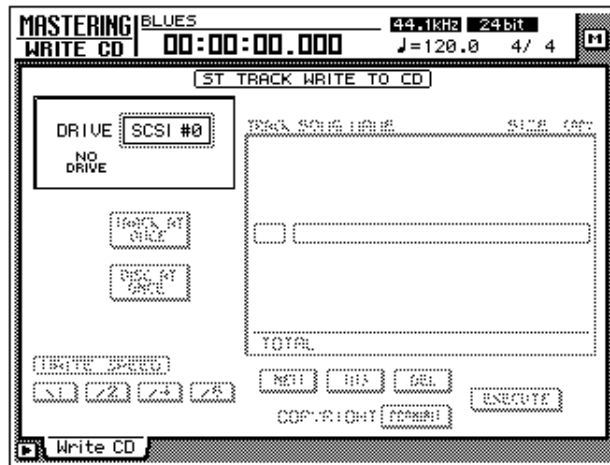


- It is not possible to turn off both the TEST and WRITE buttons.
- When writing for the first time, we recommend that you leave the TEST button on.

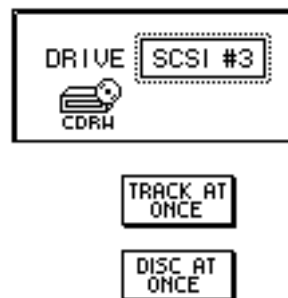
## Writing the master

Here's how to use the mastering function to write the stereo track data to CD-R/RW media.

1. Press the [MASTERING] key.  
The MASTERING screen will appear in the display.



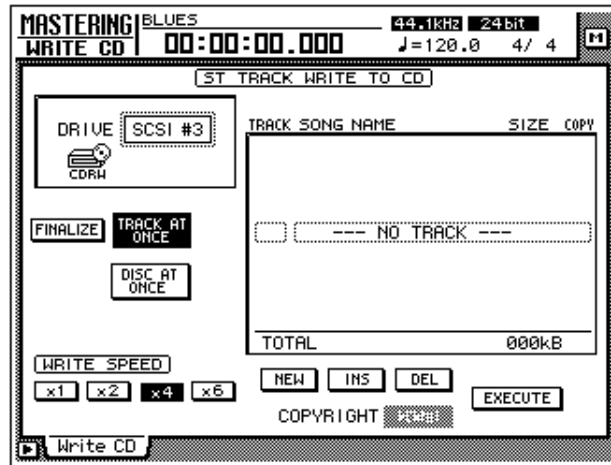
2. Hold down the [SHIFT] key and press the [F2] key (CD UNLOAD).  
The tray of the CD-RW drive will open.
3. Place a CD-R/RW disc on the tray. Then hold down [SHIFT] and press the [F1] key (CD LOAD).  
The tray will close.
4. Use the [DATA/JOG] dial to select the SCSI ID number of the AW4416's internal CD-RW drive, and press the [ENTER] key.



- In the MASTERING screen, you can access all stereo tracks (44.1 kHz sampling frequency) saved on the internal hard disk. Thus, it is not necessary that the stereo track be part of the current song.
- However, the mastering function cannot be used if the current song has a sampling frequency of 48 kHz. In this case, you must load a 44.1 kHz song before you begin the mastering procedure.

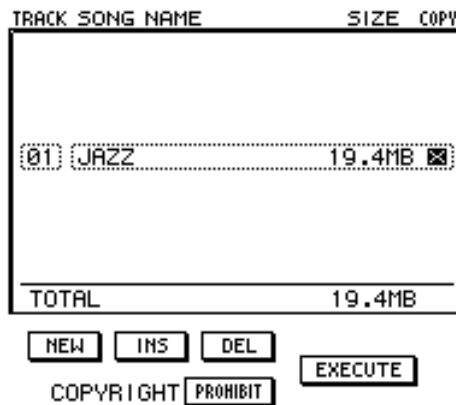
5. Move the cursor to the TRACK AT ONCE button if you wish to master using Track At Once, or to the DISC AT ONCE button if you wish to master using Disc At Once. Then press the [ENTER] key.

If you are using CD-RW media, only DISC AT ONCE can be used. The following screen is an example of when you have inserted CD-R media in the tray, moved the cursor to TRACK AT ONCE, and pressed the [ENTER] key.



6. Move the cursor to the NEW button at the bottom of the display, and press the [ENTER] key.

The list in the right of the display will show information (the name of the song containing the stereo track, the size of the stereo track, and the copy protect setting) for the stereo track that will be written to CD audio track 1.



7. Move the cursor to the stereo track data area of the list, and use the [DATA/JOG] dial to select the stereo track that you wish to write to track 1 of the CD.

TRACK	SONG NAME	SIZE	COPY
01	DEMO SONG	27.3MB	☒
TOTAL		19.4MB	

NEW INS DEL EXECUTE  
COPYRIGHT PROHIBIT



.....  
Stereo tracks from 48 kHz songs cannot be selected in this list. Also in some cases, it may not be possible to select stereo tracks from songs for which Optimize has not been executed. To optimize a song, refer to page 182.

8. If you wish to allow digital copying of the track you selected in step 7, move the cursor to the COPYRIGHT button at the bottom of the screen, and press the [ENTER] key.

The COPYRIGHT button specifies whether copy prohibit data will be written into the subcode channel of the CD. When the button is displayed as PROHIBIT, a ☒ symbol will be displayed in the COPY column of the corresponding track, and digital copying will be prohibited for that track. If you switch the COPYRIGHT button to PERMIT, digital copying will be allowed for that track.

9. Repeat steps 5–7 to select the stereo tracks that will be written into track numbers 2 and following of the CD.

TRACK	SONG NAME	SIZE	COPY
04	BLUES 16	19.2MB	☒
03	DANCE	44.2MB	☒
02	JAZZ	19.4MB	☒
01	DEMO SONG	27.3MB	
TOTAL		77.8MB	

NEW INS DEL EXECUTE  
COPYRIGHT PROHIBIT



.....  
By using the DEL button at the bottom of the display, you can remove the currently selected stereo track from the list. By using the INS button, you can insert data for a new audio track into the track number that follows the currently selected track.

10. As necessary, use the WRITE SPEED buttons located in the lower left of the display to select the writing speed.

The x1/x2/x4/x6 buttons correspond to single-speed/double-speed/quad-speed/6x speed writing. Normally you should select the fastest speed that your CD-RW drive supports.



11. When you have finished selecting all of the stereo tracks that will be written to the CD, move the cursor to the EXECUTE button in the lower right of the display, and press the [ENTER] key.

A popup window will appear, asking you to confirm the operation.



12. To execute the writing operation, move the cursor to the OK button and press the [ENTER] key.

If you decide to cancel the disc writing operation, move the cursor to CANCEL and press the [ENTER] key.

After all data has been written, the media will be ejected automatically.



Tip! .....

- If Writing Test is turned on, the writing test will be executed before the actual writing begins. If a problem occurs during the test, a message will appear.
- If you write using Disc At Once, the media can be played in a CD player as soon as it is ejected.
- If you write to CD-R media using Track At Once, a popup window will ask you whether you wish to finalize the disc.

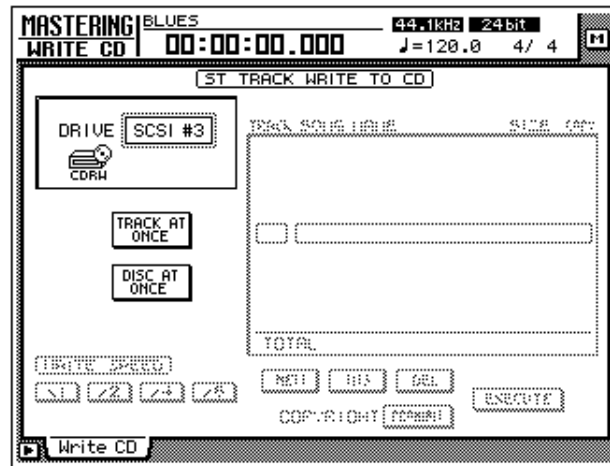
13. If you wish to execute the Finalize operation, move the cursor to the OK button and press the [ENTER] key. The CD-RW tray will close automatically, and the disc will be finalized.

If you do not wish to finalize, move the cursor to the CANCEL button and press the [ENTER] key. In this case, additional data can be recorded later on the ejected CD-R media.

# Finalizing

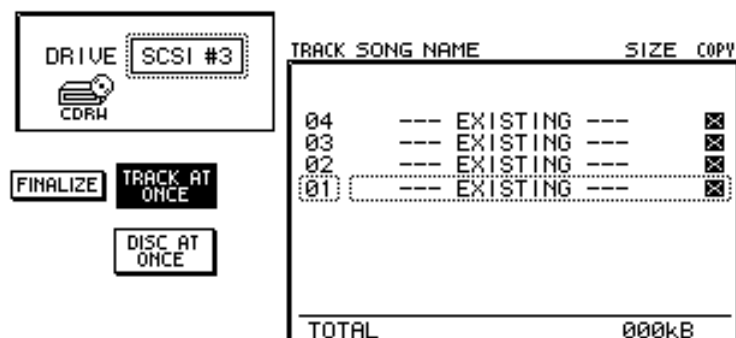
As long as you have not executed the Finalize operation, other stereo track data can be added to CD-R media that was recorded using Track At Once. However, media that has not yet been finalized cannot be played back by a CD-RW drive or a conventional CD player. In order to use a CD player to play CD-R media on which you have written data, use the following procedure to execute the Finalize operation.

1. Press the [MASTERING] key.



2. Place the CD-R media that you wish to finalize on the CD-RW drive tray.
3. Move the cursor to the TRACK AT ONCE button, and press the [ENTER] key.

The FINALIZE button will appear at the left of the TRACK AT ONCE button. The list in the right side of the display will show the tracks that have been written on the CD-R media.



4. Move the cursor to the FINALIZE button and press the [ENTER] key. A popup window will appear, asking you to confirm the Finalize command.



5. To execute the Finalize command, move the cursor to the OK button and press the [ENTER] key. To cancel without executing, move the cursor to the CANCEL button and press the [ENTER] key.

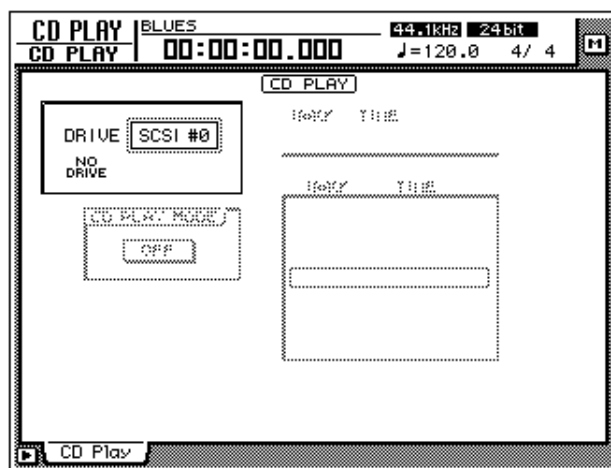
---

## Playing CD-R/RW media (the CD Play function)

---

By using the AW4416's CD Play function, CD-R/RW media that contains audio data can be played back from the internal CD-RW drive (or from an external CD-RW drive connected to the SCSI connector).

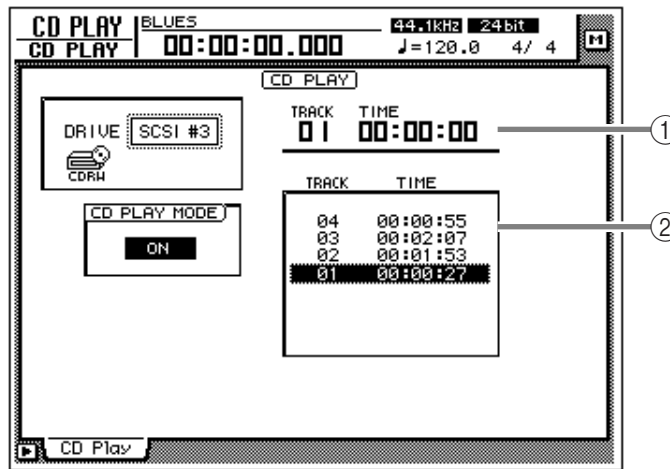
1. Press the [CD PLAY] key. The CD PLAY screen will appear in the display.



2. Use the [DATA/JOG] dial to select the SCSI ID of the CD-RW drive, and press the [ENTER] key.
3. Hold down the [SHIFT] key and press the [F2] key (CD UNLOAD). The tray of the CD-RW drive will open.
4. Place the CD-R/RW media on which data was written into the drive. Then hold down the [SHIFT] key and press the [F1] key (CD LOAD).

5. Move the cursor to the CD PLAY MODE button, and press the [ENTER] key.

The CD PLAY MODE button will change from OFF to ON, and track information for the CD-R/RW media in the drive will be displayed.



- ① Currently selected track number (TRACK column) and elapsed time (TIME column).
- ② Track numbers on the disc (TRACK column) and their track times (TIME column).



- CD-R media that has not been finalized cannot be played back.
- The counter in the level meters/counter section will not function while you are using the CD Play function.

6. Use the Locate section [⏮]/[⏭] keys to select the track that you wish to play.
7. To begin playback, press the Transport section [PLAY] key.  
The audio output of the CD-RW drive will be sent directly to the stereo bus. Use the STEREO fader to adjust the volume.
8. To stop playback, press the [STOP] key.



While playback is stopped, you can press and hold the [REW]/[FF] keys to rewind or fast-forward. (However, there will be no sound.)

9. To exit the CD PLAY function, move the cursor to the CD PLAY MODE button and press the [ENTER] key.



- While the CD Play function is being used, all keys except for [⏮]/[⏭], [PLAY], [STOP], [REW]/[FF], and [ENTER] will have no effect.
- If you wish to perform other operations, turn off the CD Play function.







# AW4416

PROFESSIONAL AUDIO WORKSTATION

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## Reference Guide

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# Reference guide

The reference guide explains all screens and all pages that appear in the display. Use it like a dictionary when you wish to learn more about the functions in the screen, or to find the page from which to execute a desired operation.

## How to read the reference guide

Here's how to read the reference guide.

### ① Screen name

### ② Page name/title

### ③ [Function]

A brief summary of the functions of this page.

### ④ [Key operation]

The procedure for using the top panel keys to access this page.

### ⑤ [Mouse operation]

The procedure for using the mouse to access this page.

### ⑥ [Screen functions]

Explanations of the function of each item or operation in this page.

### ⑦ ■ Additional functions in the page

Explanations of the additional functions assigned to the function keys ([F1]–[F5]) in this page.

### ⑧ [Procedure]

The procedure for performing a specific operation in this page.

①

## EQ/ATT/GRP screen

②

### EQ/Att page

#### EQ and attenuation settings

③

#### [Function]

Make four-band EQ and attenuation settings for the selected channel.

④

#### [Key operation]

- [EQ] key → [F1] key (EQ/Att) key
- Repeatedly press the [EQ] key until the screen shown at the right appears.

⑤

#### [Mouse operation]

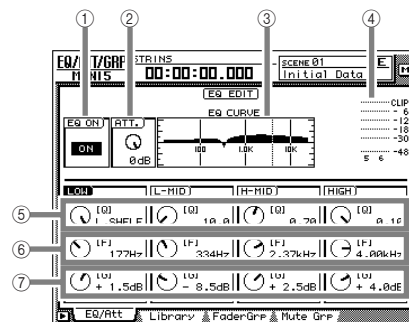
M button → EQ button → EQ/Att tab

⑥

#### [Screen functions]

##### ① EQ ON button

This switches EQ on/off. When this page is displayed, you can use the [ENTER] key to switch this button on/off regardless of the cursor location.



the EQ type to H.SHELF (shelving), and turning it all the way in the counter-clockwise direction will switch the EQ type to LPF (low pass filter). Range: 10–0.10, HPF/L.SHELF (LOW band only), LPF/H.SHELF (HIGH band only)

⑦

#### ■ Additional functions in the EQ/Att page

In the EQ/Att page you can press the [SHIFT] key to assign the following additional functions to the [F1]–[F2] and [F5] keys.



##### • [F1] (FLAT) key

Reset all bands to a boost/cut amount of 0.0 dB (off if HPF/LPF is selected).

##### • [F2] (BAND FLAT) key

Reset only the selected band to a boost/cut amount of 0.0 dB (off if HPF/LPF is selected).

##### • [F5] (COPY ATT. TO ALL) key

Copy the attenuation setting of the selected channel to all channels. (However, the stereo output channel is excepted.)

⑧

#### EQ/ATT/GRP screen

#### ● Copying the attenuation setting to all channels

##### [Procedure]

1. Access the EQ/Att page for the copy source channel, and move the cursor to the ATT. knob.
2. Press the [SHIFT] key + [F5] key. A CONFIRMATION popup window will appear, asking you to confirm the copy.
3. To execute the copy, move the cursor to the OK button and press the [ENTER] key.



If the cursor is at a location other than the ATT. knob, a message of "Can't Copy This Parameter" will appear, and the copy will not occur.



Only the attenuation setting will be copied. If you wish to copy EQ settings, you must store the settings in the library and recall them into the copy destination channel. For the procedure refer to page 47.



## Song List page

### Saving/loading a song

#### [Function]

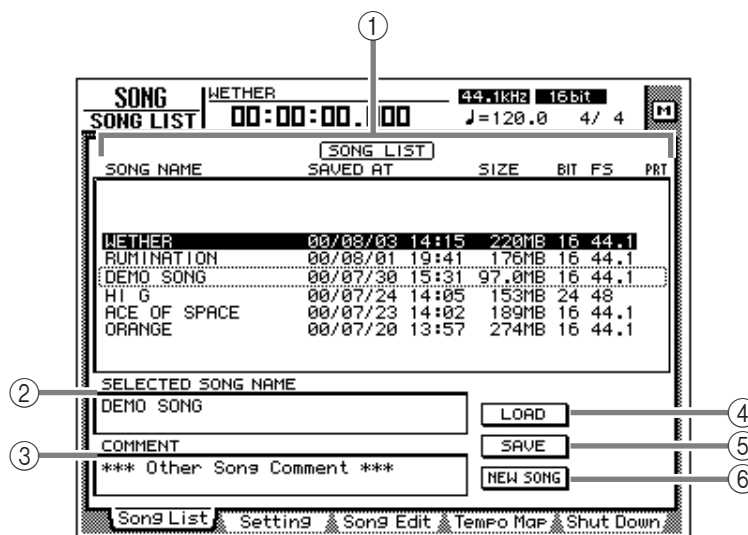
Load a song from hard disk, or save the current song to hard disk.

#### [Key operation]

- [SONG] key → [F1] (Song List) key
- Repeatedly press the [SONG] key until the display shown at right appears.

#### [Mouse operation]

M button → SONG button → Song List tab



#### [Screen functions]

##### ① Song list

This lists the songs that are saved on the internal hard disk. The highlighted line is the current song, and the line enclosed by a dotted line is the song selected for loading. Use the [DATA/JOG] dial to select the song for loading.

This list shows the following data for each song.

- **SONG NAME** ..... First 16 characters of the song name
- **SAVED AT** ..... Date and time at which the song was last saved
- **SIZE** ..... Size of the song
- **BIT/FS** ..... Quantization (bit number)/sampling frequency of the song
- **PRT** ..... Song protect on/off (→ P.2)



If song protect is on, the PRT column will show "🔒".

##### ② SELECTED SONG NAME

This shows the name of the song selected by the cursor. This field is for display only, and cannot be edited.

##### ③ COMMENT

This shows the comment of the song selected by the cursor. This field is for display only, and cannot be edited.

##### ④ LOAD button

This button loads the song enclosed by the dotted line in the list.

##### ⑤ SAVE button

This button saves the current song.



The location of the dotted frame in the list does not affect the save location of the current song. It is not possible to change the save location of the current song.



For details on loading or saving songs, refer to Operation Guide "Chapter 11. Song management."

##### ⑥ NEW SONG button

This button creates a new song. For details on creating a new song, refer to Operation Guide "Chapter 5. Recording on the AW4416."

# Setting page

## Make various settings for the current song

### [Function]

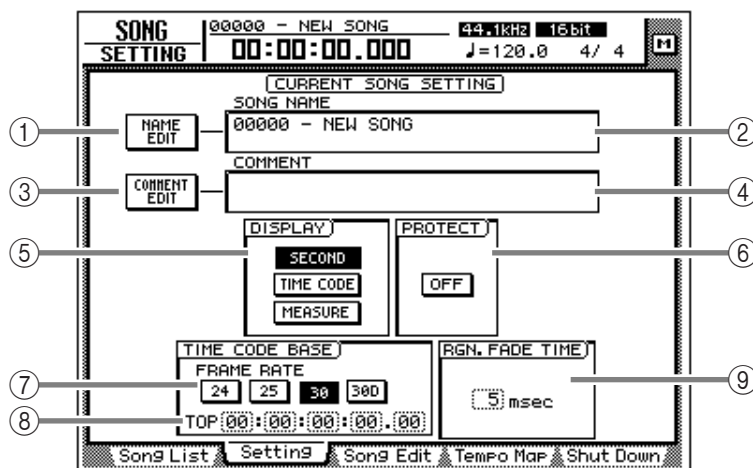
Make various settings for the current song, such as editing the song name, selecting the counter display method, and selecting the time code frame rate.

### [Key operation]

- [SONG] key → [F2] (Setting) key
- Repeatedly press the [SONG] key until the display shown at the right appears.

### [Mouse operation]

M button → SONG button → Setting tab



### [Screen functions]

#### ① NAME EDIT button

This button edits the song name of the current song.

#### ② SONG NAME

This displays the song name of the current song.

#### ③ COMMENT EDIT button

This button edits the comment of the current song.

#### ④ COMMENT

This displays the comment of the current song.

#### ⑤ DISPLAY

You can select one of the following three display methods for the current location that is shown in the counter/level meter and in the counter in the upper part of the display.

##### ● SECOND button

The counter will be displayed as time (hours/minutes/seconds/milliseconds).

##### ● TIME CODE button

The counter will be displayed as time code (hours/minutes/seconds/frames/sub-frames).

##### ● MEASURE button

The counter will be displayed as measures (measures/beats/ticks).



**Tip!**

The display method you select here will also affect how the track editing range is specified (EDIT screen TR Edit page), and how locate points are displayed (TRACK screen Mark Adj. page etc.).

#### ⑥ PROTECT

This specifies the protect setting of the song. When you move the cursor to the button in the PROTECT area and press the [ENTER] key, the button will alternate between ON and OFF. When protect is on, it will not be possible to edit or record tracks, edit the sampling pads, or set/change locate points.

#### ⑦ FRAME RATE buttons

Use the following four buttons to select the frame rate of the time code. The frame rate setting will affect the counter time code display and the MTC that is transmitted and received.

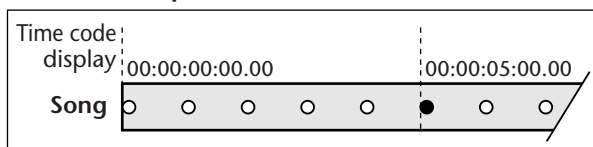
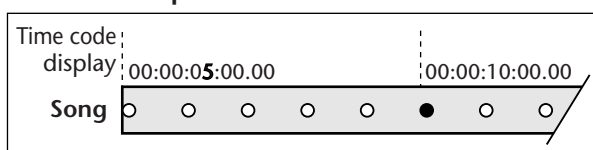
- **24 button** .....24 fps
- **25 button** .....25 fps
- **30 button** .....30 fps (30 non-drop frame)
- **30D button** .....29.97 fps (30 drop-frame)



If you wish to use MTC to synchronize the AW4416 and an external device, you must use the FRAME RATE buttons to match the frame rate of the two devices.

**⑧ TOP**

This adjusts the time code time that corresponds to the beginning of the song ("time code top") in the range of "00:00:00:00.00"–"24:00:00:00.00". (Negative values cannot be set.) Move the cursor to the TOP area, and use the [DATA/JOG] dial to adjust the hours/minutes/seconds/frames/subframes value.

**Time code top= 00:00:00:00.00****Time code top= 00:00:05:00.00**

- Changing the time code Top will affect the time code indications in the display and the MTC that the AW4416 transmits and receives.
- When you modify the time code Top, the start point and end point will be adjusted automatically. For details on the start point and end point, refer to the explanation in "TRACK screen/Mark Adj. page."

**⑨ RGN. FADE TIME (region fade time)**

This parameter automatically fades-in/fades-out the starting and ending point of regions. You can select from 3, 5, 10, 20, or 45 msec as the time over which the fade-in/out will take place ("region fade time"). The default setting is 5 msec.



*If the level changes abruptly at the start/end point of a region, noise or a click may be heard during playback. For this reason, it is not possible to set the region fade time to 0 msec. If you notice noise or clicks, set the region fade time to a longer value.*

# Song Edit page

## Deleting/copying/optimizing songs

### [Function]

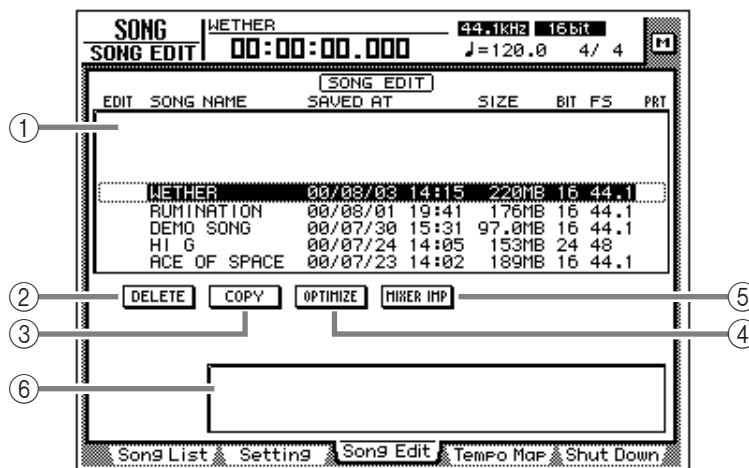
Edit songs saved on the internal hard disk, such as by deleting, copying, or optimizing them.

### [Key operation]

- [SONG] key → [F3] (Song Edit) key
- Repeatedly press the [SONG] key until the screen shown at the right appears.

### [Mouse operation]

M button → SONG button → Song Edit tab



### [Screen functions]

#### ① Song list

This lists the songs saved on the internal hard disk. The current song is highlighted in the list. An "E" symbol displayed at the left edge of the list indicates a song selected for editing. The following information is also displayed in the song list.

- **SONG NAME** .....First 16 characters of the song name
- **SAVED AT** .....Date and time at which the song was last saved
- **SIZE** .....Size of the song
- **BIT/FS** .....Quantization (bit number)/sampling frequency of the song
- **PRT** .....Song protect on/off status



- When you use the cursor to select a song in the list and press the [ENTER] key, the "E" symbol that indicates the editing selection will alternately appear and disappear.
- Depending on the operation, you may be able to select more than one song for editing.

#### ② DELETE button

This button deletes the song marked by the "E" symbol from the internal hard disk.



- The current song cannot be deleted.
- A deleted song is gone forever. Use this operation with caution.

#### ③ COPY button

This button copies the song marked by the "E" symbol onto the internal hard disk.

#### ④ OPTIMIZE button

This button optimizes the song marked by the "E" symbol. When optimize is executed, audio files not currently used by that song (e.g., undo files) will be deleted.



*Optimize can be executed on only one song at a time. Optimize can be executed on the current song.*

#### ⑤ MIXER IMP (mixer import) button

This button imports the mixer settings (scene memory/automix/tempo map/libraries) from the song marked by the "E" symbol into the current song.



*Only one song can be selected as the import source for mixer data. The current song cannot be selected as the import source.*

#### ⑥ Parameter area

When you move the cursor to one of the buttons ②–⑤, the operation (DELETE/COPY/OPTIMIZE/MIXER IMPORT) that can be executed by that button will appear in this area.



*For details on using each operation, refer to Operation Guide "Chapter 11. Song Management."*

# Tempo Map page

## Programming the tempo map

### [Function]

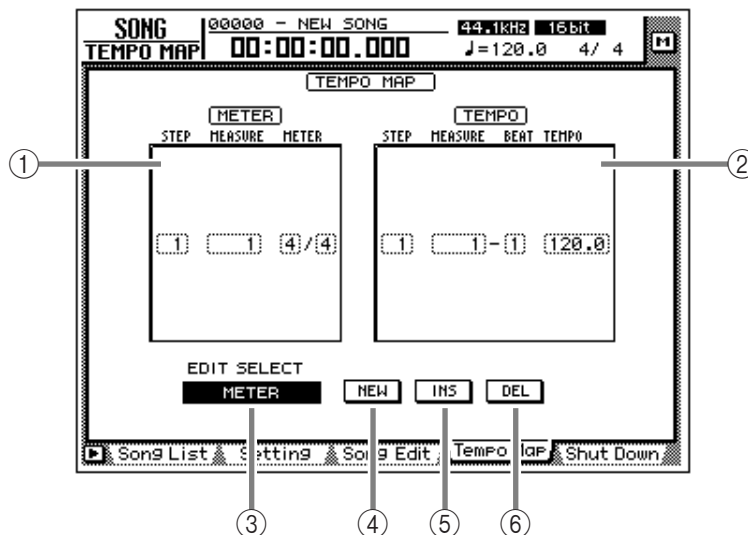
Program tempo data and time signature data into the tempo map.

### [Key operation]

- [SONG] key → [F4] (Tempo Map) key
- Repeatedly press the [SONG] key until the screen shown at the right appears.

### [Mouse operation]

M button → SONG button → Tempo Map tab



### [Screen functions]

#### ① METER

In this area you can specify the time signature. The area enclosed by the dotted frame is the currently selected time signature data. In the METER area you can make the following settings for the STEP/MEASURE/METER items.

##### ● STEP

Move the cursor to this area and rotate the [DATA/JOG] dial to select the number (step number) of the time signature data. The step number is assigned consecutively, starting at the time signature data of the lowest-numbered measure.

##### ● MEASURE

Move the cursor to this area and rotate the [DATA/JOG] dial to modify the measure number of the time signature. If you move the time signature beyond the previous or next time signature data, their step numbers will be exchanged automatically.

##### ● METER

Move the cursor to this area and rotate the [DATA/JOG] dial to specify the time signature (2/1–8/8) for that measure. The numerator and denominator of the time signature can be set independently.



*When the AW4416 is in the default state, time signature data of 4/4 is already input at measure 1.*



- It is not possible to move the time signature data of measure 1.
- It is not possible to place two time signatures at the same measure. If you move the cursor to the MEASURE area and specify the same measure number as an existing time signature, the previous time signature data will be deleted.

#### ② TEMPO

In this area you can specify tempo data. The area enclosed by the dotted line is the currently selected tempo data. In the TEMPO area you can make the following settings for the STEP/MEASURE/BEAT/TEMPO items.

##### ● STEP

Move the cursor to this area and rotate the [DATA/JOG] dial to select the number (step number) of the tempo data. The step number is assigned consecutively, starting at the tempo data of the lowest-numbered measure.

##### ● MEASURE/BEAT

Move the cursor to this area and rotate the [DATA/JOG] dial to modify the location (measure/beat) of the tempo data. If you move the tempo data beyond the previous or next tempo data, their step numbers will be exchanged automatically.

### ● TEMPO

Move the cursor to this area and rotate the [DATA/JOG] dial to set the tempo (BPM) of that location. The BPM value can be set in a range of 20.0–300.0, in 0.1 steps.



When the AW4416 is in the default state, tempo data of BPM=120 is already input at measure 1 beat 1.



- The tempo data at step number 1 cannot be moved.
- It is not possible to place two tempo data at the same location. If you move the cursor to the MEASURE/BEAT area and specify the same location as an existing tempo data, the previous tempo data will be deleted.

### ③ EDIT SELECT button

Use this button to specify whether you will edit time signature data (METER) or tempo data (TEMPO). Move the cursor to the button and press the [ENTER] key to switch between METER and TEMPO.

### ④ NEW button

When you move the cursor to this button and press the [ENTER] key, new time signature/tempo data will be added following the last step number that is currently input.



- For details on inputting the tempo map, refer to Operation Guide “Chapter 15. MIDI.”
- A maximum of 26 time signature data/tempo data items can be input in the METER area/TEMPO area.

### ⑤ INS button

When you move the cursor to this button and press the [ENTER] key, new time signature/tempo data will be inserted after the currently selected time signature/tempo data.

### ⑥ DEL button

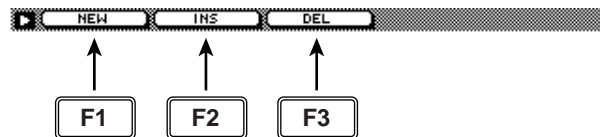
When you move the cursor to this button and press the [ENTER] key, the currently selected time signature/tempo data will be deleted.



It is not possible to delete the time signature/tempo data of step number 1.

## ■ Additional functions in the Tempo Map page

In the Tempo Map page, pressing the [SHIFT] key will assign the following functions to the [F1]–[F3] keys.



### • [F1] (NEW) key

This key inputs additional time signature data or tempo data. This is the same function as the ④ NEW button.

### • [F2] (INS) key

This key inserts time signature data or tempo data. This is the same function as the ⑤ INS button.

### • [F3] (DEL) key

This key deletes time signature data or tempo data. This is the same function as the ⑥ DEL button.

# Shut Down page

## Shut down the AW4416

### [Function]

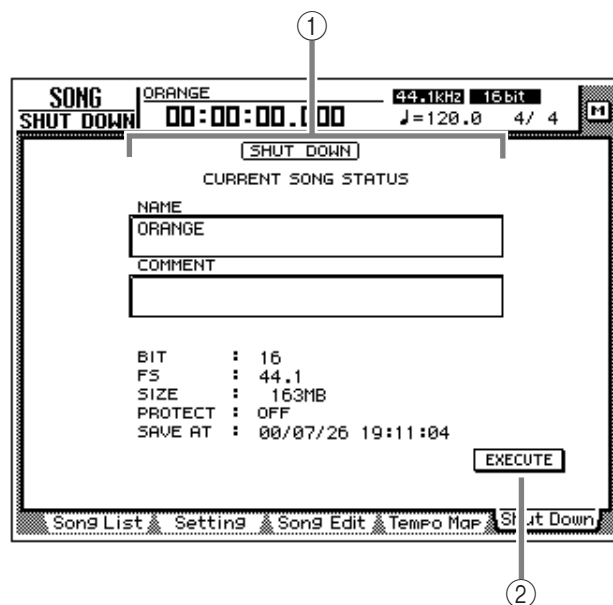
Shut down the AW4416 so that the power can be turned off.

### [Key operation]

- [SONG] key → [F5] (Shut Down) key
- Repeatedly press the [SONG] key until the screen shown at the right appears.

### [Mouse operation]

M button → SONG button → Shut Down tab



### [Screen functions]

#### ① Current song status

This area displays various information on the last-saved song.



*The data for the current song (date, size, quantization bits, protect) shown here in the song list is the data for when the song was last saved. When you perform the Save procedure and press the [ENTER] key, it will be overwritten by the new data.*

#### ② EXECUTE button

In this page, the cursor is fixed at the EXECUTE button, so you can shut-down simply by pressing the [ENTER] key. For details on the order in which the AW4416 and peripheral devices should be shut down, refer to Operation Guide "Important points you must observe."



*If you turn off the power of the AW4416 without performing the shut-down operation, audio data on the internal hard disk may be damaged. Be sure to perform this shut-down operation before turning off the power of the AW4416.*



# QUICK REC screen

## Quick Rec page

### Simultaneously recording 16 inputs/16 tracks

#### [Function]

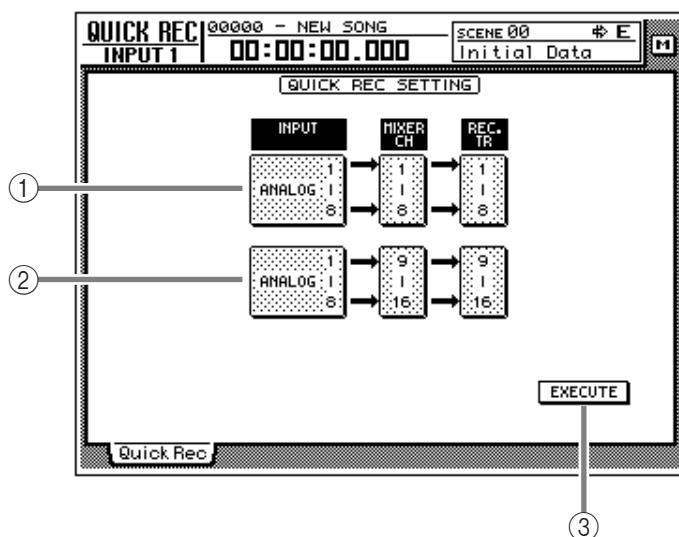
Instantly make settings (Quick Rec function) for simultaneously recording 16 input sources on audio tracks 1–16.

#### [Key operation]

[QUICK REC] key

#### [Mouse operation]

M button → Quick REC button



#### [Screen functions]

##### ① Input select 1–8

##### ② Input select 9–16

Select from the following input sources to send to audio tracks 1–8/9–16.

- **ANALOG 1–8** .....INPUT jacks 1–8
- **SLOT1 1–8**.....INPUT 1–8 of an I/O card (slot 1)
- **SLOT2 1–8**.....INPUT 1–8 of an I/O card (slot 2)



*It is possible to select the same source for ① and ②. In this case, the same signal will be sent to tracks 1–8 and tracks 9–16.*

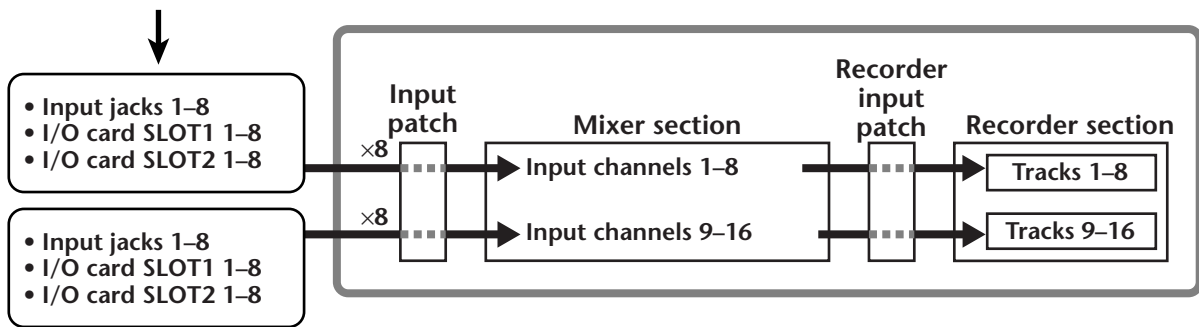
##### ③ EXECUTE button

When you move the cursor to this button and press the [ENTER] key, the settings of the AW4416 will change as follows.

- Mix parameters such as fader, pan, and EQ for each channel will be reset.
- [REC TRACK SELECT] keys 1–16 will blink, and tracks 1–16 will be in record-ready mode.
- The output of all tracks 1–16 will be muted.
- Input patch and recorder input patch settings will be switched as follows.



## ① Input select 1–8



## ② Input select 9–16

After you have used the EXECUTE button, you can simply press the [REC] key + [PLAY] key to simultaneously record 16 inputs on tracks 1–16.



**Tip!**

- To defeat record-ready and mute settings for tracks 1–16, press the [ALL SAFE] key.
- For details on operation of the Quick Rec function, refer to Operation Guide “Chapter 8. Patching.”

# MASTERING screen

## Write CD page

### Using a CD-RW drive to create an audio CD

#### [Function]

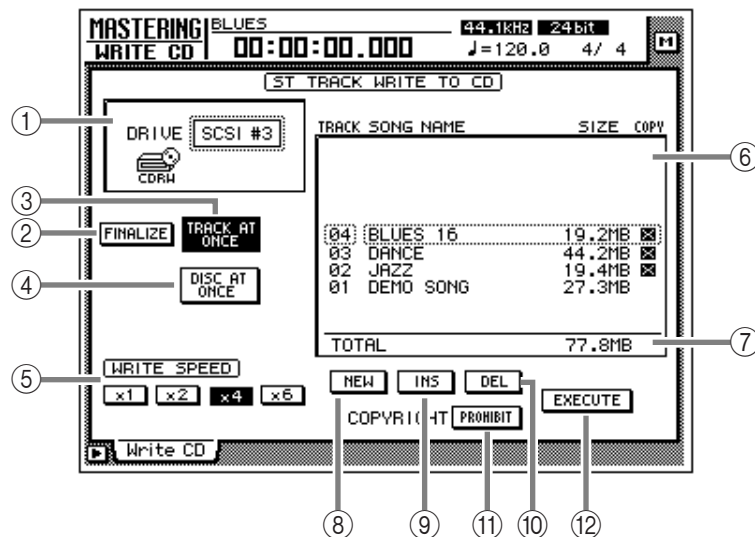
Create an audio CD by writing the stereo track data of songs to CD-R/RW media as CD audio tracks.

#### [Key operation]

[MASTERING] key

#### [Mouse operation]

M button → MAST button



#### [Screen functions]

##### ① DRIVE

Select the SCSI ID number of the internal or external CD-RW drive.

##### ② FINALIZE button

When you press this button, CD-R media that was written using Track At Once will be finalized (information on track locations etc. will be written into the data area). You must perform the finalize operation in order for CD-R media written using Track At Once to be playable on a CD player.



*If you used Disc At Once to write the data, finalize will be performed automatically. For this reason, the FINALIZE button will be displayed only if the TRACK AT ONCE button ③ is turned on.*

##### ③ TRACK AT ONCE button

##### ④ DISC AT ONCE button

Use these buttons to select the way in which data will be written to the CD-R/RW media (either Track At Once or Disc At Once). Before you execute the Write operation, you must move the cursor to one of these buttons and press the [ENTER] key.



*CD-RW media does not support Track At Once.*

##### ⑤ WRITE SPEED buttons

Use the x1, x2, x4, and x6 buttons to select the writing speed (normal speed/double speed/quad speed/x6 speed). Normally you should select the fastest speed supported by your CD-RW drive.

⑥ **Track list**

Here you can select the stereo tracks that will be written as audio tracks on the CD. The track list shows the following information.

● **TRACK**

This is the track number on the CD. Move the cursor to this area and rotate the [DATA/JOG] dial to change the track number.

● **SONG NAME/SIZE/COPY**

This shows the song name, stereo track data size, and copy protect setting of songs that contain a stereo track. Move the cursor to this area and use the [DATA/JOG] dial to select the stereo track that will be written to the corresponding audio track.



- The track list will show only the stereo tracks of songs whose sampling frequency is 44.1 kHz. Stereo tracks of 48 kHz sampling frequency songs will not be displayed.



If CD-R media containing data written using Track At Once is in the CD-RW drive, the SONG NAME/SIZE/COPY area will indicate “-EXISTING-”.

⑦ **Total**

This shows the total of the SIZE column of the track list. A maximum of approximately 650 MB can be written to 74 minute CD-R/RW media.

⑧ **NEW button**

Add a new audio track to the track list.

⑨ **INS button**

Insert a new audio track after the track number currently selected in the track list.

⑩ **DEL**

Delete the currently selected audio track from the track list.

⑪ **COPYRIGHT button**

Set the copy protect setting of the audio track currently selected in the track list. Move the cursor to this button and press the [ENTER] key to switch between the following two button displays.

● **PROHIBIT**

Digital copying of the corresponding track will be prohibited.

● **PERMIT**

Digital copying of the corresponding track will be permitted.



If the button is displayed as PROHIBIT, an “” symbol will be displayed in the COPY column of the track list.

⑫ **EXECUTE button**

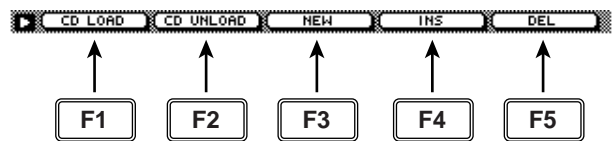
Use this button to execute writing (mastering) to CD-R/RW media.



- The AW4416 has a “writing test” function that can check before mastering is performed to see whether data transmission errors will occur. By default, this test will not be performed. However, you can make settings so that the test will be performed before writing, or execute the test by itself. (→ P.37)
- For details on the procedure of the Mastering function, refer to Operation Guide “Chapter 17. Mastering.”

■ **Additional functions in the Write CD page**

In the Write CD page you can press the [SHIFT] key to assign the following functions to the [F1]–[F5] keys.



• **[F1] (CD LOAD) key**

Close the tray of the CD-RW drive.

• **[F2] (CD UNLOAD) key**

Eject the tray of the CD-RW drive.

• **[F3] (NEW) key**

Add a new audio track to the track list ⑥. This is the same function as the NEW button ⑧.

• **[F4] (INS) key**

Insert a new audio track after the track number currently selected in the track list ⑥. This is the same function as the INS button ⑨.

• **[F5] (DEL) key**

Delete the audio track currently selected in the track list ⑥. This is the same function as the DEL button ⑩.

# CD PLAY screen

## CD Play page

### Use the CD-RW drive to play an audio CD

#### [Function]

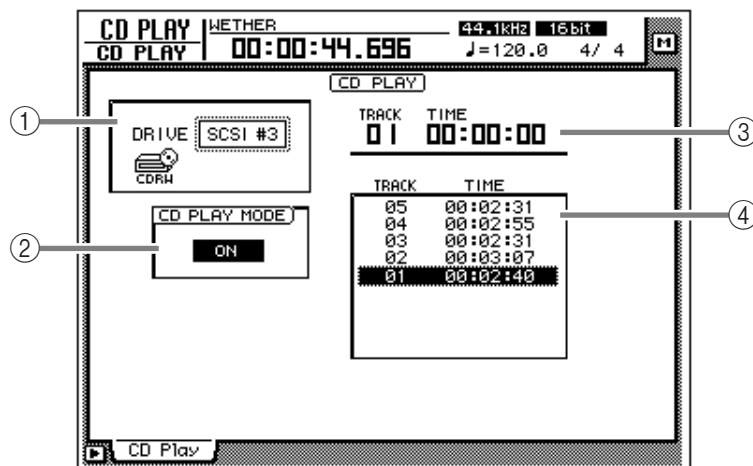
Use a CD-RW drive connected to the AW4416 to play back an audio CD (CD Play function).

#### [Key operation]

[CD PLAY] key

#### [Mouse operation]

M button → CD button



#### [Screen functions]

##### ① DRIVE

Select the SCSI ID number of the internal or external CD-RW drive.

##### ② CD PLAY MODE button

This button switches the CD Play function on/off. When the CD PLAY function is on, you can use the keys of the Transport section to operate the CD-RW drive.

Key	CD-RW drive operation
[PLAY] key	Play the CD
[STOP] key	Stop the CD
[FF]/[REW] keys	Rewind/fast-forward the CD
[<<]/[>>] keys	Select tracks

##### ③ Counter

This displays the track number (TRACK) currently selected in the track list ④, and the elapsed time of that track (TIME).

##### ④ Track list

This list shows the audio track numbers on the CD (TRACK area), and the times for each track (TIME area). The currently selected audio track will be highlighted.



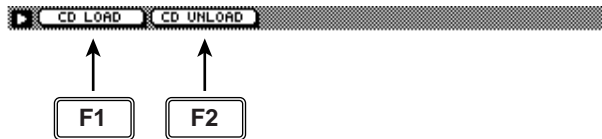
You can move the cursor to the track list and switch the playback track by using the [DATA/JOG] dial and the [ENTER] key.



- While the CD PLAY MODE button ② is on, all keys except the [CURSOR] keys, [DATA/JOG] dial, [ENTER] key, and Transport section keys will be disabled.
- The CD audio signal is routed through the stereo output channel and output from the STEREO OUT jacks. (Use the STEREO fader to adjust the volume.) During this time, the signals of other channels will not be sent to the stereo output channel.
- For details on the CD Play function, refer to Operation Guide "Chapter 17. Mastering."

## ■ Additional functions in the CD Play page

In the CD Play page you can press the [SHIFT] key to assign the following functions to the [F1]–[F2] keys.



- **[F1] (CD LOAD) key**  
Close the tray of the CD-RW drive.
- **[F2] (CD UNLOAD) key**  
Eject the tray of the CD-RW drive.

# SET UP screen

## Patch IN page

### Patching a signal to a channel/track

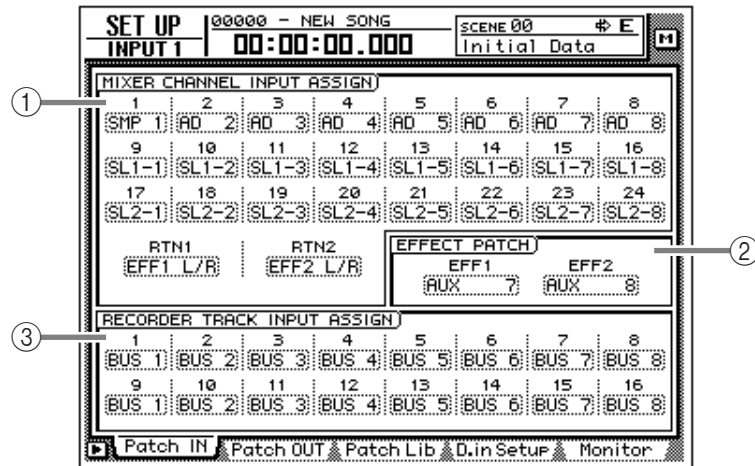
#### [Function]

Assign signals to the inputs of input channels 1–24, return channels 1/2, and recorder tracks 1–16.

#### [Key operation]

- [SETUP] key → [F1] (Patch IN) key <sup>(\*1)</sup>
- Repeatedly press the [SETUP] key until the display shown at right appears.

\*1. In the SET UP screen, the tabs displayed at the bottom are divided into two groups. If the Patch IN tab is not assigned to the [F1] key when you press the [SETUP] key, press the [SETUP] key + [F1] (CHANGE TAB) key to switch the tab.



#### [Mouse operation]

M button → SETU button → Patch IN tab

#### [Screen functions]

##### ① MIXER CHANNEL INPUT ASSIGN

Select the signal that will be assigned to input channels 1–24 and return channels 1/2. The following signals can be assigned to each channel.

##### ● Input channels 1–24

Display	Signal type
AD 1–AD 8	INPUT jacks 1–8
SL1-1 – SL1-8	INPUT 1–8 of an I/O card (slot 1)
SL2-1 – SL2-8	INPUT 1–8 of an I/O card (slot 2)
DIN L/DIN R	L/R channels of the DIGITAL STEREO IN jack
SMP 1–SMP 8	Sampling pads 1–8
MET	Internal metronome

##### ● Return channels 1/2

Display	Signal type
EFF1 L/R	Return of internal effect 1
EFF2 L/R	Return of internal effect 2
AD 1/2–AD 7/8	INPUT jacks 1/2–7/8
SL1-1/2 – SL1-7/8	INPUT 1/2–7/8 of an I/O card (slot 1)
SL2-1/2 – SL2-7/8	INPUT 1/2–7/8 of an I/O card (slot 2)
DIN L/R	DIGITAL STEREO IN jack (stereo)

##### ② EFFECT PATCH

Select whether effects 1/2 will be used via AUX send/return (AUX7/AUX8), or inserted into a specified channel (INSERT). For details on operation, refer to Operation Guide “Chapter 10. Internal effects.”

③ **RECORDER TRACK INPUT ASSIGN**

Here you can select the signals to be assigned to the inputs of tracks 1–16. The following signals can be assigned.

● **Recorder inputs 1–16**

Display	Signal type
BUS 1–BUS 8	Bus 1–8
DIR 1–DIR16	Input channel direct out 1–16



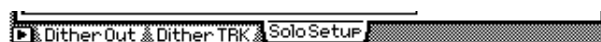
*For details on operations in the Patch IN page, refer to Operation Guide “Chapter 8. Patching.”*

■ **Additional functions in the Patch IN page**

In the Patch IN page you can press the [SHIFT] key to assign the following function to the [F1] key.



- **[F1] (CHANGE TAB) key**  
Switch between the following two tab displays.



# Patch OUT page

## Patch signals to output jacks

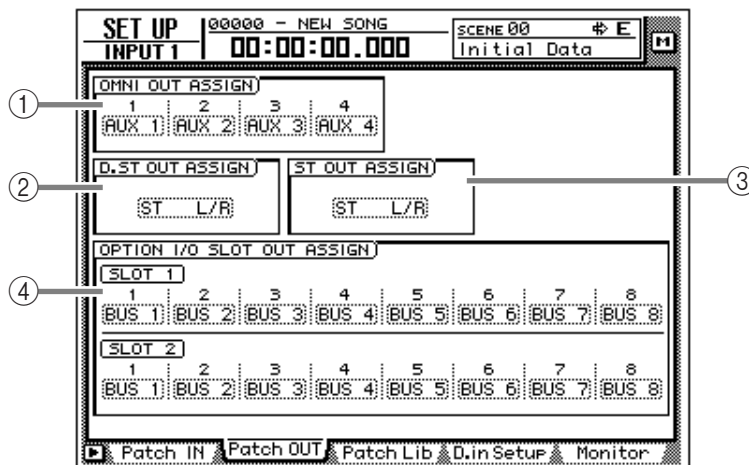
### [Function]

Assign output signals to the OMNI OUT jacks, STEREO OUT jacks, DIGITAL STEREO OUT jack, and the output channels of I/O cards.

### [Key operations]

- [SETUP] key → [F2] (Patch OUT) key (\*1)
- Repeatedly press the [SETUP] key until the display shown at right appears.

\*1. In the SET UP screen, the tabs displayed at the bottom of the screen are divided into two groups. If the Patch OUT tab is not assigned to the [F2] key when you press the [SETUP] key, press [SHIFT] key + [F1] (CHANGE TAB) key to switch the tabs.



### [Mouse operation]

M button → SETU button → Patch OUT tab

### [Screen functions]

#### ① OMNI OUT ASSIGN

Select the signals that will be output from the OMNI OUT 1–4 jacks. The following signals can be assigned.

Display	Signal type
AUX 1–AUX 8	AUX buses 1–8
RDR 1–RDR16	Recorder direct outputs 1–16
ST L/ST R	L/R channels of the stereo output channel

#### ② D.ST OUT ASSIGN (digital stereo out assign)

#### ③ ST OUT ASSIGN (stereo out assign)

These respectively select the pair of signals that will be output from the DIGITAL STEREO OUT jack and the STEREO OUT jack. The following signals can be assigned.

Display	Signal type
ST L/R	Stereo output channel
BUS 1/2–BUS 7/8	Bus 1/2–7/8
DIR 1/2–DIR15/16	Input channel direct out 1/2–15/16
AUX 1/2–AUX 7/8	AUX buses 1/2–7/8
RDR 1/2–RDR15/16	Recorder direct outs 1/2–15/16



④ **OPTION I/O SLOT OUT ASSIGN**

This selects the signals that will be output from I/O cards installed in OPTION I/O slots 1/2. The following signals can be assigned.

Display	Signal type
BUS 1–BUS 8	Buses 1–8
DIR 1–DIR16	Input channel direct out 1–16
AUX 1–AUX 8	AUX buses 1–8
RDR 1–RDR16	Recorder direct outputs 1–16



*For details on operation in the Patch OUT page, refer to Operation Guide “Chapter 8. Patching.”*

## ■ Additional functions in the Patch OUT page

In the Patch OUT page you can press the [SHIFT] key to assign the following function to the [F1] key.



- **[F1] (CHANGE TAB) key**  
Switch between the two tab displays.

# Patch Lib page

## Store or recall patching settings

### [Function]

Store the settings of the Patch IN/Patch OUT pages in the patch library, or recall previously-stored settings.

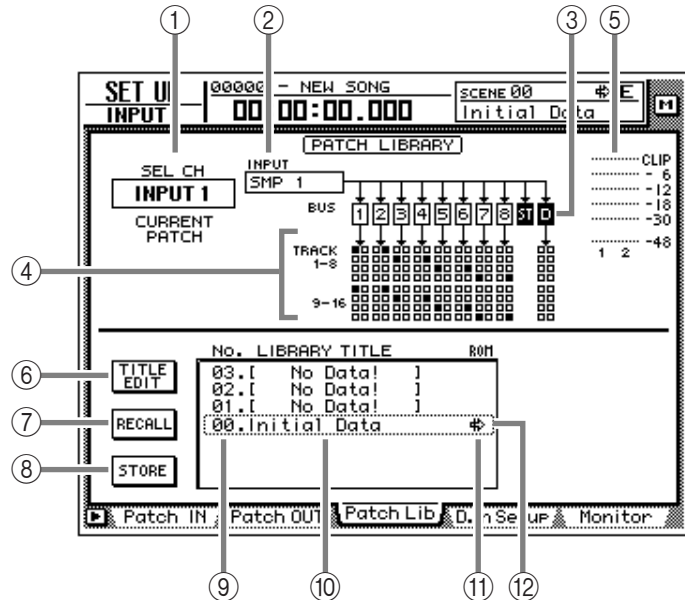
### [Key operation]

- [SETUP] key → [F3] (Patch Lib) key <sup>(\*)1</sup>
- Repeatedly press the [SETUP] key until the display shown at right appears.

\*1. In the SET UP screen, the tabs displayed at the bottom of the screen are divided into two groups. If the Patch Lib tab is not assigned to the [F3] key when you press the [SETUP] key, press [SHIFT] key + [F1] (CHANGETAB) key to switch the tabs.

### [Mouse operation]

M button → SETU button → Patch Lib tab



### [Screen functions]

#### ① SEL CH

This indicates the channel currently selected by the [SEL] key.

#### ② INPUT

This indicates the input signal patched to the channel shown in ①. Refer to the explanation of the Patch IN page for the meaning of each abbreviation.

#### ③ BUS

This area shows the buses to which the signal of the channel is being sent. For buses 1–8 (1–8) and the stereo bus (S), buses to which that channel is assigned will be displayed as white characters on black background.

#### ④ TRACK 1-8/9-16

This area displays ■ symbols to indicate the track inputs to which buses 1–8 (1–8) and the direct output (D) of the input channel currently selected by the [SEL] key are patched.

#### ⑤ Input meter

This shows the input level of the odd-numbered → even-numbered channels adjacent to the channel selected in ①, or the output level of the stereo output channel.

#### ⑥ TITLE EDIT button

Use this button when you wish to edit the name (library title) of the patching settings saved in the library. Move the cursor to the TITLE EDIT button and press the [ENTER] key to access the TITLE EDIT screen where you can input the name.



*Library number 0 is a recall-only preset, and therefore its name cannot be changed. Patch library numbers in which no data has been stored will be displayed as "No Data!," and their title cannot be edited.*

#### ⑦ RECALL button

This button recalls the currently selected patching settings from the list.



*If you select a number in which nothing has been stored and attempt to recall it, an error message of "ERROR NO DATA TO RECALL" will be displayed, and the recall will not take place.*

#### ⑧ STORE button

Store the current patching settings.



- Library number 0 is a recall-only preset; data cannot be stored in it. Data can be stored only in library numbers 1–20.
- When you execute the Store operation, the patching settings that had been stored in that number will be erased.

### ⑨ LIBRARY No. (library number)

This area displays library numbers 00–20.

### ⑩ LIBRARY TITLE

This area displays the names assigned to the library settings.

### ⑪ ROM

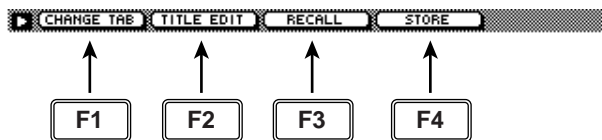
Recall-only library number 0 is indicated by a write-prohibit symbol in this column.

### ⑫ Selected patching

The patching settings enclosed by the dotted line in the library list will be the subject of the Store or Recall operation. In this page, you can use the [DATA/JOG] dial to select patching settings regardless of where the cursor is located.

## ■ Additional functions in the Patch Lib page

In the Patch Lib page you can press the [SHIFT] key to assign the following functions to the [F1]–[F4] keys.



- **[F1] (CHANGE TAB) key**  
Switch between the two tab displays.
- **[F2] (TITLE EDIT) key**  
Use this to edit the name (library title) of patching settings saved in the library. This is the same function as the ⑥ TITLE EDIT button.
- **[F3] (RECALL) key**  
Recall the currently selected patching settings from the list. This is the same function as the ⑦ RECALL button.
- **[F4] (STORE) key**  
Store the current patching settings. This is the same function as the ⑧ STORE button.

## ● To store the patching settings into a library

### [Procedure]

1. Access the SET UP screen Patch Lib page.
2. Use the [DATA/JOG] dial to select the library number 1–20 into which you wish to store the settings.
3. Move the cursor to the STORE button and press the [ENTER] key.  
The NAME EDIT display will appear, allowing you to input the name.



If STORE CONFIRMATION is turned “OFF” in the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key), this popup window will not appear.

4. Input the library title. For details on inputting characters, refer to Operation Guide P.60.
5. Move the cursor to the OK button and press the [ENTER] key.  
The Store operation will be executed.

## ● To recall patching settings from a library

### [Procedure]

1. Access the SET UP screen Patch Lib page.
2. Use the [DATA/JOG] dial to select the library number that you wish to recall.
3. Move the cursor to the RECALL button and press the [ENTER] key.  
A confirmation message will appear.



If RECALL CONFIRMATION is turned “OFF” in the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key), this popup window will not appear.

4. Move the cursor to the OK button and press the [ENTER] key.  
The Recall operation will be executed.

# D.in Setup page

## Make word clock/cascade settings

### [Function]

Select the word clock source to which the AW4416 will synchronize. In this page you can also make settings for stereo bus cascade connections.

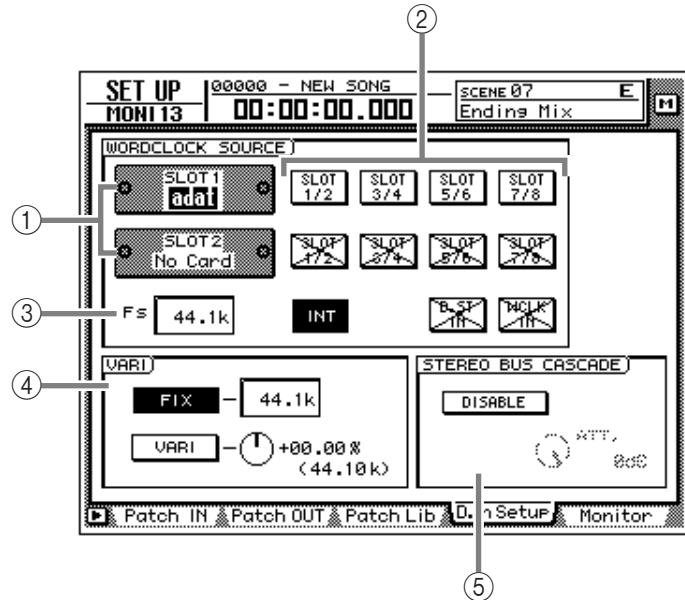
### [Key operation]

- [SETUP] key → [F4] (D.in Setup) key <sup>(\*)1</sup>
- Repeatedly press the [SETUP] key until the screen shown at the right appears.

\*1. In the SET UP screen, the tabs displayed at the bottom of the screen are divided into two groups. If the D.in Setup tab is not assigned to the [F4] key when you press the [SETUP] key, press the [SHIFT] key + [F1] (CHANGE TAB) key to switch the tabs.

### [Mouse operation]

M button → SETU button → D.in Setup tab



### [Screen functions]

#### ① Slots 1/2

If an optional I/O card is installed in OPTION I/O slots 1/2, a graphic will be displayed to show the type of I/O card. Cards in which no card is installed will be displayed as "No Card!"

#### ② WORD CLOCK SOURCE

From the following choices, select one of the following clock source to which the AW4416 will synchronize.

##### ● SLOT 1 1/2–7/8

##### ● SLOT 2 1/2–7/8

The input signal from a digital I/O card installed in OPTION I/O slots 1/2 will be the clock source. One pair of digital I/O card input channels 1/2–7/8 can be selected.

##### ● INT

The internal clock of the AW4416 will be used as the clock source.

##### ● D.ST IN

The word clock data included in the input signal of the DIGITAL STEREO IN jack will be the clock source.

##### ● WCLK IN

The word clock data included in the input signal of the WORD CLOCK IN jack will be the clock source.



- The highlighted button indicates the currently selected word clock source.
- Buttons marked with an "X" indicate that no digital audio signal is being input from the corresponding slot/jack.
- Buttons marked by a / indicate that a digital audio signal is being input from the corresponding slot/jack, but is not synchronized with the internal clock of the AW4416.
- Buttons without an X or / symbol indicate that a digital audio signal is being input from the corresponding slot/jack, and is synchronized with the internal clock of the AW4416.

### ③ FS (sampling frequency)

This shows the sampling frequency of the signal that is currently selected as the clock source.



*If you select an external clock as the clock source, you must check that the sampling frequency of the song matches the frequency of the external clock. For example if you are synchronized to a 48 kHz external clock and record on a 44.1 kHz song, be aware that the pitch will change when you return the clock source setting to "INT" and play back.*

### ④ VARI (vari-pitch)

If "INT" is selected as the clock source, you can select whether the sampling frequency will be fixed (FIX button on) or variable (VARI button on). If "FIX" is selected, the control change frequency of the internal clock will be displayed at the right.

If "VARI" is selected, you can move the cursor to the knob at the right and rotate the [DATA/JOG] dial to make fine adjustments to the sampling frequency over a range of -5.97%–+6.00%.

### ⑤ STEREO BUS CASCADE

This selects whether the digital device connected to the DIGITAL STEREO IN jack will be cascaded with the stereo bus of the AW4416.

When you move the cursor to the "DISABLE" button and press the [ENTER] key, the button display will change to "ENABLE," and the input signal from the DIGITAL STEREO IN jack will be sent directly to the stereo bus of the AW4416. At this time, you can use the ATT. knob to adjust the level (attenuation) of the input signal.



*In order for the device connected to the DIGITAL STEREO IN jack to be cascade-connected to the stereo bus, the clock source must be set to "D.ST IN." If another clock source is selected, a message of "CANNOT ASSIGN DIGITAL-ST-IN." will be displayed, and it will not be possible to set the button to "ENABLE."*

## ■ Additional functions in the D.in Setup page

In the D.in Setup page, you can press the [SHIFT] key to assign the following function to the [F1] key.



- [F1] (CHANGE TAB) key

Switch between the two types of tab display.

# Monitor page

## Monitor the digital input signals

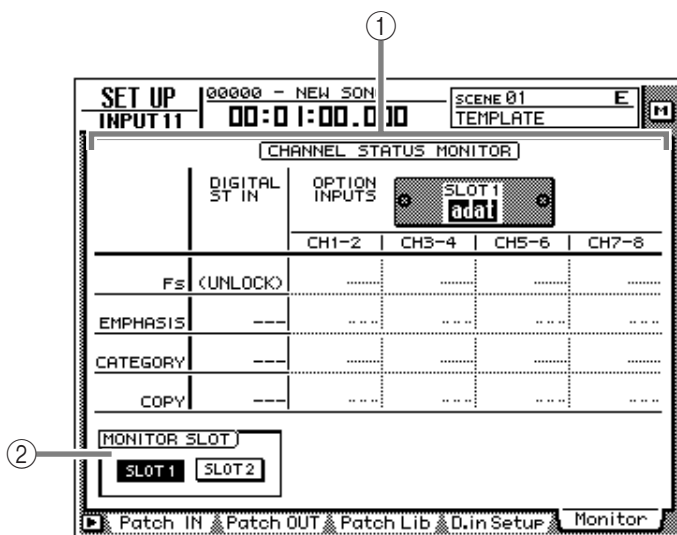
### [Function]

Monitor the state of the digital audio signals being input from the DIGITAL STEREO IN jack or from digital I/O cards installed in the OPTION I/O slots.

### [Key operation]

- [SETUP] key → [F5] (Monitor) key <sup>(\*1)</sup>
- Repeatedly press the [SETUP] key until the screen shown at the right appears.

\*1. In the SET UP screen, the tabs displayed at the bottom of the screen are divided into two groups. If the Monitor tab is not assigned to the [F5] key when you press the [SETUP] key, press the [SHIFT] key + [F1] (CHANGE TAB) key to switch the tabs.



### [Mouse operation]

M button → SETU button → Monitor tab

### [Screen functions]

#### ① CHANNEL STATUS MONITOR

This area monitors the state of the digital input signals from the DIGITAL STEREO IN jack (DIGITAL ST IN) or from a digital I/O card installed in an OPTION I/O slot (OPTION INPUTS). The following items are displayed.

#### ● Fs

This shows the sampling frequency of the input signal.

Display	Meaning
44.1k	44.1 kHz sampling frequency
48k	48 kHz sampling frequency
None	Unknown sampling frequency
UNLOCK	No signal being input, or invalid signal being input

#### ● EMPHASIS

This shows whether the input signal has been processed by emphasis.

Display	Meaning
ON	Emphasis on
OFF	Emphasis off
???	Unknown

### ● CATEGORY

This shows the category of the digital input signal.

Display	Meaning
GEN	General use
LASER OPTICAL	Optical laser device such as a CD player
D/D Conv	D/D converter or signal processor
D.Broadcast	Digital broadcast
Instrument	Instrument or sound module
AD Conv	A/D converter (without copyright data)
A/D Conv with (c)	A/D converter (with copyright data)
Solid Memory	Solid-state memory device
Experimental	Experimental device
Unknown	Unknown device

### ● COPY

This shows the copy permit/prohibit status of the digital input signal.

Display	Meaning
OK	Copying permitted
Prohibit	Copying prohibited



Digital input signals from the OPTION I/O slots are displayed in units of two adjacent odd-numbered → even-numbered channels (channels 1/2, 3/4 ...). The buttons in the MONITOR SLOT area (②) select whether slot 1 or 2 will be displayed.

### ② MONITOR SLOT

These buttons select the OPTION I/O slot that will be monitored in the OPTION INPUTS area.

### ■ Additional functions in the Monitor page

In the Monitor page, you can press the [SHIFT] key to assign the following function to the [F1] key.



- **[F1] (CHANGE TAB) key**  
Switch between the two types of tab display.



# Dither Out page

## Specify dithering and word length of the digital outputs

### [Function]

Turn dithering on/off and specify the word length of the output signal for the various digital outputs.

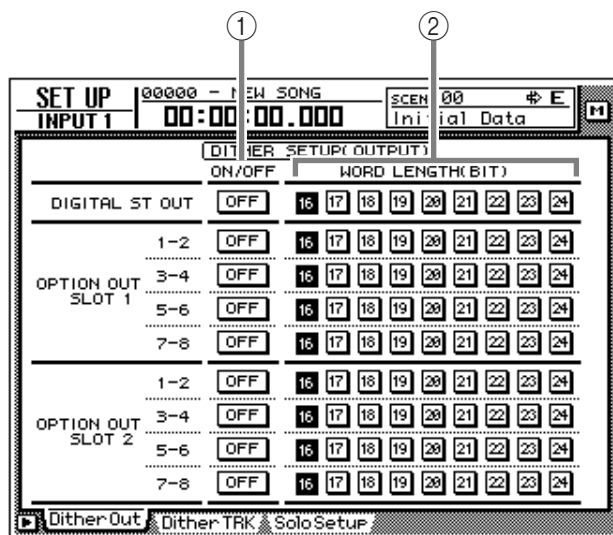
### [Key operation]

- [SETUP] key → [F1] (Dither Out) key (\*1)
- Repeatedly press the [SETUP] key until the screen shown at the right appears.

\*1. In the SET UP screen, the tabs displayed at the bottom of the screen are divided into two groups. If the Dither Out tab is not assigned to the [F1] key when you press the [SETUP] key, press the [SHIFT] key + [F1] (CHANGE TAB) key to switch the tabs.

### [Mouse operation]

M button → SETU button → Dither Out tab



### [Screen functions]

#### ① ON/OFF (dithering on/off)

Turn dithering on/off for the DIGITAL STEREO OUT jack (DIGITAL OUT) or the output channels of the OPTION I/O slots (OPTION OUT SLOT).



- Dithering is a process by which a small amount of noise is added to the signal in order to make the sound smoother, preventing the obtrusive sound that can occur if bits are discarded when digital audio data is transmitted from a high-resolution system to a lower resolution system (for example when copying from a 24 bit system to a 16 bit system).
- For digital I/O cards, dithering is switched on/off by pairs of adjacent odd-numbered → even-numbered channels (channels 1/2, 3/4, ...).

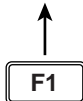
#### ② WORD LENGTH (BIT)

Select the word length (number of bits) for the signals that are output to the DIGITAL STEREO OUT jack (DIGITAL OUT) or to digital I/O cards installed in the OPTION I/O slots (OPTION OUT SLOT). Set this to the word length of the destination device.

### ■ Additional functions in the Dither Out page

In the Dither Out page, you can press the [SHIFT] key to assign the following function to the [F1] key.

CHANGE TAB



- [F1] (CHANGE TAB) key

Switch between the two types of tab display.



# Dither TRK page

## Specify dithering and word length for tracks

### [Function]

Turn dithering on/off and specify the word length for recording on tracks 1–16 of the recorder.

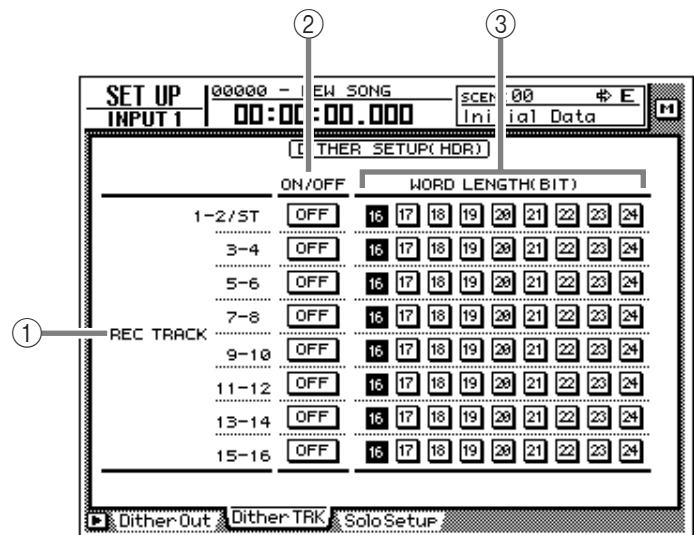
### [Key operation]

- [SETUP] key → [F2] (Dither TRK) key (\*1)
- Repeatedly press the [SETUP] key until the screen shown at the right appears.

\*1. In the SET UP screen, the tabs displayed at the bottom of the screen are divided into two groups. If the Dither TRK tab is not assigned to the [F1] key when you press the [SETUP] key, press the [SHIFT] key + [F1] (CHANGE TAB) key to switch the tabs.

### [Mouse operation]

M button → SETUP button → Dither TRK tab



### [Screen functions]

#### ① REC TRACK

In pairs of adjacent odd-numbered → even-numbered tracks (tracks 1/2, 3/4 ...), this indicates the tracks for which you can specify dithering and word length. The settings for the stereo track are common to tracks 1/2.

#### ② ON/OFF (dithering on/off)

Turn dithering on/off for the data that is recorded on adjacent odd-numbered → even-numbered tracks.

#### ③ WORD LENGTH (BIT)

Select the word length (number of bits) for the data that is recorded on adjacent odd-numbered → even-numbered tracks. Set this to match the quantization (number of bits) that you selected when creating the song.

### ■ Additional functions in the Dither TRK page

In the Dither TRK page, you can press the [SHIFT] key to assign the following function to the [F1] key.



#### • [F1] (CHANGE TAB) key

Switch between the two types of tab display.

# Solo Setup page

## Make solo settings

### [Function]

Make various settings related to the Solo function.

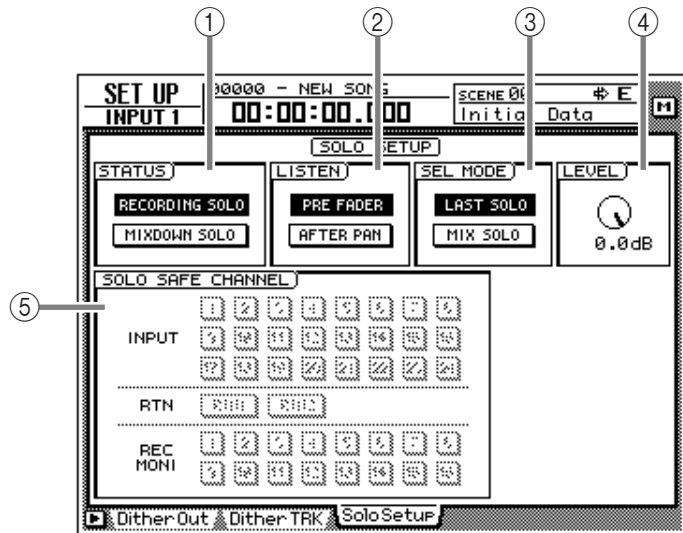
### [Key operation]

- [SETUP] key → [F3] (Solo Setup) key <sup>(\*1)</sup>
- Repeatedly press the [SETUP] key until the screen shown at the right appears.

\*1. In the SET UP screen, the tabs displayed at the bottom of the screen are divided into two groups. If the Solo Setup tab is not assigned to the [F3] key when you press the [SETUP] key, press the [SHIFT] key + [F1] (CHANGE TAB) key to switch the tabs.

### [Mouse operation]

M button → SETUP button → Solo Setup tab



### [Screen functions]

#### ① STATUS

Turn on one of the following two buttons to select the operating mode of the Solo function.

##### ● RECORDING SOLO

If this button is on, the solo signal will be output via the dedicated SOLO bus to the MONITOR OUT jacks/PHONES jack. (The output of the stereo bus and buses 1–8 will not be affected.) You can also monitor channels that are not assigned to the stereo bus or to buses 1–8, or channels whose [ON] key is off.

##### ● MIXDOWN SOLO

If this button is on, the solo signal will be output via the stereo bus to the MONITOR OUT jacks/PHONES jack. When the Solo function is turned on, only the channel(s) being soloed will be sent to the stereo bus, and the remaining channels will be muted. It is not possible to monitor channels that are not assigned to the stereo bus, nor channels whose [ON] key is turned off.

#### ② LISTEN

When RECORDING SOLO is selected for ①, you can select one of the following two locations from which the signal will be sent from each channel to the SOLO bus.

##### ● PRE FADER

The pre-fader signal will be sent to the SOLO bus. Since the pan setting of the channel will have no effect, the signal being monitored from the MONITOR OUT jacks/PHONES jack will be monaural.

##### ● AFTER FADER

The signal after passing through fader and pan will be sent to the SOLO bus. The pan and fader settings of each channel will affect the signal that is monitored by the MONITOR OUT jacks/PHONES jack.

#### ③ SEL MODE (select mode)

Select one of the following two ways by which the monitored signal will be selected when the Solo function is on.

**● LAST SOLO**

When the Solo function is on, only the channel last-selected by pressing its [ON] key will be monitored.

**● MIX SOLO**

When the Solo function is on, all channels selected by pressing their [ON] keys will be monitored.

**④ LEVEL**

This adjusts the level of the signal that is sent to the SOLO bus when RECORDING SOLO mode is selected for ①.

**⑤ SOLO SAFE CHANNEL**

This area selects the channels that will be excluded from the Solo function when MIX-DOWN SOLO is selected for ①. Channels that are turned on in this area will not be affected when you press the [SOLO] key.

**■ Additional functions in the Solo Setup page**

In the Solo Setup page, you can press the [SHIFT] key to assign the following function to the [F1] key.

**• [F1] (CHANGE TAB) key**

Switch between the two types of tab display.

# FILE screen

## Backup page

### Backup a song

#### [Function]

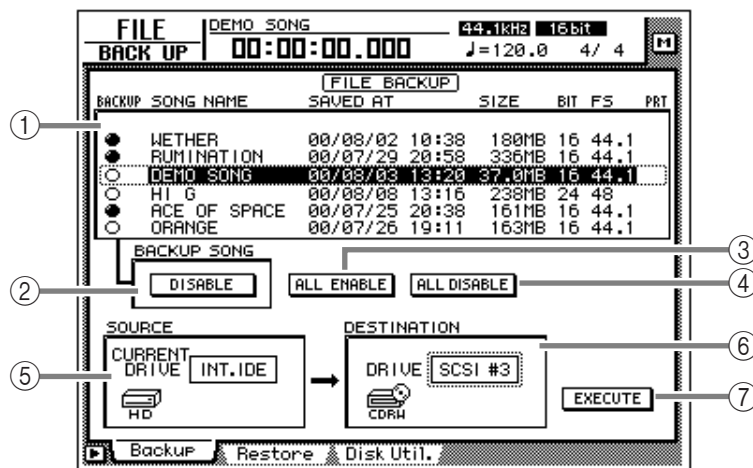
Backup song data from the internal hard disk to a SCSI device (e.g., internal CD-RW drive or external MO drive).

#### [Key operation]

- [FILE] key → [F1] (Backup) key
- Repeatedly press the [FILE] key until the screen shown at the right appears.

#### [Mouse operation]

M button → FILE button → Backup tab



#### [Screen functions]

##### ① Song list

This list shows the songs saved on the internal hard disk. The current song is highlighted in the list, and songs selected for backup are indicated by a "●" symbol in the BACKUP column.

The following information is also shown in the list.

- **SONG NAME ..** Song name
- **SAVED AT .....** Date and time at which the song was last saved
- **SIZE .....** Data size of the song
- **BIT/FS.....** Quantization (word length)/sampling frequency of the song
- **PRT.....** Song protect on/off setting

##### ② BACKUP SONG button

This button selects whether the song currently selected in the song list ① will be included in the backup (ENABLE) or excluded from the backup (DISABLE). Move the cursor to this button and press the [ENTER] key to switch between ENABLE and DISABLE.

##### ③ ALL ENABLE button

If you move the cursor to this button and press the [ENTER] key, all songs will be selected for backup.

##### ④ ALL DISABLE button

If you move the cursor to this button and press the [ENTER] key, all songs will be excluded from the backup.

##### ⑤ SOURCE

This shows the backup source drive (internal hard disk). This item is for display only, and cannot be modified.

##### ⑥ DESTINATION

This selects the SCSI ID number of the backup destination drive.

## ⑦ EXECUTE button

Execute the song backup.

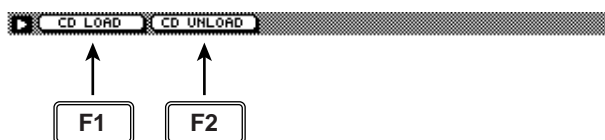


**Tip!**

- When backing up to removable media such as an MO drive, you can select from two types of backup: "TYPE 1" in which the backup can extend across multiple volumes of media, and "TYPE 2" in which data can be backed up in units of individual songs on one volume of media. The selection of either TYPE 1 or TYPE 2 is made in the UTILITY screen Prefer.3 page (→ P.37).
- For details on the song backup procedure, refer to Operation Guide "Chapter 16. Backing up and restoring songs."

## ■ Additional functions in the Backup page

In the Backup page you can press the [SHIFT] key to assign the following functions to the [F1]–[F2] keys.



- **[F1] (CD LOAD) key**  
Close the open tray of the CD-RW drive.
- **[F2] (CD UNLOAD) key**  
Eject the tray of the CD-RW drive.

# Restore page

## Restore backed-up songs

### [Function]

Restore songs from the backup destination SCSI device to the AW4416's internal hard disk.

### [Key operation]

- [FILE] key → [F2] (Restore) key
- Repeatedly press the [FILE] key until the screen shown at the right appears.

### [Mouse operation]

M button → FILE button → Restore tab

### [Screen functions]

#### ① Song list

This list shows the songs saved on the backup destination SCSI device. Songs selected for restore are indicated by a “●” symbol in the RESTORE column.

The following information is also shown in the list.

- **SONG NAME ..** Song name
- **SAVED AT .....** Date and time at which the song was last saved on the AW4416's internal hard disk
- **SIZE .....** Data size of the song
- **BIT/FS.....** Quantization (word length)/sampling frequency of the song
- **PRT.....** Song protect on/off setting

#### ② RESTORE SONG button

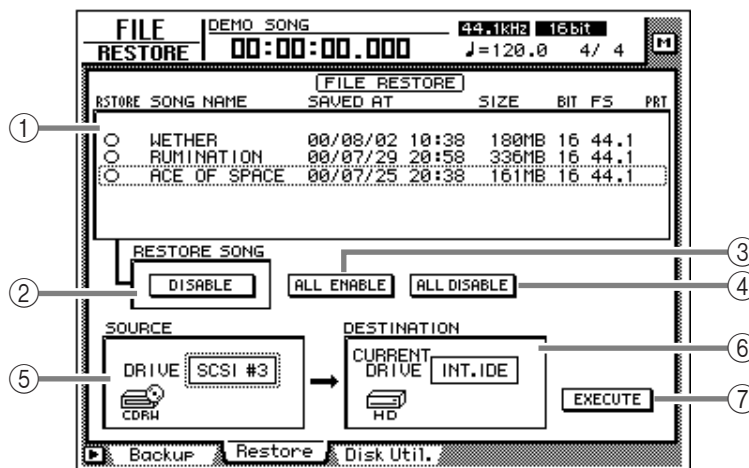
This button selects whether the song currently selected in the song list ① will be included in the restore (ENABLE) or excluded from the restore (DISABLE). Move the cursor to this button and press the [ENTER] key to switch between ENABLE and DISABLE.

#### ③ ALL ENABLE button

If you move the cursor to this button and press the [ENTER] key, all songs will be selected for restore.

#### ④ ALL DISABLE button

If you move the cursor to this button and press the [ENTER] key, all songs will be excluded from the restore.



#### ⑤ SOURCE

This selects the ID number of the SCSI device on which the data was backed up.

#### ⑥ DESTINATION

This shows the restore destination drive (internal hard disk). This item is for display only, and cannot be modified.

#### ⑦ EXECUTE button

Execute the song restore.

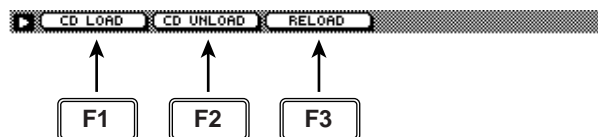


**Tip!**

For details on song restore, refer to Operation Guide “Chapter 16. Backing up and restoring songs.”

## Additional functions in the Restore page

In the Restore page you can press the [SHIFT] key to assign the following functions to the [F1]–[F3] keys.



#### • [F1] (CD LOAD) key

Close the open tray of the CD-RW drive.

#### • [F2] (CD UNLOAD) key

Eject the tray of the CD-RW drive.

#### • [F3] (RELOAD) key

Reload the removable media and update the displayed list.

# Disk Util. page

## Format or erase a disk

### [Function]

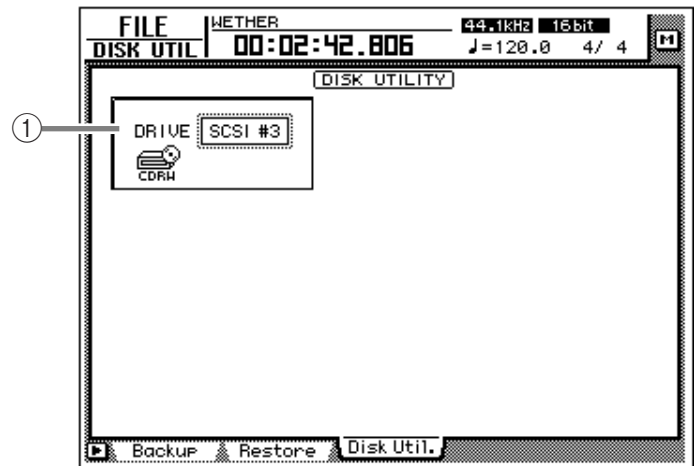
Format the internal hard disk or an external SCSI device, or erase CD-RW media.

### [Key operation]

- [FILE] key → [F3] (Disk Util.) key
- Repeatedly press the [FILE] key until the screen shown at the right appears.

### [Mouse operation]

M button → FILE button → Disk Util. tab



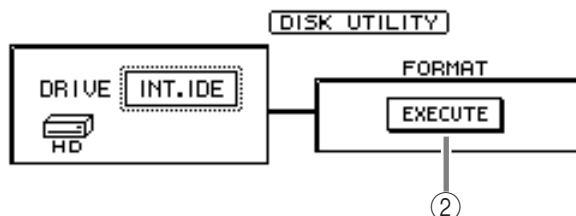
### [Screen functions]

#### ① Drive select

Select the SCSI ID number of the drive that you wish to format (external SCSI device such as MO) or of the CD-RW drive in which you wish to erase CD-RW media. To format the internal hard disk, select "INT.IDE."

The display will change as follows, depending on the type of drive that you select here.

#### ■ If the internal hard disk or an external SCSI device (MO or external hard disk) is selected



#### ② EXECUTE button

Execute formatting of the selected drive/media.

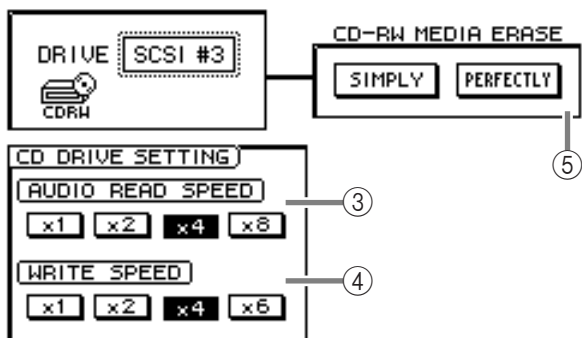


- If a removable media drive (e.g., MO) is selected, **FORMAT** column will appear before the Format operation is executed, allowing you to select the file system that will be used for formatting and the formatting method.  
However if **REMOVABLE BACKUP** is set to "TYPE 1" in the **UTILITY** screen **Prefer.3** page, the media will be formatted automatically, and therefore the **FORMAT** item for selecting the format method will not be displayed.
- For details on this procedure, refer to *Operation Guide* "Chapter 16. Backing up and restoring songs."



When you execute the Format operation, all the saved data will be lost forever. Please use caution.

## ■ If an internal or external CD-RW drive is selected



### ③ AUDIO READ SPEED

Use the x1, x2, x4, or x8 buttons to select the reading speed (normal speed, double speed, quad speed or 8x speed).



*This setting is valid only for CD-IMPORT. If errors occur during CD-IMPORT, lower the read speed and try again.*

### ④ WRITE SPEED

Use the x1, x2, x4, or x6 buttons to select the writing speed (normal speed, double speed, quad speed or 6x speed).



*Normally you should set the read and write speeds to the fastest speeds supported by your CD-RW drive.*

### ⑤ CD-RW MEDIA ERASE

Use the following two buttons to specify how the CD-RW media will be erased.

- **SIMPLE** ..... Only the TOC (Table Of Contents) of the CD-RW media will be erased.
- **PERFECT** ..... All data on the CD-RW media will be erased.



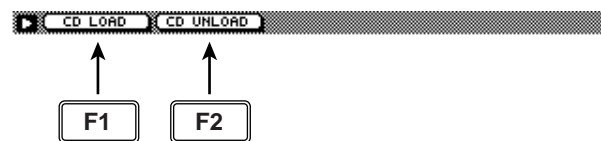
*For details on erasing CD-RW media, refer to Operation Guide "Chapter 16. Backing up and restoring songs."*



*When you execute the Erase operation, all data on the CD-RW media will be lost forever. Please use caution.*

## ■ Additional functions in the Disk Util. page

In the Disk Util. page you can press the [SHIFT] key to assign the following functions to the [F1]–[F2] keys.



- **[F1] (CD LOAD) key**  
Close the open tray of the CD-RW drive.
- **[F2] (CD UNLOAD) key**  
Eject the tray of the CD-RW drive.



# UTILITY screen

## Oscillator page

### Using the test tone oscillator

#### [Function]

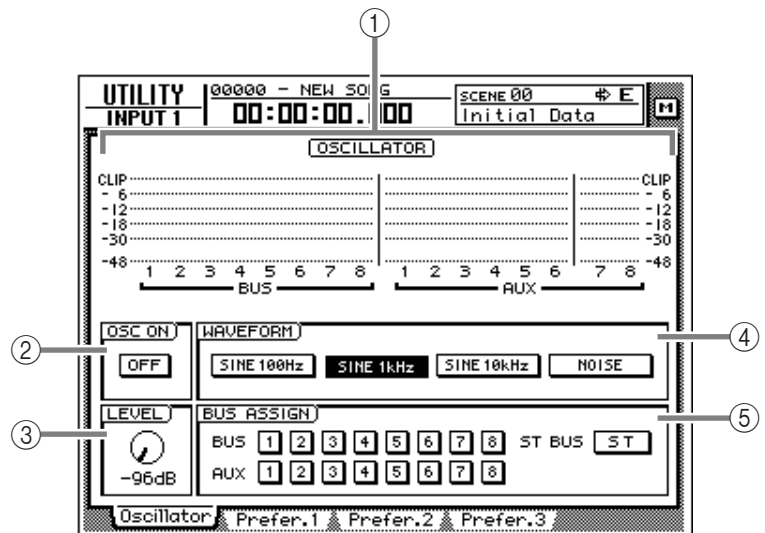
Select the waveform of the test tone oscillator built into the AW4416, and send it to the desired bus.

#### [Key operation]

- [UTILITY] key → [F1] (Oscillator) key
- Repeatedly press the [UTILITY] key until the screen shown at the right appears.

#### [Mouse operation]

M button → UTIL button → Oscillator tab



#### [Screen functions]

##### ① Level meter

This shows the oscillator output level that is being sent to buses 1–8 and AUX buses 1–8.

##### ② OSC ON (oscillator on) button

This button switches the oscillator on/off. (Default=OFF)



*Sine waves and white noise have a higher sound pressure level than they appear to your ears. Use caution, since they may damage your speakers if played back at a high volume.*

##### ③ LEVEL knob

This knob adjusts the output level (–96 dB–0 dB) of the oscillator.

##### ④ WAVEFORM

Use the following four buttons to select the waveform of the test tone oscillator.

- **SINE 100 Hz button** ..... 100 Hz sine wave
- **SINE 1 kHz button** ..... 1 kHz sine wave
- **SINE 10 kHz button** ..... 10 kHz sine wave
- **NOISE** ..... White noise

##### ⑤ BUS ASSIGN

Use the following buttons to specify the bus to which the oscillator signal will be sent.

- **BUS 1–8 buttons** ..... Buses 1–8
- **AUX 1–8 buttons** ..... AUX buses 1–8
- **ST BUS button** ..... Stereo bus



*You can specify more than one bus as the oscillator output destination.*

# Prefer.1 page

## Make overall settings for the AW4416 (1)

### [Function]

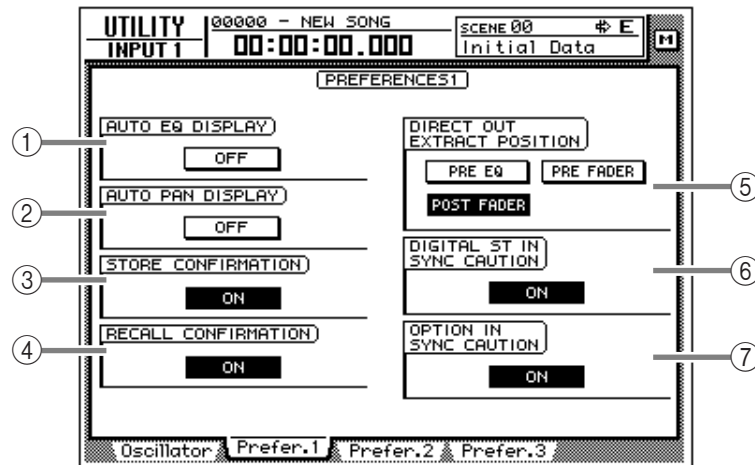
Enable/disable warning messages, and specify the point from which direct output will be taken.

### [Key operation]

- [UTILITY] key → [F2] (Prefer.1) key
- Repeatedly press the [UTILITY] key until the screen shown at the right appears.

### [Mouse operation]

M button → UTIL button → Prefer.1 tab



### [Screen functions]

#### ① AUTO EQ DISPLAY

#### ② AUTO PAN DISPLAY

If the ① or ② buttons are ON, operating the [EQ] controls or [PAN] control located at the right of the display will cause the corresponding page to automatically appear in the display. (Default=off)



*If buttons ①/② are off, the current EQ/pan settings will appear in the upper right of the display when you operate the [EQ]/[PAN] controls.*

#### ③ STORE CONFIRMATION

#### ④ RECALL CONFIRMATION

If the ③ or ④ buttons are ON, a popup window will ask you to confirm the operation when storing or recalling a scene or library. (Default=on)

#### ⑤ DIRECT OUT EXTRACT POSITION

Use the following three buttons to select the position from which the signal will be taken for direct output from input channels 1–24.

- **PRE EQ button**.....Immediately before the EQ
- **PRE FADER button**.....Pre-fader position
- **POST FADER button**.....Post-fader position (default)

#### ⑥ DIGITAL ST IN SYNC CAUTION

#### ⑦ OPTION IN SYNC CAUTION

If the ⑥ or ⑦ buttons are ON, an error message will be displayed if a digital signal that cannot be synchronized with the word clock source is input from the DIGITAL STEREO IN jack or from an optional I/O card. (Default=on)

# Prefer.2 page

## Make overall settings for the AW4416 (2)

### [Function]

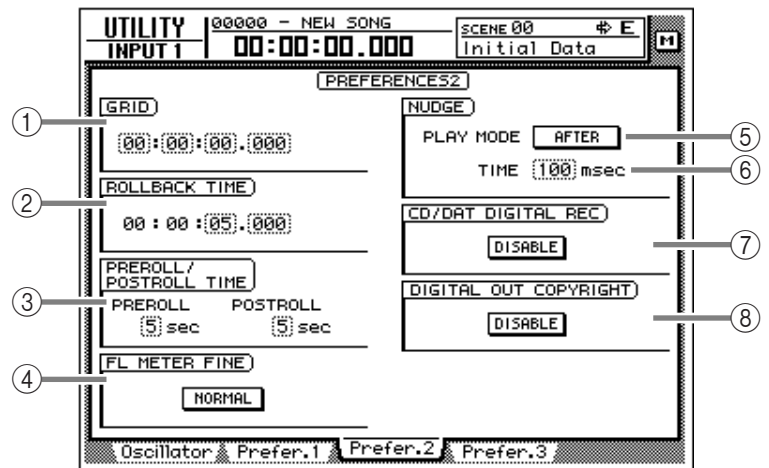
Set the rollback time, pre-roll/post-roll time, and the nudge playback method etc.

### [Key operation]

- [UTILITY] key → [F3] (Prefer.2) key
- Repeatedly press the [UTILITY] key until the screen shown at the right appears.

### [Mouse operation]

M button → UTIL button → Prefer.2 tab



### [Screen functions]

#### ① GRID

This sets the minimum unit when you specify an area in the EDIT screen TR Edit page or V.TR Edit page. For example if the grid value is set to "00:00:00.010," the specified location will move in 10 millisecond increments for each click of the [DATA/JOG] dial. (Default= 00:00:00.000)



- The value you specify here will not affect how you adjust locate points (TRACK screen Mark Adj. page) or how you specify locate points using the [NUM LOCATE] key.
- The value you specify here has no effect if "measure display" is selected as the counter display method.

#### ② ROLLBACK TIME

This specifies the rollback time (0–5 seconds) of the [ROLL BACK] key. For details on rollback, refer to Operation Guide "Chapter 6. Transport/locate operations." (Default= 5 seconds)

#### ③ PREROLL/POSTROLL TIME

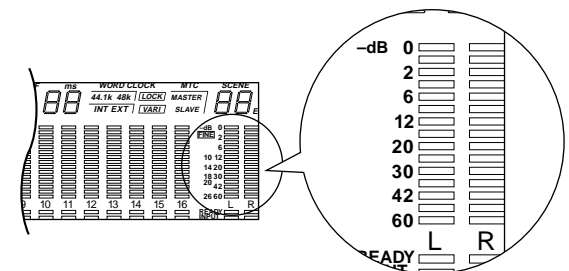
Specify the pre-roll time (0–5 seconds) and post-roll time (0–5 seconds) used when you perform auto punch-in/out. For details on pre-roll time and post-roll time, refer to Operation Guide "Chapter 7. Punch-in/out." (Default= 5 seconds)

#### ④ FL METER FINE

Select one of the following two scales for the level meter/counter display.

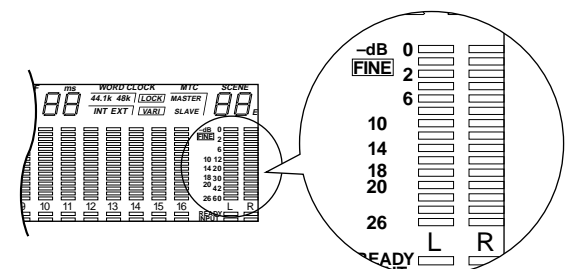
##### ● NORMAL

The full range of the level meter will indicate levels of –60 dB–0 dB. (Default setting)



##### ● FINE

The full range of the level meter will indicate levels of –26 dB–0 dB. This setting is convenient when you wish to make fine adjustments to the level near the 0 dB region.



⑤ **PLAY MODE**

Select one of the following two play modes for the Nudge function. (Default= AFTER)

● **AFTER**

Playback will be repeated for the specified nudge time ⑥ starting at the current location.

● **BEFORE**

Playback will be repeated for the specified nudge time ⑥ ending at the current location.

⑥ **TIME**

Specify the playback length (nudge time) of the Nudge function over a range of 25–800 milliseconds. (Default= 100 milliseconds)



*For details on using the Nudge function, refer to Operation Guide "Chapter 6. Transport/locate operations."*

⑦ **CD/DAT DIGITAL REC**

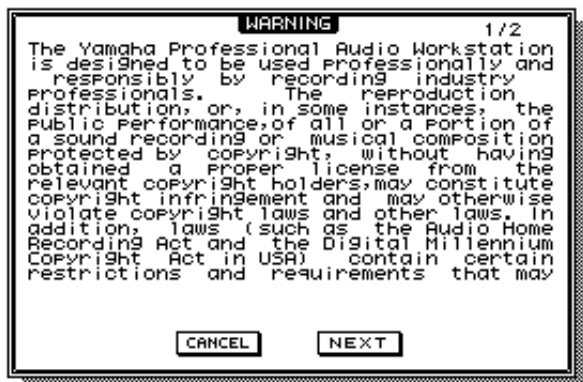
This setting specifies whether digital recording from an audio CD or DAT tape via a CD-RW drive or the DIGITAL STEREO IN jack will be allowed (ENABLE) or not (DISABLE). When you move the cursor to the "DISABLE" button and press the [ENTER] key, the following two-page warning will be displayed. If you select the YES button in the second page, the button display will change to ENABLE.

⑧ **DIGITAL OUT COPYRIGHT**

This setting specifies whether SCMS (Serial Copy Management System) copy protect data will be enabled (ENABLE) or not (DISABLE) for the digital signal output from the DIGITAL STEREO OUT jack. When you move the cursor to this button and press the [ENTER] key, the setting will alternate between ENABLE/DISABLE.



*Even if copy protect data is enabled, it will still be possible to make a digital recording from the DIGITAL STEREO OUT jack on a DAT recorder or MD recorder. However, it will not be possible to create a second-generation digital copy.*



# Prefer.3 page

## Make overall settings for the AW4416 (3)

### [Function]

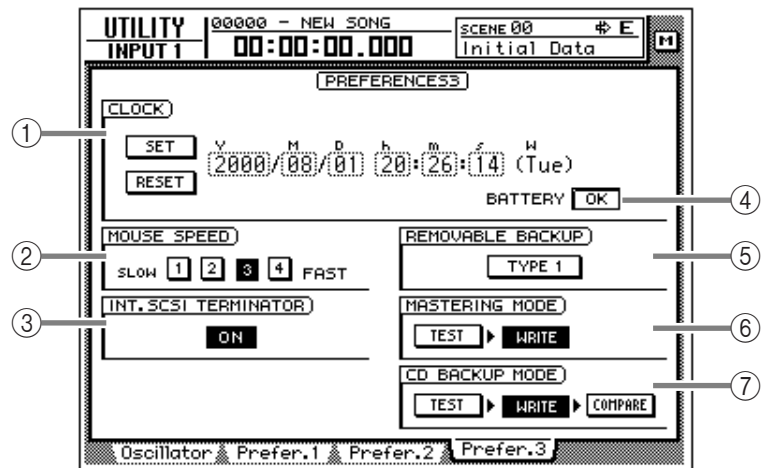
Set the internal clock, mouse cursor speed, and removable media backup method etc.

### [Key operation]

- [UTILITY] key → [F4] (Prefer.3) key
- Repeatedly press the [UTILITY] key until the screen shown at the right appears.

### [Mouse operation]

M button → UTIL button → Prefer.3 tab



### [Screen functions]

#### ① CLOCK

Here you can set the internal clock of the AW4416. Use the [DATA/JOG] dial to adjust the year (Y), month (M), date (D), hour (h), minute (m), and second (s) fields, and use the SET button to finalize the date and time. If you use the RESET button, the date and time you input will be cancelled.



- When you save a song, date and time information will be stored in the song according to this internal clock.
- When shipped from the factory, the internal clock of the AW4416 is set to Japan time.
- For details on setting the internal clock, refer to the opening section of the Operation Guide, "Important points you must observe."

#### ② MOUSE SPEED

Use buttons 1–4 to specify the movement speed of the mouse pointer. Higher value will produce faster movement.

#### ③ INT. SCSI TERMINATOR (internal SCSI terminator)

This switches the internal SCSI bus terminator on/off. For details on the terminator setting, refer to Operation Guide "Before you begin." (Default: on)

#### ④ BATTERY

This displays the state of the battery that operates the AW4416's internal clock. If the battery capacity is sufficient, this will indicate "OK." If the battery has run low and needs to be replaced, this will indicate "LOW." If the "LOW" indication appears, please contact your dealer to have the battery replaced.

#### ⑤ REMOVABLE BACKUP

This specifies the backup method when backing up songs to removable media such as MO. Move the cursor to this button and press the [ENTER] key to switch the setting between the following two methods. (Default= TYPE 1)

##### ● TYPE 1

This backup method makes full use of the capacity of the removable media, but does not allow backup data to be added later. Even if the data being backed up will not fit on a single volume of media, the backup can extend across multiple volumes of media. If this method is selected, the media will be formatted automatically before the backup begins.

### ● TYPE 2

This backup method allows new backup data to be added to media on which data was previously backed up. It is not possible to backup data that extends across multiple volumes of media. Before you can use this method to backup on previously-unused media, you must format the media manually.



---

*For details on the procedure for backing up songs, refer to Operation Guide "Chapter 16. Backing up and restoring songs."*

### ⑥ MASTERING MODE

Use the following two buttons to select the writing mode that will be used when you execute the Mastering function.

#### ● TEST button

If this button is on, a test will be performed before writing data to the CD-R/RW media to see whether writing errors will occur. (Default= off)

#### ● WRITE button

This turns data writing on/off. If the TEST button = on and the WRITE button = off, only the writing test will be executed. (Default= on)

### ⑦ CD BACKUP MODE

Use the following three buttons to select the writing mode when backing up songs to CD-R/RW media.

#### ● TEST/WRITE buttons

These are the same functions as the MASTERING MODE ⑥ TEST/WRITE buttons.

#### ● COMPARE button

When this button is on, the backup source song data on the internal hard disk will be compared with the backup destination data on the CD-R/RW media after the data has been written. If for some reason the backup was not written correctly, an error message will be displayed when Compare is executed.

# MIDI screen

## MIDI Setup page

### Make basic MIDI settings

#### [Function]

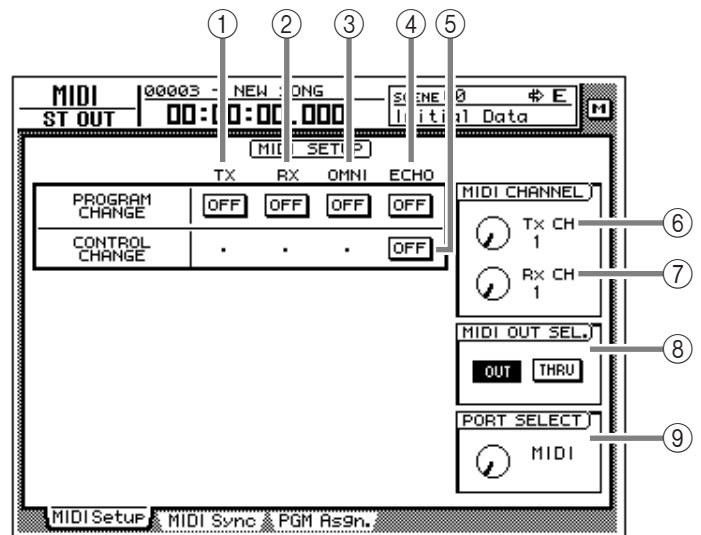
Set the MIDI transmit/receive channels, turn transmission/reception of various messages on/off, and specify the port used for transmission and reception.

#### [Key operation]

- [MIDI] key → [F1] (MIDI Setup) key
- Repeatedly press the [MIDI] key until the screen shown at the right appears.

#### [Mouse operation]

M button → MIDI button → MIDI Setup tab



#### [Screen functions]

##### ① PROGRAM CHANGE TX (program change transmission)

Specify whether program changes will be transmitted to external MIDI devices. If this button is on, the program change assigned to a scene number will be transmitted when that scene is recalled.

##### ② PROGRAM CHANGE RX (program change reception)

Specify whether program changes will be received from external MIDI devices. If this button is on, receiving a program change will recall the scene assigned to that program number.

##### ③ PROGRAM CHANGE OMNI

If this button is on, program changes of all MIDI channels will be received, regardless of the Rx (receive channel) setting.

##### ④ PROGRAM CHANGE ECHO

If this button is on, received program changes will be re-transmitted without change (“thru-ed”) from the MIDI OUT connector or TO HOST connector.

##### ⑤ CONTROL CHANGE ECHO

If this button is on, received control changes will be re-transmitted without change from the MIDI OUT connector or TO HOST connector.

##### ⑥ Tx CH (transmit channel)

Select the channel (1–16) on which MIDI messages will be transmitted to external MIDI devices.

##### ⑦ Rx CH (receive channel)

Select the channel (1–16) on which MIDI messages will be received from external MIDI devices.

##### ⑧ MIDI OUT SEL. (MIDI OUT select)

This selects whether the MIDI OUT connector will be used as MIDI OUT or as MIDI THRU. If “MIDI THRU” is selected, operations performed on the AW4416 itself will not be output.



If you wish to transmit MIDI Clock to an external MIDI device, you must set this to “MIDI OUT.” For details on synchronization, refer to P.41.



**⑨ PORT SELECT**

Select the port and transmission speed with which MIDI messages will be transmitted and received.

<b>Setting</b>	<b>Computer platform</b>	<b>Port type</b>	<b>Transmission speed</b>
<b>MIDI</b>	MIDI compatible	MIDI IN, OUT/THRU connectors	31.25 kbps
<b>TO HOST PC2</b>	IBM PC compatible	TO HOST connector	38.4 kbps
<b>TO HOST MAC</b>	Apple Macintosh series <sup>(*1)</sup>	TO HOST connector	31.25 kbps

\*1. Only usable with Macintosh computers that have a modem/printer port. On the software that you use, set the clock to "1 MHz."



# MIDI Sync page

## Make settings related to MIDI synchronization

### [Function]

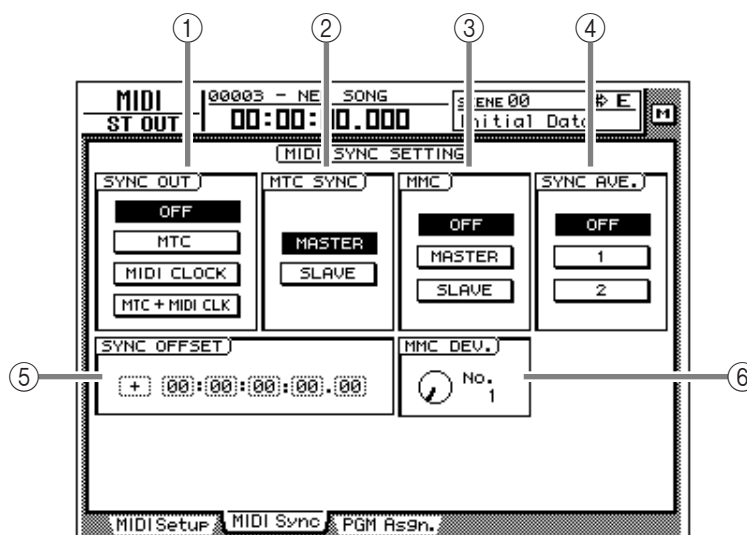
Make various settings for synchronization operation.

### [Key operation]

- [MIDI] key → [F2] (MIDI Sync) key
- Repeatedly press the [MIDI] key until the screen shown at the right appears.

### [Mouse operation]

M button → MIDI button → MIDI Sync tab



### [Screen functions]

#### ① SYNC OUT

Select one of the following synchronization signals for output.

##### ● OFF

Synchronization signals will not be output.

##### ● MTC

MIDI Time Code will be transmitted from the MTC OUT connector.

##### ● MIDI CLOCK

MIDI Clock will be transmitted from the MIDI OUT connector or TO HOST connector.

##### ● MTC + MIDI CLK

Both MIDI Time Code (MTC OUT connector) and MIDI Clock (MIDI OUT connector or TO HOST connector) will be transmitted.



When using the AW4416 as the MIDI Clock master, you must set MIDI OUT SEL. to "MIDI OUT" in the MIDI screen MIDI Setup page. (→ P.39)

#### ② MTC SYNC

Specify whether the AW4416 will be the MTC master (MASTER) or slave (SLAVE) when MTC is used to synchronize an AW4416 song with the operation of an external MIDI device.

If master is selected, MTC messages will be transmitted from the MTC OUT connector in synchronization with the progress of the song. If slave is selected, the AW4416 song will follow the MTC messages received at the MIDI IN connector.



The MTC frame rate is selected in the SONG screen Setting page (→ P.2).

#### ③ MMC (MIDI Machine Control)

When using MMC for remote control between the AW4416 and an external MIDI device, this setting specifies whether the AW4416 will be the MMC master (MASTER) or slave (SLAVE).

If master is selected, operating the transport of the AW4416 will cause the corresponding MMC command to be transmitted from the MIDI OUT connector or TO HOST connector.

If slave is selected, MMC commands sent from a MIDI sequencer or other external device can be used to remotely select or de-select recording tracks and control transport operations on the AW4416.



When using MMC, you must match the device ID of the AW4416 and the external MIDI device. For details on setting the device ID, refer to MMC DEV.⑥.

#### ④ SYNC AVE. (sync average)

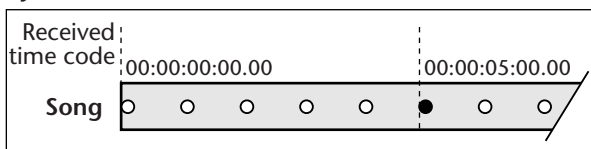
When the AW4416 is used as an MTC slave, this parameter specifies the precision with which MTC will be received.

Normally you will use this with the “OFF” button selected. However if synchronization is unreliable, try the 1 or 2 setting.

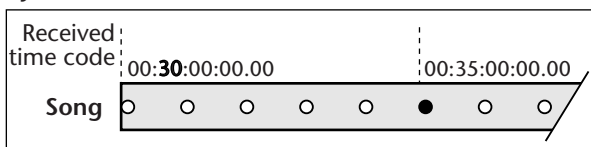
#### ⑤ SYNC OFFSET

When the AW4416 is used as an MTC slave, this parameter specifies how the absolute time of the AW4416 will be shifted relative to the time code (MTC) received from the external device. You can specify a range of “-24:00:00:00.00”-“+24:00:00:00.00”.

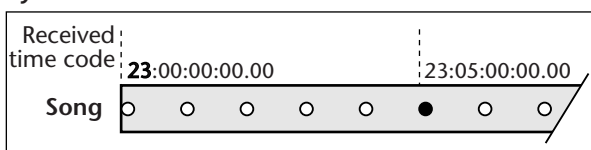
**Sync offset= 00:00:00:00.00**



**Sync offset= +00:30:00:00.00**



**Sync offset= -01:00:00:00.00**



The offset value you specify here does not affect the MTC that is transmitted from the MTC OUT connector of the AW4416. If you want the MTC transmitted from the MTC OUT connector to be shifted relative to the absolute time of the AW4416, you must adjust the Time Code Top (SONG screen Setting page).

#### ⑥ MMC DEV. (MIDI Machine Control device)

When using MMC for remote control, specify a device ID of 1–127 to distinguish each device.

# PGM Asgn. page

## Assign a scene number to each program change number

### [Function]

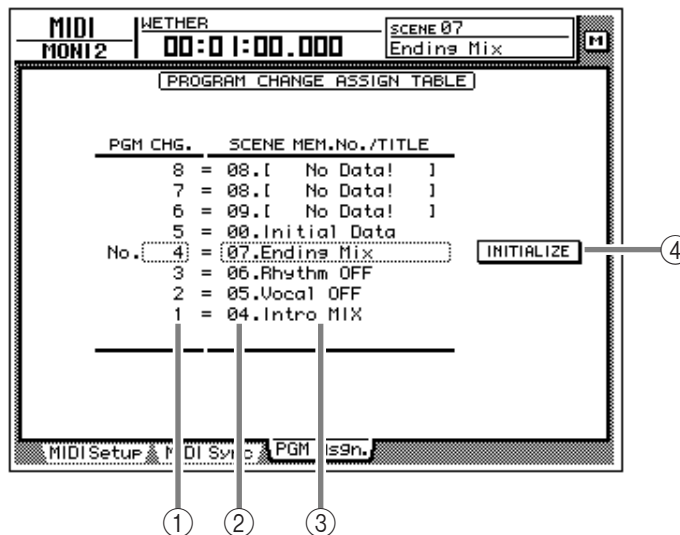
Assign a scene number to each program change number 1–128.

### [Key operation]

- [MIDI] key → [F3] (PGM Asgn.) key
- Repeatedly press the [MIDI] key until the screen shown at the right appears.

### [Mouse operation]

M button → MIDI button → PGM Asgn. tab



### [Screen functions]

#### ① PGM CHG. No. (program change number)

These are the program change numbers 1–128. Move the cursor to this area, and rotate the [DATA/JOG] dial to select the program number.

#### ② SCENE MEM. No. (scene memory number)

This is the scene number assigned to each program number. Move the cursor to this area, and rotate the [DATA/JOG] dial to select the scene number.

#### ③ SCENE MEM. TITLE (scene memory title)

The scene name of each scene is displayed.

#### ④ INITIALIZE

If you move the cursor to this button and press the [ENTER] key, the scene number assignments will be reset to the following default settings.

##### ● Program change numbers 1–96

Scenes 1–96

##### ● Program change numbers 97–99/101–128

No assignment

##### ● Program change number 100

Initial data (default scene)



Scene numbers in which nothing has been stored will be displayed as “No Data!”.

# VIEW screen

## CH View page

### View all parameters of a channel

#### [Function]

This page displays all mix parameters of the selected channel. Parameters other than EQ and dynamics can also be edited in this page.

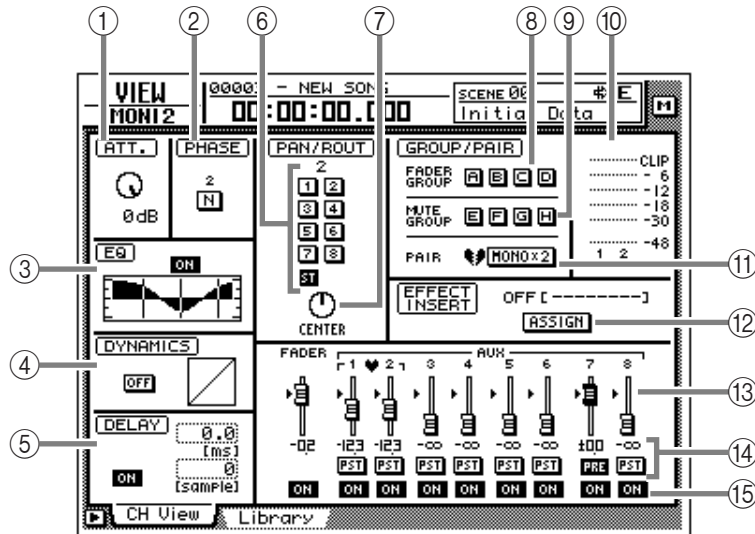
#### [Key operation]

- [VIEW] key → [F1] (CH View) key
- Repeatedly press the [VIEW] key until the screen shown at the right appears.

#### [Mouse operation]

M button → VIEW button → CH View tab

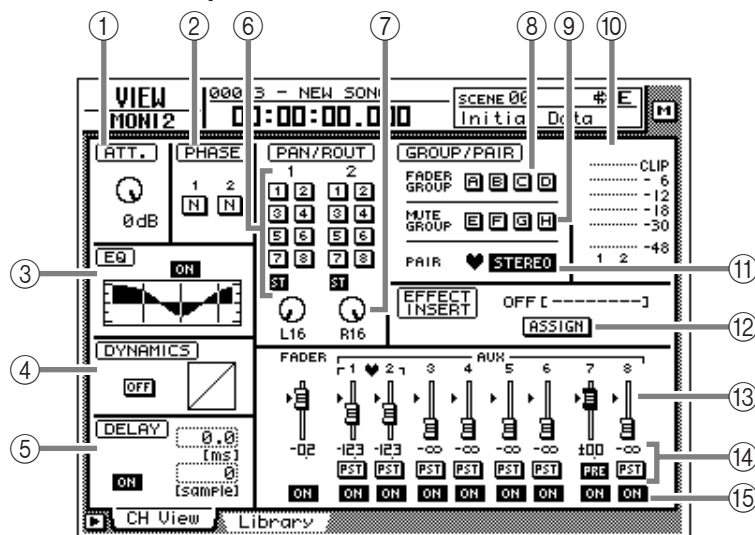
#### ● Input channel/monitor channel



#### [Screen functions]

- ① **ATT. (attenuation)**  
Set the attenuation value.
- ② **PHASE**  
Switch between normal (N) and reverse (R) phase.
- ③ **EQ (equalizer)**  
Turn the EQ on/off. This area also displays a graph showing the approximate response of the current EQ settings.
- ④ **DYNAMICS**  
Turn the dynamics processor on/off. This area also displays a graph showing the approximate response of the current dynamics processor settings.
- ⑤ **DELAY**  
Turn the delay on/off. The delay time can also be edited here.
- ⑥ **ROUT (routing)**  
Assign the channel to buses 1–8 and the stereo bus.

#### ● Paired input channels/monitor channels



⑦ PAN

Adjust the panning between the L/R channels of the stereo bus or between odd-numbered → even-numbered buses.



If you move the cursor to the PAN knob and press the [ENTER] key, the knob will move to the center position.

⑧ Fader group

This area shows the fader group to which the channel belongs. You can also defeat or register groups in this page.

⑨ Mute group

This area shows the mute group to which the channel belongs. You can also defeat or register groups in this page.

⑩ Input/output meter

This shows the input level of the input channel, monitor channel, or return channel, and the output level of the stereo output channel.

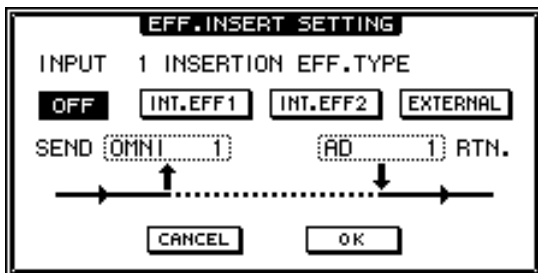
⑪ Pair

This shows the pairing status. Pairing can also be set/defeated in this page.

⑫ ASSIGN button

Use this button to insert an external effect or internal effect into the channel.

Move the cursor to this button and press the [ENTER] key to access a screen like the following.



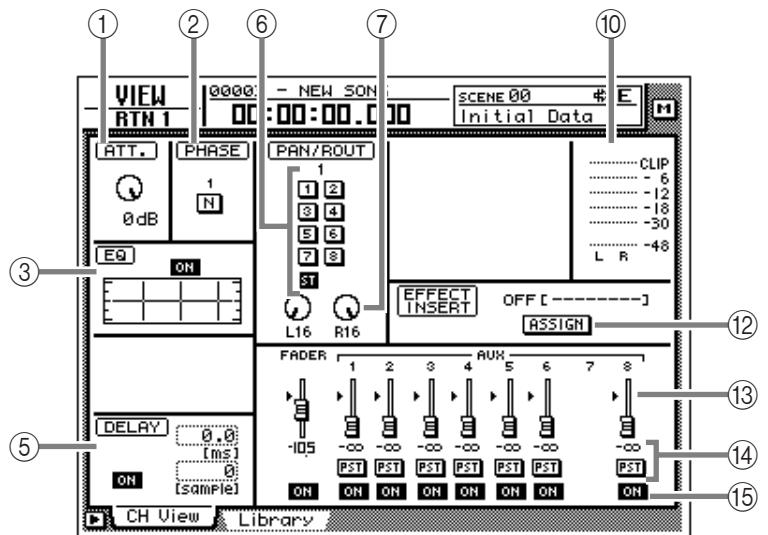
● OFF button

When this button is on, an effect will not be inserted.

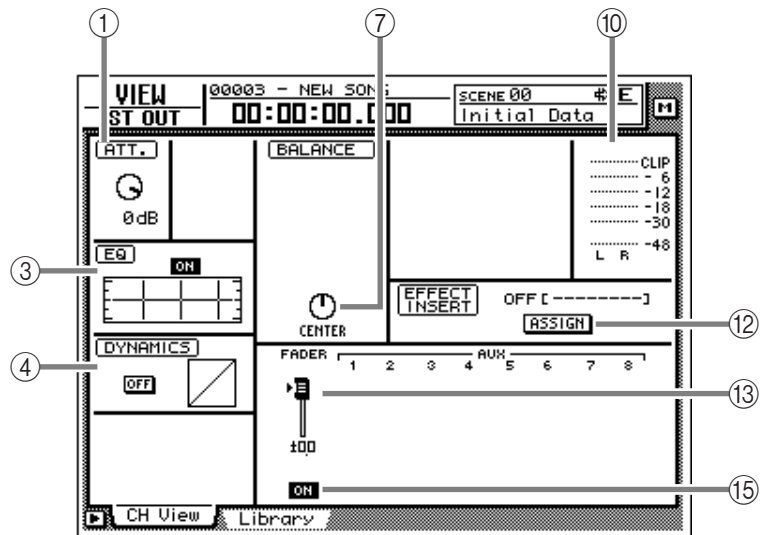
● INT.EFF 1 button

When this button is on, internal effect 1 will be inserted into the corresponding channel.

● Return channel



● Stereo output channel



● INT.EFF 2 button

When this button is on, internal effect 2 will be inserted into the corresponding channel.



When inserting the internal effect 1/2 into a channel, you must set either EFF1 or EFF2 to "INSERT" in the SETUP screen Patch IN page. If neither of the effects is set to "INSERT," attempting to turn on the INT.EFF1/INT.EFF2 button in this screen will produce an error message of "ERROR INT. EFF NOW SELECTED AUX."

● EXTERNAL button

When this button is on, you can select the desired input and output jacks for use as the insert send/return jacks for the corresponding channel.

### ● SEND

When the EXTERNAL button is on, move the cursor to this area and rotate the [DATA/JOG] dial to select one of the following jacks for use as the insert send jack.

- **OMNI 1–4**.....OMNI OUT 1–4 jacks
- **SL1-1–SL1-8**.....Output channels 1–8 of OPTION I/O slot 1
- **SL2-1–SL2-8**.....Output channels 1–8 of OPTION I/O slot 2
- **D STO L/R**.....L/R channels of the DIGITAL STEREO OUT jack
- **STOUT L/R**.....L/R channels of the STEREO OUT jack



If you select **D STO** or **STOUT**, only the **L** channel can be selected for odd-numbered channels, and only the **R** channel can be selected for even-numbered channels.

### ● RTN.

When the EXTERNAL button is on, move the cursor to this area and rotate the [DATA/JOG] dial to select one of the following jacks for use as the insert return jack.

- **AD1–AD8**.....INPUT 1–8 jacks
- **SL1-1–SL1-8**.....Input channels 1–8 of OPTION I/O slot 1
- **SL2-1–SL2-8**.....Input channels 1–8 of OPTION I/O slot 2
- **D STIN L/R**.....L/R channels of the DIGITAL STEREO IN jack



- When the **INT.EFF 1** or **INT.EFF 2** button is on, the input and output of internal effect 1/2 will automatically be assigned to the insert send/return of that channel. This assignment cannot be changed.
- For the procedure of inserting an external effect into a channel, refer to Operation Guide “Chapter 8. Patching.”
- For the procedure of inserting an internal effect into a channel, refer to Operation Guide “Chapter 10. Internal effects.”

### ⑬ Fader

This shows the current fader location both graphically and numerically. The setting can also be edited in this page.

You can also move the cursor to the fader and rotate the [DATA/JOG] dial to modify the fader setting.

### ⑭ AUX

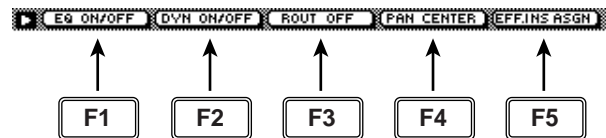
This shows the send level and pre/post selection for AUX buses 1–8. These settings can also be edited in this page. The heart symbol indicates AUX buses that are paired.

### ⑮ ON/OFF

This switches the channel on/off.

## ■ Additional functions in the CH View page

In the CH View page you can press the [SHIFT] key to assign the following additional functions to the [F1]–[F5] keys.



- **[F1] (EQ ON/OFF) keys**  
Switch EQ on/off. This is the same function as the ON/OFF button of ③ EQ.
- **[F2] (DYN ON/OFF) key**  
Switch the dynamics processor on/off. This is the same function as the ON/OFF button of ④ DYNAMICS.
- **[F3] (ROUT OFF) key**  
Turn off all signals sent from that channel to AUX buses 1–8.
- **[F4] (PAN CENTER) key**  
Set the pan to center.
- **[F5] (EFF. INS ASGN) key**  
This button is used to insert an external effect or internal effect into a channel. This is the same function as the ⑫ ASSIGN button.

# Library page

## Store or recall channel settings

### [Function]

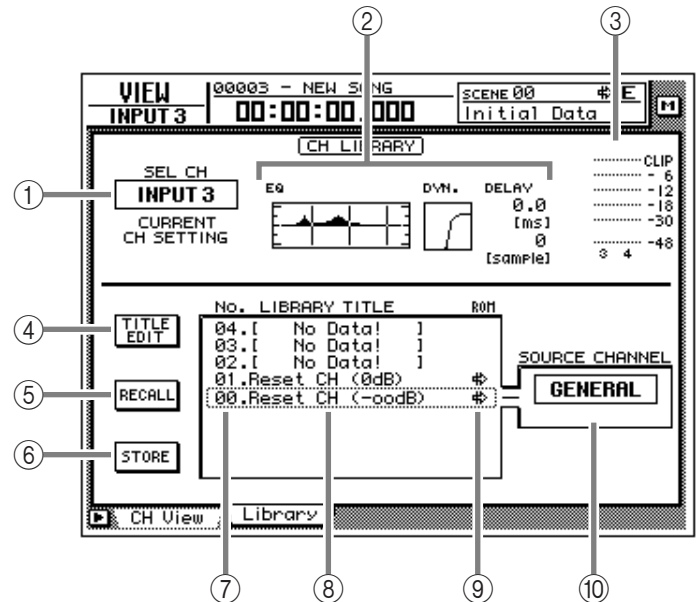
Store the settings of the currently selected channel into the channel library, or recall stored settings.

### [Key operation]

- [VIEW] key → [F2] (Library) key
- Repeatedly press the [VIEW] key until the screen shown at the right appears.

### [Mouse operation]

M button → VIEW button → Library tab



### [Screen functions]

#### ① Channel

This indicates the currently selected channel.

#### ② EQ/DYN./DELAY settings

This area shows the EQ/dynamics processor/delay settings for the channel.

#### ③ Input meter

This meter shows the input level of the channel.

#### ④ TITLE EDIT button

Use this to edit the name (library title) of the settings stored in the channel library. Move the cursor to the TITLE EDIT button and press the [ENTER] key to access the TITLE EDIT popup window where you can input the name. For details on inputting text, refer to page 60 of the Operation Guide.



*Library numbers 0 and 1 are recall-only preset programs, and their names cannot be edited. Also, numbers in which channel settings have not been stored will be displayed as "No Data!," and their title cannot be edited.*

#### ⑤ RECALL button

Recall the currently selected settings from the list.



*If you select a number in which nothing has been stored and attempt to recall it, an error message of "ERROR NO DATA TO RECALL" will be displayed, and recall will not be possible.*

#### ⑥ STORE button

Store the current channel settings.



*Library numbers 0 and 1 are recall-only preset programs; data cannot be stored in them. Data can be stored only in library numbers 2–64.*

#### ⑦ LIBRARY No. (library number)

This shows the library number 1–64.

#### ⑧ LIBRARY TITLE

This shows the name assigned to the library.

#### ⑨ ROM

This write-prohibit symbol is displayed for recall-only numbers 0/1.

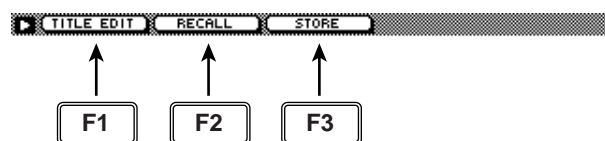
#### ⑩ SOURCE CHANNEL

This shows the original channel from which the settings were stored. For preset numbers 0/1 this is displayed as "GENERAL."



## ■ Additional functions in the Library page

In the Library page you can press the [SHIFT] key to assign the following functions to the [F1]–[F3] keys.



- **[F1] (TITLE EDIT) key**

Use this to edit the name (library title) of the settings saved in the channel library. This is the same function as the ④ TITLE EDIT button.

- **[F2] (RECALL) key**

Recall the currently selected channel settings from the list. This is the same function as the ⑤ RECALL button.

- **[F3] (STORE) key**

Store the current channel settings. This is the same function as the ⑥ STORE button.

## ● To store channel settings in the library

### [Procedure]

1. Select the channel whose settings you wish to store, and access the VIEW screen Library page.
2. Use the [DATA/JOG] dial to select the library number in which you wish to store the settings.
3. Move the cursor to the STORE button and press the [ENTER] key.  
The TITLE EDIT popup window will appear, allowing you to input a name.



*It is possible to store the settings directly without accessing the TITLE EDIT popup window. To do so, turn STORE CONFIRMATION off in the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key).*

4. Input the library title.  
For details on inputting characters, refer to Operation Guide page 60.
5. Move the cursor to the OK button and press the [ENTER] key.  
The settings will be stored.



*When you execute the Store operation, the channel settings that had previously been stored in that number will be lost.*

## ● To recall channel settings from the library

1. Select the channel into which you wish to recall the settings, and access the VIEW screen Library page.
2. Use the [DATA/JOG] dial to select the library number that you wish to recall.
3. Move the cursor to the RECALL button and press the [ENTER] key.

The following message will ask you for confirmation.



- *It is possible to recall the library settings without seeing the CONFIRMATION popup window. To do so, access the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key) and turn the RECALL CONFIRMATION setting off.*
  - *When you recall an EQ program into a paired channel or the stereo output channel, the same settings will be recalled for both channels.*
4. Move the cursor to the OK button and press the [ENTER] key.  
The Recall operation will be executed.



*When you recall to a paired channel or to the stereo channel, the same settings will be recalled to both channels.*



*If you select a number in which nothing has been stored and attempt to recall, an error message of "ERROR NO DATA TO RECALL" will be displayed, and the Recall will not be performed.*



# PAN/ROUTE screen

## Pan 1–16/Pan17–24/Pan MONI pages

### Set pan and routing

#### [Function]

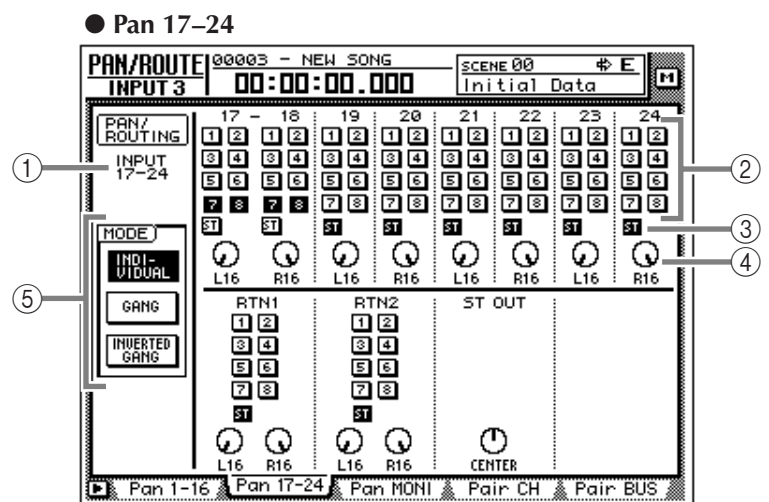
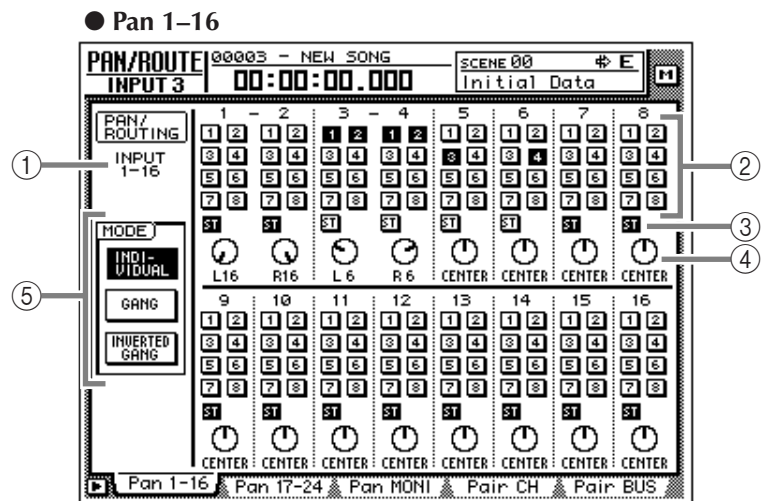
Set pan and routing for the input channels, return channels and monitor channels, and set the balance of the stereo output channel.

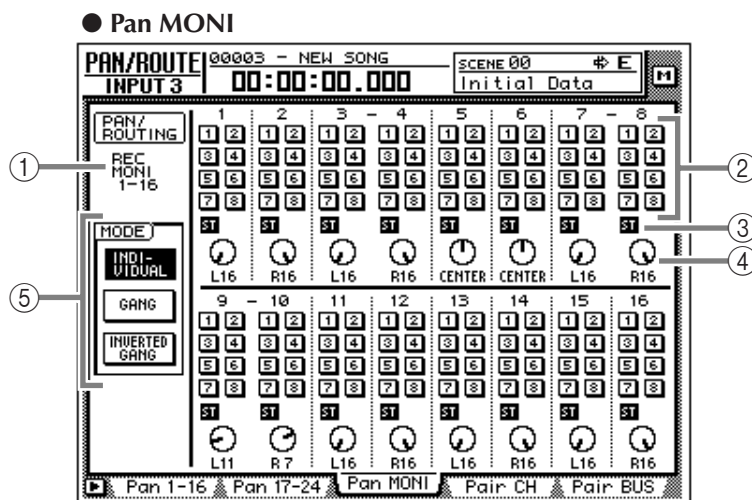
#### [Key operation]

- [EQ] key → [F1] key (Pan 1–16)/ [F2] key (Pan 17–24)/[F3] key (Pan MONI)
- Repeatedly press the [PAN] key until one of the screens shown at the right appear.

#### [Mouse operation]

M button → EQ button → Pan 1–16 tab/Pan 17–24 tab/Pan MONI tab





[Screen functions]

① Channel

This indicates the channel for which pan/routing is being set.

② Bus assign buttons 1-8

These buttons assign the signal of each channel to buses 1-8.

③ ST (stereo bus assign) buttons

These buttons assign the signal of each channel to the stereo bus.

④ PAN knobs

These knobs pan the signal between L/R of the stereo bus and between odd-numbered and even-numbered buses. Use the [DATA/JOG] dial to operate the knobs. Pressing the [ENTER] key will set the knob to the CENTER position.



The ST OUT knobs in the Pan 17-24 page adjust the output channel balance.

⑤ MODE

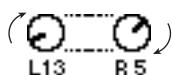
Use the following three buttons to select how the PAN knob will function for paired channels.

● INDIVIDUAL button

The pan of each channel will operate independently. (Default setting)

● GANG button

The pan of paired channels will be linked while preserving the existing spatial relationship.



● INVERTED GANG button

The pan of paired channels will be linked inversely.



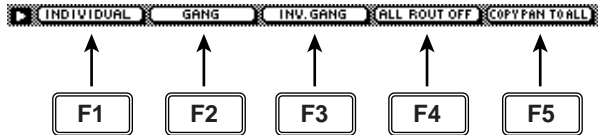
On the AW4416, the pan of a channel can be adjusted in the following two ways.

- (1). Use the [SEL] keys to select the desired channel, and rotate the [PAN] control. If AUTO PAN DISPLAY is turned "ON" in the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key), operating the [PAN] control will automatically switch the display to the PAN/ROUTE screen even if a screen other than the PAN/ROUTE screen had been displayed.
- (2). In the PAN 1-16/PAN 17-24/PAN MONI pages, move the cursor to the PAN knob of the desired channel and rotate the [DATA/JOG] dial.

In the PAN 1-16/PAN 17-24/PAN MONI pages, the channel can be specified freely, regardless of the state of the [SEL] keys. For this reason, there may be cases in which the channel whose pan is adjusted by the [PAN] control is different than the channel whose pan is adjusted by the [DATA/JOG] dial.

## ■ Additional functions in the Pan page

In the Pan 1–16/Pan 17–24/Pan MONI pages, you can press the [SHIFT] key to assign the following additional functions to the [F1]–[F5] keys.



- **[F1] (INDIVIDUAL) key**  
Independently control the pan of paired channels. This is the same function as the INDIVIDUAL button.
- **[F2] (GANG) key**  
Link the pan of paired channels while maintaining their existing spatial relationship. This is the same function as the GANG button.
- **[F3] (INVERTED GANG) key**  
Inversely link the pan of paired channels. This is the same function as the INVERTED GANG button.
- **[F4] (ALL ROUT OFF) key**  
Turn off bus assign 1–8 buttons for all channels in the page.
- **[F5] (COPY PAN TO ALL) key**  
Copy the pan setting of the currently selected channel to all channels (including the channels of other pages).

## ● Copying pan settings to all channels

### [Procedure]

1. In the PAN screen, move the cursor to the PAN knob of the copy source channel.
2. Press the [SHIFT] key + [F5] key.  
The CONFIRMATION popup window will appear, asking you to confirm the copy.



*If the cursor is at a parameter other than the PAN knob, a message of “Can’t Copy This Parameter” will appear, and the copy will not occur.*

3. To execute the copy, move the cursor to the OK button and press the [ENTER] key.

# Pair CH/Pair BUS pages

## Set channel/bus pairing

### [Function]

Set or defeat pairing of buses 1/2–7/8 and AUX 1/2–5/6 for adjacent odd-numbered → even-numbered channels.

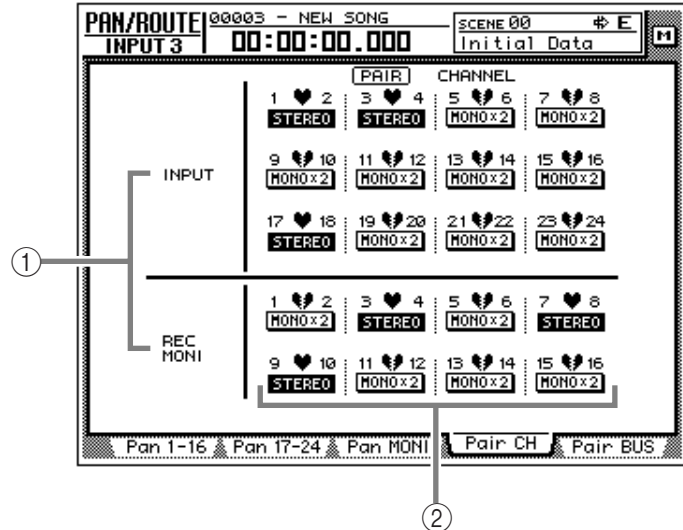
### [Key operation]

- [EQ] key → [F4] key (Pair CH)/[F5] (Pair BUS)
- Repeatedly press the [PAN] key until one of the screens shown at the right appears.

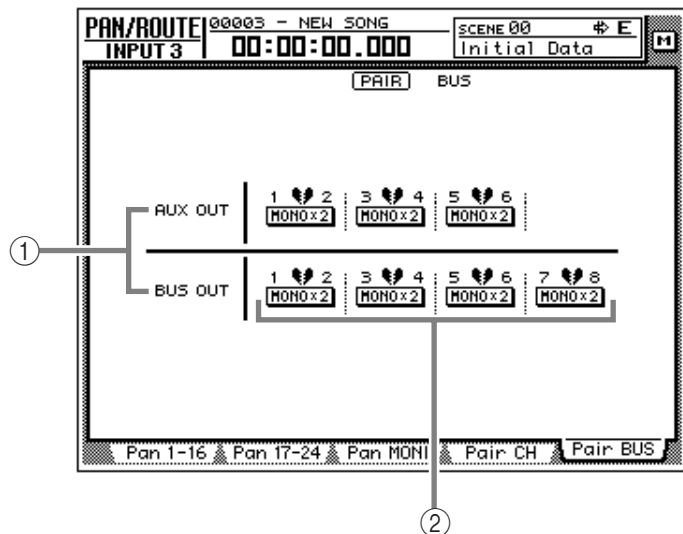
### [Mouse operation]

M button → EQ button → Pair CH tab/Pair BUS tab

#### ● Pair CH



#### ● Pair BUS



### [Screen functions]

#### ① Channel/bus

These are the channels/bus for which pairing will be set or defeated.

#### ② Pairing

These buttons set or defeat pairing.

The heart symbol will be connected for channels/buses that are paired, and the button will be displayed as "STEREO."

The heart symbol will be divided for channels/buses that are not paired, and the button will be displayed as "MONO x2."



**Tip!**

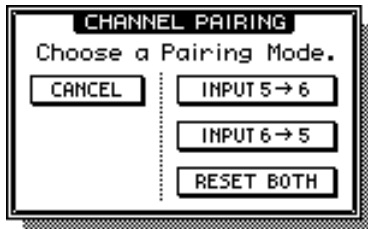
- All parameters other than attenuation and pan will be linked for channels that are paired. However, pan will be linked if the pan mode is set to GANG or INVERTED GANG. It will not be linked if the pan mode is set to INDIVIDUAL (the default setting).
- For buses that are paired, the master level (HOME screen/Bus page) will be linked.
- For AUX buses that are paired, the master level (HOME screen/Bus page) and the send level of the signals sent from each channel to the corresponding AUX bus will be linked.

## ● Setting or defeating pairing for channels/buses

### [Procedure]

1. To pair channels or buses, move the cursor in the Pair CH page/Pair Bus page to a button that is displayed as "MONO x 2," and press the [ENTER] key.

The PAIRING popup window will appear, allowing you to specify how the pairing will occur.



Another way to pair channels is to simultaneously press adjacent odd-numbered → even-numbered [SEL] keys. In this case, the above window will appear when you press the two [SEL] keys simultaneously.

2. Move the cursor to either the "INPUT 1 → 2," "INPUT 2 → 1," or "RESET BOTH" button, and press the [ENTER] key.

You can select one of the following three pairing methods.

#### ● INPUT x → y (x=odd number, y=even number)

The parameters of the odd-numbered channel/bus (except for attenuator and pan) will be copied to the even-numbered channel.

#### ● INPUT y → x (x=odd number, y=even number)

The parameters of the even-numbered channel/bus (except for attenuator and pan) will be copied to the odd-numbered channel.

#### ● RESET BOTH

The parameters of both odd and even-numbered channels/buses will be reset to their default values.

When you execute pairing, the button display will change to "STEREO." When you use the [SEL] keys to select a paired channel, the other [SEL] key will blink.

3. To defeat pairing, move the cursor to a button displayed as "STEREO" and press the [ENTER] key.

A popup window will appear, asking you to confirm that you wish to defeat pairing.



You can also defeat channel pairing by pressing the two [SEL] keys simultaneously.

4. Move the cursor to the OK button and press the [ENTER] key.

# EQ/ATT/GRP screen

## EQ/Att page

### EQ and attenuation settings

#### [Function]

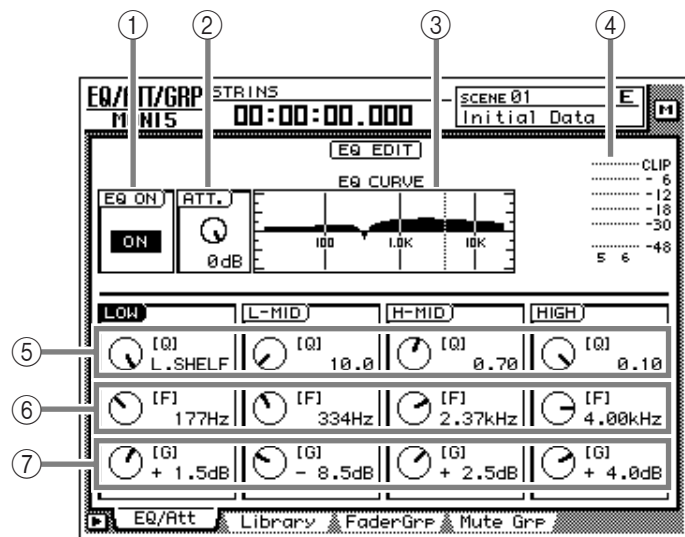
Make four-band EQ and attenuation settings for the selected channel.

#### [Key operation]

- [EQ] key → [F1] key (EQ/Att) key
- Repeatedly press the [EQ] key until the screen shown at the right appears.

#### [Mouse operation]

M button → EQ button → EQ/Att tab



#### [Screen functions]

##### ① EQ ON button

This switches EQ on/off. When this page is displayed, you can use the [ENTER] key to switch this button on/off regardless of the cursor location.

##### ② ATT. (attenuation) knob

Set the amount of attenuation for the signal before it enters the EQ. This is used mainly to prevent clipping when the EQ is boosted.  
Range: -96 dB-0 dB

##### ③ EQ CURVE

This graphically displays the EQ settings.

##### ④ Output meter

This meter shows the post-EQ output level.

##### ⑤ Q knob

This sets the steepness at which the boost/cut will occur at the center frequency specified by the F knob. Higher settings will produce a steeper curve.

For the LOW band EQ, turning the Q knob all the way in the clockwise direction will switch the EQ type to L.SHELF (shelving), and turning it all the way in the counter-clockwise direction will switch the EQ type to HPF (high pass filter).

For the HIGH band EQ, turning the Q knob all the way in the clockwise direction will switch

the EQ type to H.SHELF (shelving), and turning it all the way in the counter-clockwise direction will switch the EQ type to LPF (low pass filter).

Range: 10-0.10, HPF/L.SHELF (LOW band only), LPF/H.SHELF (HIGH band only)

##### ⑥ F (frequency) knob

Set the center frequency that will be boosted or cut.

Range: 21 Hz-20.1 kHz

##### ⑦ G (gain) knob

Set the amount of boost or cut. If the LOW or HIGH bands are set to HPF or LPF respectively, this knob switches them on/off.

Range: -18 dB- +18 dB, ON/OFF (LOW/HIGH bands only)



#### Tip!

The Q, F, and G parameters of each band can also be controlled by the EQ [HIGH]/[HI-MID]/[LO-MID]/[LOW] keys and EQ [Q]/[F]/[G] keys located at the right of the display. If AUTO EQ DISPLAY is turned "ON" in the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key), operating these keys or controls will automatically cause the EQ/ATT page to automatically appear if any other page is currently selected.

## ■ Additional functions in the EQ/Att page

In the EQ/Att page you can press the [SHIFT] key to assign the following additional functions to the [F1]–[F2] and [F5] keys.



- **[F1] (FLAT) key**  
Reset all bands to a boost/cut amount of 0.0 dB (off if HPF/LPF is selected).
- **[F2] (BAND FLAT) key**  
Reset only the selected band to a boost/cut amount of 0.0 dB (off if HPF/LPF is selected).
- **[F5] (COPY ATT. TO ALL) key**  
Copy the attenuation setting of the selected channel to all channels. (However, the stereo output channel is excepted.)

## ● Copying the attenuation setting to all channels

### [Procedure]

1. Access the EQ/Att page for the copy source channel, and move the cursor to the ATT. knob.
2. Press the [SHIFT] key + [F5] key.  
A CONFIRMATION popup window will appear, asking you to confirm the copy.



*If the cursor is at a location other than the ATT. knob, a message of “Can’t Copy This Parameter” will appear, and the copy will not occur.*

3. To execute the copy, move the cursor to the OK button and press the [ENTER] key.



*Only the attenuation setting will be copied. If you wish to copy EQ settings, you must store the settings in the library and recall them into the copy destination channel. For the procedure refer to page 47.*



# Library page

## Store or recall EQ settings

### [Function]

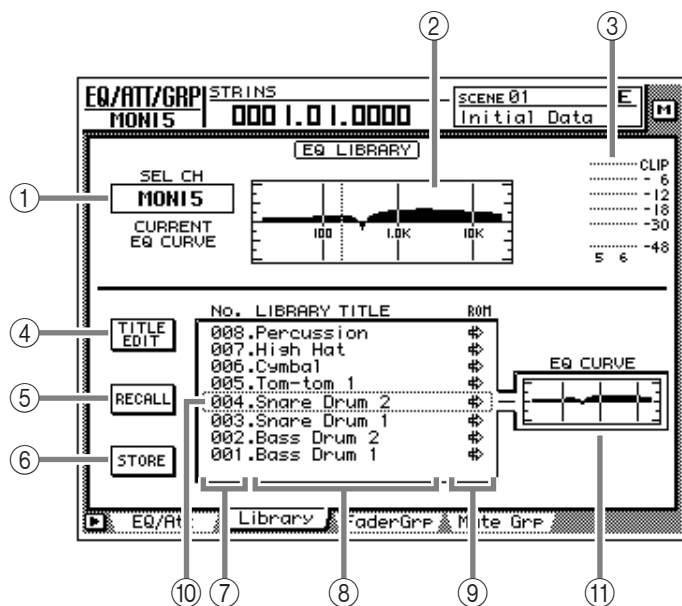
Store EQ settings in the EQ library, or recall a stored EQ program.

### [Key operation]

- [EQ] key → [F2] (Library) key
- Repeatedly press the [EQ] key until the screen shown at the right appears.

### [Mouse operation]

M button → EQ button → Library tab



### [Screen functions]

#### ① SEL CH

This indicates the currently selected channel.

#### ② EQ graph

This graphically displays the EQ settings.

#### ③ Output meter

This meter shows the post-EQ output level.

#### ④ TITLE EDIT button

Use this to edit the name (library title) of the EQ program stored in the EQ library. A library name of up to 16 characters can be input. Move the cursor to the TITLE EDIT button and press the [ENTER] key to access the TITLE EDIT popup window where you can input a name. For details on inputting characters, refer to Operation Guide P.60.



*Library numbers 1–40 are recall-only preset memories, and their names cannot be changed. Numbers in which no EQ program has been stored are displayed as “No Data!,” and their title cannot be changed.*

#### ⑤ RECALL button

Recall the currently selected EQ program from the list.



*If you attempt to recall a number in which no data has been stored, a message of “ERROR NO DATA TO RECALL” will appear, and the recall will not occur.*

#### ⑥ STORE button

Store the current EQ settings.



- Library numbers 1–40 are recall-only preset memories, and cannot be stored. You can store only in library numbers 41–128.
- When you store, the EQ program that was previously stored in that number will be erased.



#### ⑦ LIBRARY No. (library number)

This shows the library number 1–128.

#### ⑧ LIBRARY TITLE

This shows the names assigned to each library number.

#### ⑨ ROM

A write-protect symbol is displayed for recall-only programs (library numbers 1–40).



**⑩ Selected program**

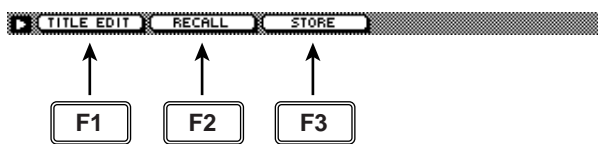
The EQ program selected for store/recall is enclosed by a dotted frame in the EQ library list. In this page you can use the [DATA/JOG] dial to select the EQ program regardless of the cursor location.

**⑪ EQ CURVE**

Of the EQ programs stored in the library, the curve of the currently selected EQ program is shown as a graph.

## ■ Additional functions in the Library page

In the Library page you can press the [SHIFT] key to assign the following functions to the [F1]–[F3] keys.



- **[F1] (TITLE EDIT) key**

Use this to edit the name (library title) of an EQ program stored in the EQ library. This is the same function as the ④ TITLE EDIT button.

- **[F2] (RECALL) key**

Recall the currently selected EQ program from the list. This is the same function as the ⑤ RECALL button.

- **[F3] (STORE) key**

Store the current EQ settings. This is the same function as the ⑥ STORE button.

## ● Storing EQ settings in the EQ library

### [Procedure]

1. Select the EQ settings that you wish to store, and access the EQ/ATT/GRP screen Library page.
2. Use the [DATA/JOG] dial to select the store destination library number 41–128.
3. Move the cursor to the STORE button and press the [ENTER] key.  
The TITLE EDIT popup window will appear, allowing you to assign a name to the EQ program.
4. Input the library title as desired. For details on inputting characters, refer to Operation Guide P.60.

5. Move the cursor to the OK button and press the [ENTER] key.  
The EQ settings will be stored.



*It is possible to store the EQ settings immediately, without displaying the TITLE EDIT popup window. To do so, access the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key) and turn STORE CONFIRMATION off.*



*When you store, the EQ program that had been previously stored in that number will be erased.*

## ● Recalling EQ settings from the EQ library

### [Procedure]

1. Select the channel into which you wish to recall the EQ settings, and access the EQ/ATT/GRP screen Library page.
2. Use the [DATA/JOG] dial to select the library number 1–128 that you wish to recall.
3. Move the cursor to the RECALL button and press the [ENTER] key.  
A CONFIRMATION popup window will appear, asking you to confirm the recall operation.
4. Move the cursor to the OK button and press the [ENTER] key.  
The recall will be executed.



*It is possible to recall the EQ settings immediately, without displaying the CONFIRMATION popup window. To do so, access the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key) and turn RECALL CONFIRMATION off.*

*When you recall an EQ program to a paired channel or the stereo output channel, the same settings will be recalled into both channels.*



*If you attempt to recall a number in which nothing has been stored, an error message of "ERROR NO DATA TO RECALL" will appear, and the recall will not occur.*

# FaderGrp page

## Set and cancel fader groups

### [Function]

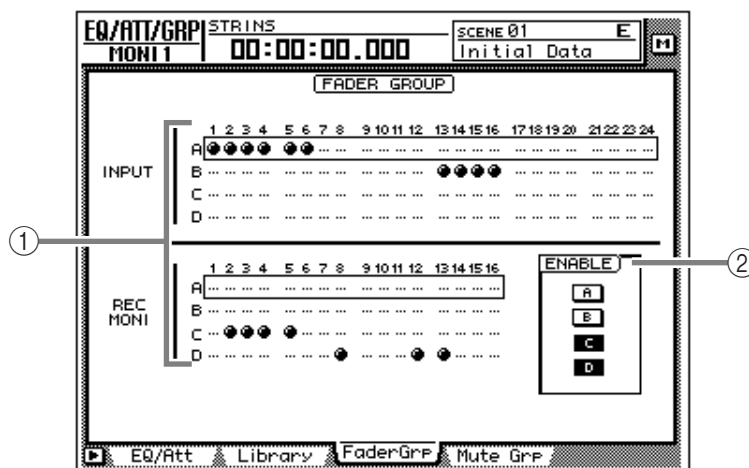
Assign input channels 1–24/monitor channels 1–16 to fader groups A–D. If channels are assigned to a fader group, you can move a single fader to control all the faders in that group while preserving the current balance.

### [Key operation]

- [EQ] key → [F3] (FaderGrp) key
- Repeatedly press the [EQ] key until the screen shown at the right appears.

### [Mouse operation]

M button → EQ button → FaderGrp tab



### [Screen functions]

#### ① Fader groups A–D

The ● symbols indicate the fader group A–D to which each input channel 1–24 and monitor channel 1–16 belongs.

When you move the cursor up or down to select group A–D and use the [SEL] key to select a channel, that channel will be assigned to the corresponding fader group. When you press the [SEL] key once again, the channel will be removed from the fader group.



A channel cannot belong to more than one fader group. If a channel that is already assigned to a fader group is assigned to another group, only the newly assigned group will be valid.

#### ② ENABLE button

Turn fader groups A–D on/off.



If you wish to adjust the position of a fader assigned to a group, you can use the ENABLE button to temporarily disable that group.



Do not manually operate two or more faders of a group at the same time. Doing so will strain the motor and cause malfunctions.

### ■ Additional functions in the Fader-Grp page

In the FaderGrp page you can press the [SHIFT] key to assign the following additional function to the [F1] key.



#### • [F1] (ALL CLEAR) key

Clear all fader group settings.

# Mute Grp page

## Set and cancel mute groups

### [Function]

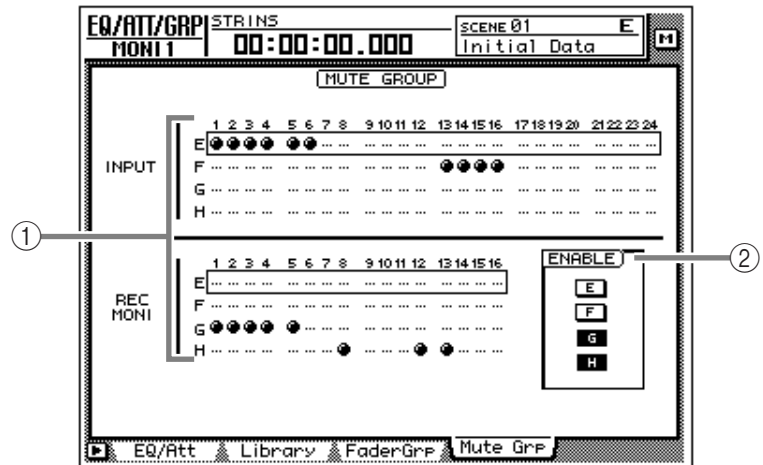
Assign input channels 1–24/monitor channels 1–16 to mute groups E–H. If channels are assigned to a mute group, you can operate a single [ON] key to switch the on/off status of all [ON] keys in that group.

### [Key operation]

- [EQ] key → [F4] (Mute Grp) key
- Repeatedly press the [EQ] key until the screen shown at the right appears.

### [Mouse operation]

M button → EQ button → Mute Grp tab



### [Screen functions]

#### ① Mute groups E–H

The ● symbols indicate the mute group E–H to which each input channel 1–24 and monitor channel 1–16 belongs.

When you move the cursor up or down to select mute group E–H and use the [SEL] key to select a channel, that channel will be assigned to the corresponding mute group. When you press the [SEL] key once again, the channel will be removed from the mute group.



A mute group may contain both channels that are On and channels that are Off. If a mute group contains channels that are On and channels that are Off, operating the [ON] key of one of the channels will turn off the channels that are on, and turn on the channels that are off.



A channel cannot belong to more than one mute group. If a channel that is already assigned to a mute group is assigned to another group, only the newly assigned group will be valid.

#### ② ENABLE button

Turn mute groups E–H on/off.

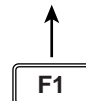


If you wish to change the on/off status after assigning a channel to a group, you can use the ENABLE button of that group to temporarily disable the group.

### ■ Additional functions in the Mute Grp page

In the Mute Grp page you can press the [SHIFT] key to assign the following additional function to the [F1] key.

ALL CLEAR



- [F1] (ALL CLEAR) key  
Clear all mute group settings.

# DYN/DLY screen

## Dyn. Edit page

### Dynamics processor parameter settings

#### [Function]

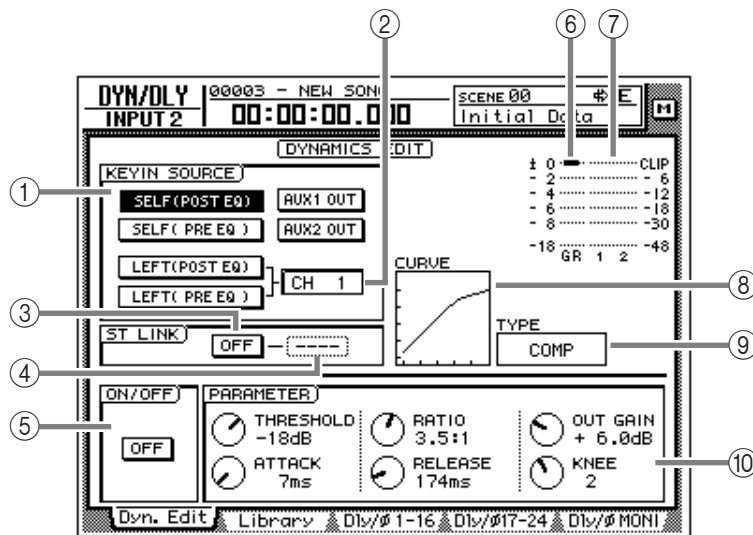
Set the dynamics processor parameters for the selected channel.

#### [Key operation]

- [DYN] key → [F1] (Dyn. Edit) key
- Repeatedly press the [DYN] key until the screen shown at the right appears.

#### [Mouse operation]

M button → DYN button → Dyn. Edit tab



#### [Screen functions]

##### ① KEYIN SOURCE

Select one of the following key-in signals to control the dynamics processor.

##### ● SELF (POST EQ)

The post-EQ signal of the same channel

##### ● SELF (PRE EQ)

The pre-EQ signal of the same channel

##### ● AUX 1 OUT

The signal being output to AUX bus 1

##### ● AUX 2 OUT

The signal being output to AUX bus 2

##### ● LEFT (POST EQ)

The post-EQ signal of the next channel to the left

##### ● LEFT (PRE EQ)

The pre-EQ signal of the next channel to the left



LEFT (POST EQ) or LEFT (PRE EQ) cannot be selected for input channel 1, monitor channel 1, or the stereo output channel.



Return channels 1/2 do not have dynamics processors.



If either one of two paired channels exceeds the threshold level, both channels will operate simultaneously.

##### ② Channel

If LEFT is selected as the KEYIN SOURCE (①), the key-in signal source channel will be shown here.

##### ③ ST LINK ON/OFF (stereo link on/off) button

If this button is on, dynamics processor parameter settings and operation will be linked for adjacent odd-numbered → even-numbered channels.



For the stereo out channel and for paired channels, this Stereo Link setting will always be on and cannot be defeated.



When Stereo Link is turned on, the dynamics processor settings of the odd-numbered channel will be copied to the even-numbered channel.

**④ Channel**

Select the channel(s) to which the dynamics processor will apply when the ③ ST LINK ON/OFF button is on; L (left/odd-numbered channel), R (right/even-numbered channel), or BOTH (both channels).



*If the ST LINK ON/OFF button is off, this will be displayed as "----" and cannot be selected.*

**⑤ ON/OFF**

This button turns the dynamics processor on/off. When the cursor is located at on/off or in the PARAMETER area, press the [ENTER] key to turn the dynamics processor on/off.

**⑥ GR (gain reduction)**

This displays the amount of gain reduction produced by the dynamics processor in dB units.

**⑦ Level meter**

This shows the output level of the dynamics processor in dB units.

**⑧ CURVE**

This graph shows the approximate response of the current dynamics processor settings.

**⑨ TYPE**

This shows the type of the currently selected dynamics processor.

The following types of dynamics processor are available.

- **COMP (compressor)**
- **EXPAND (expander)**
- **GATE**
- **COMPANDER (HARD/SOFT)**
- **DUCKING**



*The type cannot be changed in this page. If you wish to use a specific type, you must recall a program that uses that type from the library. For details on recalling a program, refer to P.47.*

**⑩ PARAMETER**

Set the parameters of the dynamics processor. The type of parameters and their range will differ depending on the currently selected type. For details on parameters and their functions, refer to the following appendices: "Dynamics Processors" and "Preset Dynamics Program Parameters."

# Library page

## Storing and recalling dynamics processor settings

### [Function]

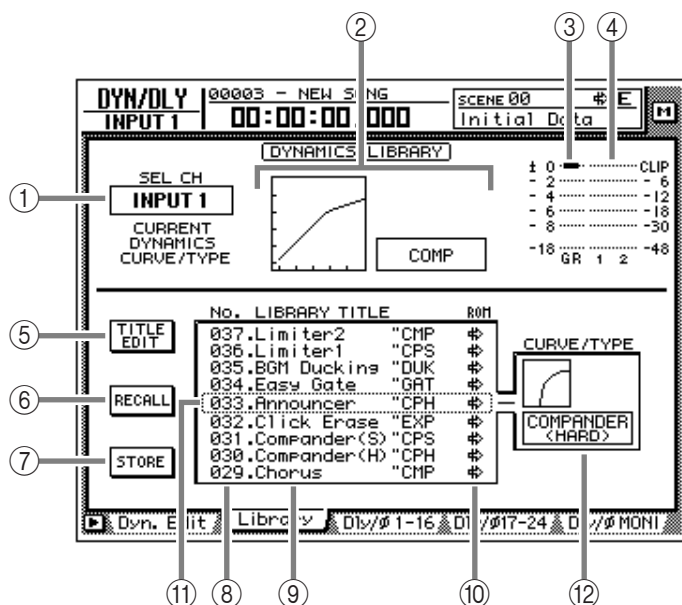
Store dynamics processor settings in the library, or recall stored programs.

### [Key operation]

- [DYN] key → [F2] (Library) key
- Repeatedly press the [DYN] key until the screen shown at the right appears.

### [Mouse operation]

M button → DYN button → Library tab



### [Screen functions]

- SEL CH**  
This displays the currently selected recall destination channel.
- Curve/type**  
This indicates the approximate dynamics curve of the currently selected channel, and shows the name of the dynamics processor type.
- GR (gain reduction)**  
This displays the amount of gain reduction produced by the dynamics processor in dB units.
- Level meter**  
This shows the output level of the dynamics processor in dB units.
- TITLE EDIT button**  
Use this when you wish to edit the name (library title) of the dynamics program saved in the library. Move the cursor to the TITLE EDIT button and press the [ENTER] key to access the TITLE EDIT popup window where you can input the name. You can input a library name of up to 16 characters.



Library numbers 1–40 are recall-only preset programs, and their name cannot be changed. Numbers in which no dynamics program has been stored are displayed as “No Data!,” and their title cannot be changed.



For details on the library preset dynamics programs, refer to appendix “Preset Dynamics Program Parameters”.

### ⑥ RECALL button

Recall the currently selected program from the list.



If you attempt to recall a number in which nothing has been stored, an error message of “ERROR NO DATA TO RECALL” will be displayed, and the recall will not take place.

### ⑦ STORE button

Store the current dynamics settings.



- Library numbers 1–40 are recall-only; data cannot be stored in them. You can store only to library numbers 41–128.
- When you execute the Store operation, the dynamics program that had been stored in that number will be erased.

### ⑧ LIBRARY No. (library number)

This displays the library number 1–128.

### ⑨ LIBRARY TITLE

This displays the name assigned to the library and the type of dynamics processor.



*Library numbers in which nothing has been stored are displayed as "No Data!"*

### ⑩ ROM

This write-prohibit symbol is displayed for recall-only library numbers 1–40.

No.	LIBRARY TITLE	ROM
044.	[ No Data! ]	
043.	[ No Data! ]	
042.	[ No Data! ]	
041.	[ No Data! ]	
040.	Total Comp3 "CMP	#
039.	Total Comp2 "CMP	#
038.	Total Comp1 "CMP	#
037.	Limiter2 "CMP	#
036.	Limiter1 "CPS	#

### ⑪ Selected program

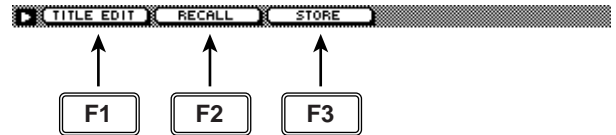
Store/recall operations will apply to the program enclosed by a dotted line in the library list. In this page, you can always use the [DATA/JOG] dial to select the program, regardless of where the cursor is located.

### ⑫ CURVE/TYPE

Of the dynamics programs stored in the library, the response and type of the currently selected dynamics program are shown in this area.

## ■ Additional functions in the Library page

In the Library page you can press the [SHIFT] key to assign the following functions to the [F1]–[F3] keys.



#### • [F1] (TITLE EDIT) key

Use this to edit the name (library title) assigned to settings in the library. This is the same function as the ⑤ TITLE EDIT button.

#### • [F2] (RECALL) key

Recall the currently selected dynamics settings from the list. This is the same function as the ⑥ RECALL button.

#### • [F3] (STORE) key

Store the current dynamics settings. This is the same function as the ⑦ STORE button.



## ● Storing dynamics settings in the library

### [Procedure]

1. Select the channel whose settings you wish to store, and access the DYN/DLY screen Library page.
2. Use the [DATA/JOG] dial to select the library number 41–128 in which you will store the settings.

Library numbers in which nothing has been stored are displayed as “No Data!”

3. Move the cursor to the STORE button and press the [ENTER] key.

The TITLE EDIT popup window will appear, allowing you to input a name.



*It is also possible to store the settings directly into the library without accessing the TITLE EDIT popup window. To do so, access the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key) and turn STORE CONFIRMATION off.*

4. Input the library title. For details on inputting characters, refer to Operation Guide P.60.

The Store operation will be executed.

## ● Recalling dynamics settings from the library

### [Procedure]

1. Select the recall destination channel, and access the DYN/DLY screen Library page.
2. Use the [DATA/JOG] dial to select the library number that you wish to recall.
3. Move the cursor to the RECALL button and press the [ENTER] key.  
A confirmation message will appear.



- *It is possible to recall the library data without seeing the CONFIRMATION popup window. To do so, access the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key), and turn RECALL CONFIRMATION off.*
- *When you recall a dynamics program into a paired channel or into the stereo out channel, the same settings will be recalled into both channels.*

4. Move the cursor to the OK button and press the [ENTER] key.

The recall will be executed.



*When you recall a dynamics program into a stereo channel or a paired channel, the same settings will be recalled into both channels.*



# Dly/ø1-16, Dly/ø17-24, Dly/øMONI pages

## Set delay and phase

### [Function]

Set the delay and phase of each channel.

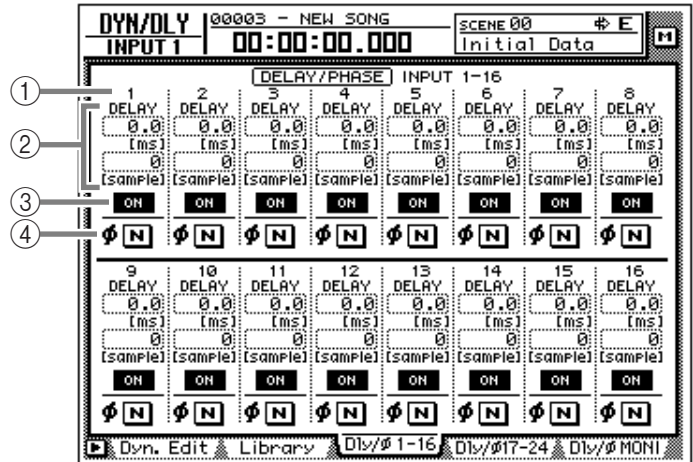
### [Key operation]

- [DYN] key → [F3] (Dly/ø1-16) key, [F4] (Dly/ø17-24) key/[F5] (Dly/øMONI) key
- Repeatedly press the [DYN] key until the desired page appears.

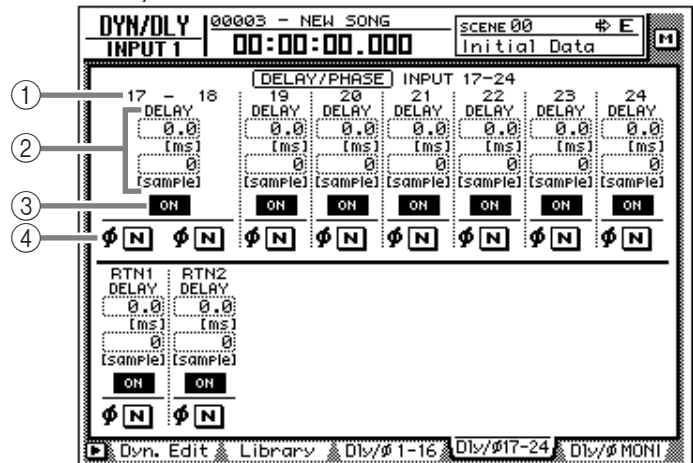
### [Mouse operation]

M button → DYN button → Dly/ø1-16 tab, Dly/ø17-24 tab, Dly/øMONI tab

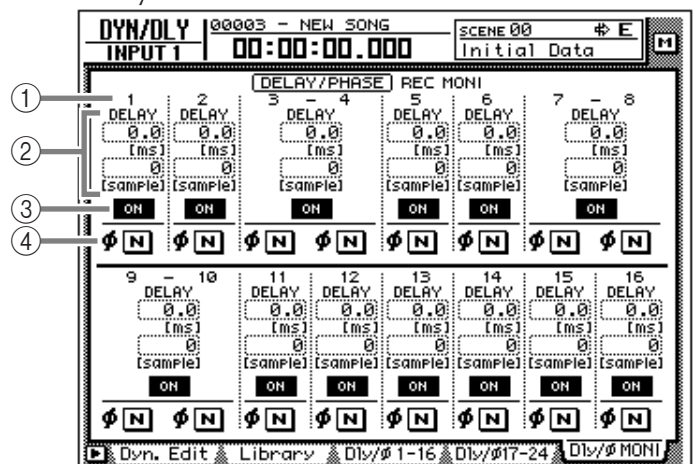
#### ● Dly/ø1-16



#### ● Dly/ø17-24



#### ● Dly/øMONI



### [Screen functions]

#### ① Channel

This displays the channels for which you can make delay and phase settings.

#### ② DELAY

Set the delay time for the signal of each channel. The upper row shows the delay in ms (millisecond) units, and the lower row shows the delay in sample units. Adjusting either one will cause the other value to change in tandem.

#### ③ ON/OFF

Switch the delay on/off.

#### ④ ø (phase)

Switch the phase of each channel.



*Phase (ø) will operate independently even for paired channels.*

## ■ Additional functions in the Dly/ øpages

In the Dly/ø1–16, Dly/ø17–24, Dly/øMONI pages you can press the [SHIFT] key to assign the following additional function to the [F5] key.



- **[F5] (COPY TO ALL) key**

Copy the delay time or phase setting selected by the cursor to all other channels.

## ● Copying delay time or phase settings to other channels

1. Access the DYN/DLY screen Dly/ø1–16, Dly/ø17–24, Dly/øMONI page.
2. Move the cursor to the delay time parameter or the ø button of the copy source channel.
3. Press the [SHIFT] key + [F5] key.  
The following confirmation screen will appear.



4. Move the cursor to the OK button and press the [ENTER] key.

# AUX1–AUX6 screens

## Pre/Pst IN, Pre/Pst MONI pages

### Make on/off and pre/post settings for the AUX sends

#### [Function]

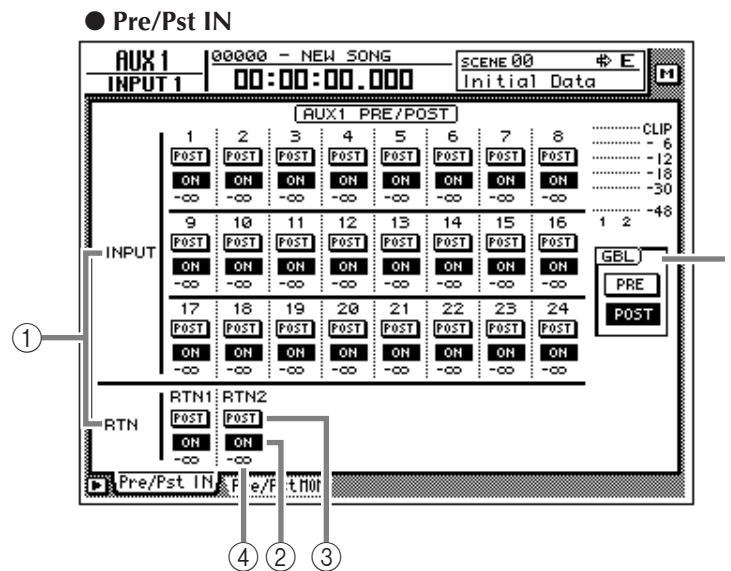
Make on/off and pre/post settings for the signal sent from the input channels, return channels, and monitor channels to AUX buses 1–6.

#### [Key operation]

- [AUX 1]–[AUX 6] keys → [F1] (Pre/Pst IN) key/[F2] (Pre/Pst MONI) key
- Repeatedly press an [AUX 1]–[AUX 6] key until the desired page appears.

#### [Mouse operation]

M button → AUX 1–AUX 6 buttons → Pre/Pst IN tab/Pre/Pst MONI tab



#### [Screen functions]

##### ① Channels

This area shows the channels whose AUX send pre/post settings are being switched.

##### ② ON/OFF buttons

These buttons are on/off switches for the signal that is sent from each channel to the corresponding AUX bus.

##### ③ PRE/POST buttons

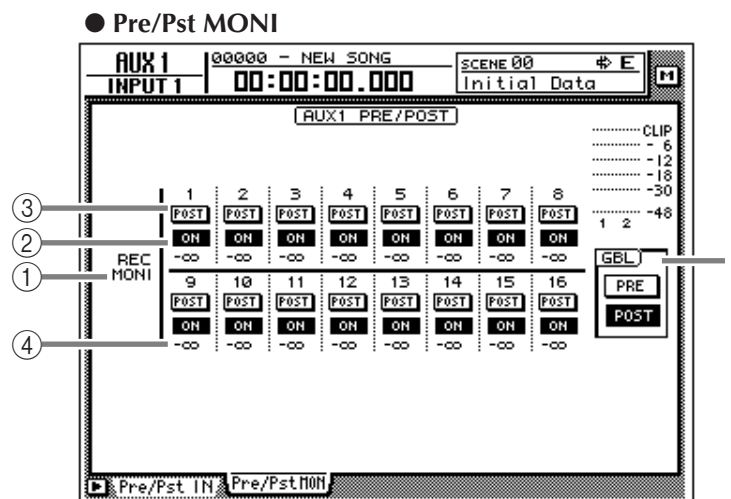
These buttons switch the signal sent from each channel to the corresponding AUX bus between pre-fader and post-fader locations.

##### ④ Send levels

These indicate the send level values of each channel.

##### ⑤ GBL (global)

If you move the cursor to the PRE button or the POST button and press the [ENTER] key, the pre/post setting of all channels in that page will be switched together.



## ■ Additional functions in the Pre/Pst IN, Pre/Pst MONI pages

In the Pre/Pst IN/Pre/Pst MONI pages, you can press the [SHIFT] key to assign the following functions to the [F1]–[F2] keys.



- **[F1] (GLOBAL PRE) key**  
Switch all channels in that page to pre-fader.  
This is the same function as the PRE button in the GBL area ⑤.
- **[F2] (GLOBAL POST) key**  
Switch all channels in that page to post-fader.  
This is the same function as the POST button in the GBL area ⑤.

# AUX7/EFF1 and AUX8/EFF2 screens

## Eff. Edit page

### Edit internal effects 1/2

#### [Function]

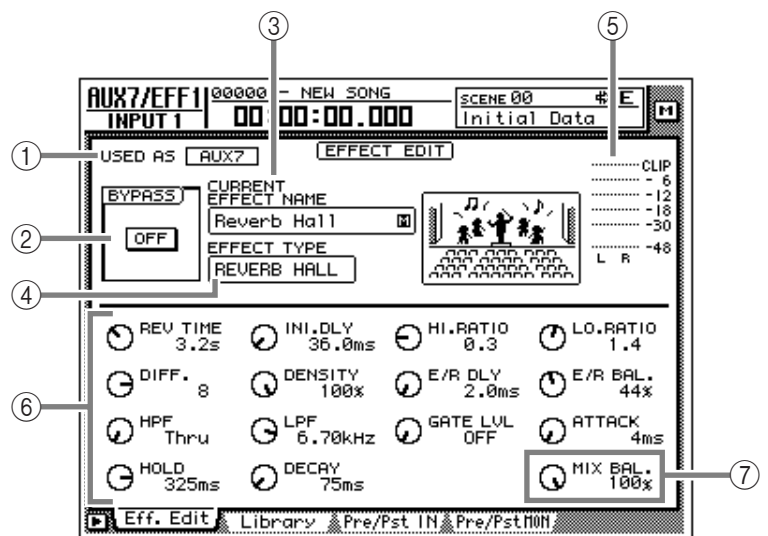
Edit the parameters of the effect that is selected for internal effect 1 (AUX7/EFF1 screen) or external effect 2 (AUX8/EFF2).

#### [Key operation]

- [AUX 7] key/[AUX 8] → [F1] (Eff. Edit) key
- Repeatedly press the [AUX 7] key or [AUX 8] key until the desired screen appears

#### [Mouse operation]

M button → EFF 1 button/EFF 2 button → Eff. Edit tab



#### [Screen functions]

##### ① USED AS (effect usage method)

If the effect is patched to AUX send/return this will indicate "AUX 7"/"AUX 8." If the effect is patched to a specific channel this will indicate "INSERT."



The choice of AUX send/return or insertion is made in the SET UP screen Patch IN page.

##### ② BYPASS ON/OFF button

This button switches effect bypass on/off. This ON/OFF button can be switched by pressing the [ENTER] key regardless of where the cursor is located.

##### ③ CURRENT EFFECT NAME

This shows the name of the currently used effect program.

##### ④ EFFECT TYPE

This shows the name of the currently used effect type. A graphic indicating the effect type is also displayed as the right.



It is not possible to change the effect type in this page. If you wish to use a specific effect type, load a program using that effect type from the effect library (→ P.71).

##### ⑤ Output meter

This level meter shows the effect output level.

##### ⑥ Effect parameters

Use the knobs displayed in this area to edit the effect parameter values. The type of parameters will differ depending on the currently-used effect type.

⑦ **MIX BAL. (mix balance) knob**

This knob adjust the mix amount of the effect sound. A setting of 0% will output only the original sound, 50% will output equal amounts of direct and effect sound, and 100% will output only the effect sound. If the effect is patched via AUX send/return, set this to 100%. If the effect is inserted in a specific channel, adjust this to the desired value.



*This knob will be located in the same place regardless of the effect type.*

■ **Additional functions in the Eff Edit page**

In the Eff Edit page you can press the [SHIFT] key to assign the following function to the [F1] key.



- **[F1] (BYPASS ON/OFF) key**  
Switch effect bypass on/off. This is the same function as the ② BYPASS ON/OFF button.

# Library page

## Store or recall an effect program

### [Function]

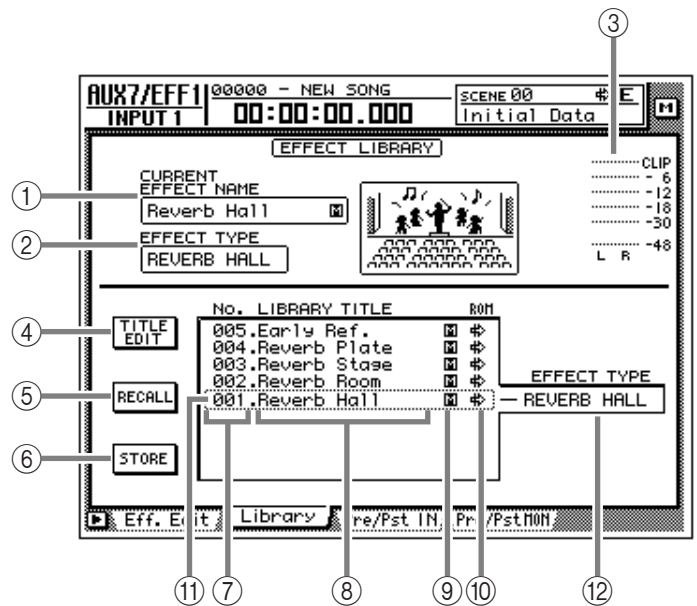
Store an effect program in the library, or recall a stored effect program.

### [Key operation]

- [AUX 7]–[AUX 8] keys → [F2] (Library) key
- Repeatedly press an [AUX 7]–[AUX 8] key until the desired screen appears

### [Mouse operation]

M button → EFF 1–EFF 2 button → Library tab



### [Screen functions]

#### ① CURRENT EFFECT NAME

#### ② EFFECT TYPE

#### ③ Output meter

These are the same as in the Eff. Edit page. Refer to P.69.

#### ④ TITLE EDIT button

Use this when you wish to edit the name (library title) of an effect program saved in the effect library. Move the cursor to the TITLE EDIT button and press the [ENTER] key to access the TITLE EDIT popup window where you can input the name. For details on inputting characters, refer to Operation Guide P.60.



Library numbers 1–41 are recall-only presets; their name cannot be edited. Numbers in which no effect program has been stored will be displayed as "No Data!," and their name cannot be edited either.

#### ⑤ RECALL button

Recall the currently selected effect program from the list.



If you select and attempt to recall a number in which nothing has been stored, a message of "ERROR NO DATA TO RECALL" will appear, and the recall will not take place.

#### ⑥ STORE button

Store the current effect settings.



- Library numbers 1–41 are recall-only presets, and cannot be stored. Settings can be stored only in library numbers 42–128.
- When you execute the Store operation, the effect program that had been stored in that number will be erased.



For the programs that are preset in the effect library, refer to the appendix "Preset Effects Programs."

#### ⑦ LIBRARY No. (library number)

This shows the library number 1–128.

#### ⑧ LIBRARY TITLE

This shows the name assigned to each library number.

#### ⑨ S/M (stereo/monaural)

This indicates whether the effect type used by each program is stereo or monaural. Stereo effect types are indicated by "S," and monaural effect types are indicated by "M."

#### ⑩ ROM

Recall-only programs (library numbers 1–41) are indicated by a write-prohibit symbol in this column.



⑪ **Selected program**

Store/recall operations will apply to the program enclosed by a dotted line in the library list. In this page, you can always use the [DATA/JOG] dial to select the program, regardless of where the cursor is located.

⑫ **EFFECT TYPE**

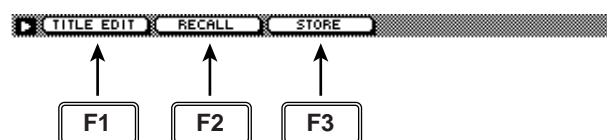
This displays the effect type used by the program currently selected for store or recall.



*In general, the effect library is common to both effects 1 and 2. However, effect program no.19 "HQ-Pitch" can be used only by effect 2.*

■ **Additional functions in the Library page**

In the Library page, you can press the [SHIFT] key to assign the following functions to the [F1]–[F3] keys.



• **[F1] (TITLE EDIT) key**

Use this to edit the name (library title) of the effect program saved in the library. This is the same function as the ④ TITLE EDIT button.

• **[F2] (RECALL) key**

Recall the currently selected effect program from the list. This is the same function as the ⑤ RECALL button.

• **[F3] (STORE) key**

Store the current effect settings. This is the same function as the ⑥ STORE button.

● **Storing an effect program in the library**

**[Procedure]**

1. Access the Library page of the AUX7/EFF1 screen or the AUX8/EFF2 screen.
2. Use the [DATA/JOG] dial to select the store destination library number 42–128.
3. Move the cursor to the STORE button and press the [ENTER] key.  
The TITLE EDIT popup window will appear, allowing you to assign a name to the effect program.

4. Input the library title as desired. For details on inputting characters, refer to Operation Guide P.60.

A maximum of 16 characters can be input.

5. Move the cursor to the OK button and press the [ENTER] key.

The Store operation will be executed.



*It is possible to store the settings directly in the library without seeing the TITLE EDIT popup window. To do so, access the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key) and turn STORE CONFIRMATION off.*



*When you store, the effect program that had been stored in that number will be erased.*

● **Recalling an effect program from the library**

**[Procedure]**

1. Access the Library page of the AUX7/EFF1 screen or the AUX8/EFF2 screen.
2. Use the [DATA/JOG] dial to select the library number that you wish to recall.
3. Move the cursor to the RECALL button and press the [ENTER] key.  
The CONFIRMATION popup window will appear, asking you to confirm the Recall operation.
4. Move the cursor to the OK button and press the [ENTER] key.  
The Recall operation will be executed.



*It is possible to execute the recall immediately without seeing the CONFIRMATION popup window. To do so, access the UTILITY screen Prefer.1 page ([UTILITY] key → [F2] key) and turn RECALL CONFIRMATION off.*



*If you attempt to recall a number in which no data has been stored, an error message of "ERROR NO DATA TO RECALL" will appear, and the recall will not take place.*



# Pre/Pst IN, Pre/Pst MONI pages

## Make on/off and pre/post settings for the effect sends

### [Function]

Make on/off and pre/post settings for the signal sent from the input channels, return channels, and monitor channels to AUX buses 7/8 (effects 1/2).

### [Key operation]

- [AUX 7] key/[AUX 8] key → [F3] (Pre/Pst IN) key/[F4] (Pre/Pst MONI) key
- Repeatedly press the [AUX 7] key or [AUX 8] key until the desired page appears.

### [Mouse operation]

M button → EFF 1 button/EFF 2 button → Pre/Pst IN tab/Pre/Pst MONI tab

### [Screen functions]

#### ① Channels

This area shows the channels whose effect send pre/post settings are being switched.

#### ② ON/OFF buttons

These buttons are on/off switches for the signal that is sent from each channel to effect 1/2.

#### ③ PRE/POST buttons

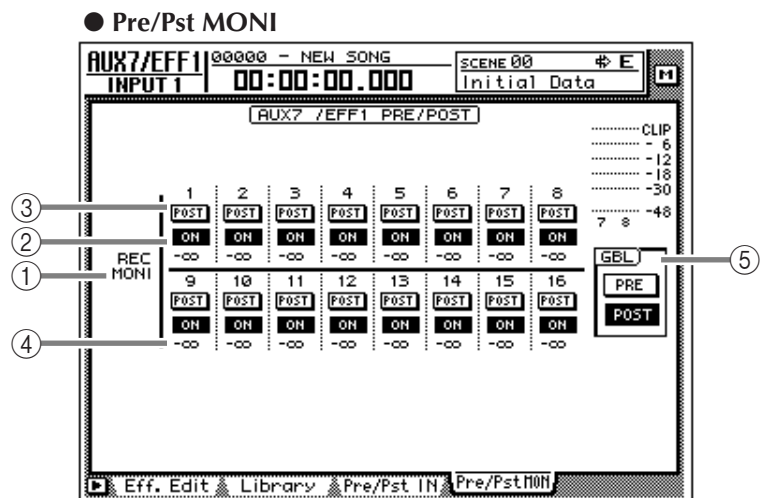
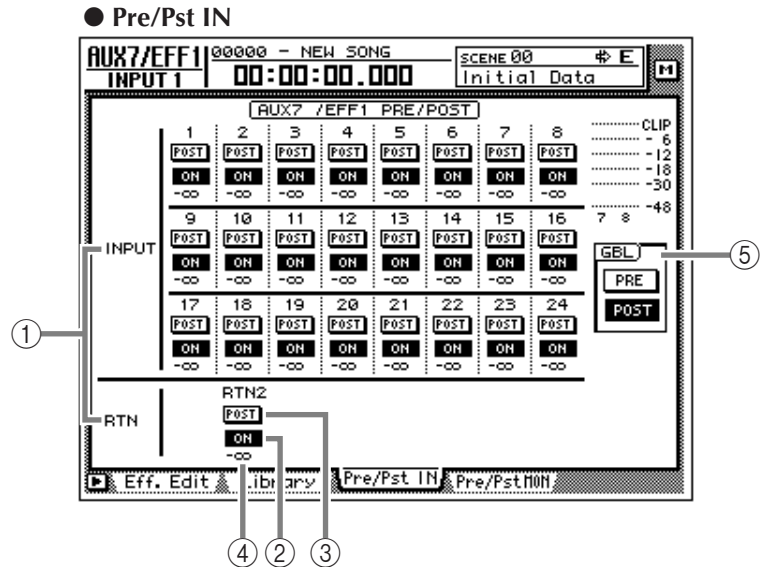
These buttons select either pre-fader or post-fader signals to be sent from each channel to the effect send.

#### ④ Send levels

These indicate the send level values of each channel.

#### ⑤ GBL (global)

If you move the cursor to the PRE button or the POST button and press the [ENTER] key, the pre/post setting of all channels in that page will be switched together.





*It is not possible to send signals from return channel 1 to AUX7. Likewise, it is not possible to send signals from return channel 2 to AUX8. This is to prevent the return signal of an effect from being accidentally returned to the same effect, creating a loop.*

## ■ Additional functions in the Pre/Pst IN/Pre/Pst MONI pages

In the Pre/Pst IN/Pre/Pst MONI pages, you can press the [SHIFT] key to assign the following functions to the [F1]–[F2] keys.



- **[F1] (GLOBAL PRE) key**  
Switch all channels in that page to pre-fader. This is the same function as the PRE button in the GBL area ⑤.
- **[F2] (GLOBAL POST) key**  
Switch all channels in that page to post-fader. This is the same function as the POST button in the GBL area ⑤.

# HOME screen

## 1-24/Rtn page

### Monitor the input level of the input channels

#### [Function]

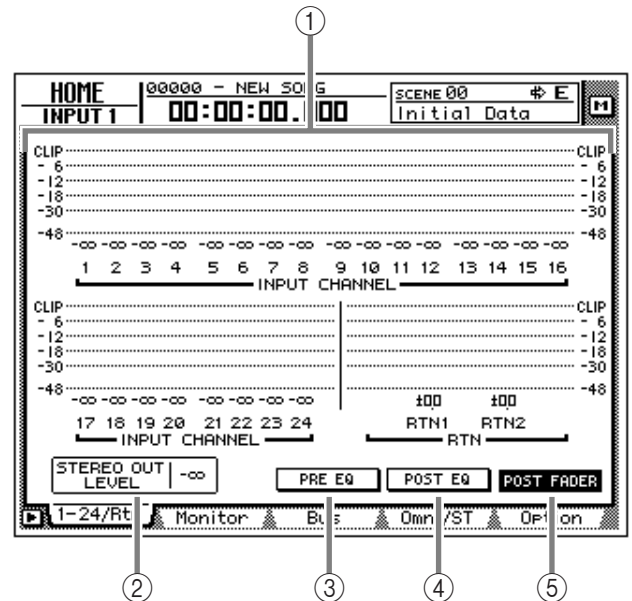
Monitor the input levels of input channels 1-24 and return channels 1/2.

#### [Key operation]

- [HOME] key → [F1] (1-24/Rtn) key
- Repeatedly press the [HOME] key until the screen shown at the right appears

#### [Mouse operation]

M button → HOME button → 1-24/Rtn tab



#### [Screen functions]

##### ① Level meters

These meters show the input levels of input channels 1-24 and return channels 1/2. The fader position is shown in dB units below each level meter.

##### ② STEREO OUT LEVEL

This shows the position of the STEREO fader in dB units.

##### ③ PRE EQ button

##### ④ POST EQ button

##### ⑤ POST FADER button

Select one of these three buttons to select the location in the signal path (pre-EQ/post-EQ/post-fader) whose level will be shown by the level meters.

#### ■ Additional functions in the 1-24/Rtn page

In the 1-24/Rtn page you can press the [SHIFT] key to assign the following function to the [F1] key.



##### • [F1] (PEAK HOLD) key

This key sets/defeats the Peak Hold function. This is the same function as the [PEAK HOLD] key in the level meter/counter section. When Peak Hold is on, a "▬" symbol will be maintained in the level meter to indicate the peak level.

# MONITOR page

## Monitor the input levels of the monitor channels

### [Function]

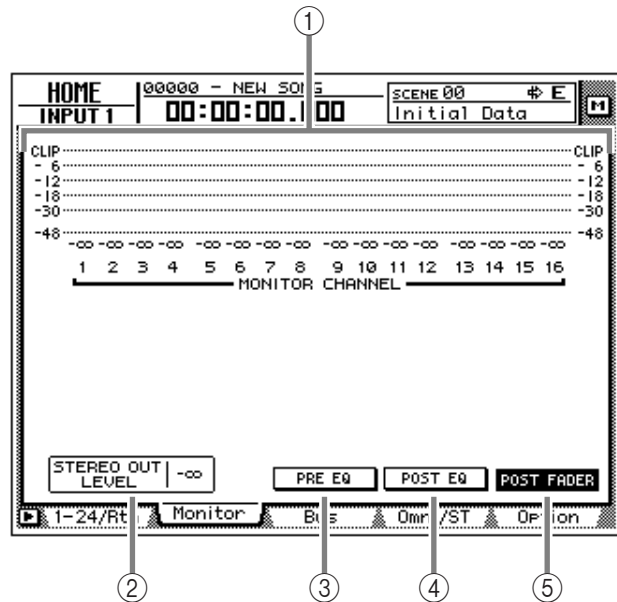
Monitor the input levels of monitor channels 1–16

### [Key operation]

- [HOME] key → [F2] (Monitor) key
- Repeatedly press the [HOME] key until the screen shown at the right appears

[Mouse operation]

M button → HOME button → Monitor tab



### [Screen functions]

#### ① Level meters

These meters show the input levels of monitor channels 1–16. The fader position of each channel is shown in dB units below each level meter.

#### ② STEREO OUT LEVEL

This shows the position of the STEREO fader in dB units.

#### ③ PRE EQ button

#### ④ POST EQ button

#### ⑤ POST FADER button

Select one of these three buttons to select the location in the signal path (pre-EQ/post-EQ/post-fader) whose level will be shown by the level meters.

### ■ Additional functions in the Monitor page

In the Monitor page you can press the [SHIFT] key to assign the following function to the [F1] key.



#### • [F1] (PEAK HOLD) key

This key sets/defeats the Peak Hold function. This is the same function as the [PEAK HOLD] key in the level meter/counter section.

# Bus page

## Monitor the output levels of buses 1–8/AUX buses 1–8

### [Function]

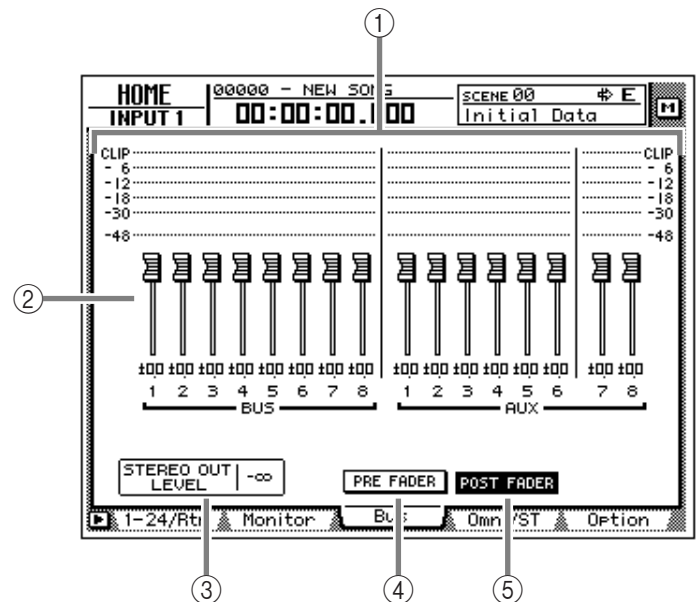
Monitor the output level of buses 1–8 and AUX buses 1–8. In this page you can also adjust the master level of each bus.

### [Key operation]

- [HOME] key → [F3] (Bus) key
- Repeatedly press the [HOME] key until the screen shown at the right appears

### [Mouse operation]

M button → HOME button → Bus tab



### [Screen functions]

#### ① Level meters

These meters show the output levels of buses 1–8/AUX buses 1–8.

#### ② Faders

These faders adjust the master level of buses 1–8/AUX buses 1–8. The fader location of each bus is shown in dB units below each fader.



*To adjust the value of a fader, move the cursor to the desired fader and rotate the [DATA/JOG] dial.*

#### ③ STEREO OUT LEVEL

The location of the STEREO fader is shown in dB units.

#### ④ PRE FADER (pre-EQ) button

#### ⑤ POST FADER (post-EQ) button

Select one of these two buttons to select the location in the signal path (pre-fader/post-fader) whose level will be shown by the level meters.

### ■ Additional functions in the Bus page

In the Bus page you can press the [SHIFT] key to assign the following function to the [F1] key.



#### • [F1] (PEAK HOLD) key

This key sets/defeats the Peak Hold function. This is the same function as the [PEAK HOLD] key in the level meter/counter section.

# Omni/ST page

## Monitor the output levels of the OMNI OUT jacks and stereo output

### [Function]

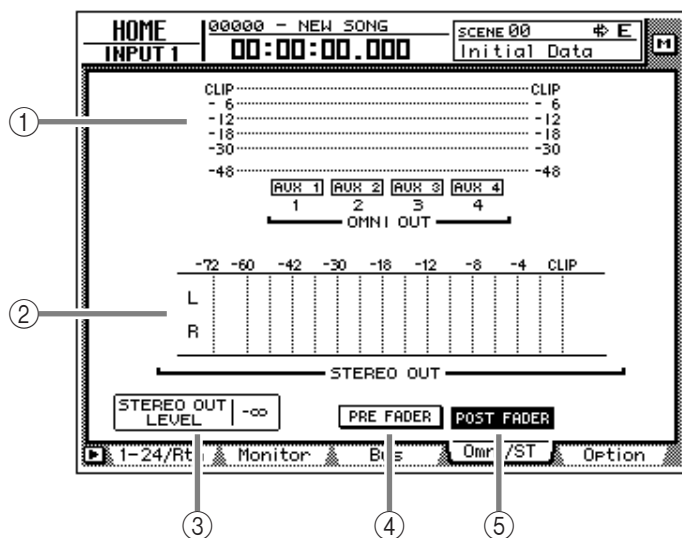
Monitor the output levels of OMNI OUT jacks 1–4 and the stereo output.

### [Key operation]

- [HOME] key → [F4] (Omni/ST) key
- Repeatedly press the [HOME] key until the screen shown at the right appears

### [Mouse operation]

M button → HOME button → Omni/St tab



### [Screen functions]

#### ① OMNI OUT level meters

These meters show the output level of OMNI OUT jacks 1–4. The type of signal assigned to each OMNI OUT jack is indicated below each level meter.



*This page is for display only; assignments cannot be changed in this page. The signals assigned to OMNI OUT jacks 1–4 can be selected in the SETUP screen Patch OUT page.*

#### ② STEREO OUT level meter

This meters shows the output level of stereo output.

#### ③ STEREO OUT LEVEL

This shows the position of the STEREO fader in dB units.

#### ④ PRE FADER (pre-EQ) button

#### ⑤ POST FADER (post-EQ) button

Select one of these two buttons to select the location in the signal path (pre-fader/post-fader) whose level will be shown by the STEREO OUT level meters.

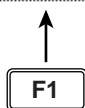


*The PRE FADER button/POST FADER button setting will not affect the OMNI OUT level meter display.*

## ■ Additional functions in the Omni/ST page

In the Omni/ST page you can press the [SHIFT] key to assign the following function to the [F1] key.

PEAK HOLD



#### • [F1] (PEAK HOLD) key

This key sets/defeats the Peak Hold function. This is the same function as the [PEAK HOLD] key in the level meter/counter section.

# Option page

## Monitor the output level of option I/O cards

### [Function]

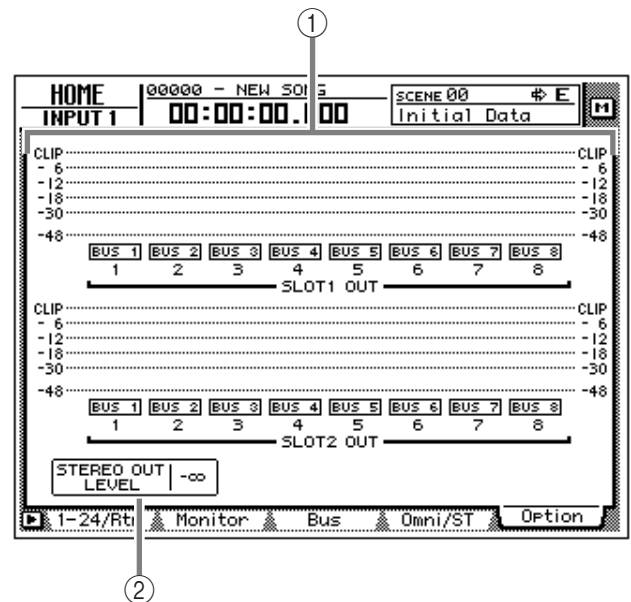
Monitor the output level of option I/O cards inserted in slots 1/2 of the AW4416.

### [Key operation]

- [HOME] key → [F5] (Option) key
- Repeatedly press the [HOME] key until the screen shown at the right appears

### [Mouse operation]

M button → HOME button → Option tab



### [Screen functions]

#### ① Level meters

These meters show the output levels of the option I/O cards inserted in slots 1/2. The type of signal assigned to each OUTPUT is indicated below each level meter.



*This page is for display only; the assignments cannot be changed here. The signals assigned to each OUTPUT of an option I/O card can be selected in the SETUP screen Patch OUT page.*

#### ② STEREO OUT LEVEL

The position of the STEREO fader is shown in dB units.

### ■ Additional functions in the Option page

In the Option page you can press the [SHIFT] key to assign the following function to the [F1] key.



#### • [F1] (PEAK HOLD) key

This key sets/defeats the Peak Hold function. This is the same function as the [PEAK HOLD] key in the level meter/counter section.

# SAMP. PAD screen

## From Rgn. page

### Assign a region to a sampling pad

#### [Function]

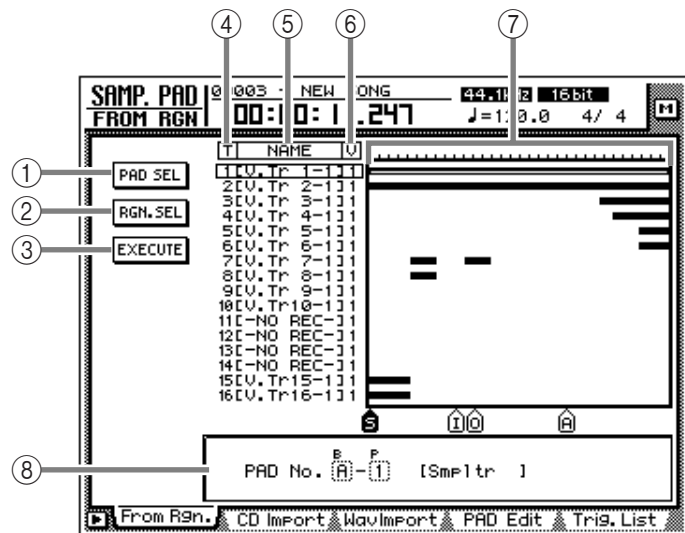
Assign a region (continuous audio data recorded in one operation) to a sampling pad.

#### [Key operation]

- Sampling pad section [EDIT] pad → [F1] (From Rgn.) key
- Repeatedly press the [EDIT] pad until the screen shown at the right appears.

#### [Mouse operation]

M button → SAMP. PAD EDIT button → From Rgn. tab



#### [Screen functions]

- ① **PAD SEL (pad select) button**  
This button selects the pad to which a region will be assigned.
- ② **RGN. SEL (region select) button**  
This button selects the region that will be assigned to the pad.
- ③ **EXECUTE button**  
This button executes the assignment. When you move the cursor to this button and press the [ENTER] key, the region you selected in ② will be assigned to the pad you selected in ①.
- ④ **T (track)**  
This column shows the track number (1–16).
- ⑤ **N (name)**  
This column shows the virtual track name. Tracks in which nothing has been recorded are displayed as “-NO REC-”.
- ⑥ **V (virtual track)**  
This column shows the virtual track number (1–8) selected for each track.

- ⑦ **Track view**  
This area shows a bar graph to indicate the regions included in each track.
- ⑧ **Parameter area**  
In this area you can set the parameters for the selected menu.

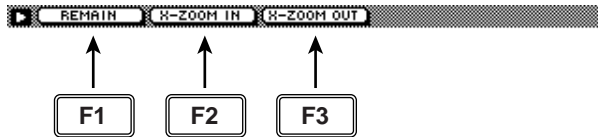


*The total length of the samples that can be assigned to the sampling pads is a maximum of 90 seconds (for a 44.1 kHz/16 bit song). If you wish to use part of a region that is longer than this, you must first divide the region appropriately (EDIT screen TR Edit page).*



## ■ Additional functions in the From Rgn. page

In the From Rgn. page you can press the [SHIFT] key to assign the following additional functions to the [F1]–[F3] keys.



- **[F1] (REMAIN) key**

This causes the counter/level meter and the counter at the top of the display to show the remaining time available for recording in the trigger list. For details on the trigger list, refer to the explanation for the “SAMP.PAD screen/ Trig.List page” (→ P.88). When you press the [SHIFT] key + [F1] (REMAIN) key once again, the usual counter display will reappear.

- **[F2] (X-ZOOM IN) key**

Each time you press the [SHIFT] key + [F2] (X-ZOOM IN) key, the track view ⑦ will zoom-in horizontally (three stages).

- **[F3] (X-ZOOM OUT) key**

Each time you press the [SHIFT] key + [F3] (X-ZOOM OUT) key, the track view ⑦ will zoom-out horizontally (three stages).



**Tip!**

For the procedure of assigning a region to a pad, refer to Operation Guide “Chapter 12. Sampling pads.”

# CD Import page

## Assign CD-DA to a sampling pad

### [Function]

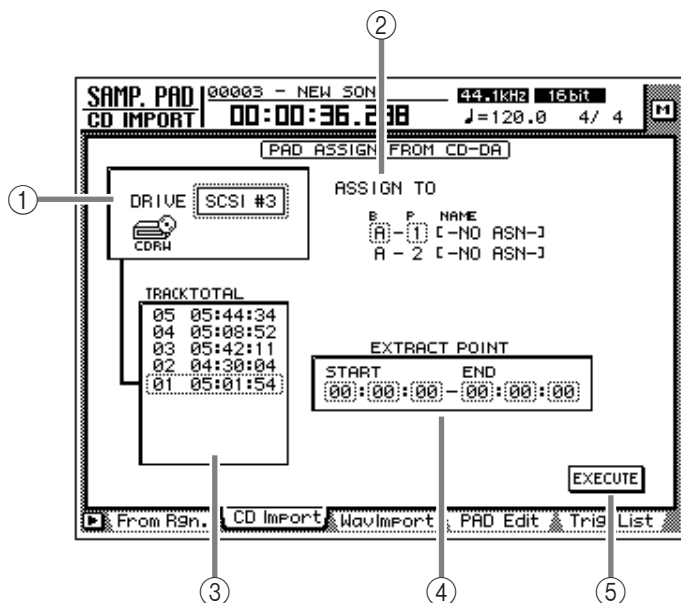
Import CD-DA (CD audio) audio data from an audio CD/mixed-mode CD-ROM inserted in an internal or external CD-RW drive, and assign it to a sampling pad.

### [Key operation]

- Sampling pad section [EDIT] pad → [F2] (CD Import) key
- Repeatedly press the [EDIT] key until the screen shown at the right appears.

### [Mouse operation]

M button → SAMP.PAD EDIT button → CD Import tab



### [Screen functions]

#### ① DRIVE

Move the cursor to this area and rotate the [DATA/JOG] dial to select the internal or external CD-RW drive.

#### ② ASSIGN TO

Select the pad to which you wish to assign CD-DA data. Pads to which no sample has been assigned will be displayed as “-NO ASN-”.

#### ③ TRACK/TOTAL

This is the track list of the audio CD/mixed-mode CD-ROM inserted in the CD-RW drive. Move the cursor to this list, and rotate the [DATA/JOG] dial to select a track. The value at the right shows the total time of that track.

#### ④ EXTRACT POINT

Select the area of the track specified in ③ that will be assigned to the pad, in units of “minutes:seconds:frames (1/75 seconds).”

Move the cursor to this area and use the [DATA/JOG] dial to specify the START (start point) and END (end point).



Later, you can trim the sample assigned to the pad to make even finer adjustments. Samples can be trimmed in the SAMP. PAD screen PAD Edit page (→ P.86).

#### ⑤ EXECUTE button

This button executes the sample import operation.



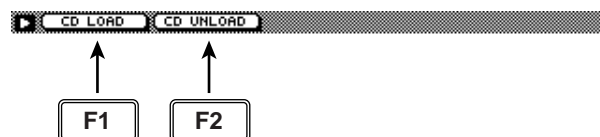
CD-DA data can be imported only for songs whose sampling frequency is 44.1 kHz.



Execution of this operation requires a longer time than the actual time length of the data. Also, processing cannot be cancelled once the operation has been executed.

## ■ Additional functions in the CD Import page

In the CD Import page you can press the [SHIFT] key to assign the following additional functions to the [F1]–[F2] keys.



- **[F1] (CD LOAD) key**  
Close the tray of the CD-RW drive.
- **[F2] (CD UNLOAD) key**  
Eject the tray of the CD-RW drive.

## ● Assigning CD-DA data to a sampling pad

### [Procedure]

1. Access the SAMP. PAD screen CD Import page, and press [SHIFT] key + [F2] (CD UNLOAD) key.

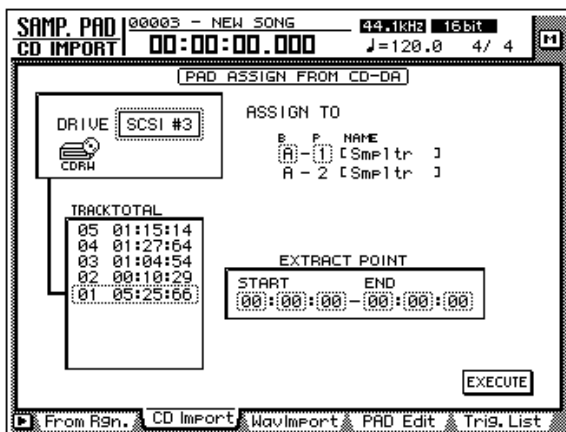
The tray of the CD-RW drive will be ejected.

2. Place an audio CD or mixed-mode CD in the tray, and press the [SHIFT] key + [F1] (CD LOAD) key.

The tray of the CD-RW drive will close, and the CD will be inserted.

3. Move the cursor to the DRIVE area, use the [DATA/JOG] dial to select the SCSI ID of the CD-RW drive, and press the [ENTER] key.

The AW4416 will recognize the CD that was inserted, and a display like the following will appear.



4. Move the cursor to the ASSIGN TO area, and use the [DATA/JOG] dial to select the bank and pad number to which the CD-DA data will be assigned.

```

ASSIGN TO
  B  P  NAME
  A- 7  [-NO ASN-]
  A- 8  [-NO ASN-]

```

In this page a pair of adjacent odd-numbered → even-numbered pads of the same bank will be selected (e.g., A-1/A-2, B-1/B-2) and automatically specified as a pair, and the L/R channels of the CD-DA data will be assigned to these.

5. Move the cursor to the TRACK/TOTAL area, and use the [DATA/JOG] dial to select the track from which you wish to import.

TRACK	TOTAL
86	00:26:09
85	00:15:04
84	00:19:42
83	00:22:06
82	00:19:59
81	00:19:24
80	01:56:42
79	01:57:31
78	00:04:29

6. Move the cursor to the EXTRACT POINT area, and use the [DATA/JOG] dial to specify START (start point) and END (end point) to select the area that will be assigned to the pad.

EXTRACT POINT	
START	END
00:02:13	00:02:25

7. To execute the sample import, move the cursor to the EXECUTE button and press the [ENTER] key.

A confirmation message like the following will appear.



If a message of "Prohibit CD Import" appears instead of this message, access the UTILITY screen/Prefer.2 page ([UTILITY] key → [F3] key) and change the CD/DAT DIGITAL REC button display to ENABLE.

8. Move the cursor to the OK button and press the [ENTER] key.

The sample import will be executed.



*So that the samples assigned to the two pads will play back in stereo, assign the pad outputs to paired channels. (SETUP screen Patch IN page)*

# WAV Import page

## Assign a WAV file to a sampling pad

### [Function]

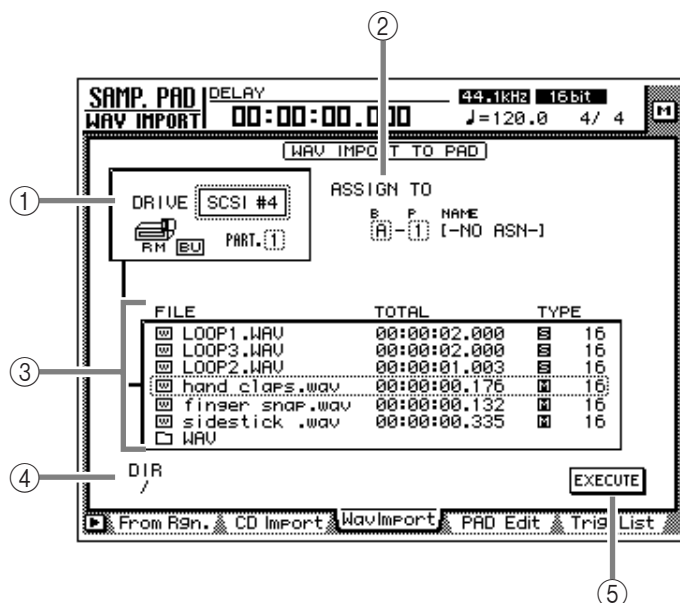
Import a WAV format audio file from a CD-ROM or MO disk inserted in the internal CD-RW drive or an external SCSI device, and assign it to a sampling pad.

### [Key operation]

- Sampling pad section [EDIT] pad → [F3] (WavImport) key
- Repeatedly press the [EDIT] pad until the screen shown at the right appears.

### [Mouse operation]

M button → SAMP. PAD EDIT button → WavImport tab



### [Screen functions]

#### ① DRIVE

Move the cursor to this area and rotate the [DATA/JOG] dial to select the internal CD-RW drive or external SCSI device.

#### ② ASSIGN TO

Select the pad to which you wish to assign the WAV file. Pads to which no sample is assigned are displayed as "-NO ASN-".

#### ③ File list

This shows a list of the WAV files on the internal CD-RW drive or external SCSI device. This list contains the following information.

##### ● FILE

The file name/directory name is displayed. icons indicate WAV files, and files indicate directories.

##### ● TOTAL

The playback time of the WAV file is displayed in hours/minutes/seconds/milliseconds.

##### ● TYPE

The stereo () /monaural () status of the WAV file and its quantization (word length) is displayed.



The AW4416 can recognize only WAV files that have the same sampling frequency as the current song which have a filename extension of ".WAV" following their name. Other files will not be displayed in the list.

#### ④ DIR (directory)

The "/" symbol and the directory name indicate the directory in which the list shown in ③ is located. For example this will indicate "/" if you are in the highest level (root directory), or "/WAV/" if you are in a directory named WAV located one level lower.

#### ⑤ EXECUTE button

This button executes the WAV file import.

## ■ Additional functions in the Wav Import page

In the Wav Import page you can press the [SHIFT] key to the [F1]–[F2] keys.



- **[F1] (CD LOAD) key**  
Close the tray of the CD-RW drive.
- **[F2] (CD UNLOAD) key**  
Eject the tray of the CD-RW drive.

## ● Assigning a WAV file to a sampling pad

### [Procedure]

1. Insert the media containing the WAV file into an external SCSI device (e.g., MO drive) or the internal CD-RW drive.
2. Access the SAMP. PAD screen WavImport page.
3. Move the cursor to the DRIVE area, use the [DATA/JOG] dial to select the SCSI ID of the drive, and press the [ENTER] key. The AW4416 will recognize the WAV files on the inserted media (CD-ROM, MO disk etc.), and will display a list like the following.

FILE	TOTAL	TYPE
LOOP1.WAV	00:00:02.000	S 16
LOOP3.WAV	00:00:02.000	S 16
LOOP2.WAV	00:00:01.003	S 16
hand claps.wav	00:00:00.176	M 16
finser snap.wav	00:00:00.132	M 16
sidestick .wav	00:00:00.335	M 16
WAV		

4. Move the cursor to the file list, and use the [DATA/JOG] dial to select the WAV file that you wish to import.

The file enclosed by the dotted lines in the center of the list is selected for the operation.



□ . indicates the current directory, and □ .. indicates the directory above. To return to the next highest directory, move the cursor to □ .. and press the [ENTER] key.

5. Move the cursor to the ASSIGN TO area, and use the [DATA/JOG] dial to select the bank and pad number to which the WAV file will be assigned.



If you select a stereo WAV file in step 4, a pair of adjacent odd-numbered → even-numbered pads in the same bank will be selected (e.g., A-1/A-2, B-1/B-2) and automatically assigned as a pair to the L/R channels of the WAV file.

6. To execute the sample import, move the cursor to the EXECUTE button and press the [ENTER] key. A popup window will ask you for confirmation.



7. Move the cursor to the OK button and press the [ENTER] key. The sample import will be executed.



If you want the samples assigned to the two pads to play back in stereo, assign the pad outputs to paired channels. (SETUP screen Patch IN page)



Execution of this operation requires a longer time than the actual time length of the data. Also, processing cannot be cancelled once the operation has been executed.

# PAD Edit page

## Editing a sample pad

### [Function]

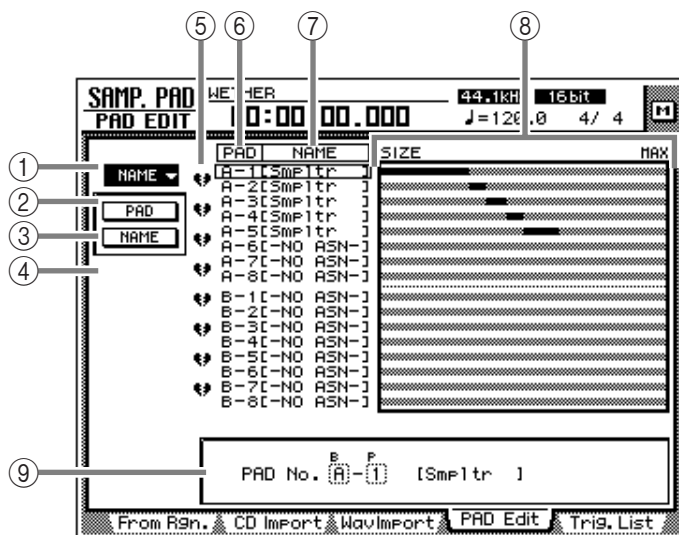
Assign a name to a sampling pad, erase a pad, or trim a sample.

### [Key operation]

- Sampling pad section [EDIT] pad → [F4] (PAD Edit) key
- Repeatedly press the [EDIT] pad until the screen shown at the right appears.

### [Mouse operation]

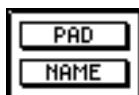
M button → SAMP. PAD EDIT button → PAD Edit tab



### [Screen functions]

#### ① NAME

This menu allows you to assign the desired name to a pad. When you move the cursor to this menu and press the [ENTER] key, the following buttons will appear.



These buttons have the following functions.

##### ● PAD

Select the bank/pad number of the pad that you wish to name.

##### ● NAME

Access the NAME EDIT screen where you can input a name. You can input a maximum of 8 characters.



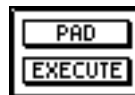
*Immediately after a sample has been assigned to a pad, a default name of "Smp1tr" will be assigned automatically.*



*Undo is not possible after the pad name has been edited.*

#### ② ERASE

This menu allows you to erase the sample and name assigned to a pad, and return the pad to its initial state. When you move the cursor to this menu and press the [ENTER] key, the following buttons will appear.



These buttons have the following functions.

##### ● PAD

Select the bank/pad number of the pad that you wish to erase.

##### ● EXECUTE

Execute the pad erase operation.



*Undo is not possible after a pad has been erased.*

**③ TRIM IN**

This menu allows you to adjust the playback start location of the sample assigned to a pad. When you move the cursor to this menu and press the [ENTER] key, the following buttons will appear.



These buttons have the following functions.

**● PAD**

Select the bank/pad number of the pad whose playback start location you wish to trim.

**● TRIM IN**

Adjust the amount of trimming in sample units.

**● EXECUTE**

Execute the trim operation.

**④ TRIM OUT**

This menu allows you to adjust the playback end location of the sample assigned to a pad. When you move the cursor to this menu and press the [ENTER] key, the following buttons will appear.



These buttons have the following functions.

**● PAD**

Select the bank/pad number of the pad whose playback end location you wish to trim.

**● TRIM OUT**

Adjust the amount of trimming in sample units.

**● EXECUTE**

Execute the trim operation.



- TRIM IN/TRIM OUT cannot be undone.
- Trimming a sample will not increase the available memory area.

**⑤ Pairing**

Here you can set or cancel pairing of adjacent odd-numbered/even-numbered pads. Move the cursor to the heart symbol and press the [ENTER] key to connect the heart symbol, pairing the two channels. In this state, pressing either of the pads will sound both pads simultaneously.

**⑥ PAD**

This column shows the bank and pad number (A1–A8/B1–B8).

**⑦ NAME (pad name)**

This column shows the pad name. When a sample is assigned to a pad, a name of “Smpltr” will automatically be assigned. Pads to which nothing is assigned will be displayed as “-NO ASN-”.

**⑧ SIZE**

This area shows a bar graph that indicates the length of the sample assigned to each pad. MAX (at the right edge) is the maximum RAM that can be assigned to the sampling pad.



*The maximum total length of sound that can be assigned to the sampling pads is 90 seconds (for a 44.1 kHz/16 bit song).*

**⑨ Parameter area**

In this area you can set the parameters for the selected menu. When you select a button for menu ①–④, the corresponding parameter values will appear here.



*For examples of editing the sampling pads, refer to Operation Guide “Chapter 12. Sampling pads.”*



# Trig. List page

## Recording and playing sampling pad operations

### [Function]

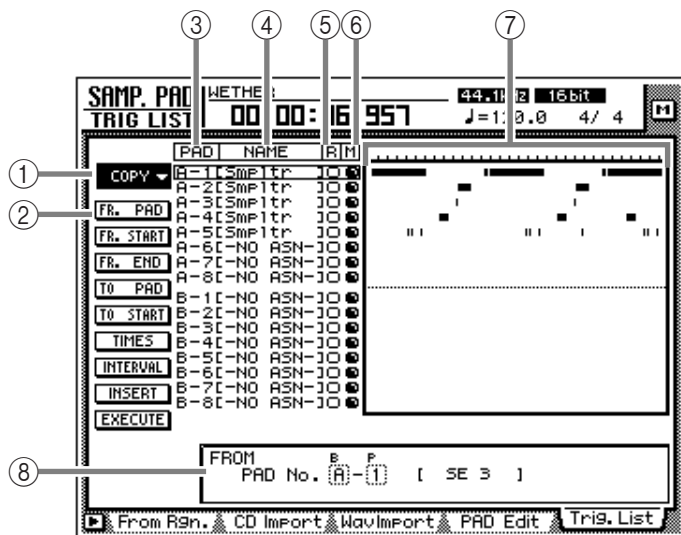
Use a dedicated “convenience sequencer” to record and play back pad operations, and edit the recorded performance.

### [Key operation]

- Sampling pad section [EDIT] pad → [F5] (Trig. List) key
- Repeatedly press the [EDIT] pad until the screen shown at the right appears.

### [Mouse operation]

M button → SAMP. PAD EDIT button → Trig. List tab



### [Screen functions]

#### ① COPY menu

Using this menu, events recorded in the convenience sequencer can be copied to another location in the same pad track or to another pad track. When you move the cursor here and press the [ENTER] key, the following buttons will appear.



These buttons have the following functions.

#### ● FR. PAD

Select the copy source pad track.

#### ● FR. START

#### ● FR. END

Specify the beginning (FR. START) and end (FR. END) of the pad track selected in FR. PAD that will be the copy source. The specified portion of the performance will be the copy source pattern.

#### ● TO PAD

Specify the pad track to which you wish to copy.

#### ● TO START

Specify the location in the pad track selected for TO PAD at which the data will be copied.

#### ● TIMES

Specify the number of times the data will be copied. If you specify a multiple number of copies, the pattern selected as the copy source will be copied repeatedly.

#### ● INTERVAL

When copying multiple times, this parameter specifies the interval between copy destination patterns.

#### ● INSERT

Select whether the pattern will be inserted (Insert) or overwritten (OverWrite) at the copy destination. If you select “Insert,” the events following the insert location will be moved toward the end of the song for the length of the copied pattern. If you select “OverWrite,” the existing events will be erased for the length of the copied pattern.

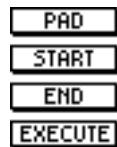
#### ● EXECUTE

Execute the copy.



## ② ERASE menu

Using this menu, a specified range of events recorded in the convenience sequencer can be erased. When you move the cursor here and press the [ENTER] key, the following buttons will appear.



These buttons have the following functions.

### ● PAD

Select the pad track from which you wish to erase events.

### ● START

### ● END

Specify the beginning (START) and end (END) of the range that you wish to erase from the pad track specified by PAD.

### ● EXECUTE

Execute the erase command.

## ③ PAD

This column shows the pad and pad number (A1–A8/B1–B8).

## ④ NAME (pad name)

This column shows the name of each pad. Pads to which nothing has been assigned will be displayed as “-NO ASN-”.



*When you assign a sample to a pad, it will automatically be given a default name of “Smpltr”. To edit the name, use the SAMP. PAD screen PAD Edit page (→ P.86).*

## ⑤ R (recording) buttons

These buttons enable recording for each pad. When you move the cursor to a button and press the [ENTER] key, the O display will change to ●, and your performance on the pad can be recorded as events.

## ⑥ M (mute) buttons

These are mute switches for each pad. When you move the cursor to a button and press the [ENTER] key, the O display will change to ●, and that pad track will no longer be played back.



*If bank A (B) is selected by the BANK pad, pads 1–8 of bank B (A) will be forcibly muted. To cancel muting, press the BANK switch to change banks.*

## ⑦ Pad track view

The timing at which trigger events are played can be recorded separately for each pad on these tracks. The bar graphs indicate the time from when a pad was pressed until it was released.

## ⑧ Parameter area

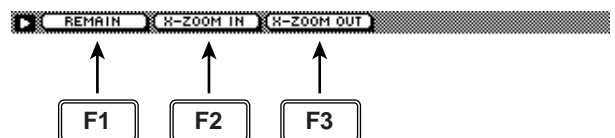
The parameters required in order to execute the editing operation can be set in this area.



*For the procedure of recording or playing your pad performances, and copying or erasing a recorded performance, refer to Operation Guide “Chapter 12. Sampling pads.”*

## ■ Additional functions in the Trig. List page

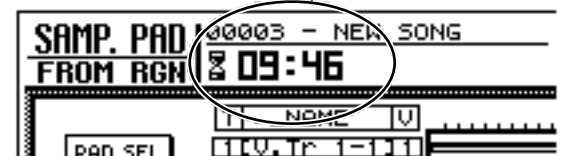
In the Trig. List page you can press the [SHIFT] key to assign the following additional functions to the [F1]–[F3] keys.



### • [F1] (REMAIN) key

The counter will show the remaining time available for recording in the trigger list. When you press the [SHIFT] key + [F1] (REMAIN) key once again, the usual counter display will reappear.

Remaining time for recording in the trigger list



Remaining time for recording in the trigger list

### • [F2] (X-ZOOM IN) key

Each time you press the [SHIFT] key + [F2] (X-ZOOM IN) key, the pad track view will zoom-in horizontally (three levels).

### • [F3] (X-ZOOM OUT) key

Each time you press the [SHIFT] key + [F3] (X-ZOOM OUT) key, the pad track view will zoom-out horizontally (three levels).

# TRACK screen

## TR View page

### Viewing the recorded content for each track

#### [Function]

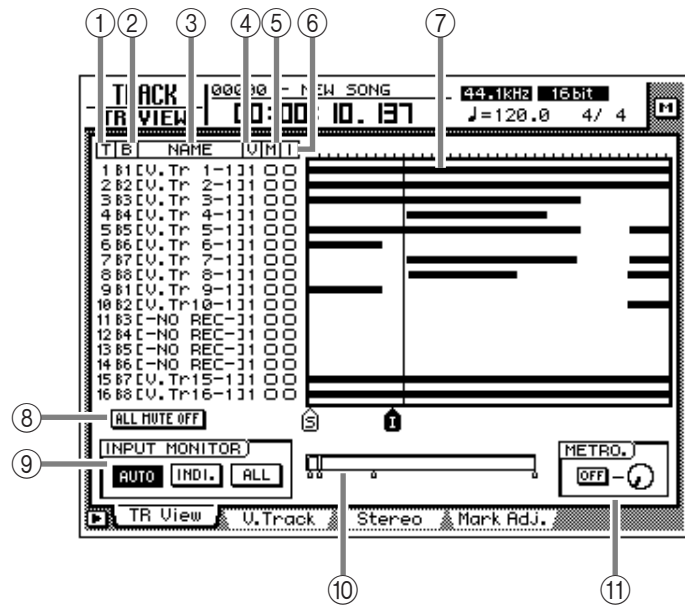
View a bar graph that shows the regions recorded on each track, and switch the input monitor mode or mute on/off for each track.

#### [Key operation]

- [TRACK] key → [F1] (TR View) key
- Repeatedly press the [TRACK] key until the screen shown at the right appears

#### [Mouse operation]

M button → TRAC button → TR View tab



#### [Screen functions]

##### ① T (track)

This column shows the track number 1–16.

##### ② B (bus)

This column indicates the type of signal that is sent to the input (recorder input) of each track 1–16. The abbreviations have the following significance.

- **B1–B8**.....Buses 1–8
- **D1–D16**.....Direct output of input channels 1–16

##### ③ NAME

This column shows the name of the virtual track currently selected for each track 1–16. When you record something on a track, a default name of "V.Tr x-y" (x=track number 1–16, y=virtual track number 1–8) will be assigned automatically. Tracks on which nothing has been recorded will be displayed as "-NO REC-".



Up to 16 characters can be specified as the name of a virtual track, but only the first eight characters will be displayed in this column. The name can be edited in the EDIT screen TR Edit page.

##### ④ V (virtual track)

This column shows the virtual track number (1–8) that is selected for each track.



Virtual tracks are selected in the TRACK screen V.Track page.

##### ⑤ M (mute)

In this column you can turn muting on/off for each track. Move the cursor to the ⑤ column and press the [ENTER] key to switch muting on (●) or off (O) for that track.



- On the AW4416, the number of tracks that can be played back simultaneously may be limited according to the quantization (word bit length) of the song and by the number of tracks being recorded simultaneously. In this case, a message of "PLAY TRACK MUTE ON" will be displayed, and tracks that cannot be played back will be forcibly muted.
- If you wish to monitor a track that has been forcibly muted, you must first turn muting on for other tracks, and then defeat muting for the desired track. If you simply attempt to defeat muting without increasing the number of muted tracks, a message of "CANNOT CHANGE MUTE" will appear, and muting cannot be defeated.
- By pressing the [ALL SAFE] key you can cancel the record-ready and muted status of all tracks.
- The mute on/off setting of the tracks does not affect the [ON] keys of the monitor channels.

⑥ I (input monitor)

This column indicates the signal that can be monitored for each track. The track input signal is being monitored when ● is displayed, and the track playback signal is being monitored when O is displayed. The INPUT MONITOR ⑨ setting, the state of the [REC TRACK SELECT] key, and the current transport mode will determine which signal is being monitored for each track.

⑦ Track view

The regions (continuous audio data recorded in a single operation) included in each track are displayed as bar graphs in this area. The vertical line in this area indicates the current location. The symbols displayed at the bottom of the frame indicate locate points or markers that have been set in those locations. The following types of symbols are displayed.

- S..... Start point
- E..... End point
- I ..... In point
- O..... Out point
- A ..... A point
- B ..... B point
- 1-99..... Markers 1-99

⑧ ALL MUTE OFF button

This button defeats muting for all tracks.



Tracks that have been forcibly muted due to limitations on the number of simultaneously playable tracks cannot be un-muted.

⑨ INPUT MONITOR

Select one of the following three buttons to select the input mode (monitor source selection) for each track. The following table shows how the track monitor signal will change according to the state of the [REC TRACK SELECT] key and the transport mode when each mode is selected.

● When the AUTO button is on (Auto Input Monitor)

	REC TRACK SELECT	Monitored signal
Stopped	Off	Silence
	On	Input source
Playing	Off	Playback
	On	Playback
Recording	Off	Playback
	On	Input source

The input mode of all tracks will change automatically depending on the on/off status of the [REC TRACK SELECT] key. It is not possible to change ⑥ input monitor manually.

● When the INDI. button is on (Individual Input Monitor)

	REC TRACK SELECT	Monitored signal
Stopped	(irrelevant)	Input source or silence (*1)
Playing	(irrelevant)	Input source or playback (*1)
Recording	(irrelevant)	Input source or playback (*1)

\*1. Depends on the ⑥ input monitor setting.

You can manually change the ⑥ input monitor for each track. This is unaffected by the on/off status of the [REC TRACK SELECT] key.



Even for tracks whose ⑥ input monitor is set to the input source (●), turning on a [REC TRACK SELECT] key that had been off will automatically cause the input source (●) to switch to playback (O).

● When the ALL button is on (All Input Monitor)

	REC TRACK SELECT	Monitored signal
Stopped	(irrelevant)	Input source
Playing	(irrelevant)	Input source
Recording	(irrelevant)	Input source

Regardless of the on/off status of the [REC TRACK SELECT] key, the input source will be monitored for all tracks. The ⑥ input monitor cannot be switched manually.

⑩ **Current position**

The vertical line in the frame shows the approximate current position. The small markers below the frame show the approximate locations of each locate point.

⑪ **METRO. (metronome)**

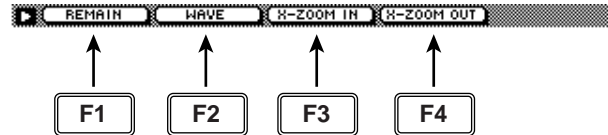
Here you can turn the internal metronome on/off (ON/OFF button) and adjust its volume (knob). The tempo and time signature of the metronome are set in the SONG screen Tempo Map page.



- When the AW4416 is in its initial state, the internal metronome will be output from the MONITOR OUT jacks mixed with other signals. However, it is possible to patch the metronome output signal (MET) to any of the input channels 1–24. For details refer to SETUP screen Patch IN page.
- The metronome sound will not be output while the song is stopped.

## ■ Additional functions in the Track View page

In the Track View page you can press the [SHIFT] key to assign the following additional functions to the [F1]–[F4] keys.



• **[F1] (REMAIN) key**

The remaining recordable time will be displayed in the level meter/counter and in the display counter area. When you press the [SHIFT] key + [F1] (REMAIN) key once again, the normal counter display will reappear.



*The remaining recordable time will differ depending on the number of tracks that are currently in record-ready mode. For example if you increase the number of tracks in record-ready mode from one track to two tracks, the remaining recordable time will be halved.*

• **[F2] (WAVE) key**

Display the waveform for the audio of a desired track. This is convenient when you wish to view the waveform while searching precisely for a locate point. For the procedure, refer to “Viewing a waveform for the audio data of a track” in the section that follows.

• **[F3] (X-ZOOM IN) key**

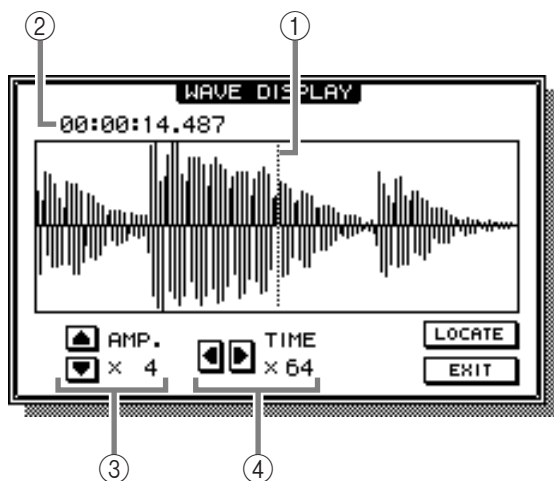
Each time you press the [SHIFT] key + [F3] (X-ZOOM IN) key, the track view ⑦ will zoom-in horizontally (three levels).

• **[F4] (X-ZOOM OUT) key**

Each time you press the [SHIFT] key + [F4] (X-ZOOM OUT) key, the track view ⑦ will zoom-out horizontally (three levels).

## ■ Viewing a waveform for the audio data of a track

1. Access the TRACK screen TR View page, and use the CURSOR [▲]/[▼] keys to select the track whose waveform you wish to view.
2. While stopped, locate the song to the place where you wish to view the waveform, and press the [SHIFT] key + [F2] key. The WAVE DISPLAY popup window will appear.



- ① Pointer
- ② Pointer location
- ③ Level magnification (×1–×64) adjustment
- ④ Time axis magnification (×1–×4096) adjustment

3. If you wish to move the pointer location, rotate the [DATA/JOG] dial. Rotating the [DATA/JOG] dial toward the right will move the pointer forward, and rotating it toward the left will move the pointer backward.



- The keys of the locate/transport section cannot be used while the waveform is displayed.
- The audio of the corresponding track cannot be monitored while the [DATA/JOG] dial is being used to move the pointer.
- This function can be used only while the song is stopped.

4. If you wish to locate the song to the pointer position, move the cursor to the LOCATE button and press the [ENTER] key. The WAVE DISPLAY popup window will close, and the song will locate to the location of the pointer.

5. If you wish to close the WAVE DISPLAY popup window without locating, move the cursor to the EXIT button and press the [ENTER] key.

# V. Track page

## Switching virtual tracks

### [Function]

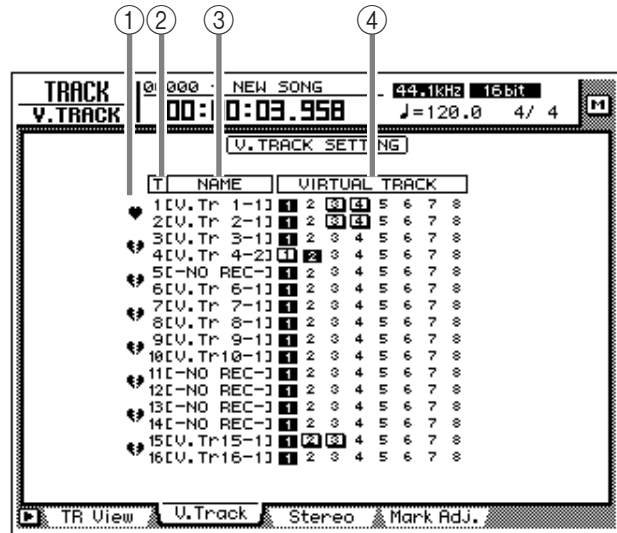
Switch the virtual track number assigned to each track 1–16, and set/cancel pairing between tracks.

### [Key operation]

- [TRACK] key → [F2] (V. Track) key
- Repeatedly press the [TRACK] key until the screen shown at the right appears.

### [Mouse operation]

M button → TRAC button → V.Track tab



### [Screen functions]

#### ① Pairing

By moving the cursor to this area and pressing the [ENTER] key, you can pair (or cancel pairing for) two adjacent odd-numbered → even-numbered tracks. Paired tracks are indicated by a "♥" symbol, and tracks for which pairing is defeated are indicated by a "✖" symbol.



- Paired tracks will be linked when you switch virtual tracks, or when you select them for track editing.
- Track pairing does not affect pairing of monitor channels.

#### ② T (track)

These are the track numbers 1–16.

#### ③ NAME

This column shows the name of the virtual track that is currently selected for each track 1–16.

#### ④ VIRTUAL TRACK

Move the cursor to this column and press the [ENTER] key to select the virtual track number used by each track 1–16. The currently selected virtual track number will be highlighted. Of the virtual track numbers that are not currently selected, tracks that have been recorded are displayed as [RE].

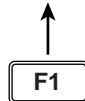


For details on operating virtual tracks, refer to Operation Guide "Chapter 9. Track and virtual track operations."

## Additional functions in the V. Track page

In the V. Track page you can press the [SHIFT] key to assign the following additional function to [F1].

REMAIN



#### • [F1] (REMAIN) key

The remaining recordable time will appear in the level meter/counter and in the counter area of the display. When you press the [SHIFT] key + [F1] (REMAIN) key once again, the normal display will reappear.



The remaining recordable time will depend on the number of tracks that is currently in record-ready mode.

# Stereo page

## Playing or erasing the stereo track

### [Function]

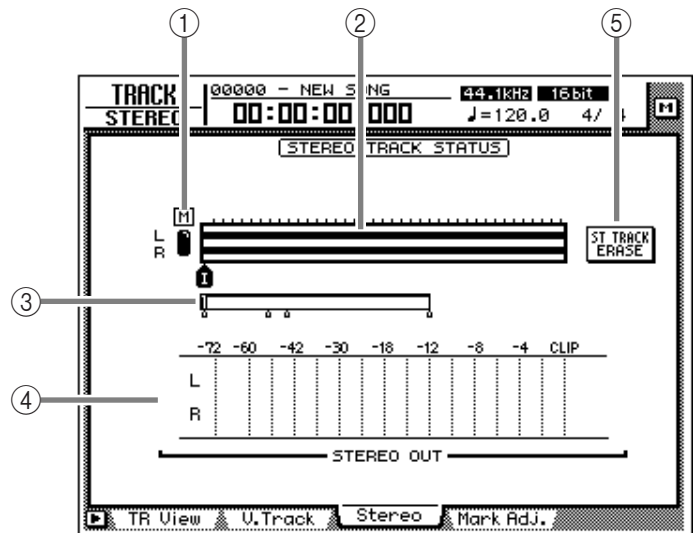
Play back the stereo track, or erase the recorded contents.

### [Key operation]

- [TRACK] key → [F3] (Stereo) key
- Repeatedly press the [TRACK] key until the screen shown at the right appears.

### [Mouse operation]

M button → TRAC button → Stereo tab



### [Screen functions]

#### ① M (mute) button

Use this button to switch muting on (●) or off (○) for the stereo track. When muting is off, the output of the stereo track will be assigned to monitor channels 1/2. (Normally muting is on.)

When you play back the song in this state, the stereo track can be monitored via monitor channels 1/2 → stereo bus. (At this time, tracks 1–16 will be forcibly muted.) When you turn muting on for the stereo track, tracks 1–16 will return to their previous status.



*For details on recording/playing the stereo track, refer to Operation Guide "Chapter 5. Recording on the AW4416."*

#### ② Track view

Continuous audio data in the stereo track is displayed as a bar graph. The symbols displayed below the track view indicate locate points and markers at those locations. The following types of symbols are displayed.

- **S**.....Start point
- **E**.....End point
- **I**.....In point
- **O**.....Out point
- **A**.....A point
- **B**.....B point
- **1-99**.....Markers 1–99

#### ③ Current position

The vertical line in the frame indicates the approximate current position. The small symbols beneath the frame indicates the approximate location of the locate points.

#### ④ STEREO OUT

This meter indicates the output level of the stereo output channel. The pre/post-fader position can be selected in the HOME screen Omni/ST page.

#### ⑤ ST TRACK ERASE (stereo track erase) button

If you move the cursor to this button and press the [ENTER] key, the recorded contents of the stereo track will be erased.

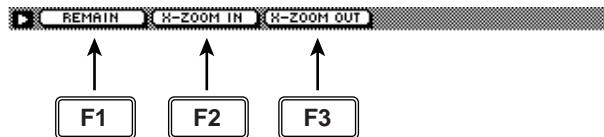


*The stereo track is an L/R pair and has only one region. If you re-record a previous recording on the stereo track, the previously-recorded content will be erased. (However, you can use the [UNDO] key to return to the previous state.)*



## ■ Additional functions in the Stereo page

In the Stereo page you can press the [SHIFT] key to assign the following additional functions to the [F1]–[F3] keys.



- **[F1] (REMAIN) key**

The level meter/counter and the counter area of the display will show the remaining time available for recording. When you press the [SHIFT] key + [F1] (REMAIN) key once again, the usual counter display will reappear.



*The remaining time available for recording will depend on the number of tracks that are currently in record-ready mode.*

- **[F2] (X-ZOOM IN) key**

Each time you press the [SHIFT] key + [F2] (X-ZOOM IN) key, the track view ② will zoom-in horizontally in three levels.

- **[F3] (X-ZOOM OUT) key**

Each time you press the [SHIFT] key + [F3] (X-ZOOM OUT) key, the track view ② will zoom-out horizontally in three levels.



# Mark Adj. page

## Adjust or erase locate points or markers

### [Function]

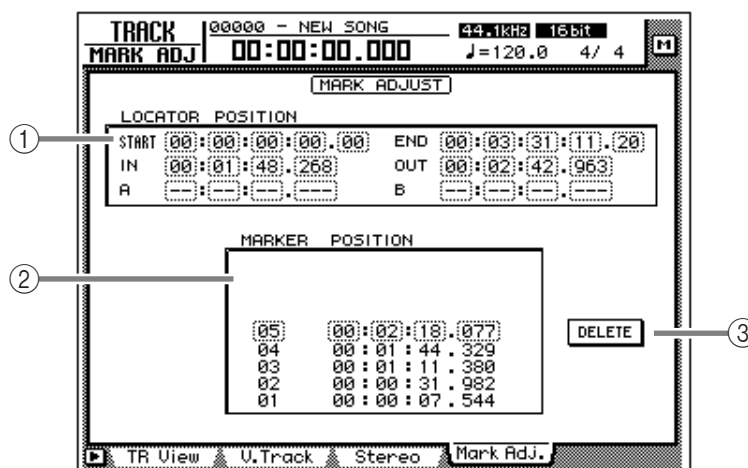
Adjust the position of markers or locate points such as the IN/OUT points, or erase locate points or markers.

### [Key operation]

- [TRACK] key → [F4] (Mark Adj.) key
- Repeatedly press the [TRACK] key until the screen shown at the right appears.

### [Mouse operation]

M button → TRAC button → Mark Adj. tab



### [Screen functions]

#### ① LOCATOR POSITION

Display the positions of the various locate points listed below. The position of an existing locate point can be adjusted by moving the cursor to the desired numerical box and rotating the [DATA/JOG] dial. Locate points that have not been set are displayed as “-”.

##### ● START/END (start point/end point)

These locate points normally correspond with the beginning and end of the song. When you create a new song, the Start point will be initially set to absolute time 00:00:00.000. When you record the song, the end of the song will automatically be set as the End point.



- The start/end points are always displayed as time code, regardless of the counter display method selected in the SONG screen/Setting page.
- If measure display is selected in the SONG screen/Setting page, only beats will be displayed for a location earlier than the start point.

##### ● IN/OUT (in point/out point)

These locate points can be used as the punch-in/out points. The in/out points are automatically set at the beginning and end of the area that was last-recorded, and can also be set individually by using the [SET] key + [IN] key or [SET] key + [OUT] key.

##### ● A/B (A point/B point)

These locate points can be used as the area for A-B repeat playback. These points can be set individually by using the [SET] key + [A] key or [SET] key + [B] key.



The units used for the in/out points and the A/B points will depend on the counter display method (time/time code/measure). If measure display is selected, “beat” will be the smallest unit by which a locate point can be adjusted.

#### ② Marker

This area displays a list of markers 1–99. Move the cursor to the MARKER column and select the marker number. Then move the cursor to the POSITION column and adjust the position of the corresponding marker.



- When adjusting the position of a marker, it is not possible to move a marker beyond the preceding or following marker.
- Marker numbers are automatically assigned in sequence from the beginning of the song. If you delete a marker, the marker numbers will be re-assigned appropriately.

### ③ DELETE button (valid only when using the mouse)

This button deletes a previously-set locate point or marker. In this page, you can delete the locate point or marker simply by moving the cursor to it and pressing the [ENTER] key (or using the mouse to click the DELETE button).



The start point and end point cannot be deleted.



For details on setting the various locate points or modifying a locate point, refer to Operation Guide "Chapter 6. Transport/locate operations."



Be aware that locate points or markers you delete cannot be recovered.

### ■ Additional functions in the Mark Adj. page

In the Mark Adj. page, you can press the [SHIFT] key to assign the following additional function to the [F1] key.



- [F1] (REMAIN) key

The level meter/counter and the counter area of the display will show the remaining time available for recording. When you press the [SHIFT] key + [F1] (REMAIN) key once again, the usual counter display will reappear.



The remaining time available for recording will depend on the number of tracks that are currently in record-ready mode.

# EDIT screen

## TR Edit page

### Edit tracks

#### [Function]

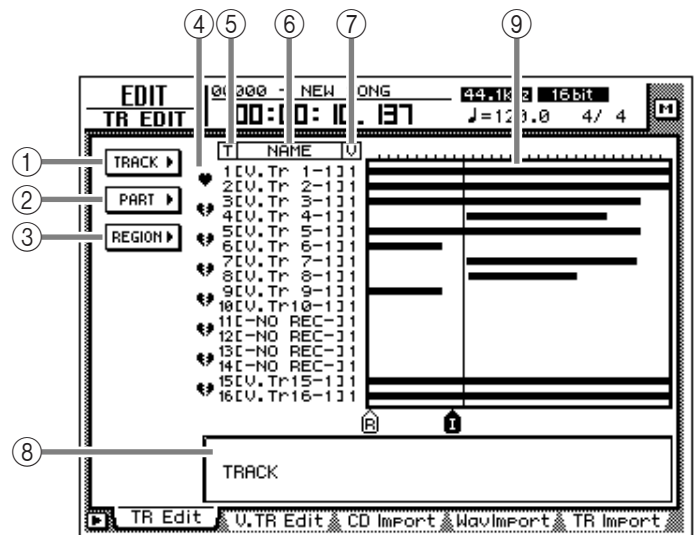
Assign a name to each track, and edit audio data by tracks, parts, or regions.

#### [Key operation]

- RECORDER [EDIT] key → [F1] (TR Edit) key
- Repeatedly press the RECORDER [EDIT] key until the screen shown at the right appears.

#### [Mouse operation]

M button → RECORDER EDIT button → TR Edit tab



#### [Screen functions]

##### ① TRACK menu

##### ② PART menu

##### ③ REGION menu

Select one of the following three units of data that you wish to edit.

##### ● Track

Edit the audio data of the entire currently selected track (1–16).

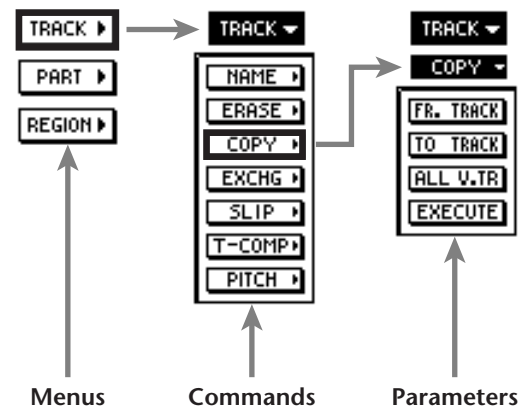
##### ● Part

Within the currently selected track, edit the specified area of audio data.

##### ● Region

Edit a piece of continuous audio data that was recorded in a single operation.

When you move the cursor to the desired menu and press the [ENTER] key, a list of buttons will appear, allowing you to select an editing command (center column in the illustration at right). When you then move the cursor to the desired command and press the [ENTER] key, a list of buttons for setting the parameters of that command will appear (right column in the illustration at right).





For details on the commands and parameters that can be selected from the TRACK/PART/REGION menus, refer to page 101.



If you move the cursor to the command whose button is highlighted and press the [ENTER] key, you will return to the command list. If you move the cursor to the menu highlighted at the top of the list and press the [ENTER] key, you will return to the first menu.

④ **Pairing**

By moving the cursor to this column and pressing the [ENTER] key, you can set/defeat pairing for adjacent odd-numbered → even-numbered tracks. Paired tracks are indicated by a “” symbol, and unpaired tracks by a “” symbol. When editing tracks or parts, both tracks of a pair will be selected for editing.

⑤ **T (track)**

This column shows the track numbers 1–16.

⑥ **NAME**

This column shows the name of the virtual track currently selected for each track 1–16. Tracks that have already been recorded are assigned a default name of “V. Tr x-y” (x=track number 1–16, y=virtual track number 1–8). Tracks in which nothing has been recorded will be displayed as “-NO REC-”.



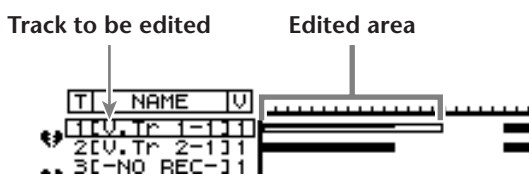
A name of up to 16 characters can be assigned to a virtual track, but this column will show only the first eight characters.

⑦ **V (virtual track)**

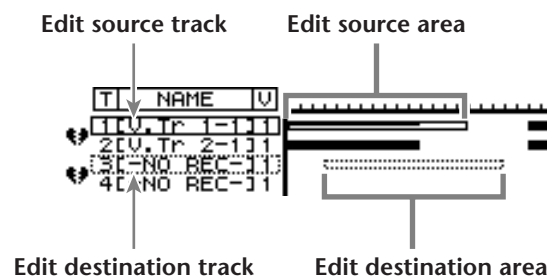
This shows the virtual track number (1–8) that is currently selected for each track 1–16. Virtual track numbers can be changed in the TRACK screen V. Track page.

⑧ **Track view**

In this area, the regions included in each track are displayed as a bar graph. The vertical line in the track view area indicates the location at which the area for editing has been set. The symbols displayed at the bottom of the track view area indicate locate points and markers. While editing, the track and area selected for editing will be displayed as follows.



When selecting the edit source and edit destination tracks, as when copying or moving audio data, the display will be as follows.



⑨ **Parameter settings**

In this area you can set the necessary parameters for executing the edit command.



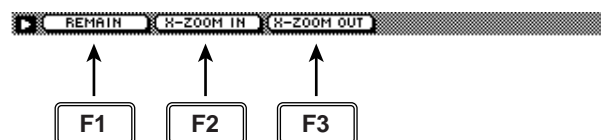
For the track editing procedure, refer to Operation Guide “Chapter 9. Track/virtual track operations.”



The keys of the transport section will have no effect while the TR Edit page is displayed.

■ **Additional functions in the TR Edit page**

In the TR Edit page you can press the [SHIFT] key to assign the following additional functions to the [F1]–[F3] keys.



- **[F1] (REMAIN) key**  
The level meter/counter and the counter area of the display will show the remaining time available for recording. When you press the [SHIFT] key + [F1] (REMAIN) key once again, the usual counter display will reappear.
- **[F2] (X-ZOOM IN) key**  
Each time you press the [SHIFT] key + [F2] (X-ZOOM IN) key, the track view ⑧ will zoom-in on the time axis in three levels.
- **[F3] (X-ZOOM OUT) key**  
Each time you press the [SHIFT] key + [F3] (X-ZOOM OUT) key, the track view ⑧ will zoom-out on the time axis in three levels.

## ■ TRACK menu commands and parameters

The TRACK menu allows you to select a track (or virtual track) and edit all of the audio data of the track together.



*In the TRACK menu, tracks containing no audio data cannot be selected for editing.*

The commands that can be selected in the TRACK menu and their parameters are listed below.

### ● NAME (track name)

Edit the name of an already-recorded track.

- **TRACK**

Select the track whose name you wish to edit.

- **NAME**

Access the NAME EDIT popup window, and input the new name. Move the cursor to the OK button of the NAME EDIT popup window, and press the [ENTER] key to finalize the new name.

### ● ERASE

Erase the audio data of a track. When you execute the Erase command, the track name will return to the “-NO REC-” display.

- **TRACK**

Select the track that you wish to erase. For the Erase command, you can specify all tracks as the subject of the operation. To do so, rotate the [DATA/JOG] dial all the way clockwise when setting the TRACK parameter, to make the selection read “AL-C” (ALL-CURRENT). With this setting, all virtual tracks currently selected for tracks 1–16 will be selected for the operation.

- **ALL V.TR (all virtual tracks)**

Select whether all virtual tracks included in the corresponding track(s) will be erased (YES) or whether only the currently selected virtual track will be erased (NO).

- **EXECUTE**

Execute the command.

### ● COPY

Copy the audio data of a track to another track.

- **FR.TRACK (from track)**

Select the copy source track.

- **TO TRACK**

Select the copy destination track.

- **ALL V.TR (all virtual tracks)**

Select whether all virtual tracks included in the corresponding track(s) will be copied (YES) or whether only the currently selected virtual track will be copied (NO).

- **EXECUTE**

Execute the command.



*If you selected one track of a pair of tracks as the copy destination, the same content will be copied to both of the paired tracks.*

### ● EXCHG (exchange)

Exchange the audio data of two tracks.

- **FR. TRACK (from track)**

- **TO TRACK**

Select the two tracks that will be exchanged. For TO TRACK, it is also possible to select an unrecorded track.

- **ALL V.TR (all virtual tracks)**

Select whether all virtual tracks included in the two tracks will be exchanged (YES) or whether only the currently selected virtual tracks will be exchanged (NO).

- **EXECUTE**

Execute the command.

### ● SLIP

Shift the audio data of the entire track forward or backward.

- **TRACK**

Select the track that you wish to shift forward or backward. For the Slip command, you can specify all tracks as the subject of the operation. To do so, rotate the [DATA/JOG] dial all the way clockwise when setting the TRACK parameter, to make the selection read “AL-C” (ALL-CURRENT). With this setting, all virtual tracks currently selected for tracks 1–16 will be selected for the operation.

- **ALL V.TR (all virtual tracks)**

Select whether all virtual tracks included in the corresponding track(s) will be moved (YES) or whether only the currently selected virtual track will be moved (NO).

- **SLIP**

Specify the time by which the data will be shifted (range: maximum of  $\pm 5$  hours).

- **EXECUTE**

Execute the command.

### ● T-COMP (time compression/expansion)

Compress or expand the length of the track in a range of 50%–200% without affecting the pitch. After this command is executed, all regions included in the track will be combined into a single region.

- **TRACK**

Select the track that you wish to compress or expand.

- **RATIO**

Specify the compression/expansion ratio in units of 0.01% (range: 50–200%).

- **EXECUTE**

Execute the command.

● **PITCH (pitch change)**

Modify the pitch of the entire track without changing the length of the audio. After this command is executed, all regions included in the track will be combined into a single region.

● **TRACK**

Select the track whose pitch you wish to modify.

● **PITCH**

Adjust the amount of pitch change in semitone units (range: ±12 semitones).

● **FINE**

Adjust the amount of pitch change in one-cent units (range: ±50 cents).



*Executing the T-COMP or PITCH commands will require more processing time than the actual length of the audio. Also, it is not possible to cancel the command after it has been executed.*

● **EXECUTE**

Execute the command.



*Immediately after executing an editing command of the TRACK menu (except for the NAME command), you can press the [UNDO] key to return the data to its previous condition.*

■ **PART menu commands and parameters**

The PART menu allows you to specify an area (“part”) of the selected track, and execute an editing command.



*An area that contains no audio data cannot be specified as a part.*

The commands that can be selected in the PART menu and their parameters are listed below.

● **ERASE**

Erase the audio data from the selected part. If all audio data in a track is erased, the track name will return to the “-NO REC-” display.

● **TRACK**

Select the track from which you wish to erase data. For the Erase command, you can specify all tracks as the subject of the operation. To do so, rotate the [DATA/JOG] dial all the way clockwise when setting the TRACK parameter, to make the selection read “AL-C” (ALL-CURRENT). With this setting, the START→END portion of the virtual tracks currently selected for tracks 1–16 will be selected for the operation.

● **ALL V.TR (all virtual tracks)**

Select whether data will be erased from all virtual tracks included in the selected track(s) (YES) or only from the currently selected virtual track (NO).

● **START**

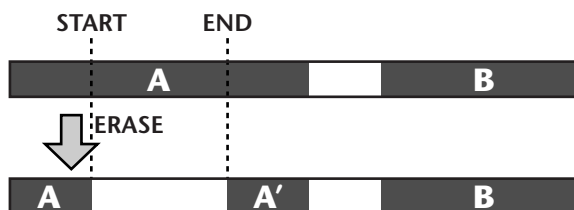
Specify the starting location of the part to be erased.

● **END**

Specify the ending location of the part to be erased.

● **EXECUTE**

Execute the command.



● **DELETE**

Delete the audio data from the selected part. Subsequent audio data will be moved forward by the length of the deleted part.

● **TRACK**

Select the track from which you wish to delete data. For the Delete command, you can specify all tracks as the subject of the operation. To do so, rotate the [DATA/JOG] dial all the way clockwise when setting the TRACK parameter, to make the selection read “AL-C” (ALL-CURRENT). With this setting, the START→END range of the virtual tracks currently selected for tracks 1–16 will be selected for the operation.

● **ALL V.TR (all virtual tracks)**

Select whether data will be deleted from all virtual tracks included in the selected track(s) (YES) or only from the currently selected virtual track (NO).

● **START**

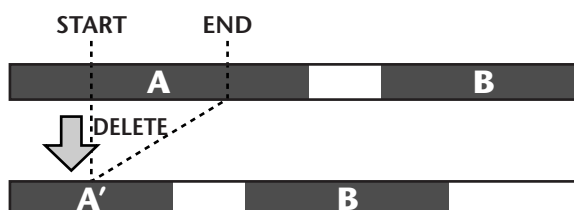
Specify the starting location of the part to be deleted.

● **END**

Specify the ending location of the part to be deleted.

● **EXECUTE**

Execute the command.





● **COPY**

Copy the audio data of the selected part to the specified location of the specified track.

● **FR. TRACK (from track)**

Select the copy source track.

● **FR. START (from start)**

Specify the starting location of the copy source part.

● **FR. END (from end)**

Specify the ending location of the copy source part.

● **ALL V.TR (all virtual tracks)**

Select whether all virtual tracks included in the corresponding track(s) will be copied (YES) or whether only the currently selected virtual track will be copied (NO).

● **TO TRACK**

Select the copy destination track.

● **TO START**

Specify the starting location of the copy destination.

● **TIMES**

Specify the number of times (1–99) that the data will be copied.

● **INTERVAL**

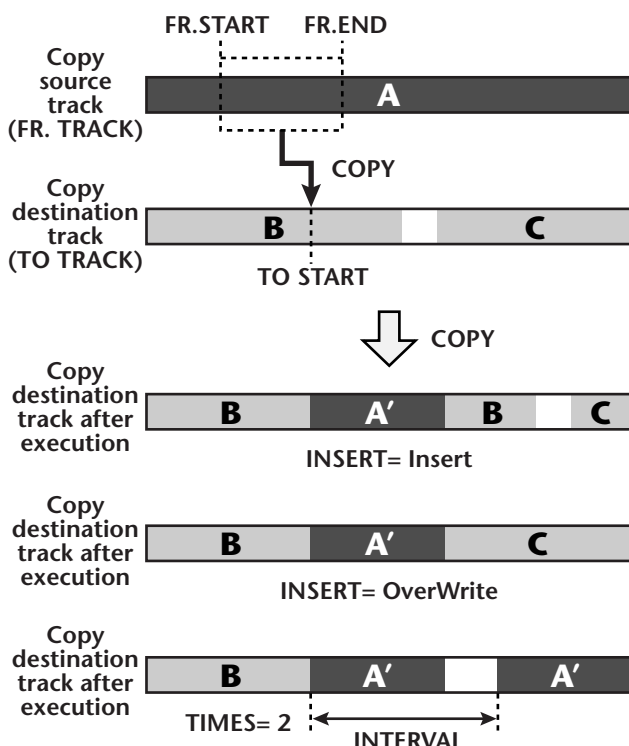
When copying multiple times, specify the spacing of the copy destination starting locations.

● **INSERT**

Specify whether the copied audio data will be inserted (Insert) or overwritten (OverWrite) in the copy destination track.

● **EXECUTE**

Execute the command.



● **MOVE**

Move the audio data of the selected part to the specified location of the specified track. At this time, the move source audio data will be erased.

● **FR. TRACK (from track)**

Select the move source track.

● **FR. START (from start)**

Specify the starting location of the move source part.

● **FR. END (from end)**

Specify the ending location of the move source part.

● **ALL V.TR (all virtual tracks)**

Select whether all virtual tracks included in the corresponding track(s) will be moved (YES) or whether only the currently selected virtual track will be moved (NO).

● **TO TRACK**

Select the move destination track.

● **TO START**

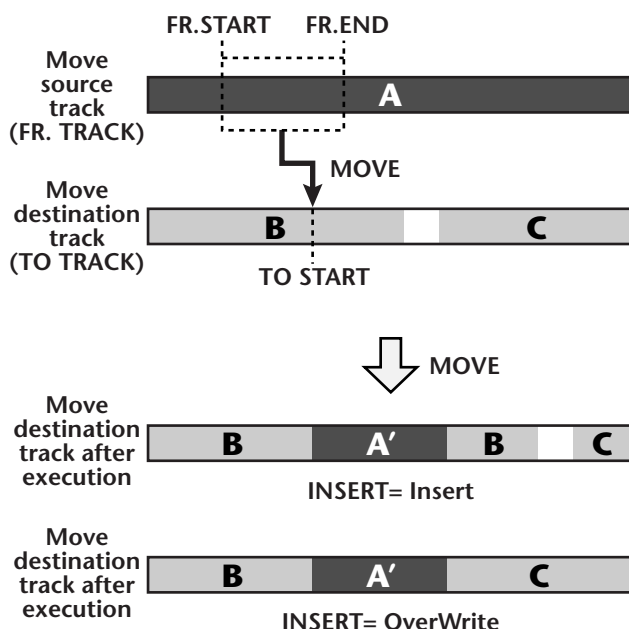
Specify the starting location of the move destination.

● **INSERT**

Specify whether the moved audio data will be inserted (Insert) or overwritten (OverWrite) in the move destination track.

● **EXECUTE**

Execute the command.



● **INSERT**

Insert a length of silence into the selected part. Subsequent audio data will be moved backward by the length of the inserted silence.

● **TRACK**

Select the track into which you wish to insert silence. For the Insert command, you can specify all tracks as the subject of the operation. To do so, rotate the [DATA/JOG] dial all the way clockwise when setting the TRACK parameter, to make the selection read "AL-C" (ALL-CURRENT). With this setting, the START→END portion of the virtual tracks currently selected for tracks 1–16 will be selected for the operation.

● **START**

Specify the starting location of the part into which silence will be inserted.

● **END**

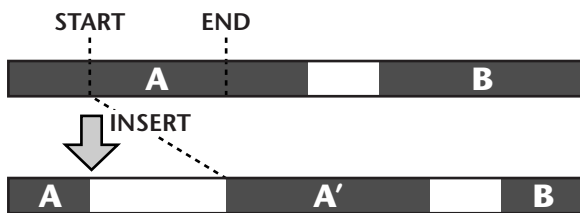
Specify the ending location of the part into which silence will be inserted.

● **ALL V.TR (all virtual tracks)**

Select whether silence will be inserted into all virtual tracks included in the selected track(s) (YES) or only into the currently selected virtual track (NO).

● **EXECUTE**

Execute the command.



● **T-COMP (time compression/expansion)**

Compress or expand the length of the selected part in a range of 50%–200% without affecting the pitch.

● **TRACK**

Select the track that you wish to compress/expand.

● **START**

Specify the starting location of the part that you wish to compress/expand.

● **END**

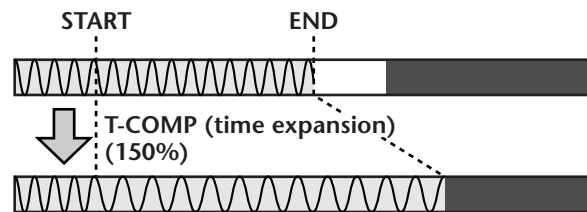
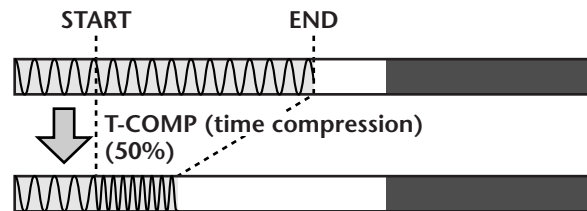
Specify the ending location of the part that you wish to compress/expand.

● **RATIO**

Specify the compression/expansion ratio in units of 0.01% (range: 50–200%).

● **EXECUTE**

Execute the command.





## ● PITCH (pitch change)

Modify the pitch of the selected part without changing the length of the audio.

### ● TRACK

Select the track whose pitch you wish to modify.

### ● START

Specify the starting location of the part whose pitch you wish to modify.

### ● END

Specify the ending location of the part whose pitch you wish to modify.

### ● PITCH

Adjust the amount of pitch change in semitone units (range:  $\pm 12$  semitones).

### ● FINE

Adjust the amount of pitch change in one-cent units (range:  $\pm 50$  cents).

### ● EXECUTE

Execute the command.



*Immediately after executing any editing command of the PART menu you can press the [UNDO] key to return the data to its previous condition.*



*Executing the T-COMP or PITCH commands will require more processing time than the actual length of the audio. Also, it is not possible to cancel the command after it has been executed.*

## ■ REGION menu commands and parameters

In the REGION menu you can specify a region (a continuous piece of audio data that was recorded in a single operation) in the selected track, and execute an editing command.



*For the commands of the REGION menu, it is not possible to select only part of the region for editing. If you wish to do this, you must either use the PART menu, or use the DIVIDE command to divide the region.*

The commands that can be selected in the REGION menu and their parameters are listed below.

### ● NAME

Modify the name of a region.

#### ● REGION

Select the region whose name you wish to modify.

#### ● NAME

Access the NAME EDIT popup window, and input the new name. Move the cursor to the OK button of the NAME EDIT popup window, and press the [ENTER] key to finalize the new name.

### ● ERASE

Erase the selected region. If all regions are erased from a track, the track name will return to the “-NO REC-” display.

#### ● REGION

Select the region that will be erased.

#### ● EXECUTE

Execute the command.

### ● DELETE

Delete the selected region. Subsequent audio data will be moved forward by the length of the deleted region.

#### ● REGION

Select the region that will be deleted.

#### ● EXECUTE

Execute the command.

### ● COPY

Copy the selected region to the specified location of the specified track.

#### ● REGION

Select the region that you wish to copy.

#### ● TO TRACK

Select the copy destination track.

#### ● TO START

Specify the starting location of the copy destination.

#### ● TIMES

Specify the number of times (1–99) that the data will be copied.

#### ● INTERVAL

When copying multiple times, specify the spacing of the copy destination starting locations.

#### ● INSERT

Specify whether the copied data will be inserted (Insert) or overwritten (OverWrite) in the copy destination track.

#### ● EXECUTE

Execute the command.

### ● MOVE

Move the selected region to the specified location of the specified track. At this time, the move source region will be erased.

#### ● REGION

Select the region that you wish to move.

#### ● TO TRACK

Select the move destination track.

#### ● TO START

Specify the starting location of the move destination.

- **INSERT**  
Specify whether the moved audio data will be inserted (Insert) or overwritten (OverWrite) in the move destination track.
- **EXECUTE**  
Execute the command.
- **DIVIDE**  
Divide the selected region into two regions at the specified point.
  - **REGION**  
Select the region that you wish to divide.
  - **DIVIDE**  
Specify the location at which the region will be divided.
  - **EXECUTE**  
Execute the command.
- **TRIM IN**  
Trim the starting location of the selected region toward the end of the song in units of a sample.
  - **REGION**  
Select the region that you wish to trim.
  - **TRIM IN**  
Specify the amount of trimming in units of a sample.
  - **EXECUTE**  
Execute the command.
- **TRIM OUT**  
Trim the ending location of the selected region toward the beginning of the song in units of a sample.
  - **REGION**  
Select the region that you wish to trim.
  - **TRIM OUT**  
Specify the amount of trimming in units of a sample.
  - **EXECUTE**  
Execute the command.
- **T-COMP (time compression/expansion)**  
Compress or expand the length of the selected region in a range of 50%–200% without affecting the pitch.
  - **REGION**  
Select the region that you wish to compress or expand.
  - **RATIO**  
Specify the compression/expansion ratio in units of 0.01% (range: 50–200%).
  - **EXECUTE**  
Execute the command.
- **PITCH (pitch change)**  
Modify the pitch of the selected region without changing the length of the audio data.
  - **REGION**  
Select the region whose pitch you wish to modify.
  - **PITCH**  
Adjust the amount of pitch change in semitone units (range:  $\pm 12$  semitones).
  - **FINE**  
Adjust the amount of pitch change in one-cent units (range:  $\pm 50$  cents).
  - **EXECUTE**  
Execute the command.



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*Immediately after executing an editing command of the REGION menu (except for the NAME command), you can press the [UNDO] key to return the data to its previous condition.*



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*Executing the T-COMP or PITCH commands will require more processing time than the actual length of the audio. Also, it is not possible to cancel the command after it has been executed.*

# V.TR Edit page

## Edit virtual tracks

### [Function]

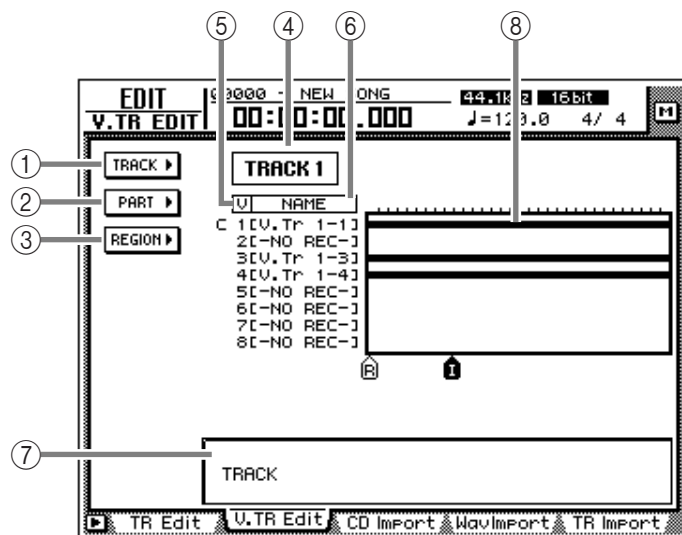
Edit the virtual tracks 1–8 included in the specified track.

### [Key operation]

- [EDIT] key → [F2] (V. TR Edit) key
- Repeatedly press the RECORDER [EDIT] key until the screen shown at the right appears.

### [Mouse operation]

M button → RECORDER EDIT button → V. TR Edit tab



### [Screen functions]

#### ① TRACK menu

#### ② PART menu

#### ③ REGION menu

These are the same as the TR Edit page TRACK menu, PART menu, and REGION menu, with the difference that the editing will apply to virtual tracks 1–8 of the same track. For details refer to the explanation that begins on page 99. For the commands that can be selected in each menu and their parameters, refer to page 99 and following.



*In the V. TR Edit page it is not possible to select all tracks for editing.*

#### ④ Track number

Move the cursor to this area and use the [DATA/JOG] dial to select the track number that contains the virtual track you wish to edit.

#### ⑤ V (virtual track number)

This column shows the virtual track numbers 1–8. The virtual track currently used by the track ③ is indicated by a "C" (Current) symbol at the left of this column.

#### ⑥ NAME

This column shows the names of virtual tracks 1–8. Virtual tracks that have already been recorded are assigned a default name of "V.Tr x-y" (x=track number 1–16, y=virtual track number 1–8). Virtual tracks on which nothing has been recorded are displayed as "-NO REC-".



*A name of up to 16 characters can be assigned to a virtual track, but only the first eight characters will be displayed in this column.*

#### ⑦ Track view

In this area, the regions included in each virtual track are displayed as a bar graph. With the exception that virtual tracks 1–8 of the same track are displayed simultaneously, this display is the same as in the TR Edit page.

#### ⑧ Parameter area

In this area you can set the required parameters for executing the edit command.



*For the track editing procedure, refer to Operation Guide "Chapter 9. Track/virtual track operations."*

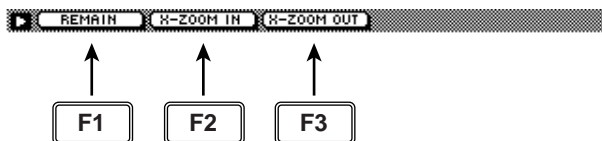


*The keys of the transport section will have no effect while the V. TR Edit page is displayed.*

## ■ Additional functions in the V.TR

### Edit page

In the V.TR Edit page, you can press the [SHIFT] key to assign the following additional functions to the [F1]–[F3] keys.



- [F1] (REMAIN) key
- [F2] (X-ZOOM IN) key
- [F3] (X-ZOOM OUT) key

These are the same as the additional functions of the TR Edit page.

# CD Import page

## Import CD-DA to an audio track

### [Function]

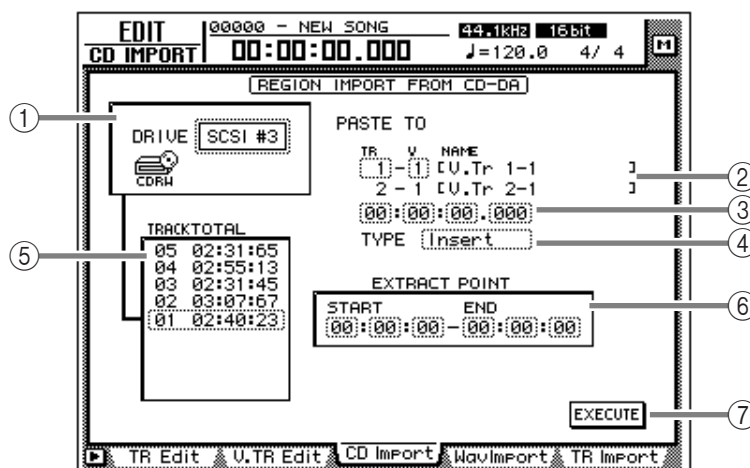
Import CD-DA (CD audio) data from an audio CD/mixed-mode CD-ROM inserted in the internal or external CD-RW drive, and assign it to the desired audio track.

### [Key operation]

- [EDIT] key → [F3] (CD Import) key
- Repeatedly press the [EDIT] key until the screen shown at the right appears.

### [Mouse operation]

M button → RECORDER EDIT button → CD Import tab



### [Screen functions]

#### ① DRIVE

Move the cursor to this area and rotate the [DATA/JOG] dial to select the internal or external CD-RW drive.

#### ② PASTE TO

Select the track number and virtual track number of the destination track in which the CD-DA data will be placed.



Since the CD-DA audio data is imported in stereo, the track number will always be selected as an odd-numbered/even-numbered pair.

#### ③ Destination point

Specify the point in the track at which the imported CD-DA data will be placed.



The units used to specify this point will change depending on the counter display method (time/units/measures) selected in the SONG screen Setting page. If measure display is selected, "measures" will be the smallest settable unit.

#### ④ TYPE

Select whether the imported CD-DA data will be inserted into the track (Insert) or overwritten (OverWrite). If "Insert" is selected, any subsequent audio data in the import destination track will be moved toward the end of the song by the length of the inserted audio data.

#### ⑤ TRACK/TOTAL

This is the track list of the audio CD/mixed-mode CD-ROM inserted in the CD-RW drive. Move the cursor to this list and rotate the [DATA/JOG] dial to select the import source track.

#### ⑥ EXTRACT POINT

From the track selected in ⑤, specify the area that will be imported in units of "minutes:seconds:frames (1/75 second)." Move the cursor to this area, and use the [DATA/JOG] dial to set START (start point) and END (end point).

#### ⑦ EXECUTE button

This button executes the CD-DA import operation.



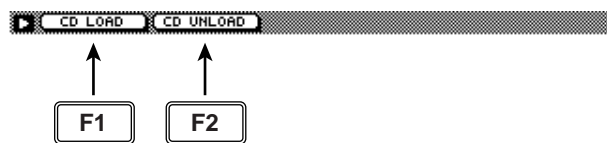
- CD-DA data can be imported only into songs whose sampling frequency is 44.1 kHz. If the current song has a sampling frequency of 48 kHz, a message of “Current Song is 48 (kHz) Fs Type” will appear, and this page cannot be used.
- The keys of the transport section will have no effect while the CD Import page is displayed.



If a “Prohibit CD Import!” message is displayed and the import cannot be executed, access the UTILITY screen Prefer.2 page, and after reading the warning regarding copyright, switch the CD/DAT DIGITAL REC “DISABLE” button to “ENABLE.”

## ■ Additional functions in the CD Import page

In the CD Import page you can press the [SHIFT] key to assign the following additional functions to the [F1]–[F2] keys.



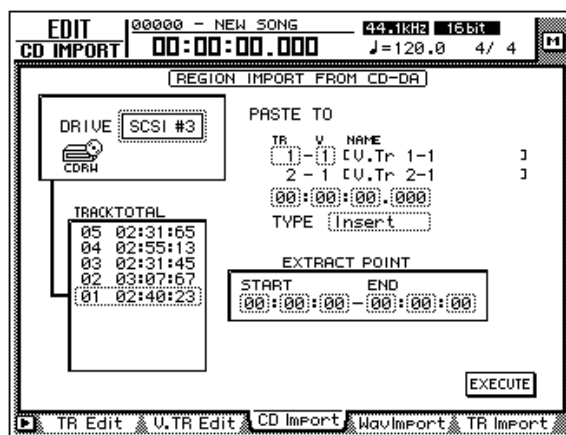
- [F1] (CD LOAD) key  
Close the tray of the CD-RW drive.
- [F2] (CD UNLOAD) key  
Eject the tray of the CD-RW drive.

## ● Importing CD-DA data into a track

### [Procedure]

1. Access the EDIT screen CD Import page, and press the [SHIFT] key + [F2] (CD UNLOAD) key.  
The CD-RW drive tray will be ejected.
2. Place the audio CD or mixed-mode CD-ROM on the tray, and press the [SHIFT] key + [F1] (CD LOAD) key.  
The CD-RW drive tray will close, and the disc will be inserted.
3. Move the cursor to the DRIVE area, use the [DATA/JOG] dial to select the SCSI ID of the CD-RW drive, and press the [ENTER] key.

The AW4416 will detect the inserted CD, and a screen like the following will appear.



4. Move the cursor to PASTE TO, and use the [DATA/JOG] dial to specify the track number and virtual track number of the track in which the CD-DA data will be placed.  
In this page, identically-numbered virtual tracks of adjacent odd-numbered/even-numbered tracks will be selected (e.g., 1–1/2–1, 1–2/2–2), and the L/R channels of the CD-DA data will be assigned to these tracks.
5. Move the cursor to the destination point area, and use the [DATA/JOG] dial to specify the location in the track where the CD-DA audio data will be placed.
6. Move the cursor to the TYPE area. Select “Insert” if you want the CD-DA audio data to be inserted into the track, or “Over-Write” if you want the data to be overwritten onto the track.
7. To execute the Import operation, move the cursor to the EXECUTE button and press the [ENTER] key.  
A message will ask you to confirm.
8. Move the cursor to the OK button and press the [ENTER] key.  
The CD-DA import will be executed.



Execution of this operation will require more time than the actual data length. Also, execution of the operation cannot be halted once it has begun.

# WavImport page

## Import a WAV file to an audio track

### [Function]

Import a WAV format audio file from a CD-ROM or CD-ROM/MO disk inserted in the internal CD-RW drive or an external SCSI device, and assign it to a track.

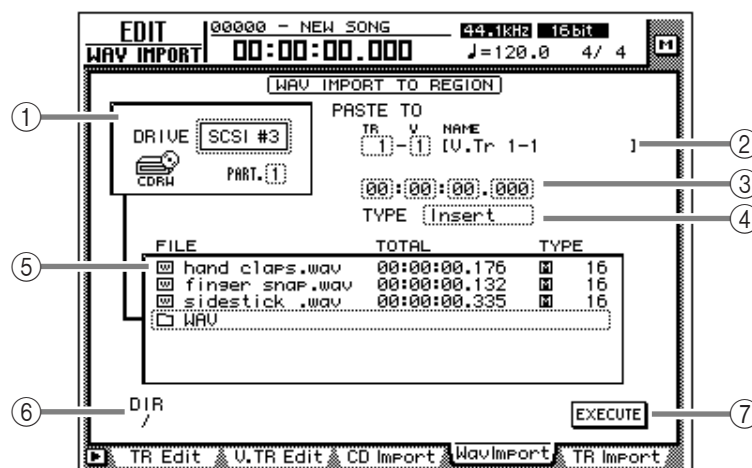
### [Key operation]

- [EDIT] key → [F4] (WavImport) key
- Repeatedly press the RECORDER [EDIT] key until the screen shown at the right appears.

### [Mouse operation]

M button → RECORDER EDIT button → WavImport tab

### [Screen functions]



#### ① DRIVE

Move the cursor to this area and rotate the [DATA]JOG dial to select the internal CD-RW drive or external SCSI device.

#### ② PASTE TO

Select the track number (1–16 and virtual track number (1–8) of the track into which you wish to import the WAV file. The NAME field shows the track name of the selected track.

If a stereo WAV file is selected, two adjacent odd-numbered → even-numbered tracks will be displayed.

#### ③ Destination point

Specify the point in the track at which the WAV file will be placed.



The units used to specify this point will change depending on the counter display method (time/units/measures) selected in the SONG screen Setting page. If measure display is selected, “measures” will be the smallest settable unit.

#### ④ TYPE

Select whether the imported WAV file will be inserted into the track (Insert) or overwritten (OverWrite). If “Insert” is selected, any subsequent audio data in the import destination track will be moved toward the end of the song by the length of the inserted WAV file.

#### ⑤ File list

This shows a list of the WAV files on the internal CD-RW drive or external SCSI device. This list contains the following information.

##### ● FILE

The file name/directory name is displayed. icons indicate WAV files, and files indicate directories.

##### ● TOTAL

The playback time of the WAV file is displayed in hours/minutes/seconds/milliseconds.

##### ● TYPE

The stereo () /monaural () status of the WAV file and its quantization (word length) is displayed.



The AW4416 can recognize only WAV files that have the same sampling frequency as the current song, and have a filename extension of “.WAV” following their name. Other files will not be displayed in the list.

#### ⑥ DIR (directory)

The “/” symbol and the directory name indicate the directory in which the list shown in ⑤ is located. For example this will indicate “/” if you are in the highest level (root directory), or “/WAV/” if you are in a directory named WAV located one level lower.



⑦ EXECUTE button

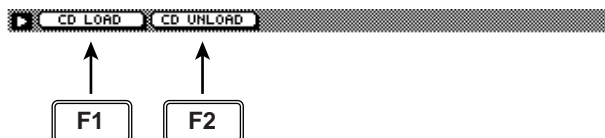
This button executes the WAV file import.



The keys of the transport section will have no effect when the WavImport page is displayed.

■ Additional functions in the Wav Import page

In the Wav Import page you can press the [SHIFT] key to assign the following additional functions to the [F1]–[F2] keys.

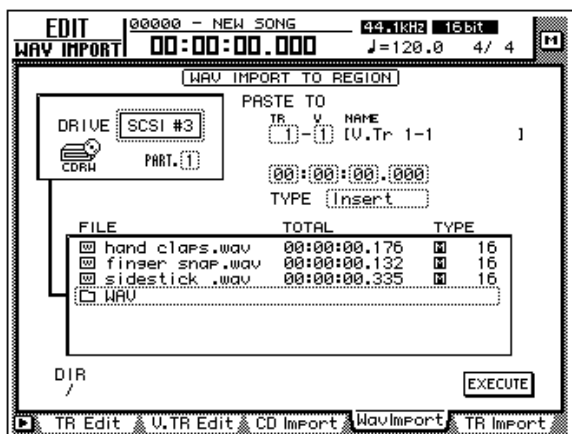


- **[F1] (CD LOAD) key**  
Close the tray of the CD-RW drive.
- **[F2] (CD UNLOAD) key**  
Eject the tray of the CD-RW drive.

● Importing a WAV file to a track

[Procedure]

1. Insert the media containing the WAV file into an external SCSI device (e.g., MO drive) or the internal CD-RW drive.
2. Access the EDIT screen WavImport page.
3. Move the cursor to the DRIVE area, use the [DATA/JOG] dial to select the SCSI ID of the drive, and press the [ENTER] key. The AW4416 will recognize the WAV files on the inserted media (CD-ROM, MO disk etc.), and will display a list like the following.



4. Move the cursor to the file list, and use the [DATA/JOG] dial to select the WAV file that you wish to import.

The file enclosed by the dotted lines in the center of the list is selected for the operation.



- . indicates the current directory, and
- .. indicates the directory above. To return to the next highest directory, move the cursor to □ .. and press the [ENTER] key.

5. Move the cursor to the PASTE TO area, and use the [DATA/JOG] dial to select the track number (1–16) and virtual track number (1–8) of the track in which the WAV file will be placed.



If you select a stereo WAV file in step 4, identically-numbered virtual tracks for a pair of adjacent odd-numbered → even-numbered tracks (e.g., 1–1/2–1, 1–2/2–2) will be selected, and the L/R channels of the WAV file will be assigned to these tracks.

6. Move the cursor to the location point area below PASTE TO, and use the [DATA/JOG] dial to specify the location in the track where the WAV file will be placed.
7. Set the TYPE parameter to “Insert” if you wish to insert the WAV file into the track, or to “OverWrite” if you wish to overwrite the WAV file onto the track.
8. To execute the WAV file import, move the cursor to the EXECUTE button and press the [ENTER] key. A popup window will ask you for confirmation.
9. Move the cursor to the OK button and press the [ENTER] key. The WAV file import will be executed.



Execution of this operation requires a longer time than the actual time length of the data. Also, processing cannot be cancelled once the operation has been executed.



# TR Import page

## Import a track from an existing song

### [Function]

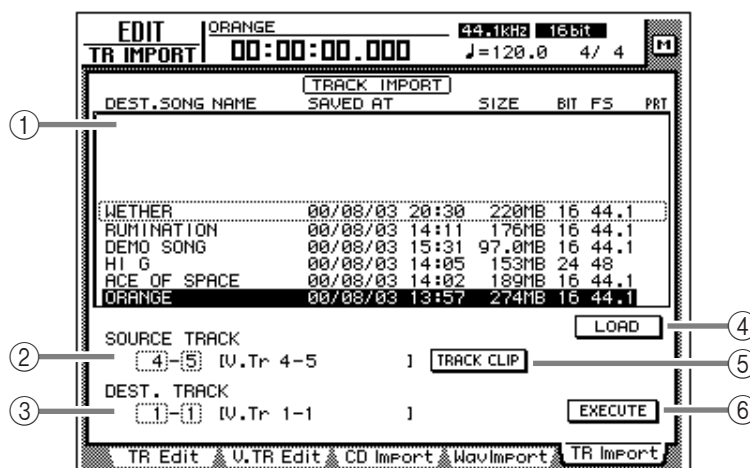
Import a track from a song on the hard disk into the desired track of the current song.

### [Key operation]

- [EDIT] key → [F5] (TR Import) key
- Repeatedly press the RECORDER [EDIT] key until the screen shown at the right appears.

### [Mouse operation]

M button → RECORDER EDIT button → TR Import tab



### [Screen functions]

#### ① Song list

This lists the songs that are saved on the internal hard disk. The current song will be highlighted in the list. Move the cursor to this list, and use the [DATA/JOG] dial to select the import source song.

The list shows the following information.

- **DEST. SONG NAME..** Song name
- **SAVED AT.....** Date and time at which the song was last saved
- **SIZE.....** Song data size (including audio data)
- **BIT/FS .....** Song quantization and sampling rate
- **PRT .....** Song protect on/off



Only a song with the same quantization and sampling rate as the current song can be selected as the import source. The current song cannot be selected.



The current song will be displayed with the most recently saved content.

#### ② SOURCE TRACK

From the song selected in the song list ①, select the track number (1–16) and virtual track number (1–8) of the track that you wish to import. The name of the selected track is displayed at the right.



- This parameter will be valid only after you have used the **LOAD button ④** to load the track information for the selected song.
- The track name is not included in the data that is imported.

#### ③ DEST. TRACK (destination track)

Specify the track number (1–16) and virtual track number (1–8) for the import destination track. The name of the selected track is displayed at the right.



This display will appear only after you have used the **TRACK CLIP button ⑤** to register the desired track from the import source song.

#### ④ LOAD button

When you move the cursor to this button and press the [ENTER] key, track information for the song selected in the track list will be loaded.

#### ⑤ TRACK CLIP button

When you move the cursor to this button and press the [ENTER] key, the track selected in **SOURCE TRACK ③** will be registered as the import source.



This button will be valid only after you have used the **LOAD button ④** to load the track information for the song.

⑥ EXECUTE button

This button executes the track import operation. For the procedure of importing a track, refer to “Importing a track from an existing song,” below.



- This button will be valid only after you have used the TRACK CLIP button ⑤ to register the import source track.
- The keys of the transport section will have no effect in the TR Import page.

● Importing a track from an existing song

[Procedure]

1. Access the EDIT screen TR Import page.
2. Move the cursor to the upper part of the display, and use the [DATA/JOG] dial to select the song from which a track will be imported.
3. Move the cursor to the LOAD button and press the [ENTER] key.  
A confirmation popup window will appear.
4. Move the cursor to the OK button and press the [ENTER] key.  
The track information will be read from the selected song, and the display will change as follows.

```
SOURCE TRACK
  [4]-[5] W.Tr 4-5      } [TRACK CLIP]
DEST. TRACK
  [0]-[0]              }
```

5. Move the cursor to the SOURCE TRACK field, and select the track number (1–16) and virtual track number (1–8) of the track that you wish to import.
6. Move the cursor to the TRACK CLIP button and press the [ENTER] key.  
A confirmation popup window will appear.
7. Move the cursor to the OK button and press the [ENTER] key.

The track selected in the SOURCE TRACK field will be selected as the import source, and the display will change as follows.

```
SOURCE TRACK
  [4]-[5] W.Tr 4-5      } [TRACK CLIP]
DEST. TRACK
  [0]-[0] W.Tr 1-1      }
```



When you use the TRACK CLIP button to register the import source track, it will no longer be possible to change the track in the SOURCE TRACK field. If you wish to change the import source track, move the cursor to the song list in the upper part of the display, and rotate the [DATA/JOG] dial. In the confirmation popup window that appears, select the OK button and you will return to the state of step 2.

8. Move the cursor to the DEST. TRACK field, and specify the track number (1–16) and virtual track number (1–8) of the import destination track.



If you select an already-recorded virtual track as the import destination, all the contents of the corresponding track will be erased and replaced by the contents of the imported track.

9. Move the cursor to the EXECUTE button and press the [ENTER] key.  
A confirmation popup window will appear.
10. Move the cursor to the OK button and press the [ENTER] key.  
The track will be imported into the current song.



By pressing the [UNDO] key immediately after you execute the import, you can return the data to the state before importing.

# AUTOMIX screen

## Main page

### Make basic automix settings

#### [Function]

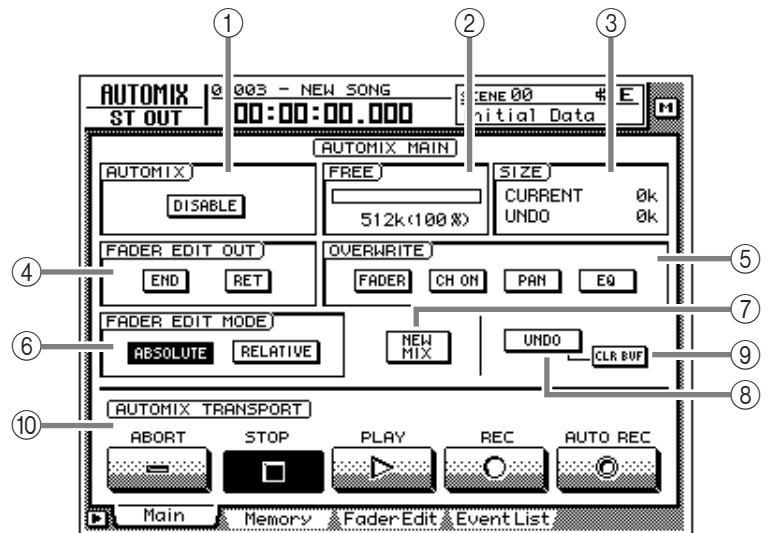
Make basic settings for recording and playing automix.

#### [Key operation]

- [AUTO MIX] key → [F1] (Main) key
- Repeatedly press the [AUTO MIX] key until the screen shown at the right appears.

#### [Mouse operation]

M button → AMIX button → Main tab



#### [Screen functions]

##### ① AUTOMIX

Turn automix on (ENABLE) or off (DISABLE). If this button is set to "ENABLE," automix recording or playback will begin automatically when the song is started.

##### ② FREE

This shows the free area of automix memory in kilobytes and as a percentage.

##### ③ SIZE

This shows the sizes in kilobytes of the current automix and of the undo buffer.



The undo buffer is dedicated memory for automix undo, and contains the automix data prior to the last operation.

##### ④ FADER EDIT OUT

This setting specifies how the fader and other parameter values will change when automix recording ends.

##### ● END

If this button is on, all subsequent recorded events of the same parameter will be erased when you finish editing fader or other parameter data.

##### ● RET

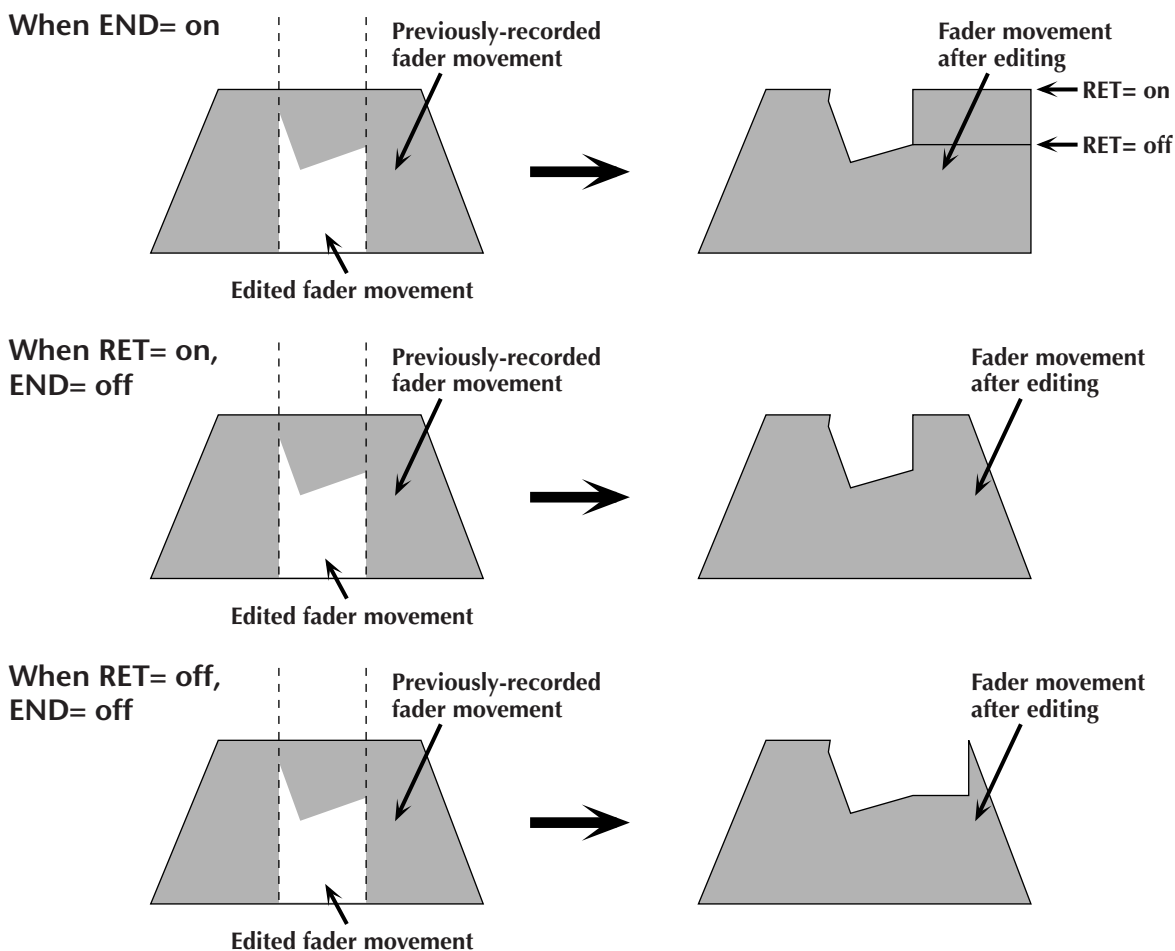
If this button is on, the fader will return to the previously-recorded value when you finish editing fader data. (The time over which it returns to the original value can be set in the Fader Edit page. → P.121)

If this button is off, the value at which fader editing ended will be maintained until the next time the fader changes.



The AW4416 remembers the previously-recorded fader movements even when you are editing fader operations. If you leave the RET button turned on, the fader will automatically return to the previous location when editing ends, which is convenient when you are editing only a portion of the fader operations.

If you want the fader locations at which editing ended to be maintained to the end of the automix, it is convenient to turn on the END button.



⑤ **OVERWRITE**

Switch recording on/off for each parameter. Each button corresponds to the following parameters.

- **FADER**  
Fader operations of each channel
- **CH ON**  
[ON] key operations of each channel
- **PAN**  
Pan operations of each channel
- **EQ**  
EQ operations of each channel

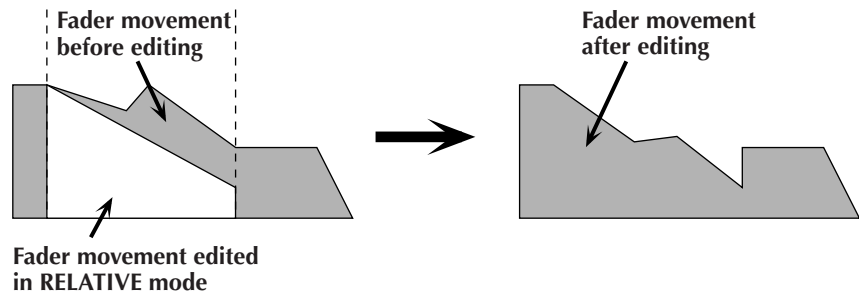
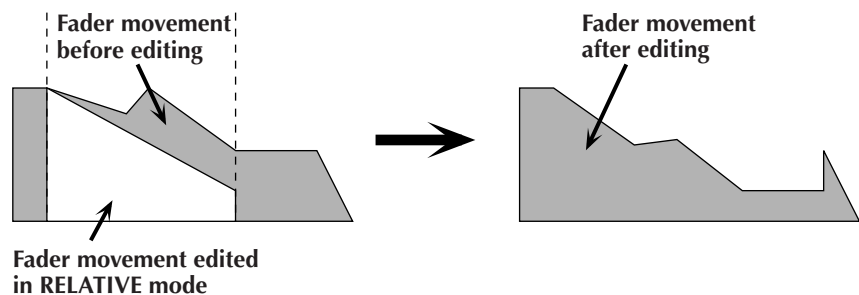
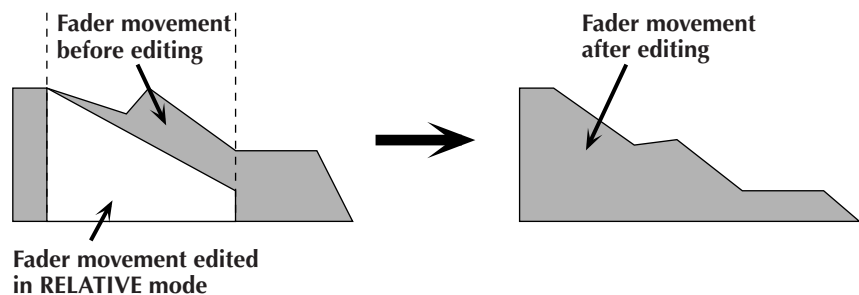
⑥ **FADER EDIT MODE**

Select one of the following two ways in which fader movements recorded in automix will be edited.

- **ABSOLUTE**  
This is the usual mode, in which previously-recorded fader events are erased and the new events recorded.
- **RELATIVE**  
In this mode, the previously-recorded fader operation events are combined with the new events and recorded. This is convenient when you wish to add relative changes to the previously-recorded fader movements.

**Fader Edit Mode= RELATIVE**

RET= on

**Fader Edit Mode= RELATIVE**RET= off  
END= off**Fader Edit Mode= RELATIVE**RET= off  
END= on**⑦ NEW MIX button**

When you move the cursor to this button and press the [ENTER] key, the current automix will be erased, and a new automix will be created.



When a song is in its initial state, there is no current automix. You must first create a new automix before you can operate the automix.

**⑧ UNDO**

When you move the cursor to this button and press the [ENTER] key, the content that was last-recorded in the automix will be erased, returning the automix to its previous state.

**⑨ CLR.BUF (clear buffer) button**

When you move the cursor to this button and press the [ENTER] key, the undo buffer will be erased.



For example if the current automix is too large to be stored in memory, you can try using this button. (However, the data prior to the most recent operation will be lost.)

**⑩ AUTOMIX TRANSPORT**

These buttons control automix recording and playback. By moving the cursor and pressing the [ENTER] key you can perform the corresponding operation. These buttons have the following functions.

**● ABORT**

This button stops automix recording and discards the changes. If you turn on this button while recording automix, a popup window will ask whether you wish to discard the automix.

### ● STOP button

This button stops automix recording or playback. If you turn on this button while recording automix, a popup window will ask whether you wish to update the data.

### ● PLAY button

If the recorder is started with the ENABLE button turned on, this button will automatically be turned on, and automix recording/playback will begin. While automix is playing, you can use this button in conjunction with the REC button to punch-in.



- Automix will not start even if you move the cursor to the on-screen PLAY button and press the [ENTER] key.
- When the REC button is blinking, you can punch-in by moving the cursor to the PLAY button and pressing the [ENTER] key.

### ● REC (record) button

When automix is stopped, turning this button on will cause the button to blink and record-ready mode to be selected. In this state, starting playback on the recorder will cause automix recording to begin, and when recording ends the REC button will also turn off automatically. When automix is playing, this button can be used in conjunction with the PLAY button to punch-in.

### ● AUTO REC button

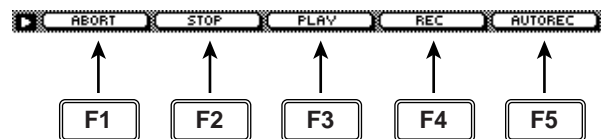
If you turn this button on (lit) and play back the recorder, automix recording will begin. However, this differs from the REC button in that this button will not turn off automatically when recording ends. If you wish to turn it back off, move the cursor to this button and press the [ENTER] key.



*For the procedure of recording and playing automix, refer to Operation Guide "Chapter 14. Automix."*

## ■ Additional functions in the Main page

In the Main page you can press the [SHIFT] key to assign the following functions to the [F1]–[F5] keys.



- **[F1] (ABORT) key**  
Stop automix recording and discard the changes. This is the same function as the ABORT button.
- **[F2] (STOP) key**  
Stop recording or playing automix. This is the same function as the STOP button.
- **[F3] (PLAY) key**  
Execute punch-in when the REC (record) button is blinking. This is the same function as the PLAY button.
- **[F4] (REC) key**  
Record or punch-in automix. This is the same function as the REC (record) button.
- **[F5] (AUTO REC) key**  
Automatically record automix. This is the same function as the AUTO REC (auto record) button.

# Memory page

## Store or recall automix

### [Function]

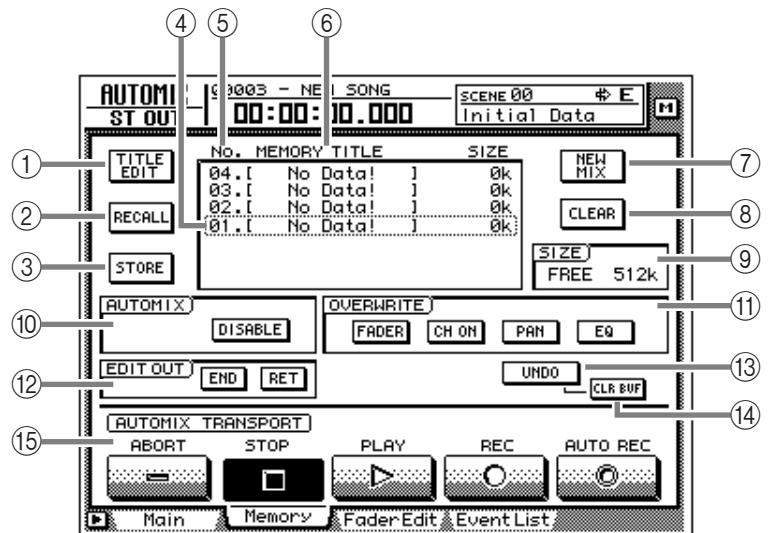
Store or recall automix data to/from memory.

### [Key operation]

- [AUTO MIX] key → [F2] (Memory) key
- Repeatedly press the [AUTO MIX] key until the screen shown at the right appears.

### [Mouse operation]

M button → AMIX button → Memory tab



### [Screen functions]

#### ① TITLE EDIT button

Use this to edit the name (memory title) of an automix stored in memory. When you move the cursor to the TITLE EDIT button and press the [ENTER] key, the TITLE EDIT popup window will appear, allowing you to input a name. A maximum of 16 characters can be input. For details on inputting characters, refer to Operation Guide P.60.

#### ② RECALL button

Recall the currently selected automix from the list.



*If you select an automix number in which nothing has been stored and attempt to recall it, an error message of "CANNOT AUTOMIX RECALL" will appear, and recall will not be possible.*

#### ③ STORE button

This button stores the current automix data into memory. You can select an automix number 1–16 as the store destination.



*When you execute the Store operation, the automix data that had previously been stored in that number will be erased.*

#### ④ Selected memory

Store/recall operations will apply to the automix data enclosed by the dotted line in the memory list. In this page, you can use the [DATA/JOG] dial to select automix data regardless of where the cursor is located.

#### ⑤ No. (number)

This column shows the memory number 1–16.

#### ⑥ MEMORY TITLE

This column shows the names of the automixes stored in memory.



*Automix numbers in which nothing has been stored will be displayed as "No Data!"*

#### ⑦ NEW MIX button

When you move the cursor to this button and press the [ENTER] key, the current automix will be erased, and a new automix will be created.

#### ⑧ CLEAR button

Erase the automix data that is currently selected in the memory list.

#### ⑨ SIZE

This shows the free area of automix memory in kilobytes.

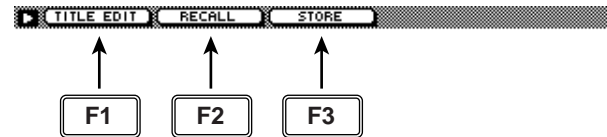


- ⑩ AUTOMIX
- ⑪ OVERWRITE
- ⑫ EDIT OUT
- ⑬ UNDO button
- ⑭ CLR. BUF (clear buffer) button
- ⑮ AUTOMIX TRANSPORT

These are the same functions as described in the Main page. Refer to the explanation on page 115.

## ■ Additional functions in the Memory page

In the Memory page you can press the [SHIFT] key to assign the following functions to the [F1]–[F3] keys.



- **[F1] (TITLE EDIT) key**  
Use this to edit the name (memory title) of automix data saved in memory. This is the same function as the ① TITLE EDIT button.
- **[F2] (RECALL) key**  
Recall the automix that is currently selected by the cursor in the list. This is the same function as the ② RECALL button.
- **[F3] (STORE) key**  
Store the current automix data. This is the same function as the ③ STORE button.



# Fader Edit page

## View fader events as a bar graph

### [Function]

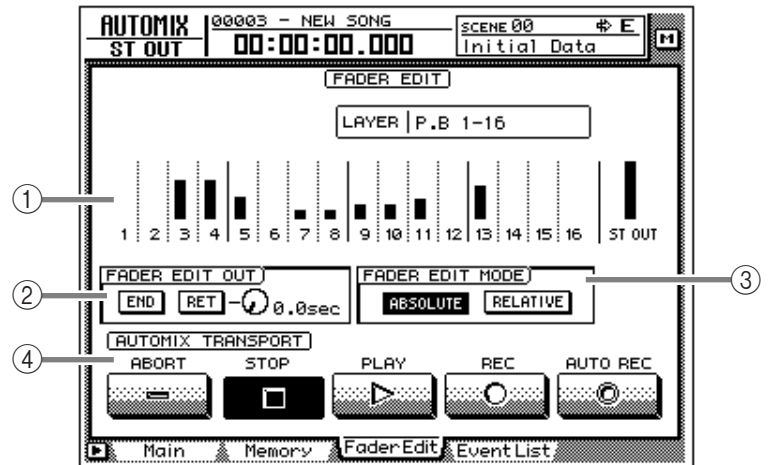
View a bar graph representation of the fader operation events recorded in the automix.

### [Key operation]

- [AUTO MIX] key → [F3] (Fader Edit) key
- Repeatedly press the [AUTO MIX] key until the screen shown at the right appears.

### [Mouse operation]

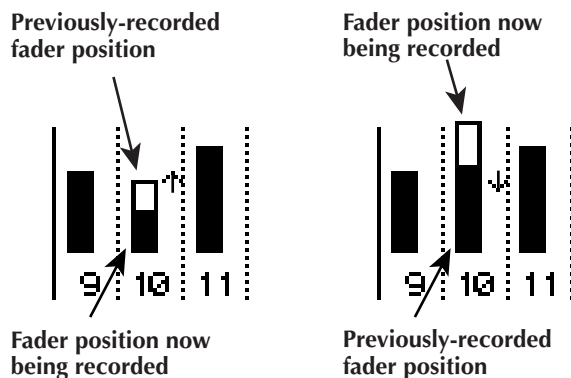
M button → AMIX button → Fader Edit tab



### [Screen functions]

#### ① Bar graph

This shows the fader position of each channel as a bar graph. (Use the keys of the MIXING LAYER section to select the channels that are displayed.) For the fader being edited, both the previously-recorded position and the edited position are displayed, as shown in the following diagram. At this time, the arrow displayed beside the bar graph indicates the direction in which you can move the fader to return it to the previous position.



- (1) If the fader is lower than previously recorded (2) If the fader is higher than previously recorded

#### ② FADER EDIT OUT

These are the same functions as the END/RET buttons of the Main page. Refer to the explanation on page 115. If the RET button is on, the knob located at the right sets the time over

which the faders will return to their original values after fader editing is ended.

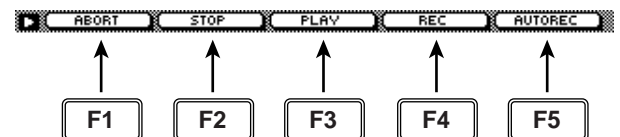
#### ③ FADER EDIT MODE

#### ④ AUTOMIX TRANSPORT

These are the same functions as in the Main page. Refer to the explanation on page 115.

### ■ Additional functions in the Fader Edit page

In the Fader Edit page you can press the [SHIFT] key to assign the following functions to the [F1]–[F5] keys.



- [F1] (ABORT) key
  - [F2] (STOP) key
  - [F3] (PLAY) key
  - [F4] (REC) key
  - [F5] (AUTO REC) key
- These are identical to the additional functions of the Main page.

# Event List page

## Edit events off-line

### [Function]

Perform off-line editing of the scene/library recall, channel on/off, pan, and fade operations recorded in the automix.

### [Key operation]

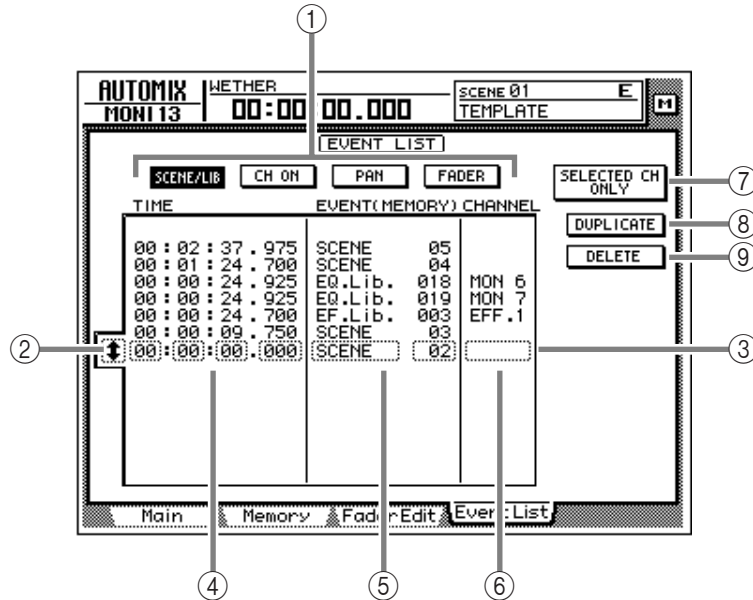
- [AUTO MIX] key → [F4] (Event List) key
- Repeatedly press the [AUTO MIX] key until the screen shown at the right appears.

### [Mouse operation]

M button → AMIX button → Event List tab



*This page cannot be operated while automix is being played or recorded. Also, if automix playback or recording is started when this page is displayed, the display will automatically change to the AUTOMIX screen Main page.*



### [Screen functions]

#### ① Event list select buttons

Of the events recorded in automix, these buttons select the type of automix events that will be displayed in the event list. Move the cursor to one of the four buttons, and press the [ENTER] key to select the type of events. Each button corresponds to the following events.

##### ● SCENE/LIB (scene/library) button

Scene memory and library recall events will be displayed. The following types of events will be displayed.

- **SCENE** ..... Scene memory recall events. The numeric value indicates the scene number.
- **EQ. Lib.** ..... EQ library recall events. The numeric value indicates the EQ library number.
- **DY. Lib.** ..... Dynamics library recall events. The numeric value indicates the dynamics library number.

- **EF. Lib.** ..... Effect library recall events. The numeric value indicates the effect library number.

- **CH. Lib.** ..... Channel library recall events. The numeric value indicates the channel library number.

##### ● CH ON (channel on) button

On/off events of each channel will be displayed.

##### ● PAN button

Pan operation events of each channel will be displayed.

##### ● FADER button

Fader operation events of each channel will be displayed.

#### ② Event selection cursor

Move the cursor to this area and rotate the [DATA/JOG] dial to select the data that you wish to edit.

**③ Selected event**

Editing will apply to the event that is enclosed by a dotted line in the list. Move the cursor to the parameter that you wish to edit, and rotate the [DATA/JOG] dial to edit the value.

**④ TIME**

This area shows the time at which the event is recorded, as hours/minutes/seconds/milliseconds. (The minimum unit is 25 milliseconds.) You can move the cursor to this area and rotate the [DATA/JOG] dial to move the location of the event.



*Regardless of the display method selected in the SONG screen Setting page, the timing in the event list is always displayed as time.*



*If you edit the TIME the events in the list will be re-ordered automatically. This means that the displayed order of the events may change.*

**⑤ EVENT**

This area shows the type of each event. Move the cursor here and rotate the [DATA/JOG] dial to edit the event.

**⑥ CHANNEL**

This area shows the channel of the event. Move the cursor here and rotate the [DATA/JOG] dial to change the channel.

**⑦ SELECTED CH ONLY (selected channel only) button**

If you press a [SEL] key when this button is on, only the events of that channel will be displayed.

**⑧ DUPLICATE button**

When you move the cursor to this button and press the [ENTER] key, a duplicate of the selected event will be created at the same location.

**⑨ DELETE button**

When you move the cursor to this button and press the [ENTER] key, the selected event will be deleted.



*For the procedure of duplicating or deleting an event, refer to Operation Guide "Chapter 14. Automix."*

# SCENE screen

## Scene Mem page

### Store or recall a scene

#### [Function]

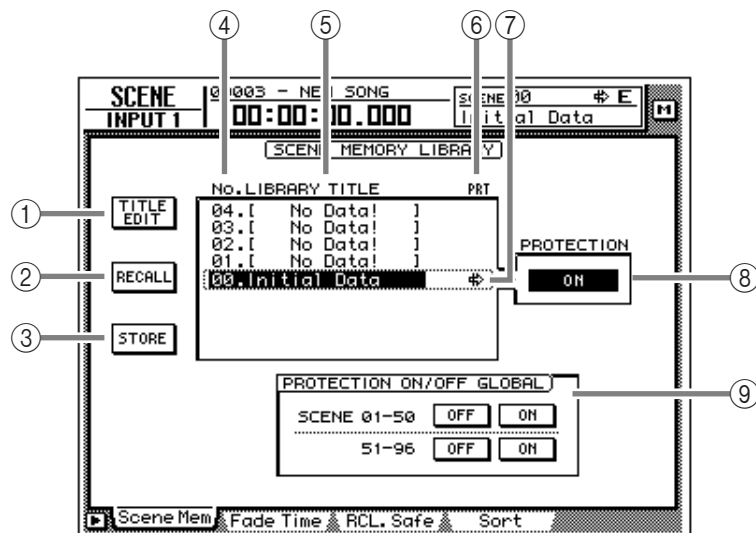
Store the current settings of the AW4416 into scene memory, or recall a scene that was stored in scene memory.

#### [Key operation]

- [SCENE] key → [F1] (Scene Mem) key
- Repeatedly press the [SCENE] key until the screen shown at the right appears.

#### [Mouse operation]

M button → SCEN button → Scene Mem tab



#### [Screen functions]

##### ① TITLE EDIT button

Use this to edit the name (library title) of a scene stored in the library. When you move the cursor to the TITLE EDIT button and press the [ENTER] key, the TITLE EDIT popup window will appear, allowing you to input the name. You can input a library name of up to 16 characters. For details on inputting characters, refer to page 60 of the Operation Guide.



*It is not possible to change the name of scene number 0 or of a scene in which PROTECTION is turned on. Also, numbers in which no scene has been stored will be displayed as "No Data!," and their title cannot be edited.*

##### ② RECALL button

Recall the currently selected scene from the scene list. This is the same function as the [RECALL] key of the top panel SCENE MEMORY section.



*If you select a number in which nothing has been stored and attempt to recall it, an error message of "ERROR NO DATA TO RECALL" will be displayed, and recall will not be possible.*

##### ③ STORE button

Store the current settings (current scene) of the AW4416 into scene memory. This is the same function as the [STORE] key of the SCENE MEMORY section.

The following parameters are saved in memory as a scene.

<b>Mix parameters</b>	Fader locations of all channels and buses (input channels 1–24, recorder monitor channels 1–16, AUX send levels 1-8, effect returns 1/2, stereo)
	ON key settings of all channels
	Attenuation settings of all channels
	Phase settings of all channels
	EQ settings of all channels
	Pan settings of all channels
	Routing settings of all channels
	Fader group settings of all channels
	Pairing settings of all channels
	Dynamics settings of all channels
	Delay settings of all channels
	<b>Effect parameters</b>
<b>Other</b>	Scene name settings
	Fader recall fade time settings
	Patching and insert settings for external input/output



- Scene number 0 is recall-only, and settings cannot be stored in it.
- When you execute the Store operation, the scene that had been stored in that number will be erased.


#### ④ LIBRARY No. (library number)

This column displays the scene number 0–96.

#### ⑤ LIBRARY TITLE

This column displays the name assigned to each scene.

#### ⑥ PRT (protect)

A write-prohibit symbol is displayed in this column for recall-only scene number 0. In addition, a  symbol is displayed for scenes for which the PROTECTION button is on, indicating that they cannot be stored.

#### ⑦ Selected scene

Scene store/recall operations will apply to the scene enclosed by a dotted line in the library list. In this page, you can use the [DATA/JOG] dial to select scenes regardless of where the cursor is located.

#### ⑧ PROTECTION

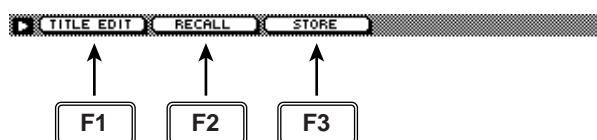
Turn memory protect on/off for the scene currently selected by the cursor.

#### ⑨ PROTECTION ON/OFF GLOBAL

Turn memory protect on/off for all scene numbers 1–50/51–96.

### ■ Additional functions in the Scene Mem page

In the Scene Mem page you can press the [SHIFT] key to assign the following functions to the [F1]–[F3] keys.



#### • [F1] (TITLE EDIT) key

Use this to edit the name of a scene saved in the library. This is the same function as the ① TITLE EDIT button.

#### • [F2] (RECALL) key

Use this to recall the scene currently selected by the cursor from the list. This is the same function as the ② RECALL button.

#### • [F3] (STORE) key

Store the current scene. This is the same function as the ③ STORE button.

# Fade Time page

## Specify the fade time

### [Function]

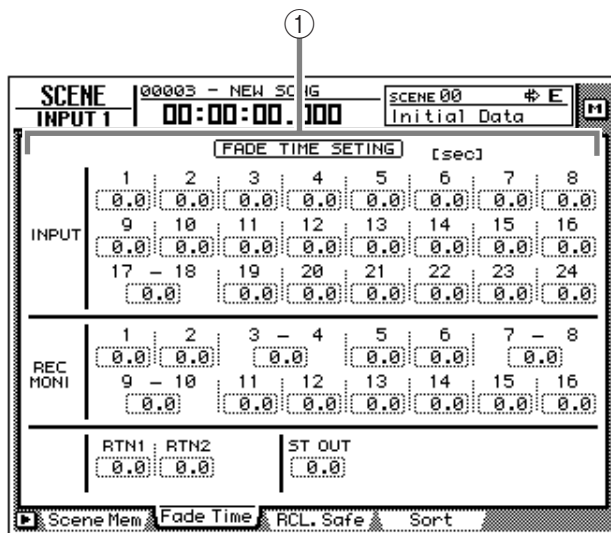
Specify the time over which the faders will reach their new locations when a scene is recalled.

### [Key operation]

- [SCENE] key → [F2] (Fade Time) key
- Repeatedly press the [SCENE] key until the screen shown at the right appears.

### [Mouse operation]

M button → SCEN button → Fade Time tab



### [Screen functions]

#### ① Fade time

Specify the time (fade time) over which the faders of each channel will move their new locations when a scene is recalled, in steps of 0.1 second. (Range: 0.1 second–10 seconds). Fade time can be set for the following channels.

- Input channels 1–24
- Monitor channels 1–16
- Effect return channels 1/2
- Stereo output channel



Fade time will have no effect unless it is specified for the scene being recalled (even if it is specified for the current scene).



The fade time is specified independently for each scene. Be sure to save the scene after editing the fade time.

### ■ Additional functions in the Fade Time page

In the Fade Time page you can press the [SHIFT] key to assign the following additional function to the [F5] key.



#### • [F5] (COPY TO ALL) key

Copy the fade time setting selected by the cursor to all other channels.



#### ● Copying fade time settings to all channels

### [Procedure]

1. In the SCENE screen Fade Time page, move the cursor to the fade time setting of the copy source channel.
2. Press the [SHIFT] key + [F5] key. A CONFIRMATION popup window will appear, asking you to confirm the copy.
3. To execute the copy, move the cursor to the OK button and press the [ENTER] key.
4. Press the [STORE] key to store the scene.

# RCL. Safe page

## Make fader recall safe settings

### [Function]

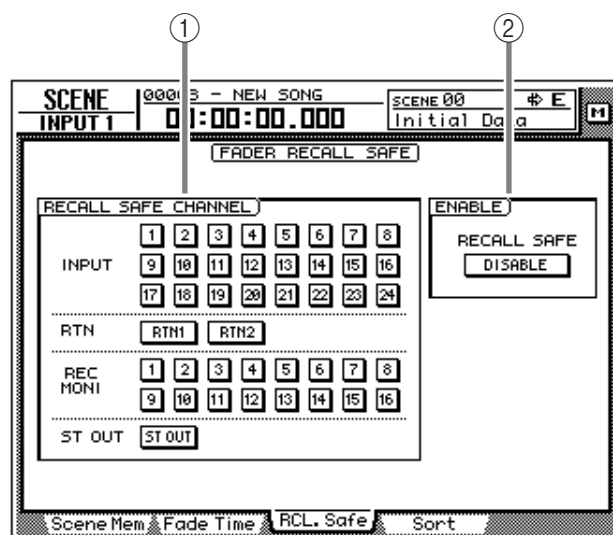
Specify the faders that will be excluded from the recall when a scene is recalled.

### [Key operation]

- [SCENE] key → [F3] (RCL. Safe) key
- Repeatedly press the [SCENE] key until the screen shown at the right appears.

### [Mouse operation]

M button → SCEN button → RCL. Safe tab



### [Screen functions]

#### ① RECALL SAFE CHANNEL

If a button in this area is turned on, the fader of the corresponding channel will maintain its current position even when a scene is recalled. The following channels can be set to Recall Safe status.

- Input channels 1–24
- Monitor channels 1–16
- Effect return channels 1/2
- Stereo output channel



*When a scene is recalled, Fader Recall Safe is valid only if that scene was saved with the ENABLE parameter ② set to ENABLE.*



*Recall Safe settings are not linked for paired channels. This means that if one channel of a pair is set to Recall Safe, the faders of the pair may be in different positions immediately after a scene is recalled. However even in this case, moving one of the faders will cause the other fader to follow immediately.*

#### ② ENABLE

Move the cursor to this button and press the [ENTER] key to specify whether the Fader Recall Safe function will be enabled (ENABLE) or not (DISABLE).



# Sort page

## Sort scenes

### [Function]

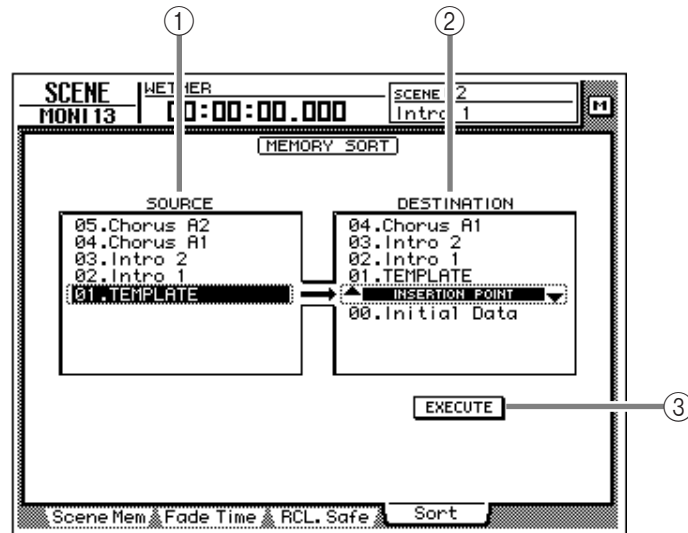
Sort the scenes stored in scene memory.

### [Key operation]

- [SCENE] key → [F4] (Sort) key
- Repeatedly press the [SCENE] key until the screen shown at the right appears.

### [Mouse operation]

M button → SCEN button → Sort tab



### [Screen functions]

#### ① SOURCE

This list shows the current state of the scene memories. Move the cursor to this list, and rotate the [DATA/JOG] dial to select the scene whose sorting order you wish to change. (The currently selected scene will be highlighted.)

#### ② DESTINATION

Specify the scene number to which the scene selected in the SOURCE list will be moved. Move the cursor to this area and rotate the [DATA/JOG] dial to select the point where the scene will be inserted. (The location currently selected for insertion is displayed as "INSERTION POINT.")

#### ③ EXECUTE button

Move the cursor to this button and press the [ENTER] key to change the order of the scenes.



*Even if you select a scene in which nothing has been stored, it is not possible to change its order.*



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# Preset EQ Program Parameters

No	Name	Parameter				Description	
		LOW	L-MID	H-MID	HIGH		
001	Bass Drum 1		PEAKING	PEAKING	PEAKING	H.SHELF	Emphasizes the low range of the bass drum and the attack created by the beater.
		Q	1.2	10	0.9		
		F	99Hz	265Hz	1.05kHz	5.33kHz	
		G	+3.5dB	-3.5dB	0.0dB	+4.0dB	
002	Bass Drum 2		PEAKING	PEAKING	PEAKING	LPF	Creates a peak around 80Hz, producing a tight, stiff sound.
		Q	1.4	4.5	2.2		
		F	79Hz	397Hz	2.52kHz	12.6kHz	
		G	+8.0dB	-7.0dB	+6.0dB	ON	
003	Snare Drum 1		PEAKING	PEAKING	PEAKING	H.SHELF	Emphasizes snapping and rimshot sounds.
		Q	1.2	4.5	0.11		
		F	132Hz	1.00kHz	3.17kHz	5.04kHz	
		G	-0.5dB	0.0dB	+3.0dB	+4.5dB	
004	Snare Drum 2		L.SHELF	PEAKING	PEAKING	PEAKING	Emphasizes the ranges of that classic rock snare drum sound.
		Q		10	0.7	0.1	
		F	177Hz	334Hz	2.37kHz	4.00kHz	
		G	+1.5dB	-8.5dB	+2.5dB	+4.0dB	
005	Tom-tom 1		PEAKING	PEAKING	PEAKING	PEAKING	Emphasizes the attack of tom-toms, and creates a long, "leathery" decay.
		Q	1.4	10	1.2	0.28	
		F	210Hz	667Hz	4.49kHz	6.35kHz	
		G	+2.0dB	-7.5dB	+2.0dB	+1.0dB	
006	Cymbal		L.SHELF	PEAKING	PEAKING	H.SHELF	Emphasizes the attack of crash cymbals, extending the "sparkling" decay.
		Q		8	0.9		
		F	105Hz	420Hz	1.05kHz	13.4kHz	
		G	-2.0dB	0.0dB	0.0dB	+3.0dB	
007	High Hat		L.SHELF	PEAKING	PEAKING	H.SHELF	Use on a tight high-hat, emphasizing the mid to high range.
		Q		0.5	1		
		F	94Hz	420Hz	2.82kHz	7.55kHz	
		G	-4.0dB	-2.5dB	+1.0dB	+0.5dB	
008	Percussion		L.SHELF	PEAKING	PEAKING	H.SHELF	Emphasizes the attack and clarifies the high-range of instruments, such as shakers, cabasas, and congas.
		Q		4.5	0.56		
		F	99Hz	397Hz	2.82kHz	16.9kHz	
		G	-4.5dB	0.0dB	+2.0dB	0.0dB	
009	E.Bass 1		L.SHELF	PEAKING	PEAKING	H.SHELF	Makes a tight electric bass sound by cutting very low frequencies.
		Q		5	4.5		
		F	35Hz	111Hz	2.00kHz	4.00kHz	
		G	-7.5dB	+4.5dB	+2.5dB	0.0dB	
010	E.Bass 2		PEAKING	PEAKING	PEAKING	H.SHELF	Unlike program 009, this emphasizes the low range of the electric bass.
		Q	0.1	5	6.3		
		F	111Hz	111Hz	2.24kHz	4.00kHz	
		G	+3.0dB	0.0dB	+2.5dB	+0.5dB	

No	Name	Parameter				Description	
		LOW	L-MID	H-MID	HIGH		
011	Syn.Bass 1		PEAKING	PEAKING	PEAKING	H.SHELF	Use on a synth bass with emphasized low range.
		Q	0.1	8	4.5		
		F	83Hz	944Hz	4.00kHz	12.6kHz	
		G	+3.5dB	+8.5dB	0.0dB	0.0dB	
012	Syn.Bass 2		PEAKING	PEAKING	PEAKING	H.SHELF	Emphasizes the attack that is peculiar to a synth bass.
		Q	1.6	8	2.2		
		F	125Hz	177Hz	1.12kHz	12.6kHz	
		G	+2.5dB	0.0dB	+1.5dB	0.0dB	
013	Piano 1		L.SHELF	PEAKING	PEAKING	H.SHELF	This is used to make a piano sound brighter.
		Q		8	0.9		
		F	94Hz	944Hz	3.17kHz	7.55kHz	
		G	-6.0dB	0.0dB	+2.0dB	+4.0dB	
014	Piano 2		PEAKING	PEAKING	PEAKING	H.SHELF	Emphasize the attack and low range of the piano sound by using a compressor.
		Q	5.6	10	0.7		
		F	223Hz	595Hz	3.17kHz	5.33kHz	
		G	+3.5dB	-8.5dB	+1.5dB	+3.0dB	
015	E.G.Clean		PEAKING	PEAKING	PEAKING	H.SHELF	Use for line-recording an electric guitar or semi-acoustic guitar to get a slightly hard sound.
		Q	0.18	10	6.3		
		F	265Hz	397Hz	1.33kHz	4.49kHz	
		G	+2.0dB	-5.5dB	+0.5dB	+2.5dB	
016	E.G.Crunch 1		PEAKING	PEAKING	PEAKING	PEAKING	Adjusts the tonal quality of a slightly distorted guitar sound.
		Q	8	4.5	0.63	9	
		F	140Hz	1.00kHz	1.88kHz	5.65kHz	
		G	+4.5dB	0.0dB	+4.0dB	+2.0dB	
017	E.G.Crunch 2		PEAKING	PEAKING	PEAKING	H.SHELF	This is a variation on program 016.
		Q	8	0.4	0.16		
		F	125Hz	445Hz	3.36kHz	19.0kHz	
		G	+2.5dB	+1.5dB	+2.5dB	0.0dB	
018	E.G.Distortion 1		L.SHELF	PEAKING	PEAKING	H.SHELF	Makes a heavily distorted guitar sound clearer.
		Q		9	10		
		F	354Hz	944Hz	3.36kHz	12.6kHz	
		G	+5.0dB	0.0dB	+3.5dB	0.0dB	
019	E.G.Distortion 2		L.SHELF	PEAKING	PEAKING	H.SHELF	This is a variation on program 018.
		Q		10	4		
		F	315Hz	1.05kHz	4.23kHz	12.6kHz	
		G	+6.0dB	-8.5dB	+4.5dB	+4.0dB	
020	A.G.Stroke 1		PEAKING	PEAKING	PEAKING	H.SHELF	Emphasizes the bright tones of an acoustic guitar.
		Q	0.9	4.5	3.5		
		F	105Hz	1.00kHz	1.88kHz	5.33kHz	
		G	-2.0dB	0.0dB	+1.0dB	+4.0dB	
021	A.G.Stroke 2		L.SHELF	PEAKING	PEAKING	H.SHELF	This is a variation on program 020. You can also use it for the electric gut guitar.
		Q		9	4.5		
		F	297Hz	749Hz	2.00kHz	3.56kHz	
		G	-3.5dB	-2.0dB	0.0dB	+2.0dB	

## Appendix

No	Name	Parameter				Description	
		LOW	L-MID	H-MID	HIGH		
022	A.G.Arpeggio 1		L.SHELF	PEAKING	PEAKING	PEAKING	Corrects arpeggio technique of an acoustic guitar.
		Q		4.5	4.5	0.12	
		F	223Hz	1.00kHz	4.00kHz	6.72kHz	
		G	-0.5dB	0.0dB	0.0dB	+2.0dB	
023	A.G.Arpeggio 2		L.SHELF	PEAKING	PEAKING	H.SHELF	This is a variation on program 022.
		Q		7	4.5		
		F	177Hz	354Hz	4.00kHz	4.23kHz	
		G	0.0dB	-5.5dB	0.0dB	+4.0dB	
024	Brass Section		PEAKING	PEAKING	PEAKING	PEAKING	Use with trumpets, trombones, or sax. With one instrument, adjust the HIGH or H-MID frequency.
		Q	2.8	2	0.7	7	
		F	88Hz	841Hz	2.11kHz	4.49kHz	
		G	-2.0dB	+1.0dB	+1.5dB	+3.0dB	
025	Male Vocal 1		PEAKING	PEAKING	PEAKING	PEAKING	Use as a template for male vocal. Adjust the HIGH or H-MID setting according to the voice quality.
		Q	0.11	4.5	0.56	0.11	
		F	187Hz	1.00kHz	2.00kHz	6.72kHz	
		G	-0.5dB	0.0dB	+2.0dB	+3.5dB	
026	Male Vocal 2		PEAKING	PEAKING	PEAKING	H.SHELF	This is a variation on program 025.
		Q	0.11	10	5.6		
		F	167Hz	236Hz	2.67kHz	6.72kHz	
		G	+2.0dB	-5.0dB	+2.5dB	+4.0dB	
027	Female Vocal 1		PEAKING	PEAKING	PEAKING	PEAKING	Use as a template for female vocal. Adjust the HIGH or H-MID setting according to the voice quality.
		Q	0.18	0.45	0.56	0.14	
		F	118Hz	397Hz	2.67kHz	5.99kHz	
		G	-1.0dB	+1.0dB	+1.5dB	+2.0dB	
028	Female Vocal 2		L.SHELF	PEAKING	PEAKING	H.SHELF	This is a variation on program 027.
		Q		0.16	0.2		
		F	111Hz	334Hz	2.00kHz	6.72kHz	
		G	-7.0dB	+1.5dB	+1.5dB	+2.5dB	
029	Chorus & Harmony		PEAKING	PEAKING	PEAKING	PEAKING	Use as a template for a chorus. It makes the entire chorus much brighter.
		Q	2.8	2	0.7	7	
		F	88Hz	841Hz	2.11kHz	4.49kHz	
		G	-2.0dB	+1.0dB	+1.5dB	+3.0dB	
030	Total EQ 1		PEAKING	PEAKING	PEAKING	H.SHELF	Use on the STEREO bus during mixdown. For more effect, try it with a compressor.
		Q	7	2.2	5.6		
		F	94Hz	944Hz	2.11kHz	16.0kHz	
		G	-0.5dB	0.0dB	+3.0dB	+6.5dB	
031	Total EQ 2		PEAKING	PEAKING	PEAKING	H.SHELF	This is a variation on program 030.
		Q	7	2.8	5.6		
		F	94Hz	749Hz	1.78kHz	17.9kHz	
		G	+4.0dB	+1.5dB	+2.0dB	+6.0dB	
032	Total EQ 3		L.SHELF	PEAKING	PEAKING	H.SHELF	This is a variation on program 030. Also use these programs for stereo inputs or external effect returns.
		Q		0.28	0.7		
		F	66Hz	841Hz	1.88kHz	15.1kHz	
		G	+1.5dB	+0.5dB	+2.0dB	+4.0dB	

No	Name	Parameter				Description	
		LOW	L-MID	H-MID	HIGH		
033	Bass Drum 3		PEAKING	PEAKING	PEAKING	This is a variation on program 001. The low and mid range is removed.	
		<b>Q</b>	2	10	0.4		0.4
		<b>F</b>	118Hz	315Hz	4.23kHz		20.1kHz
		<b>G</b>	+3.5dB	-10.0dB	+3.5dB		0.0dB
034	Snare Drum 3		L.SHELF	PEAKING	PEAKING	This is a variation on program 003. It creates rather thick sound.	
		<b>Q</b>		4.5	2.8		0.1
		<b>F</b>	223Hz	561Hz	4.23kHz		4.00kHz
		<b>G</b>	0.0dB	+2.0dB	+3.5dB		0.0dB
035	Tom-tom 2		L.SHELF	PEAKING	PEAKING	This is a variation on program 005. Emphasizes the mid and high range.	
		<b>Q</b>		4.5	1.2		
		<b>F</b>	88Hz	210Hz	5.33kHz		16.9kHz
		<b>G</b>	-9.0dB	+1.5dB	+2.0dB		0.0dB
036	Piano 3		PEAKING	PEAKING	PEAKING	This is a variation on program 013.	
		<b>Q</b>	8	10	9		
		<b>F</b>	99Hz	472Hz	2.37kHz		10.0kHz
		<b>G</b>	+4.5dB	-13.0dB	+4.5dB		+2.5dB
037	Piano Low		PEAKING	PEAKING	PEAKING	Use for the low range of the piano sound when it is recorded in stereo. Use with program 038.	
		<b>Q</b>	10	6.3	2.2		
		<b>F</b>	187Hz	397Hz	6.72kHz		12.6kHz
		<b>G</b>	-5.5dB	+1.5dB	+6.0dB		0.0dB
038	Piano High		PEAKING	PEAKING	PEAKING	Use for the high range of the piano sound when it is recorded in stereo. Use with program 037.	
		<b>Q</b>	10	6.3	2.2		0.1
		<b>F</b>	187Hz	397Hz	6.72kHz		5.65kHz
		<b>G</b>	-5.5dB	+1.5dB	+5.0dB		+3.0dB
039	Fine-EQ(Cass)		L.SHELF	PEAKING	PEAKING	Use for recording to or from cassette tape to make the sound clearer.	
		<b>Q</b>		4.5	1.8		
		<b>F</b>	74Hz	1.00kHz	4.00kHz		12.6kHz
		<b>G</b>	-1.5dB	0.0dB	+1.0dB		+3.0dB
040	Narrator		PEAKING	PEAKING	PEAKING	Use for recording a voice reading a text.	
		<b>Q</b>	4	7	0.63		
		<b>F</b>	105Hz	707Hz	2.52kHz		10.0kHz
		<b>G</b>	-4.0dB	-1.0dB	+2.0dB		0.0dB


**Note**

The EQ programs were programmed for recording acoustic musical instruments. If you are using them for a sampler, synthesizer, or rhythm machine, adjust the parameters accordingly.

# Preset Effects Programs

The following table lists the preset effects programs. See “Effects Parameters” on page Appendix–8 for detailed parameter information. Effects programs that use the HQ. PITCH effect can be used only with Effect 2.

## Reverb-type Effects

#	Title	Type	Description
01	Reverb Hall	REVERB HALL	Reverb simulating a large space such as a concert hall.
02	Reverb Room	REVERB ROOM	Reverb simulating the acoustics of a smaller space (room) than REVERB HALL.
03	Reverb Stage	REVERB STAGE	Reverb designed with vocals in mind.
04	Reverb Plate	REVERB PLATE	Simulation of a metal-plate reverb unit, producing a feeling of hard-edged reverberation.
05	Early Ref.	EARLY REF.	An effect which isolates only the early reflection (ER) component from reverberation. A flashier effect than reverb is produced.
06	Gate Reverb	GATE REVERB	A type of ER designed for use as gated reverb.
07	Reverse Gate	REVERSE GATE	A reverse-playback type ER.

## Delays

#	Title	Type	Description
08	Mono Delay	MONO DELAY	Mono delay with simple operation. Use when you don't need to use complex parameter settings.
09	Stereo Delay	STEREO DELAY	Stereo delay with independent left and right.
10	Mod.delay	MOD.DELAY	Mono delay with modulation.
11	Delay LCR	DELAY LCR	Three-tap delay (L, C, R).
12	Echo	ECHO	Stereo delay with additional parameters for more detailed control. The signal can be fed back from left to right, and right to left.

## Modulation-type Effects

#	Title	Type	Description
13	Chorus	CHORUS	Three-phase stereo chorus.
14	Flange	FLANGE	The well-known flanging effect.
15	Symphonic	SYMPHONIC	A Yamaha proprietary effect that produces a richer and more complex modulation than chorus.
16	Phaser	PHASER	Stereo phaser with 2–16 stages of phase shift.
17	Auto Pan	AUTO PAN	An effect which cyclically moves the sound between left and right.
18	Tremolo	TREMOLO	Tremolo
19	HQ.Pitch	HQ.PITCH (Effect 2 only)	Only one note is pitch-shifted, but a stable effect is produced.
20	Dual Pitch	DUAL PITCH	Stereo pitch shift with left and right pitches set independently.
21	Rotary	ROTARY	Simulation of a rotary speaker.
22	Ring Mod.	RING MOD.	An effect that modifies the pitch by applying amplitude modulation to the frequency of the input. On the AW4416, even the modulation frequency can be controlled by modulation.
23	Mod.Filter	MOD.FILTER	An effect which uses an LFO to modulate the frequency of the filter.

## Distortion-type Effects

#	Title	Type	Description
24	Distortion	DISTORTION	Distortion
25	Amp Simulate	AMP SIMULATE	Guitar Amp Simulator

## Dynamic Effects

#	Title	Type	Description
26	Dyna.Filter	DYNA.FILTER	Dynamically controlled filter. Responds to MIDI Note On velocity when SOURCE set to MIDI.
27	Dyna.Flange	DYNA.FLANGE	Dynamically controlled flanger. Responds to MIDI Note On velocity when SOURCE set to MIDI.
28	Dyna.Phaser	DYNA.PHASER	Dynamically controlled phase shifter. Responds to MIDI Note On velocity when SOURCE set to MIDI.

## Combined Effects

#	Title	Type	Description
29	Rev+Chorus	REV+CHORUS	Reverb and chorus in parallel
30	Rev->Chorus	REV->CHORUS	Reverb and chorus in series
31	Rev+Flange	REV+FLANGE	Reverb and flanger in parallel
32	Rev->Flange	REV->FLANGE	Reverb and flanger in series
33	Rev+Sympho.	REV+SYMPHO.	Reverb and symphonic in parallel
34	Rev->Sympho.	REV->SYMPHO.	Reverb and symphonic in series
35	Rev->Pan	REV->PAN	Reverb and auto-pan in parallel
36	Delay+ER.	DELAY+ER.	Delay and early reflections in parallel
37	Delay->ER.	DELAY->ER.	Delay and early reflections in series
38	Delay+Rev	DELAY+REV	Delay and reverb in parallel
39	Delay->Rev	DELAY->REV	Delay and reverb in series
40	Dist->Delay	DIST->DELAY	Distortion and delay in series

## Other Effects

#	Title	Type	Description
41	Multi.Filter	MULTI.FILTER	Three-band parallel filter (24 dB/octave).

# Effects Parameters

## REVERB HALL, REVERB ROOM, REVERB STAGE, REVERB PLATE

Hall, room, stage, and plate simulations, all with gates.

Parameter	Range	Description
REV TIME	0.3–99.0 s	Reverb time
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
HI.RATIO	0.1–1.0	High-frequency reverb time ratio
LO.RATIO	0.1–2.4	Low-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left–right reverb spread)
DENSITY	0–100%	Reverb density
E/R DLY	0.0–100.0 ms	Delay between early reflections and reverb
E/R BAL.	0–100%	Balance of early reflections and reverb (0% = ER, 100% = reverb)
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
GATE LVL	OFF, –60 to 0 dB	Level at which gate kicks in
ATTACK	0–120 ms	Gate opening speed
HOLD	*1	Gate open time
DECAY	*2	Gate closing speed
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

\*1. 0.02 ms–2.13 s (fs=44.1 kHz), 0.02 ms–1.96 s (fs=48 kHz)

\*2. 6.0 ms–46.0 s (fs=44.1 kHz), 5.0 ms–42.3 s (fs=48 kHz)

## EARLY REF.

Early reflections.

Parameter	Range	Description
TYPE	S-Hall, L-Hall, Random, Reverse, Plate, Spring	Type of early reflection simulation
ROOMSIZE	0.1–20.0	Reflection spacing
LIVENESS	0–10	Early reflections decay characteristics (0 = dead, 10 = live)
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
DIFF.	0–10	Reverb diffusion (left–right reverb spread)
DENSITY	0–100%	Reverb density
ER NUM.	1–19	Number of early reflections
FB.GAIN	–99 to +99%	Feedback gain
HI.RATIO	0.1–1.0	High-frequency feedback ratio
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds



## GATE REVERB, REVERSE GATE

Early reflections with gate, and early reflections with reverse gate.

Parameter	Range	Description
TYPE	Type-A, Type-B	Type of early reflection simulation
ROOMSIZE	0.1–20.0	Reflection spacing
LIVENESS	0–10	Early reflections decay characteristics (0 = dead, 10 = live)
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
DIFF.	0–10	Reverb diffusion (left–right reverb spread)
DENSITY	0–100%	Reverb density
ER NUM.	1–19	Number of early reflections
FB.GAIN	–99 to +99%	Feedback gain
HI.RATIO	0.1–1.0	High-frequency feedback ratio
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## MONO DELAY

Basic repeat delay.

Parameter	Range	Description
DELAY	0.0–2730.0 ms	Delay time
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI.RATIO	0.1–1.0	High-frequency feedback ratio
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## STEREO DELAY

Basic stereo delay.

Parameter	Range	Description
DELAY L	0.0–1350.0 ms	Left channel delay time
FB.G L	–99 to +99%	Left channel feedback (plus values for normal-phase feedback, minus values for reverse-phase feedback)
DELAY R	0.0–1350.0 ms	Right channel delay time
FB.G R	–99 to +99%	Right channel feedback (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI.RATIO	0.1–1.0	High-frequency feedback ratio
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## MOD.DELAY

Basic repeat delay with modulation.

Parameter	Range	Description
DELAY	0.0–2725.0 ms	Delay time
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI.RATIO	0.1–1.0	High-frequency feedback ratio
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## DELAY LCR

Three-tap delay (left, center, right).

Parameter	Range	Description
DELAY L	0.0–2730.0 ms	Left channel delay time
DELAY C	0.0–2730.0 ms	Center channel delay time
DELAY R	0.0–2730.0 ms	Right channel delay time
LEVEL L	–100 to +100%	Left channel delay level
LEVEL C	–100 to +100%	Center channel delay level
LEVEL R	–100 to +100%	Right channel delay level
FB.DLY	0.0–2730.0 ms	Feedback delay time
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI.RATIO	0.1–1.0	High-frequency feedback ratio
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## ECHO

Stereo delay with crossed feedback loop.

Parameter	Range	Description
DELAY L	0.0–1350.0 ms	Left channel delay time
FB.DLY L	0.0–1350.0 ms	Left channel feedback delay time
FB.G L	–99 to +99%	Left channel feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
DELAY R	0.0–1350.0 ms	Right channel delay time
FB.DLY R	0.0–1350.0 ms	Right channel feedback delay time
FB.G R	–99 to +99%	Right channel feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
L->R FBG	–99 to +99%	Left to right channel feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
R->L FBG	–99 to +99%	Right to left channel feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI.RATIO	0.1–1.0	High-frequency feedback ratio
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## CHORUS

Chorus effect.

Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
PM DEP.	0–100%	Pitch modulation depth
AM DEP.	0–100%	Amp modulation depth
MOD.DLY	0.0–500.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
LSH F	21.2–8.00 k [Hz]	Low-shelving filter frequency
LSH G	–12 to +12 [dB]	Low-shelving filter gain
EQ F	100–8.00 k [Hz]	Parametric equalizer center frequency
EQ G	–12 to +12 [dB]	Parametric equalizer gain
EQ Q	10–0.10	Parametric equalizer band width
HSH F	50.0–16.0 k [Hz]	High-shelving filter frequency
HSH G	–12 to +12 [dB]	High-shelving filter gain
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## FLANGE

Flange effect.

Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD.DLY	0.0–500.0 ms	Modulation delay time
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
WAVE	Sine, Tri	Modulation waveform
LSH F	21.2–8.00 k [Hz]	Low-shelving filter frequency
LSH G	–12 to +12 [dB]	Low-shelving filter gain
EQ F	100–8.00 k [Hz]	Parametric equalizer center frequency
EQ G	–12 to +12 [dB]	Parametric equalizer gain
EQ Q	10–0.10	Parametric equalizer band width
HSH F	50.0–16.0 k [Hz]	High-shelving filter frequency
HSH G	–12 to +12 [dB]	High-shelving filter gain
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## SYMPHONIC

Symphonic effect.

Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD.DLY	0.0–500.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
LSH F	21.2–8.00 k [Hz]	Low-shelving filter frequency
LSH G	–12 to +12 [dB]	Low-shelving filter gain
EQ F	100–8.00 k [Hz]	Parametric equalizer center frequency
EQ G	–12 to +12 [dB]	Parametric equalizer gain
EQ Q	10–0.10	Parametric equalizer band width
HSH F	50.0–16.0 k [Hz]	High-shelving filter frequency
HSH G	–12 to +12 [dB]	High-shelving filter gain
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## PHASER

16-stage phaser.

Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
OFFSET	0–100	Lowest phase-shifted frequency offset
STAGE	2, 4, 8, 10, 12, 14, 16	Number of phase shift stages
LSH F	21.2–8.00 k [Hz]	Low-shelving filter frequency
LSH G	–12 to +12 [dB]	Low-shelving filter gain
HSH F	50.0–16.0 k [Hz]	High-shelving filter frequency
HSH G	–12 to +12 [dB]	High-shelving filter gain
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## AUTOPAN

Auto-panner.

Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
DIR.	*1	Panning direction
WAVE	Sine, Tri, Square	Modulation waveform
LSH F	21.2–8.00 k [Hz]	Low-shelving filter frequency
LSH G	–12 to +12 [dB]	Low-shelving filter gain
EQ F	100–8.00 k [Hz]	Parametric equalizer center frequency
EQ G	–12 to +12 [dB]	Parametric equalizer gain
EQ Q	10–0.10	Parametric equalizer band width
HSH F	50.0–16.0 k [Hz]	High-shelving filter frequency
HSH G	–12 to +12 [dB]	High-shelving filter gain
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

\*1. L<->R, L->R, L<-R, Turn L, Turn R

## TREMOLO

Tremolo effect.

Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
WAVE	Sine, Tri, Square	Modulation waveform
LSH F	21.2–8.00 k [Hz]	Low-shelving filter frequency
LSH G	–12 to +12 [dB]	Low-shelving filter gain
EQ F	100–8.00 k [Hz]	Parametric equalizer center frequency
EQ G	–12 to +12 [dB]	Parametric equalizer gain
EQ Q	10–0.10	Parametric equalizer band width
HSH F	50.0–16.0 k [Hz]	High-shelving filter frequency
HSH G	–12 to +12 [dB]	High-shelving filter gain
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## HQ.PITCH (Effect 2 only)

High-quality pitch shifter.

Parameter	Range	Description
PITCH	–12 to +12 semitones	Pitch shift
FINE	–50 to +50 cents	Pitch shift fine
DELAY	0.0–1000.0 ms	Delay time
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
MODE	1–10	Pitch shift precision
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## DUAL PITCH

Twin-voice pitch shifter.

Parameter	Range	Description
PITCH 1	–24 to +24 semitones	Channel 1 pitch shift
FINE 1	–50 to +50 cents	Channel 1 pitch shift fine
PAN 1	L16–1, C, R1–16	Channel 1 panpot
DELAY 1	0.0–1000.0 ms	Channel 1 delay time
FB.G 1	–99 to +99%	Channel 1 feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
LEVEL 1	–100 to +100%	Channel 1 level (plus values for normal phase, minus values for reverse phase)
PITCH 2	–24 to +24 semitones	Channel 2 pitch shift
FINE 2	–50 to +50 cents	Channel 2 pitch shift fine
PAN 2	L16–1, C, R1–16	Channel 2 panpot
DELAY 2	0.0–1000.0 ms	Channel 2 delay time
FB.G 2	–99 to +99%	Channel 2 feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
LEVEL 2	–100 to +100%	Channel 2 level (plus values for normal phase, minus values for reverse phase)
MODE	1–10	Pitch shift precision
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## ROTARY

Rotary speaker simulator.

Parameter	Range	Description
ROTATE	STOP, START	Rotation stop, start
SPEED	SLOW, FAST	Rotation speed (see SLOW and FAST parameters)
DRIVE	0–100	Overdrive level
ACCEL	0–10	Accelation at speed changes
LOW	0–100	Low-frequency filter
HIGH	0–100	High-frequency filter
SLOW	0.05–10.00 Hz	SLOW rotation speed
FAST	0.05–10.00 Hz	FAST rotation speed
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## RING MOD.

Ring modulator.

Parameter	Range	Description
SOURCE	OSC, SELF	Modulation source: oscillator or input signal
OSC FREQ	0.0–3000.0 Hz	Oscillator frequency
FM FREQ	0.05–40.00 Hz	Oscillator frequency modulation speed
FM DEPTH	0–100%	Oscillator frequency modulation depth
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## MOD.FILTER

LFO modulation-type filter.

Parameter	Range	Description
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
TYPE	LPF, HPF, BPF	Filter type: low pass, high pass, band pass
OFFSET	0–100	Filter frequency offset
RESO.	0–20	Filter resonance
PHASE	0.00–354.38°	Left-channel modulation and right-channel modulation phase difference
LEVEL	0–100	Output level
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## DISTORTION

Distortion effect.

Parameter	Range	Description
DST TYPE	DST1, DST2, OVD1, OVD2, CRUNCH	Distortion type (DST = distortion, OVD = overdrive)
DRIVE	0–100	Distortion drive
MASTER	0–100	Master volume
TONE	–10 to +10	Tone
N.GATE	0–20	Noise reduction
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## AMP SIMULATE

Guitar Amp Simulator.

Parameter	Range	Description
AMP TYPE	*1	Guitar amp simulation type
DST TYPE	DST1, DST2, OVD1, OVD2, CRUNCH	Distortion type (DST = distortion, OVD = overdrive)
N.GATE	0–20	Noise reduction
DRIVE	0–100	Distortion drive
MASTER	0–100	Master volume
CAB DEP	0–100%	Speaker cabinet simulation depth
BASS	0–100	Bass tone control
MIDDLE	0–100	Middle tone control
TREBLE	0–100	High tone control
EQ F	99–8.0 kHz	Parametric equalizer frequency
EQ G	–12 to +12 dB	Parametric equalizer gain
EQ Q	10.0–0.10	Parametric equalizer bandwidth
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

\*1. STK-M1, STK-M2, THRASH, MIDBST, CMB-PG, CMB-VR, CMB-DX, CMB-TW, MINI, FLAT

## DYNA.FILTER

Dynamically controlled filter.

Parameter	Range	Description
SOURCE	INPUT, MIDI	Control source: input signal or MIDI note on velocity
SENSE	0–100	Sensitivity
TYPE	LPF, HPF, BPF	Filter type
OFFSET	0–100	Filter frequency offset
RESO.	0–20	Filter resonance
DIR.	UP, DOWN	Upward or downward frequency change
DECAY	*1	Filter frequency change decay speed
LEVEL	0–100	Output Level
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

\*1. 6.0 ms–46.0 s (fs=44.1 kHz), 5.0 ms–42.3 s (fs=48 kHz)

**DYNA.FLANGE**

Dynamically controlled flanger.

Parameter	Range	Description
SOURCE	INPUT, MIDI	Control source: input signal or MIDI note on velocity
SENSE	0–100	Sensitivity
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
OFFSET	0–100	Delay time offset
DIR.	UP, DOWN	Upward or downward frequency change
DECAY	*1	Decay speed
LSH F	21.2–8.00 k [Hz]	Low-shelving filter frequency
LSH G	–12 to +12 [dB]	Low-shelving filter gain
EQ F	100–8.00 k [Hz]	Parametric equalizer center frequency
EQ G	–12 to +12 [dB]	Parametric equalizer gain
EQ Q	10–0.10	Parametric equalizer band width
HSH F	50.0–16.0 k [Hz]	High-shelving filter frequency
HSH G	–12 to +12 [dB]	High-shelving filter gain
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

\*1. 6.0 ms–46.0 s (fs=44.1 kHz), 5.0 ms–42.3 s (fs=48 kHz)

**DYNA.PHASER**

Dynamically controlled phaser.

Parameter	Range	Description
SOURCE	INPUT, MIDI	Control source: input signal or MIDI note on velocity
SENSE	0–100	Sensitivity
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
OFFSET	0–100	Lowest phase-shifted frequency offset
STAGE	2, 4, 8, 10, 12, 14, 16	Number of phase shift stages
DIR.	UP, DOWN	Upward or downward frequency change
DECAY	*1	Decay speed
LSH F	21.2–8.00 k [Hz]	Low-shelving filter frequency
LSH G	–12 to +12 [dB]	Low-shelving filter gain
HSH F	50.0–16.0 k [Hz]	High-shelving filter frequency
HSH G	–12 to +12 [dB]	High-shelving filter gain
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

\*1. 6.0 ms–46.0 s (fs=44.1 kHz), 5.0 ms–42.3 s (fs=48kHz)



## REV+CHORUS

Reverb and chorus effects in parallel.

Parameter	Range	Description
REV TIME	0.3–99.9 s	Reverb time
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
HI.RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left-right reverb spread)
DENSITY	0–100%	Reverb density
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
FREQ.	0.05–40.00 Hz	Modulation speed
PM DEP.	0–100%	Pitch modulation depth
AM DEP.	0–100%	Amp modulation depth
MOD.DLY	0.0–500.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
REV/CHO	0–100%	Reverb and chorus balance (0% = chorus, 100% = reverb)
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

## REV->CHORUS

Reverb and chorus effects in series.

Parameter	Range	Description
REV TIME	0.3–99.9 s	Reverb time
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
HI.RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left-right reverb spread)
DENSITY	0–100%	Reverb density
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
FREQ.	0.05–40.00 Hz	Modulation speed
PM DEP.	0–100%	Pitch modulation depth
AM DEP.	0–100%	Amp modulation depth
MOD.DLY	0.0–500.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
REV/CHO	0–100%	Reverb and chorused reverb balance (0% = chorused reverb, 100% = reverb)
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

**REV+FLANGE**

Reverb and flanger effects in parallel.

Parameter	Range	Description
REV TIME	0.3–99.9 s	Reverb time
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
HI.RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left-right reverb spread)
DENSITY	0–100%	Reverb density
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD.DLY	0.0–500.0 ms	Modulation delay time
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
WAVE	Sine, Tri	Modulation waveform
REV/FLG	0–100%	Reverb and flange balance (0% = flange, 100% = reverb)
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

**REV->FLANGE**

Reverb and flanger effects in series.

Parameter	Range	Description
REV TIME	0.3–99.9 s	Reverb time
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
HI.RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left-right reverb spread)
DENSITY	0–100%	Reverb density
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD.DLY	0.0–500.0 ms	Modulation delay time
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
WAVE	Sine, Tri	Modulation waveform
REV/FLG.	0–100%	Reverb and flanged reverb balance (0% = flanged reverb, 100% = reverb)
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

**REV+SYMPHO.**

Reverb and symphonic effects in parallel.

Parameter	Range	Description
REV TIME	0.3–99.9 s	Reverb time
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
HI.RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left-right reverb spread)
DENSITY	0–100%	Reverb density
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD.DLY	0.0–500.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
REV/SYM	0–100%	Reverb and symphonic balance (0% = symphonic, 100% = reverb)
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

**REV->SYMPHO.**

Reverb and symphonic effects in series.

Parameter	Range	Description
REV TIME	0.3–99.9 s	Reverb time
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
HI.RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left-right reverb spread)
DENSITY	0–100%	Reverb density
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
MOD.DLY	0.0–500.0 ms	Modulation delay time
WAVE	Sine, Tri	Modulation waveform
REV/SYM	0–100%	Reverb and symphonic reverb balance (0% = symphonic reverb, 100% = reverb)
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

**REV->PAN**

Reverb and auto-pan effects in parallel.

Parameter	Range	Description
REV TIME	0.3–99.9 s	Reverb time
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
HI.RATIO	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left-right reverb spread)
DENSITY	0–100%	Reverb density
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
DIR.	*1	Panning direction
WAVE	Sine, Tri, Square	Modulation waveform
REV BAL.	0–100%	Reverb and panned reverb balance (0% = panned reverb, 100% = reverb)
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

\*1. L<->R, L->R, L<-R, Turn L, Turn R

**DELAY+ER.**

Delay and early reflections effects in parallel.

Parameter	Range	Description
DELAY L	0.0–1000.0 ms	Left channel delay time
DELAY R	0.0–1000.0 ms	Right channel delay time
FB.DLY	0.0–1000.0 ms	Feedback delay time
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI.RATIO	0.1–1.0	High-frequency feedback ratio
TYPE	S-Hall, L-Hall, Random, Revers, Plate, Spring	Type of early reflection simulation
ROOMSIZE	0.1–20.0	Reflection spacing
LIVENESS	0–10	Early reflections decay characteristics (0 = dead, 10 = live)
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
DIFF.	0–10	Reverb diffusion (left-right reverb spread)
DENSITY	0–100%	Reverb density
ER NUM.	1–19	Number of early reflections
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
DLY/ER	0–100%	Delay and early reflections balance (0% = early reflections, 100% = delay)
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

**DELAY->ER.**

Delay and early reflections effects in series.

Parameter	Range	Description
DELAY L	0.0–1000.0 ms	Left channel delay time
DELAY R	0.0–1000.0 ms	Right channel delay time
FB.DLY	0.0–1000.0 ms	Feedback delay time
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI.RATIO	0.1–1.0	High-frequency feedback ratio
TYPE	S-Hall, L-Hall, Random, Revers, Plate, Spring	Type of early reflection simulation
ROOMSIZE	0.1–20.0	Reflection spacing
LIVENESS	0–10	Early reflections decay characteristics (0 = dead, 10 = live)
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
DIFF.	0–10	Reverb diffusion (left-right reverb spread)
DENSITY	0–100%	Reverb density
ER NUM.	1–19	Number of early reflections
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
DLY/ER	0–100%	Delay and early reflected delay balance (0% = early reflected delay, 100% = delay)
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

**DELAY+REV**

Delay and reverb effects in parallel.

Parameter	Range	Description
DELAY L	0.0–1000.0 ms	Left channel delay time
DELAY R	0.0–1000.0 ms	Right channel delay time
FB.DLY	0.0–1000.0 ms	Feedback delay time
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
DELAY HI	0.1–1.0	Delay high-frequency feedback ratio
REV TIME	0.3–99.9 s	Reverb time
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
REV HI	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left-right reverb spread)
DENSITY	0–100%	Reverb density
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
DLY/REV	0–100%	Delay and reverb balance (0% = reverb, 100% = delay)
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

**DELAY->REV**

Delay and reverb effects in series.

Parameter	Range	Description
DELAY L	0.0–1000.0 ms	Left channel delay time
DELAY R	0.0–1000.0 ms	Right channel delay time
FB.DLY	0.0–1000.0 ms	Feedback delay time
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
DELAY HI	0.1–1.0	Delay high-frequency feedback ratio
REV TIME	0.3–99.9 s	Reverb time
INI.DLY	0.0–500.0 ms	Initial delay before reverb begins
REV HI	0.1–1.0	High-frequency reverb time ratio
DIFF.	0–10	Reverb diffusion (left-right reverb spread)
DENSITY	0–100%	Reverb density
HPF	Thru, 21 Hz–8.0 kHz	High-pass filter cutoff frequency
LPF	50 Hz–16.0 kHz, Thru	Low-pass filter cutoff frequency
DLY/REV	0–100%	Delay and delayed reverb balance (0% = delayed reverb, 100% = delay)
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

**DIST->DELAY**

Distortion and delay effects in series.

Parameter	Range	Description
DST TYPE	DST1, DST2, OVD1, OVD2, CRUNCH	Distortion type (DST = distortion, OVD = overdrive)
DRIVE	0–100	Distortion drive
MASTER	0–100	Master volume
TONE	–10 to +10	Tone control
N.GATE	0–20	Noise reduction
DELAY	0.0–2725.0 ms	Delay time
FB.GAIN	–99 to +99%	Feedback gain (plus values for normal-phase feedback, minus values for reverse-phase feedback)
HI.RATIO	0.1–1.0	High-frequency feedback ratio
FREQ.	0.05–40.00 Hz	Modulation speed
DEPTH	0–100%	Modulation depth
DLY BAL	0–100%	Distortion and delay balance (0% = distortion, 100% = delayed distortion)

## MULTI FILTER

Three-band parallel filter (24 dB/octave)

Parameter	Range	Description
TYPE 1	HPF, LPF, BPF	Filter 1 type: low pass, high pass, band pass
TYPE 2	HPF, LPF, BPF	Filter 2 type: low pass, high pass, band pass
TYPE 3	HPF, LPF, BPF	Filter 3 type: low pass, high pass, band pass
FREQ. 1	28 Hz–16.0 kHz	Filter 1 frequency
FREQ. 2	28 Hz–16.0 kHz	Filter 2 frequency
FREQ. 3	28 Hz–16.0 kHz	Filter 3 frequency
LEVEL 1	0–100	Filter 1 level
LEVEL 2	0–100	Filter 2 level
LEVEL 3	0–100	Filter 3 level
RESO. 1	0–20	Filter 1 resonance
RESO. 2	0–20	Filter 2 resonance
RESO. 3	0–20	Filter 3 resonance
MIX BAL.	0–100 [%]	Mix balance of the effects and dry sounds

# Dynamics Processors

Dynamics processors are generally used to correct or control signal levels. However, you can also use them creatively to shape the volume envelope of a sound. The AW4416 features comprehensive dynamics processors for all the input channels, tape returns, and the bus and stereo outputs. These processors allow you to compress, expand, compress-expand (compand), gate, or duck the signals passing through the mixer, giving you unparalleled sonic quality and flexibility.

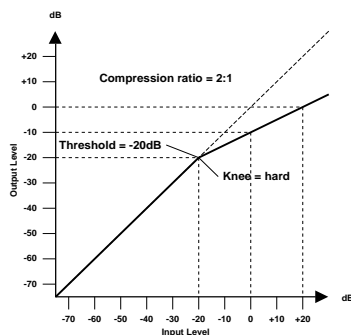
## Preset Dynamics Programs

These are the preset dynamics programs.

No	Program Name	No	Program Name
001	A.Dr.BD "CMP	021	BrassSection "CMP
002	A.Dr.BD "EXP	022	Syn.Pad "CMP
003	A.Dr.BD "GAT	023	SamplingPerc "CPS
004	A.Dr.BD "CPH	024	Sampling BD "CMP
005	A.Dr.SN "CMP	025	Sampling SN "CMP
006	A.Dr.SN "EXP	026	Hip Comp "CPS
007	A.Dr.SN "GAT	027	Solo Vocal1 "CMP
008	A.Dr.SN "CPS	028	Solo Vocal2 "CMP
009	A.Dr.Tom "EXP	029	Chorus "CMP
010	A.Dr.OverTop "CPS	030	Compander(H) "CPH
011	E.B.finger "CMP	031	Compander(S) "CPS
012	E.B.slapp "CMP	032	Click Erase "EXP
013	Syn.Bass "CMP	033	Announcer "CPH
014	Piano1 "CMP	034	Easy Gate "GAT
015	Piano2 "CMP	035	BGM Ducking "DUK
016	E.Guitar "CMP	036	Limiter1 "CPS
017	A.Guitar "CMP	037	Limiter2 "CMP
018	Strings1 "CMP	038	Total Comp1 "CMP
019	Strings2 "CMP	039	Total Comp2 "CMP
020	Strings3 "CMP	040	Total Comp3 "CMP



## Compressor



A compressor provides a form of automatic level control. By attenuating high levels, thus effectively reducing the dynamic range, the compressor makes it much easier to control signals and set appropriate fader levels. Reducing the dynamic range also means that recording levels can be set higher, therefore improving the signal-to-noise performance.

### Compressor (CMP) parameters:

Parameter	Value
Threshold (dB)	-54 to 0 (55 points)
Ratio	1.0, 1.1, 1.3, 1.5, 1.7, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 20, $\infty$ (16 points)
Attack (ms)	0 to 120 (121 points)
Outgain (dB)	0 to +18 (36 points)
Knee	hard, 1, 2, 3, 4, 5 (6 points)
Release (ms)	5 ms to 42.3 sec <sup>*1</sup> , 6 ms to 46.0 sec <sup>*2</sup> , 8 ms to 63.4 sec <sup>*3</sup> (160 points)

\*1. These values are obtained when the sampling frequency is 48 kHz.

\*2. These values are obtained when the sampling frequency is 44.1 kHz.

\*3. These values are obtained when the sampling frequency is 32 kHz

**Threshold** determines the level of input signal required to trigger the compressor. Signals at a level below the threshold pass through unaffected. Signals at and above the threshold level are compressed by the amount specified using the Ratio parameter. The trigger signal is determined using the KEY IN parameter.

**Ratio** controls the amount of compression—the change in output signal level relative to change in input signal level. With a 2:1 ratio, for example, a 10 dB change in input level (above the threshold) results in a 5 dB change in output level. For a 5:1 ratio, a 10 dB change in input level (above the threshold) results in a 2 dB change in output level.

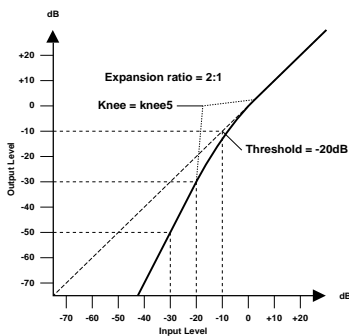
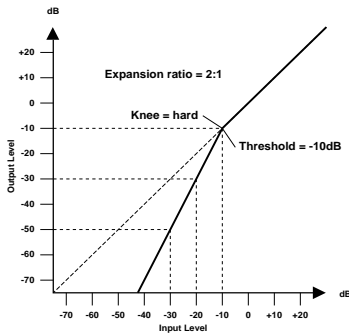
**Attack** controls how soon the signal is compressed once the compressor has been triggered. With a fast attack time, the signal is compressed almost immediately. With a slow attack time, the initial transient of a sound passes through unaffected.

**Out Gain** sets the compressor's output signal level. Compression tends to reduce the average signal level. Out Gain can be used to counter this level reduction and set an appropriate level for the next stage in the audio path.

**Knee** sets the transition of the signal at the threshold. With a hard knee, the transition between uncompressed and compressed signal is immediate. With the softest knee, knee5, the transition starts before the signal reaches the threshold and gradually ends above the threshold.

**Release** determines how soon the compressor returns to its normal gain once the trigger signal level drops below the threshold. If the release time is too short, the gain will recover too quickly causing level pumping—noticeable gain fluctuations. If it is set too long, the compressor may not have time to recover before the next high level signal appears, and it will be compressed incorrectly.

## Expander



An expander is another form of automatic level control. By attenuating the signal below the threshold, the expander reduces low-level noise and effectively increases the dynamic range of the recorded material.

### Expander (EXP) parameters:

Parameter	Value
Threshold (dB)	-54 to 0 (55 points)
Ratio	1.0, 1.1, 1.3, 1.5, 1.7, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 20, ∞ (16 points)
Attack (ms)	0 to 120 (121 points)
Outgain (dB)	0 to +18 (36 points)
Knee	hard, 1, 2, 3, 4, 5 (6 points)
Release (ms)	5 ms to 42.3 sec <sup>*1</sup> , 6 ms to 46.0 sec <sup>*2</sup> , 8 ms to 63.4 sec <sup>*3</sup> (160 points)

\*1. These values are obtained when the sampling frequency is 48kHz.

\*2. These values are obtained when the sampling frequency is 44.1 kHz.

\*3. These values are obtained when the sampling frequency is 32 kHz

**Threshold** determines the level of input signal required to trigger the expander. Signals above the threshold pass through unaffected. Signals at and below the threshold level are attenuated by the amount specified using the Ratio parameter. The trigger signal is determined using the KEY IN parameter.

**Ratio** controls the amount of expansion—the change in output signal level relative to change in input signal level. With a 1:2 ratio, for example, a 5 dB change in input level (below the threshold) results in a 10 dB change in output level. For a 1:5 ratio, a 2 dB change in input level (below the threshold) results in a 10 dB change in output level.

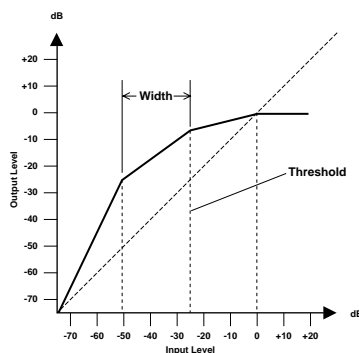
**Attack** controls how soon the signal is expanded once the expander has been triggered. With a fast attack time, the signal is expanded almost immediately. With a slow attack time, the initial transient of a sound passes through unaffected.

**Out Gain** sets the expander's output signal level.

**Knee** sets the transition of the signal at the threshold. With a hard knee, the transition between unexpanded and expanded signal is immediate. With the softest knee, knee5, the transition starts before the signal reaches the threshold and gradually ends above the threshold.

**Release** determines how soon the expander returns to its normal gain once the trigger signal level drops below the threshold.

## Compander



A compander is a compressor-expander—a combination of signal compression and expansion. The compander attenuates the input signal above the threshold as well as the level below the width. For very dynamic material, this program allows you to retain the dynamic range without having to be concerned with excessive output signal levels and clipping.

### CompanderH (CPH) and CompanderS (CPS) parameters:

Parameter	Value
<b>Threshold (dB)</b>	-54 to 0 (55 points)
<b>Ratio</b>	1.0, 1.1, 1.3, 1.5, 1.7, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 20 (15 points)
<b>Attack (ms)</b>	0 to 120 (121 points)
<b>Outgain (dB)</b>	-18 to 0 (36 points)
<b>Width (dB)</b>	1 to 90 (90 points)
<b>Release (ms)</b>	5 ms to 42.3 sec <sup>*1</sup> , 6 ms to 46.0 sec <sup>*2</sup> , 8 ms to 63.4 sec <sup>*3</sup> (160 points)

\*1. These values are obtained when the sampling frequency is 48kHz.

\*2. These values are obtained when the sampling frequency is 44.1 kHz.

\*3. These values are obtained when the sampling frequency is 32 kHz

**Threshold** determines the level of input signal required to trigger the compander. Signals above the threshold pass through unaffected. Signals at and below the threshold level are attenuated by the amount specified using the Ratio parameter. The trigger signal is determined using the KEY IN parameter.

**Ratio** controls the amount of companding—the change in output signal level relative to change in input signal level. With a 2:1 ratio, for example, a 10 dB change in input level (above the threshold) results in a 5 dB change in output level. The hard compander (CPH) has a fixed ratio of 5:1 for expansion and the soft compander (CPS) has a fixed ratio of 1.5:1 for expansion.

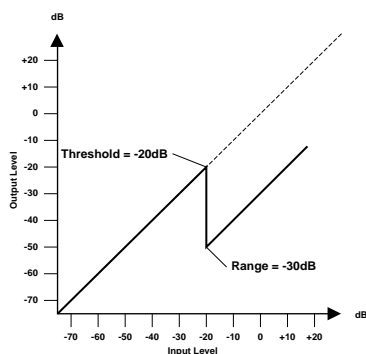
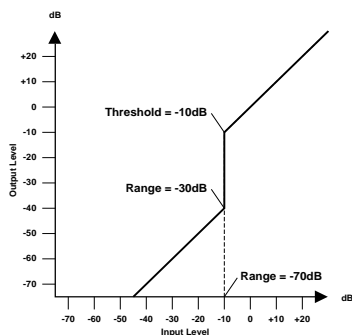
**Attack** controls how soon the signal is companded once the compander has been triggered. With a fast attack time, the signal is companded almost immediately. With a slow attack time, the initial transient of a sound passes through unaffected.

**Out Gain** sets the compander's output signal level.

**Width** is used to determine the distance, in decibels, between the expander and the compressor. With a width of 90 dB, the expander is effectively switched off and the compander is simply a compressor-limiter. With a smaller width (30dB) and a high threshold (0dB), the compander is an expander-compressor-limiter.

**Release** determines how soon the compander returns to its normal gain once the trigger signal level drops below the threshold.

## Gate and Ducking



A gate, or noise gate is an audio switch used to mute signals below a set threshold level. It can be used to suppress background noise and hiss from valve (tube) amps, effects pedals, and microphones.

Ducking is used to automatically reduce the levels of one signal when the level of a source signal exceeds a specified threshold. It is used for voice-over applications where, for example, level of background music is automatically reduced, allowing an announcer to be heard clearly.

### Gate (GAT) and Ducking (DUK) parameters:

Parameter	Value
Threshold (dB)	-54 to 0 (55 points)
Range (dB)	-70 to 0 (71 points)
Attack (ms)	0 to 120 (121 points)
Hold (ms)	0.02 msto1.96s <sup>*1</sup> , 0.02 msto2.13 sec <sup>*2</sup> , 0.03 msto2.94 sec <sup>*3</sup> (216 points)
Decay (ms)	5ms to 42.3s <sup>*1</sup> , 6 ms to 46.0 sec <sup>*2</sup> , 8 ms to 63.4 sec <sup>*3</sup> . (160 points)

\*1. These values are obtained when the sampling frequency is 48kHz.

\*2. These values are obtained when the sampling frequency is 44.1 kHz.

\*3. These values are obtained when the sampling frequency is 32 kHz

**Threshold** sets the level at which the gate closes, cutting off the signal. Signals above the threshold level pass through unaffected. Signals at or below the threshold cause the gate to close.

For ducking, trigger signal levels at and above the threshold level activate ducking, and the signal level is reduced to a level set by the Range parameter.

The trigger signal is determined using the KEY IN parameter.

**Range** controls the level to which the gate closes. It can be used to reduce the signal level rather than cut it completely. At a setting of -70 dB, the gate closes completely when the input signal falls below the threshold. At a setting of -30 dB, the gate only closes so far allowing an attenuated signal through. At a setting of 0 dB, the gate has no effect. When signals are gated abruptly, the sudden cutoff can sound odd.

For ducking, a setting of -70 dB causes the signal to be virtually cutoff. At a setting of -30 dB the signal is ducked by 30 dB. At a setting of 0 dB, the duck has no effect.

**Attack** determines how fast the gate opens when the signal exceeds the threshold level. Slow attack times can be used to remove the initial transient edge of percussive sounds. Too slow an attack time makes some signals sound backwards.

For ducking, this controls how soon the signal is ducked once the duck has been triggered. With a fast attack time, the signal is ducked almost immediately. With a slow attack time, ducking fades the signal. Too fast an attack time may sound abrupt.

**Hold** sets how long the gate stays open or the ducking remains active once the trigger signal has fallen below the threshold level.

**Decay** controls how fast the gate closes once the hold time has expired. A longer decay time produces a more natural gating effect, allowing the natural decay of an instrument to pass through.

For ducking, this determines how soon the ducker returns to its normal gain after the hold time has expired.

# Preset Dynamics Program Parameters

The “Release”, “Hold”, and “Decay” values shown in the following table are valid when the AW4416 is set at a sampling frequency of 44.1 kHz.

No.	Name	Type	Parameter	Value	Description	
001	A.Dr.BD	"CMP	Compressor	Threshold (dB)	-24	Compressor that gives the best results with an acoustic bass drum.
				Ratio ( :1)	3	
				Attack (ms)	9	
				Outgain (dB)	5.5	
				Knee	2	
			Release (ms)	58		
002	A.Dr.BD	"EXP	Expander	Threshold (dB)	-23	Expander for the same purpose as program 001.
				Ratio ( :1)	1.7	
				Attack (ms)	1	
				Outgain (dB)	3.5	
				Knee	2	
			Release (ms)	70		
003	A.Dr.BD	"GAT	Gate	Threshold (dB)	-11	Gate for the same purpose as program 001.
				Range (dB)	-53	
				Attack (ms)	0	
				Hold (ms)	1.93	
			Decay (ms)	400		
004	A.Dr.BD	"CPH	CompanderH	Threshold (dB)	-11	Hard compander for the same purpose as program 001.
				Ratio ( :1)	3.5	
				Attack (ms)	1	
				Outgain (dB)	-1.5	
				Width (dB)	7	
			Release (ms)	192		
005	A.Dr.SN	"CMP	Compressor	Threshold (dB)	-17	Compressor that gives the best results with an acoustic snare drum.
				Ratio ( :1)	2.5	
				Attack (ms)	8	
				Outgain (dB)	3.5	
				Knee	2	
			Release (ms)	12		
006	A.Dr.SN	"EXP	Expander	Threshold (dB)	-23	Expander for the same purpose as program 005.
				Ratio ( :1)	2	
				Attack (ms)	0	
				Outgain (dB)	0.5	
				Knee	2	
			Release (ms)	151		
007	A.Dr.SN	"GAT	Gate	Threshold (dB)	-8	Gate for the same purpose as program 005.
				Range (dB)	-23	
				Attack (ms)	1	
				Hold (ms)	0.63	
			Decay (ms)	238		

## Appendix

No.	Name	Type	Parameter	Value	Description	
008	A.Dr.SN	"CPS	CompanderS	Threshold (dB)	-8	Soft compander for the same purpose as program 005.
				Ratio ( :1)	1.7	
				Attack (ms)	11	
				Outgain (dB)	0.0	
				Width (dB)	10	
				Release (ms)	128	
009	A.Dr.Tom	"EXP	Expander	Threshold (dB)	-20	Expander for acoustic toms automatically reduces the volume when the toms are not played, helping to differentiate the bass and snare drums clearly.
				Ratio ( :1)	2	
				Attack (ms)	2	
				Outgain (dB)	5.0	
				Knee	2	
				Release (ms)	749	
010	A.Dr.OverTop	"CPS	CompanderS	Threshold (dB)	-24	Soft compander to emphasize the attack and ambience of cymbals using overhead microphones. It automatically reduces the volume when the cymbals are not played, helping differentiate the bass and snare drums clearly.
				Ratio ( :1)	2	
				Attack (ms)	38	
				Outgain (dB)	-3.5	
				Width (dB)	54	
				Release (ms)	842	
011	E.B.finger	"CMP	Compressor	Threshold (dB)	-12	Compressor to equalize the attack and volume level of a finger-picked electric bass guitar.
				Ratio ( :1)	2	
				Attack (ms)	15	
				Outgain (dB)	4.5	
				Knee	2	
				Release (ms)	470	
012	E.B.slapp	"CMP	Compressor	Threshold (dB)	-12	Compressor to equalize the attack and volume level of a slap electric bass guitar
				Ratio ( :1)	1.7	
				Attack (ms)	6	
				Outgain (dB)	4.0	
				Knee	hard	
				Release (ms)	133	
013	Syn.Bass	"CMP	Compressor	Threshold (dB)	-10	Compressor to adjust and/or emphasize the level of a synth bass.
				Ratio ( :1)	3.5	
				Attack (ms)	9	
				Outgain (dB)	3.0	
				Knee	hard	
				Release (ms)	250	
014	Piano1	"CMP	Compressor	Threshold (dB)	-9	Compressor to brighten the tonal color of a piano.
				Ratio ( :1)	2.5	
				Attack (ms)	17	
				Outgain (dB)	1.0	
				Knee	hard	
				Release (ms)	238	

No.	Name	Type	Parameter	Value	Description	
015	Piano2	"CMP	Compressor	Threshold (dB)	-18	A variation on program 014, adjusting the attack and entire level using a deeper threshold.
				Ratio ( :1)	3.5	
				Attack (ms)	7	
				Outgain (dB)	6.0	
				Knee	2	
				Release (ms)	174	
016	E.Guitar	"CMP	Compressor	Threshold (dB)	-8	Compressor for backing performances, such as electric rhythm guitar playing chords or arpeggios.
				Ratio ( :1)	3.5	
				Attack (ms)	7	
				Outgain (dB)	2.5	
				Knee	4	
				Release (ms)	261	
017	A.Guitar	"CMP	Compressor	Threshold (dB)	-10	A variation on program 016, intended for acoustic guitar playing rhythm chords or arpeggios.
				Ratio ( :1)	2.5	
				Attack (ms)	5	
				Outgain (dB)	1.5	
				Knee	2	
				Release (ms)	238	
018	Strings1	"CMP	Compressor	Threshold (dB)	-11	Compressor for string instruments. This program was intended for violins.
				Ratio ( :1)	2	
				Attack (ms)	33	
				Outgain (dB)	1.5	
				Knee	2	
				Release (ms)	749	
019	Strings2	"CMP	Compressor	Threshold (dB)	-12	A variation on program 018, intended for violas or cellos.
				Ratio ( :1)	1.5	
				Attack (ms)	93	
				Outgain (dB)	1.5	
				Knee	4	
				Release (ms)	1.35 S	
020	Strings3	"CMP	Compressor	Threshold (dB)	-17	A variation on program 018, intended for string instruments with a very low range, such as cellos or contrabass.
				Ratio ( :1)	1.5	
				Attack (ms)	76	
				Outgain (dB)	2.5	
				Knee	2	
				Release (ms)	186	
021	BrassSection	"CMP	Compressor	Threshold (dB)	-18	Compressor intended for brass sounds with fast and strong attack.
				Ratio ( :1)	1.7	
				Attack (ms)	18	
				Outgain (dB)	4.0	
				Knee	1	
				Release (ms)	226	

## Appendix

No.	Name	Type	Parameter	Value	Description	
022	Syn.Pad	"CMP	Compressor	Threshold (dB)	-13	Compressor for synth pad, intended to prevent diffusion of the sound.
				Ratio ( :1)	2	
				Attack (ms)	58	
				Outgain (dB)	2.0	
				Knee	1	
				Release (ms)	238	
023	SamplingPerc	"CPS	CompanderS	Threshold (dB)	-18	Compressor for sampled sounds to boost them to be as powerful and clear as the acoustic sounds. This program is for percussion sounds.
				Ratio ( :1)	1.7	
				Attack (ms)	8	
				Outgain (dB)	-2.5	
				Width (dB)	18	
				Release (ms)	238	
024	Sampling BD	"CMP	Compressor	Threshold (dB)	-14	A variation on program 023, intended for sampled bass drum sounds.
				Ratio ( :1)	2	
				Attack (ms)	2	
				Outgain (dB)	3.5	
				Knee	4	
				Release (ms)	35	
025	Sampling SN	"CMP	Compressor	Threshold (dB)	-18	A variation on program 023, intended for sampled snare drum sounds.
				Ratio ( :1)	4	
				Attack (ms)	8	
				Outgain (dB)	8.0	
				Knee	hard	
				Release (ms)	354	
026	Hip Comp	"CPS	CompanderS	Threshold (dB)	-23	A variation on program 023, intended for sampled sounds for loops.
				Ratio ( :1)	20	
				Attack (ms)	15	
				Outgain (dB)	0.0	
				Width (dB)	15	
				Release (ms)	163	
027	Solo Vocal1	"CMP	Compressor	Threshold (dB)	-20	Compressor suited for a solo vocal source.
				Ratio ( :1)	2.5	
				Attack (ms)	31	
				Outgain (dB)	2.0	
				Knee	1	
				Release (ms)	342	
028	Solo Vocal2	"CMP	Compressor	Threshold (dB)	-8	A variation on program 027.
				Ratio ( :1)	2.5	
				Attack (ms)	26	
				Outgain (dB)	1.5	
				Knee	3	
				Release (ms)	331	



No.	Name	Type	Parameter	Value	Description	
029	Chorus	"CMP	Compressor	Threshold (dB)	-9	A variation on program 027, intended for chorus vocals.
				Ratio ( :1)	1.7	
				Attack (ms)	39	
				Outgain (dB)	2.5	
				Knee	2	
			Release (ms)	226		
030	Compander(H)	"CPH	CompanderH	Threshold (dB)	-10	A template for the hard knee compander program.
				Ratio ( :1)	3.5	
				Attack (ms)	1	
				Outgain (dB)	0.0	
				Width (dB)	6	
			Release (ms)	250		
031	Compander(S)	"CPS	CompanderS	Threshold (dB)	-8	A template for the soft knee compander program.
				Ratio ( :1)	4	
				Attack (ms)	25	
				Outgain (dB)	0.0	
				Width (dB)	24	
			Release (ms)	180		
032	Click Erase	"EXP	Expander	Threshold (dB)	-33	Expander to remove click track sounds that may bleed out of the monitor headphones the musicians are using.
				Ratio ( :1)	2	
				Attack (ms)	1	
				Outgain (dB)	2.0	
				Knee	2	
			Release (ms)	284		
033	Announcer	"CPH	CompanderH	Threshold (dB)	-14	Hard compander reduces the level during the interval between the words, making the voice sound even.
				Ratio ( :1)	2.5	
				Attack (ms)	1	
				Outgain (dB)	-2.5	
				Width (dB)	18	
			Release (ms)	180		
034	Easy Gate	"GAT	Gate	Threshold (dB)	-26	A template for the gate program.
				Range (dB)	-56	
				Attack (ms)	0	
				Hold (ms)	2.56	
			Decay (ms)	331		
035	BGM Ducking	"DUK	Ducking	Threshold (dB)	-19	Ducking background music for voiceovers, typically keyed from the announcer's channel.
				Range (dB)	-22	
				Attack (ms)	93	
				Hold (ms)	1.20 S	
			Decay (ms)	6.32 S		
036	Limiter1	"CMP	CompanderS	Threshold (dB)	-8	A template for a limiter using the soft compander program. This program has a slow release.
				Ratio ( :1)	4	
				Attack (ms)	25	
				Outgain (dB)	0.0	
				Width (dB)	24	
			Release (ms)	180		

## Appendix

No.	Name	Type	Parameter	Value	Description	
037	Limiter2	"CMP	Compressor	Threshold (dB)	0	A template for a limiter using the compressor program. This program is a PEAK STOP type.
				Ratio ( :1)	$\infty$	
				Attack (ms)	0	
				Outgain (dB)	0.0	
				Knee	hard	
				Release (ms)	319	
038	Total Comp1	"CMP	Compressor	Threshold (dB)	-8	Compressor intended to reduce the overall volume level. Use for the stereo out during mixdown. It is also interesting on stereo input signals.
				Ratio ( :1)	2.5	
				Attack (ms)	60	
				Outgain (dB)	0.0	
				Knee	2	
				Release (ms)	1.12 S	
039	Total Comp2	"CMP	Compressor	Threshold (dB)	-18	A variation of program 038. It has a harder compression ratio.
				Ratio ( :1)	3.5	
				Attack (ms)	94	
				Outgain (dB)	2.5	
				Knee	hard	
				Release (ms)	447	
040	Total Comp3	"CMP	Compressor	Threshold (dB)	-16	A variation of program 038. It has an extreme compression ratio, almost a limiter in effect.
				Ratio ( :1)	6	
				Attack (ms)	11	
				Outgain (dB)	6.0	
				Knee	1	
				Release (ms)	180	

# Troubleshooting

If the AW4416 does not operate as you expect, or if you suspect a problem, please refer to the following points and take the appropriate action.

## ■ Power does not turn on

- Is the power cable connected to an AC outlet of the correct voltage?
- Is the POWER switch turned ON?
- If the power still does not turn on, please contact your Yamaha dealer.

## ■ Internal hard disk is not detected

- Is the internal hard disk connected correctly?
- The pins of the internal hard disk may have been deformed.
- Has the internal hard disk been formatted appropriately? \*
  - \* If an unformatted hard disk is installed, a message will appear when the power is turned on, asking you whether you wish to format the hard disk.

## ■ LCD display is dim or dark

- Use the contrast knob located at the lower right of the screen to adjust the contrast.

## ■ Input sound is not output

- Are speakers or headphones connected correctly?
- Is your amp and other external devices turned on?
- Is the signal from the external device being input?
- The connection cable from the external device may be broken.
- Is the [GAIN] control set to an appropriate level?
- Is the fader of the input channel or monitor channel raised?
- Is the [ON] key of the input channel or monitor channel lit?
- Is the fader of the stereo output channel raised?
- Is the [ON] key of the stereo output channel lit?
- Is the option card installed correctly?
- Is the input/output patching set correctly?
- Is the word clock set correctly?
- The jack being used for input may have been assigned as an EFFECT INSERT return.
- Is the attenuator raised in the EQ screen or VIEW screen?

## ■ Recorded sound is not output

- Has audio data been recorded on the recorder?
- Muting may be enabled in the TRACK screen TR View page.
- The input monitor mode may be set to INPUT.

- Is the virtual track set to the track that was recorded?
- A region shorter than the specified region fade time cannot be played.

## ■ Can't hear the signal from the INPUT 1/2 jacks

- An external effect unit may be connected to the INSERT jack, and turned off.

## ■ Signal from the INPUT 8 jack is too loud

- A conventional line-level signal may be connected to the Hi-Z jack.

## ■ Sound is too soft

- Are the speakers or headphones connected correctly?
- Is the volume of your amp or external equipment raised?
- Is the [GAIN] control set correctly?
- Is the fader of the input channel or monitor channel raised?
- Is the fader of the stereo output channel raised?
- The EQ gain may be set to an extremely low value.
- The dynamics processor may be set to an extreme threshold or ratio.
- If you are connecting an electric guitar, is it connected to the Hi-Z jack?
- Check the level in the HOME screen. For details refer to P.75 "HOME screen."
- Is the attenuator of the EQ screen or VIEW screen raised?

## ■ Sound is distorted

- Is the [GAIN] control set correctly?
- The connection cable from the external device may be broken.
- The fader of the input channel or monitor channel may be raised excessively.
- The stereo output channel fader may be raised excessively.
- The stereo output channel attenuator may be raised excessively.
- The EQ gain may be excessively high.
- Did you record at an appropriate level?
- Is the word clock setting correct for both the AW4416 and the external device(s)?
- An effect such as Distortion or Amp Simulate may be in use.

### ■ Can't record

- Is the internal hard disk connected?
- Is there sufficient free space on the internal hard disk?
- The song may be protected.
- Is the [REC TRACK SELECT] key lit?
- The stereo track may be in playback mode.
- Is the input signal routed appropriately to the recorder? \*
- \* If the signal is being input appropriately to the recorder, pressing the [REC TRACK SELECT] key will cause the meter in the FL display to react.
- When a file input/output page such as the SONG screen Song List page is displayed, recording and playback are not possible.
- CD/DAT DIGITAL REC in the UTILITY screen Prefer.2 page may be set to DISABLE.
- Please read and understand the copyright warning (→ P.36) before using digital input signals.

### ■ Can't record on the STEREO track

- It is not possible to record on the STEREO track while recording on other tracks.

### ■ Can't play back the STEREO track

- Muting may be selected in the TRACK screen Stereo page.
- Are monitor channels 1 and 2 raised? \*
- \* For STEREO track playback mode, the signal is output from monitor channels 1 and 2.

### ■ Not all tracks will play back

- There are limitations on the number of tracks that can be simultaneously recorded or played. Refer to page 90.

### ■ The volume of a particular channel increases or decreases

- Are the dynamics processor settings appropriate?
- EQ may have been recorded in the automix.

### ■ Faders move to the lowest position on their own

- Automix may have been recorded.
- Faders 9–14 cannot be operated when the mixing layer is 17–24/RTN.

### ■ Meters move even though the faders are lowered

- The direct out setting may be PRE EQ or PRE FADER.
- The meter display may be set to PRE FADER.

### ■ Can't store a scene

- Is the scene memory protected?
- A scene cannot be stored in scene number 00.

### ■ Can't reproduce a scene

- One or more channels may be set to Recall Safe.

### ■ Can't recall a scene during recording

- The AW4416 may be set to record the digital input signal.
- Make sure that CD/DAT DIGITAL REC is set to ENABLE.

### ■ Can't change input patches during recording

- The AW4416 may be set to record the digital input signal.
- Make sure that CD/DAT DIGITAL REC in the UTILITY screen Prefer.2 page is set to ENABLE.

### ■ Can't save to a library

- It is not possible to save to the factory-preset libraries.

### ■ Can't recall a channel library to the stereo output channel

- Channel libraries saved from other channels cannot be recalled to the stereo output channel.

### ■ Can't exchange MIDI data

- Are the MIDI cables connected correctly?
- A MIDI cable may be broken.
- Is the power turned on for the transmitting and receiving devices?
- Do the channel settings match for the transmitted and receiving devices?
- In the MIDI screen MIDI Setup page, is PORT SELECT effect to MIDI?
- In the MIDI screen MIDI Setup page, are PROGRAM CHANGE TX and RX set to ON?
- Is a scene assigned to the program change number being transmitted?

### ■ MIDI messages are looped

- In the MIDI screen MIDI Setup page, ECHO may be turned ON.
- Also check the settings of the connected external MIDI devices.

### ■ MTC messages are not transmitted

- Is the MIDI cable correctly connected to the MTC OUT connector? MTC is not transmitted from the MIDI OUT connector.
- Is SYNC OUT set correctly?
- Is MTC SYNC set to MASTER?

### ■ The AW4416 does not synchronize to incoming MTC messages

- Is the MIDI cable connected to the MIDI IN connector?
- In the MIDI screen MIDI Sync page, is MTC Sync set to SLAVE?

### ■ MTC messages are received, but synchronization drifts

- Is a large amount of MIDI data (notes etc.) being received together with the MTC messages?

**■MTC synchronization drifts**

- Does the frame rate match between the AW4416 and the external device?
- SYNC OFFSET may have been set.
- If jumps occur in the synchronized time, change the SYNC AVE. setting in the MIDI screen MIDI Sync page, and try again.

**■Something happens to the sound when the [DATA/JOG] dial, [SHUTTLE] dial, [FF] key, or [REW] key are operated**

- Differences in the number of simultaneously played tracks will affect the way in which the sound is heard when these controls are operated.

**■MMC is not transmitted**

- Is the MIDI cable connected to the MIDI OUT connector?
- MMC messages are not transmitted from the MTC OUT connector.

**■MIDI data is not exchanged via the TO HOST connector**

- Is the cable correctly connected to the TO HOST connector?
- PORT SELECT may be set to MIDI.
- Is the PORT SELECT setting appropriate for your computer? \*  
\* For details on this setting, refer to page 39 “MIDI screen.”
- A computer application other than your sequencer may be using the port.

**■Metronome cannot be heard**

- The metronome sound is normally sent only to the MONITOR OUT and headphones. \*  
\* Settings can also be made in the SETUP screen Patch IN page to assign the metronome to an output channel.

**■Moving a fader does not change the level**

- Is the appropriate fader mode and mixing layer selected?
- The fader may be set to PRE FADE in AUX.

**■The ON key and SEL key select the wrong channel**

- Is the appropriate mixing layer selected?

**■Noise is present in the recorded signal**

- Does the word clock setting match for the AW4416 and the external device(s)?
- Is an unsynchronized signal being input?
- Is the dither setting appropriate?
- The oscillator may be functioning.
- If the speed of your internal hard disk is slow, problems may occur during recording and playback. Please use only the recommended internal hard disks.

**■Sound recorded via the digital input sounds grainy**

- Is the dither setting appropriate?

**■Pairing was specified, but the signal is monaural**

- Is the odd-numbered channel panned far left and the even-numbered channel panned far right?

**■Pairing was specified, but the signal phase does not match**

- Even when channels are paired, the phase setting is not linked.

**■Signal is delayed**

- Is the channel delay set correctly?

**■Automix cannot be recorded**

- Is automix set to ENABLE?
- In the AUTOMIX screen, is the REC or AUTO REC button turned ON?
- Is the [SEL] key lit for the channel you are operating?
- Is OVERWRITE turned ON for the control (e.g., fader or EQ) you are operating?

**■Can't use the internal effects**

- Effect BYPASS may be turned ON.
- Are the EFF.RTN 1, 2 faders raised?
- In the SETUP screen Patch IN page, EFFECT PATCH may be set to INSERT.
- It is not possible to insert one effect into multiple channels.
- 019. HQ. Pitch can be used only with EFFECT 2.

**■Can't use SOLO**

- The channel may be set to Solo Safe.
- Is the SETUP screen Solo Setup page set appropriately? \*  
\* For details on the settings, refer to page 14, “SETUP screen.”

**■Can't edit a recorded track**

- Have you selected the virtual track that you recorded?

**■Fader groups and mute groups don't work**

- In the EQ screen Fader Group page and Mute Group page, check that grouping is set to ENABLE.

**■Editing results are not heard in the sound**

- Have you selected the virtual track that you recorded?
- Are you using the appropriate editing command? \*  
\* For details on editing commands, refer to page 99 “EDIT screen.”

### ■ Playback pitch is wrong

- VARI may be selected.
- Is the AW4416 operating on the same sampling frequency as the synchronized external device?
- Is the master device operating in a stable way?
- You may have executed the EDIT screen PITCH command.
- Is an effect such as HQ.Pitch or Dual Pitch selected for a monitor channel?

### ■ Counter display is not 0 when you return to the beginning of the song

- The display mode may be set to REMAIN (remaining recording time).
- If the display mode is set to REL (relative time), the start point may be specified.
- The SONG screen Setting page may be set to MEASURE. \*  
\* For details on this setting, refer to page 1 “SONG screen.”

### ■ No sound from the sampling pads

- In the SETUP screen Patch IN page, are the signals from the sampling pads assigned to a channel?
- The bank A/B setting may be incorrect.

### ■ Can't save a file

- Is there sufficient space on the internal hard disk?
- Did you perform the correct shut-down procedure when you last turned off the power? \*  
\* If you turn off the power without performing the shut-down, data may be lost or the hard disk may be damaged.

### ■ Song file size is unnaturally large

- Even after you use recorder editing to erase a track etc., that sound file will be saved on the disk as an unused file. Execute the optimize operation in the SONG screen Song Edit page.

### ■ File date is not recorded correctly

- Is the internal clock set to the correct date and time? \*  
\* If the date and time of the internal clock has drifted, the internal battery may have run down. Please contact your Yamaha dealer.

### ■ A device connected to the SCSI connector is not recognized

- The power of the SCSI device may have been turned on after the AW4416.
- Is the SCSI cable connected correctly?
- The pins of the SCSI cable may have been bent.
- Is the ID of the SCSI device set correctly?
- Is termination specified correctly for the SCSI device?

### ■ Can't save files on a SCSI device

- Is there sufficient free space on the save destination media?
- Has the save destination media been formatted appropriately?

### ■ Can't load files from a SCSI device

- Is there sufficient free space on the internal hard disk?

### ■ CD-RW drive is not recognized

- Is the CD-RW drive connected correctly?

### ■ Can't create an audio CD

- Is CD-R media inserted?
- The inserted CD-R may have already been finalized.
- Is a signal recorded on the stereo track?
- The stereo track must be at least four seconds long.
- It is not possible to create an audio CD from a song whose Fs (sampling frequency) setting is 48 kHz.

### ■ An audio CD you created does not play back on a conventional player

- An audio CD you created you not play back on a conventional player unless the disc has been finalized.

### ■ Audio recorded on CD-RW media does not play back on some players

- In order for audio data recorded on CD-RW media to be played back, the player must support CD-RW. Contact the manufacturer of the player regarding CD-RW support.

### ■ The sound skips while playing an audio CD that you created

- There may be differences in the quality of the completed CD depending on the type of CD-R media you use. If this occurs, try using single speed (normal speed) recording rather than double-speed or faster recording.

### ■ The screen changes on its own when you operate the PAN or EQ encoders

- In the UTILITY screen Prefer. 1 page, turn the AUTO PAN DISPLAY and AUTO EQ DISPLAY settings OFF. \*  
\* For details refer to page 33 “UTILITY screen.”

### ■ Can't use the [DATA/JOG] dial to control on-screen parameters

- The [NUM LOCATE] key may be on.
- The [JOG ON] key may be on.

# Display message list

## Messages

<b>AUTOMIX DISABLED.</b>	Automix is not enabled, and cannot be recorded.
<b>AUTOMIX MEMORY FULL!</b>	Automix memory has no free area.
<b>AUTOMIX NOT RUNNING.</b>	Automix has been stopped, so recording is not possible. Pause the recorder, and then playback.
<b>AUTOMIX REC ABORTED.</b>	Automix recording was stopped, and the data was discarded.
<b>AUTOMIX RECORDING.</b>	The operation cannot be executed since automix is being recorded.
<b>AUTOMIX RUNNING.</b>	The operation cannot be executed since automix is being recorded or played.
<b>BANK A SELECTED</b>	Since sampling pad bank A is selected, muting cannot be defeated for this pad.
<b>BANK B SELECTED</b>	Since sampling pad bank B is selected, muting cannot be defeated for this pad.
<b>CANNOT ASSIGN DIGITAL-ST-IN.</b>	DIGITAL STEREO IN cannot be assigned to the stereo bus cascade.
<b>CANNOT CHANGE THE MUTE</b>	Muting cannot be defeated since this would exceed the number of simultaneously playable tracks.
<b>CANNOT PLAY THIS PAGE</b>	Playback is not possible in this page.
<b>CANNOT RECALL AUTOMIX</b>	Recall is not possible, since automix data has not been stored.
<b>CANNOT REDO</b>	Redo (re-execution of an operation) is not possible.
<b>CANNOT SELECT (MTC SLAVE)</b>	Since the AW4416 is set to be the MTC slave, the external word clock cannot be selected as the word clock source.
<b>CANNOT SELECT (WC EXTERNAL)</b>	Since the external word clock is selected as the word clock source, the AW4416 cannot be set as the MTC slave.
<b>CANNOT SET MARK</b>	It is not possible to specify a mark at an already-specified position.
<b>CANNOT UNDO</b>	Undo (cancellation of an operation) is not possible.
<b>CANNOT USE BOTH SLOTS!</b>	OPTION I/O slot 1 and slot 2 cannot be used simultaneously.
<b>CD PLAY MODE NOW.</b>	Since the AW4416 is in CD Play mode, this operation is not possible.
<b>DIFFERENT TC FRAME TYPE</b>	MTC of a different frame type than the internal setting is being received.
<b>DIGITAL-ST-IN REC PROHIBIT.</b>	Recording is prohibited for the signal being input from DIGITAL STEREO IN.
<b>DIGITAL-ST-IN SYNC ERROR!</b>	The signal being input from DIGITAL STEREO IN is not synchronized to the word clock master.
<b>DIN TO STEREO BUS REFUSE.</b>	Since the signal was interrupted, cascading from DIGITAL STEREO IN to the stereo bus has been defeated.
<b>EFF1 INSERT RELEASED</b>	Effect 1 has been released from insertion because a patch library was recalled.
<b>EFF2 INSERT RELEASED</b>	Effect 2 has been released from insertion because a patch library was recalled.
<b>FOR EFFECT2 ONLY.</b>	The selected effect program can be used only with effect 2.
<b>IN/OUT POINTS TOO CLOSE</b>	The auto punch-in/out interval is too short. It cannot be set less than approximately 100 msec.

<b>INT.EFF NOW SELECTED AUX.</b>	The internal effect is connected to the AUX send, and cannot be inserted.
<b>LOW BATTERY!!</b>	The internal battery is running down.
<b>MAKE NEW MIX.</b>	There are no events to be edited. Please create a new mix.
<b>MARK ERASED</b>	The mark has been erased.
<b>MARK SET</b>	The mark has been set.
<b>MIDI IN: DATA FRAMING ERROR!</b>	Invalid data may have been received at the MIDI IN connector.
<b>MIDI IN: DATA OVERRUN!</b>	Invalid data may have been received at the MIDI IN connector.
<b>MIDI: RX BUFFER FULL!</b>	The AW4416 is receiving more MIDI data than it can handle.
<b>MIDI: TX BUFFER FULL!</b>	The AW4416 is attempting to transmit more MIDI data than it can handle.
<b>NO CURRENT AUTOMIX.</b>	There is no valid automix data. Please create a new mix.
<b>NO DATA TO RECALL.</b>	Since data has not been stored, it cannot be recalled.
<b>NO MARK LEFT</b>	The allowable number of marks has been exceeded.
<b>PLAY TRACK MUTE IS ON</b>	Playback tracks were muted because the allowable number of simultaneously recorded/played tracks was exceeded.
<b>RECORDER BUSY</b>	The operation cannot be executed because the recorder is operating.
<b>RECORDER RUNNING</b>	The operation cannot be executed because the recorder is recording or playing.
<b>REDO COMPLETE</b>	Redo (re-execution of the previous operation) has been completed.
<b>REPEAT POINTS TOO CLOSE</b>	The repeat interval is too short. It cannot be set to less than one second.
<b>SELECTED AREA HAS NO DATA.</b>	The selected area contains no trigger data.
<b>SELECTED AREA HAS NO REGION.</b>	The selected area contains no region.
<b>SELECTED CH IS NONE.</b>	The selected channel cannot be selected since it does not exist.
<b>SELECTED CH ONLY MODE.</b>	The channel cannot be changed, since the display mode is set to SELECTED CH ONLY.
<b>SELECTED PAD NOT ASSIGNED.</b>	No sample is assigned to the selected sampling pad.
<b>SELECTED SONG HAS NO REGION.</b>	The selected song does not contain a region.
<b>SELECTED TRACK HAS NO REGION.</b>	The selected track does not contain a region.
<b>SELECTED TRACK NOT RECORDED.</b>	The selected track does not contain recorded data.
<b>SLOT1 INPUT SYNC ERROR!</b>	The signal being input to the input jack of a card installed in OPTION I/O slot 1 is not synchronized to the word clock master.
<b>SLOT1,2 INPUT SYNC ERROR!</b>	The signal being input to the input jack of a card installed in an OPTION I/O slot is not synchronized to the word clock master.
<b>SLOT2 INPUT SYNC ERROR!</b>	The signal being input to the input jack of a card installed in OPTION I/O slot 2 is not synchronized to the word clock master.
<b>SOLO READY.</b>	The Solo function is ready. Use the [SEL] keys to select the solo channel.
<b>SOLO SLAVE.</b>	The Solo status cannot be changed when the AW4416 is functioning as a cascade slave. Press the Solo key on the master console.
<b>SONG NUMBER FULL.</b>	The maximum number of songs has been reached.
<b>SONG TOP/END OUT OF RANGE</b>	You located outside the top/end range of the song.
<b>STEREO PAIRED.</b>	You are attempting to defeat ST LINK for the dynamics of paired channels.



<b>STEREO TRACK MUTE IS OFF</b>	Since muting is off for the stereo track, track muting cannot be turned off.
<b>THIS SONG IS PROTECTED.</b>	This song is protected, and cannot be edited or recorded.
<b>TO HOST: DATA FRAMING ERROR!</b>	Invalid data may have been received at the TO HOST connector.
<b>TO HOST: DATA OVERRUN!</b>	Invalid data may have been received at the TO HOST connector.
<b>TO HOST: DATA PARITY ERROR!</b>	Invalid data may have been received at the TO HOST connector.
<b>TO HOST: RX BUFFER FULL!</b>	Excessive amounts of data may have been received at the TO HOST connector.
<b>TO HOST: TX BUFFER FULL!</b>	The AW4416 may be attempting to transmit excessive amounts of data from the TO HOST connector.
<b>TRIGGER LIST RECORDING</b>	A sampling pad trigger list is being recorded.
<b>UNDO COMPLETE</b>	Undo (cancellation of the previous operation) has been executed.
<b>WRONG WORD CLOCK!!</b>	The word clock from a connected device selected by the AW4416 for synchronization is not appropriate.

## Popup messages

<b>CD Access Error!</b>	A error occurred when accessing the CD.
<b>CD Size Full!</b>	Data exceeding the recordable length of the CD cannot be added.
<b>CD Track Over!</b>	The maximum number of tracks has been reached, and further addition is not possible.
<b>Can't Copy This Parameter!</b>	This parameter cannot be copied.
<b>Can't Create Image File!</b>	Since the disk is full, a CD image file cannot be created.
<b>Can't Delete Current Song!</b>	The currently loaded song cannot be deleted.
<b>Can't Delete Protected Song!</b>	A protected song cannot be deleted.
<b>Can't Edit Multiple Songs!</b>	This editing operation cannot be executed on multiple songs simultaneously.
<b>Can't Optimize Protected Song!</b>	Optimize cannot be executed on a protected song.
<b>Can't REDO</b>	Redo is not possible.
<b>Can't Select Current Song!</b>	The currently loaded song cannot be edited.
<b>Can't UNDO</b>	Undo is not possible.
<b>Can't Write CD-RW by Track At Once!</b>	A CD-RW cannot be written using Track At Once.
<b>Change Media, Invalid Order.</b>	Please exchange the media. The order of media volumes is incorrect.
<b>Change Media, Not 1st Media</b>	Please exchange the media. This is not the first media volume.
<b>Change Media, Not TYPE 1 Backup.</b>	Please exchange the media. This media was not backed up as TYPE 1.
<b>Change Media, Not TYPE 2 Backup.</b>	Please exchange the media. This media was not backed up as TYPE 2.
<b>Change Media, Please Device Error!</b>	The media is an incorrect type. Please exchange it.
<b>Directory Name Too Long!</b>	A problem has occurred with the SCSI device.
<b>Directory Not Found!</b>	The directory name is too long and cannot be displayed.
<b>Disk Full!</b>	The specified directory cannot be found.
<b>File System Error!</b>	The disk has no free capacity.
<b>Finalized Media!</b>	An error has occurred in the file system of the internal hard disk.
<b>Invalid Parameter!</b>	The media has already been finalized.
	The parameter setting exceeds the allowable range.

<b>Media Error!</b>	A problem has occurred on the media.
<b>Media Full!</b>	The media has no free space.
<b>Media Protected!</b>	The media is write-protected.
<b>Memory Full!</b>	There is no free space in the sampling pad memory.
<b>No Song to Backup!</b>	There is no song to backup.
<b>No Song to Edit!</b>	There is no song to edit.
<b>No Song to Load!</b>	There is no song to load.
<b>No Song to Restore!</b>	There is no song to restore.
<b>No Song to Save!</b>	There is no song to save.
<b>No Song to Write!</b>	No songs to write to the CD have been selected.
<b>No Song!</b>	No songs can be found.
<b>No Stereo Track!</b>	There is no stereo track.
<b>No Track to Open Wave Display!</b>	There is no track data for waveform display.
<b>Not WAV Drive!</b>	The selected drive contains no WAV files.
<b>Not WAV File!</b>	The file is not a WAV file.
<b>Partition Not Found!</b>	The specified partition was not found.
<b>Recall Channel Data Conflict!</b>	The specified channel library cannot be loaded into this channel.
<b>SCSI Error!</b>	An error has occurred in the SCSI connection.
<b>Selected Drive is not CD Drive!</b>	The drive of the selected SCSI ID is not a CD drive.
<b>Selected Drive is not Connected!</b>	The drive of the selected SCSI ID is not connected.
<b>Selected Preset is Effect2 Only!</b>	The selected preset can be used only by effect 2.
<b>Selected Song Status Conflict!</b>	The track cannot be imported, since it is from a song with a different sampling frequency or quantization (bit length).
<b>Selected Track is not Recorded!</b>	The selected track is not recorded.
<b>Too Many Regions!</b>	There are too many regions.
<b>Too Small Region!</b>	Time compression/expansion cannot be executed since the region is too small.

# Specifications

## General Specifications

AD converter	24-bit linear, 64-times oversampling
DA converter	24-bit linear, 128-times oversampling
Internal processing	32-bit
Sampling frequency	Internal 44.1 kHz/48kHz External 44.1 kHz (−6%) to 48 kHz (+6%)
Audio input section	max. 26 channels
MIC/LINE	8 channels
DIGITAL STEREO IN	2 channels (stereo × 1)
mini YGDAI card (option)	max. 16 channels
Audio output section	max. 28 channels
STEREO OUT	2 channels (stereo × 1)
OMNI OUT	4 channels
MONITOR OUT	2 channels (stereo × 1)
PHONES	2 channels (stereo × 1)
DIGITAL STEREO OUT	2 channels (stereo × 1)
mini YGDAI card (option)	max. 16 channels
Mixing layer section	44 channels
Input channel	24 channels
Internal effect return	4 channels (stereo × 2)
Playback	16 channels (16 track direct out playback), or stereo 2 channels (stereo track playback)
Internal effects section	
Multi-effects × 2	
Bus section	20 channels
Bus	8 channels
Aux	8 channels
Stereo	2 channels (stereo × 1)
Solo	2 channels (stereo × 1)
Sampler section	
Assign to mixer section	
Playback	8 voices
Trigger pads	8 × 2 banks
Sampling time	max. 90 sec. (16-bit/44.1 kHz)
Recorder section	
Recording medium	2.5" IDE hard disk drive
Sound file format	AW4416 original format
Recording resolution	16-bit, 24-bit

Tracks	130 tracks (16 tracks × 8 virtual tracks plus stereo track)
Maximum recording time	Approx. 140 min (44.1 kHz, 16-bit, 16 tracks, 12 GB hard disk)
Power requirements	U.S.A. & Canada 120 V 80 W AC, 60 Hz Europe 230 V 80 W AC, 50 Hz
Dimensions (W × H × D)	558.0 × 147.7 × 459.7 mm (22 × 5.8 × 18.1 inches)
Weight	11.8 kg (26 lbs)
Operating temperature range	5° to 35° C
Options	Removable 2.5" hard disk adapter (ADP25H), mini YGDAI cards (MY8-AT, MY8-TD, MY8-AE, MY8-AT, MY4-AD, MY4-DA), Footswitch FC5

## Mixer section

### ■ Input/output

MIC/LINE input	Channel 1, 2 (balanced, XLR-type, TRS phone jack)
+48 V DC phantom powering	
PEAK LED	−3 dB (clipping level)
Input impedance	3 kΩ
Nominal input level	−46 dB to +4 dB
Minimum input level	−52 dB
Maximum input level	+22 dB
Insert I/O	Channel 1, 2 (unbalanced, TRS phone jack)
Input impedance	10 kΩ
Nominal input level	0 dB
Output impedance	600Ω
Nominal output level	0 dB
MIC/LINE input	channel 3–8 (balanced, TRS phone jack)
PEAK LED	−3 dB (clipping level)
Input impedance	3 kΩ
Nominal input level	−46 dB to +4 dB
Minimum input level	−52 dB
Maximum input level	+22 dB
MIC/LINE input (Hi-Z)	channel 8 (unbalanced, phone jack)
Input impedance	500 kΩ
Nominal input level	−46 dB to +4 dB
Minimum input level	−52 dB
Maximum input level	+20 dB

STEREO OUT	L, R (unbalanced, phono)
Output impedance	1 k $\Omega$
Nominal load impedance	10 k $\Omega$
Nominal output level	-10 dBV
Maximum output level	+8 dBV
MONITOR OUT	L, R (balanced, TRS phone jack)
Output impedance	150 $\Omega$
Nominal load impedance	10 k $\Omega$
Nominal output level	+4 dB
Maximum output level	+22 dB
OMNI OUT	1-4 (unbalanced, phone jack)
Output impedance	1 k $\Omega$
Nominal load impedance	10 k $\Omega$
Nominal output level	0 dB
Maximum output level	+18 dBV
PHONES	(unbalanced, TRS phone jack)
Nominal load impedance	8-40 $\Omega$
Maximum output level	100 mW + 100 mW (40 $\Omega$ load)
DIGITAL STEREO I/O	Coaxial (phono)
Option card slot	Slot $\times$ 2
Digital I/O	MY-8-AT (Adat) MY-8-TD (Tascam) MY-8-AE (AES/EBU)
Analog input	MY-8-AD (TRS phone jack $\times$ 8) MY-4-AD (XLR-type $\times$ 4)
Analog output	MY-4-DA (XLR-type $\times$ 4)

## ■ Digital mixer

Input channel (channel 1-24, playback 1-16)

Attenuator, Phase (normal, reverse), EQ (4-band PEQ), Dynamics, Delay, On/Off, Fader (60 mm motorized), Pan, Bus assign (stereo, bus, aux, solo, direct out)

Internal effects return

Attenuator, Phase (normal, reverse), EQ (4-band PEQ), Delay, On/Off, Fader (60 mm motorized), Pan, Bus assign (stereo, bus, aux, solo)

Bus

Stereo L, R

Attenuator, EQ (4-band PEQ), Dynamics, On/Off, Fader (60 mm motorized), Balance

Bus 1-8

Attenuator

Aux 1-8

Attenuator

Solo L, R

Fader	60 mm motorized × 17
Frequency response	+1, -3 dB, 20 Hz–20 kHz (MIC/LINE IN to STEREO OUT)
Dynamic range (20 kHz, LPF, IHF-A)	109 dB (typical) DA converter (STEREO OUT) 104 dB (typical) AD + DA (LINE IN to STEREO OUT)
Total harmonic distortion (20 kHz, LPF)	Less than 0.02% @1 kHz (LINE IN to STEREO OUT)

## Recorder section

### ■ General

Recording resolution	16-bit, 24-bit (set per song)
Sampling frequency	44.1 kHz, 48 kHz (set per song)
Maximum simultaneous recording tracks	

• 16 bit song

Simultaneous recording tracks	Simultaneous playback tracks
0–8	16
9–16	0

• 24 bit song

Simultaneous recording tracks	Simultaneous playback tracks
0	16
1–2	14
3–4	12
5–8	8
16	0

Tracks	130 tracks (16 tracks × 8 virtual tracks plus stereo track)
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### ■ Format

File system	AW4416 original format
Internal hard disk drive	2.5" IDE
Max. hard disk capacity	64 GB (8 GB partition)
Max. songs per hard disk	Approx. 30,000 songs

### ■ Edit

Song edit	Name, comment, delete, copy, optimize, protect, fade in/out
Track edit	Name, erase, copy, exchange, slip, time compression/ expansion, pitch change, import
Part edit	Erase, delete, copy, move, insert, time compression/ expansion, pitch change

Region edit	Erase, delete, copy, move, time compression/expansion, pitch change, insert
-------------	---

### ■ Others

Locate	Direct locate: data entry search (time, measure) Quick locate: start, end, RTZ, A/B, last rec in/out, roll back
Punch I/O	Manual punch I/O, auto punch I/O

## Controls

### Analog section

Input (channel 1–8)	Gain (variable)
Input (channel 1, 2)	+48 V (phantom switch)
Output	Phones level, monitor out level

### Mixer section

WORK NAVIGATE buttons	SONG, QUICK REC, MASTERING, CD PLAY	
UNIT buttons	SETUP, FILE, UTILITY, MIDI	
MIXER buttons	VIEW, PAN, EQ, DYN	
FADER MODE buttons	AUX1, AUX2, AUX3, AUX4, AUX5, AUX6, AUX7, AUX8, HOME	
MIXING LAYER buttons	1–16, 17–24 RTN, MONI	
ON buttons, SEL buttons, Faders	1–8	channel 1–8, channel 17–24
	9–14	channel 9–14
	15	channel 15/return 1
	16	channel 16/return 2
	17	stereo master

### SOLO buttons

Function buttons	SHIFT × 2, F1, F2, F3, F4, F5
EQ buttons	HIGH, HI-MID, LO-MID, LOW
Encoders	PAN, Q, F, G

### Sampler section

SAMPLING PAD buttons	1, 2, 3, 4, 5, 6, 7, 8, BANK, EDIT
----------------------	------------------------------------

### Recorder section

CUE button	
REC TRACK SELECT buttons	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, ST, ALL, SAFE
RECORDER buttons	TRACK, EDIT
Locate buttons	NUM LOCATE, <b>⏪</b> , <b>⏩</b> , MARK, AUTO PUNCH, IN, OUT, SET, REPEAT, A, B, ROLL BACK, <b>⏮</b> , RTZ, <b>⏭</b> , CANCEL
Transport buttons	REW, FF, STOP, PLAY, REC

### Others

ABS/REL button, PEAK HOLD button, AUTOMATION button (AUTOMIX, SCENE), SCENE MEMORY button (STORE, RECALL, -, +), JOG ON button, UNDO button, REDO button, CURSOR button, (◀, ▶, ▲, ▼), DATA ENTRY button (JOG/SHUTTLE), ENTER button

### Display

320 × 240 dots graphical LCD (with contrast control), 3-color FL display

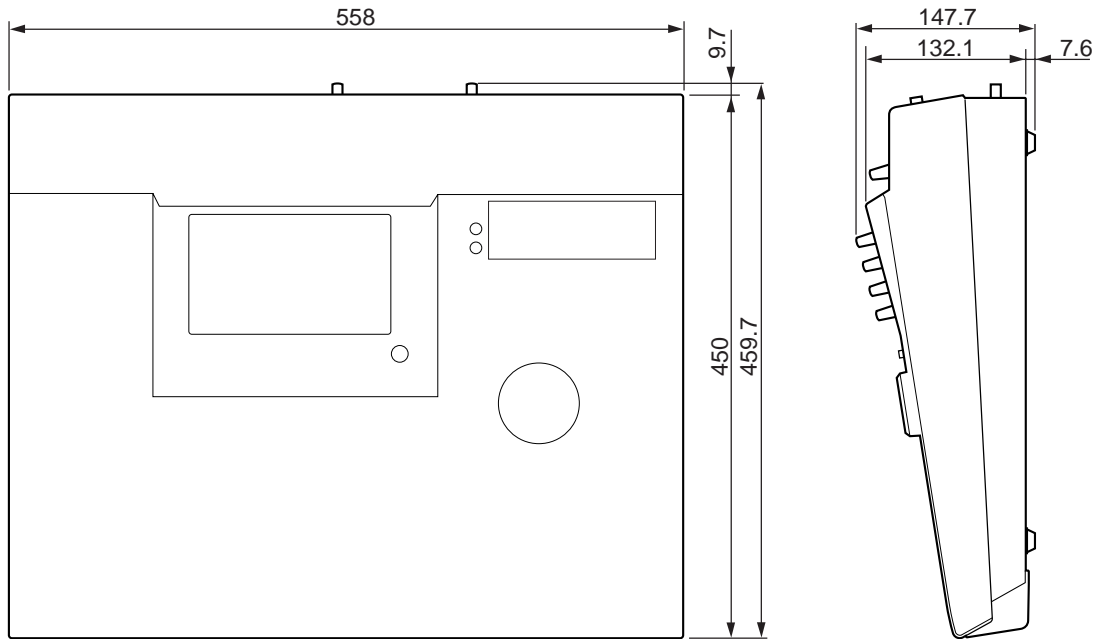
## Control I/O

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WORD CLOCK IN	BNC
WORD CLOCK OUT	BNC
MIDI IN	5-pin DIN
MIDI OUT/THRU	5-pin DIN
MTC OUT	5-pin DIN
TO HOST	8-pin mini DIN
SCSI	50-pin half pitch D-Sub
MOUSE	9-pin D-Sub
Foot switch	Phone jack



# Dimensions



Unit: mm

Specifications and external appearance subject to change without notice.

For European Model

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

Inrush Current: 30A

Conformed Environment: E1, E2, E3 and E4

# MIDI data format

## 1. Functions

### 1.1 MIDI-SETUP

There are two types of serial connector: the MIDI connectors and the TO HOST. They have the same functionality, and you can select which type to use as appropriate for the connection destination. Both types use the MIDI format for communication.

In the case of the TO HOST connector, the transmission method must be selected appropriate for the other device. The available methods are listed below.

Regardless of which method is selected, MTC is transmitted from the dedicated MTC OUT connector.

You can select either THRU or OUT as the function of the MIDI THRU/OUT connector. If THRU is selected, messages received at the MIDI IN connector will be retransmitted without change from the MIDI OUT/THRU connector.

Name Connector Transmission speed Destination

Name	Connector	Transmission speed	Destination
MIDI	MIDI	31.25k	for MIDI
PC1	ToHost	31.25k	for NEC PC9800series
PC2	ToHost	38.4k	for DOS/V
Mac	ToHost	31.25k	for Macintosh (contain CLOCK)

### 1.2 SCENE CHANGE

When a program change message is received, a scene will be recalled as specified by the [MIDI Program Change Assign Table].

Program change messages are transmitted with the program number specified by the [MIDI Program Change Assign Table]. If multiple program numbers are assigned to that memory number, the lowest-numbered program change will be transmitted.

### 1.3 MMC CONTROL

Basic recorder operations such as stop/play/rec/locate can be controlled.

If you select MMC MASTER from the MIDI SETUP menu, MMC commands will be transmitted according to operations of the transport. If you select MMC SLAVE, the internal recorder will operate according to the MMC commands that are received.

### 1.4 EFFECT CONTROL

Depending on the effect type, note on/off messages can be received for control.

These settings are made by the parameters of the corresponding effect.

### 1.5 MIDI CLOCK transmission

If you select MIDI CLOCK transmission from the MIDI SETUP menu, MIDI clock messages will be transmitted during playback and recording.

When the AW4416 is in MIDI clock transmission mode, Start/Stop/Continue commands will be transmitted by the corresponding operations, and MIDI Clock and Song Position Pointer messages will be transmitted according to the MIDI Tempo Map.

### 1.6 MTC master

If you select MTC transmission from the MIDI SETUP menu, MTC will be transmitted during playback and recording.

### 1.7 MTC slave synchronization

If you select SLAVE operation from the MIDI SETUP menu, the AW4416's internal recorder will operate in synchronization with the MTC messages received from the MIDI IN or TO HOST connector.

## 2. Internal settings and operations

### 2.1 MIDI-SETUP

#### 2.1.1 MIDI Channel

##### 2.1.1.1 Transmit channel

Select the MIDI channel used for transmission.

However, transmissions in response to requests are transmitted on the Receive Channel in order to specify the transmitting device.

##### 2.1.1.2 Receive channel

Specify the MIDI channel used for reception. In general, MIDI messages are received only if the MIDI channel matches, but this is not the case if OMNI is turned on.

#### 2.1.2 ON/OFF

##### 2.1.2.1 Program change

Reception and transmission can be enabled or disabled. If OMNI is turned on, program changes will be received regardless of their MIDI channel. If ECHO is on, they will be echoed regardless of the channel.

##### 2.1.2.2 Control change

If ECHO is on, these messages will be echoed regardless of the channel.

#### 2.1.3 MMC Device ID

Specify the ID number used when transmitting and receiving MMC commands.

#### 2.1.4 PORT

Select whether serial communication will use the MIDI IN/OUT connectors or the TO HOST connector.

(MTC is always transmitted from the MTC OUT connector.) If the TO HOST connector is selected, you must also select one of three settings as appropriate for the other device.

#### 2.1.5 THRU

You can select whether the MIDI OUT/THRU connector will function as OUT or THRU.

If THRU is selected, messages received at the MIDI IN connector will be retransmitted without change from the MIDI OUT/THRU connector.

If MIDI THRU is selected, the connector will function as THRU regardless of the PORT setting. In order to function as MIDI OUT, the PORT setting must be set to MIDI IN/OUT.

### 2.2 MIDI program change assign table

The correspondence between program change numbers and scene numbers can be set freely.

This conversion is applied to both transmission and reception.

### 3. MIDI message formats

#### 3.1 CHANNEL MESSAGE

command	rx/tx	function
8n NOTE OFF	rx	Control internal effects
9n NOTE ON	rx	Control internal effects
Bn CONTROL CHANGE		Only echoed
Cn PROGRAM CHANGE	rx/tx	Select scene memories (using the Program Change Table)

#### 3.2 SYSTEM COMMON MESSAGE

command	rx/tx	function
F1 MIDI TIME CODE	rx/tx	MTC transmission (when MTC master), MTC reception (when MTC slave)
F2 SONG POSITION POINTER	tx	SPP transmission (when using MIDI Clock)

#### 3.3 SYSTEM REAL TIME MESSAGE

command	rx/tx	function
F8 TIMING CLOCK	tx	MIDI Clock reception (when using MIDI Clock)
FA START	tx	Start command transmission (when using MIDI Clock)
FB CONTINUE	tx	Continue command transmission (when using MIDI Clock)
FC STOP	tx	Stop command transmission (when using MIDI Clock)
FE ACTIVE SENSING	rx	MIDI cable connection checking
FF RESET	rx	Clear running status

#### 3.4 SYSTEM EXCLUSIVE MESSAGE

##### 3.4.1 Real Time System Exclusive

###### 3.4.1.1 MMC

command	rx/tx	function
01 STOP	rx/tx	Transport Stop
02 PLAY	rx	Transport Play
03 DEFERRED PLAY	rx/tx	Transport Play
04 FAST FOWARD	rx/tx	Transport Fast-forward
05 REWIND	rx/tx	Transport Rewind
06 RECORD STROBE	rx	Transport Record/Punch-in
07 RECORD EXIT	rx	Transport Punch-out
0F RESET	rx/tx	MMC Reset
40 WRITE	rx	Write Information Field
44 LOCATE	rx/tx	Transport Locate

### 4. MIDI format details

#### 4.1 NOTE OFF (8n)

##### < Reception >

Received if [Rx CH] matches.

Used to control effects. See below for details.

STATUS	1000nnnn 8n	Note Off Message
DATA	0nnnnnnn nn	Note No.
	0vvvvvvv vv	Velocity (ignored)

#### 4.2 NOTE ON (9n)

##### < Reception >

Received if [Rx CH] matches.

Used to control effects. See below for details.

If velocity is 0x00, same as note-off.

STATUS	1001nnnn 9n	Note On Message
DATA	0nnnnnnn nn	Note No.
	0vvvvvvv vv	Velocity (1-127:On, 0:off)

\* Notes used to control effects.

1: Dynamic Flange / Dynamic Phase / Dynamic Filter

If the SOURCE parameter is set to MIDI, velocity will control the width of frequency modulation for both note-on and note-off.

#### 4.3 CONTROL CHANGE (Bn)

##### < Reception >

Echoed if [Control Change ECHO] is on.

##### < Transmission >

If [Control Change ECHO] is on, this is merged with the AW4416's own output while taking advantage of running status.

#### 4.4 PROGRAM CHANGE (Cn)

##### < Reception >

Received if [Program Change RX] is on and [Rx CH] matches. However if [OMNI] is on, this is received regardless of the channel.

This is echoed if [Program Change ECHO] is on.

A scene memory will be recalled according to the [Program change table].

##### < Transmission >

If [Program Change TX] is on, a recall operation will cause a program change to be transmitted on the [Tx CH] according to the settings of the [Program change table].

If more than one program number is assigned to the memory number that was recalled, the lowest-numbered program will be transmitted.

If [Program Change ECHO] is on, program changes will be echoed.

(If a memory number is recalled for which there is no setting in the [MIDI Program Change Assign Table], no program change will be transmitted.)

STATUS	1100nnnn Cn	Program Change
DATA	0nnnnnnn nn	Program No. (0-127)

#### 4.5 MIDI TIME CODE QUARTER FRAME (F1)

##### < Transmission >

When MTC transmission is selected and the recorder is in PLAY or REC status, Quarter Frame messages will be transmitted according to the time code operation of the recorder.

##### < Reception >

These messages are received if the AW4416 is operating as a MTC slave. Quarter Frame messages received in realtime are assembled internally to create time code values that control the recorder.

STATUS	11110001 F1	Quarter Frame Message
DATA	0nnndddd dd	nnn = message type (0-7) dddd = data

#### 4.6 SONG POSITION POINTER (F2)

##### < Transmission >

If MIDI Clock is being transmitted, Song Position Pointer messages will be transmitted when the recorder stops or locates, in order to indicate the song position at which playback should begin for the next Start/Continue.

STATUS	11110010 F2	Song Position Pointer
DATA	0ddddd dd0	data (H) high 7 bits of 14 bits data
	0ddddd dd1	data (L) low 7 bits of 14 bits data

#### 4.7 TIMING CLOCK (F8)

##### < Transmission >

If MIDI Clock is being transmitted, Timing Clock messages are transmitted according to the MIDI tempo map whenever the recorder is playing or recording (until it stops).

STATUS	11111000 F8	Timing Clock
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#### 4.8 START (FA)

##### < Transmission >

If MIDI Clock is being transmitted, this message is transmitted when the recorder begins playback or recording from the first measure.

STATUS	11111010 FA	Start
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#### 4.9 CONTINUE (FB)

##### < Transmission >

If MIDI Clock is being transmitted, this message is transmitted when the recorder begins playback or recording from a location other than the first measure.

STATUS	11111011 FB	Continue
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#### 4.10 STOP (FC)

##### < Transmission >

If MIDI Clock is being transmitted, this message is transmitted when the recorder stops.

STATUS	11111100 FC	Stop
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#### 4.11 ACTIVE SENSING (FE)

##### < Reception >

Once this message has been received, an interval of 300 ms in which no message has been received will cause MIDI communications to be initialized by clearing the running status, etc.

STATUS	11111110 FE	Active Sensing
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#### 4.12 RESET

##### < Reception >

If a Reset message is received, MIDI communications will be initialized by clearing the running status, etc.

STATUS	11111111 FF	Reset
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#### 4.13 EXCLUSIVE MESSAGES (F0-F7)

##### 4.13.1 MMC STOP

##### < Transmission >

Transmitted with a device number of 7F when the STOP key is pressed.

##### < Reception >

If the AW4416 is operating as the MMC SLAVE, it will stop when this message is received if the device number matches or is 7F.

STATUS	11110000 F0	System Exclusive Message
ID No.	01111111 7F	Real Time System Exclusive
Device ID	0ddddd dd	Destination (00-7E, 7F:all call)

Command	00000110 06	Machine Control Command (mcc) sub-id
	00000001 01	Stop (MCS)
EOX	11110111 F7	End Of Exclusive

##### 4.13.2 MMC PLAY

##### < Reception >

If the AW4416 is operating as the MMC SLAVE, it will begin playback when this message is received if the device number matches or is 7F.

STATUS	11110000 F0	System Exclusive Message
ID No.	01111111 7F	Real Time System Exclusive
Device ID	0ddddd dd	Destination (00-7E, 7F:all call)
Command	00000110 06	Machine Control Command (mcc) sub-id
	00000010 02	Play (MCS)
EOX	11110111 F7	End Of Exclusive

##### 4.13.3 MMC DEFERRED PLAY

##### < Transmission >

Transmitted with device number 7F when the PLAY key is pressed.

##### < Reception >

If the AW4416 is operating as the MMC SLAVE, it will begin playback when this message is received if the device number matches or is 7F.

STATUS	11110000 F0	System Exclusive Message
ID No.	01111111 7F	Real Time System Exclusive
Device ID	0ddddd dd	Destination (00-7E, 7F:all call)
Command	00000110 06	Machine Control Command (mcc) sub-id
	00000011 03	Deferred play (MCS)
EOX	11110111 F7	End Of Exclusive

##### 4.13.4 MMC FAST FORWARD

##### < Transmission >

Transmitted with device number 7F when the FF key is pressed, or when the shuttle is rotated toward the right to enter Cue mode.

##### < Reception >

If the AW4416 is operating as the MMC SLAVE, it will begin fast-forward when this message is received if the device number matches or is 7F.

STATUS	11110000 F0	System Exclusive Message
ID No.	01111111 7F	Real Time System Exclusive
Device ID	0ddddd dd	Destination (00-7E, 7F:all call)
Command	00000110 06	Machine Control Command (mcc) sub-id
	00000110 04	Fast Forward (MCS)
EOX	11110111 F7	End Of Exclusive

##### 4.13.5 MMC REWIND

##### < Transmission >

Transmitted with device number 7F when the REWIND key is pressed, or when the shuttle is rotated toward the left to enter Review mode.

##### < Reception >

If the AW4416 is operating as the MMC SLAVE, it will begin rewind when this message is received if the device number matches or is 7F.

STATUS	11110000 F0	System Exclusive Message
ID No.	01111111 7F	Real Time System Exclusive
Device ID	0ddddd dd	Destination (00-7E, 7F:all call)
Command	00000110 06	Machine Control Command (mcc) sub-id
	00000101 05	Rewind (MCS)
EOX	11110111 F7	End Of Exclusive

**4.13.6 MMC RECORD STROBE****< Reception >**

If the AW4416 is operating as the MMC SLAVE and the device number of the message matches or is 7F, it will begin recording if stopped, or punch-in if playing.

STATUS	11110000 F0	System Exclusive Message
ID No.	01111111 7F	Real Time System Exclusive
Device ID	00000000 dd	Destination (00-7E, 7F:all call)
Command	00000110 06	Machine Control Command (mcc) sub-id
	00000110 06	Record strobe
EOX	11110111 F7	End Of Exclusive

**4.13.7 MMC RECORD EXIT****< Reception >**

If the AW4416 is operating as the MMC SLAVE and the device number of the message matches or is 7F, the AW4416 will punch-out if it had been recording.

STATUS	11110000 F0	System Exclusive Message
ID No.	01111111 7F	Real Time System Exclusive
Device ID	00000000 dd	Destination (00-7E, 7F:all call)
Command	00000110 06	Machine Control Command (mcc) sub-id
	00000111 07	Record Exit
EOX	11110111 F7	End Of Exclusive

**4.13.8 MMC RESET****< Transmission >**

Transmitted with a device number of 7F when song loading is completed.

**< Reception >**

If the AW4416 is operating as the MMC SLAVE and the device number of the message matches or is 7F, internal MMC-related settings will be reset to the power-on state.

STATUS	11110000 F0	System Exclusive Message
ID No.	01111111 7F	Real Time System Exclusive
Device ID	00000000 dd	Destination (00-7E, 7F:all call)
Command	00000110 06	Machine Control Command (mcc) sub-id
	00001101 0D	Reset
EOX	11110111 F7	End Of Exclusive

**4.13.9 MMC WRITE****< Reception >**

If the AW4416 is operating as the MMC SLAVE and the device number of the message matches or is 7F, data will be written to the specified information field.

STATUS	11110000 F0	System Exclusive Message
ID No.	01111111 7F	Real Time System Exclusive
Device ID	00000000 dd	Destination (00-7E, 7F:all call)
Command	00000110 06	Machine Control Command (mcc) sub-id
	01000000 40	Write
	0ccccccc cc	Byte Count
	0nnnnnnn nn	Writeable Information Field name
	00000000 dd	Format defined by the Information Filed name
	:	:
	0nnnnnnn nn	More nn dd... pairs as required..
EOX	11110111 F7	End Of Exclusive

**4.13.9.1 MMC INFORMATION FIELD - TRACK RECORD READY****< Reception >**

If the AW4416 is operating as the MMC SLAVE and the device number of the message matches, REC SELECT for the recorder tracks will be switched on/off according to the data of the standard track bitmap.

01001111 4F	Track Record Ready (Information Field name)
0nnnnnnn nn	Data Length (0:all track off, 3:record track on)
0aaaaaaaa aa	1-2tr rec track On(Standard Track Bitmap)
0bbbbbbb bb	3-9tr rec track On
0ccccccc cc	10-16tr rec track On

**4.13.10 MMC LOCATE (TARGET)****< Transmission >**

This message will be transmitted with a device number of 7F when a locate-related key such as MARK SEARCH/IN/OUT is pressed, when a FF/REW/shuttle operation is performed, when returning to the auto-punch pre-roll point, or when repeating.

**< Reception >**

If the AW4416 is operating as the MMC SLAVE and the device number of the message matches, the AW4416 will locate to the time code location specified by the command data of the message.

STATUS	11110000 F0	System Exclusive Message
ID No.	01111111 7F	Real Time System Exclusive
Device ID	00000000 dd	Destination (00-7E, 7F:all call)
Command	00000110 06	Machine Control Command (mcc) sub-id
	01000100 44	Locate
	00000110 06	byte count
	00000001 01	"target" sub command
	0hhhhhhh hh	hour(Standard Time Code)
	0mmmmmmm mm	minute
	0sssssss ss	second
	0ffffff ff	frame
	0sssssss ss	sub-frame
EOX	11110111 F7	End Of Exclusive

MIDI Implementation Chart

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default	1-16	1-16	Memorized
	Changed	1-16	1-16	Memorized
Mode	Default	X	OMNI off/OMNI on	Memorized
	Messages	X	X	
	Altered	*****	X	
Note Number	:True Voice	X	0-127	
		*****	X	
Velocity	Note On	X	X	
	Note Off	X	X	
After Touch	Key's	X	X	
	Ch's	X	X	
Pitch Bend		X	X	
Control Change		X	X	
Prog Change	:True#	0-127	0-127	
		*****	0-96	
System Exclusive		X	O	*1
System Common	:Song Pos	O	X	*2
	:Song Sel	X	X	
	:Tune	X	X	
System Real Time	:Clock	O	X	*2
	:Commands	O	X	*2
Aux Messages	:Local ON/OFF	X	X	
	:All Notes OFF	X	X	
	:Active Sense	X	O	
	:Reset	X	O	
Notes		MTC quarter frame message is transmitted. (When MTC Sync mode) MTC quarter frame message is recognized. (When MTC Sync mode) *1: MMC *2: When MCLK Sync mode		

Mode 1: OMNI ON, POLY

Mode 2: OMNI ON, MONO

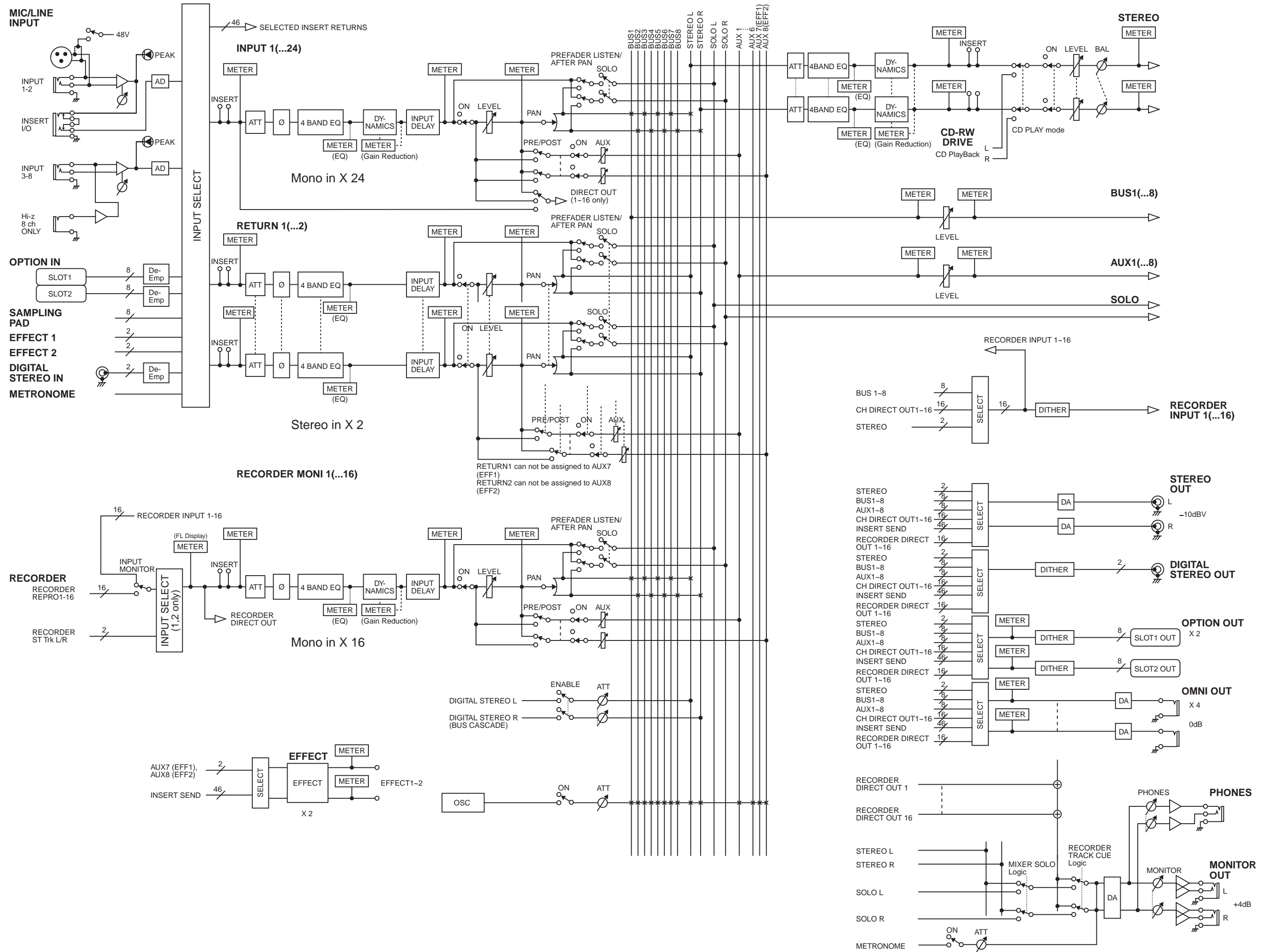
O: Yes

Mode 3: OMNI OFF, POLY

Mode 4: OMNI OFF, MONO

X: No

# AW4416 Block diagram









# AW4416

PROFESSIONAL AUDIO WORKSTATION

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## Tutorial

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# AW4416 Professional Audio Workstation

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Showing a Yamaha AW4416 to a recording engineer, say, 20 years ago, would have a similar effect to showing an interplanetary probe to Galileo. After the initial shock both parties would probably nod their heads and mumble something about inevitability. It had to happen. The AW4416 can do what once required a couple of rooms full of very, very expensive equipment that required considerable expertise to operate. And it does it very well, indeed. In short, the AW4416 can take your sound recording projects from conception to completion with professional-level control and quality.

If you've worked with a Yamaha O2R Digital Mixing Console (a de-facto standard through the recording and production industries today) or one of Yamaha's other top-quality digital consoles, operating the AW4416 will not be a challenge. But if you've never had the pleasure, the power and depth of the AW4416 (translation: lots of features and flexibility) might be a little daunting at first. This tutorial is designed to help you make friends with the AW4416 as quickly and as painlessly as possible. Since the actual recording process is pretty much the same no matter what equipment you use, we've provided a complete set of pre-recorded tracks for the demo song "So Fine", and will walk you through the process of mixing and mastering the tracks to create the final product. We haven't completely ignored the initial recording process, however; a few guidelines are provided below.

## □ A Note About the Tutorial

This tutorial assumes that you already have a basic knowledge of how the AW4416 controls and main features work. If you get lost, refer to the AW4416 operation guide for details.

We've also included a simple glossary at the end of the tutorial. If you encounter any terms you're not familiar with, you might find explanations in the glossary.

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# Laying Down the Basic Tracks

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Although the basic tracks you'll use to assemble the "So Fine" mix have already been recorded for you (of course you can add your own tracks, if you like), let's take a moment to discuss the initial recording process.

The basic steps introduced here may not apply if you're recording something very "avant-garde," but if you're laying down a song or instrumental piece with a fairly standard arrangement, here are a few issues to keep in mind:

## □ Rhythm First!

Since the rhythm parts define the tempo and "groove" of the music, it makes sense that they should be recorded first so that the musicians who will be overdubbing the subsequent parts — lead guitar, lead vocal, chorus, etc. — will have something to lock onto. Of course this isn't necessary if the piece to be recorded consists of just one person strumming a guitar and singing or, for that matter, if you'll be recording an entire ensemble in one take. But if you'll be recording your masterpiece track-by-track or at least section-by-section — whether it's because like most of us you're recording with limited studio space and resources, or simply because you're a perfectionist who demands total creative control at all times — start with the rhythm. The first rhythm part to be recorded could simply be drums and/or percussion alone, drums and bass, or drums plus bass and a rhythm keyboard or guitar part.

## □ Separation

Remember that the more instruments you record via microphones at the same time, the more you need to think about separation (or "isolation" depending on whom you talk to). Once again, there are no hard-and-fast rules: if you'll be recording an entire rhythm section or ensemble with one stereo microphone pair, for example, separation is a non-issue — but instrument layout and microphone placement are critical! But assuming you want all instruments cleanly recorded on separate tracks so you can do all your spatial arranging and processing later on, you'll need to ensure that leakage between instruments and microphones is minimized. How? Physical separation is the best way. Record different instruments in different rooms, if possible (this corresponds to using "isolation booths" in a recording studio), or use baffles to reduce leakage when recording more than one source in the same room. Directional microphones are a good idea, and close-miking can be a big help. The only way to achieve total separation, though, is to overdub acoustic sources one-at-a-time. Even then, you'll probably end up with a little leakage from the vocalist's headphones, for example. Line sources, naturally, do not present a problem.

A little leakage is not a big problem, though, so don't let it bog you down. Listen carefully to the individual "So Fine" tracks and you'll hear what we mean.

## □ “Scratch” or “Guide” Vocals

If you’re working alone this won’t be necessary, but when recording a band it’s sometimes a good idea to have the singer lay down a “scratch vocal” track while recording the rhythm section. This is simply because bands are generally used to playing with vocals, and the performance can suffer if there is a void where the vocals are supposed to be. The scratch vocal track can also be a useful guide while laying down other overdubs such as guitar or keyboard solos. **DON’T** rely on the scratch vocal track to record chorus parts, though, because the teeniest changes in the pitch or phrasing of the lead vocal part can throw the entire chorus out of whack.

## □ Microphone Selection?

Oowee! Here’s a subject that can make even the most seasoned recording engineer cringe. But, reality check firmly established, we realize that for most of us this is not a problem simply because we don’t have a dazzling selection of microphones at our disposal. And that’s that.

But there is one thing we would like to stress: if you don’t already own the microphone(s) you intend to use for recording, **CHOOSE THEM WITH CARE!!** Really. Here are a few guidelines for the minimum microphone selection for most home recording applications.

### ○ **If you will be recording vocals and/or acoustic instruments in the (home) studio.**

Quite a number of high-quality large-diaphragm condenser microphones have become available at very reasonable prices in the last few years. Get one. But, if at all possible, try out a few before making a final commitment. Although most microphones in this category have uniformly excellent frequency response and high sensitivity, they do have distinctive sounds. Choose the one that sounds the best to your own ears. Don’t worry about switchable directivity unless you really think you’ll need an omni-directional pattern for some application; the plain-vanilla cardioid pattern is probably all you’ll ever need for most recording. And since the AW4416 provides switchable phantom power on inputs 1 and 2, you can choose studio-quality phantom-powered microphones with confidence.

The same microphone you choose for recording vocals will most probably also be ideal for recording acoustic guitar, piano, and a range of wind instruments as well. Not a good choice for close-miking drums and percussion, though. One or two large-diaphragm condenser mics are, however, perfect for use as drum “overheads.”

### ○ **Close-miking guitar amps, drums, and other loud stuff.**

Here’s where you need one, or perhaps a few, good-quality dynamic microphones. There are a number of “standard” dynamic microphones that are ideal for this type of application, and which can be acquired for surprisingly little outlay. If you don’t already have a couple of established makers and models in mind, ask around.

## □ Overdubs

The actual procedure for recording overdubs is really no different from recording the basic tracks, except that you'll be monitoring previously recorded material while doing it. Remember to use a good pair of closed headphones to monitor the backing tracks while recording acoustic overdubs or vocals (not open types or the in-ear types often used with portable stereos) to prevent leakage of the headphone mix back into the microphone.

## □ To Process or Not To Process?

Now things get a little tricky, because you will be making decisions that will directly affect your freedom to make changes later in the production process. Some engineers almost never use processing of any kind (compression, EQ, etc.) when recording the initial tracks, the reasoning being that it not only reduces their freedom to shape the sound as required at subsequent stages, but that it also compromises the "openness" of the sound. There is a good deal of truth in this, but there are also a few good reasons for some judiciously-applied processing right from the outset.

### ○ Compression & Limiting

Of the several processing options available during initial recording, compression is probably the most often used. But at this early stage in the production process it must be applied with care. Compression or limiting is most often used at this point to reduce high-level transients that, although not a critical part of the instrument's sound, would otherwise take up a large portion of the recording system's available dynamic range. By reducing transient peaks you can effectively record the main body of the signal at a higher level and thus, in the case of digital media, increase the resolution of the reproduced sound while reducing potential problems with system noise. Bass guitar, electric guitar, vocals, and drums are often compressed during recording. Avoid compression on instruments like acoustic piano in which the initial attack is critical in conveying the instrument's character.

### ○ Equalization

During initial recording equalization is normally only used as a compensation tool. You might need to compensate for irregularities in the response of a microphone or other piece of equipment in the recording chain, or perhaps beef up the response of a guitar pickup. All mix-related equalization should be left until the mixdown stage, when you can hear how response changes affect the overall sound.

### ○ Effects

As a rule, don't apply any ambience-type effects (reverb, delay, etc.) during initial recording. Ambience added at this stage in the game can't be removed later, and will almost certainly get in the way of the overall sound. You'll have much more flexibility and control if you save ambience processing until mixdown. Of course, there are exceptions; but those are creative decisions you'll have to make on your own.

Other effects such as modulation and distortion are often applied during recording, but only when they function as an inherent part of the instrument's sound (distortion on electric guitar or rotary speaker on an organ, for example).



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# Load the Demo Song

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Before you can work on the demo song, you'll first need to load it onto the AW4416 hard disk from the supplied CD-ROM.

This tutorial assumes that you already have a CD-RW drive configured for use with your AW4416. See the Operation Guide for information on installing and connecting an external CD-RW drive.

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## Load the Demo Song From the CD-ROM Onto the AW4416 Hard Disk

1. Press the AW4416 [FILE] key.
2. Press the [F2] function key to go to the "Restore" page.
3. Make sure that the SCSI ID number of your CD-RW drive is selected in the SOURCE DRIVE window (if it isn't, move the cursor to the SOURCE DRIVE window and use the DATA dial to select the appropriate SCSI ID number, then press the [ENTER] key). The default SCSI drive number is SCSI#3. If you install a CD-RW drive manufactured by Yamaha, the SCSI ID will be set to "3" at the factory, and we recommend that you leave it at this setting.
4. Open the CD-tray by pressing the [F2] function key ("CD UNLOAD") while holding the [SHIFT] key. Place the demo CD-ROM on the tray (label side up) and press the [F1] function key ("CD LOAD") while holding the [SHIFT] key to close the tray and load the CD.
5. The demo song "So Fine" should appear in the list on the display. Move the cursor to the RESTORE SONG window, and then use the [ENTER] key to switch the DISABLE button to ENABLE.
6. Move the cursor to "EXECUTE" on the display, then press the [ENTER] key. When the "ARE YOU SURE?" confirmation prompt appears, move the cursor to "OK" and press [ENTER] to begin the restore operation.
7. When the "COMPLETE" window appears, the restore operation has finished.  
It take about 10 minutes to restore the demo song. Once the restore process has begun, it cannot be stopped.

---

## Load the Demo Song from the Hard Disk

1. Press the [SONG] key (and the [F1] function key if necessary to select the “Song List” page).
2. Use the DATA dial to select “So Fine”.
3. Move the cursor to “LOAD” on the display and press [ENTER]. When the “Will Save Current song ... ARE YOU SURE?” confirmation prompt appears, move the cursor to “YES” or “NO” and press [ENTER] to begin the load operation.
4. When the progress window disappears, the demo song has been loaded and is ready for playback.

***If you want to hear the pre-mixed version of “So Fine” before mixing it yourself ...***  
*Actually, all you have to do is hit the [PLAY] button. The “So Fine” demo will be loaded with automix enabled, and will play through exactly the way we set it up.*

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# Mixdown

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Although the term “mixdown” seems to imply a single action, it is really a process that can involve many interrelated steps. As you become more experienced, the individual steps will sort of blend into one larger operation. This is important because at all times you’ll need to consider how each small action will affect the overall sound. A small change in equalization on one instrument, for example, can affect the way the others sound. The ability to anticipate cause-and-effect relationships like this can only come through experience. The more you mix, the better you’ll get!

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## Phase 1: Listen To the Tracks and Make a Plan

One of the most important steps in any mix is to make at least a mental plan before even starting the actual mix. Here are a few points to consider:

- First and foremost think about the music! What is the song saying? What kind of mood is the piece attempting to convey? How can you approach the mix in a way that will enhance the music itself?
- Does the piece depend mostly on the lyrics? The singer’s voice? The rhythm? A particular instrument or sound? You’ll probably want to emphasize whichever element(s) of the piece you determine to be the most important. If the lyrics are critical, for example, you won’t want the vocal track buried in the background or rendered unintelligible by an excessive wash of reverb.
- How do you want to place the instruments in the stereo soundstage? Are you trying to create a realistic “live performance” image, or just shooting for an overall effect?
- What kind of “space” do you want to place the music in? Open and dry? Large and reverberant? Small and tight? Distant? Intimate?
- What instruments are in similar frequency ranges and are likely to get in each other’s way? Distorted electric guitar and organ are perfect examples of instruments that do this. You’ll need to think about panning such instruments to different areas of the soundstage and/or using equalization to give them separate “identities”.
- Will you need to make any mood or scene changes during the mix that might involve major changes in levels, EQ or effects? Here’s where automation might make the job a lot easier.
- Remember that the points given here are only a guide, and that every piece of music is different. In fact, planning the mix is probably the most creative part of the entire production process.

### Do It

OK, the tracks are loaded, now let’s go ahead and listen to the raw tracks.



*Make sure that AUTOMIX is disabled before proceeding! You can do this by pressing the AUTOMATION [AUTOMIX] key, moving the cursor to the AUTOMIX “ENABLE” parameter, and pressing [ENTER] to switch this to “DISABLE”.*

1. Make sure that the RECORDER [MONI] MIXING LAYER is selected.
2. Recall the scene number 01 “FADERS NOMINAL” provided to set faders 1 through 14 to nominal (Press the [SCENE] key, use the data dial to select the scene number 01 “FADERS NOMINAL”, move the cursor to “RECALL”, press [ENTER], select “OK” in the confirmation and press [ENTER] again).
3. Press the MIXER [VIEW] key so you can see the selected monitor channel parameters on the display. You might also have to press the [F1] function key to select the “CH View” page.
4. Hit the [PLAY] button and listen.

The chart below lists the contents of the “So Fine” tracks. “V.Trk” at the left side of the chart refers to the recorder’s virtual tracks (there are actually 8 virtual tracks for each recorder track). Note that although we’ll be using only the main tracks (virtual track 1) for most of this tutorial, an alternate string take is provided on the second virtual tracks for recorder tracks 9 and 10, and a male lead vocal track is provided on the second virtual track of recorder track 14. Later on you’ll use these alternate takes to build a mix based around a male rather than female lead vocal part.

	1	2	3	4	5	6	7	8
V.Trk 1	Drums Left	Drums Right	Claves & E.Drm	Bass	Rthm Guitar	Lead Guitar	Organ	Piano
V.Trk 2								

	9	10	11	12	13	14	15	16
V.Trk 1	String Left	String Right	Fem. Ch. 1	Fem. Ch. 2	Male Ch. & Rap	Lead Vocal (Fem)		
V.Trk 2	Alt. String Left	Alt. String Right				Lead Vocal (Male)		

## Phase 2: Set Up a Rough Mix

The rough mix is only the starting point for the final mix, and it doesn't have to be perfect. The purpose of setting up a rough mix using only levels and panning is to give you a reference point on which to base decisions about more detailed processing, effects, automation, etc. You shouldn't spend a lot of time on this phase of the mixdown process. But if a fader or pan setting really bugs you, you should readjust it to within an acceptable range so that it doesn't stick out like a sore thumb and affect your ability to make appropriate decisions about the rest of the mix. Also keep in mind that mixing is really a trial-and-error process, and you're likely to adjust and readjust parameters many times before you're totally satisfied with the results.

### **INSTANT GRATIFICATION!**

*If you don't want to set up the rough mix yourself, or simply want to see how we've done it, recall the scene number 02 "ROUGH MIX" we have provided. Press the [SCENE] key (and the [F1] function key if necessary to select the "Scene Mem" page), use the data dial to select the scene number 02 "ROUGH MIX", move the cursor to "RECALL", press [ENTER], select "OK" in the confirmation window and press [ENTER] again. After doing this you'll need to press the MIXER [VIEW] key to go back to the VIEW display.*

*An alternate method of doing this — without leaving the VIEW display — is to use the panel SCENE MEMORY keys. Use the [-] and [+] keys to select the scene to be recalled (scene numbers and names appear in the upper right corner of the display), then press [RECALL], select "OK" in the confirmation window, press [ENTER] again, and you're done.*



*While setting up the rough mix it can be useful to set up a repeat loop that covers the entire song, or at least a "representative" section of the song that will allow you to easily set up the levels and pan positions. Use the A and B markers to specify the beginning and end points of your repeat loop, then press the [REPEAT] key to engage repeat playback (see page 118 of the operation guide for details).*

### Start with the Drums

Use the channel [ON] keys to turn off all tracks except the stereo drums on 1 and 2 (leave the STEREO track on, too).

Since the drums are recorded in stereo on tracks 1 and 2, and you'll want to adjust the levels of those tracks simultaneously, it's a good idea to pair the tracks to make adjusting level and other parameters easier. To do this:

1. Press the track 2 [SEL] key while holding the track 1 [SEL] key.
2. When the CHANNEL PAIRING window appears select the "MONITOR 1→2" mode and press [ENTER].

The tracks are now paired so that when you move the fader for one track the other will automatically follow. Also note that in the MIXER VIEW display the pan and routing controls for both channels appear in the same display.

Now to pan the stereo drum tracks left and right to create a stereo image. There is a tendency to pan stereo drum tracks (or any type of stereo track, for that matter) hard left and right but, depending on how the drums have been recorded or the type of drum module you're using, this isn't always a good idea. If the hi-hat is way over in one channel and the low floor tom hard over in the opposite channel, you have an inordinately large drum set. For a more realistic drum image in

cases where the drums or other instrument seems to occupy the entire stereo field, try panning the left and right channels between about a third and half way to the maximum values. In the case of the “So Fine” demo, however, the drums were recorded “live” in the studio with proper stereo imaging (i.e. this is not a sampler or drum module), and sound fine panned full left and right. Go ahead and set the left and right drum track pan values to L16 and R16, respectively.

To pan the drum tracks:

1. Use the [SEL] keys to select the track you’re going to pan (since the channels are paired, the other [SEL] key will flash when one is selected).
2. Use the PAN control near the upper right corner of the display while watching the graphic pan controls in the display.

## Add the Claves/Electronic Drums Track

For now just turn channel 3 ON and set the fader at about  $-4.5$  dB.

## Add the Bass Track

Turn on channel 4 and listen. Bass is usually panned to center so you won’t need to adjust the pan control, but you might find that the bass is a little hot (loud) in relation to the drum tracks with their faders at nominal, so move fader 4 down to reduce the bass track level by about 5 dB (“ $-5.0$ ” on the fader display).

## Add the Guitar Tracks

Turn ON channel 5 and 6. The guitar tracks are REALLY hot in relation to the drums and bass, so use faders 5 and 6 to reduce them to reasonable levels (track 5 rhythm guitar to about  $-10.5$  dB, and track 6 lead guitar also to about  $-10.5$  dB). Also pan the track 5 guitar to the left and the track 6 guitar to the right (about L14 and R15, respectively).

## Add the Organ & Piano Tracks

Turn ON channel 7 and 8. The organ and piano tracks will also need to be reduced in level a bit, so use faders 7 and 8 to reduce the track 7 organ to about  $-9.8$  dB, and track 8 piano to about  $-10.5$  dB. Also pan the track 7 organ a little to the left and the track 8 piano a little to the right (about L11 and R9, respectively).

## Add the String Tracks

Like the drum tracks, the “So Fine” string tracks are basically a stereo pair. After turning channels 9 and 10 ON and making sure that the faders are both at exactly the same level, use the same pairing technique described for the drum tracks, above, to pair the string tracks. Then reduce the level to about  $-5.7$  dB, and pan the string tracks left and right (about L13 and R13).

## Add the Lead Vocal

Ah-ha! Fooled you! You thought we were going to add the chorus parts on tracks 11, 12, and 13, and THEN add the lead vocal track, didn't you! Well we won't, and the reason is simply that the chorus parts really must be heard in relation to the lead vocal in order to set appropriate levels.

Turn ON channel 14, leave the pan control set at center (the normal position for lead vocals), and reduce the fader level to about  $-7.3$  dB.

## Add the Chorus

Although the chorus appears before the lead vocal part during the introduction, and this might require a bit of automation at the final mix stage, adjust the chorus levels while listening to a section of the song during which the chorus parts appear with the lead vocal. Turn channels 11, 12, and 13 ON, then set their fader levels to about  $-10.0$ . Pan the same tracks to L14, R14, and CENTER, respectively.

## Listen!

Although you've been listening to the song during the entire rough mix process, now it's time to listen to the entire song in context rather than concentrating on individual parts. Hear something you don't like? Change it.

## Save the Song!

Now would be a good time to save your work. Press the WORK NAVIGATE [SONG] key to go to the SONG display, if necessary also press the [F1] function key to select the "Song List" page. Move the cursor to "SAVE" on the display and press [ENTER]. When the confirmation window appears move the cursor to "OK" and press [ENTER] again to actually save the song.

## Phase 3: Assemble the Mix Part by Part

Now we're ready to do some serious work on the sound of the individual tracks in an attempt to make them "mesh" to create a well-balanced overall mix.

### **INSTANT GRATIFICATION!**

Once again, we've provided a scene you can simply recall to automatically make all the settings included in "Phase 3", below. Press the [SCENE] key (and the [F1] function key if necessary to select the "Scene Mem" page), use the data dial to select the scene number 03 "PHASE 3 MIX", move the cursor to "RECALL", press [ENTER], select "OK" in the confirmation window and press [ENTER] again. After doing this you'll need to press the MIXER [VIEW] key to go back to the VIEW display.

An alternate method of doing this — without leaving the VIEW display — is to use the panel SCENE MEMORY keys. Use the [-] and [+] keys to select the scene to be recalled (scene numbers and names appear in the upper right corner of the display), then press [RECALL], select "OK" in the confirmation window, press [ENTER] again, and you're done.



As you're working on the various parts of the mix you'll constantly be turning channels on and off so you can hear things alone or in combination with certain other tracks. In order to use the SOLO function for this select "MIXDOWN SOLO" and "AFTER PAN" in the Solo Setup page (see page 96 of the operation guide for details). The reason for this is that during this phase of the mix you'll almost always want to hear the tracks with EQ, dynamics, and other effects applied. Normal solo monitoring lets you hear the tracks "dry", and that won't help you here.

### □ Tracks 1 & 2: Drums

Listening to the drums in the context of the rough mix we notice that they sound a little dull. The lower end is fine, but the cymbals don't have quite the degree of presence we'd like to hear. Otherwise, the drums are fine. If we attempted to use any compression on these tracks we'd probably lose the natural dynamics that make this track work — and dilute the contrast between the acoustic drums and the electronic drums at the end of the song.

A subtle touch of high-end EQ is all that is needed here:

1. Press the track 1 [SEL] key (tracks 1 and 2 are paired, so EQ settings you make to track 1 will also be applied to track 2 — convenient, eh?)
2. Press the MIXER [EQ] key (this is so you can see the detailed EQ parameters as we make the adjustment).
3. Make sure that the EQ for the selected tracks is ON (if not, move the cursor to the "EQ ON" parameter and press [ENTER] to turn it "ON").
4. Press the [HIGH] key in the "virtual EQ" control section to the right of the display to select the HIGH EQ band.
5. Use the [G] control to increase the gain of the 10-kHz shelving EQ to +4.0 dB. No need to change the EQ type of frequency.



### □ Track 3: Claves/Electronic Drums

This track needs a bit of compression to make the electronic drums jump out of the mix when they appear at the outro. Later, when we work on the automation, we'll boost this track a bit at the outro for extra impact.

1. Press the track 3 [SEL] key to select the claves/electronic drums track.
2. Press the MIXER [DYN] key to access the dynamics parameters.
3. The "COMP" dynamics type should already be selected (it's the default). Move the cursor to the "ON/OFF" parameter and turn dynamics for the selected track "ON".
4. Use the cursor keys and data dial to make the following dynamics settings for the claves/electronic drums track:

THRESH.	RATIO	OUT GAIN	ATTACK	RELEASE	KNEE
-24	10:1	0.0	29	6	hard

### □ Track 4: Bass

The bass track is a bit "flabby" and lacks punch. We'll use EQ to tighten the sound up a little, and compression to give the track a little more uniformity and power.

1. Press the track 4 [SEL] key to select the bass track.
2. Press the MIXER [EQ] key.
3. Make sure that the EQ for the selected track is ON.
4. Use the cursor keys and data dial or the virtual EQ controls to make the following EQ settings for the bass track:

	LOW	L-MID	H-MID	HIGH
Q	6.3	7	8	—
F	66.0	223	4.75 kHz	—
G	+2.5	-4.5	+6.0	—

5. Press the MIXER [DYN] key to access the dynamics parameters.
6. The "COMP" dynamics type should already be selected. Move the cursor to the "ON/OFF" parameter and turn dynamics for the selected track "ON".
7. Use the cursor keys and data dial to make the following dynamics settings for the bass track:

THRESH.	RATIO	OUT GAIN	ATTACK	RELEASE	KNEE
-15	8:1	+2.0	51	192	2

## □ Track 5: Rhythm Guitar

The rhythm guitar track needs to be a little “chunkier” to achieve the classic R&B type of sound we’re after. A little EQ and compression will accomplish that feat, and the compression will also help to even out dynamic variations that cause the guitar part to be buried in the mix from time to time.

You should know how to make the EQ and dynamics adjustments by now, so we’ll just give you the figures and you can make the settings yourself.

### ○ Rhythm Guitar EQ

	LOW	L-MID	H-MID	HIGH
Q	L.SHELF	9	—	—
F	125	420	—	—
G	+2.5	+3.5	—	—

### ○ Rhythm Guitar Compression

THRESH.	RATIO	OUT GAIN	ATTACK	RELEASE	KNEE
-9	4:1	0.0	9	110	4

## □ Track 6: Lead Guitar

In terms of tone the lead guitar part sounds fine the way it is. But perhaps we should apply a little compression to even it out a bit.

Here are the figures; do the dialing yourself:

### ○ Lead Guitar Compression

THRESH.	RATIO	OUT GAIN	ATTACK	RELEASE	KNEE
-5	3.5:1	0.0	35	238	4

## □ Track 7: Organ

The ultra-lows of the organ sound are muddying the sound a little. We can take care of that by using a high-pass filter to remove some of the offending frequencies. The LOW band of the AW4416 parametric equalizer functions as a high-pass filter — all you have to do is make the appropriate settings. No compression is required.

### ○ Organ EQ

	LOW	L-MID	H-MID	HIGH
Q	HPF	—	—	—
F	66	—	—	—
G	ON	—	—	—

## □ Track 8: Piano

We'll use some EQ to "thin out" the piano sound a bit, and give it a touch more presence so that it will come through in the mix a bit more.

### ○ Piano EQ

	LOW	L-MID	H-MID	HIGH
Q	L.SHELF	8.0	—	H.SHELF
F	74	21	—	7.55 kHz
G	-3.5	-4.0	—	+2.0

## □ Tracks 9 & 10: Strings

If we'd recorded real strings we might have needed a bit of processing here, but since this is pretty-much a "pre-processed" synth string patch, we can leave it alone.

## □ Tracks 11 & 12: Female Chorus 1 & 2

Processing to make a chorus "blend" well can be tricky, but in general you'll just have to rely on your ears. In this case we've used high-pass filtering to remove rumble from the studio and other low-frequency noise that can lead to unclear overall sound. Some midrange has been removed to prevent the chorus from getting in the way of the lead vocal, and a touch of high-end presence has been added to help the voices cut through. Compression also helps to achieve a tighter chorus blend by smoothing out dynamic variations.

### ○ Female Chorus 1 EQ

	LOW	L-MID	H-MID	HIGH
Q	HPF	10.0	9	H.SHELF
F	94	841	1.49	13.4 kHz
G	ON	-1.5	-2.5	+4.0

### ○ Female Chorus 2 EQ

	LOW	L-MID	H-MID	HIGH
Q	HPF	1.0	—	H.SHELF
F	50	1.00 kHz	—	13.4 kHz
G	ON	-2.5	—	+3.5

### ○ Female Chorus 1 Compression

THRESH.	RATIO	OUT GAIN	ATTACK	RELEASE	KNEE
-16	2.5:1	+2.0	21	319	1

### ○ Female Chorus 2 Compression

THRESH.	RATIO	OUT GAIN	ATTACK	RELEASE	KNEE
-16	2.5:1	+2.0	22	226	4

### □ Track 13: Male Chorus

The quality of this singer's voice makes EQ unnecessary in this situation, but some compression will be helpful to help the blend with the female chorus.

### ○ Male Chorus Compression

THRESH.	RATIO	OUT GAIN	ATTACK	RELEASE	KNEE
-20	2.5:1	+2.0	31	315	1

### □ Track 14: Lead Vocal

The lead vocalist on this track has a beautiful wide-range voice, one of the attractions of which is the rich, sensuous low-end. We want all of this to come through, so we'll only use a high pass filter set at 79 Hz to cut out the extreme low frequencies (mostly ambient rumble), and a bit of high boost to provide a little extra presence. The lead voice is well controlled, so not much compression is required ... but we'll use a little anyway, for a subtle boost in punch and power.

### ○ Lead Vocal EQ

	LOW	L-MID	H-MID	HIGH
Q	HPF	—	—	H.SHELF
F	79	—	—	10.0 kHz
G	ON	—	—	+1.5

### ○ Lead Vocal Compression

THRESH.	RATIO	OUT GAIN	ATTACK	RELEASE	KNEE
-13	2.5:1	+1.5	26	6	3



*As you make adjustments to EQ, dynamics, etc., don't be afraid to adjust the fader levels as you go along. EQ and dynamics invariably alter the levels of the tracks, and you'll almost certainly need to make minor adjustments to compensate.*

### □ Save the Song!

Once again, now's a good time to save your work. Press the WORK NAVIGATE [SONG] key to go to the SONG display, if necessary also press the [F1] function key to select the "Song List" page. Move the cursor to "SAVE" on the display and press [ENTER]. When the confirmation window appears move the cursor to "OK" and press [ENTER] again to actually save the song.

## Phase 4: Add Ambience

“Ambience” effects such as reverb, delay, and echo are generally used to provide a sense of space and warmth. So far we’ve worked with the “dry” (i.e. no effects) tracks, but many engineers and artists would already have ambience effects in place. In fact, many artists insist on monitoring “wet” while laying down the tracks. There are no rules regarding when in the mix process you should add ambience, but for this tutorial we’ve chosen to make ambience a separate subject because, unlike EQ and compression, it doesn’t directly affect the actual sound of the tracks. Ambience “adds” to the sound rather than changing it.

For the sake of consistency we’ll use only one reverb effect for the entire piece. The AW4416 has two separate effect processors built in, so it would be no problem to set up two different reverbs or other effects and use them on different tracks, but the straightforward, “earthy” feel of the song demands a more simple approach.



*There’s nothing worse than too much reverb all over everything!! Use ambience effects sparingly! And remember, reverb is cumulative! That is, the seemingly small amounts of reverb you add to individual tracks can add up to a great big mess when the entire mix is played back. In the beginning you’ll probably have to go back and readjust individual reverb sends many times until you get it right, but as you gain experience you’ll develop a feel for how much to add right from the outset.*

### **INSTANT GRATIFICATION!**

*You can instantly recall all the reverb settings described below (as well as all other settings made up until this point) by recalling the scene number 04 “AMBIENCE” we’ve provided for you. You should know how to do this by now, but if you don’t, go back and check the previous sections.*

### □ Engage the “Effect 1 Sends” and Select an Effect

1. Press the FADER MODE [AUX7] key. The faders will now function as auxiliary sends for the corresponding tracks. In the AW4416 AUX 7 is pre-assigned to internal effect processor 1 and AUX 8 is pre-assigned to effect processor 2. We’ll only use the AUX 7 sends for this example.
2. Press the [F2] function key to select the “Effect Library” page. The default “Reverb Hall” effect is a little too big and spacious for our needs. The “Reverb Room” effect, on the other hand, has just about the right combination of warmth and intimacy.
3. Use the data dial to select “Reverb Room” from the effect library list, then move the cursor to “RECALL” on the display and press [ENTER]. When the confirmation window appears move the cursor to “OK” and press [ENTER] again.
4. Press the [F1] function key to select the “Effect Edit” page and make sure that the BYPASS setting is “OFF” (if it is ON, move the cursor there and turn it OFF).

## □ Add Ambience to the Tracks as Required

All you have to do now is use the faders in the AUX 7 mode to add the required degree of the Reverb Room effect to the tracks.



*As with other stages in the mix process you'll probably be turning channels on and off so you can hear how the processed tracks sound alone or in combination with certain other tracks. As we mentioned earlier, don't use the SOLO function to do this, use the channel [ON] buttons instead.*

## □ Tracks 1 & 2: Drums

Drums usually benefit from a touch of reverb, especially if they have been recorded fairly dry like the “So Fine” drum track. But beware of adding too much. Fairly heavy reverb is sometimes used on drum tracks for ballads, but usually only specific drums — particularly the snare. In order to do this you'll obviously need to have at least the snare recorded on a separate track. It's perfectly OK to leave the drums totally dry, too, depending on the overall effect you're after. For “So Fine” we'll add a barely-noticeable amount of reverb to help define the recording's “space”.

Move the AUX 7 faders for tracks 1 & 2 (they're paired, remember, so you only have to move one) up to about  $-25\text{dB}$ .



*You can check and edit precise fader settings for the selected channel in the MIXER VIEW display (press the MIXER [VIEW] key). The AUX 7 fader near the lower right corner of the display shows the current level, and if you move the cursor there you can use the data dial to make precise adjustments. Remember to press the FADER MODE [AUX7] key if you want to go back and make further reverb adjustments via the channel faders.*

## □ Track 3: Claves/Electronic Drums

Leave this track dry. The claves sound has enough natural room ambience which was undoubtedly picked up during the initial recording. The electronic drum sequence for the outro needs to remain dry to emphasize its “techno” quality as well as maximize the contrast with the acoustic drums.

## □ Track 4: Bass

It's usually a good idea to avoid adding reverb to bass because the resultant boomy wash of sound can severely compromise the clarity of the mix. And that's precisely what we'll do with the “So Fine” bass track — no reverb.

## □ Tracks 5 & 6: Rhythm & Lead Guitar

Electric guitar is one of those instruments that almost demands added reverb (unless the guitarist applied reverb himself while recording the tracks). In the studio electric guitar is often recorded close-miked or directly injected into the console, so the sound tends to be extremely dry and brittle. Unless you're specifically looking for a very dry sound, you can safely add a fair amount of reverb.

Track 5 rhythm guitar reverb at  $-12.7$ ; track 6 lead guitar reverb at  $-11.8$ .

## □ Track 7: Organ

Instruments like organ always present a challenge when trying to decide on the right amount of reverb to add. The sustained nature of the sound means you can add a LOT of reverb before you really notice it ... but it's there, and probably playing havoc with the overall mix. You'll probably need to add a touch of reverb to integrate the instrument into the overall space of the recording, but only a touch!

Organ reverb at -20.

## □ Track 8: Piano

The amount of reverb you add to piano track will depend both on the type of sound you are trying to create and on how the piano is played. Reverb is much more noticeable when the instrument is played in a sparse, staccato style than when played with lots of sustain and/or big chords. Particularly in the latter case the caution given for organ applies to piano as well: don't overdo it!

Piano reverb at -15.

## □ Tracks 9 & 10: Strings

Since the strings themselves are sort of used as a "wash" or "pad" type of sound, some reverb is essential to fill out the image. In short, the right amount of reverb can give strings — especially the synth strings that most of us will be using — a more lush, rich sound.

String reverb level at -5.5.

## □ Tracks 11, 12, & 13: Chorus

Here we'll use just enough reverb to fill out and unify the sound of the backing vocals. More reverb would produce a more lush sound, but would at the same time reduce the intelligibility of the vocals as well as the clarity of the overall mix.

Track 11, 12, and 13 reverb to -15.9.

## □ Track 14: Lead Vocal

There is a tendency to add lots of reverb to the lead vocal, but listen to the results carefully. Less is usually better. Increase the reverb gradually until you begin to hear a slight thickening or "glow", and stop there. If you're hearing reverb as a separate entity, there's too much reverb.

Lead vocal reverb to -10.9.



*Everything, yes, everything you do to the mix can change the perceived balance of the tracks. Make adjustments to the fader levels whenever you feel the urge to do so.*

## □ Save the Song!

We can't emphasize enough how important it is to keep saving your work at relatively short intervals. Accidents do happen, and if after several hours of hard work your AW4416 is accidentally unplugged, or there's a power failure, or your pet cat decides to do a mix of his own, you'll have to go back and start again. Ouch!

Press the WORK NAVIGATE [SONG] key to go to the SONG display, if necessary also press the [F1] function key to select the "Song List" page. Move the cursor to "SAVE" on the display and press [ENTER]. When the confirmation window appears move the cursor to "OK" and press [ENTER] again to actually save the song.



## Phase 5: Finalize the Mix & Set Up Automation

Well, the basic mix is pretty much done. Now that all the processing and effects are in place you should listen carefully and make any final adjustments. But as you listen to the mix we've set up you'll probably notice that one "average" mix doesn't quite do justice to the entire song. You'll probably notice sections on which you'd like make a temporary change to the level of one track or another. This is where automation comes in handy. Back in the "pre-automation" days recording engineers would have to make such changes manually "on the fly". And if the changes involved a number of faders and controls simultaneously, then several people would have to be recruited to do the job. Of course, timing is critical, so the mix would often have to re-run many times until all the required changes could be made satisfactorily. Thank goodness for the AW4416. It will let you record fader, channel ON/Off, pan, and EQ automation changes one at a time so you can put together the perfect automix with relative ease.

For the "So Fine" automix we've used a combination of fader, channel ON/OFF, and pan automation. Please refer to the AW4416 operation guide for details on how to record and edit automation. In this section we'll simply describe the changes we made and why we thought they were necessary. We suggest you enable our automix and watch the faders and channel ON keys as the song plays.

To enable the automix:

1. Press the AUTOMATION [AUTOMIX] key and, if necessary, the [F1] function key to select the "Main" page.
2. Move the cursor to the "AUTOMIX" parameter and press [ENTER] to select "ENABLE".
3. And to select the pre-master automix: press the [F4] key to select the "Event List" page, move the cursor to the SCENE/LIB button on the display and press [ENTER] to highlight it, then move the cursor down to the scene number in the event list (it should be "06" initially) and use the data dial to change the scene number to "05".
4. Now go back to the VIEW display or any other display you want to watch while studying the automix.

## □ The Automix

The general flow of the automix is described below in reference to absolute counter times. Please note that the times given are not precise. Use them as a guide.

### ○ 00:00:00

The first thing you'll notice is that the channel ON keys for tracks 8 through 14 are all off. We'll turn those tracks on just before the corresponding parts come in.

### ○ 00:00:13

Channels 11, 12, and 13 are turned ON just before the chorus comes in on the introduction.

### ○ 00:00:15

The level of the second introductory lead guitar phrase (track 6) was a little lower than the first, and it was getting buried in the chorus. We used fader automation to boost it a bit.

### ○ 00:00:25

The lead vocal track (14) is turned ON just before the lead vocal comes in. At the same time we've turned the chorus tracks (11, 12, and 13) back off because the chorus won't be coming back in for a while. Why bother? Well, with any source recorded via microphone you're also likely to pick up some extraneous ambient noise, and this can reduce the clarity of the mix if allowed to play while the desired source isn't doing anything. This is the case with the "So Fine" chorus tracks. In fact, if you watch the track 11, 12, and 13 level meters while the chorus isn't singing you can see that there's a surprising amount of signal where there really shouldn't be any. This type of unwanted noise can also be removed automatically by "gating" (a type of dynamics processing in which signals below a specified level are cut off — the AW4416 dynamics processors can do this). But since the noise is effectively masked by the other tracks during denser parts of the song, we'll simply use channel ON/OFF automation for the "So Fine" demo.

You'll also notice that we reduced the level of the organ track (7) at about this point. This is because we wanted a slightly higher organ level during the introduction to achieve a better overall balance before the lead vocal comes in. Now that the lead vocal has begun, however, we've lowered the organ track back to its "normal" level.

### ○ 00:00:47

Chorus channels 11 and 12 are turned back ON, and the level of left female vocal track (11) has been boosted a bit to maintain optimum balance between the two female chorus parts during this section of the song.

The piano track (8) is turned ON just before the piano part comes in.

### ○ 00:01:08

Chorus track 11 is brought down again for optimum chorus balance, and the level of the lead vocal track is boosted just a bit to allow the lead vocal to come through the denser instrumentation of the bridge section.

The strings tracks (9 and 10) are turned ON just before the string part begins.

Also note that the level of the lead guitar track (6) was boosted a bit just before this point. We did this to emphasize the distinctive guitar part during the bridge.

The organ level has been lowered to "make room" for the strings, piano, and chorus parts during the bridge.

○ **00:01:31**

The lead guitar on track 6 and the lead vocal on track 14 have been brought back down to their “normal” levels.

The organ level is also returned to normal.

○ **00:01:39**

The level of the male chorus track (13) is boosted a bit here because for the next couple of phrases the male chorus doubles with the lead vocalist while the female chorus provides “Ooh” type support.

○ **00:01:53**

Male chorus brought back down to normal chorus level.

○ **00:2:13**

Once again, the lead vocal (14) and lead guitar (6) are boosted a bit for the bridge.

The organ drops out a bit to leave room for the denser arrangement of the bridge section.

○ **00:02:36**

The level of the lead vocal track is briefly lowered just a bit to soften the impact of the very high notes.

○ **00:02:47**

Another brief dip in the lead vocal level to even out the dynamics.

○ **00:02:57**

Track 13 is boosted in preparation for the male rap part on the outro.

Track 3 contains the electronic drum part used on the outro, so this track is also boosted.

The strings tracks (9 and 10) play an important role on the outro, so they are boosted as well.

The level of the lead vocal track is reduced to move it more into the background.

○ **00:02:58**

The pan automation on the rap track (13) begins here. Note that the rap part pans alternately to the left and right for each phrase, and to the center for the final phrase.

○ **00:03:33**

Fade out.

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## Phase 6: Use the Virtual Tracks to Create an Alternate Mix

If you feel that you need a little more practice with the mixing process, try selecting the alternative string and vocal tracks we've provided and see how they change the overall sound. Otherwise you can skip ahead to the "Mastering" section that follows.

Tracks 9 and 10 of the "So Fine" demo contain alternative string parts, and track 14 contains an alternative male lead vocal part. Switch to virtual tracks 2 on these tracks (i.e. 9-2, 10-2, and 14-2) as follows:

1. Press the RECORDER [TRACK] key.
2. Press the [F2] function key to go to the "V.Track" page.
3. Move the cursor to virtual track buttons 9-2, 10-2, and 14-2, and press [ENTER] each time so that the alternate tracks are highlighted.
4. Now that you have selected the alternative tracks you can go back to the VIEW display or any other display you want to work on.

Play the mix as is with the alternative string and lead vocal parts. Now go ahead and make any adjustments you feel are necessary to make the mix work better with the new parts. Note that if you play back the song with AUTOMIX enabled the automix values will automatically be recalled, so you will probably initially want to disable AUTOMIX to experiment with the virtual tracks.

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# Mastering

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When you think mastering, think “subtle”. But just because it’s subtle doesn’t mean that it can’t have a huge impact on the overall sound of a song. Mastering is the process of making final adjustments to the overall sound, usually involving the application of EQ and/or compression. In some instances an engineer might even decide to add a touch of overall reverb. In the context of an album containing several individual songs or compositions, mastering also covers the process of matching levels and sound between songs, and deciding on the amount of space to leave between tracks. For our discussion here we’ll concentrate on mastering and “burning” the song to a CD-R disk which can then be played in just about any standard CD player.

## **THE IMPORTANCE OF ACCURATE MONITORING**

*One of the most critical factors in successful mastering (and mixing, for that matter) is to have a good monitoring setup. This is also one of the most difficult to achieve simply because it involves not only your amp and speakers, but the room you monitor in and everything in it as well. Quite simply, your mix will sound different on different systems and in different rooms. If the environment you work in tends to be bass deficient, you will probably crank the bass up too high and end up with excessively boomy sound on other systems. If your “studio” is reverberant (we don’t recommend mixing or mastering in the bathroom), you won’t be able to accurately judge the effect of ambience processing on your mix. What you really need is a mixing and mastering environment that is relatively dry (in the sonic sense, that is) and has a broad, flat frequency response without unnatural dips or peaks. If your studio isn’t perfect (and this is the norm for home studios) then experience is the answer. The more you mix, master, and listen to the results on different systems and in different rooms, the more you’ll get a feel for how the sound of your studio relates to the real-world “average”. Listening to your own work in a variety of environments is a very good idea in any case. Listen on big, expensive hi-fi systems as well as cheap portables. Don’t forget car stereos, either. The more you listen, the better your mixes will become.*

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## Step 1: Set Up the “Master” EQ and Dynamics

It won’t always be necessary to use EQ and dynamics during mastering; in fact, we’ll use only compression for this example. The dynamics are set using the STEREO channel processor. Press the STEREO channel [SEL] key, then use the MIXER [DYN] key to access the dynamics parameters. The nice thing about this system is that you can hear how your master EQ and/or dynamics settings affect the overall mix immediately. In some cases you might even decide to go back and make changes to the mix because of the way everything sounds “mastered” as opposed to straight, before committing to a specific set of mastering parameters. Generally, though, the better the mix, the less master processing is required.

To enable the pre-programmed “mastered” automix:

1. Press the AUTOMATION [AUTOMIX] key and, if necessary, press the [F4] key to select the “Event List” page.
2. Move the cursor to the SCENE/LIB button on the display and press [ENTER] to highlight it.

3. Move the cursor down to the scene number in the event list (it should be “05” if you changed it as we suggested on page 24) and use the data dial to change the scene number to “06”.
4. Now go back to the VIEW display or any other display you want to watch while listening to the mastered automix.

#### ○ Equalization

As mentioned above, you won’t always need to do this, but overall master EQ can be useful when you want to add a little brilliance or low end, or both, to a finished mix. You might also find that some mixes are too “boomy” or “middly”, and that applying a slight dip in the appropriate frequency range can clean things up considerably.

The “So Fine” demo doesn’t need any EQ (at least we think so), so we’ll leave it alone.

#### ○ Compression

You’ll probably end up using master compression a lot more than master EQ. The trend these days in popular music is to squeeze as much level onto the final master as possible without making the music sound unnatural (sometimes, on the other hand, “unnatural” is a desirable goal). Some compression can also give the mix more punch and presence.

The master compression settings for “So Fine” are not particularly extreme, but if you feel the urge to experiment with other settings we encourage you to do so.

#### ○ So Fine Master Compression

THRESH.	RATIO	OUT GAIN	ATTACK	RELEASE	KNEE
-10	1.7:1	+3.5	55	192	1

## Step 2: Record the Song to the Stereo Track

The AW4416 requires that your song be recorded to the stereo track before it can be written to a CD. So once you’re satisfied with the master EQ and/or compression settings, record the song to the AW4416 stereo track, as follows:

1. Press the [ST] key to engage the STEREO track record mode (the key will flash).
2. Locate to the top of the song and start recording (press the [REC] and [PLAY] keys simultaneously).
3. Press the [STOP] key when the song has finished.  
Simple, isn’t it?

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## Step 3: Write the Song to a CD-R Disk

This procedure is described in detail in the AW4416 operation guide (page 255), so we won't go into it here. But now you know how the entire process works — from the basic tracks to CD.

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## Practice, Practice ...

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Really. Mixing and mastering are skills which, like playing an instrument, can only be acquired through practice. You have the tools (the AW4416 is about the coolest little mixing and mastering toolkit you can lay your hands on), now it's up to you to learn how to use them like a pro. Don't be afraid to go back and change things. Even if you've gone right through the process and mastered a CD, if it doesn't sound right when you play it back on CD player, by all means go back and make the necessary changes. That's how we learn. As you gain experience and skill the need to backtrack and redo things will decrease, and you'll make better mixes more quickly and easily.

Happy mixing!

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# Glossary

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## ☐ Galileo

An early astronomer who lived in the 16<sup>th</sup>–17<sup>th</sup> century, and who most certainly never saw anything like an interplanetary probe. We're pretty sure he never saw an AW4416, either.

## ☐ Close-miking

As the term implies, “close-miking” involves placing a microphone very close to the source in order to maximize the amount of sound picked up from the desired source in relation to other ambient sound.

## ☐ Condenser Microphone

Condenser microphones employ a very thin, light diaphragm with a low moving mass to pick up sound. This makes it possible to achieve high sensitivity and broad frequency response, but has the disadvantage that this type of microphone tends to be delicate. They can be damaged by physical shock as well as high humidity. Condenser microphones, particularly the more delicate large-diaphragm types (yep, they have a large diaphragm) are generally never taken out of the studio.

## ☐ Dynamic Microphone

Dynamic microphones use a rigid diaphragm connected to a coil which moves in a magnetic field to transform acoustic sound into electric energy. Dynamic microphones are generally rugged and provide consistent performance under a wide range of conditions, but they rarely provide the high sensitivity and flat broad frequency response of their condenser counterparts. Still, dynamics are the microphones of choice for high-SPL (Sound Pressure Level) percussive sources such as drums (particularly when close-miked) and live sound.

## ☐ Phantom Power

A number of studio-type microphones have built-in preamplifiers that, naturally, require some sort of power to operate. Power can be provided by an external power supply (not too common these days), batteries, or phantom power from the console. It's called “phantom” power because it sort of sneaks into the microphone from the console via the microphone cable without affecting the audio signal. Neat trick, huh!. Since dynamic microphones rarely require external power, most phantom-powered microphones are condenser types.

## ☐ Baffle

Usually a movable sound-absorbing partition which can be placed strategically in the studio to prevent leakage between sources and microphones.



## ☐ **Directional Microphone**

A microphone which primarily picks up sound from only one general direction is a “directional” microphone. This can be handy in maximizing separation in the studio (and in reducing feedback on stage), because you can simply aim the microphone away from sources of sound you don’t want to pick up.

## ☐ **Cardioid Pattern**

This refers to a widely-used type of response pattern for directional microphones. It’s called a “cardioid” pattern because the graph representing this type of response sort of resembles a heart shape. Sort of.

## ☐ **Omni-directional Microphone**

A microphone which will pick up sound equally from all directions. Not often used in studio recording or live sound, but this type of microphone can be useful when you want to capture the main source as well as it’s environment (room ambience, for example) in one go.

## ☐ **Overheads**

Microphones that are placed “overhead”, sometimes as a stereo pair, to pick up the overall sound of an instrument or group of instruments. Overheads are often used in addition to close-miking when recording drums. Microphones set up this way are also sometimes called “showers” for, well, obvious reasons.

## ☐ **Closed Headphones**

This is the type of headphone that completely covers your ears rather than fitting in you ears or simply pressing against your ears. This is definitely the type of headphones you want to use for monitoring while recording, because they prevent the headphone sound from leaking out to any microphones in the room, and well as preventing extraneous sound from leaking in.

## **So Fine**

Written and arranged by  
Karl Christmas

Engineered and produced by  
Darren Allison

Vocals: Rusharn Simpson

Vocals, backing vocals, guitars and keyboards: Karl Christmas

Backing vocals: Billie Godfrey

Bass: Finn Day-Lewis

Drums: Andrew Small

Recorded at Protocol Studios and Darren's Studios, London.

Mixed at Transmedia Services Ltd, Bedford, UK.

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HHB Communications and Digital Village for their support.

Additional mixing and production by  
Kent Ibbott

