EDIROL by Roland


# Owner's Manual

**Before using this unit, carefully read the sections entitled: "USING THE UNIT SAFELY" and "IMPORTANT NOTES" (p. 3–4; p. 5–6).**

**These sections provide important information concerning the proper operation of the unit.**

**Additionally, in order to feel assured that you have gained a good grasp of every feature provided by your new unit, Owner's manual should be read in its entirety. The manual should be saved and kept on hand as a convenient reference.**

**For the U.K.**

**IMPORTANT:** THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.

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 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.
Under no circumstances must either of the above wires be connected to the earth terminal of a three pin plug.

**For EU Countries**

CE

This product complies with the requirements of European Directive 89/336/EEC.

**For the USA**

## FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

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Unauthorized changes or modification to this system can void the users authority to operate this equipment.
This equipment requires shielded interface cables in order to meet FCC class B Limit.

**For Canada**

## NOTICE

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

## AVIS

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

**For the USA**

## DECLARATION OF CONFORMITY Compliance Information Statement

| | |
|---|---|
| Model Name : | M-16DX |
| Type of Equipment : | Digital Mixer |
| Responsible Party : | Roland Corporation U.S. |
| Address : | 5100 S.Eastern Avenue, Los Angeles, CA 90040-2938 |
| Telephone : | (323) 890-3700 |

# USING THE UNIT SAFELY

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

About ⚠WARNING and ⚠CAUTION Notices

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

About the Symbols

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

## ALWAYS OBSERVE THE FOLLOWING

### ⚠WARNING

- Do not open (or modify in any way) the unit or its AC adaptor.

- Do not attempt to repair the unit, or replace parts within it (except when this manual provides specific instructions directing you to do so). Refer all servicing to your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.

- Never use or store the unit in places that are:
  - Subject to temperature extremes (e.g., direct sunlight in an enclosed vehicle, near a heating duct, on top of heat-generating equipment); or are
  - Damp (e.g., baths, washrooms, on wet floors); or are
  - Humid; or are
  - Exposed to rain; or are
  - Dusty; or are
  - Subject to high levels of vibration.

- Make sure you always have the unit placed so it is level and sure to remain stable. Never place it on stands that could wobble, or on inclined surfaces.

- Be sure to use only the AC adaptor supplied with the unit. Also, make sure the line voltage at the installation matches the input voltage specified on the AC adaptor's body. Other AC adaptors may use a different polarity, or be designed for a different voltage, so their use could result in damage, malfunction, or electric shock.

- Use only the attached power-supply cord. Also, the supplied power cord must not be used with any other device.

### ⚠WARNING

- Do not excessively twist or bend the power cord, nor place heavy objects on it. Doing so can damage the cord, producing severed elements and short circuits. Damaged cords are fire and shock hazards!

- This unit, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level, or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should immediately stop using the unit, and consult an audiologist.

- Do not allow any objects (e.g., flammable material, coins, pins); or liquids of any kind (water, soft drinks, etc.) to penetrate the unit.

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

## ⚠WARNING

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

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

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

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

- DO NOT play a CD-ROM disc on a conventional audio CD player. The resulting sound may be of a level that could cause permanent hearing loss. Damage to speakers or other system components may result.

## ⚠ CAUTION

- The unit and the AC adaptor should be located so their location or position does not interfere with their proper ventilation.

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

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

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

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

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

- Before moving the unit, disconnect the AC adaptor and all cords coming from external devices.

- Before cleaning the unit, turn off the power and unplug the AC adaptor from the outlet.

- Whenever you suspect the possibility of lightning in your area, disconnect the AC adaptor from the outlet.

- Always keep the following parts including with the M-16DX and small components that may be removed out of the reach of small children to avoid accidental ingestion of the parts.
  - Ground terminal (screw)
  - Screws used in attaching the rack mount adaptor
  - Rubber feet
  - Ferrite core

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

  This instrument's phantom power:
  (per channel) 48 V DC, 5 mA Max

# IMPORTANT NOTES

**In addition to the items listed under "USING THE UNIT SAFELY" on page 3–4, please read and observe the following:**

## Power Supply

- Do not connect this unit to same electrical outlet that is being used by an electrical appliance that is controlled by an inverter (such as a refrigerator, washing machine, microwave oven, or air conditioner), or that contains a motor. Depending on the way in which the electrical appliance is used, power supply noise may cause this unit to malfunction or may produce audible noise. If it is not practical to use a separate electrical outlet, connect a power supply noise filter between this unit and the electrical outlet.
- The AC adaptor will begin to generate heat after long hours of consecutive use. This is normal, and is not a cause for concern.
- Before connecting this unit to other devices, turn off the power to all units. This will help prevent malfunctions and/or damage to speakers or other devices.

## Placement

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

## Maintenance

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

## Repairs and Data

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

## Additional Precautions

- Please be aware that the contents of memory can be irretrievably lost as a result of a malfunction, or the improper operation of the unit. To protect yourself against the risk of loosing important data, we recommend that you periodically save a backup copy of important data you have stored in the unit's memory written down on paper.
- Unfortunately, it may be impossible to restore the contents of data that was stored in the unit's memory and hard disk (computer) once it has been lost. Roland Corporation assumes no liability concerning such loss of data.
- Use a reasonable amount of care when using the unit's buttons, sliders, or other controls; and when using its jacks and connectors. Rough handling can lead to malfunctions.
- Never strike or apply strong pressure to the display.
- When connecting / disconnecting all cables, grasp the connector itself—never pull on the cable. This way you will avoid causing shorts, or damage to the cable's internal elements.

- To avoid disturbing your neighbors, try to keep the unit's volume at reasonable levels. You may prefer to use headphones, so you do not need to be concerned about those around you (especially when it is late at night).
- When you need to transport the unit, package it in the box (including padding) that it came in, if possible. Otherwise, you will need to use equivalent packaging materials.
- Some connection cables contain resistors. Do not use cables that incorporate resistors for connecting to this unit. The use of such cables can cause the sound level to be extremely low, or impossible to hear. For information on cable specifications, contact the manufacturer of the cable.
- Depending on the circumstances of a particular setup, you may experience a discomforting sensation, or perceive that the surface feels gritty to the touch when you touch this device, microphones connected to it, or the metal portions of other objects, such as guitars. This is due to an infinitesimal electrical charge, which is absolutely harmless. However, if you are concerned about this, connect the ground terminal (see figure) with an external ground. When the unit is grounded, a slight hum may occur, depending on the particulars of your installation. If you are unsure of the connection method, contact the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.

  Unsuitable places for connection
  - Water pipes (may result in shock or electrocution)
  - Gas pipes (may result in fire or explosion)
  - Telephone-line ground or lightning rod (may be dangerous in the event of lightning)

## Handling the CD-ROMs

- Avoid touching or scratching the shiny underside (encoded surface) of the disc. Damaged or dirty CD-ROM discs may not be read properly. Keep your discs clean using a commercially available CD cleaner.

## Copyright

- This product can be used to record or duplicate audio or visual material without being limited by certain technological copy-protection measures. This is due to the fact that this product is intended to be used for the purpose of producing original music or video material, and is therefore designed so that material that does not infringe copyrights belonging to others (for example, your own original works) can be recorded or duplicated freely.
- Do not use this unit for purposes that could infringe on a copyright held by a third party. We assume no responsibility whatsoever with regard to any infringements of third-party copyrights arising through your use of this unit.



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

# Contents

# Main features

The M-16DX is a 24-bit, 96 kHz full-digital 16-channel mixer.

It delivers high audio quality and sophisticated functionality at an amazing cost/benefit ratio, giving you the sound and operability of a full-digital mixer for an ideal mixing environment.

## Mix controller and I/O module

The M-16DX has been designed as two separate units, one of which is a free-standing mix controller (operating console). You can connect your peripheral equipment to the I/O module (connector box), and use a single special cable to connect the I/O module with the mix controller. The I/O module can be rack mounted.

This gives you a neat and tidy operating environment, free of tangled cables.

## A rich array of input/output jacks

A full complement of input/output jacks are provided, including phone jacks and RCA pin type input/output jacks.

For mic input, the unit offers four XLR type connectors. Phantom power is also provided.

For digital input/output, both optical and coaxial jacks/connectors are provided.

## Use dedicated effects to create the perfect sound

Also included are special "insert effects," designed to be used on vocal sources input via microphone, such as narrations and announcements; a "finalize" effect, which improves the overall volume and loudness balance to create your final sound; and "FX," which provides spatial-type effects, such as echo and reverb to simulate the acoustics of a club or hall.

## Automatic compensation for room acoustics

The M-16DX's "Room Acoustic Auto Control" function analyzes the acoustical characteristics of the room and automatically adjusts the output signal so that it will be appropriate for that room.

## Graphic display

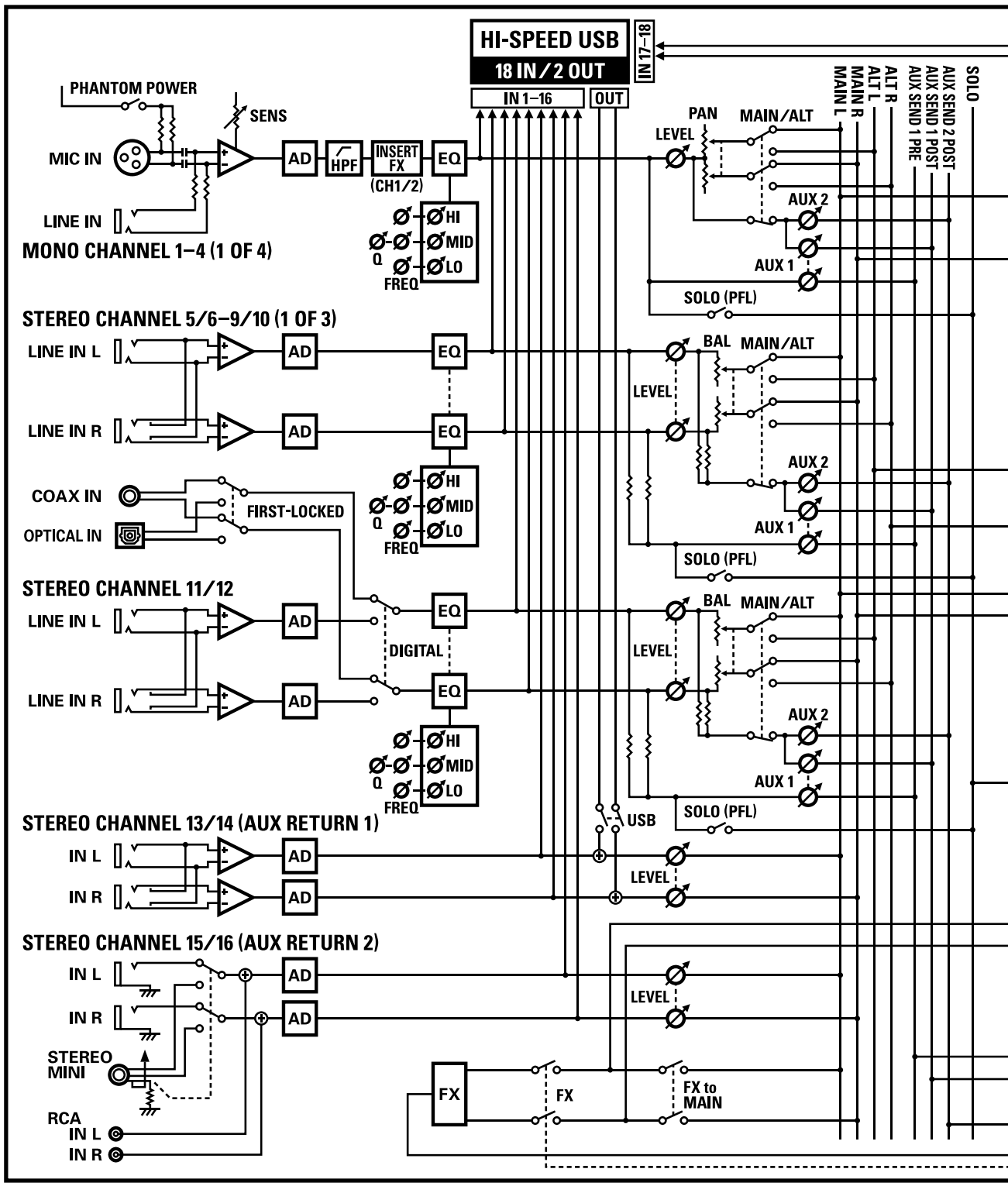
A backlit graphic LCD display is provided, letting you adjust the channel levels while viewing the settings in the display. The display also shows information about each channel and about the effect settings, giving you visual confirmation of the current status while you operate the mixer.

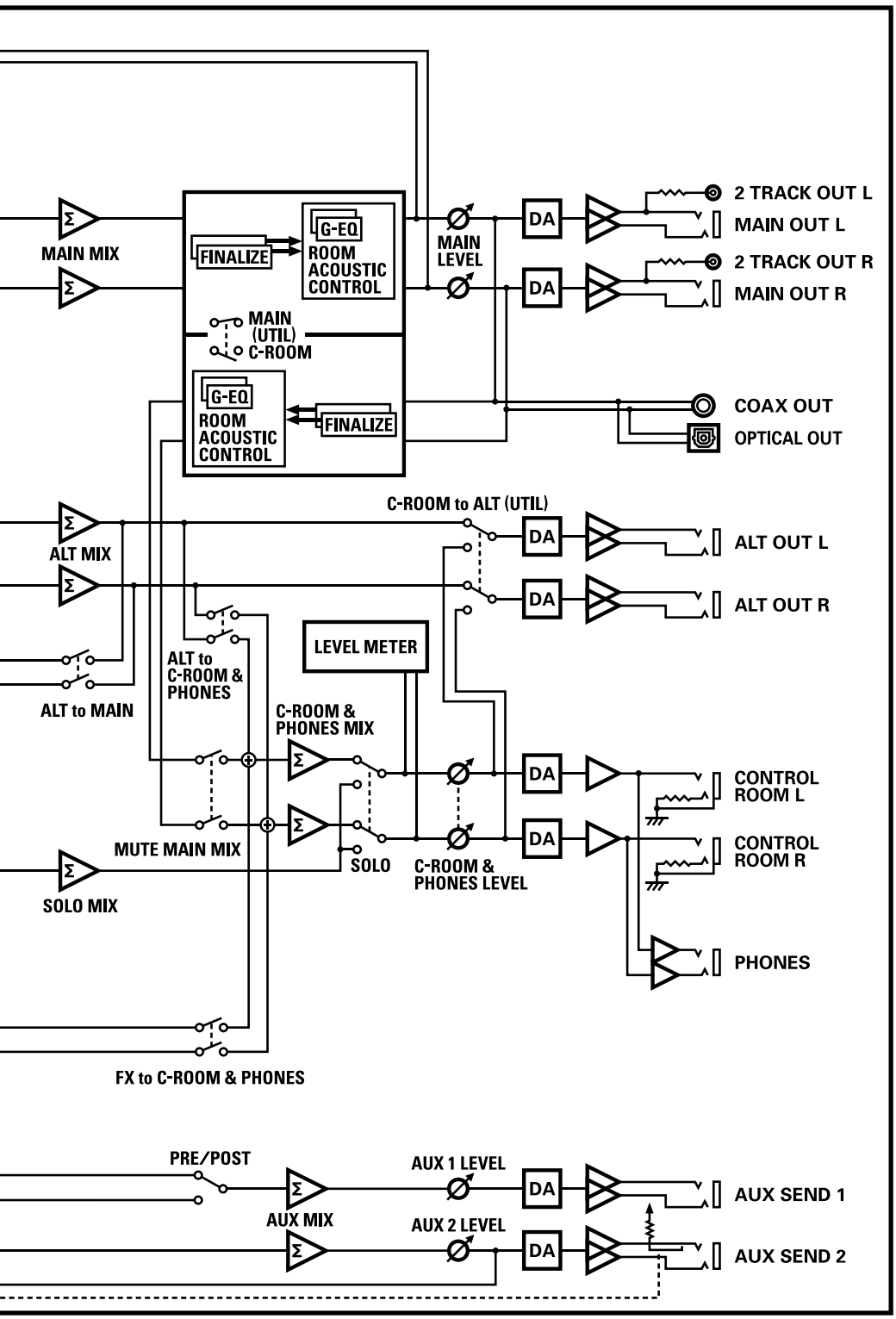
## Built-in USB 2.0 audio interface

The M-16DX can be readily integrated with your computer. A total of eighteen channels—sixteen input channels plus the main output—can be recorded simultaneously on your computer.

This capability takes the M-16DX beyond the realm of a simple mixer, letting you mix and record on your computer-based system.

# Block diagram




MAIN MIX
FINALIZE
G-EQ
ROOM ACOUSTIC CONTROL
MAIN LEVEL
DA
2 TRACK OUT L
MAIN OUT L
2 TRACK OUT R
MAIN OUT R
MAIN (UTIL) C-ROOM
COAX OUT
OPTICAL OUT
C-ROOM to ALT (UTIL)
ALT MIX
ALT OUT L
ALT OUT R
LEVEL METER
ALT to C-ROOM & PHONES
ALT to MAIN
C-ROOM & PHONES MIX
CONTROL ROOM L
CONTROL ROOM R
MUTE MAIN MIX
SOLO
C-ROOM & PHONES LEVEL
SOLO MIX
PHONES
FX to C-ROOM & PHONES
PRE/POST
AUX 1 LEVEL
AUX SEND 1
AUX MIX
AUX 2 LEVEL
AUX SEND 2

# Names of things and what they do

## Mix controller

### Channel control section


### 1. LO CUT Switches

Switch on/off the low cut filters.

When a switch is pressed ( ▬ ), the low-cut filter is turned on, and the range of frequencies below 75 Hz are cut.

Use this to eliminate unwanted low-frequency noise.

### 2. SENS Knobs (channels 1–4)

Allow you to adjust the sensitivity as appropriate for the level of the input signal.

| Connector | Range of adjustment |
|---|---|
| MIC connector (XLR) | +10– +60 dB |
| LINE IN jack (TRS) | +10– -40 dBu |

If you're using the MIC connector, you can change the setting of the function switch to further specify the range of adjustment.

→ "Switching the adjustment range of the SENS knobs (SENS RANGE)" (p. 44)

* *If this is set to NARROW, you'll be able to make detailed adjustments.*

**NOTE**

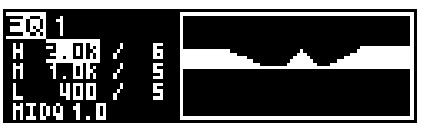
When you turn the SENS knob, it may seem as though the change does not occur smoothly, but this is not a malfunction.

### 3. EQ Knobs (HI, MID, LOW)

Provide for three-band equalization, with high, mid, and low frequency controls for each channel.

The corresponding frequency range will be boosted when you turn a knob toward the right, be cut when you turn it toward the left, and made flat when the knob is in the center (U) position.

When you turn a knob, the equalizer screen will appear in the display, showing the current settings both numerically and graphically.



You can change the center frequency of the high, mid, and low frequency ranges, and the width of the mid-frequency range (MID Q).

→ "Making detailed equalizer settings" (p. 29)

When you turn an EQ knob, the [SEL] button of that channel will light.

## 4. PAN Knobs

Allow you to localize a mono input signal between L and R. The signal will be located in the center when a knob is in the ( ◄► ) position.

## 5. BAL Knobs

Adjust the volume balance of a stereo input signal (channels 5–12). The left and right channels will be at the same volume when a knob is in the ( ◄► ) position.

## 6. AUX Knobs

Adjust the levels of the signals sent from the channels to the AUX 1 bus and AUX 2 bus.

For stereo input signals (channels 5–12), the signals from odd-numbered inputs (L) and even-numbered inputs (R) are mixed and sent to the AUX bus.

You can select whether the pre-fader signal (before passing through the channel volume) or the post-fader signal (after passing through the channel LEVEL knob) will be sent to the AUX 1 bus.

→ "PRE Switch" (p. 15)

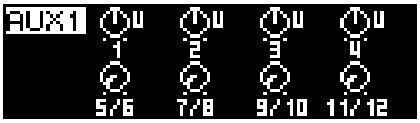
The post-fader signal is sent to the AUX 2 bus.

## 7. AUX 1 Button

If you press this button so it's lit, the AUX knobs will function in adjusting AUX 1 levels.

The display will show the AUX 1 screen, indicating the AUX 1 level of each channel.

This is convenient when you want to check the current AUX level of each channel.




* *Press the DISPLAY button to return to the level meter screen.*

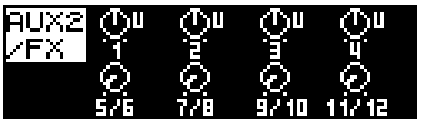
## 8. AUX 2 Button

If you press this button so it's lit, the AUX knobs will function in adjusting AUX 2 levels.

* *When the effect (FX) is on, turning an AUX knob will simultaneously adjust the AUX 2 level as well as the effect depth of the channel.*

The display will show the AUX 2 screen, indicating the AUX 2 level of each channel.

This is convenient when you want to check the current AUX level of each channel.



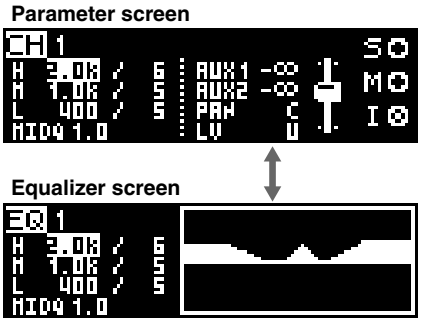

* *Press the DISPLAY button to return to the level meter screen.*

## 9. SEL Buttons

If you press one of these buttons (the button will light), the parameters of the selected channel will appear in the display as the "parameter screen."

When calling up a scene (p. 43), this is a convenient way to check the settings of each channel.

This button can be pressed at any time to toggle between the "parameter screen" and "equalizer screen."

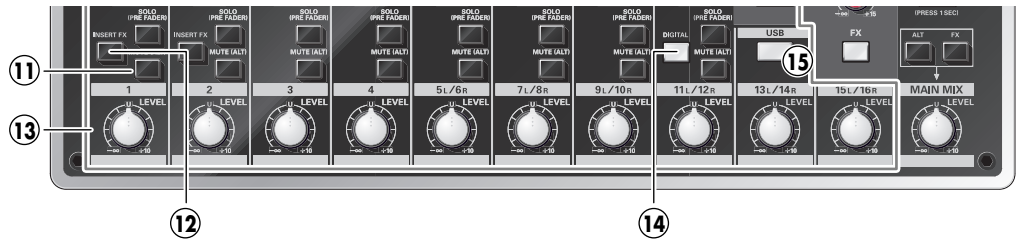



* *Press the DISPLAY button to return to the level meter screen.*

## 10. SOLO (PRE FADER) Switches

If you turn a switch on ( ▬ ), the MUTE MAIN MIX button will blink, and the pre-fader signal (from before the channel volume) of the corresponding channel will be sent to the headphones (PHONES) and control room (CONTROL ROOM).

* *The output level meter (p. 16) will show the pre-fader signal level. For channels 1–4, you should watch this level indication while you use the SENS knob to adjust the volume.*

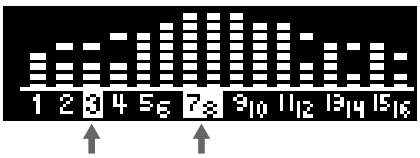



## 11. MUTE (ALT) Switches

Determine whether the signal of the channel will be sent to the ALT bus or to the MAIN bus.

| | |
|---|---|
| **On ( ▬ )** | The signal of the channel will be sent to the ALT bus, and muted for the MAIN bus. |
| **Off ( ▭ )** | The signal of the channel will be sent to the MAIN bus. |

* *If a channel is being sent to the ALT bus, its channel number is highlighted in the level meter screen.*



## 12. INSERT FX Switch (channels 1, 2)

When the insert effect is on (INSERT FX button lit), these switches determine whether the insert effect will be used for channels 1 and 2, respectively.

If a switch is on ( ▬ ), the insert effect will be applied to the input signal.

## 13. Channel LEVEL Knobs

Adjust the levels of the signals input to the channels.

* *In order to reduce the amount of noise in your mix, channels you're not using should be set to the minimum level.*

## 14. DIGITAL Button (channels 11/12)

Specifies whether the signal from the LINE IN jacks or the signal from DIGITAL IN (jack/connector) is to be input to channels 11/12.

| | |
|---|---|
| **Button lit** | When you press the DIGITAL button, the button will light if a valid digital signal is being input to DIGITAL IN (jack/connector), and the signal from DIGITAL IN (jack/connector) will be input to channels 11/12. |
| **Button blinking** | If no digital signal is being input, or if its sampling frequency is not supported by the M-16DX, the button will blink, and the signal from the LINE IN jacks will be input to channels 11/12. |
| **Button unlit** | The signal from the LINE IN jacks will be input to channels 11/12. |

**MEMO**

The sampling frequency at which the mixer operates will automatically switch to the sampling frequency of the digital signal that is being input at DIGITAL IN (jack/connector), and will synchronize completely to this sampling frequency.

* *The current sampling frequency is shown in the utility screen (p. 44).*

**Caution when using a USB connection**

* *You can't change the sampling frequency while the M-16DX is connected via USB.*

If the mixer's operating sampling frequency is different than the sampling frequency of the digital signal being input to DIGITAL IN (jack/connector) when you press the DIGITAL button, the button will blink, and the input to channels 11/12 will switch to the signal from the LINE IN jacks.

In this case, you can either select the appropriate sampling frequency on the digital device that's connected, or temporarily disconnect the USB cable and then reconnect it after the button has changed to steadily lit.

## 15. USB Button (channels 13/14)

Use this when you want to input signals from USB connector into channels 13/14.

| | |
|---|---|
| **Button lit** | If the USB connection is valid, the button will light automatically, and the signal from USB will be input to channels 13/14. |
| **Button unlit** | Only the signals from LINE IN will be input to channels 13/14. |

## Output section


### 16. MAIN MIX LEVEL Knob

Adjusts the level of the signal that is output from MAIN OUT jacks.

### 17. ALT to MAIN MIX Switch

If you turn this switch on ( ▬ ), the signal of the ALT bus will also be sent to the MAIN bus.

### 18. FX to MAIN MIX Switch

If you turn this switch on ( ▬ ), the signal from FX (echo, reverb) will also be sent to the MAIN bus.

### 19. PHONES/CTRL ROOM Knob

Adjusts the volume of the signal that is output to the PHONES jack and the CONTROL ROOM jacks.

### 20. ALT to PHONES/CTRL ROOM Switch

If you turn this switch on ( ▬ ), the signal of the ALT bus will be sent via the PHONES/CTRL ROOM knob and output from the PHONES jack and CONTROL ROOM jacks.

### 21. FX to PHONES/CTRL ROOM Switch

If you turn this switch on ( ▬ ), the signal from FX will be sent via the PHONES/CTRL ROOM knob and output from the PHONES jack and CONTROL ROOM jacks.

**MEMO**

If you turn the FX to MAIN MIX switch off and this switch on, the sound with FX (echo, reverb) applied will be output to the PHONES jack and CONTROL ROOM jacks, and the sound without FX applied will be output to MAIN OUT jacks. This is convenient when you want to check the FX depth.

### 22. MUTE MAIN MIX Button

If you hold down this button for one second or longer so it's lit, the signal after passing through the MAIN MIX LEVEL knob will no longer be output from the PHONES jack and CONTROL ROOM jacks.

When you press the button to turn off its illumination, the signal after passing through the MAIN MIX LEVEL knob will once again be output from the PHONES jack and CONTROL ROOM jacks.

### 23. AUX 1 MASTER Knob

Adjusts the level of the signal that is output from the AUX SEND 1 jack.

### 24. PRE Switch

Selects whether the AUX SEND 1 jack will output the pre-fader signal or the post-fader signal.

| | |
|---|---|
| **On ( ▬ )** | The pre-fader signal (before passing through the channel LEVEL knob) will be output. |
| **Off ( ▬ )** | The post-fader signal (after passing through the channel LEVEL knob) will be output. |

### 25. AUX 2 MASTER Knob

Adjusts the level of the signal that is output from the AUX SEND 2 jack.

* *The same signal that is output from the AUX SEND 2 jack is also sent to FX (echo, reverb). This means that if you use the AUX 2 MASTER knob to adjust the output level of the AUX SEND 2 jack, the FX send level will also be adjusted to the same level.*

### 26. FX Button

If you press this button so it's lit, FX (echo, reverb) will be turned on, and the signal processed by the effect will be sent to the MAIN bus and the PHONES jack/CONTROL ROOM jacks.

→ "Applying echo/reverb (FX)" (p. 33)


## 27. Output Level Meter

Indicates the level of the signal that is output from MAIN OUT jacks.

* *If the SOLO (PRE FADER) switch is on ( ▬ ), this indicates the level of the pre-fader signal (from before passing through the channel volume) of each channel. It's convenient to use this when you're using the SENS knobs to adjust the input sensitivity.*

## 28. ROOM ACOUSTIC AUTO CONTROL Button

The output from the M-16DX's MAIN OUT jacks or CONTROL ROOM jacks can be automatically adjusted to optimize the frequency response for your acoustical environment.

→ "Adjusting the output signal appropriately for your environment (Room Acoustic Control)" (p. 35)

## 29. 16 BAND GRAPHIC EQ Button

You can use a 16-band graphic equalizer to adjust the output from the M-16DX's MAIN OUT jacks or CONTROL ROOM jacks.

→ "Using the 16-band graphic equalizer" (p. 40)

## 30. FREQ Knob

Use this to select the frequency.

## 31. GAIN Knob

Use this to adjust the level of the currently selected frequency.

MEMO

You can also use the FREQ knob and LEVEL knob to adjust the MID frequency and MID Q of the three-band equalizer.

→ "Making detailed equalizer settings" (p. 29)

## 32. INSERT FX Button

Press this when you want to edit the Insert Effect settings.

When you press the button it will light, and the Insert Effect screen will appear.

→ "Using the dedicated vocal/narration effect (Insert Effect)" (p. 30)

## 33. FINALIZE Button

Press this when you want to edit the Finalize settings. When you press the button it will light, and the Finalize screen will appear.

→ "Creating a well-balanced sound (Finalize)" (p. 41)

## 34. Liquid Crystal Display

This graphically shows the input level of all channels, or displays parameters and their values.

## 35. CURSOR Buttons (BWD/FWD)

Use these buttons to move the cursor when you're editing parameters shown in the screen. Pressing the FWD button will move the cursor forward, and pressing the BWD button will move the cursor backward.

The parameter or value at the cursor location is highlighted.

You can access the Utility screen by pressing the BWD button and FWD button simultaneously.

## 36. VALUE Buttons (-/+)

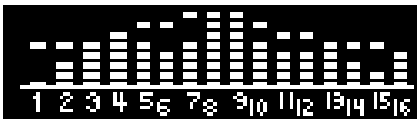
When editing parameters shown in the screen, use these buttons to modify the value.

MEMO

If you press the [+] button while holding down the [-] button, or press the [-] button while holding down the [+] button, the numerical value will change more quickly, allowing you to edit the value efficiently.

### 37. DISPLAY Button

When you press this button, the level meter screen will appear, indicating the input levels (pre EQ) of all input channels.




The DISPLAY button's light will go out when you press another button to switch to something other than the level meter screen.

From any screen, you can press the DISPLAY button to access the level meter screen.

* *In order to mix with the least possible noise and distortion, adjust the SENS knob so that the top "▬" of the level meter in the display does not light when the input signal is loudest.*

### 38. SCENE Button

Press this when you want to register the current settings as a "scene" or call up a previously registered scene.

→ "Saving and calling up mixer settings (Scenes)" (p. 43)

## Rear panel


### 39. PHONES Jack

This is a stereo 1/4" phone jack for connecting stereo headphones.

### 40. CONTROL ROOM Jacks (L, R)

These are 1/4" phone jacks that output the same sound as the PHONES jack.

Connect to these if you're using nearfield powered monitors instead of headphones.

### 41. LINE IN (AUX RETURN 2) Jacks (15L, 16R)

These are 1/4" phone line input jacks. If you've connected the AUX SEND 2 jacks to an external effects processor, use these jacks to input the output signal from the external effects processor.

### 42. LINE IN (STEREO) Jack (15/16)

This is a 1/8" stereo mini-type line input jack that's convenient for connecting a portable audio device such as an MP3 player.

### 43. ROOM ACOUSTIC SENSOR

This sensor detects the frequency response of the room acoustic auto control.

→ "Automatic adjustment (Room Acoustic Auto Control)" (p. 35)

* *A mic connected to channel 1 can also be used as the sensor.*

→ "Switching the room acoustic sensor (RAC SOURCE)" (p. 44)

### 44. DX BUS Connector

Use the included cable to connect this to the DX BUS connector of the I/O module.

**NOTE**
Do not connect it to a computer or display.

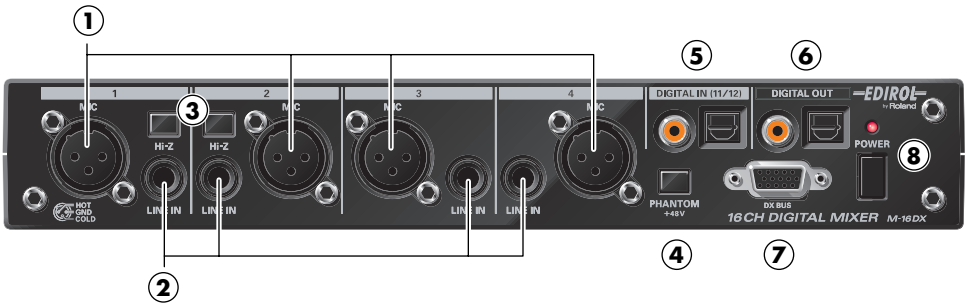
### 45. Function Switches

You can make various settings using these switches.

→ "Changing the function switches" (p. 44)

# I/O module

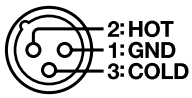
## Front panel




### 1. MIC Connectors (channels 1–4)

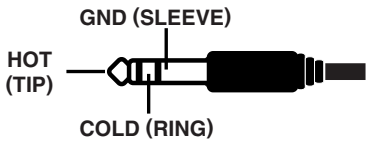
These are balanced (XLR) mic input jacks. 48V phantom power can be supplied via these jacks, allowing you to connect phantom powered condenser mics.

* *You may connect either balanced or unbalanced sources.*
* *The MIC connectors are wired as follows. Check how your audio equipment is wired before you connect it.*




### 2. LINE IN Jacks (channels 1–4)

These are 1/4" TRS balanced line input jacks.




* *You can also connect standard (unbalanced) 1/4" plugs to these jacks.*

**NOTE**

You can't use the MIC connector and LINE IN jack of the same channel simultaneously. Connect only one or the other.

### 3. Hi-Z Switches (channels 1, 2)

When one of these is switched on ( ▬ ), the corresponding LINE IN jack becomes a high-impedance jack, allowing an electric guitar to be connected directly.

### 4. PHANTOM Switch

If you turn this switch on ( ▬ ), phantom power will be supplied to the MIC connectors (1–4).

**NOTE**

You must leave phantom power turned off unless you've connected a condenser mic that requires a phantom power supply. Supplying phantom power to a dynamic mic or an audio playback device will cause malfunctions.

For details on the specifications for your mic, refer to the instruction manual that came with the mic you're using.

* *The M-16DX's phantom power: (per channel) DC 48 V, 5 mA Max*
* *You can specify whether phantom power will be supplied to all MIC connectors or just to MIC connectors 3–4.*

→ "Specifying the channels to which phantom power is supplied (Phantom)" (p. 45)

### 5. DIGITAL IN Jack/Connector (channels 11/12)

These connectors accept the input of digital signals. Both optical and coaxial-type connectors are provided.

If you press the mix controller's DIGITAL button so it's lit, the digital signal will be input to channels 11/12.

* *You can't use the optical and coaxial inputs simultaneously. The M-16DX will use the first signal that it detects after you pressed the DIGITAL button.*
* *When inputting a digital signal, the sampling frequency of the input signal must match the sample rate of the M-16DX.*

→ "Specifying the M-16DX's sampling frequency (Sample Freq)" (p. 45)

### 6. DIGITAL OUT Connector/Jack

These digitally output the same signal as the MAIN OUT jacks.

Both optical and coaxial-type connectors are provided, and both can be output simultaneously.

### 7. DX BUS Connector

Use the included controller cable to connect this to the DX BUS connector of the mix controller.

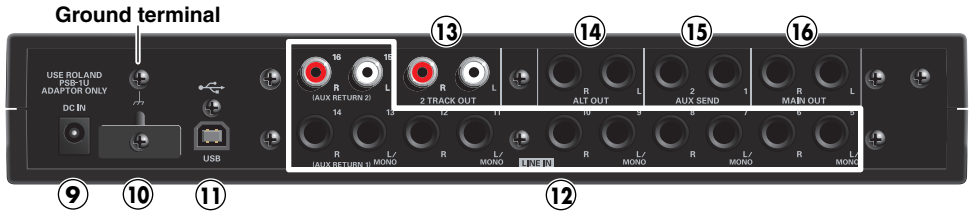
**NOTE**

Do not connect this to a computer or display.

### 8. POWER Switch/Indicator

Turns the power on/off. When the power is on, the indicator will light.

## Rear panel




### 9. DC IN (AC adaptor) Jack

Connect the included AC adaptor to this jack.

### 10. Cord Hook

Wrap the cord of the AC adaptor around this hook to prevent the cord from being accidentally unplugged.

### 11. USB Connector

Use a USB cable to connect this to your computer.

→ "Specifying the M-16DX's sampling frequency (Sample Freq)" (p. 45)

### 12. LINE IN Jacks (channels 5–16)

Channels 5–14 are balanced TRS 1/4" phone input jacks.

Channels 15 and 16 are RCA pin-type input jacks.

If you've connected the AUX SEND 1 jacks to an external effects processor, input the signals output by the external effects processor to 13L and 14R.

If you've connected the AUX SEND 2 jacks to an external effects processor, input the signals output by the external effects processor to 15L and 16R.

### 13. 2 TRACK OUT Jacks (L, R)

You can connect these RCA pin-type output jacks to a cassette deck or other recording device.

### 14. ALT OUT Jacks (L, R)

These are balanced TRS 1/4" output jacks that can be connected to a sampler or recorder. You can use these freely as appropriate for your situation.

* *You can also connect standard 1/4" (unbalanced) plugs.*

**MEMO**

You can use ALT OUT jacks as CONTROL ROOM outputs.

→ "Outputting the CONTROL ROOM jacks signal from ALT OUT jacks (CTRL to ALT)" (p. 45)

### 15. AUX SEND Jacks (1, 2)

These are balanced TRS 1/4" output jacks that you can connect to an external effects processor or other device.

* *You can also connect standard 1/4" (unbalanced) plugs.*

* *If plugs are inserted into the AUX SEND 2 jacks, the FX switch will be turned off.*

### 16. MAIN OUT Jacks (L, R)

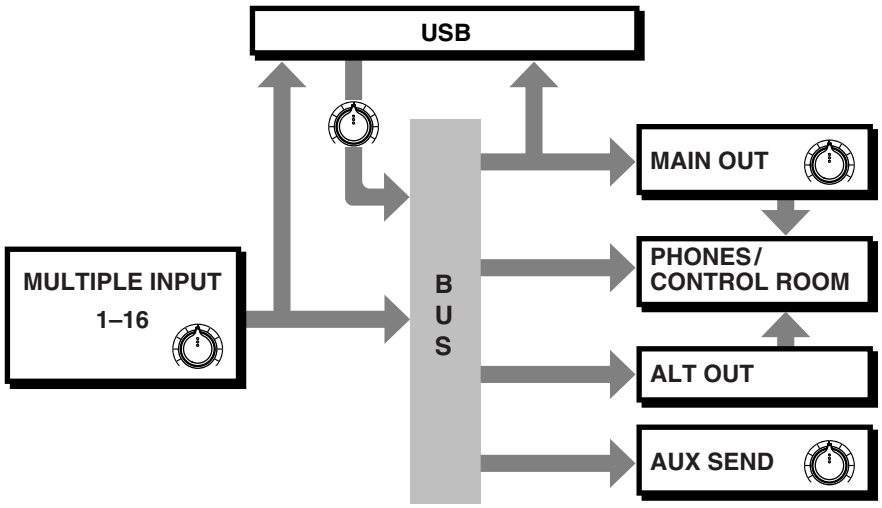
These are balanced TRS 1/4" output jacks that output the final signal produced by mixing.

Connect these jacks to your power amp or other device.

* *You can also connect standard 1/4" (unbalanced) plugs.*

# Signal flow

The overall flow of audio signals in the M-16DX is shown in the following diagram. For a more detailed illustration of signal flow, refer to “Block diagram” (p. 10).




## MULTIPLE INPUT

These are the input channels that receive audio signals from external devices.

This includes mic inputs, line inputs, and digital input (optical/coaxial), and also allows you to receive digital audio signals via USB.

## BUS

A “bus” is a signal route to which multiple signals within the mixer are combined.

There are four buses—MAIN, ALT, AUX, and SOLO—and the signals combined to each bus are sent to the corresponding output route.

## MAIN OUT

This is the output route for signals sent from the MAIN bus.

## ALT OUT

This is the output route for signals sent from the ALT bus. You can also send these signals to the MAIN bus by making the appropriate setting on the mix controller.

## AUX SEND

This is the output route for signals sent from the AUX bus.

## PHONES/CONTROL ROOM

This is the output route used to monitor the signals of MAIN OUT and ALT OUT. By making the appropriate setting on the mix controller, you can switch this to the output route for signals sent from the SOLO bus.

## USB

Signals can be received from a USB-connected computer or sent to the computer.

Signals from the computer are input to channels 13/14. From the M-16DX, the pre-fader signals of all input channels, as well as the signal following the MAIN MIX LEVEL knob are sent to the computer.

# Basic use

## Connecting the mix controller to the I/O module

Use the included cable to connect the mix controller to the I/O module.

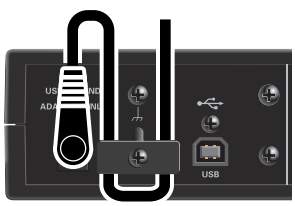

**NOTE**

For connecting, you must use the included cable or optional controller cable (DXC-7).
If you use any other cable, it may cause deterioration of sound quality.

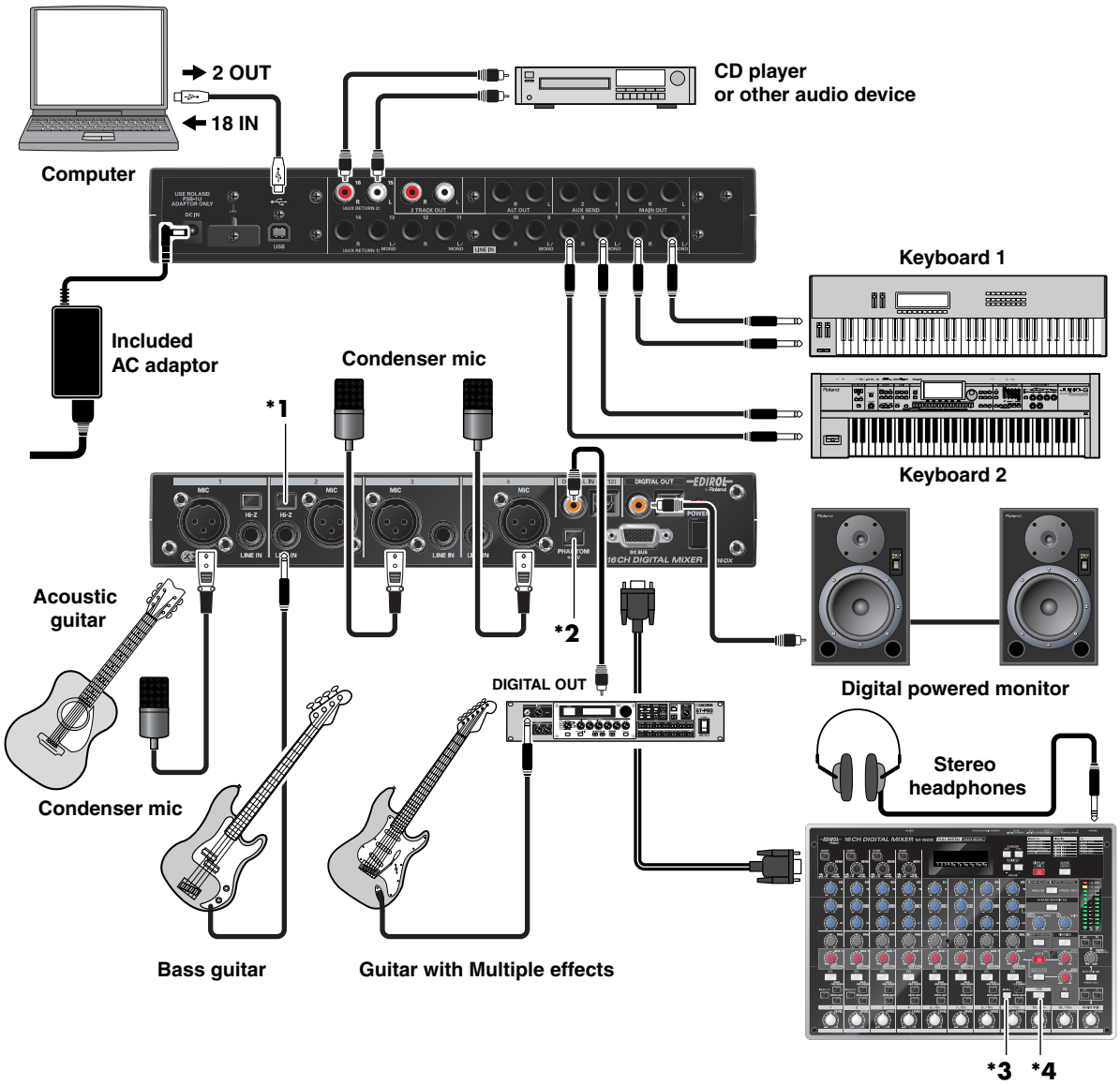
## Main connections

The M-16DX provides a large number of connectors, making it possible for a wide variety of equipment to be connected. Here, we will explain how to connect the M-16DX to speakers, mics, audio equipment, and a computer.

- To prevent malfunction and/or speaker damage, you must turn down the volume on all equipment and switch off their power before making connections.
- Secure the cord from the AC adaptor by looping it around the cord hook, as shown in the illustration. This will prevent the cord from being unplugged, even if it gets tugged on inadvertently, and will avoid excessive strain on the AC adaptor jack.



## Example 1) Home studio




***1** If you're connecting a bass guitar directly, turn the channel 2 [Hi-Z] switch on. If you've connected an effects processor between the bass guitar and the LINE IN jack, turn the [Hi-Z] switch off.

***2** If you're connecting a condenser mic that requires phantom power, turn the [PHANTOM] switch on.

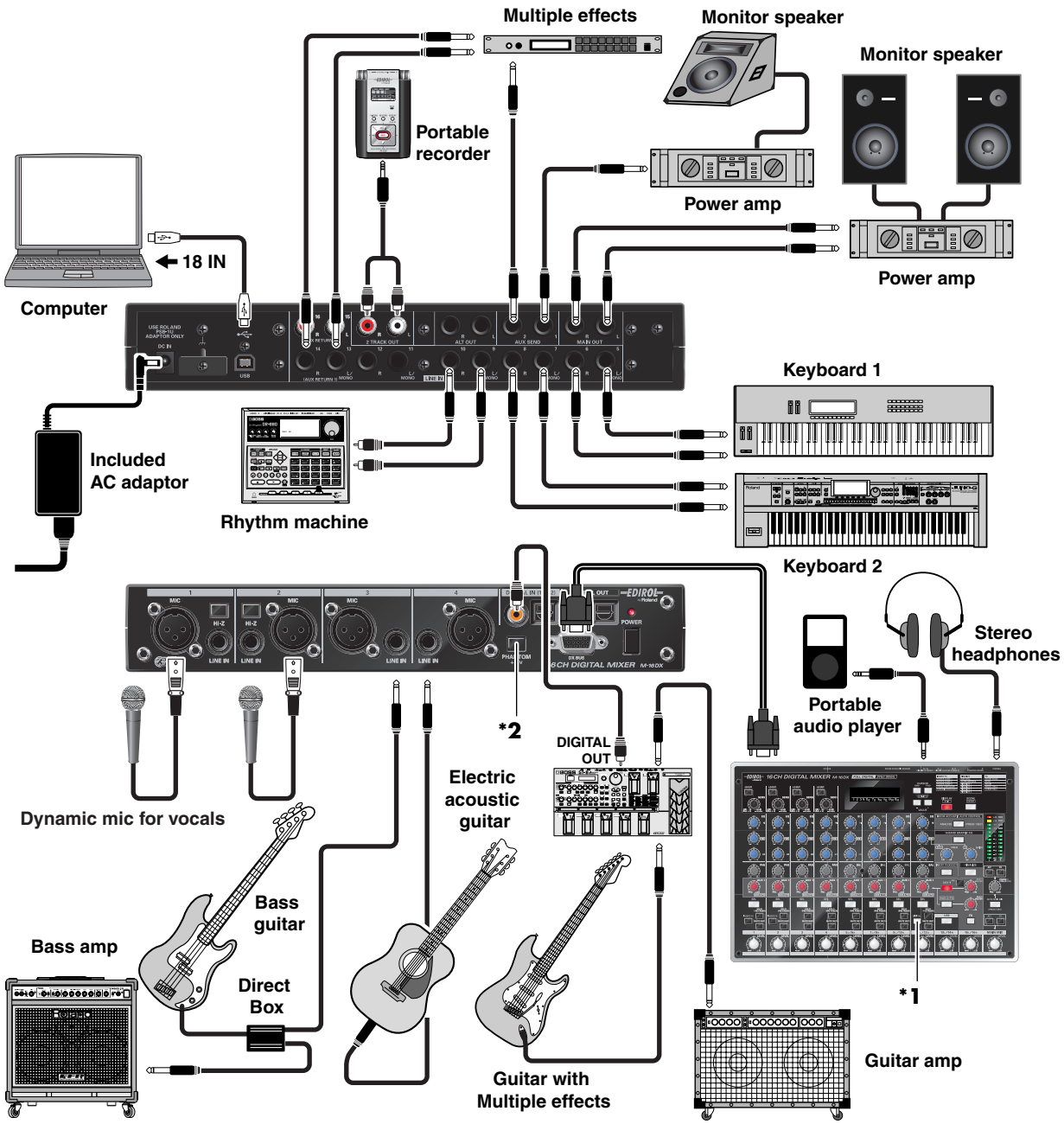
**NOTE**

With the default settings, phantom power is supplied to all the MIC connectors, channels 1–4. However, you can change a system setting (p. 45) so that phantom power is supplied only to channels 3 and 4.

***3** If you've digitally connected a device to the DIGITAL IN jack, turn the [DIGITAL] button on (lit). You'll need to match the sampling frequency of the connected device and the M-16DX (p. 45).

***4** The audio signals from your computer are input to channels 13/14. Press the [USB] button so it's lit.

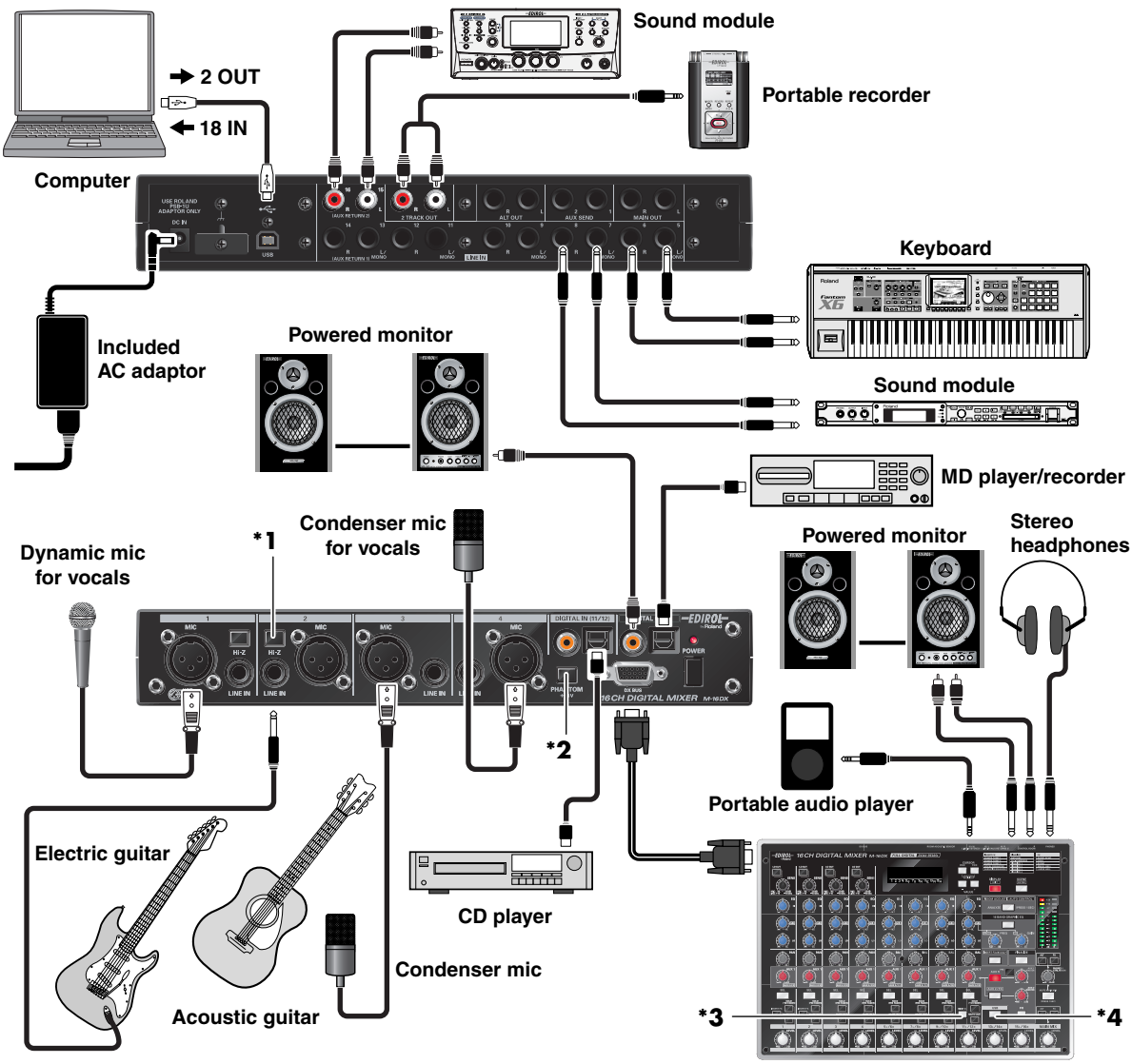
## Example 2) Simple PA




***1** If you've digitally connected a device to the DIGITAL IN jack, turn the [DIGITAL] button on (lit). You'll need to match the sampling frequency of the connected device and the M-16DX (p. 45).

***2** If you've connected a dynamic mic, turn the [PHANTOM] switch off.

## Example 3) Computer music




***1** If you're connecting a electric guitar directly, turn the channel 2 [Hi-Z] switch on. If you've connected an effects processor between the electric guitar and the LINE IN jack, turn the [Hi-Z] switch off.

***2** If you're connecting a condenser mic that requires phantom power, turn the [PHANTOM] switch on.

**NOTE**

With the default settings, phantom power is supplied to the MIC connectors of all channels 1–4, but in the connections shown above, channels 1 and 2 do not require phantom power. Change the system settings (p. 45) so that phantom power is supplied only to channels 3 and 4.

***3** If you've digitally connected a device to the DIGITAL IN jack, turn the [DIGITAL] button on (lit). You'll need to match the sampling frequency of the connected device and the M-16DX (p. 45).

***4** The audio signals from your computer are input to channels 13/14. Press the [USB] button so it's lit.

## Turning the power on

Once the connections have been completed (p. 21 — p. 24), turn on power to your various devices in the order specified. By turning on devices in the wrong order, you risk causing malfunction and/or damage to speakers and other devices.

**1. Set the channel LEVEL knobs to the "U" position.**


**2. Set the MAIN MIX LEVEL knob and PHONES/CTRL ROOM knob to the "-∞" position.**

* *Minimize the MAIN MIX LEVEL and PHONES/CTRL ROOM volume controls before you turn the power on. Even if the volume is minimized, you may hear some noise when you turn on the power, but this is not a malfunction.*

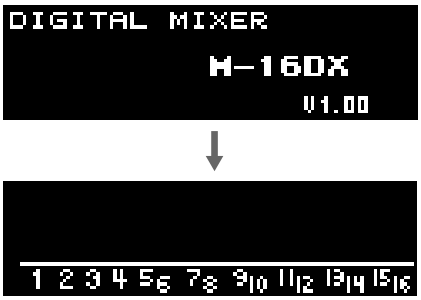

**3. Switch on the power to your digitally connected equipment.**

**4. Switch on the power to your analog-connected equipment (musical instruments, sound modules, effects processors, mics, CD players, etc.).**

**5. Turn on the M-16DX's [POWER] switch (I/O module).**

The POWER indicator will light.

After the power is turned on, the display will show the level meter screen.




**6. Switch on the power to your amp and powered monitors.**

## Turning the power off

**1. Make sure you've done the following before you turn off the power.**

- The M-16DX's MAIN MIX LEVEL knob has been set to the "-∞" position.
- The volume of the connected equipment has been minimized.

**2. Switch off the power to your amp and powered monitors.**

**3. Turn the M-16DX's [POWER] switch (I/O module) off.**

**4. Switch off the power to your analog-connected equipment (musical instruments, sound modules, effects processors, mics, CD players, etc.).**

**5. Switch off the power to your digitally connected equipment.**

# Basic operation


**1. Slowly turn the MAIN MIX LEVEL knob toward the right to an appropriate position.**

**2. Use the SENS knobs to adjust the input sensitivity of channels 1–4.**

* *In order to mix with the least possible noise and distortion, adjust the SENS knob so that the top "[-]" of the level meter in the display does not light when the input signal is loudest.*

MEMO

If you press the [SOLO (PRE FADER)] switch, you'll be able to view the level in the output level meter while you adjust the input sensitivity.

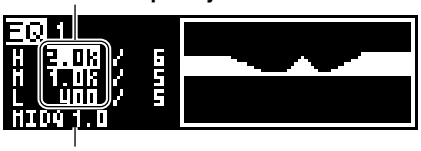
**3. Use the channel LEVEL knobs to adjust the volume of each channel.**

**4. For channels 1–4, use the PAN knobs to adjust the pan. For channels 5–12, use the BAL knobs to adjust the L/R volume balance.**

**5. Use the EQ knobs to adjust the high, mid, and low-frequency ranges.**

When you turn these knobs, the equalizer screen will appear in the display, showing the current settings numerically and graphically.

Center frequency




Width of the mid-range band

MEMO

You can change the center frequency of the high, mid, and low ranges, and also change the width of the mid-range band (MID Q).

→ "Making detailed equalizer settings" (p. 29)

**6. When you've finished adjusting the level of all connected devices, raise the MAIN MIX LEVEL knob until the overall volume is at an appropriate level.**

* *Adjust the knob so that the "20" (dB) segment of the level meter blinks occasionally when the signal reaches its maximum input level.*

**7. If you want to listen to the sound through headphones or monitors connected to the CONTROL ROOM jacks, use the PHONES/CTRL ROOM knob to adjust the volume.**

## [SOLO] (PRE FADER) switches

If you turn this switch on ( ▬ ), the pre-fader signal (from before it passes through the channel volume) of the corresponding channel will be heard from the headphones or from monitors connected to the CONTROL ROOM jacks.

Even if the channel volume is minimized, this method lets you listen to the channel whose [SOLO] switch you turn on.

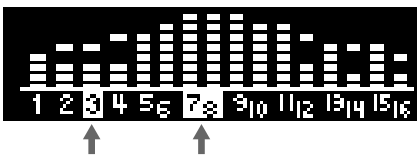
* *If even one [SOLO] switch is on, the [MUTE MAIN MIX] switch will blink.*

* *The level meter will show the level of the pre-fader signal. In the case of channels 1–4, you should watch this level indication while using the SENS knob to adjust the input sensitivity.*

## [MUTE] (ALT) switches

If you turn this switch on ( ▬ ), the signal of the corresponding channel will not be output from MAIN OUT jacks, but will be output from ALT OUT jacks. This allows you to temporarily mute the sound of specific channels.

If a channel is being output from ALT OUT jacks, its channel number will be highlighted in the level meter screen.




## [SEL] buttons

If you press this button (lit), the "parameter screen" of the selected channel will appear in the display.

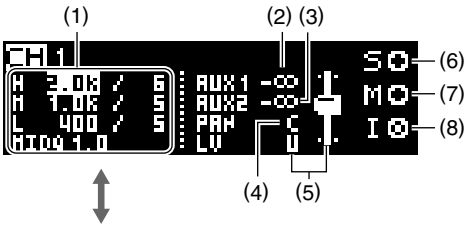
This button can be pressed at any time to toggle between the "parameter" screen and the "equalizer" screen.

The screen will show the current settings of the selected channel.

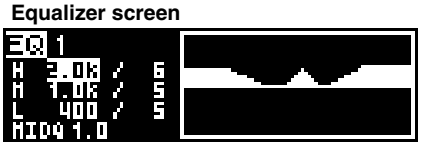
In this screen you can edit the settings while watching the numerical values.

* *You can return to the level meter screen by pressing the DISPLAY button.*

**Parameter screen**




**Equalizer screen**




| | | |
|---|---|---|
| **(1)** | Equalizer settings | |
| **(2)** | AUX1 setting | |
| **(3)** | AUX2 setting | |
| **(4)** | Channels 1–4: Pan setting<br>Channels 5–12: Volume balance setting | |
| **(5)** | Channel LEVEL knob setting | |
| **(6)** | [SOLO (PRE FADER)] switch on/off | (on) |
| **(7)** | [MUTE (ALT)] switch on/off | |
| **(8)** | [INSERT FX] switch on/off (channels 1 and 2 only) | (off) |

MEMO

This is a convenient way to check the settings of each channel when you call up a scene (p. 43).

MEMO

For details on how to change the center frequencies and MID Q of the equalizer, refer to "Making detailed equalizer settings" (p. 29).

# Using the M-16DX with your computer

The M-16DX provides a USB connector for connection to your computer.

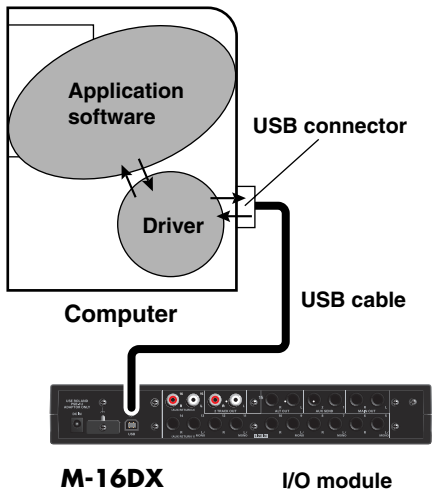
If it is connected to your computer via a USB cable, audio signals output from your computer can be input into the M-16DX and mixed, and the audio signals mixed by the M-16DX can be sent to your computer.

After using the M-16DX to mix and effect-process the sound, you can use your music production software or wave editing software on your computer to produce original audio data.

* *The M-16DX supports USB 2.0, allowing sixteen input channels plus the MAIN OUT (a total of eighteen channels of signals) to be sent to your computer.*
* *If the M-16DX is connected to your computer when operating at the 24-bit/96 Hz setting, you won't be able to use Finalize (p. 41).*

**In order to use the M-16DX via a USB connection, you must install the driver.**
**Install the driver as described in the separate "Driver installation and settings."**

## What is a driver?




The driver is software that passes data between the M-16DX and the application software running on your computer when the M-16DX is connected via a USB cable.

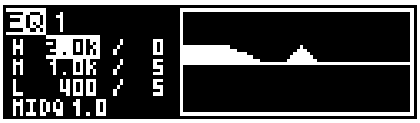
The driver sends data from the application software to the M-16DX, and passes data from the M-16DX to the application software.

# Advanced use

## Making detailed equalizer settings

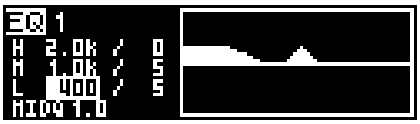
In addition to adjusting the equalizer's high, mid, and low-frequency levels, you can also change its Mid Q and the center frequency of each band.

**1. Press the [SEL] button several times for the channel whose equalizer settings you want to edit, until the equalizer screen appears.**




**2. Use the CURSOR [BWD] [FWD] buttons to select the parameter you want to edit.**

The selected parameter is highlighted.




**3. Use the VALUE [-] [+] buttons to edit the value.**

| Parameter | Description |
|---|---|
| **H** | Center frequency of the high range |
| **M** | Center frequency of the mid range |
| **L** | Center frequency of the low range |
| **MIDQ** | Width of the mid-frequency range |

When the equalizer screen is displayed, you can use the FREQ knob of the 16 BAND GRAPHIC EQ section to adjust the MID frequency, and the LEVEL knob to adjust the MID Q.

# Using the dedicated vocal/narration effect (Insert Effect)

The M-16DX provides five types of dedicated vocal/narration insert effects based on COSM technology. These effects can be applied directly to channels 1 and 2.

You can edit the settings of the insert effect to obtain the result that's appropriate for your input source or situation.

MEMO

The edited settings are remembered even when the power is off.

**What is COSM (Composite Object Sound Modeling)?**

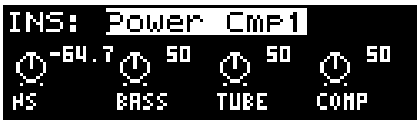
This is Roland's proprietary modeling technology, which analyzes the various elements that affect sound—such as electrical circuits, structures, and materials—and assembles them to reconstruct the desired sound.

## Editing the effect settings

**1. Press the [INSERT FX] button so it's lit, turning the insert effect on.**

The insert effect screen will appear.

* *If a different screen is shown even though the [INSERT FX] button is lit, pressing the [INSERT FX] button will display the insert effect screen.*

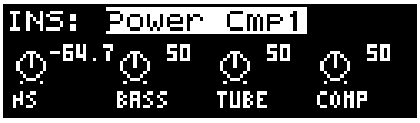



If the insert effect screen is already shown, pressing the [INSERT FX] button will turn off the insert effect and turn off the button's illumination.


### Selecting an effect type

**2. Use the CURSOR [BWD] [FWD] buttons to move the cursor to the effect type.**

**3. Use the VALVE [-] [+] buttons to select an effect type.**




### Editing the parameters

**4. Use the CURSOR [BWD] [FWD] buttons to move the cursor to the parameter you want to edit.**

**5. Use the VALVE [-] [+] buttons to edit the value.**


MEMO

If you press the [+] button while holding down the [-] button, or press the [-] button while holding down the [+] button, the value will change more rapidly, allowing you to edit more efficiently.

MEMO

If the [INSERT FX] button is lit, you can hold down the [DISPLAY] button and press the [INSERT FX] button to turn the insert effect off at any time.

## List of effects

### ■ Power Cmp1

This controls a COSM effect that simulates a vacuum tube amp, and a compressor. It boosts thin sounds that are lacking in low range, giving them greater weight and power.

### ■ Power Cmp2

This controls a COSM effect that simulates a vacuum tube amp, and a compressor. It boosts the mid-range, creating a fat-sounding vocal.

### ■ Power Cmp3

This controls a COSM effect that simulates a vacuum tube amp, and a compressor. It boosts the high range.

This is ideal for delicate acoustic guitar sounds.

This is also a way to obtain greater clarity for sounds that tend to be buried by other loud sounds around them.

| Parameter | Range | Explanation |
|---|---|---|
| **NS** | -90.0– -40 dB | Cuts the noise that occurs at low volumes in the background of the voice.<br>With higher values for this setting, louder noises will be cut.<br>* *If you apply this too strongly, the beginning (attack) and end (decay) of the voice may be cut off unnaturally, or the voice may be less intelligible.* |
| **(Power Cmp1) BASS** | 0–100 | Mainly adjusts the loudness of the low-frequency range.<br>Raising this setting will boost the low-frequency range. |
| **(Power Cmp2) TONE** | 0–100 | Mainly adjusts the loudness of the mid-frequency range.<br>Raising this setting will boost the mid-frequency range. |
| **(Power Cmp3) BRIGHT** | 0–100 | Mainly adjusts the loudness of the high-frequency range.<br>Raising this setting will boost the high-frequency range. |
| **TUBE** | 0–100 | This is a COSM effect that simulates a vacuum tube amp.<br>It produces the natural-sounding distortion typical of a vacuum tube.<br>Raising this setting will increase the distortion.<br>* *Since this models the subtle characteristics of a vacuum tube amp, it may be difficult to notice the result in some cases.* |
| **COMP** | 0–100 | Lowers the threshold of the compressor (i.e., the volume level at which the compressor begins to operate), and simultaneously raises the volume.<br>The result is to even out the volume levels of the loud and soft sounds, raising the overall loudness. Raising this setting will increase the level. Unlike simply raising the volume, this produces a thicker and heavier sound.<br>**NOTE**<br>The compressor threshold is common to channels 1 and 2. This means that you can use COMP either in stereo for channels 1 and 2, or for just one or the other channel. |

* *You should be careful not to over-apply effects. Doing so may increase noise, or cause the sound to be muffled when loud sounds are excessively suppressed.*

## ■ Vocal Enh. (Vocal Enhancer)

This effect controls a four-band equalizer to give the voice brightness and clarity.

It works on the basic components of a voice as well as the components that define its character, boosting or reducing these components. This can be used to emphasize or modify the character of spoken lines in a stage play, or when recording a vocal.

| Parameter | Range | Explanation |
|---|---|---|
| **NS** | -90.0– -40 dB | Cuts any low-volume noises that occur in the background of the vocal. Raising this setting will cut progressively louder noises.<br>* *If you apply this too strongly, the beginning (attack) and end (decay) of the voice may be cut off unnaturally, or the voice may be less intelligible.* |
| **TONE** | 0–100 | Boosts the frequency range that is the basic component of the voice. Raise this value to make the vocal more rich-sounding, or lower it to reduce unwanted resonance or loudness. |
| **BRIGHT** | 0–100 | Increases the brightness.<br>The higher the value, the brighter the sound. |

## ■ Narration

This effect controls a de-esser and enhancer to give the voice greater clarity and intelligibility.

It will minimize the sibilants (*1) that are heard when vocalizing into a mic, making the voice more listenable.

When editing video, it's convenient to use this while recording a voice-over, narration, or reading.

(*1) Sibilants are the "s" sounds within words.

| Parameter | Range | Explanation |
|---|---|---|
| **NS** | -90.0– -40 dB | Cuts the low-volume noises that occur in the background of the voices. Raising this setting will cut progressively louder noises.<br>* *If you apply this too strongly, the beginning (attack) and end (decay) of the voice may be cut off unnaturally, or the voice may be less intelligible.* |
| **ATTACK** | 0–100 | Emphasize the sense of attack for the voice.<br>Raising this setting will produce a stronger sense of attack. |
| **CLARITY** | 0–100 | Specifies the strength of the effect that clarifies the voice. Raising this setting will apply the effect more strongly.<br>* *If this effect is applied excessively to a voice that is already clear, the sound may become unpleasant or distorted.* |
| **DEESSER** | 0–100 | Cuts the sibilance.<br>Raising this setting will apply the effect more strongly. |

# Applying echo/reverb (FX)

As effects that process the output signal, the M-16DX provides two types of echo and five types of reverb.
You can edit the parameters of the echo/reverb effect to your needs and taste.
Use the AUX 2/FX knobs to adjust the depth of echo/reverb for each input (p. 13).

MEMO
The edited settings are remembered even when the power is off.

## Editing the effect settings

**1. Press the [FX] button so it's lit, turning the effect on.**

The FX screen will appear.

* *If a different screen is displayed even though the [FX] button is lit, you can press the [FX] button to access the FX screen.*


If you press the [FX] button when the FX screen is already displayed, the effect will be turned off and the button's light will go out.


### Selecting the effect type

**2. Use the CURSOR [BWD] [FWD] buttons to move the cursor to the effect type.**

**3. Use the VALVE [-] [+] buttons to select the effect type.**


### Editing the parameters

**4. Use the CURSOR [BWD] [FWD] buttons to move the cursor to the parameter you want to edit.**

**5. Use the VALUE [-] [+] buttons to edit the value.**


MEMO
If you press the [+] button while holding down the [-] button, or press the [-] button while holding down the [+] button, the value will change more rapidly, allowing you to edit the value more efficiently.

MEMO
If the [FX] button is lit, you can hold down the [DISPLAY] button and press the [FX] button to turn the effect off at any time.

## List of effects

### ■ SHORT ECHO

This is an echo effect that repeats the sound at short intervals.

| Parameter | Range | Explanation |
|---|---|---|
| **DELY** | 10–200 (ms) | Adjusts the spacing of the repetitions. |
| **REPT** | 0.0–6.0 (s) | Adjusts the length (time) of the repetitions. |

### ■ ECHO

This is an echo effect that repeats the sound at longer intervals.

| Parameter | Range | Explanation |
|---|---|---|
| **TIME** | 0.0–6.0 (s) | Adjusts the length (time) of the repetitions. |
| **DAMP** | 315–8k (Hz), BYP | Specifies the frequency at which the repeated sound will begin to be attenuated. With the "BYP" setting, the repeated sound will not be attenuated. |

### ■ ROOM

This simulates the reverberation of a room such as a live house or club.

### ■ SMALL HALL

This simulates the reverberation of a small concert hall.

| Parameter | Range | Explanation |
|---|---|---|
| **P.DLY** | 0.0–160 (ms) | Adjusts the time at which the reverberation starts being heard. |
| **TIME** | 0.0–6.0 (s) | Adjusts the length (time) of reverberation. |
| **DAMP** | 315–8k (Hz), BYP | Specifies the frequency at which the reverberation will begin to be attenuated. With the "BYP" setting, the reverberation will not be attenuated. |

### ■ LARGE HALL

This simulates the reverberation of a large space such as a concert hall or gymnasium.

| Parameter | Range | Explanation |
|---|---|---|
| **P.DLY** | 0.0–160 (ms) | Adjusts the time at which the reverberation starts being heard. |
| **TIME** | 0.0–6.0 (s) | Adjusts the length (time) of reverberation. |
| **DAMP** | 315–8k (Hz), BYP | Specifies the frequency at which the reverberation will begin to be attenuated. With the "BYP" setting, the reverberation will not be attenuated. |

# Adjusting the output signal appropriately for your environment (Room Acoustic Control)

"Room acoustics" refers to the overall acoustical characteristics of the environment in which you're reproducing sound, including the response of the speakers you're using.

The M-16DX provides a "Room Acoustic Auto Control" function, which automatically compensates for the acoustics of a room. At the touch of a single button, this function performs the following operations:

**(1) Outputs a test signal from the M-16DX, and plays this signal through the connected monitors.**

**(2) Detects the sound played by the monitors with the Room Acoustic Sensor, and analyzes its frequency response.**

**(3) Based on the results of the analysis, automatically adjusts the response of the output signal.**

The results of this automatic adjustment can be further edited manually if you wish.

**NOTE**

When using the room acoustic control, the settings for the 16-band graphic equalizer (P.40) will be ignored.

**NOTE**

Depending on the environment in which you are located, the automatic adjustment may not be enough to provide the optimal response. In this case, you can perform manual adjustments in conjunction with the automatic adjustment.

**MEMO**

You can select whether room acoustic control will be applied to MAIN OUT jacks or PHONES/CONTROL ROOM jacks.

→ "Selecting the output to which Room Acoustic Control and Finalize will apply (RAC - FINALIZE)" (p. 45)

**MEMO**

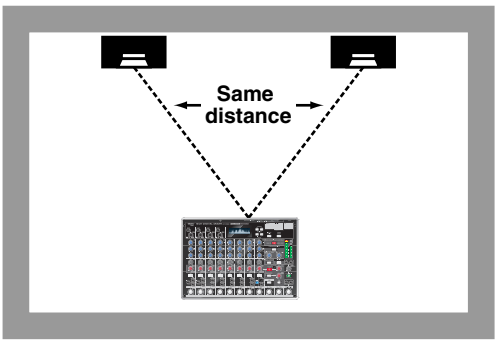
You can specify the upper and lower limits of the frequencies that will be automatically adjusted.

→ "Specifying the frequency range analyzed by Room Acoustic Auto Control (RAC Freq >= / RAC Freq <=)" (p. 45)

## Automatic adjustment (Room Acoustic Auto Control)

**In order to obtain the best possible results from this function, please observe the following points.**

- Place your equipment so that the room acoustic sensor or mic (if the function switch is set to EXT) is at the listening point.
- Place your equipment so that the left and right monitors (speakers) are the same distance to the sensor/mic.
- To the extent possible, place the sensor/mic at the height of your ears at the listening point.
- Do not place obstructions near the sensor/mic.
- While the adjustments are being performed, do not place the mix controller or mic on an object that could resonate easily (such as a hollow box or stand).




* *Such an object could resonate with the test signal, causing slight vibrations that might interfere with accurate measurement.*

**NOTE**

With monitors (speakers) that have a low output level, the test signal may not be detected, and the analysis may fail to start. In this case we recommend that you perform the analysis manually (p. 39).

**1. Using the MAIN MIX LEVEL knob and the volume controls of your amp or speakers, adjust the volume of the sound from the speakers so it's at a suitable level.**

Adjust the volume as you would for normal playback when listening to the music.

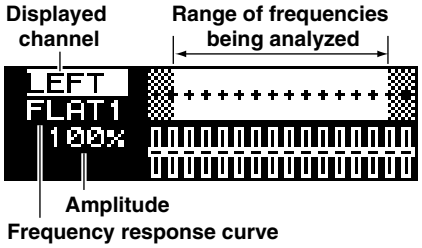
**NOTE**

If the speaker volume is too high the test signal will be produced at a loud volume, and if the volume is too low the sensor will be unable to detect the test signal. Either situation will prevent the automatic adjustment from occurring correctly.

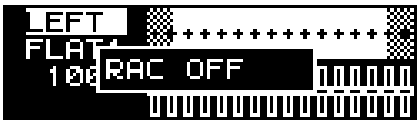
**2. Press the [ROOM ACOUSTIC AUTO CONTROL] button.**

The [ROOM ACOUSTIC AUTO CONTROL] button and [16 BAND GRAPHIC EQ] button will light, and the Room Acoustic Control screen will appear.

* *In the system settings (p. 45) you can change the range of frequencies that will be analyzed.*

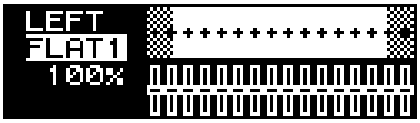



If you press the [ROOM ACOUSTIC AUTO CONTROL] button while this screen is displayed, the Room Acoustic Control function will turn off and the button's light will go out.




**3. Use the CURSOR [BWD] [FWD] buttons to move the cursor to the response curve.**

**4. Use the VALUE [-] [+] buttons to select the response curve that will be the index for the adjustment.**




| | |
|---|---|
| **FLAT 1–4** | Flat response. |
| **BUMPY 1–4** | Response curves that boost the low and high-frequency regions, producing the so-called "scooped" sound. |
| **WARMY 1–4** | Response curves that boost the mid-range, producing a rich and warm sound. |

* *You can create four variations for each frequency response curve. With the factory settings, 1–4 all have the same settings. You can adjust the amplitude of the curves as suitable for different uses.*

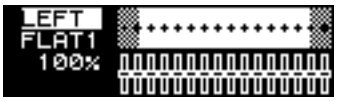
The room acoustic control function uses four screens to display a variety of information.

To switch screens, use the CURSOR [BWD] [FWD] buttons to move the cursor to the display channel, and use the VALUE [-] [+] buttons to select the desired screen.

* *You can't modify the amplitude of the response curve while "FREQ" is selected.*

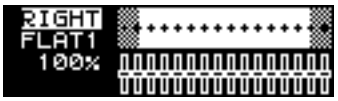
* *The next time you access the Room Acoustic Control screen, the last-selected display will appear.*

**LEFT**



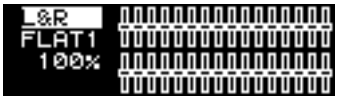

**View the L channel's frequency response and graphic equalizer settings**

**RIGHT**



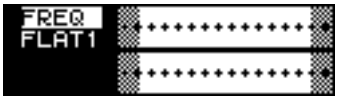

**View the R channel's frequency response and graphic equalizer settings**

**L&R**




**View the graphic equalizer settings of both L and R channels**

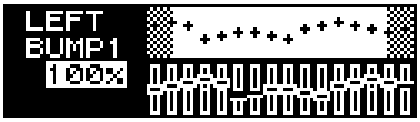
**FREQ**




**View the frequency response of both L and R channels**

**5.** **Press the CURSOR [BWD] [FWD] buttons to move the cursor to the amplitude of the response curve.**

**6.** **Use the VALUE [-] [+] buttons to adjust the amplitude of the response curve.**




* *If you've selected FLAT as the response curve, you won't be able to adjust the amplitude.*

| Range |
|---|
| 70–100–130% |

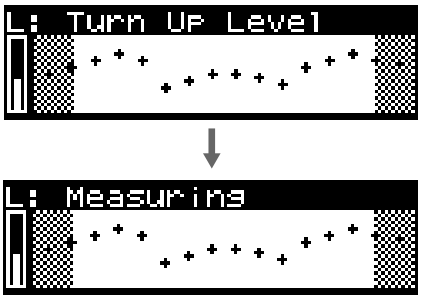
MEMO

If the [ROOM ACOUSTIC AUTO CONTROL] button is lit, you can hold down the [DISPLAY] button and press the [ROOM ACOUSTIC AUTO CONTROL] button to turn off room acoustic control at any time.

## Analysis and automatic adjustment

**7.** **Hold down the [ROOM ACOUSTIC AUTO CONTROL] button for at least one second to start the analysis.**

The [ROOM ACOUSTIC AUTO CONTROL] button will blink, and all input channels of the mixer will be muted.




A test signal will be output. Raise the output level if the screen indicates "Turn Up Level," or lower the output level if it indicates "Turn Down Level."

When the sensor/mic detects the test signal, the screen will indicate "Measuring," and analysis of the L channel will start automatically.

* *If you decide to cancel the operation, press the [DISPLAY] (EXIT) button.*

If the screen does not indicate "Measuring" (i.e., if the test signal cannot be detected), check or adjust the following settings.

- **Could the MAIN MIX LEVEL knob be set too low?**
  Ideally, the knob should be set near the "U" position.
- **Could the amp or speaker volume be set too low?**
  Adjust the playback volume to the level you would normally use when listening to music.
  * *Raising the volume too high may cause your speakers to malfunction. Keep the volume setting within the range of normal playback volume.*
- **Could the sensor/mic be positioned too far away from the speakers?**
- **Is the sensor/mic pointing toward the speakers?**

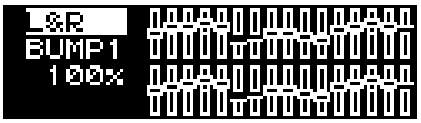
If analysis still fails to start automatically, the test signal cannot be detected in your setup.
Press the [DISPLAY] button to end the analysis. We suggest that you perform the analysis manually.
Press the [ROOM ACOUSTIC AUTO CONTROL] button so it's lit, and then perform the procedure described in "Graphic equalizer settings" (p. 39).

When the L channel analysis and adjustment have been completed, the analysis will proceed to the R channel.
Raise the output level if the screen indicates “Turn Up Level,” or lower the output level if it indicates “Turn Down Level.”


When the sensor/mic detects the test signal, the screen will indicate “Measuring,” and analysis of the R channel will start.


## Finishing the adjustment

When analysis and adjustment have been completed for both channels, the [ROOM ACOUSTIC AUTO CONTROL] button and [16 BAND GRAPHIC EQ] button will change from blinking to lit, and the screen will show the result of the adjustment.




When the adjustment has been completed, the input channels will be unmuted, and the M-16DX will return to normal operation.

### 8. Listen to the adjusted sound.

MEMO

The frequency response curve and its amplitude is stored together with the adjustment results (graphic equalizer settings) as a set. (This is remembered even when the power is turned off.)

* *If you want to return to the default settings, execute the Initialize operation.*

→ “Initializing the settings (Initialize)” (p. 46)

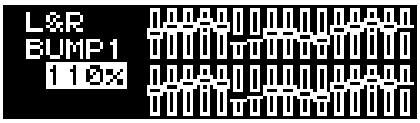
## Manual adjustment

### Depth of the adjustment results

**9. Use the CURSOR [BWD] [FWD] buttons to move the cursor to the percentage indication, and use the VALUE [-] [+] buttons to change the percentage by which the results of the automatic adjustment will be applied.**

| Range | Explanation |
|---|---|
| 70–100–130% | With a setting of 100%, the adjustment results will be applied without further change. Settings below 100% will reduce the effect of the adjustment results, and settings above 100% will apply the results more strongly. |

The graphic equalizer settings will also change according to the percentage you specify.



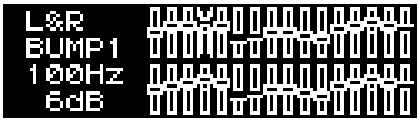

### Graphic equalizer settings

While you actually listen to the sound, make corrections to the frequency response by (for example) lowering levels that had been raised excessively.

**1. Use the FREQ knob to select a frequency.**

**2. Turn the GAIN knob to adjust the level.**

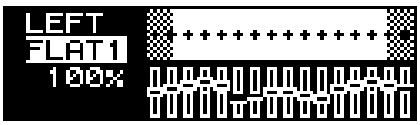
The selected frequency and its level are shown in the left of the screen.




## Calling up adjustment settings

When you press the [ROOM ACOUSTIC AUTO CONTROL] button so it's lit and turn the Room Acoustic Control function on (the [16 BAND GRAPHIC EQ] button will also light), the most recently selected settings will be called up.

At this point, use the CURSOR [BWD] [FWD] buttons to move the cursor to the frequency response curve, and use the VALUE [-] [+] buttons to switch curves; the amplitude and adjustment result (graphic equalizer settings) stored as a set with the response curve will be called up.




TIP

You can use this as a sixteen-memory preset equalizer.

# Using the 16-band graphic equalizer

If you're not using the Room Acoustic Control function, you can use a sixteen-band graphic equalizer to adjust the output signal.

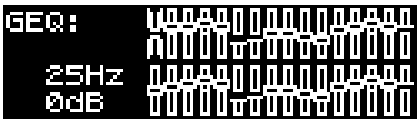
**NOTE**

This will not affect the Room Acoustic Control settings.

**1. Press the [16 BAND GRAPHIC EQ] button so it's lit.**

The graphic equalizer will be turned on, and the equalizer screen will appear.

* *The most recently assigned graphic equalizer state will be called up.*

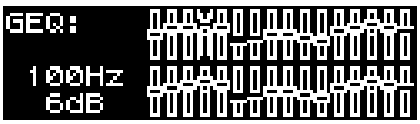



If you press the [16 BAND GRAPHIC EQ] button while the equalizer screen is displayed, the graphic equalizer will be turned off and the button's light will go out.


**2. Use the FREQ knob to select a frequency.**

**3. Turn the GAIN knob to adjust the level of that frequency.**

The selected frequency and its level are shown in the left side of the screen.




**MEMO**

You can also perform these steps using the CURSOR [BWD] [FWD] buttons and VALUE [-] [+] buttons.

# Creating a well-balanced sound (Finalize)

After you've mixed the sounds from each channel, you can create a well-balanced sound by making the overall volume and loudness more consistent.

This process is called "finalizing," and is done using a multi-band compressor and an enhancer.

The M-16DX provides six types of Finalize effects.

You can adjust the Finalize settings to create the result that's suitable for your needs.

**NOTE**

The Finalize function is not available if you're using a USB connection and the M-16DX is operating at a sampling frequency of 96 kHz.

**MEMO**

You can choose whether to apply Finalize to the MAIN OUT jacks or to PHONES/CONTROL ROOM jacks.

→ "Selecting the output to which Room Acoustic Control and Finalize will apply (RAC - FINALIZE)" (p. 45)

**MEMO**

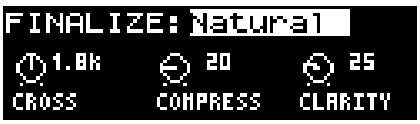
The edited settings are remembered even when the power is off.

## Editing the effect settings

**1. Press the [FINALIZE] button so it's lit, turning the effect on.**

The Finalize screen will appear.

* *If a different screen is displayed even though the [FINALIZE] button is lit, you can press the [FINALIZE] button to access the Finalize screen.*




If you press the [FINALIZE] button when the Finalize screen is already displayed, the effect will turn off and the button's light will go out.


### Selecting an effect type

**2. Use the CURSOR [BWD] [FWD] buttons to move the cursor to the effect type.**

**3. Use the VALUE [-] [+] buttons to select an effect type.**


### Editing the parameters

**4. Use the CURSOR [BWD] [FWD] buttons to move the cursor to the parameter you want to edit.**

**5. Use the VALUE [-] [+] buttons to edit the value.**


**MEMO**

The value will change more rapidly if you press the [+] button while holding down the [-] button, or press the [-] button while holding down the [+] button, allowing you to edit more efficiently.

**MEMO**

If the [FINALIZE] button is lit, you can hold down the [DISPLAY] button and press the [FINALIZE] button to turn off the effect at any time.

## List of effects

### ■ Natural

This effect adds a natural finish that does not impair the original character of the sound.

| Parameter | Range | Explanation |
|---|---|---|
| **CROSS** | 10.0–14k (Hz) | Specifies the frequency at which the low and high ranges will be divided. |
| **COMPRESS** | 0–100 | Lowers the threshold of the multi-band compressor (the volume at which the compressor begins to apply), and simultaneously raises the volume. The result is that the level differences between high volume and low volume will be smoothed out, making the overall volume more consistent and raising the overall loudness. Increasing this value will intensify the result. Unlike simply raising the volume, this produces a thicker and denser sound. |
| **CLARITY** | 0–100 | Controls the enhancer to specify the degree to which the sound is clarified. Higher settings will produce a stronger effect.<br>* *If you excessively apply this to a sound that is already clear, it will make the sound unpleasant or distorted.* |

### ■ FAT Comp

This effect produces a thick, robust sound.

| Parameter | Range | Explanation |
|---|---|---|
| **L COMPRESS** | 0–100 | Lowers the low-frequency threshold for the multi-band compressor, and simultaneously increases the volume. This will thicken the sound of the low-frequency range. Increasing this value will set this to a higher level. Unlike simply raising the volume, this produces a thicker and denser low-frequency range. |
| **H COMPRESS** | 0–100 | Lowers the high-frequency threshold for the multi-band compressor, and simultaneously increases the volume. This will thicken the sound of the high-frequency range. Increasing this value will set this to a higher level. Unlike simply raising the volume, this produces a thicker and denser high-frequency range. |

### ■ Final 1/2/3/4

These effects let you make more detailed settings as necessary. With the factory settings, these effects are set as follows.

| | |
|---|---|
| **Final 1** | Improves the overall balance. |
| **Final 2** | Boosts the low-frequency range. |
| **Final 3** | Clarifies muddy sound. |
| **Final 4** | Smoothes out inconsistencies in the sound. |

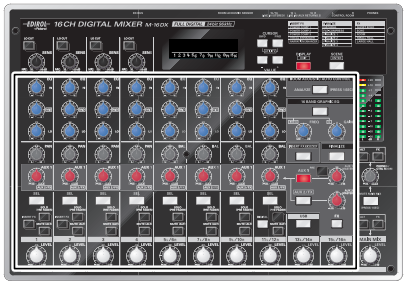
| Parameter | Range | Explanation |
|---|---|---|
| **Cross** | 10.0–14k (Hz) | Specifies the frequency at which the multi-band compressor's low and high frequency ranges will be divided. |
| **ThrsL** | -50–0 | Specifies the volume at which the low-frequency range compressor begins to apply. |
| **GainL** | -50–24 | Specifies the amount of boost or cut for the low-frequency range. |
| **ThrsH** | -50–0 | Specifies the volume at which the high-frequency range compressor begins to apply. |
| **GainH** | -50–24 | Specifies the amount of boost or cut for the high-frequency range. |
| **Clarity** | 0–100 | Controls the enhancer to adjust the strength of the effect that clarifies the sound. Increasing this value will produce a stronger effect.<br>* *If you excessively apply this to a sound that is already clear, it will make the sound unpleasant or distorted.* |

# Saving and calling up mixer settings (Scenes)

The M-16DX lets you save eight different sets of mixer settings including the effects. Each set of mixer settings is called a "scene," and can be called up instantly whenever needed.

MEMO

A scene saves the settings of the enclosed area shown in the illustration below.



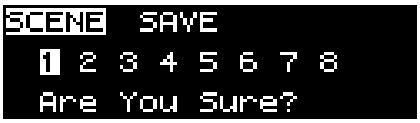
NOTE

Room acoustic control stores only the response curve and the amplitude.

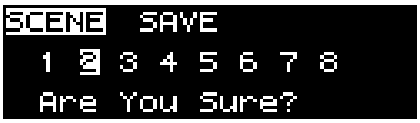
## Saving a scene

**1. Hold down the [SCENE] button for at least one second.**

The button will blink, and the Scene Save screen will appear.




**2. Use the CURSOR [BWD] [FWD] buttons to select the scene number that you want to save.**




**3. Press the [SCENE] button to write the settings into memory.**

The settings will be saved, the screen will indicate "Save Complete," and you'll be returned to the level meter screen.

## Calling up a scene

**1. Press the [SCENE] button so it's lit.**

The settings of scene 1 will be called up.


**2. If you want to change scenes, use the CURSOR [BWD] [FWD] buttons to select the scene you want to call up.**

The settings of the selected scene will be called up immediately.

NOTE

Depending on the settings of the scene you call up, the volume may be higher than the current setting. Use this function with caution, and be aware of the volume of your speakers or headphones.

NOTE

If the [SCENE] button is lit, only the settings of the called up scene are valid. Panel operations won't be reflected in the sound. If you operate the panel knobs or other controls, a message will appear in the screen.


MEMO

By holding down the [DISPLAY] button and turning the LEVEL knob of a channel, you can adjust the volume of that channel.

MEMO

By pressing the following buttons you can check the settings you've called up.

[SEL], [16 BAND GRAPHIC EQ], [INSERT FX], [FINALIZE], [AUX 1], [AUX 2/FX], [FX]

## Clearing the settings of a scene

If you press the [SCENE] button so its light is turned off, all settings of the currently selected scene will be cleared, and you'll be returned to the normal operating state (the position of the panel knobs and the state of the switches will be reflected in the sound).

MEMO

If the [SCENE] button is lit, you can hold down the [DISPLAY] button and press the [SCENE] button to turn the scene off at any time.

NOTE

Depending on the settings of the front panel, the volume may be higher than the current setting. Use this function with caution, and be aware of the volume of your speakers or headphones.

# Other functions

## Changing the function switches


### Switching the adjustment range of the SENS knobs (SENS RANGE)

You can choose one of the following two ranges.

| Switch | Range | | Explanation |
|---|---|---|---|
| **REGULAR** | MIC | 10–60 dB | Normal setting |
| | LINE | +10– -40 dBu | |
| **NARROW** | MIC | 40–60 dB | Optimal setting for a mic |
| | LINE | -20– -40 dBu | |

After you change the setting of the function switch, the new setting will actually take effect when you move the SENS knob.

* *If this is set to NARROW, you'll be able to make detailed adjustments.*

**NOTE**
When you turn the SENS knob, it may seem as though the change does not occur smoothly, but this is not a malfunction.

### Switching the room acoustic sensor (RAC SOURCE)

This selects the sensor used by Room Acoustic Control.

**NOTE**
Before you switch from EXT to INT, you must disconnect the mic that's connected to channel 1. If you fail to disconnect the mic, a feedback loop may occur, possibly damaging your speakers.

| Switch | Setting |
|---|---|
| **INT** | Use the sensor built into the M-16DX. |
| **EXT** | Use the mic connected to channel 1 as the sensor. |

If you select EXT, channel 1 will not function as a mixer channel.

In this case, the indication "RAC" is shown in the channel 1 position of the level meter screen.


If you turn the channel 1 EQ knobs or press the [SEL] button, the following message will appear.


## Changing the system settings (UTILITY)

You can change various system settings in order to perform mixing operations more conveniently and efficiently.
You can also restore the settings of the M-16DX to their original state.

### Basic procedure

**1. Press the CURSOR [BWD] and [FWD] buttons simultaneously.**
The Utility screen will appear.


**2. Use the CURSOR [BWD] [FWD] buttons to select the setting you want to change.**
The value of the selected parameter will be highlighted.


**3. Use the VALUE [-] [+] buttons to change the setting.**

## Adjusting the brightness of the screen (LCD Contrast)

You can adjust the contrast (brightness) of the LCD display.

| Range |
|---|
| 0–19 |

## Specifying the M-16DX's sampling frequency (Sample Freq)

You can specify the M-16DX's sampling frequency.

When inputting a digital signal via the M-16DX's DIGITAL IN jack, the M-16DX's sampling frequency must match the sampling frequency of the digital input signal. If they do not match, it will not be possible to input the signal.

* *If you change this setting while connected via USB, the change will not take effect immediately. The change will take effect when you disconnect, then reconnect the USB cable or cycle the power to the unit.*

| Settings |
|---|
| 44.1, 48, 96 (kHz) |

## Outputting the CONTROL ROOM jacks signal from ALT OUT jacks (CTRL to ALT)

You can output the same signal as CONTROL ROOM jacks from ALT OUT jacks.

| Setting | Explanation |
|---|---|
| **OFF** | The signal from the ALT bus will be output from ALT OUT jacks. |
| **ON** | The same signal as CONTROL ROOM jacks will be output from ALT OUT jacks. |

## Selecting the output to which Room Acoustic Control and Finalize will apply (RAC - FINALIZE)

You can select whether Room Acoustic Control and Finalize will apply to MAIN OUT jacks or PHONES/CONTROL ROOM jacks. (refer to Block diagram.)

| Setting | Explanation |
|---|---|
| **MAIN** | Room Acoustic Control and Finalize will apply to the signal sent from MAIN OUT jacks, 2 TRACK OUT jacks, DIGITAL OUT jack/connector, CONTROL ROOM jacks, and PHONES jack. |
| **CTRL** | Room Acoustic Control and Finalize will apply to the signal sent from CONTROL ROOM jacks and PHONES jack. |

## Specifying the frequency range analyzed by Room Acoustic Auto Control (RAC Freq >= / RAC Freq <=)

You can specify the lower and upper limits of the frequency range that is automatically analyzed by Room Acoustic Control.

If you're using a mic connected to channel 1 as the sensor for Room Acoustic Control, adjusting this setting as appropriate for the frequency response of your mic will allow the adjustment to occur more optimally.

| Parameters | Range |
|---|---|
| **RAC Freq >=** (lower limit) | 25, 40, 63, 100 Hz |
| **RAC Freq <=** (upper limit) | 10, 16, 20 kHz |

* *If the function switch is set to "INT," use the following settings:*
*RAC Freq >= 40 Hz*
*RAC Freq <= 16 kHz*

## Specifying the channels to which phantom power is supplied (Phantom)

You can specify the channels 1–4 to which phantom power will be supplied.

| Setting | Explanation |
|---|---|
| **1-4** | Phantom power will be supplied to channels 1–4. |
| **3-4** | Phantom power will be supplied to channels 3–4. |

## Initializing the settings (Initialize)

Here's how you can return various settings to their initial state.

**1. Use the CURSOR [BWD] [FWD] buttons to select "Initialize."**

The [SCENE] (ENTER) button will blink.

**2. Press the [SCENE] (ENTER) button.**

The Initialize screen will appear.


**3. Use the CURSOR [BWD] [FWD] buttons to select the settings you want to initialize.**

| Setting | Explanation |
|---|---|
| **ALL** | All settings of the M-16DX<br>* *Except for UTILITY settings* |
| **Ins** | Insert effect (*) |
| **FX** | Echo/Reverb (*) |
| **GEQ/RAC** | Graphic equalizer/<br>Room Acoustic Control |
| **Finalize** | Finalize (*) |
| **Scene** | Scene |

(*) The effect type is not initialized; only the parameters are initialized.

**4. Press [SCENE] (ENTER) button.**

A confirmation message will appear in the screen.


**5. To execute the initialization, press [SCENE] (ENTER) button.**

* *If you decide to cancel, press the [DISPLAY] (EXIT) button.*

When initialization is finished, the display will indicate "COMPLETE."

## Restoring the factory settings (Factory Reset)

This operation will restore all settings, including the UTILITY settings, to their factory-set state.
This is called "Factory Reset."

**1. Turn the power off.**

**2. While holding down the [FINALIZE] button and [ROOM ACOUSTIC AUTO CONTROL] button, press the [POWER] switch to turn the power on.**

The screen will indicate "Factory Reset..." and the factory reset will be executed.
After the factory reset is completed, the level meter screen will appear.

# Troubleshooting

If you experience problems, read this chapter first/ It contains tips for solving most problems.

## Problems with the M-16DX

### Sound is crackly or distorted

#### ❑ Could the input volume be too high?

The sound may be crackly or distorted if the input volume (level) is too high. If you're inputting audio from an input jack, adjust the M-16DX's input volume (level).

→ "Basic use" (p. 21)

#### ❑ Are you mixing multiple channels?

Even if the input volume (level) of a single channel is appropriate, the sound may be louder when you mix several channels, possibly causing crackling or distortion. Please re-adjust the input level of each channel.

#### ❑ Are the equalizer levels appropriate?

If you turn an EQ knob (HI/MID/LO) too far toward the right, the sound may be crackly or distorted. Use the EQ knobs (HI/MID/LO) of each channel to re-adjust the equalizer levels.

#### ❑ Is there a problem with the level indications in the level meter?

If the sound is crackly or distorted even though there is no problem with the level indications in the level meter, the output volume is appropriate but the input volume is too high. Please adjust the M-16DX's input volume (level).

→ "Basic use" (p. 21)

#### ❑ Are the insert effect, finalize, room acoustic control, and FX settings appropriate?

Depending on the settings of each effect, the level may increase, causing the sound to be crackly or distorted. Check these settings and re-adjust them if necessary.

### Audio signals from computer not being reproduced (no sound)

#### ❑ Is the [USB] button lit?

#### ❑ Could the channel 13/14 LEVEL knob be set to "-∞"?

Audio signals from the computer are input to channels 13/14. Use the channel LEVEL knob to adjust the volume.

## Noise can be heard

### ❑ Could you have raised the level of unused channels?

For the channels you're not using, minimize the input level by turning the SENS knob or the channel LEVEL knob all the way to the left.

### ❑ Could numerous audio devices be connected?

Noise may occur if a large number of audio devices are connected. Don't connect audio devices that you're not using.

## Loud noises such as "howls," "whines," or "buzzes" occur

### ❑ Is a mic connected?

Depending on the position of the mic and speakers, acoustic feedback (a whine or howl) may occur. In this case, take the following steps.

1. Change the direction of the mic
2. Move the mic away from the speakers
3. Lower the volume

### ❑ Is an audio device connected to the M-16DX?

If the input and output of the audio device are both connected to the M-16DX, the signal may be creating a feedback loop. Please check the connections.

## A low-volume buzz or hum is heard

### ❑ Is other equipment connected?

This noise is called "hum." The M-16DX and the connected equipment may pick up electromagnetic interference and emit this noise as a result. This noise can be caused by the power supply frequency (50/60 Hz) or by high-output motors.

Try moving your equipment away from the device that contains a motor, or connecting the M-16DX to a different AC outlet. You can also try connecting your equipment to a different input jack on the M-16DX.

### ❑ Is the I/O module installed in a rack?

If the I/O module is installed in a rack, and the device above or below it contains a transformer, the I/O module may pick up noise from this device. Try installing the I/O module in a different location.

## Insert effect is not applied

### ❑ Could the channel 1 or 2 [INSERT FX] button be off?

Even if the [INSERT FX] button is on (lit), the channel 1 or 2 [INSERT FX] button needs to be on ( ▬ ) for the insert effect to be applied.

## FX (echo/reverb) is not applied

### ❑ Could the send level be too low?

The effect may not be applied if the send level is too low. Turn the AUX 2/FX button (lit), and then turn the AUX knob toward the right to gradually increase the level.

### ❑ Could a plug be inserted into the AUX SEND 2 jack?

If a plug is inserted in the AUX SEND 2 jack, the [FX] switch will automatically turn off.

### ❑ Are the [FX to MAIN] switch and [FX to PHONES/CTRL ROOM] switch on?

Turn the [FX to MAIN] switch and/or [FX to PHONES/CTRL ROOM] switch on ( ▬ ).

## Finalize is not applied

### ❑ Could the M-16DX's sampling frequency be set to 96 kHz?

When using a USB connection, the Finalize function is not available if the M-16DX's sampling frequency is set to 96 kHz. Either set the sampling frequency to 48 kHz, or disconnect the USB connection.

## Volume of a device connected to the LINE IN jacks is too low

### ❑ Could you be using a connection cable that contains a built-in resistor?

Use a connection cable that does not contain a built-in resistor.

## Can't hear the sound from a mic connected to a MIC connector (1–4)

### ❑ Could you have connected a condenser mic that requires phantom power?

If you're connecting a condenser mic that requires phantom power, turn the [PHANTOM] switch on ( ▬ ).

* *With the default settings, phantom power is supplied to all the MIC connectors, channels 1–4. However, you can change a system setting (p. 45) so that phantom power is supplied only to channels 3 and 4.*

## An input sound is heard only from the left or right

### ❑ Could the PAN knob or BAL knob be set all the way to the left or right?

Set the PAN knob or BAL knob to the center position.

# Problems related to the special driver

## Can't install the driver

### ❑ Could another USB device be connected?

All USB devices other than a mouse and keyboard must be disconnected from your computer before you install the driver.

### ❑ Could other applications or resident software (such as antivirus programs) be running?

Installation may not occur correctly if other programs are running. Be sure to close all other programs before you install the driver.

### ❑ Is power management turned off for your computer?

If power management or energy-saving settings are enabled on your computer, turn them off. For details on how to do this, refer to your computer's owner's manual.

### ❑ Is there sufficient space on your hard disk?

Delete unneeded files to increase the amount of free space. After deleting the unneeded files, empty the Recycle Bin.

### ❑ Does the Device Manager show "Other Device," "Unknown Device," or a device marked with "?/!/x"?

If the driver was not installed correctly, the installed driver may remain in an incomplete state. Delete the driver as described in "Deleting the USB driver" (p. 52), and then install the M-16DX driver once again as described in "Driver installation and settings."

## You are asked for the driver file even though you've already installed the driver

### ❑ Could you have connected the M-16DX to a USB connector that's different than the one used when you installed the driver?

The USB driver must be installed for each USB connector to which you connect the M-16DX. If you have a USB hub or a computer that has more than one USB connector, you should normally connect the M-16DX to the USB connector for which you installed the driver.

If you want to connect the M-16DX to a USB connector other than the one for which you installed the driver, you'll need to install the USB driver as follows.

1. Connect the M-16DX to your computer.
   The **"Found New Hardware Wizard"** dialog box will appear.
2. If you are asked whether you want to connect to Windows Update, choose **"No, ..."** and click **[Next]**.
3. Choose **"Install the software automatically (recommended)"** and click **[Next]**.
4. If a dialog box with a **"!"** or **"X"** symbol appears, click **[Continue]** to proceed with installation.

* *If you are unable to proceed, click **[OK]** and re-install the driver.*

## Noise or pops are heard when recording/playing on your computer

- **Noise is heard during audio playback**
- **Pops/clicks occur during audio playback**
- **Noise is heard in the recorded sound**

### ❑ In Windows, did you make the setting described in "Giving priority to background services"?

In order to ensure that audio/MIDI processing occurs smoothly, make the setting described in "Giving priority to background services."

→ "Giving priority to background services" (separate sheet)

### ❑ In Windows, Power Management settings in the Control Panel may cause clicks or pops to occur in the audio playback.

The power management properties that appear when you double-click Power Management will differ depending on your computer system. The explanation that follows is for a typical situation, but you should refer to the owner's manual for your computer to verify these settings.
Some computers may not have the following items.

1. In the Windows **"Control Panel,"** double-click the **"System"** icon.
   The **"System Properties"** dialog box will appear.
2. Click the **"Hardware"** tab.
3. Click **"Device Manager"** to see the **"list of devices."**
4. From the list, choose **"Advanced Power Management Support,"** and click **"Properties."**
   The **"Advanced Power Management Support Properties"** dialog box will appear.
5. Click the **"Settings"** tab, and in **"Troubleshooting,"** check the **"Don't Poll Power Supply Status"** check box. Then click **[OK]**.
6. In the **"System Properties"** dialog box, click **[OK]**.
7. Restart Windows.

### ❑ Are you using a USB device in addition to the M-16DX?

Try switching off USB audio devices other than the M-16DX.

### ❑ You may be able to solve the problem by adjusting the buffer size in the M-16DX Driver Settings dialog box.

Adjust the buffer size as described in "Adjusting the audio latency" (separate sheet).

* *After changing the buffer size, you must restart any software that uses the M-16DX.*

If your software has an audio device test function, execute the test function.

### ❑ Are numerous software programs running?

Playback may be interrupted if numerous software programs are running at the same time, or when you start up another software program. Close any unneeded software, and try again. If this does not solve the problem, try restarting your computer.

### ❑ Clicks or pops may occur in the sound if a LAN is operating.

Try disabling the LAN in the Device Manager. If this eliminates the clicks or pops, you may be able to solve the problem by updating your LAN driver or BIOS.

### ❑ Is the sample rate setting in your software the same as the M-16DX's sample rate setting?

Set your software and the M-16DX to the same sample rate.

If you change the sample rate of the M-16DX, you will need to reconnect the M-16DX in order for the setting to take effect.

### ❑ Try adding memory.

Adding memory will improve the processing capability of your computer. For details on how to add memory, refer to the owner's manual of your computer.

### ❑ Is the M-16DX connected to a USB hub?

Try connecting the M-16DX directly to the USB connector of your computer itself.

### ❑ Are you using the included USB cable?

You must use the included USB cable when using the M-16DX. Some commercially available USB cables do not meet the requirements of the USB standard, and this may prevent the M-16DX from operating correctly.

## Computer is sluggish

### ❑ Have you updated Windows XP?

If you have not updated Windows XP, a heavy processing load will be placed on the CPU when recording or playing back audio, and the system will not operate correctly. Please update to Windows XP SP2.

# Deleting the USB driver

If you were unable to install the USB driver using the procedure given, it is possible that your computer did not recognize the M-16DX's USB driver correctly. In this case, you'll need to delete the incorrectly installed USB driver. Follow the procedure below to delete the USB driver, and then re-install it.

1. Disconnect all USB cables from your computer except for your USB keyboard and USB mouse (if used). Also disconnect the M-16DX. Start up your computer, and log on using a user account that has administrative privileges.
2. Insert the CD-ROM into your computer's CD-ROM drive.
3. Choose **[Start]**-**[My Computer]**, and select the **[M16DX]**.
4. Select the **[DRIVER]** folder.
5. Double-click the **[UNINSTAL]** icon.
6. Proceed with the uninstallation as directed by the instructions that appear.

# Main specifications

| M-16DX | |
|---|---|
| **Number of Input Channels** | 16 channels |
| **AD/DA Conversion** | Sample Rate: 44.1/48.0/96.0 kHz<br>Signal Processing: 24 bits |
| **Frequency Response** | 96.0 kHz: 20 Hz to 40 kHz (+3/-3 dB)<br>48.0 kHz: 20 Hz to 22 kHz (+3/-3 dB)<br>44.1 kHz: 20 Hz to 20 kHz (+3/-3 dB) |
| **Residual Noise Level (IHF-A, typ.)** | MAIN MIX LEVEL knob = -∞, Channel LEVEL knobs = -∞<br>MAIN MIX LEVEL knob = U, Channel LEVEL knobs = -∞<br>-96 dBu<br>MAIN MIX LEVEL knob = U, Channel LEVEL knobs = U<br>-83 dBu |
| **Nominal Input Level** | MIC connectors 1–4: -60 to -10 dBu<br>LINE IN jacks 1–4: -40 to +10 dBu<br>* *Maximum input level: Nominal input level + 22 dB*<br>LINE IN jacks 5–16: +0 dBu<br>LINE IN jacks 15–16 (RCA pin type, Stereo miniature phone type): -10 dBu<br>* *Maximum input level: Nominal input level + 18 dB* |
| **Input Impedance** | MIC connectors 1–4: 1.5 kΩ<br>LINE IN jacks 1–4: 20 kΩ<br>LINE IN jacks 5–16: 20 kΩ<br>LINE IN jacks 15–16 (Stereo miniature phone type): 14 kΩ |
| **Nominal Output Level** | MAIN OUT jacks/ALT OUT jacks/AUX SEND jacks 1–2: +0 dBu<br>2 TRACK OUT jacks L–R: -10 dBu<br>CONTROL ROOM jacks: -6 dBu<br>* *Maximum output level: Nominal Output Level + 22 dB* |
| **Output Impedance** | MAIN OUT jacks/ALT OUT jacks/AUX SEND jacks 1–2: 600 Ω<br>2 TRACK OUT jacks L–R: 1 kΩ |
| **Recommended Load Impedance** | 10 kΩ or greater |
| **Display** | Graphic LCD 122 x 32 dot (with back-light) |
| **Connectors <I/O module>** | MIC connectors 1–4: XLR type (balanced / phantom power +48 V)<br>LINE IN jacks 1–14: 1/4 inch TRS phone type (balanced)<br>* *LINE IN jacks 1–2: supports use of hi-impedance*<br>LINE IN jacks 15–16: RCA pin type<br>MAIN OUT jacks L–R: 1/4 inch TRS phone type (balanced)<br>ALT OUT jack L–R: 1/4 inch TRS phone type (balanced)<br>AUX SEND jacks 1–2: 1/4 inch TRS phone type (balanced)<br>2 TRACK OUT jack L–R: RCA pin type<br>DIGITAL INPUT jack/connector: Optical type, Coaxial type<br>DIGITAL OUTPUT jack/connector: Optical type, Coaxial type<br>USB Connector<br>DX BUS Connector: D-SUB 15 pin |

| | |
|---|---|
| **Connectors <MIX controller>** | LINE IN jacks 15–16: 1/4 inch phone type (unbalanced), Stereo miniature phone type<br>PHONES jack: Stereo 1/4 inch phone type<br>CONTROL ROOM jacks L–R: 1/4 inch phone type (Impedance balanced)<br>DX BUS Connector: D-SUB 15 pin |
| **DSP processing** | Room Acoustic Control (Built-in Microphone)<br>16 Band Graphic EQ<br>Finalize: Enhancer/Multi-band Compressor-Limiter<br>Insertion effects: Power compressor/Vocal enhancer/Narration enhancer<br>Echo/Reverb: Short echo/Echo/Room reverb/Small hall reverb/Large hall reverb |
| **Number of USB Audio Record/Playback Channels** | Record: 18 channels, Playback: 2 channels<br>Full duplex<br>* *When using the mixer as a USB audio interface, the Finalize effects are not available in 96 kHz mode.* |
| **Power Supply** | DC 9 V (AC adaptor) |
| **Current Draw** | 1.4 A |
| **Phantom Power** | +48 V/5 mA (each input) |
| **Dimensions** | I/O module:<br>280.0 (W) x 219.0 (D) x 44.0 (H) mm<br>11-1/16 (W) x 8-5/8 (D) x 1-3/4 (H) inches<br><br>MIX Controller:<br>311.0 (W) x 215.9 (D) x 45.9 (H) mm<br>12-1/4 (W) x 8-1/2 (D) x 1-13/16 (H) inches |
| **Weight** | I/O module: 1.6 kg/3 lbs 9 oz (only this unit)<br>MIX controller: 1.2 kg/2 lbs 11 oz (only this unit) |
| **Accessories** | Owner's manual<br>Read this first/M-16DX driver installation (driver installation manual)<br>Controller cable (D-SUB 15 pin, 2 m)<br>USB cable<br>Driver CD-ROM<br>SONAR LE CD-ROM<br>AC Adaptor<br>Rack-mount adaptor<br>Rubber feet (I/O module) |
| **Option** | Controller cable: DXC-7 (D-SUB 15 pin, 7 m) |

* *0 dBu = 0.775 V rms*

**NOTE**

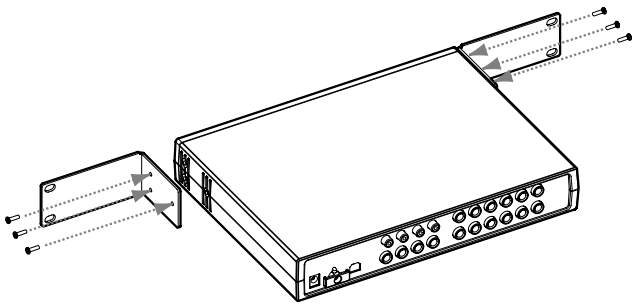
In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.

# Attaching the rack-mount adaptor

**1. Remove three screws (on each side) from the right and left panels of the I/O module.**

**2. Using the screws you removed in step 1, attach the rack-mount brackets to the I/O module.**

* *You must use the screws that you removed. Do not use any other screws.*



## Rack mounting (important notes on heat radiation)

When you are mounting the unit on a rack or the like, give attention to the following points to ensure efficient cooling.

- Install in a well-ventilated location.
- Avoid mounting in a sealed rack. Warm air within the rack cannot escape and is sucked into the unit again, making efficient cooling impossible.
- When you are using a stacked mounting arrangement, be especially sure to provide for adequate ventilation within the rack to keep discharged air from being sucked back into the unit. If the back surface of the rack cannot be kept open, then provide a ventilation port or ventilation fan at the upper area of the back surface of the rack, where warm air accumulates.
- When you are using the unit in a portable case or rack, remove the covers from the front and back surfaces of the case, so that the front and back surfaces of the unit are not obstructed.

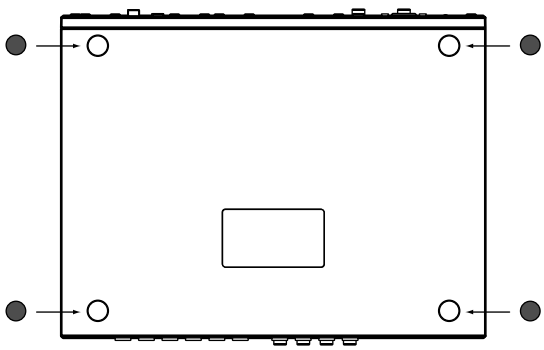
* *When placing the unit on the rack, be careful not to pinch your fingers.*

* *For more information about installation, also see "Placement" (p. 5).*

# Attaching the rubber feet

Attach these as required, such as when you're using the I/O module without mounting it on a rack or the like.

Peel off the double-sided tape from the rubber feet and affix the rubber feet at the locations shown in the following figure.



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## X

**For EU Countries**

**UK** This symbol indicates that in EU countries, this product must be collected separately from household waste, as defined in each region. Products bearing this symbol must not be discarded together with household waste.

**DE** Dieses Symbol bedeutet, dass dieses Produkt in EU-Ländern getrennt vom Hausmüll gesammelt werden muss gemäß den regionalen Bestimmungen. Mit diesem Symbol gekennzeichnete Produkte dürfen nicht zusammen mit den Hausmüll entsorgt werden.

**FR** Ce symbole indique que dans les pays de l'Union européenne, ce produit doit être collecté séparément des ordures ménagères selon les directives en vigueur dans chacun de ces pays. Les produits portant ce symbole ne doivent pas être mis au rebut avec les ordures ménagères.

**IT** Questo simbolo indica che nei paesi della Comunità europea questo prodotto deve essere smaltito separatamente dai normali rifiuti domestici, secondo la legislazione in vigore in ciascun paese. I prodotti che riportano questo simbolo non devono essere smaltiti insieme ai rifiuti domestici.
Ai sensi dell'art. 13 del D.Lgs. 25 luglio 2005 n. 151.

**ES** Este símbolo indica que en los países de la Unión Europea este producto debe recogerse aparte de los residuos domésticos, tal como esté regulado en cada zona. Los productos con este símbolo no se deben depositar con los residuos domésticos.

**PT** Este símbolo indica que nos países da UE, a recolha deste produto deverá ser feita separadamente do lixo doméstico, de acordo com os regulamentos de cada região. Os produtos que apresentem este símbolo não deverão ser eliminados juntamente com o lixo doméstico.

**NL** Dit symbool geeft aan dat in landen van de EU dit product gescheiden van huishoudelijk afval moet worden aangeboden, zoals bepaald per gemeente of regio. Producten die van dit symbool zijn voorzien, mogen niet samen met huishoudelijk afval worden verwijderd.

**DK** Dette symbol angiver, at i EU-lande skal dette produkt opsamles adskilt fra husholdningsaffald, som defineret i hver enkelt region. Produkter med dette symbol må ikke smides ud sammen med husholdningsaffald.

**NO** Dette symbolet indikerer at produktet må behandles som spesialavfall i EU-land, iht. til retningslinjer for den enkelte regionen, og ikke kastes sammen med vanlig husholdningsavfall. Produkter som er merket med dette symbolet, må ikke kastes sammen med vanlig husholdningsavfall.

**SE** Symbolen anger att i EU-länder måste den här produkten kasseras separat från hushållsavfall, i enlighet med varje regions bestämmelser. Produkter med den här symbolen får inte kasseras tillsammans med hushållsavfall.

**FI** Tämä merkintä ilmaisee, että tuote on EU-maissa kerättävä erillään kotitalousjätteistä kunkin alueen voimassa olevien määräysten mukaisesti. Tällä merkinnällä varustettuja tuotteita ei saa hävittää kotitalousjätteiden mukana.

**HU** Ez a szimbólum azt jelenti, hogy az Európai Unióban ezt a terméket a háztartási hulladéktól elkülönítve, az adott régióban érvényes szabályozás szerint kell gyűjteni. Az ezzel a szimbólummal ellátott termékeket nem szabad a háztartási hulladék közé dobni.

**PL** Symbol oznacza, że zgodnie z regulacjami w odpowiednim regionie, w krajach UE produktu nie należy wyrzucać z odpadami domowymi. Produktów opatrzonych tym symbolem nie można utylizować razem z odpadami domowymi.

**CZ** Tento symbol udává, že v zemích EU musí být tento výrobek sbírán odděleně od domácího odpadu, jak je určeno pro každý region. Výrobky nesoucí tento symbol se nesmí vyhazovat spolu s domácím odpadem.

**SK** Tento symbol vyjadruje, že v krajinách EÚ sa musí zber tohto produktu vykonávať oddelene od domového odpadu, podľa nariadení platných v konkrétnej krajine. Produkty s týmto symbolom sa nesmú vyhadzovať spolu s domovým odpadom.

**EE** See sümbol näitab, et EL-i maades tuleb see toode olemprügist eraldi koguda, nii nagu on igas piirkonnas määratletud. Selle sümboliga märgitud tooteid ei tohi ära visata koos olmeprügiga.

**LT** Šis simbolis rodo, kad ES šalyse šis produktas turi būti surenkamas atskirai nuo buitinių atliekų, kaip nustatyta kiekviename regione. Šiuo simboliu paženklinti produktai neturi būti išmetami kartu su buitinėmis atliekomis.

**LV** Šis simbols norāda, ka ES valstīs šo produktu jāievāc atsevišķi no mājsaimniecības atkritumiem, kā noteikts katrā reģionā. Produktus ar šo simbolu nedrīkst izmest kopā ar mājsaimniecības atkritumiem.

**SI** Ta simbol označuje, da je treba proizvod v državah EU zbirati ločeno od gospodinjskih odpadkov, tako kot je določeno v vsaki regiji. Proizvoda s tem znakom ni dovoljeno odlagati skupaj z gospodinjskimi odpadki.

**GR** Бхфь фп уэмвплп дзлюней ьфй уфйт чюсет фзт ЕЕ, фп рспъьн бхфь рсЭрей нб ухллЭгефбй оечщсйуфЬ брь фб пйкйбкЬ брпссЯммбфб, уэмщщнб ме фз нпмпиеуЯб фзт кЬие ресйпчЮт. Фб рспъьнфб рпх цЭспхн бхфь фп уэмвплп ден рсЭрей нб брпссЯрфпнфбй мбжЯ ме фб пйкйбкЬ брпссЯммбфб.

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