

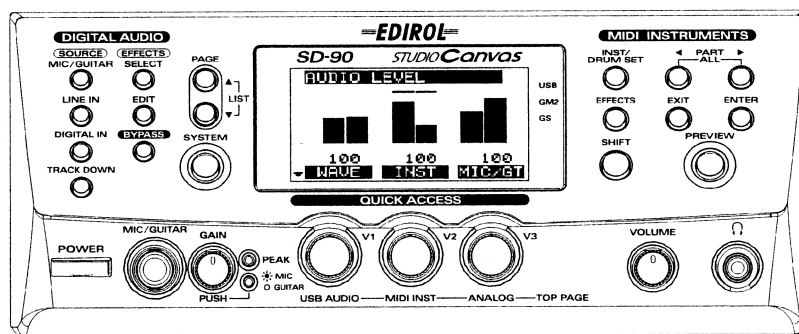
EDIROL

STUDIO Canvas **SD-90**

Owner's Manual

Thank you, and congratulations on your choice of the Edirol SD-90.

Before using this unit, carefully read the sections entitled: "IMPORTANT SAFETY INSTRUCTIONS" (Owner's manual p. 2), "USING THE UNIT SAFELY" (Owner's manual p. 2, 3), and "IMPORTANT NOTES" (Owner's manual p. 4, 5). These sections provide important information concerning the proper operation of the unit. Additionally, in order to feel assured that you have gained a good grasp of every feature provided by your new unit, Owner's manual should be read in its entirety. The manual should be saved and kept on hand as a convenient reference.



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USING THE UNIT SAFELY

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

About ⚠ WARNING and ⚠ CAUTION Notices

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

About the Symbols

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

ALWAYS OBSERVE THE FOLLOWING

⚠ WARNING

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

⚠ WARNING

- The unit should be connected to a power supply only of the type described in the operating instructions, or as marked on the unit. 
- 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. 

- 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!) 

WARNING

- 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 should be located so that its location or position does not interfere with its proper ventilation. 
- Always grasp only the plug on the power-supply cord when plugging into, or unplugging from, an outlet or this unit. 
- Try to prevent cords and cables from becoming entangled. Also, all cords and cables should be placed so they are out of the reach of children. 
- Never climb on top of, nor place heavy objects on the unit. 
- Never handle the power cord or its plugs with wet hands when plugging into, or unplugging from, an outlet or this unit. 
- Before moving the unit, disconnect the power plug from the outlet, and pull out all cords from external devices. 
- Before cleaning the unit, turn off the power and unplug the power cord from the outlet. 
- Whenever you suspect the possibility of lightning in your area, pull the plug on the power cord out of the outlet. 
- Should you remove the optical connector caps, make sure to put them in a safe place out of children's reach, so there is no chance of them being swallowed accidentally. 

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IMPORTANT NOTES

In addition to the items listed under “IMPORTANT SAFETY INSTRUCTIONS” and “USING THE UNIT SAFELY” on pages 3 and 4, please read and observe the following:

Power Supply

- Do not use this unit on the same power circuit with any device that will generate line noise (such as an electric motor or variable lighting system).
- 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.
- 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.
- To avoid possible breakdown, do not use the unit in a wet area, such as an area exposed to rain or other moisture.

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.

Additional Precautions

- 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.
- A small amount of noise may be heard from the display during normal operation.
- When connecting / disconnecting all cables, grasp the connector itself—never pull on the cable. This way you will avoid causing shorts, or damage to the cable's internal elements.
- A small amount of heat will radiate from the unit during normal operation.
- To avoid disturbing your neighbors, try to keep the unit's volume at reasonable levels. 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.
- Use a cable from Roland to make the connection. If using some other make of connection cable, please note the following precautions.
 - 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.
- Unauthorized duplication, reproduction, hiring, and lending prohibited.

Handling 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

- Unauthorized recording, distribution, sale, lending, public performance, broadcasting, or the like, in whole or in part, of a work (musical composition, video, broadcast, public performance, or the like) whose copyright is held by a third party is prohibited by law.
- When exchanging audio signals through a digital connection with an external instrument, this unit can perform recording without being subjected to some of the restrictions of the Serial Copy Management System (SCMS). This is because the unit is intended solely for musical production, and is designed not to be subject to restrictions as long as it is used to record works (such as your own compositions) that do not infringe on the copyrights of others. (SCMS is a feature that prohibits second-generation and later copying through a digital connection. It is built into MD recorders and other consumer digital-audio equipment as a copyright-protection feature.)
- Do not use this unit for purposes that could infringe on a copyright held by a third party. Roland assumes no responsibility whatsoever with regard to any infringements of third-party copyrights arising through your use of this unit.

Others

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

Q: The volume level of the instrument connected to Line input jacks is too low.

A: Could you be using a connection cable that contains a resistor?
Use a connection cable that does not contain a resistor.

- * In some cases, depending on the environment in which the unit is installed, the surface of the panel may sometimes feel rough and grainy. 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/EDIROL 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)

- Once the connections have been completed, 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.
- Always make sure to have the volume level turned down before switching on power. Even with the volume all the way down, you may still hear some sound when the power is switched on, but this is normal, and does not indicate a malfunction.
- * In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.

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- No data for the music that is played will be output from MIDI OUT.
- Howling could be produced depending on the location of microphones relative to speakers. This can be remedied by:
 1. Changing the orientation of the microphone(s).
 2. Relocating microphone(s) at a greater distance from speakers.
 3. Lowering volume levels.

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Introduction

Thank you, and congratulations on your choice of the Edirol **SD-90** Studio Canvas.

The SD-90 is a cutting-edge, desktop studio system which contains a MIDI sound generator with a treasure chest of sounds that will stimulate your creativity, plus a 24-bit/48 kHz audio interface. It's the ideal partner for your music-making.

How to read this manual

The documentation for the SD-90 consists of a **Startup Manual**, a **User Guide**, and **Additional Information** (PDF) on the included CD-ROM.

- The **Startup Manual** takes you through the steps you need to follow in order to get ready to use the SD-90 with your computer. Please read this first.
- The **User Guide** explains how to use all the basic features of the SD-90. After you have made settings for the SD-90 as described in the **Startup Manual**, and have verified that it produces sound correctly, refer to the User Guide as necessary, depending on the purpose you have in mind.
- **Additional Information** explains various settings you can make in order to take full advantage of the SD-90's functionality. Read this material as necessary. In order to read the **Additional Information** PDF file, you will need the **Adobe Acrobat Reader**. The most recent version of the **Adobe Acrobat Reader** can be downloaded from the **Adobe Systems Incorporated** website.
(<http://www.adobe.com/>)
- Letters and numbers enclosed in [] indicate buttons on the panel of the SD-90.
- Areas enclosed by a gray rectangular frame contain supplementary explanations for a function, or tips for operation.
- If the SD-90 does not operate as you expect, refer to "**Troubleshooting**" (p. 97).

Main features

Richly expressive pro-quality sounds

The 32-part/128-voice MIDI sound generator section features three MFX (multi-effect) units in addition to reverb, chorus, and equalizer. More than a thousand sounds using pro-quality wave data are organized into four categories, providing unlimited creative potential.

Cutting-edge desktop studio system

In full-digital form, the SD-90 combines a MIDI sound generator, audio mixer, and audio effects—everything you need for music production. The SD-90 is all you need to set up a cutting-edge desktop studio.

A full array of audio multi-effects

The audio interface lets you input a mic/guitar/CD or other audio source into your computer, and it also provides audio effects that can be applied to the internal sound generator as well. A total of nine algorithms are provided, including mastering effects for use during mixdown, as well as "surround reverb," which supports multi-channel speaker systems, allowing you to use the effects that are most suitable for your output needs.

Easy operation

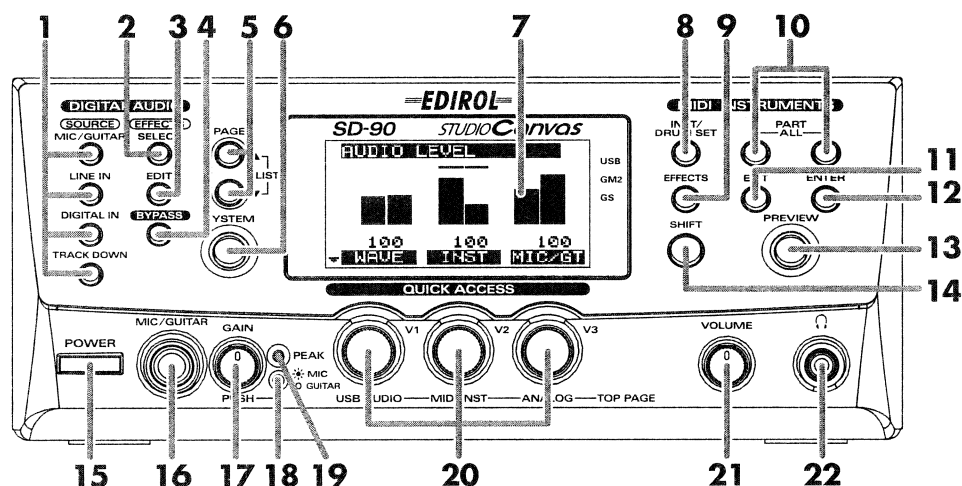
The front panel features a large display and three rotary encoders, letting you select sounds/effects and edit parameters easily and intuitively.

WDM/ASIO™ 2.0 compatible drivers included

You can enjoy high performance when used with WDM-compatible applications such as Sonar™ and ASIO™-compatible applications such as Cubase™ or Logic™. Of course, the SD-90 can also be used with applications compatible with MME (Windows®).

Names of things and what they do

■ Front Panel



1 SOURCE Buttons

These buttons recall audio mixer routings suitable for sending the selected input source (input jack) to the computer. ("Selecting a routing" (p. 52))

2 SELECT Button

This button selects the type of audio effect ("Selecting the type of effect (Algorithm)" (p. 62)).

3 EDIT Button

This button allows you to edit the parameters of the audio effect ("Editing the effect" (p. 63)).

4 BYPASS Button

This button allows you to temporarily bypass the audio effect so that you can compare the sound with and without the effect ("Editing the effect" (p. 63)).

5 PAGE Buttons

When editing the parameters of the audio mixer, use these buttons to switch between screens that consist of multiple pages ("Editing in the List display" (p. 54)).

When you press [▲] and [▼] simultaneously, a list of the parameters will be displayed ("Editing in the List display" (p. 54)).

6 SYSTEM Button

Use this button to make settings that affect the entire SD-90 system ("System-related settings" (p. 69)).

7 Display

This shows various types of information (such as level meters or parameter values) related to the current state.

8 INST/DRUM SET (Instrument/Drum Set) Button

Use this button to select the instrument (sound) or drum set assigned to each part. ("Selecting a sound" (p. 24), "Selecting a drum set" (p. 25))

9 EFFECTS Button

Use this button to select an effect (MFX) for the internal sound generator, or to edit effect parameters ("About the sound generator effects" (p. 38)).

10 PART Buttons

Use these buttons to switch the part display.

If you press [◀] and [▶] simultaneously, all parameters will be displayed ("**Editing in the list display**" (p. 30)).

11 EXIT Button

Use this button to cancel an operation, or to return to the previous screen or the basic screen.

12 ENTER Button

Use this button to execute an operation or to select a screen.

13 PREVIEW Button

Use this button to audition the currently selected sound (instrument) ("**Auditioning the sounds (Preview)**" (p. 15)).

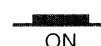
14 SHIFT Button

This button is used in conjunction with other buttons to change the function of the other button.

15 POWER Switch

This turns the power of the SD-90 on/off. The **power is on** when the switch is pressed in, and the **power is off** when the switch is in the outward position. When the power is on, the white backlighting of the LCD screen will also be on.

Lower position



Upper position

**16 MIC/GUITAR Jack**

A dynamic microphone or a guitar can be connected here ("**Connecting a mic/guitar**" (p. 49)).

* This jack is not compatible with the miniature microphones (condenser mics) included with personal computers and sound cards.

17 GAIN Knob

Turning this knob will adjust the gain of the signal input from the **MIC/GUITAR** jack or **LINE IN** jacks. By pressing this knob, you can select whether a mic or a guitar is connected to the **MIC/GUITAR** jack ("**Connecting a mic/guitar**" (p. 49)).

18 GAIN Indicator

This indicates whether mic or guitar is selected for the **MIC/GUITAR** jack. Mic is selected when the indicator is lit, and guitar is selected when the indicator is dark.

19 PEAK Indicator

This indicates the level of the signal that is input to the **MIC/GUITAR** jack or the **LINE IN** jacks. The indicator will light at -3 dB, so use the **GAIN** knob to adjust the input so that the indicator lights occasionally during the loudest passages.

20 QUICK ACCESS Knobs

In the basic screen, these knobs adjust the volume levels of the following outputs ("**Adjusting the volume in the main screen**" (p. 13)).

In the editing screens, the parameters shown in the bottom row of the display are assigned to these knobs, and can be adjusted by them.

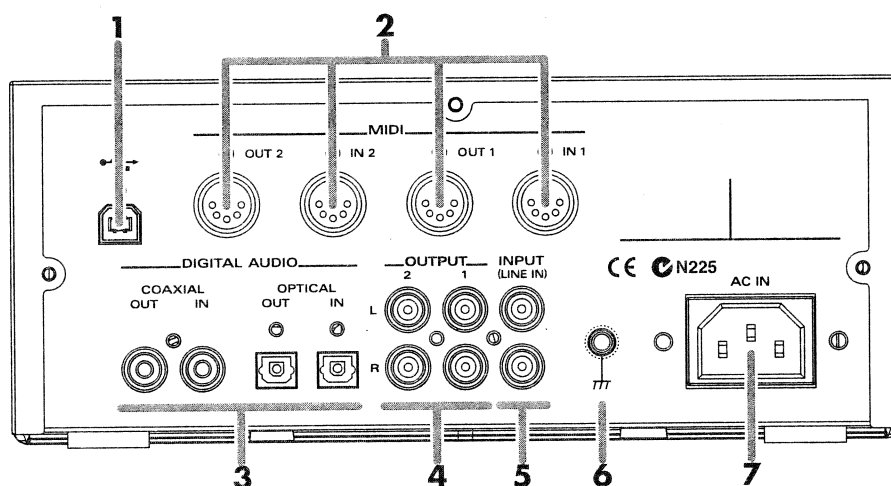
21 VOLUME Knob

This knob adjusts the output level of the audio signal that is output from the rear panel **OUTPUT 1** jacks and from the **Headphone** jack .

22 Headphone Jack

A set of headphones can be connected to this jack. The headphone jack outputs the same signal as the **OUTPUT 1** jacks.

■ Rear Panel



1 USB Connector

A USB cable can be used to connect the SD-90 to your computer. In **USB mode**, audio signals and MIDI messages can be exchanged through this cable.

2 MIDI Connectors

These connectors can be connected to other MIDI devices, such as a sequencer, allowing the exchange of MIDI messages ("Controlling the SD-90 via MIDI" (p. 77)).

IN1/IN2: These connectors receive MIDI messages from other devices. The received MIDI messages are sent to the computer (in USB mode) or to the internal sound generator (in MIDI mode).

OUT1/OUT2: These connectors transmit MIDI messages to other devices.

3 DIGITAL AUDIO Jacks

These jacks can be connected to digital audio devices such as CD players and MD players to transfer digital audio signals.

IN: These jacks receive digital signals from other digital devices. Use a coaxial cable with **COAXIAL**, and an optical cable with **OPTICAL**.

OUT: These jacks send digital signals to other digital devices. Use a coaxial cable with **COAXIAL**, and an optical cable with **OPTICAL**.

4 OUTPUT Jacks

These jacks output audio signals to your audio playback system or amplified speakers.

1: These jacks always output the signals that are being input at the input jacks. Use the front panel **VOLUME** knob to adjust the volume.

2: These jacks output either the signal for the rear speakers of surround reverb, or the signal from the internal sound generator ("Using surround output" (p. 67)).

5 INPUT (LINE IN) Jacks

These jacks accept the input of analog audio signals from an audio device such as a CD player or MD player, or from another MIDI device.

6 Grounding Terminal

This prevents the panel surface from developing an electrical charge.

7 AC IN Connector

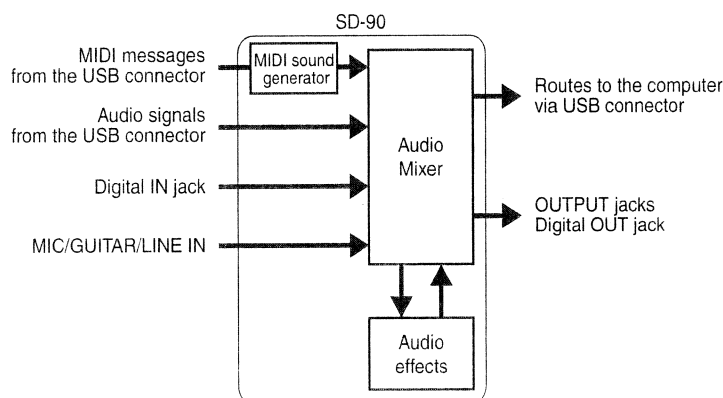
Connect the supplied AC cord here. Never use any AC cord other than the one provided, since doing so may cause malfunction.

Basic operation

This section introduces you to the overall design and organization the SD-90, and explains basic operation. Please make sure to read this section, since it is sure to help you gain a better understanding of your new unit.

How the SD-90 is organized

The SD-90 consists of the following three blocks. For details on each block, refer to the corresponding page.



- The **internal sound generator**, which receives MIDI messages from the USB connector (or MIDI IN connectors) and produces sound
->"Using the internal sound generator" (p. 17)
- The **audio mixer**, which determines the flow of audio signal inputs and outputs
->"Using the Audio Mixer" (p. 48)
- The **effect block**, which applies effects to all audio sources
->"Using the audio effects" (p. 61)

Adjusting the volume in the main screen

In the main screen (the screen that appears immediately after you turn on the power), the [V1]–[V3] knobs and the [VOLUME] knob will adjust the volume of each block.

[VOLUME] knob:

The audio signal that is output from the **Headphone** jack and the rear panel **OUTPUT 1** jacks

[V1] knob:

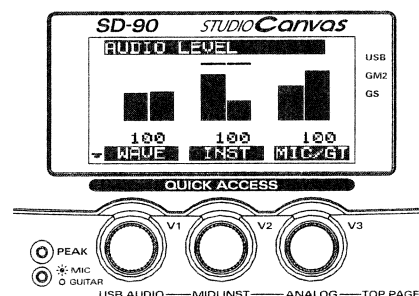
The digital audio signal that is sent from your computer via the USB cable and input to the SD-90

[V2] knob:

The internal sound generator

[V3] knob:

The audio signal that is input at the analog jacks

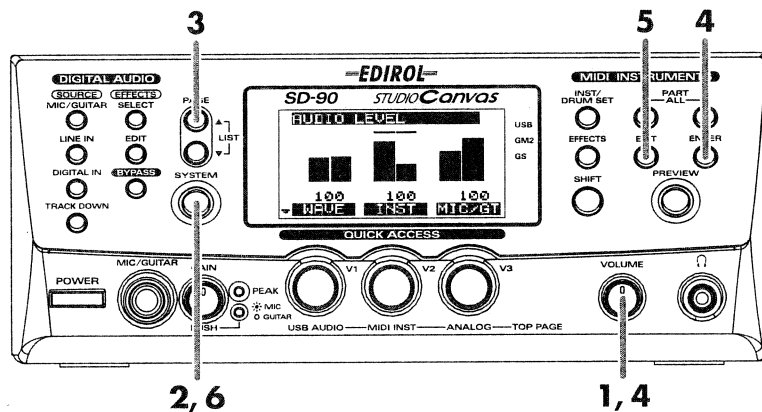


Operations in the basic screen

The SD-90 contains a diverse array of sounds, ranging from instrumental sounds such as piano/organ/guitar for an ensemble, to sound effects such as birdsong and telephone ringers. Each of these sounds is called an **instrument**. Here's how to select instruments and listen to the variety of sounds that the SD-90 provides.

■ Listening to the internal demo songs

The SD-90 contains demo songs. Here's how to listen to these demo songs, and hear the sounds and effects.



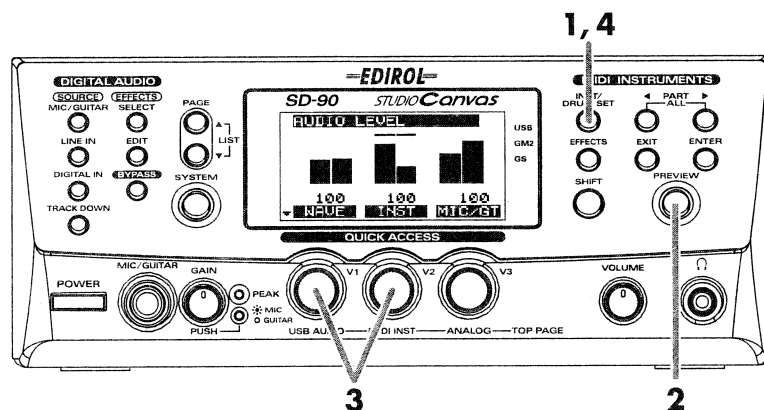
1. Turn the **[VOLUME]** knob fully counterclockwise (minimum setting).
2. Press **[SYSTEM]**.
3. Press **[PAGE ▲]** to get the screen shown at right to appear.
4. Press **[ENTER]**, and the demo song will begin playing. Slowly turn the **[VOLUME]** knob clockwise to adjust the volume to a comfortable level. Once the demo song has played to the end, it will automatically be played over again, starting from the beginning.
5. Press **[EXIT]** to stop the demo song.
6. Press **[SYSTEM]** once again to return to the main screen.



- * Using these demo songs for any purpose other than personal enjoyment without permission from the copyright owner is prohibited by law.
- * The demo song playback data will not be output from the **MIDI OUT** jacks.

■ Auditioning the sounds (Preview)

On the SD-90, sounds are specified using two numbers: the **instrument number** and the **variation number**. By pressing [PREVIEW] you can audition the currently selected sound.



1. Press [INST/DRUM SET].
2. Press [PREVIEW]. While you continue pressing [PREVIEW], the button will light and a phrase will play. When you release the button, the phrase will stop.
3. When you turn the [V1] knob, the **capital sound** will change. When you turn the [V2] knob, the **variation sound** will change. Try selecting various sounds and listening to the phrases.
4. Press [INST/DRUM SET] once again to return to the main screen.



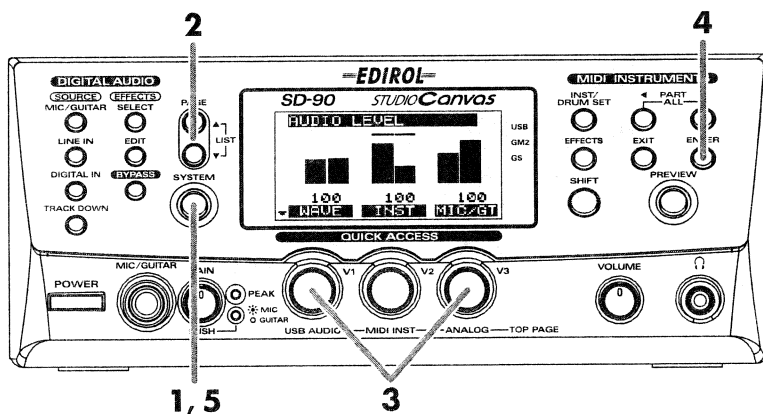
Changing the Preview settings

At the factory settings, you can audition a characteristic **phrase** that uses the currently selected sound (Phrase Preview). Alternatively, you can set it so that Preview will play a single note at the **pitch** (key) and **strength** (velocity) that you specify.

For details on Preview settings, refer to "Preview settings" (p. 74).

■ Adjusting the brightness of the display (Contrast)

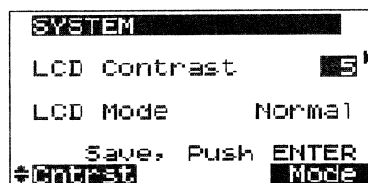
Immediately after the power is turned on, or after the SD-90 has been used for an extended period, or depending on the conditions in which it is placed, the characters or icons in the display screen may become difficult to read. If this happens, you can adjust the contrast of the display.



1. Press [SYSTEM].
2. Press [PAGE ▲] or [PAGE ▼] until LCD Contrast is displayed.
3. Turn the [V3] knob to adjust the contrast of the display.

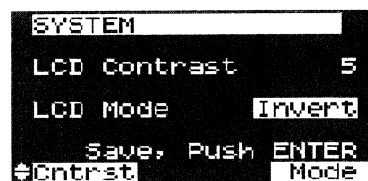
LCD Contrast 1–5–8

Adjusts the contrast of the display.



LCD Mode Normal, Invert

Adjusts the contrast of the display.



4. Press [ENTER]. The contrast setting you specify will be remembered by the SD-90.
 * Do not turn off the power while the setting is being stored (while "(TBD)" is displayed). Doing so will cause all data stored in the SD-90 to be lost.
5. Once again press [SYSTEM] to return to the main screen.

Using the internal sound generator

The SD-90 contains a sound generator with 1,050 diverse and high-quality sounds. The internal sound generator has four modes to support different sound generator formats, and you can select the mode you want to use. For details on the sound generator modes, refer to **"About the sound generator modes"** (p. 17).

Multi-effect, chorus, reverb, and equalizer (a total of four effects units) are also built-in, letting you apply effects to the internal sound generator. For details on the effects, refer to **"Using the effects of the internal sound generator"** (p. 38).

About the sound generator modes

The SD-90 has four sound generator modes: GM2, Native, GS, and XGlite.

GM2 mode further consists of four sound sets, and Native mode consists of six sound sets. For details on the Native sound sets, refer to **"GM2/Native mode sound sets"** (p. 18).

GM2 mode

This sound generator mode is compatible with the "GM2" sound generator format.

GM2 is "recommended practice," and it is backwardly compatible with GM. It was created in order to allow more sophisticated performance expression and greater compatibility. It includes detailed definitions concerning sound editing and the use of effects (things that weren't covered by the earlier GM format), and it also expands the sound set. GM2-compatible sound generators will correctly play back music data bearing either the GM or GM2 logos.

When it is necessary to make a distinction, this manual will sometimes refer to "GM1" to indicate the earlier GM format which does not include the extended specifications of GM2.

Native mode

This is the sound generator mode that allows you to take advantage of the SD-90's full potential.

It uses the same instrument files and sound sets as GM2 mode, and provides a greater number of editable parameters.

In addition, it provides two special sound sets that collect the most distinctive of the sounds of the SD-90.

GS mode

This sound generator mode supports the "GS" sound generator format promoted by Roland Corporation. In addition to the General MIDI functionality, this format expands the sound set, and also enhances compatibility by providing detailed specifications for functionality such as sound editing and effects (reverb and chorus). For flexibility in meeting future needs, it also provides for the addition of new sounds and expanded functionality. Since the GS format is compatible with GM, it allows GM scores to be played in the same way as GS music data (music data created in conformity with the GS format).

* It is not possible to edit GS mode sound generator parameters from the panel of the SD-90.

XGlite mode

XG is a sound generator format promoted by Yamaha Corporation, which is based on GM1 (General MIDI 1). It provides detailed specifications concerning expansion of the sound sets, editing methods, and effects structures and types.

XGlite is a reduced-functionality ("lite") version of XG, which allows simple playback of XG music data on a sound generator bearing the XGlite logo. Since XGlite has some limitations on the parameters and effects that can be controlled, the XG music data may sound different than the original data.

* It is not possible to edit XGlite mode sound generator parameters from the panel of the SD-90.

About GM2/Native modes

■ GM2/Native mode sound sets

The **sounds sets** of GM2 mode and Native mode are organized by their character into four or six **variations**.

Classical

This is the basic sound set that blends well into an ensemble. This set is also used when GM2 data compatibility is important.

Contemporary

This sound set emphasizes the realism of each individual instrument. It contains numerous sounds that use velocity switching for expressive dynamics.

Solo

This sound set contains mainly sounds that are designed to be distinctive when used to play solos. These sounds include spacious stereo-sampled sounds, as well as sounds that are switched by velocity.

Enhanced

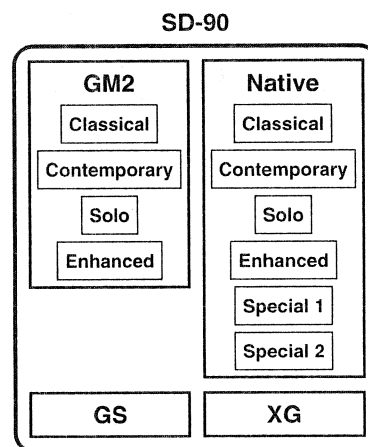
This sound set concentrates on sounds that are designed with multi-effects (MFX), such as distortion guitar and rotary organ. You can obtain an effect simply by selecting one of these sounds. The set also includes acoustic instruments with a clear upper register produced by equalization processing, and synth sounds based on multi-effects.

Up to three enhanced sounds can be used simultaneously. This set also contains some sounds that do not use MFX.

Special

This sound set can be used only in Native mode. It consists mainly of the best sounds of the SD-90 from the Enhanced set, and also includes highly original sounds not defined by GM2.

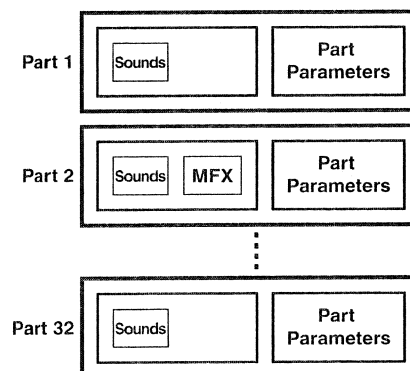
As with the Enhanced set, most sounds use multi-effects (MFX).



Parameters that can be used in GM2 mode

In GM2 mode it is not possible to edit the sounds themselves.

Multi-effects (MFX) and the sounds are always handled as a unit, and are always included in the Enhanced sound set. (In the example shown in the diagram at right, an Enhanced sound is selected for Part 2.)



About parts and sounds

The SD-90 is able to produce 32 different sounds at once. A sound generator such as the SD-90 that is able to produce many different sounds simultaneously is called a “**multitimbral sound module**.” “Timbre” refers to the unique characteristics that result in the sound of one instrument being different from that of another. The ability to simultaneously produce 32 different instrument sounds means that, using the analogy of an orchestra, you can produce an ensemble consisting of 32 different instrumental parts. On the SD-90, the sound produced by each part is called an Instrument (“**Instrument list (GM2 / Native mode)**” (p. 129)). You can assign a desired instrument to each of the 32 parts, creating a 32-part ensemble.

■ Different types of part

The SD-90 has 32 **parts**, which are divided into groups A and B. Each group is numbered from 01–16; i.e., A01–A16 and B01–B16.

Each part can be set either as an **Inst part** or a **Drum part**. Inst parts are used to play melody, bass, etc.

Drum parts are used to play percussion-type sounds. This setting is called the Part Mode.

By default, the following **part mode** is selected for each part.

Part mode	Corresponding parts
Inst part	A01–09, A11–16, B01–09, B11–16
Drum part	A10, B10

■ Polyphony and voices

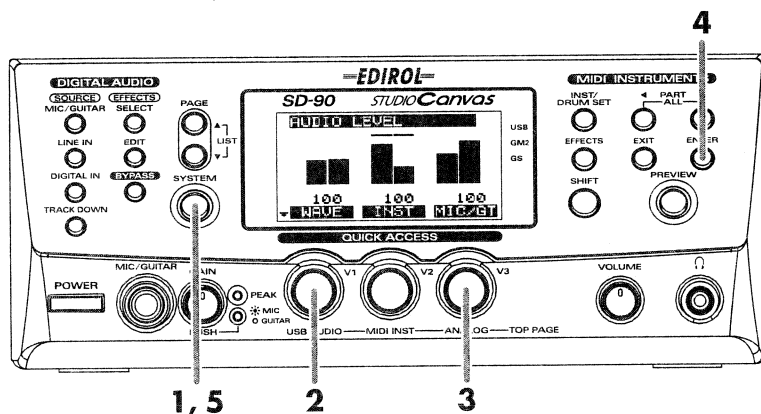
Each of the SD-90's sounds consist of units called “**voices**.” There is a limit to the number of voices that can be used, and the SD-90 is able to use 128 voices simultaneously. Some sounds (instruments) use more than one voice (“**Instrument list (GM2 / Native mode)**” (p. 129)). The main reason that an instrument uses some voices is so that velocity can be used to shift between different sounds, or so that multiple sounds can be layered to create a richer tone.

When you attempt to play more than **128** voices on the SD-90, the most-recently played note will be given priority, and the oldest of the currently-sounding notes will be turned off one by one. If you are using only instruments that consist of only one voice, you will be able to play 128 notes simultaneously.

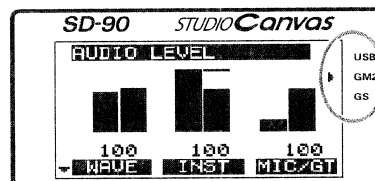
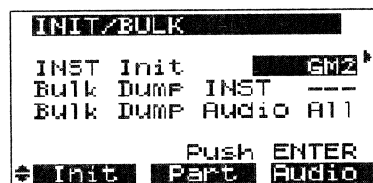
However, if you use instruments that consist of two or four voices, fewer than 128 notes can be played simultaneously. Even if a MIDI note-off message is received, a voice will continue to be used as long as that note continues to sound. You need to remain aware of this, particularly when using sounds that have a long release time.

Switching the sound generator mode

Here's how to switch the sound generator mode. The sound generator mode can be switched from the front panel, or by MIDI messages from an external device. Please be aware that the sound generator will be initialized when you switch the sound generator mode.

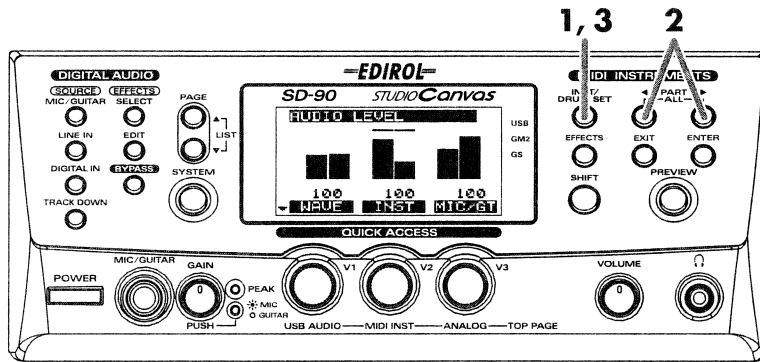


1. Press [SYSTEM].
2. Turn the [V1] knob so that the **INST Init** field is highlighted.
3. Turn the [V3] knob to select the desired sound generator mode (GM2, Native, GS, XGlite).
4. Press [ENTER]. You will switch to the sound generator mode you selected in **step 2**.
The current sound generator mode is indicated in the right side of the display. If none of the modes has a ► symbol displayed by it, **Native mode** is selected.
5. Press [SYSTEM] once again to return to the main screen.

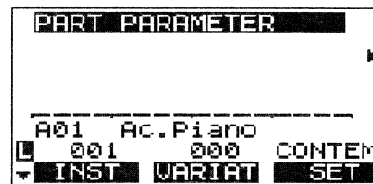


Selecting a part

Here's how to select the part that you want to edit.

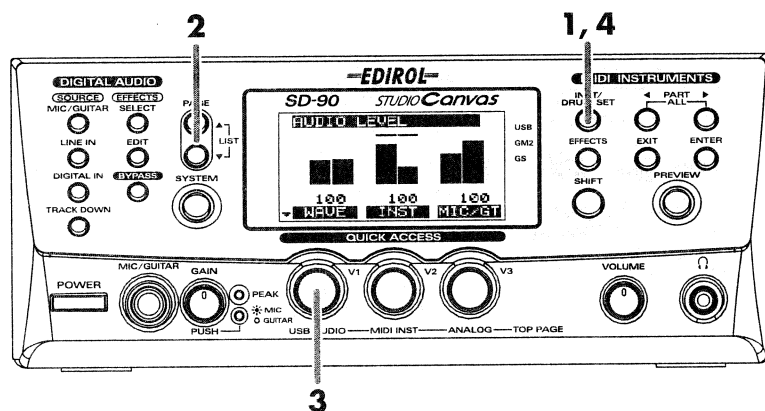


1. Press [INST/DRUM SET].
2. Press [PART◀] or [PART▶] to select the part to be edited. The number of the part currently being edited is indicated at the bottom of the display.
3. Press [INST/DRUM SET] once again to return to the main screen.



Selecting the type of part (INST/DRUM)

Here's how to select the type (Part Mode) for each part.



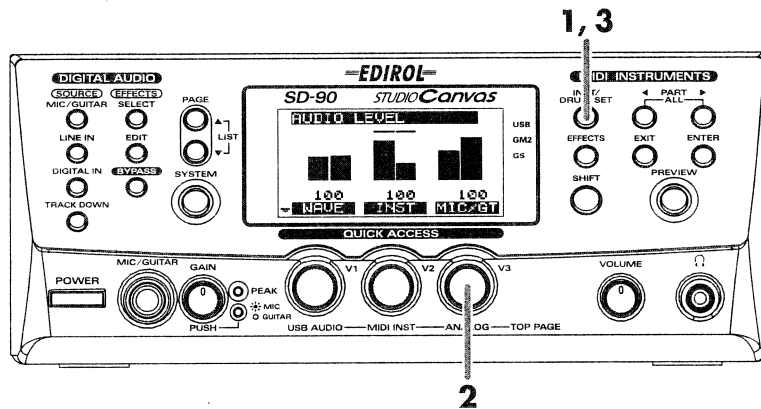
1. Press [INST/DRUM SET].
2. Press [PAGE ▼] once.
3. Turn the [V1] knob to select the desired part mode (INST or DRUM).
The part mode has now been selected.



4. Press [INST/DRUM SET] once again to return to the basic screen.

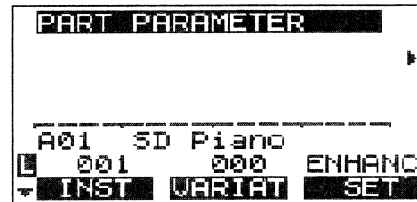
Selecting the sound set

In GM2 mode you can choose one of four different sound sets. In Native mode you can choose one of six different sound sets.



1. Press [INST/DRUM SET].
2. Turn the [V3] knob to select the desired sound set.

CLASIC:	Classical
CONTEM:	Contemporary
SOLO:	Solo
ENHANC:	Enhanced
SP 1:	Special 1 (Native mode only)
SP 2:	Special 2 (Native mode only)



The sound set has now been selected.

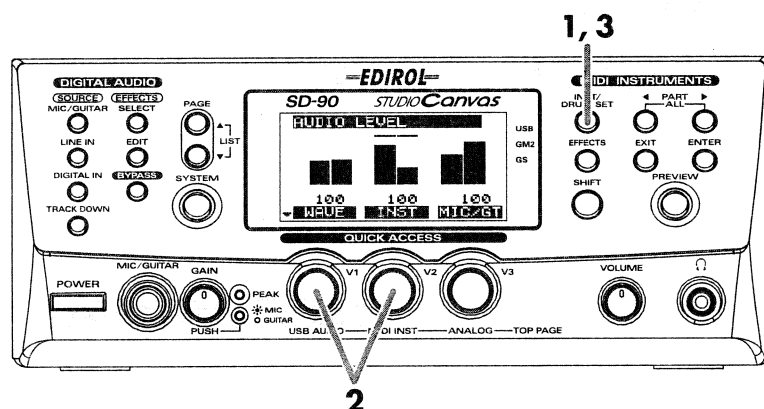
3. Press [INST/DRUM SET] once again to return to the main screen.

Selecting a sound

If the part type is Inst, use the following procedure to select a sound. First make sure that the part type is Inst. For details on how to set the part type to Inst, refer to "Selecting the type of part (INST/DRUM)" (p. 22).

On the SD-90, the sound of an Inst part is specified by two numbers: an **Instrument number** and a Variation number. There are 128 sounds whose **variation number** is 000, and these make up the basic sounds of the SD-90. These are referred to as "**capital sounds**."

By changing the MIDI bank number of these sounds, you can select variations that have a different tonal character. These are called "**variation sounds**." For details on the various sounds that can be selected, refer to "Instrument list (GM2 / Native mode)" (p. 129).



1. Press [INST/DRUM SET].
2. Turn the [V1] knob or [V2] knob to select the sound. The sound name (instrument) shown in the center of the display will change.
 - [V1]: Selects the capital sound. The **INST** (number) shown in the display will change simultaneously.
 - [V2]: Selects the variation sound. The **VAR** (number) shown in the display will change simultaneously.
3. Press [INST/DRUM SET] once again to return to the main screen.

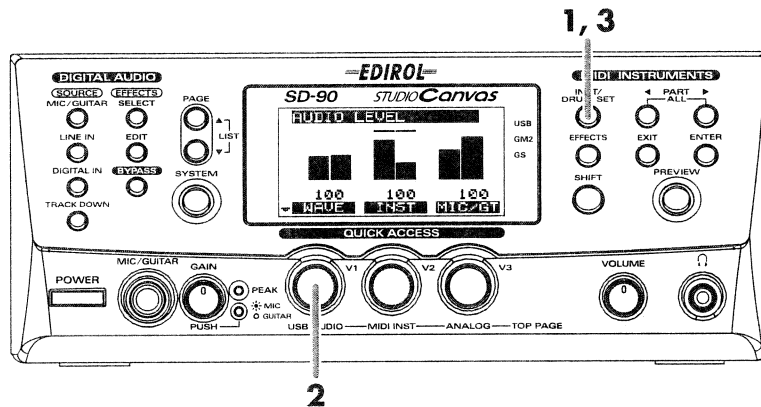


Selecting a drum set

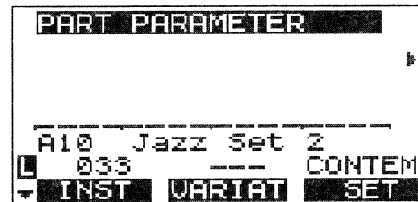
If the part type is Drum Set, use the following procedure to select a drum set. First make sure that the part type is Drum. For details on how to set the part type to Drum, refer to "Selecting the type of part (INST/DRUM)" (p. 22).

For details on the drum sets that are available, refer to "Instrument list (GM2 / Native mode)" (p. 129).

* Drum sets do not have variation sounds.



1. Press [INST/DRUM SET].
2. Turn the [V1] knob to select a drum set. The INST (number) in the display will change, and the drum set name shown in the center of the display will also change.
3. Press [INST/DRUM SET] once again to return to the basic screen.



Muting/soloing a part

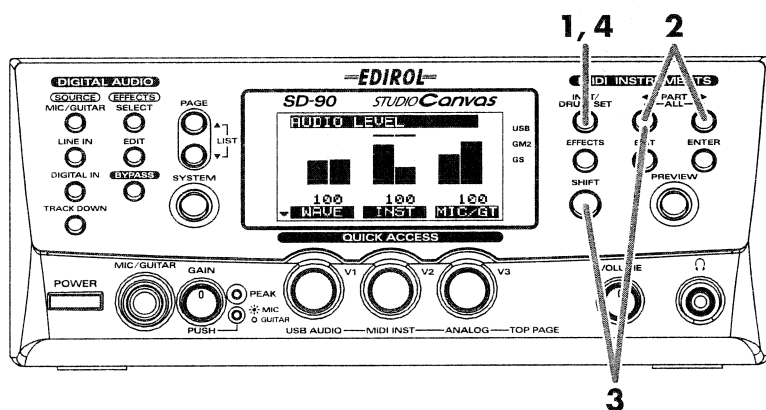
You can “**mute**” a specified part so that it will not sound. This is convenient when you want to play along to a backing provided by the SD-90 (“minus-one” playing).

Conversely, you can “**solo**” a specified part so that the remaining parts will be muted.

Here’s how to mute/solo a part.

- * Solo takes priority between solo and mute settings. This means that if you specify Solo for a part that was previously muted, Mute will be defeated for that part, and it will be set to Solo. Even if you subsequently cancel Solo, that part will not return to Mute. If you want to mute that part once again, use the procedure described in “Muting a part.”

■ Muting a part

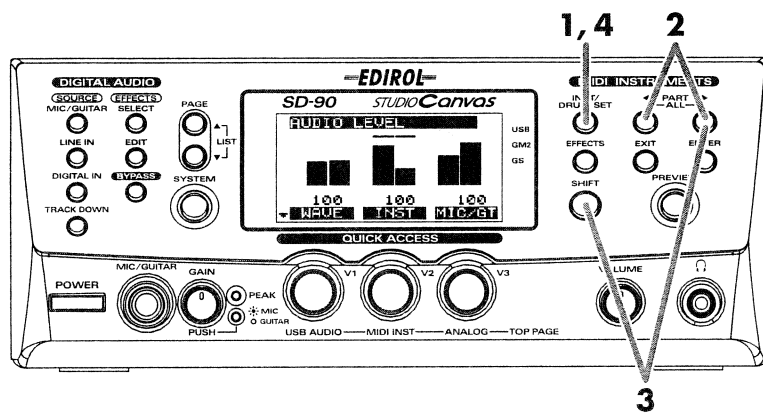


1. Press [INST/DRUM SET].
2. Press [PART <] or [PART >] to select the part that you want to mute.
3. When you hold down [SHIFT] and press [PART <], the part you selected in **step 2** will be muted. When you press [SHIFT]+[PART <] once again, muting will be defeated.
The bar graph of a muted part will be displayed as shown in the diagram at right.
4. Press [INST/DRUM SET] once again to return to the main screen.



■ Soloing a part

When multiple parts are sounding, you can cause only the currently selected part to sound, allowing you to check the performance of that part. This is referred to as “**soloing**” the part.



1. Press [INST/DRUM SET].
2. Press [PART<] or [PART>] to select the part that you want to solo.
3. Hold down [SHIFT] and press [PART>] to solo the part you selected in **step 2**. Solo will be defeated when you press [SHIFT]+[PART>] once again.
Parts other than the soloed part will not sound, nor will the bar graph be displayed.
4. Press [INST/DRUM SET] once again to return to the main screen.



About parameters

This section explains the parameters (items that you can set). **Parameters** are settings that determine how a sound is produced, and the process of modifying the values of the parameters is called "editing."

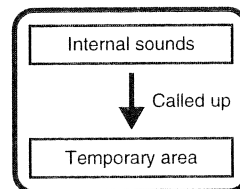
If you are using the SD-90 in **GM2 mode** or **Native mode**, some of the Part parameter values can be edited from the panel of the SD-90 itself. In other modes, parameter values cannot be edited from the panel of the SD-90. However, the parameters can be edited by using the editing functionality of your computer software or sequencer.

For details on how to edit the parameters, refer to the "**MIDI implementation**" (MIDIImple_E.pdf) on the included CD-ROM. The adjustable range of each parameter is printed in this manual as described in the comment column of the MIDI implementation.

Internal operation of parameters

When you select a sound, the sound data is loaded into a memory location called the "**temporary area**." The SD-90 produces sound based on the data in this temporary area.

When you edit a sound or drum set, you are temporarily modifying the settings of the data in the temporary area. **It is not possible for the edited sounds to be saved in the internal memory of the SD-90.** Your edits will be lost when you turn off the power. If you want to preserve the edited state, you can either make a note of the settings, or save them on an external MIDI device, such as a MIDI sequencer ("**Writing/loading SD-90 settings**" (p. 93)).



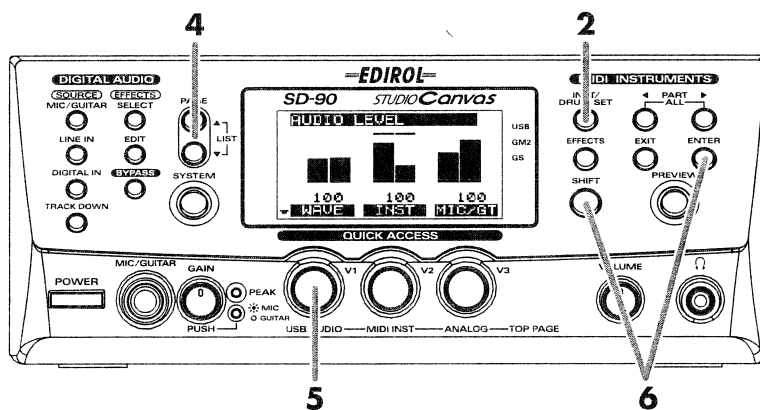
Editing the parameters

Parameters can be edited from the panel of the SD-90 only in **GM2 mode** and **Native mode**.

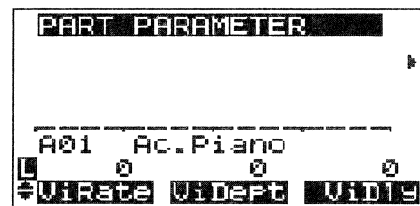
- * It is not possible to preserve the edited state of the audio mixer in the SD-90's internal memory. Your edits will be lost when the power is turned off. If you want to preserve the edited state, you can either make a note of the settings, or save them on an external MIDI device such as a MIDI sequencer ("Writing/loading SD-90 settings" (p. 93)).

■ Editing part parameters

You can change the way in which the sound selected for a part will be heard, to adjust the sound ideally for your performance. Part parameters include parameters that adjust the **volume**, **tonal character**, and **pitch**.



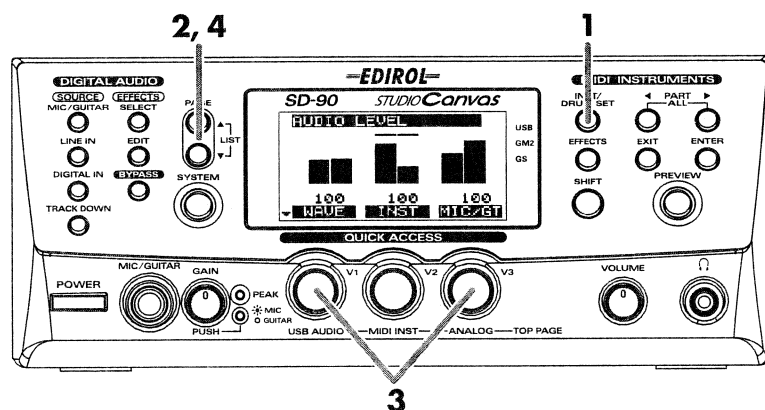
1. Make sure that the sound generator mode is set to either **GM2** or **Native**. If **GM2** or **Native** is not selected, refer to "Switching the sound generator mode" (p. 20).
2. Press [INST/DRUM SET].
3. Select the part and sound as described in the procedures for "Selecting a part" (p. 21) and "Selecting a sound" (p. 24).
4. After you have selected the part and sound, press [PAGE ▲] or [PAGE ▼] to access the parameter that you want to edit.
5. Turn the [V1]–[V3] knobs.
The value of the parameter you selected in step 4 will change.
6. If you want to keep the results of your editing, hold down [SHIFT] and press [ENTER] after step 5. The current setting will be transmitted from MIDI OUT.



- * If you want to transmit the state of the sound generator to an external MIDI device all at once, use Bulk Dump. For details on Bulk Dump, refer to "Transmitting a bulk dump" (p. 93).

■ Editing in the list display

Part parameters can also be edited in a list display. This is convenient when you want to edit a larger number of parameters at once.



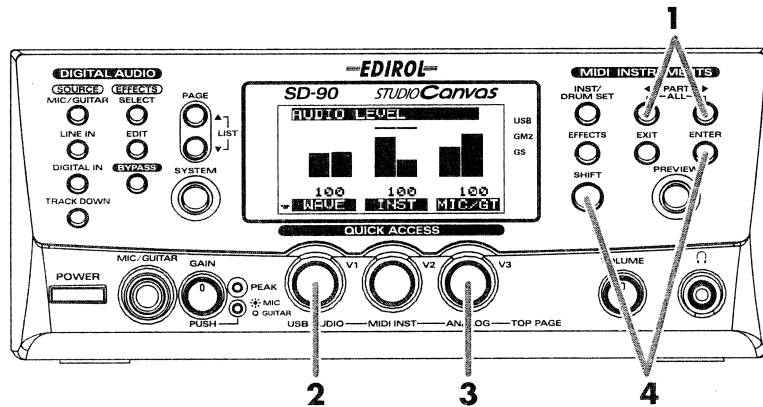
1. Press [INST/DRUM SET].
2. Simultaneously press [PAGE ▲] and [PAGE ▼]. The parameters will be displayed in a list.
3. In this state, you can turn the [V1] knob to select the parameters that you want to edit. When you turn the [V3] knob, the value of the selected parameter (highlighted) will change.

PART PARAMETER	
A01	Ac.Piano
Instrument	001
Bank	000
Set	CONTEMPORARY
INST/DRUM	INST
Volume	100
CURSOR	1/6
	VALUE

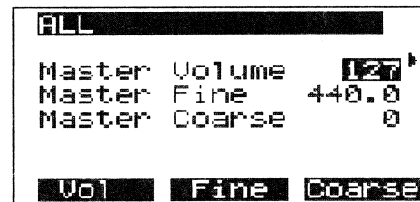
4. Once again press [PAGE ▲] and [PAGE ▼] simultaneously to return to the icon display.

■ Editing parameters that are common to all parts

Here's an example of how to edit parameters that are common to all parts.



1. Simultaneously press **[PART <]** and **[PART >]**. A screen will appear in which you can edit parameters for all parts.
2. Turn the **[V1]** knob to select the parameter that you want to edit (e.g., **Master Volume**).
3. Turn the **[V3]** knob to adjust the value of the parameter you selected in **step 2**.
4. If you want to keep the results of your edit, hold down **[SHIFT]** and press **[ENTER]** after **step 3**. The current setting will be transmitted from the USB connector ("USB mode" (p. 71)) or the MIDI OUT connector ("MIDI mode" (p. 71)).



About parameters that can be edited from the SD-90's panel

The following parameters can be edited from the panel in GM2 mode or Native mode.

Parameter name	Parameter name
INST/DRUM SET	Modulation Depth
Channel Volume	Pan
Portamento SW	Portamento Time
Filter Resonance	Brightness
Release Time	Attack Time
Decay Time	Vibrato Rate
Vibrato Depth	Vibrato Delay
Reverb Send Level	Chorus Send Level
Pitch Bend Sensitivity	Fine Tune
Coarse Tune	Mono/Poly Mode
Scale/Octave Tuning Adjust	RX Channel
Legato SW	Part Velocity Sens Offset
Part Keyboard Fade Width Lower	Part Keyboard Range Lower
Part Keyboard Range Upper	Part Keyboard Fade Width Upper
Part Dry Send Level	Part Output MFXSelect
Part Output Assign	Master Volume
Master Fine Tuning	Master Coarse Tuning

On the SD-90, parameter values are specified for the Part. In other words, these parameters belong to the part, and not to the sound (instrument). For example, if you set Vibrato Rate to +20 and then select a different sound for that part, the Vibrato Rate of the newly selected sound will stay at +20, and will not be the default setting of +/-0. Parts that belong to the Part in this way are called "**part parameters**."

■ Part parameters (GM2 mode, Native mode)

INST/DRUM SET

INST, DRUM

The part mode can be switched between Inst and Drum Set.

Select INST for parts that will play conventional instrumental sounds (Inst parts). Select DRUM for parts that will play percussion or drum sounds (Drum parts). For a drum part, each different MIDI note number will play a different sound (instrument), allowing you to play a variety of percussion instrument sounds from a single part ("**Drum set list (GM2 / Native mode)**" (p. 139)).

Each part 1–16 can be set either as an Inst part (to play a conventional sound), or a Drum part (to play a drum set).

Modulation Depth [cc#1]

0–127

Specifies the depth of vibrato.

Volume [cc#7]

0–100–127

Adjusts the volume of each part. Increasing this value will make the sound louder. The overall volume of the entire SD-90 is adjusted by the [VOLUME] knob. If the [VOLUME] knob is set to the minimum position, there will be no sound even if you raise this level parameter.

Pan [cc#10]

L64–0–63R

Adjusts the pan (localization of the sound image; effective when stereo output is used) of the part.

- * For some sounds, a small amount of sound may be heard from the opposite speaker even if this parameter is set to far right or far left.
- * In a drum set, the pan setting of each individual percussion sound is fixed. When you edit the pan setting of a drum part, the overall panning of the entire drum set will change.

Portamento SW [cc#65] ON/OFF, (PATCH : Native mode only)

Turn this ON when you want to use portamento.

Portamento Time [cc#5] 0–127, (PATCH : Native mode only)

Adjusts the time over which the next pitch will be reached.

Portamento is a function that changes the pitch smoothly from one note to the next.

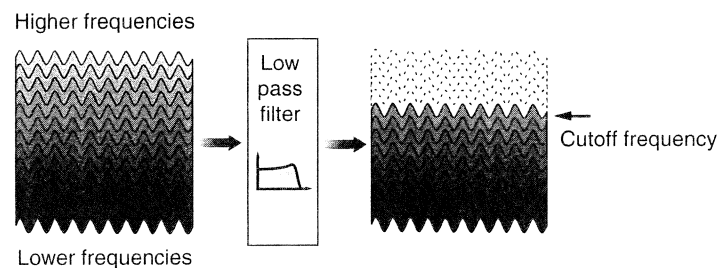
Portamento will be switched on/off when a Portamento message is received. Portamento Time specifies the speed of the pitch change. A Portamento Control message can be received to specify the “source note number” (the previously played note).

- * When you apply portamento by playing a note that is below the currently played note, the range of the effect may be limited (approximately two octaves).

Filter

You can adjust the tonal character of the sound by editing the filter values. The filters of the SD-90 are a type called Low Pass Filters, which pass the region of sound that lies below a specified frequency. This frequency is called the Cutoff Frequency. By adjusting the cutoff frequency, you can make the sound brighter or darker.

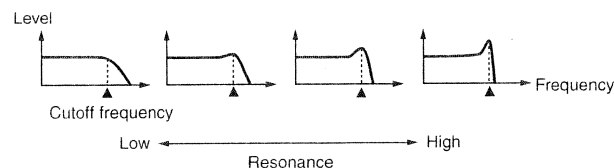
The cutoff frequency will also change over time according to an envelope. By adjusting the filter and envelope, you can create sounds that have movement and expression.

**TVF Resonance [cc#71]**

-64–0–+63

Increasing the resonance value will emphasize the harmonics in the region of the cutoff frequency, giving a distinctive character to the sound.

- * For some sounds, negative (-) settings of Resonance will not produce any audible difference.

**TVF Cutoff Freq (TVF Cutoff Frequency) [cc#74]**

-64–0–+63

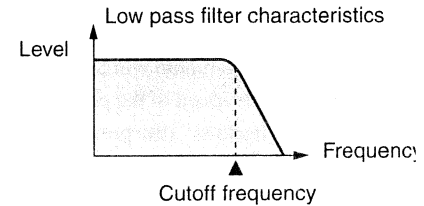
Sets the cutoff frequency of the filter.

Positive (+) settings for the Brightness parameter will raise the cutoff frequency. Negative (-) settings will lower the cutoff frequency. Increasing this value in the positive direction will pass more of the high-frequency component, making the sound brighter (harder). Increasing this value in the negative direction will cut more of the high-frequency component, making the sound more mellow (darker).

- * For some sounds, positive (+) settings of TVF Cutoff Freq will not produce any audible difference.

Envelope

The sound of a musical instrument changes over time from the moment the note begins until it ends. Such change can be expressed by the graph shown below. The shape of this change is distinctive of that particular instrument, and is an important factor that allows us to recognize the type of instrument. This shape is called the “**envelope**.”

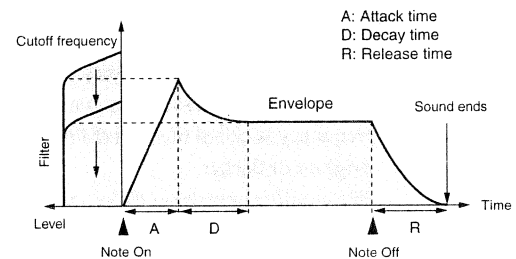


The envelope of a musical instrument sound will change depending on how the instrument is played. For example, when a trumpet is blown strongly, the sound will have a sharp and rapid attack, but when blown gently, the attack will be softer.

To adjust the sharpness of the attack, you can edit the **Attack Time** of the envelope. By adjusting the envelope parameters in this way, you can express a wide variety of the characteristics of an instrument.

The shape of the envelope that you specify in this way will also affect the movement of the **cutoff frequency**.

If the cutoff frequency is lowered, it will rise as the envelope rises and fall as the envelope falls.



TVF&TVA Release [cc#72]

-64-0-+63

This adjusts the time from when you release the key (note-off message) until the sound decays to silence. The cutoff frequency will also fall accordingly.

TVF&TVA Attack [cc#73]

-64-0-+63

This adjusts the sharpness with which the note begins.

TVF&TVA Decay [cc#75]

-64-0-+63

This adjusts the time from when the attack has been completed until the sustain level is reached (figure 1).

- * For some sounds, the sustain level is 0 (figure 2). For example, this is the case for piano or guitar-type sounds.
- * For some sounds, adjusting the various envelope times may not make any audible difference.

figure 1

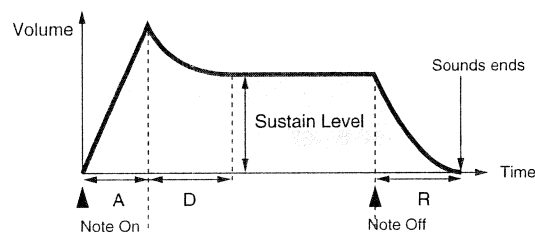
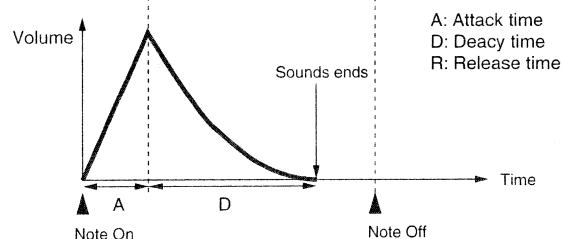
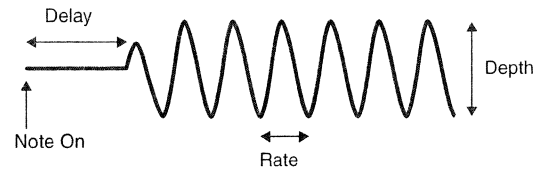


figure 2



Vibrato

Vibrato is an effect that cyclically modulates the pitch. By applying vibrato, you can make your performance more expressive.



Vibrato Rate [cc#76]

-64-0-+63

This adjusts the speed (frequency) at which the pitch is modulated. Positive (+) settings will speed up the modulation, and negative (-) settings will slow down the modulation.

Vibrato Depth [cc#77]

-64-0-+63

This adjusts the depth at which the pitch is modulated. Positive (+) settings will increase the depth of pitch modulation, and negative (-) settings will decrease the depth.

Vibrato Delay [cc#78]

-64-0-+63

This adjusts the time to pass before vibrato begins. Positive (+) settings will lengthen the time before vibrato begins, and negative (-) settings will shorten the time.

Reverb Send Level [cc#91]

0-40-127

This sets the depth of reverb for the part.

Chorus Send Level [cc#93]

0-127

This sets the depth of chorus for the part.

PitchBendSens (Pitch Bend Sensitivity) 0- +/-2-+/-24, (PATCH : Native mode only))

This specifies the maximum change in pitch that can be controlled by pitch bend. A setting of 12 allows one octave of change, and a setting of 24 allows two octaves of change. With a setting of 0, pitch bend will not affect the pitch at all.

Fine Tune (Channel Fine Tuning)

-50-0-+50

Use this when you want to make fine adjustments to the pitch of an individual part. Positive (+) settings will raise the pitch, and negative (-) settings will lower the pitch. By setting two or more parts to the same MIDI channel and instrument, and using Fine Tune to slightly spread apart the pitch of each part, you can play these parts together to create rich and spacious sounds.

* To adjust the pitch of all parts together, edit the **Master Fine Tune setting** (p. 37).

Coarse Tune (Channel Coarse Tuning)

-64-0-+63

The Channel Coarse Tuning parameter transposes (shifts the key of) an individual part.

“Transpose” means to change the pitch in steps of a semitone. For example, when playing song data from your sequencer software, you can make the song play in another key without changing the settings of your software. Or if you want to sing along with the song data playback but the pitch is too high or too low, you can edit this parameter to transpose the pitch to a comfortable range.

Each step up (down) will raise (lower) the pitch by one semitone. This means that a setting of 12 will transpose the pitch one octave. With a setting of 0, the pitch will not be changed.

* To transpose all parts together, use **Master Coarse Tuning** (p. 37).

Mono/Poly (Mono/Poly mode) [cc#126/127] Poly, Mono, (PATCH : Native mode only)

If this is set to Mono mode, the instrument of that part will play only one note at a time. Using Mono mode is effective for parts that play naturally monophonic instruments such as trumpet or sax. Select Poly mode for parts that will be playing chords.

* For a drum part, switching between mono/poly modes will not affect the sound.

Scale/Octave Tuning Adjust**-64-0+63**

Scale Tuning is a function that lets you make fine adjustments to the pitch of each note in the octave. You can make one octave of settings, and these settings will adjust the pitch of all octaves in the same way. Scale Tune allows you to play scales other than the conventional equal tempered scale.

■ Part parameters (Native mode)

In addition to the Part parameters described in the preceding pages, Native mode also allows you to adjust the following parameters.

Rx CH (Receive channel)**1-16, OFF**

This specifies the MIDI channel that is assigned to the part. If this is turned OFF for a part, all MIDI messages other than system exclusive messages will be ignored by that part, meaning that it will not sound.

Legato SW [CC#68]**ON/OFF, (PATCH : Native mode only)**

Turn this ON when you want to use legato, and OFF if you do not. Legato is a function that is valid when MONO mode is selected for the part. If Legato is ON, pressing a note while the previous note is still held down will cause the sound to be maintained while it shifts to the pitch of the newly pressed note. This lets you simulate performance techniques such as the "hammering-on" and "pulling-off" used by guitarists.

Part Velocity Sens Offset (Part Velocity Sensitivity Offset)**-63-0+63**

This adjusts the degree to which playing dynamics will affect the volume and cutoff frequency.

Part Keyboard Fade Width Lower**0-127**

This specifies how the volume will change when you play notes that are outside the lower limit of the part's key range. With higher settings of this parameter, the volume will decrease gradually. If you want there to be no sound at all when you play below the specified key range, set this to 0.

Part Keyboard Range Lower**C-1-UPPER**

Specifies the lowest note of the keyboard range for the part.

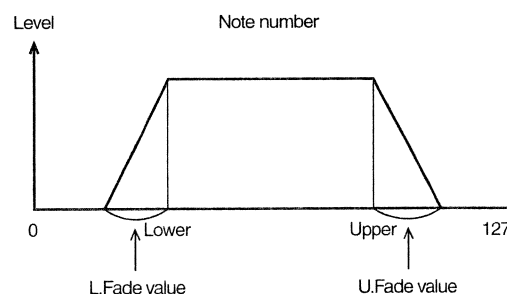
Part Keyboard Range Upper**LOWER-G9**

Specifies the highest note of the keyboard range for the part.

Part Keyboard Fade Width Upper**0-127**

This specifies how the volume will change when you play notes that are outside the upper limit of the part's key range. With higher settings of this parameter, the volume will decrease gradually. If you want there to be no sound at all when you play above the specified key range, set this to 0.

* It is not possible to set the Lower Range above the Upper Range, nor the Upper Range below the Lower. If you attempt to do so, the Lower and Upper values will change together.

**PART OUTPUT ASSIGN****MFx, A, PATCH**

This specifies where the output signal of the part will be sent.

MFx: Output to MFx.

A: Output the unprocessed sound without using MFx.

PATCH: The settings of the patch (instrument) will be applied. If the patch is set to use **MFx**, the sound will be sent to MFx. If not, the **DRY** sound will be output.

PART OUTPUT MFX SELECT

MFX-A, MFX-B, MFX-C

If **MFX** is selected for **Part Output Assign**, select one of the three MFX units to which the sound will be sent.

PART DRY SEND LEVEL

0–127

This specifies the level of the output to the output destination you've selected for **Part Output Assign**.

■ Parameters common to all parts (GM2 mode, Native mode)

The following parameters common to all parts can be edited from the panel of the SD-90.

Master Volume

0–127

Adjusts the volume of all parts. Increasing this value will increase the volume.

The basic overall volume of the SD-90 is adjusted with the [VOLUME] knob. If the [VOLUME] knob is set to the minimum position, there will be no sound even if you use this parameter to raise the volume.

Master Fine Tuning415.3–**440.0**–466.2 Hz

When you are playing in an ensemble with other instruments, or want to adjust the SD-90 to the tuning of another instrument, you can adjust the Master Tuning in a range from 415.3 Hz to 466.2 Hz. The displayed value (for example 440.0 Hz) is the frequency of the A4 note (note number 69).

Master Coarse Tuning-24–**0**–+24

This parameter transposes the pitch of all parts in semitone steps. For example, when using your sequencer software to play song data, this parameter can be adjusted to change the key without having to change the settings of your software. As another example, you can adjust this parameter to transpose the pitch to a comfortable range when you want to sing along with song data that is too high or too low for your voice.

Increasing (decreasing) this value by one will raise (lower) the pitch by one semitone. Thus, a setting of 12 will change the pitch by one octave. With a setting of 0, the pitch will not be transposed. This parameter lets you adjust the pitch in semitone steps over a range of +/-2 octaves.

* The pitch of drum parts will not change even if you adjust the Master Coarse Tuning to transpose all parts.

Using the effects of the internal sound generator

About the sound generator effects

The SD-90 contains the following four effects processors, and each can be set independently.

Chorus

Chorus is an effect that adds depth and spaciousness to the sound.

Reverb

Reverb is an effect that adds the reverberation typically heard in a concert hall.

Equalizer

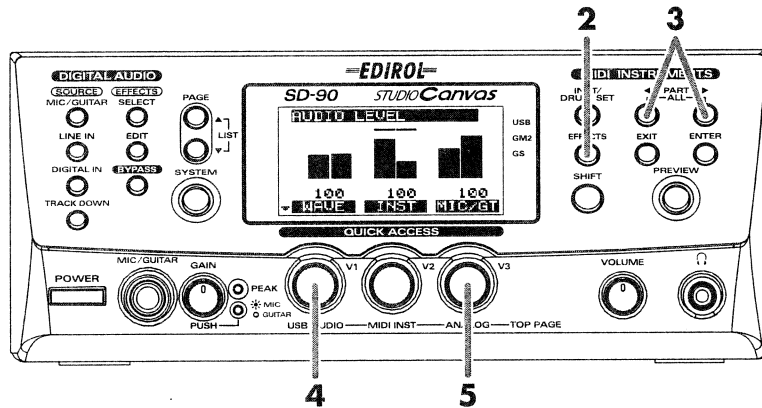
This is an effect that boosts or cuts the level of specific frequency bands of the sound, modifying its tonal character.

Multi-effect

Multi-effect provides 90 different effect types. These include single effects such as distortion and delay, as well as multiple types that combine two or more effects. Chorus and reverb are additionally provided as multi-effect effect types, but you can also use the separate chorus and reverb units to apply these effects. On the SD-90, you can use three of these multi-effects independently.

Editing the sound generator effects

You can edit the sound generator effects when the sound generator mode is either GM2 mode or Native mode.



1. Switch the sound generator to GM2 mode (or Native mode). For details on switching the sound generator mode, refer to "Switching the sound generator mode" (p. 20).
2. Press [EFFECT]. The sound generator Effect Edit screen will appear.
3. Press [PART <] or [PART >] to access either the **Reverb**, **Chorus**, or **MFx** page.

Example screen	Example screen
<pre> MIDI EFFECT > Chorus Level 127 OutSel MAIN Source MULTI CURSOR 1/5 VALUE </pre>	<pre> MIDI EFFECT CHORUS> TYPE 1 CHORUS Rate 0.50Hz Depth 20 Fbk 0 Phase 180° Pre Dly 1.0ms CURSOR 1/2 VALUE </pre>
<pre> <MIDI EFFECT REVERB> TYPE 3 SRV HALL Pre Delay 1.0ms Time 64 Size 8 High Cut 12.5kHz Density 127 CURSOR 1/2 VALUE </pre>	<pre> <MIDI EFFECT MFX A > TYPE 01 Stereo EQ LowFreq 200Hz Mid1Freq 1000Hz Mid2Freq 8000Hz HighFreq 4000Hz CURSOR 1/3 VALUE </pre>

* **MFx** cannot be selected if the sound generator mode is **GM2 mode**.

4. Turn the [V1] knob to select the parameter that you want to edit (it will be highlighted).
5. Turn the [V3] knob to modify the value of the parameter you selected in **step 4**. This completes the steps needed to edit an effect parameter.

Parameters that can be edited in GM2 mode

The sound generator effect parameters that can be edited using the SD-90's controls will differ depending on the sound generator mode (GM2 or Native). In the SD-90's GM2 mode, you can edit the **reverb** and **chorus** parameters. The following parameters can be edited.

■ Reverb (System Effect)

This includes parameters that specify the type of reverb, how the reverb sound will be heard, and how it will be output.

Reverb Type

Selection for the type of reverb.

Type	Explanation
Small Room	This reverb simulates the reverberation of a room. It produces a crisp and spacious reverb.
Medium Room	
Large Room	
Medium Hall	This reverb simulates the reverberation of a hall. It produces a deeper sensation than Room.
Large Hall	
Plate	This simulates a plate echo (a reverb unit that uses the vibration of a metal plate).

Reverb Time 0–127

Specifies the duration of the reverb. Higher settings will produce a longer reverb time. The default setting will depend on the Reverb Type setting.

Type	Default setting	Reverberation time (seconds)
Small Room	44	1.1
Medium Room	50	1.3
Large Room	56	1.5
Medium Hall	64	1.8
Large Hall	64	1.8
Plate	50	1.3

■ Chorus (System Effect)

Chorus Type

Selection for the type of chorus. The default setting of each parameter will depend on the Chorus Type.

Type	Explanation
Chorus 1	A conventional chorus effect that adds spaciousness and depth to the sound.
Chorus 2	
Chorus 3	
Chorus 4	
FB Chorus	A chorus with a flanger-like character, producing a fresh sound.
Flanger	Produces a sound reminiscent of a jet airplane taking off and landing.

Type	Feedback	Mod Rate	Mod Depth	Rev Send
Chorus 1	0 (0%)	3 (0.4 Hz)	5 (1.9 ms)	0 (0%)
Chorus 2	5 (4%)	9 (1.1 Hz)	19 (6.3 ms)	0 (0%)
Chorus 3	8 (6%)	3 (0.4 Hz)	19 (6.3 ms)	0 (0%)
Chorus 4	16 (12%)	9 (1.1 Hz)	16 (5.3 ms)	0 (0%)
FB Chorus	64 (49%)	2 (0.2 Hz)	24 (7.8 ms)	0 (0%)
Flanger	112 (86%)	1 (0.1 Hz)	5 (1.9 ms)	0 (0%)

Mod Rate (Modulation Rate)

0–127

Specifies the speed (frequency) at which the chorus sound will be modulated. Higher settings produce faster modulation.

Mod Depth (Modulation Depth)

0–127

Specifies the depth of modulation for the chorus sound. Higher settings will produce deeper modulation.

Feedback

0–127

Specifies the level of the chorus sound that will be re-input to the chorus (i.e., the amount of feedback). Feedback lets you produce a denser chorus sound. Increasing this value will raise the feedback level.

Send to Reverb

0–127

Specifies the amount of chorus sound that will be sent to reverb. Higher settings will increase the amount that is sent to reverb.

■ EQ (Equalizer)

You can make equalizer settings for the output of the sound generator section.

EQL: Left channel (Lch)

EQR: Right channel (Rch)

EQ Switch

Off, On

Switches the equalizer on/off.

EQ1 Low Frequency

200/400 Hz

EQ2 Low Frequency

200/400 Hz

Specify the frequency at which the low range will be adjusted.

EQ1 Low Gain

-15→+15

EQ2 Low Gain

-15→+15

Specify the gain (amount of boost or cut) of the low range. Increasing this setting in the positive direction will emphasize the low range.

EQ1 High Frequency

2000/4000/8000 Hz

EQ2 High Frequency

2000/4000/8000 Hz

Specify the frequency at which the high range will be adjusted.

EQ1 High Gain

-15→+15 dB

EQ2 High Gain

-15→+15 dB

Specify the gain (amount of boost or cut) of the high range. Increasing this setting in the positive direction will emphasize the high range.

Parameters that can be edited in Native mode

The sound generator effect parameters that can be edited using the front panel of the SD-90 will differ depending on the sound generator mode (GM2 or Native mode). In the SD-90's Native mode, you can edit the parameters of the two system effects and three MFX (multi-effects). The following parameters can be edited.

■ Reverb (System Effect)

This includes parameters that specify the type of reverb, how the reverb will be sounded, and how it will be output.

Reverb Type

Selection for the type of reverb. The parameters that can be edited will depend on the Reverb Type.

Type	Explanation
0 (OFF)	Reverb will not be used.
1 (Reverb)	Basic reverb.
2 (SRV Room)	Reverb that simulates the reverberation of a room in greater detail.
3 (SRV Hall)	Reverb that simulates the reverberation of a hall in greater detail.
4 (SRV Plate)	Reverb that simulates a plate echo (a reverb device that uses a metal plate).
5 (GM2)	This is the same as GM2 reverb.

Reverb Level

0–127

Specifies the output level of the signal that has passed through the reverb.

Reverb Source

COMMON, PART 1–32

Specifies the output level of the signal that has passed through the reverb.

When Reverb Type is set to 1 (Reverb)

The following parameters can be edited when **Reverb Type** is set to 1 (Reverb).

Type (Reverb/Delay Type)

Specifies the type of reverb (or delay).

Value	Explanation
ROOM 1	Reverb with short duration and high density
ROOM 2	Reverb with short duration and low density
STAGE 1	Reverb with a greater amount of subsequent reverberation
STAGE 2	Reverb with strong early reflections
HALL 1	Reverb with a transparent character
HALL 2	Rich reverb
DELAY	Conventional delay
PAN-DELAY	Delay with reflections that pan (move) between left and right

Time (Reverb/Delay Time)

0–127

When the Type is ROOM 1–HALL 2 this adjusts the duration of the reverb. When the Type is DELAY or PAN-DELAY, this specifies the delay time. Increasing this value will produce a more spacious feeling.

HF Damp (Reverb/Delay HF Damp)

Specifies the frequency above which the high-frequency component of the reverb sound will be cut. Lowering this value will cause a greater portion of the high-frequency range to be cut, producing a softer-toned reverb sound. If no cutting is desired, set this to BYPASS.

Values: 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

Feedback (Delay Feedback)

0–127

When the Type is DELAY or PAN-DELAY, this specifies the amount of delay sound that will be returned (fed back) to the input of the delay. Raising this value will cause the delay to continue repeating for a greater number of times.

When Reverb Type is 2 (Room), 3 (SRV Hall), or 4 (SRV Plate)**Pre Delay (Pre Delay Time)**

0.0–100 ms

Specifies the amount of time that is to pass after the original sound is heard before the reverb begins to sound.

Time (Reverb Time)

0–127

Specifies the length of time over which the reverb sound will decay.

Size

1–8

Adjusts the size of the room/hall. Higher settings will simulate a larger space.

High Cut (High Cut Frequency)

Specifies the frequency above which the high-frequency component of the final output sound will be cut. If no cutting is desired, set this to **BYPASS**.

Range: 160, 200, 250, 320, 400, 500, 640, 800, 1000, 1250, 1600, 2000, 2500, 3200, 4000, 5000, 6400, 8000, 10000, 12500 Hz, BYPASS

Density (Reverb Density)

0–127

Adjusts the density of the reverb sound. Higher settings will produce a denser sound.

Diffusion (Reverb Diffusion)

0–127

Adjusts the way in which the density of the reverb sound will change over time. With higher settings of this parameter, the sound will become denser as time passes. The effect of this parameter is easy to notice with longer Reverb Time settings.

LF Damp Freq (LF Damp Frequency)

Specifies the frequency below which the low-frequency component of the reverb sound will be cut.

Range: 50, 64, 80, 100, 125, 160, 200, 250, 320, 400, 500, 640, 800, 1000, 1250, 1600, 2000, 2500, 3200, 4000 Hz

LF Damp Gain:

-36–0 dB

Adjusts the amount of attenuation for LF Damp. With a setting of “0,” LF Damp will have no effect.

HF Damp Freq (HF Damp Frequency)

Specifies the frequency above which the high-frequency component of the reverb sound will be cut.

Range: 4000, 5000, 6400, 8000, 10000, 12500 Hz

HF Damp Gain

-36–0 dB

Adjusts the amount of attenuation for HF Damp. With a setting of “0,” HF Damp will have no effect.

■ Chorus (System Effect)

On the SD-90, the chorus section can also be used as a delay.

Here you can edit parameters that select either chorus or delay, and specify how the chorus/delay sound will be heard and output.

Chorus Type

Selection for the type of chorus (or delay).

Value	Explanation
0 (Off)	Chorus/delay will not be used.
1 (Chorus)	Chorus will be used.
2 (Delay)	Delay will be used.
3 (GM2)	This is the same as GM2 reverb.

Chorus Output Select

MAIN, REV, MAIN+REV

Specifies the output destination of the signal that has passed through chorus.

MAIN:	Output the signal to the OUTPUT of the MIDI sound generator block.	
REV:	Output the signal only to reverb.	
MAIN+REV:	Output the signal to the OUTPUT of the MIDI sound generator block, as well as to reverb.	

Chorus Level

0–127

Specifies the output level of the signal that has passed through the chorus.

Chorus Parameter 1-12

Edit the chorus parameters.

The parameters that can be edited will depend on the type of chorus/delay you specified for **Chorus Type**.

Chorus Source

COMMON, PART 1–32

Specifies the output level of the signal that has passed through the chorus.

When Chorus Type is 1 (CHORUS)

Rate (Chorus Rate)

0.05–10.00 Hz

Specifies the frequency at which the chorus sound will be modulated.

Depth (Chorus Depth)

0–127

Specifies the depth to which the chorus sound will be modulated.

Feedback (Chorus Feedback)

0–127

Specifies the amount of chorused sound that will be returned (fed back) to the input of the chorus. Increasing this value will produce a more complex chorus effect.

Phase

0–180 degrees

Specifies the spaciousness of the chorus sound.

Pre Delay (Chorus Pre Delay)

0.0–100 ms

Specifies the amount of time that is to pass after the original sound has been heard before the chorus sound is heard. Increasing this value heightens the dispersal effect.

Type (Filter Type)

Specifies the type of filter.

Value	Explanation
OFF	The filter will not be used.
LPF	The frequency band above the cutoff frequency setting will be cut.
HPF	The frequency band below the cutoff frequency setting will be cut.

Cutoff freq (Cutoff Frequency)

Specifies the frequency at which the filter will begin cutting the specified frequency band.

Range: 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

When the Chorus Type is 2 (DELAY)**Center (Delay Center)**

200–1000 ms, note value

Specifies the delay time for the delay sound panned to the center.

Left (Delay Left)

200–1000 ms, note value

Specifies the delay time for the delay sound panned to the left.

Right (Delay Right)

200–1000 ms, note value

Specifies the delay time for the delay sound panned to the right.

HF Damp

Specifies the frequency at which the high-frequency portion will be cut for the delay sound that is returned to the input. If you do not want to cut this sound, select BYPASS.

Range: 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

Feedback

-98–+98%

Specifies the amount of feedback. Changing the amount of feedback will change the number of times that the delay will repeat. Negative (-) settings will invert the phase of the feedback sound.

Center (Delay Center Level)

0–127

Specifies the level of the delay sound localized at the center.

Left (Delay Left Level)

0–127

Specifies the level of the delay sound localized at the left.

Right (Delay Right Level)

0–127

Specifies the level of the delay sound localized at the right.

■ MFX (Multi-effects)

This section explains how to select a multi-effect, and to edit the parameters that determine how the multi-effect sound is produced and output.

MFX A-C Type (Multi-effect A-C Type)

0–90

Provides for selection among the 90 types of multi-effect. For details on the various effects that are available, refer to MFX_E.pdf on the included CD-ROM.

MFX A-C Dry Send Level (Multi-effect A-C Dry Send Level)

0–127

Specifies the level at which the signal processed by the multi-effect will be output.

MFX A-C Chorus Send Level (Multi-effect A-C Chorus Send Level)

0–127

Specifies the level at which the signal processed by the multi-effect will be sent to the Chorus effect.

MFX A-C Reverb Send Level (Multi-effect A–C Reverb Send Level) 0–127

Specifies the level at which the signal processed by the multi-effect will be sent to the Reverb effect.

MFX A-C Control 1-4 Source (MFX A–C Control 1–4 Source)

Specifies the control source that will modify the multi-effect parameter, and the sensitivity of the control.

Value	Explanation
OFF	A controller will not be used.
CC01–95	Controller number 1–95 (except for 32)
PITCH BEND	Pitch bend
AFTERTOUCH	Aftertouch
SYS-CTRL 1–4	System control 1–4

MFX A-C Control 1-4 Sens (MFX A–C Control 1–4 Sensitivity) -63–+63

Set this to a positive (+) value if you want to apply changes to the present value in the positive direction (higher value, toward the right, faster, etc.). Set this to a negative value (-) if you want to apply changes to the present value in a negative direction (lower value, toward the left, slower, etc.). The greater the value, the greater the change produced.

MFX A-C Parameter 1-32 (MFX A–C Parameter)

Specifies the parameter of the multi-effect that you want to use. The parameters that can be edited will depend on the type of multi-effect you select in MFX Type (Multi-effect Type). For details on each effect parameter, refer to **MFX_E.pdf** in the included CD-ROM.

Using MFX in Native mode

If you switch the sound generator to **Native mode**, you will be able to control the sound and **MFX** independently. In order to apply **MFX** to the sound of a specific part, you must do the following two things.

- Select the location (source) of the parameters used by MFX.
- Send the output of the part to MFX.

Select the location of the parameters used by MFX

MFX A SOURCE (MFX A source) COMMON, PART 1–32

MFX B SOURCE (MFX B source) COMMON, PART 1–32

MFX C SOURCE (MFX C source) COMMON, PART 1–32

MFX parameters (e.g., algorithm, reverb type, distortion type) exist both within the sounds (performances) and outside them. For each of the three **MFX** units, you can specify which parameters the unit will use.

COMMON: One of the three sets of parameters stored outside the sounds will be used. A part whose **Part Output MFX Select** setting is set to **MFX** will use the effect settings you specify, and will not be affected by the effect settings of the sound that is called up for that part.

PART 1–32: The parameters stored within the sound called up for that part will be used. Parts whose **Part Output MFX Select** setting is set to **MFX** will be processed by the MFX effect settings of the part referenced by **MFX**. When another sound is called up for the part that is referenced, MFX A will operate according to the MFX settings of the newly requested sound, and the previously mentioned parts will also be processed by these effect settings.

Specifying the output destination of the part

PART OUTPUT ASSIGN

MFX, A, PATCH

Specify where the output signal of the part will be sent.

MFX: Output to MFX.

A: Output the sound directly, without using MFX.

PATCH: Use the settings of the sound (patch). If the patch is set to use **MFX**, it will be sent to MFX. If the patch is not set to use an effect, it will be output as **DRY**.

PART OUTPUT MFX SELECT

MFX A, MFX B, MFX C

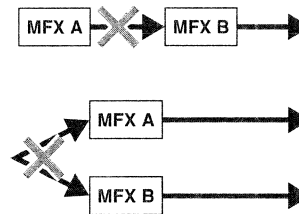
Selects which of the three MFX units the sound will be sent to when **MFX** is selected for **Part Output Assign**.

PART DRY SEND LEVEL

Specifies the output level of the part when **MFX** is not used (i.e., when Part Output Assign is set to DRY). This setting is ignored when MFX is used.

MFX output destination

Only one MFX can be selected as the output destination for one part. It is not possible to output a part to multiple MFX units simultaneously, or to send the output of an MFX unit to another MFX.



Using sounds from the Enhanced set in Native mode

If you want the MFX settings of Enhanced set sounds to be enabled in **Native mode**, make the following settings.

< Example: Using MFX A for part 4 >

1. Set the **MFX A Source** to **PART4**. This allows the MFX A effect to be applied with the settings of the sound that is called up for part 4.
2. Set the Part 4 **Output Assign** to **PATCH**. This selects **PATCH** as the output destination for the part. Since the output setting of an Enhanced sound (patch) is set to MFX, calling up the sound to Part 4 will cause the signal to be output to **MFX**.
 - * You can apply an effect even if **Part Output Assign** is set to **MFX**. However, in this case, it will be output in a fixed manner to **MFX** even if you call up a sound from a different set to Part 4.
3. For **Part Output MFX Select**, specify which of the three **MFX** units (A–C) you want to use. For this example, select **MFX A**.

■ EQ (Equalizer)

You can make equalizer settings for the output of the sound generator section. For details, refer to "EQ (Equalizer)" (p. 41).

Using the Audio Mixer

The SD-90 has a rich array of input/output jacks, allowing a wide variety of uses.

This chapter explains the **audio mixer** which controls the signal flow; i.e., how the input signal from each jack will be sent to your computer, and how to select the sound that will be monitored.

The general procedure for using the audio mixer is shown below.

Connect the audio device that will be the input source

Select the recording source

Set the volume of the source

* A **block diagram** (a diagram of internal connections) is printed on the top panel of the SD-90. You may wish to refer to this block diagram for a general understanding of the audio mixer.

Connecting an input source audio device

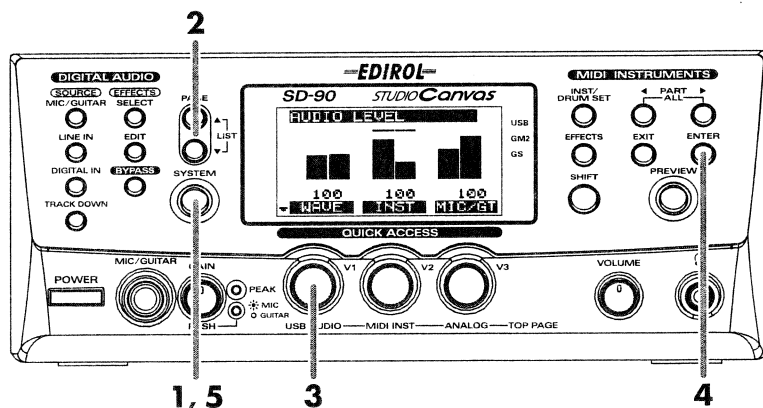
■ Analog connections

You can connect a mic, guitar, CD player, or other device to the analog input jacks on the front panel and rear panel.

* Before making connections to other devices, you must turn down the volume of all devices to prevent malfunction and/or speaker damage.

Selecting an analog input jack

You can select and use either the front panel **MIC/GUITAR** jack or the rear panel **INPUT** jacks. It is not possible to use both sets of jacks simultaneously. You must first select the analog jack(s) that you want to use.



1. Press [SYSTEM].
2. Press [PAGE ▲] or [PAGE ▼] until **Select Analog In** is displayed.

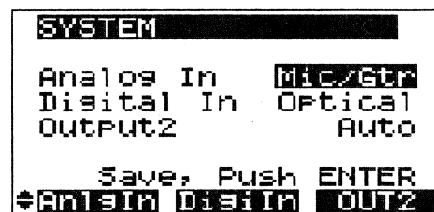
3. Turn the **[V2]** knob to select the analog input jack that you want to use.

Analog In

Select either **Mic/Gtr** or **Line**.

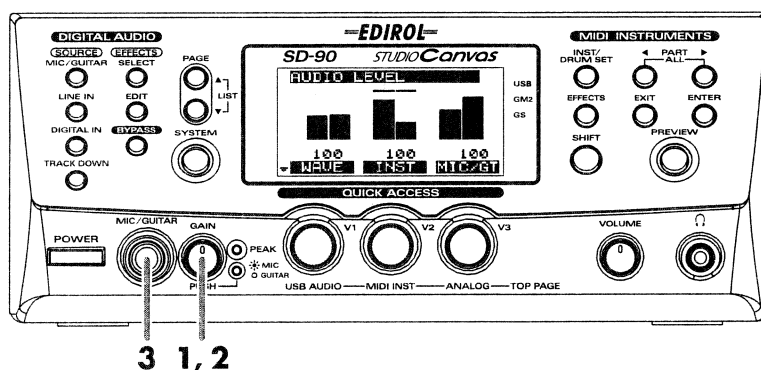
Mic/Gtr: MIC/GUITAR jack

Line: Line jacks



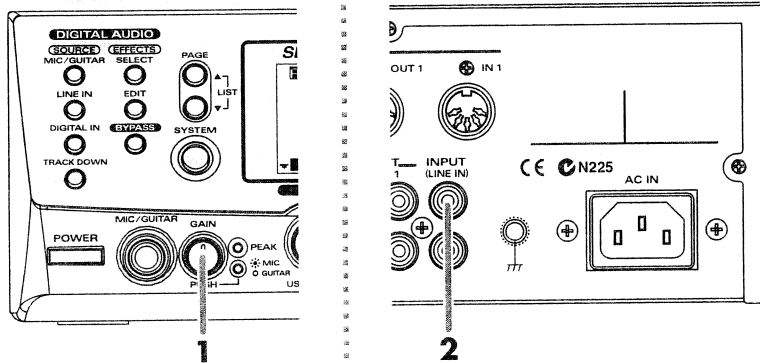
4. Press **[ENTER]**. The settings you made will be stored in the SD-90.
 - * Do not turn off the power while the settings are being stored (while the display indicates "SAVING..."). Doing so will result in the loss of all data stored within the SD-90.
5. Press **[SYSTEM]** once again to return to the main screen.

Connecting a mic/guitar



1. Turn the **GAIN** knob fully counterclockwise (minimum position).
2. If you are connecting a mic, press the **GAIN** knob so that the **GAIN** indicator lights. If you are connecting a guitar, press the **GAIN** knob so that the **GAIN** indicator goes dark.
 - * If the **GAIN** indicator is dark when a mic signal is being input, the audio from the mic will be too weak, since the **MIC/GUITAR** jack will be functioning as a guitar input.
3. Connect your mic or guitar to the front panel **MIC/GUITAR** jack.
 - * The **MIC/GUITAR** jack is not compatible with the miniature mics (condenser mics) included with some computers or sound cards.
 - * Depending on the location of the mic and speakers, you may hear acoustic feedback (a squealing or screeching sound). If this occurs, take one or more of the following measures:
 1. change the direction of the mic,
 2. move the mic away from the speakers,
 3. turn down the volume.

Connecting a CD player



1. Turn the **GAIN** knob fully counterclockwise.
2. Connect a CD player or other audio device to the rear panel **INPUT** jacks.

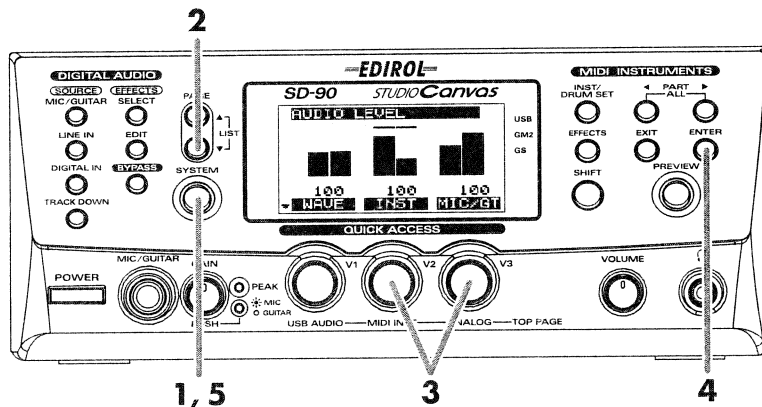
Digital connections

To digitally connect your CD player or digital recorder, connect it to the rear panel **OPTICAL IN** connector or **COAXIAL IN** connector, depending on the type of connector found on your device.

Selecting the digital input jack and sampling frequency

You must select either the **OPTICAL IN** jack or the **COAXIAL IN** jack. It is not possible to use both types of jack simultaneously.

When making digital connections, you must also make sure that the sampling frequency of the connected recorder, the sampling frequency of the SD-90, and the sampling frequency of the audio handled by the sequencer program on your computer are all set to the same setting. Use the following procedure to select the type of digital jack and the sampling frequency you will use.



1. Press **[SYSTEM]**.
2. Press **[PAGE ▼]** to make **Select Digital In** appear in the screen.
3. Turn the **[V2]** knob to select the digital jack you will use, and turn the **[V3]** knob to select the sampling frequency.

Select Sample Rate 44.1kHz, 48kHz

Select **44.1kHz** or **48kHz**.

- * Normally, CD players and MD recorders use a sampling frequency of 44.1 kHz, and DAT recorders use a sampling frequency of 48 kHz.

```

SYSTEM
USB Driver  Uender
Sample Rate 44.1kHz
Save, Push ENTER
#Driver     Sample
  
```

Select Digital inCox, Opt

Select **Cox** (Coaxial) or **Opt** (Optical).

```

SYSTEM
Analog In   Mic/Gtr
Digital In   Optical
Output2      Auto
Save, Push ENTER
#Analog In  Digital OUT2
  
```

4. Press **[ENTER]**. The settings you made will be stored in the SD-90.
 - * Do not turn off the power while the settings are being stored (while the display indicates "SAVING..."). Doing so will result in the loss of all data stored within the SD-90.
5. Press **[SYSTEM]** once again to return to the basic screen.

About recording with digital connections

One generation of digital copying (recording) from an audio CD to MD or DAT is permitted. For example, once you have made a digital copy to an MD, it will not be possible to digitally copy that MD onto another MD. This is because an audio CD contains (in addition to the audio data) flags that prohibit digital copying.

In contrast, the signal that is output from the SD-90's **DIGITAL OUT** jacks will allow more than one generation of digital copying.

However, if a CD player or similar device is connected to the SD-90's **DIGITAL IN** jack, and the incoming signal contains flags that prohibit digital copying, digital copying of the signal that is output from the **DIGITAL OUTPUT** jack will also be limited to a single generation. For this reason, you should leave the **DIGITAL IN** jack unconnected, or turn off the power of the connected digital device unless you need to use it.

Selecting the recording source

The SD-90 contains various setups of mixer settings that specify which input jacks will be sent to the computer, where the audio effects will be placed, and which output will be monitored. These setups are called **routings**, and can be recalled quickly and easily.

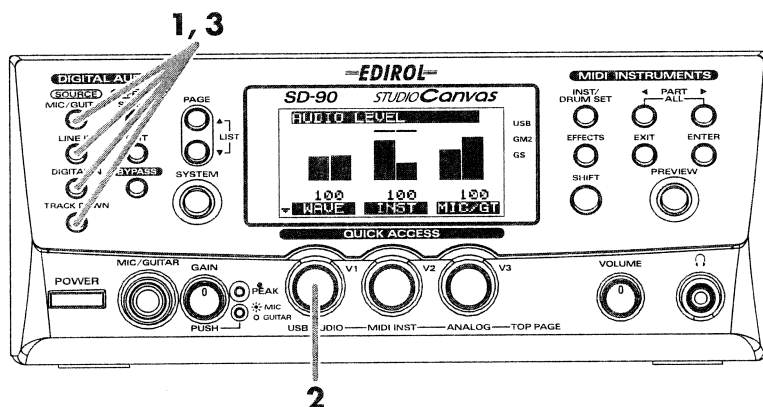
On the SD-90 you can select the source that will be recorded on your computer simply by switching the routing. For example, if you want to monitor the sound of your guitar processed by the **Guitar Multi** effect while recording only the unprocessed sound, or want to listen to the backing of the internal sound generator while playing overdubs on your guitar, you can make the various necessary mixer settings quickly and easily, simply by selecting a routing.

For details on the various types of routing that are available, refer to "About the routing presets" (p. 57)).

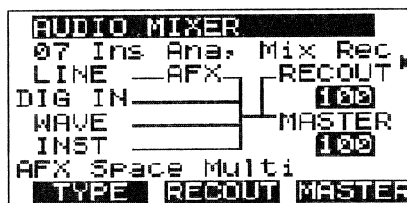
- * If the selected routing is one that uses an audio effect (No. 05--18), the source will be output with the effect applied. When the power is turned on, the effect type is Space Multi.

Selecting a routing

In order to record audio signals on your sequencer software, select a **routing** that sends the sound from the SD-90 via the USB cable to your computer.



1. Press one of the **SOURCE** buttons, as appropriate for your input source. The button will light, the routing assigned to that button will be initialized, and the routing number and connection diagram will appear in the display.



Display	Input signal
MIC/GT	Front panel MIC/GUITAR jack *
LINE IN	Rear panel INPUT jacks
DIGITAL IN	Rear panel digital input jack (OPTICAL IN/COAXIAL IN)
WAVE	Digital audio played back on your computer
INST	Internal sound generator

Display	Output signal
REC OUT	Digital audio sent from the SD-90 via the USB cable to the computer
MASTER	The SD-90's OUTPUT 1 jacks, headphone jack  , and digital output jack (OPTICAL OUT/COAXIAL OUT)

- * *MIC/GT* will be displayed if **Select Analog In** is set to **Mic/Gtr**, and **LINE IN** will be displayed if **Line** is selected.
- 2. By turning the **[V1]** knob you can change the routing assigned to the button. For example, if you want to change the location of the effects, or to change the connections, turn the **[V1]** knob to select a different routing.
- 3. If you once again press the **SOURCE** button that you pressed in **step 1**, the button will go dark, and you'll be returned to the main screen.
- * *If you hold down **[SHIFT]** and press a **SOURCE** button (**[MIC/GUITAR]****[LINE IN]****[DIGITAL IN]****[TRACK DOWN]**), the routing that was first assigned to each button will once again be recalled.*

Setting the volume of the source sound

You can adjust the volume (recording level) of each source that is sent to your computer or output to the **OUTPUT 1** jacks.

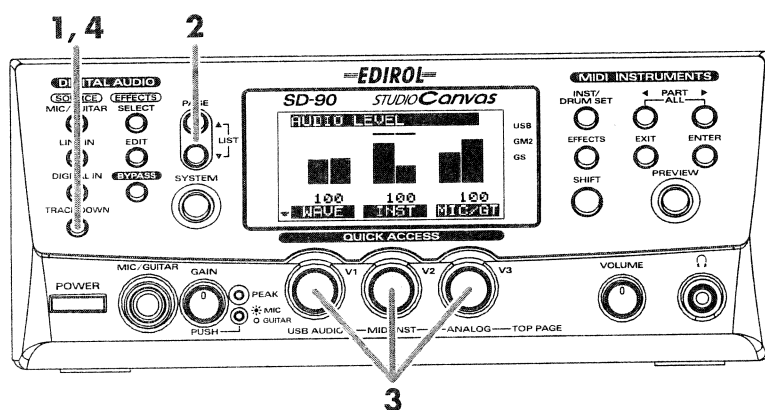
The volume of each source can be adjusted in two ways: **icon display** or **list display**. Use the method appropriate for your situation or preferences.

- * *It is not possible to save the edited state of the audio mixer in the SD-90's internal memory. The edited state will be lost when you turn off the power. If you want to preserve the edited state, either make a note of the settings, or save them on an external MIDI sequencer or similar device. ("Writing/loading SD-90 settings" (p. 93))*

Input sources and the MASTER output

All input sources are always output to **MASTER**. The routing will determine which signals are assigned to be sent via USB to your computer (**REC OUT**). This means that if you want to record only one source, you must select a routing in which **REC SOURCE** is a single item ("Selecting the recording source" (p. 52)). For example, if you want to record only the Digital In, you should select either routing number 02, 12, or 16.

■ Editing in the Icon display



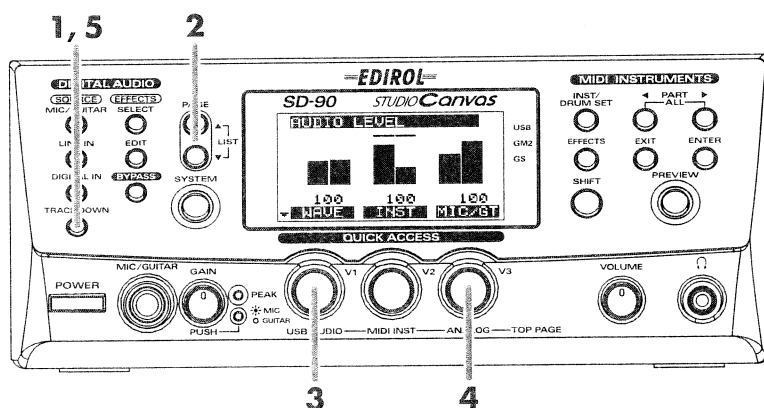
1. Press one of the **SOURCE** buttons, according to the input source you want to use. The button will light, indicating that the routing assigned to that button has been selected. The display will show the **routing number** and **connection diagram**.

* Routings are numbered from 0–19. For details, refer to "About the routing presets" (p. 57).

2. Press [PAGE ▲] or [PAGE ▼] until the parameter you want to edit is displayed.
3. To edit the settings, turn the knob ([V1])–[V3]) for the parameter you want to edit.
4. Once again, press the **SOURCE** button you pressed in step 1 to return to the main screen.



■ Editing in the List display



1. Press one of the **SOURCE** buttons, according to the input source you want to use. The button will light, indicating that the routing assigned to that button has been selected. The display will show the **routing number** and **connection diagram**.

2. Press **[PAGE ▲]** and **[PAGE ▼]** simultaneously. The parameters will be listed in the display.
3. Turn the **[V1]** knob so that the parameter you want to edit is highlighted.
4. Turn the **[V3]** knob to edit the value.
5. Once again, press the **SOURCE** button you pressed in **step 1** to return to the icon display.

■ Audio mixer parameter list

This section describes the Audio Mixer parameters that can be adjusted in each screen (when using the Icon display).

AUDIO MIXER		
05	Send/Return	AFX
Record	Volume	100
Master	Volume	100
Analog	Volume	100
	Mute	Off
	Send	064
CURSOR	1/4	VALUE

Knob	Display (Name)	Range	Explanation	Example screen
V1	TYPE	00–18	Routing preset	
V2	RECOUT (record volume)	0–127	Recording level sent to computer	
V3	MASTER (master volume)	0–127	Output level from OUTPUT 1 jacks	

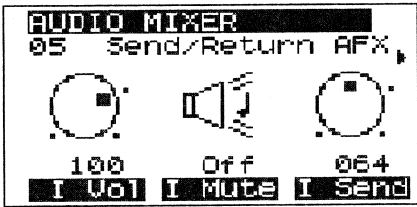
Knob	Display (Name)	Range	Explanation	Example screen
V1	A Vol (analog volume)	0–100–127	Volume of the analog input jacks	
V2	A Muted (analog mute)	OFF, ON	Mute on/off for the analog input jacks	
V3*	A Send (analog send level)	0–64–127	Send level from the analog input jack to effects	

* Valid only for preset routing 05.

Knob	Display (Name)	Range	Explanation	Example screen
V1	D Vol (digital volume)	0–100–127	Volume of the digital input jacks	
V2	D Mute (digital mute)	OFF, ON	Mute on/off for the digital input jacks	
V3*	D Send (digital send level)	0–64–127	Send level from the digital input jack to effects	

* Valid only for preset routing 05.

Knob	Display (Name)	Range	Explanation	Example screen
V1	W Vol (wave volume)	0–100–127	Volume of USB audio	
V2	W Mute (wave mute)	OFF, ON	Mute on/off for USB audio	
V3*	W Send (wave send level)	0–64–127	Send level from the USB audio to effects	

Knob	Display (Name)	Range	Explanation	Example screen
V1	INST Vol (instrument volume)	0-100-127	Volume of the internal sound generator	
V2	INST Send (instrument send level)	OFF, ON	Send level from the internal sound generator to the effects*	
V3	INST Mute (instrument mute)	0-64-127	Mute on/off for internal sound generator	

* Valid only for preset routing 05.

List display

In the list, the parameters are shown in the following order.

Record Volume
Master Volume

Analog Volume
Analog Mute
Analog Send Level *

Wave Volume
Wave Mute
Wave Send Level *

Digital Volume
Digital Mute
Digital Send Level *

Inst Volume
Inst Mute
Inst Send Level *

Rec Monitor Sw
Mixer Mute



AUDIO MIXER	
05	Send/Return AFX
Record	Volume 100
Master	Volume 100
Analog	Volume 100
	Mute Off
	Send 064
CURSOR	1/4
	VALUE

* Only preset routing 05 is valid.

About the routing presets

This section describes the 19 different routing presets.

■ Basic routing

This is the most basic routing. All input sources will be mixed and sent via USB to the computer, and the same signals will be output from the **OUTPUT 1** jacks. Audio effects will not be used.

No.	Type	Display	Connections
00	Mix all input sources and record them	Default	

■ Record the dry sound (Default Source Recording)

The selected input source will be sent to the computer without being processed. Audio effects will not be processed. Use one of these routings when you want the input signal to be recorded into your computer without being processed.

No.	Type	Display	Connections
01	Record from the analog jacks	Default Ana Rec	
02	Record from the digital jacks	Default Dig Rec	
03	Record from the USB connector	Default Wav Rec	
04	Record the output of the internal sound generator	Default Syn Rec	

■ Apply effects and track-down

This routing lets you mix all input sources, apply send/return type effects, and send the result to your computer. The send level can be adjusted for each input source. Use this routing when you want to apply reverb or Space Multi to the output of your computer or audio device, or to the internal input.

No.	Type	Display	Connections
05	Apply effects and track-down	Send/Return AFX	

* If you are using a send/return type effect, the output may be prone to distortion. Refer to the level meter in the display, and adjust the USB audio level appropriately.

■ Insert effects and track-down

This routing lets you mix all input sources, insert an effect, and send the result to your computer. Use this routing when you want to apply a mastering effect to the overall output of a sequencer program on your computer, and record the result.

No.	Type	Display	Connections
06	Insert effects and track-down	Mix to AFX	

■ Apply effects to each channel and record

These routings let you insert an effect only into the input source you want to record, mix all input sources, and send the result to your computer. The output level of the audio effect will determine the volume of the source processed by the effect. For example, you can use one of these routings when you want to apply an effect (guitar multi) to the guitar input, mix it with the backing, and record the combined result.

No.	Type	Display	Connections
07	Insert an effect into an analog input and record the mix	Ins Ana, Mix Rec	
08	Insert an effect into a digital input and record the mix	Ins Dig, Mix Rec	

No.	Type	Display	Connections
09	Insert an effect into the USB input and record the mix	Ins Wav, Mix Rec	
10	Insert an effect into the internal sound generator output and record the mix	Ins Syn, Mix Rec	

■ Apply effects and record a single channel

These routings let you insert an effect into only the input source that you want to record, and record only that channel on your computer. All inputs can be monitored. The output level of the audio effect will determine the level of the source processed by the effect. For example, you can use one of these routings when you want to apply an effect (vocal multi) to a mic input, and record only that source while monitoring the backing as well.

No.	Type	Display	Connections
11	Insert an effect into the analog input and record it	Ins Ana, Src Rec	
12	Insert an effect into the digital input and record it	Ins Dig, Src Rec	
13	Insert an effect into the USB input and record it	Ins Wav, Src Rec	
14	Insert an effect into the output of the internal sound generator and record it	Ins Syn, Src Rec	

■ Monitor the effect while recording only the dry sound

These routings let you insert an effect only into the input source you want to record, monitor the overall mix including the effect sound, and record only the dry sound of that (input source) channel into your computer. The output level of the audio effect will be the level of the source processed by the effect. For example, you can use one of these routings when you want to apply an effect (guitar multi) to a guitar source, monitor the overall sound including the backing, and record only the unprocessed source.

No.	Type	Display	Connections
15	Insert an effect into the analog input and record the dry sound	Ins Ana, Dry Rec	
16	Insert an effect into the digital input and record the dry sound	Ins Dig, Dry Rec	
17	Insert an effect into the USB input and record the dry sound	Ins Wav, Dry Rec	
18	Insert an effect into the output of the internal sound generator and record the dry sound	Ins Syn, Dry Rec	

Using the audio effects

On the SD-90 you can use one internal stereo audio effect.

The signal to which the effect will be applied (i.e., the location of the effect) is selected by the **routing preset** of the audio mixer. Depending on the location, the effect can be applied not only to the audio input/output, but also to the output of the internal sound generator. You can also apply an effect to the input source and send the result to your computer (recording "wet"), or monitor the processed sound while recording only the unprocessed (dry) sound.

The general procedure for using an audio effect is shown below.

Select the location of the effect

|

Select the effect algorithm

|

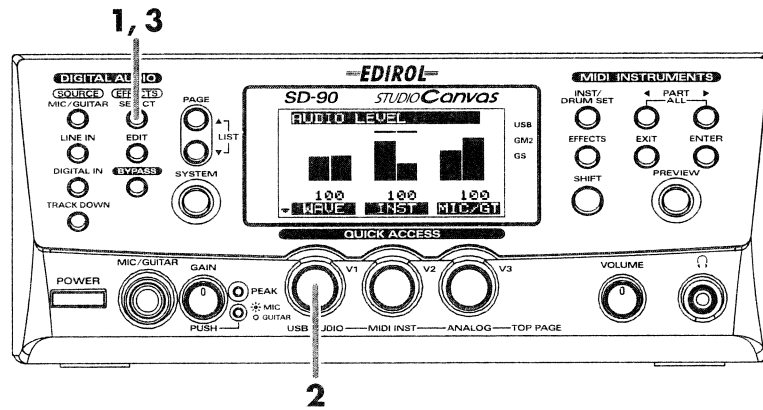
Edit the effect

Select the location of the effect (Mixer Routing)

The location of the audio effect is determined by the audio mixer **routing** you select.

Selecting the type of effect (Algorithm)

According to the routing, select the effect type (**algorithm**). For details on the effect algorithms that are available, refer to "About the effect algorithms" (p. 65).



1. Press **[SELECT]**. A list of effect algorithms will appear.
2. Turn the **[V1]** knob so that the desired effect algorithm is highlighted. The effect algorithm is active from the moment it is highlighted (i.e., you will hear the effect immediately).



- * If you have selected a mixer routing preset (00–04) that does not use the audio effect, no effect will be applied "Selecting a routing" (p. 52). However, the internal algorithm itself will change.
 - * For some effects such as **distortion** and **lo-fi**, the output level may be high even though the source level is low. Before you switch effects, turn down the **[VOLUME]** knob to prevent damage to your speakers, and return the level to an appropriate setting while you monitor the effect.
3. Listen to the sound, and if you want to edit the effect, proceed to "Editing the effect" (p. 63). To return to the basic screen, press **[SELECT]** once again.

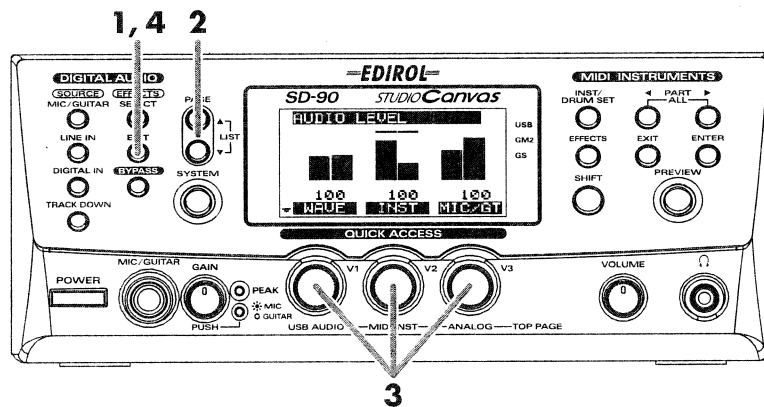
Editing the effect

For each effect algorithm, the parameters are set appropriately for the expected use. You can also edit the parameters to adjust the effect to your liking. For details on the parameters that can be adjusted for each algorithm, refer to the supplementary material on the included CD-ROM "(AFX_E.pdf)."

There are two ways to edit the effect: **icon display** and **list display**. Use the method that is most suitable for your situation or preferences.

- * *It is not possible to save the edited state of the effect in the SD-90's internal memory. The edited state will be lost when you turn off the power. If you want to preserve the edited state, either make a note of the settings, or save them on an external MIDI sequencer or similar device. ("Writing/loading SD-90 settings" (p. 93))*

■ Editing in the icon display

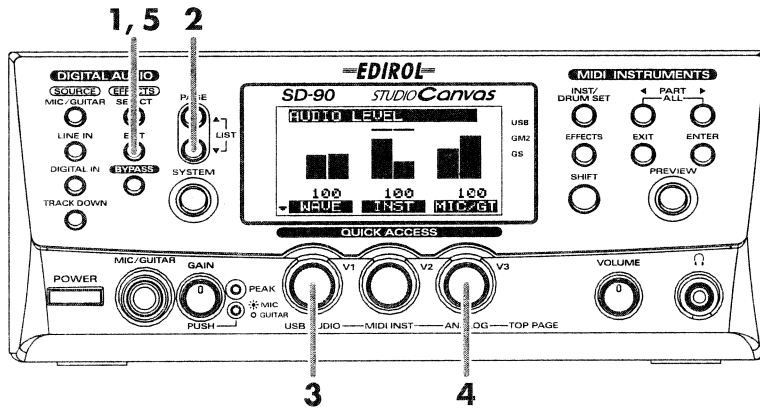


1. Press [EDIT]. The parameters of the currently selected algorithm will be displayed.
2. Press [PAGE ▲] or [PAGE ▼] until the parameter you want to edit is displayed.
3. To edit the value, turn the [V1]–[V3] knob for the parameter that you want to edit.

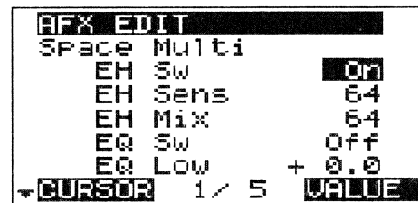


4. Press [EDIT] once again to return to the main screen.

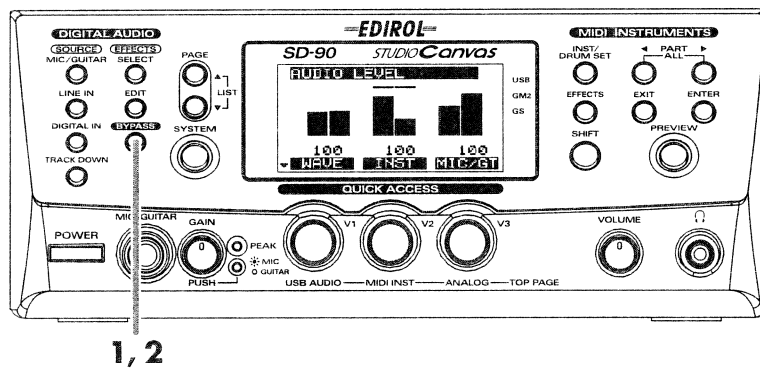
■ Editing in the list display



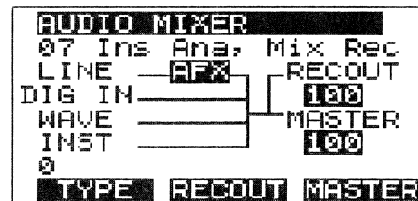
1. Press **[EDIT]**. The parameters of the currently selected algorithm will be displayed.
2. Simultaneously press **[PAGE ▲]** and **[PAGE ▼]**. A list of parameters will appear in the display.
3. Turn the **[V1]** knob to highlight the parameter that you want to edit.
4. Turn the **[V3]** knob (VALUE) to edit the setting.
5. Press **[EDIT]** once again to return to the main screen.



■ Bypassing the effect



1. If you want to compare the sound processed by the effect with the unprocessed sound, press **[BYPASS]**. The **[BYPASS]** button will light and the effect block will be highlighted, indicating that the effect has been bypassed.
2. When you press **[BYPASS]** once again, **[BYPASS]** will go dark and you'll be returned to the previous state.

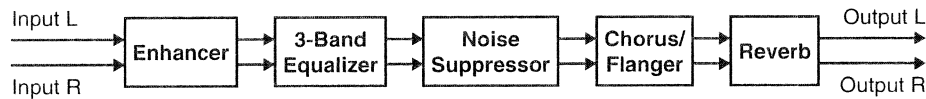


About the effect algorithms

This section explains the **effect blocks** and **internal connections** used by each algorithm. For details on the parameters that can be adjusted for each algorithm, refer to “AFX_E.pdf” in the included CD-ROM.

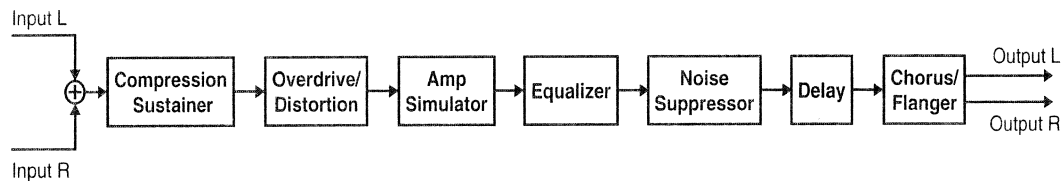
■ Space Multi

This lets you use “spatial-type” effects such as **chorus** to add spaciousness and depth, **flanger** or **phaser** to add modulation, **delay** to create echoes, and **reverb** to add reverberation. These effects can be applied to the overall sound for listen, or lightly applied when track editing is finished to create a greater feeling of space (“Apply effects and track-down” (p. 58)).



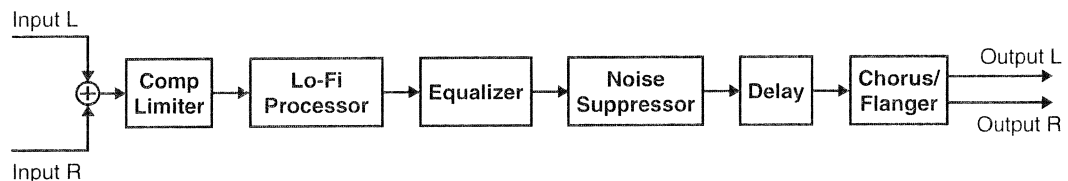
■ Guitar Multi

This algorithm is designed specifically for guitar. It provides a **compressor** to make the sound more consistent, **distortion** to distort the sound, and also **chorus** and **flanger**, covering a wide range of styles from clean to distorted sounds. It's a convenient way to produce anything from mild overdrive to extreme distortion.



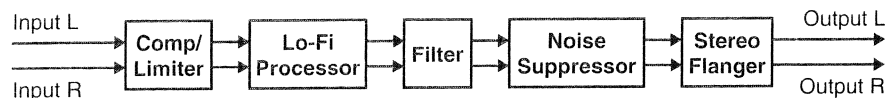
■ Vocal/Bass Multi

This algorithm is suitable when recording **vocals** or **bass** through a mic. It provides a **compressor** to make the volume more consistent, a **noise suppressor** to remove unwanted noise, and **delay** and **chorus** to add spatial resonance. By using the **lo-fi processor** you can simulate a lo-fi sound, making it sound as if the source were recorded on vintage audio equipment.



■ Groove Multi

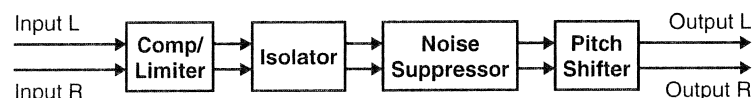
This is a multi-effect designed for dance music. It is convenient when you want to process a song from an audio CD or similar source to create phrase materials.



■ Isolator

This cuts the level independently for separate frequency bands, letting you eliminate unwanted sounds. For example, you can use it to extract a desired instrument (such as drums or vocals) from a phrase taken from an audio CD.

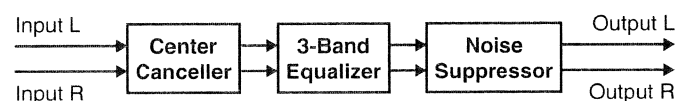
- * *On a conventional equalizer, there will still be some sound even if the gain of each frequency band is lowered completely, but on an isolator no sound at all will remain.*



■ Center Canceller

When a stereo source such as an audio CD is input, this will eliminate the sounds that are localized at the center, such as vocals and bass. This is useful when you want to process a song from an audio CD to create a collection of phrases.

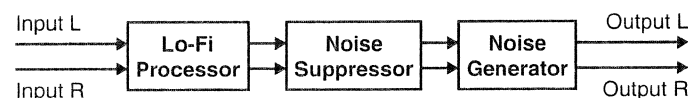
- * *For some sources, you may not be able to obtain the desired result; for example, sounds other than the one you want to eliminate may also be lost. Also, this may not work correctly on musical sources with deep reverb, or if the sound you want to eliminate is not localized at the center.*



■ Lo-Fi Processor

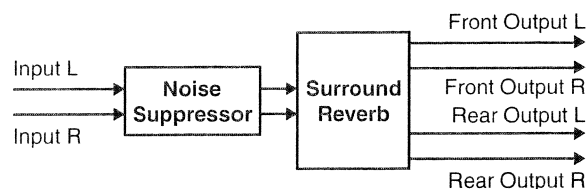
This creates a “lo-fi sound” by lowering the sample rate or reducing the number of bits.

- * *Raising the input level may cause the output level to suddenly become very loud. Before you adjust the lo-fi processor, it is best to turn down the volume to prevent speaker damage, and then adjust the level appropriately while listening to the result.*



■ Surround RV (Surround Reverb)

This is a reverb effect that uses Roland’s RSS technology to provide multi-speaker surround output (four speakers). It expands the sound field for normal listening.



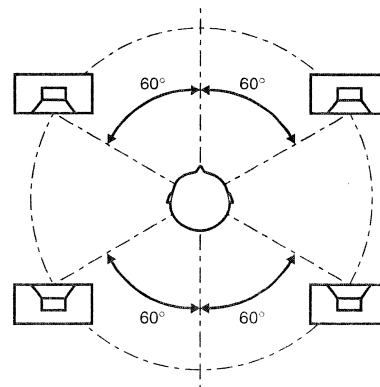
Conventional stereo playback reproduces the sound from two speakers placed in front, at the left and right. In contrast, a **surround function** uses speakers placed in back as well as in front to create a sound field that extends left to right and also front to back. You will need the appropriate number of speakers (four) for surround playback.

- * *It is not possible to place (pan) or move (fly) an audio source in the surround sound field.*

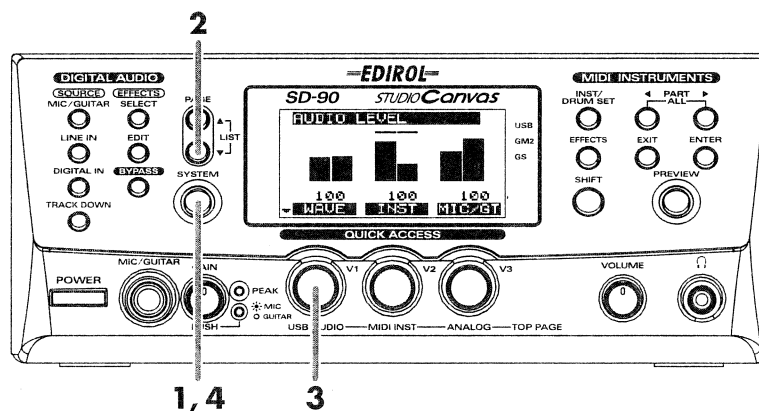
Connecting the speakers

At the factory settings, the **OUTPUT 2** jacks are set to output the signals from the internal sound generator. If you want to use surround reverb as the audio effect, you must connect external speakers to the **OUTPUT 2** jacks, and make settings so that these jacks output the signal for the rear speakers. For best results, try to listen from the “sweet spot” shown in the diagram at right.

It is best to set the **VOLUME** knob to approximately the two o'clock position. However, since the **VOLUME** knob cannot be used to adjust the output of the rear speakers, you should turn the **VOLUME** knob slightly down if it is difficult to hear the output of the rear speakers.



Using surround output



* When surround reverb is used, it may be easier for the output to become distorted. Watch the level meters shown in the display, and make adjustments so that the levels of the audio and the internal sound generator are appropriate.

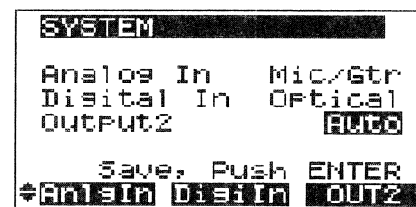
1. Press **[SYSTEM]**.
2. Press **[PAGE ▲]** or **[PAGE ▼]** until **Select Output 2** is displayed.
3. Turn the **[V1]** knob to select the output for the **OUTPUT 2** jack. For this example, select **REAR**.

Select Output 2

AUTO: Normally, the sound of the internal sound generator will be output. If Surround Reverb is being used as the audio effect algorithm, then the sound for the rear speakers will be output.

INST: The sound of internal sound generator will always be output.

REAR: The audio effect sound will always be output. If an algorithm other than Surround Reverb is used, nothing will be output.



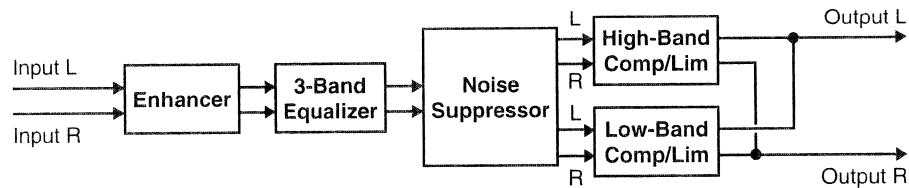
Output2		Auto	Inst	Rear
Other than Surround Reverb	Effect not used	INST	INST	---
	Effect used	INST	INST	---
Surround reverb	Effect not used	---	INST	---
	Effect used	INST	INST	Rev

4. Press [SYSTEM] once again to return to the main screen.

- * If you set **Select Output 2** to **INST** when using Surround Reverb as the audio effect, the full surround effect will not be obtained.
- * If you set **Select Output 2** to **REAR** when you are not using the audio effect, or when you are using an effect other than Surround Reverb, there will be no sound from the **OUTPUT 2** jacks. In this case, you can change **Select Output 2** back to **INST**.

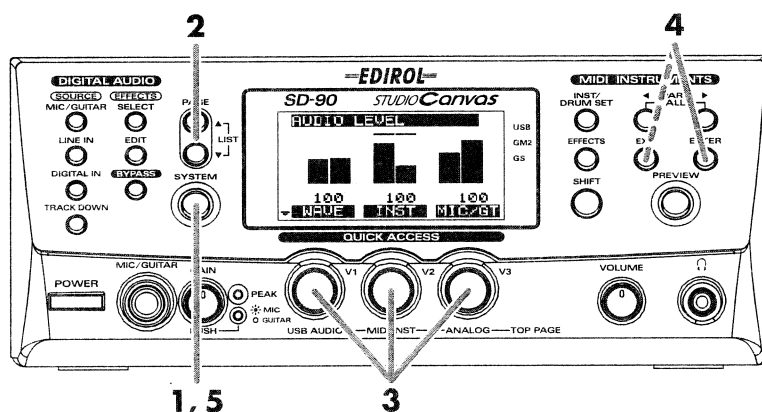
■ Mastering

This effect divides the source into frequency bands (high and low), and makes the volume more consistent and improves the balance. By using this effect when you mixdown to MD or DAT, or when mixing to an audio file (WAV file), you can master the sound at an optimal level.



System-related settings

This chapter explains how to make settings that affect the entire system of the SD-90. The following parameters can be set in the system screen.



1. Press **[SYSTEM]**. The **[SYSTEM]** indicator will light.
2. Press **[PAGE ▲]** or **[PAGE ▼]** until the item you want to edit appears in the display.
3. Turn the **[V1] knob** to edit the value of the item in the first line of the display, the **[V2] knob** to edit the value of the item in the second line of the display, or the **[V3] knob** to edit the value of the item in the third line of the display. The value of the most-recently selected item will be highlighted.
Here's the basic procedure for setting these parameters.

Dis-play	V1	V2	V3
1	INST Init	Bulk Dump INST	Bulk Dump Audio
2	MIDI Startup	INST Startup	SysEx.DevID
3	Control Output	MIDI IN1 THRU	MIDI IN2 THRU
4	Preview Mode	Preview Note	Preview Velo
5	USB Driver	---	Sample Rate
6	Analog In	Digital In	Output2
7	LCD Contrast	---	LCD Mode
8	System Tempo	---	---
9	Factory Reset	---	---

4. When you have selected the desired value, press **[ENTER]**. If you decide not to change the value, press **[EXIT]**.
5. Press **[SYSTEM]** once again to return to the main screen.

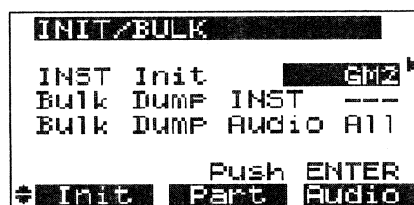
Switching the sound generator mode (Inst Initialize)

The SD-90 has four **sound generator modes**: **GM2**, **Native**, **GS**, and **XGlite**. When you switch the sound generator mode, the sound generator will also be initialized, as appropriate for that mode.

INST Init GM2, Native, GS, XGlite

This switches the unit to the sound generator mode you select here, and initializes the sound generator appropriately. ("Switching the sound generator mode (Inst Initialize)" (p. 70))

* *Inst Init is where you select the sound generator mode that you want to switch to. It does not indicate the current sound generator mode.*



Transmitting sound generator settings to an external MIDI device

The SD-90 can transmit the settings of its sound generator as MIDI data. There are two ways in which parameters can be transmitted: a group of parameter settings can be transmitted as a **bulk dump**, or a single parameter can be transmitted as **individual data**. All data is transmitted in the form of **system exclusive data**.

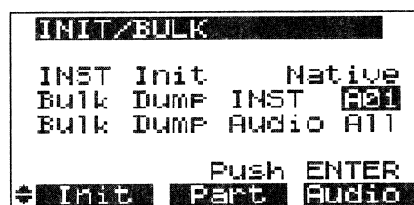
Use **bulk dump** when you want to save SD-90 settings on an external MIDI device. By transmitting a bulk dump, you can also set the parameters of two SD-90 units to identical settings. By sending individual data you can quickly and easily create data (e.g., for a sequencer) without having to look up each system exclusive message.

Bulk Dump INST A01–A16, B01–B16

Specifies the internal sound generator parameters that you want to transmit when the bulk dump is executed.

Bulk Dump INST can be carried out only when the sound generator mode is Native mode.

Otherwise, "---" will be displayed, indicating that the feature is unavailable.



BULK DUMP AUDIO ALL, AFX

Specifies the audio parameters that will be transmitted when the bulk dump is executed.

For details on transmitting individual data, please read the following sections.

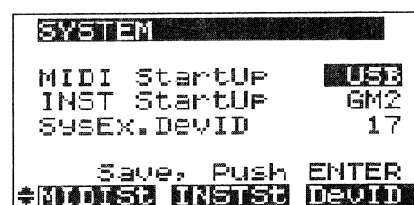
- Transmitting Part parameters -> "Editing part parameters" (p. 29)
- Transmitting parameters common to all Parts -> "Editing parameters that are common to all parts" (p. 31)
- Transmitting sound generator effect parameters -> "Editing the sound generator effects" (p. 39)

Selecting the startup mode

The SD-90 has two modes in which MIDI data is transferred differently: **USB mode** and **MIDI mode**. Here you can choose the operation mode that will be selected at startup.

MIDI Start Up USB, MIDI

Choose the operation mode that will be selected at startup.

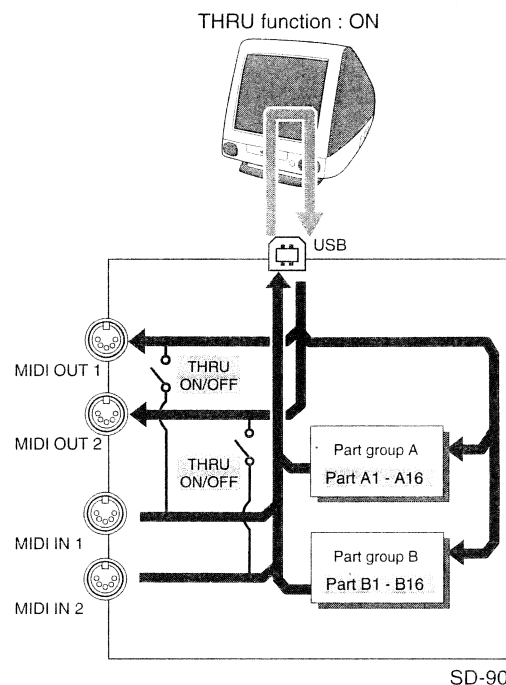


■ USB mode

MIDI messages received at the MIDI IN connectors will not be passed directly to the internal sound generator. They will be sent via USB to the computer (sequencer software).

This means that if you have started up in **USB mode**, playing an external MIDI keyboard connected to a MIDI IN connector will not play the SD-90's internal sound generator. In order for the MIDI messages received at the MIDI IN connectors to be passed to the internal sound generator, you must turn on the Thru function of your software running on your USB-connected computer. "Thru" is a function by which MIDI messages received from the SD-90's USB connector are retransmitted back to the SD-90's USB connector. If the Thru function is turned on, the MIDI messages received at the MIDI IN connectors will pass through the computer and be passed to the SD-90's internal sound generator, causing sound to be produced.

* The number of internal sound generator parts that can be controlled from the USB connector will depend on the capabilities of your sequencer software. This means that even if you connect the SD-90 to your computer via USB, you will not necessarily be able to use all 32 parts. Please carefully read the owner's manual for your sequencer software.

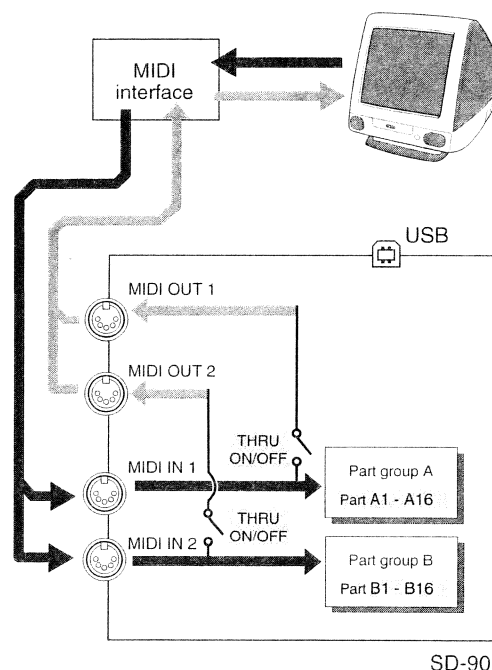


■ MIDI mode

The MIDI messages received at the MIDI IN connectors will be passed directly to the internal sound generator.

The SD-90 has two **MIDI IN connectors**, and each MIDI IN connector can receive data for 16 Parts. In **MIDI mode**, when you play using the MIDI connectors, group A corresponds to the MIDI IN 1 connector and group B corresponds to the MIDI IN 2 connector. In other words, the MIDI messages received at MIDI IN 1 will play Parts 01–16 of group A, and the MIDI messages received at MIDI IN 2 will play Parts 01–16 of group B. For example, a MIDI message received at MIDI IN 1 on channel 5 will play Group A Part 5 (A05) (when still set to the default settings).

* If you want to change the correspondence of Parts to MIDI channels, you can send the System Exclusive message **Rx.CHANNEL** via MIDI.



Specifying the start-up sound generator mode

INST StartUp GM2, Native, GS

This selects the mode in which the sound generator will be when the SD-90 is started up.

```

SYSTEM
MIDI StartUp      USB
INST StartUp      GM2
SYSEX.DEVID       17

      Save, Push ENTER
*#MIDIST INSTst DEVID
  
```

Setting the Device ID Number

The **Device ID Number** is an identification number used when receiving and transmitting **exclusive messages**. The SD-90 relies on an identical device ID number when transmitting and receiving exclusive messages. This means that in order to use exclusive messages to transfer data, both devices must be set to the same device ID number.

The device ID number is a number from 1 to 32. The factory setting is 17.

SysEx. DevID 17–32

Specifies the device ID number used when the sound generator mode is **Native mode**.

- * When playing SMF music files produced by Roland/Edirol, you must set the device ID number to 17. Playback will not be correct if this is not set to 17.
- * It is not possible to specify a different device ID number for each Part.
- * The setting will take effect the next time you turn on the power.

```

SYSTEM
MIDI StartUp      USB
INST StartUp      GM2
SYSEX.DEVID       17

      Save, Push ENTER
*#MIDIST INSTst DEVID
  
```

Transmitting button/knob operations to an external MIDI device

CONTROL OUTPUT On, Off

Specify whether operations of the SD-90's own buttons and knobs will be transmitted to an external MIDI device.

```

SYSTEM
Control Output    Off
MIDI IN1 THRU     Off
MIDI IN2 THRU     Off

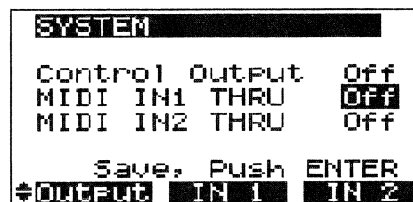
      Save, Push ENTER
*#OUTPUT IN 1 IN 2
  
```

Specifying the function of the MIDI connectors

MIDI IN1 THRU On, Off

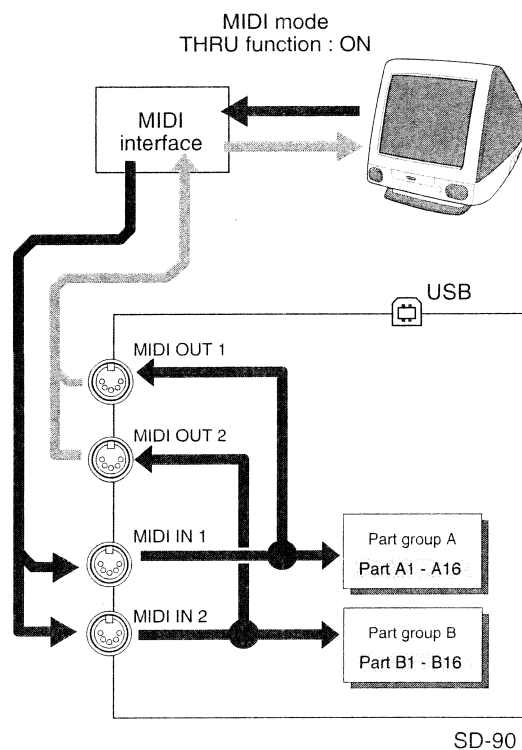
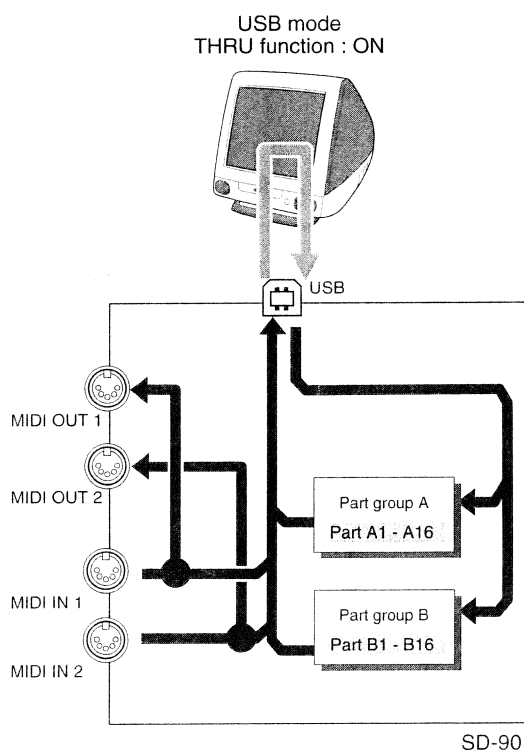
MIDI IN2 THRU On, Off

These are on/off switches for the MIDI THRU function from the MIDI IN connector to the MIDI OUT connector.



Turning this **On** when operating in **USB mode** will cause the MIDI messages input to the **MIDI IN 1** connector to be "thru'ed" to the **MIDI OUT 1** connector, and the MIDI messages input to the **MIDI IN 2** connector to be thru'ed to the **MIDI OUT 2** connector. The MIDI messages that normally would be output from your computer to the **MIDI OUT** connectors (1 and 2) will no longer be output (i.e., they will not be merged).

On the other hand, turning this **On** when operating in **MIDI mode** will cause the MIDI messages input at the **MIDI IN 1** connector to be thru'ed to the **MIDI OUT 1** connector, as well as being sent to **PART A**; and the MIDI messages input at the **MIDI IN 2** connector to be thru'ed to the **MIDI OUT 2** connector, as well as being sent to **PART B**.



Preview settings

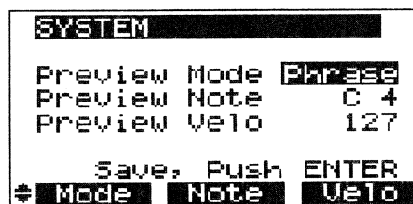
By pressing **[PREVIEW]** you can audition the currently selected sound. This is called the **preview function**.

Here you can make settings for the preview function ("**Auditioning the sounds (Preview)**" (p. 15)).

Preview Mode **Phrase, Single**
Switches the mode of the Preview function. Select **Phrase** to use phrase preview, or **Single** to select single-note preview.

Preview Note **C-1–C4–G9**
Specifies the pitch (key) of the note that will be sounded for single-note preview.

Preview Velo **0–127**
Specifies the volume (velocity) of previews.

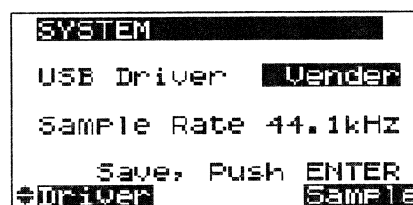


Switching the driver

USB Driver **Vender, Generic**
Selects the type of driver that will be used when the SD-90 is connected to your computer.

Vender: The dedicated driver included on the CD-ROM will be used, allowing audio to be recorded and played with high quality and stable timing. You should select **Vender** when using 24-bit capable applications such as the Cakewalk series and Cool Edit, or when using ASIO-compatible applications that are able to record/play/edit high-quality audio, such as Cubase VST, Logic Audio, and SingerSongWriter.

Generic: The standard USB audio driver included with Windows will be used. Audio signals can be transferred between the SD-90 and computer with a resolution of 16 bits and a sampling frequency of 44.1/48 kHz. Select **Generic** when you are using applications that use functionality provided by the operating system, such as applications that play back CD audio using the CD-ROM drive of your computer, or that use the software synthesizer included with the operating system. The driver included with the operating system is not compatible with ASIO.



* The setting will take effect the next time you turn on the power.

Specifying the audio input/output jacks

The SD-90 has various analog/digital input/output jacks. For each of the input/output jacks, you can specify the audio signals that will be assigned.

Sample Rates 44.1kHz, 48kHz

Selects the sampling frequency for digital input/output ("Selecting the digital input jack and sampling frequency" (p. 50)).

* The setting will take effect the next time you turn on the power.

```

SYSTEM
USB Driver  Vender
Sample Rate 44.1kHz
          Save, Push ENTER
#Driver      Sample
  
```

Analog In Mic/Guitar, LINE IN

Selects whether the **MIC/GUITAR** jack or the **LINE IN** jacks will be used as the input jack(s) for analog signals ("Selecting the digital input jack and sampling frequency" (p. 50)).

```

SYSTEM
Analog In   Mic/Gtr
Digital In  Optical
Output2     Auto
          Save, Push ENTER
#Analog In Digital Out2
  
```

Digital In Coaxial, Optical

Selects whether the **COAXIAL IN** or **OPTICAL IN** will be used as the input jack for digital signals ("Selecting the digital input jack and sampling frequency" (p. 50)).

OUTPUT 2 Auto, Inst, Rear

Select the signal that will be sent from the **OUTPUT 2** jacks ("Using surround output" (p. 67)).

AUTO: Normally the sound of the internal sound generator will be output. When you are using Surround Reverb as the audio effect algorithm, the rear speaker sound will be output.

INST: The sound of the internal sound generator will always be output.

REAR: The sound of the audio effect will always be output. If an algorithm other than Surround Reverb is being used, no sound will be output.

About recording via a digital connection

One generation of digital copying (recording) from an audio CD to MD or DAT is permitted. For example, once you have made a digital copy to an MD, it will not be possible to digitally copy that MD onto another MD. This is because an audio CD contains (in addition to the audio data) flags that prohibit digital copying.

In contrast, the signal that is output from the SD-90's **DIGITAL OUT** jacks will allow more than one generation of digital copying.

However, if a CD player or similar device is connected to the SD-90's **DIGITAL IN** jack, and the incoming signal contains flags that prohibit digital copying, digital copying of the signal that is output from the **DIGITAL OUTPUT** jack will also be limited to a single generation. For this reason, you should leave the **DIGITAL IN** jack unconnected or turn off the power of the connected digital device unless you need to use it.

Adjusting the contrast of the display

Immediately after the power is turned on, or after the SD-90 has been used for an extended period, or depending on the location, the characters and icons in the display screen may be difficult to read. If this occurs, adjust the contrast of the display ("**Adjusting the brightness of the display (Contrast)**" (p. 16)).

LCD contrast 1-5-8

This adjusts the contrast (darkness) of the SD-90's display. Increasing this value will darken the characters in the display.

```

SYSTEM
LCD Contrast      5
LCD Mode          Normal
Save, Push ENTER
#Contrst         Mode
  
```

LCD Mode Normal, Invert

Allows you to chose the desired display mode for the LCD.

```

SYSTEM
LCD Contrast      5
LCD Mode          Invert
Save, Push ENTER
#Contrst         Mode
  
```

Setting the system tempo

System Tempo 20--120--250

This sets the tempo of the entire SD-90 system. When you set the Delay Time of an internal sound generator effect (MFX) to Clock (Tempo), it will follow the tempo you specify here.

```

SYSTEM
System Tempo      120
Save, Push ENTER
#TEMPO
  
```

Restoring the factory settings

Factory Reset

This resets all system parameters of the SD-90 to their factory-set condition.

```

SYSTEM
Factory Reset
Push ENTER
  
```

Controlling the SD-90 via MIDI

The functionality of the SD-90's internal sound generator, mixer, and audio effects can be controlled by MIDI messages received from the USB connector or MIDI IN connector. This chapter provides various examples that show how MIDI messages can be used to operate the SD-90.

* For details on operation via MIDI, refer to "MIDI implementation" (MIDIImple_j.pdf) on the included CD-ROM.

Controlling the internal sound generator

MIDI messages can be used to control the internal sound generator.

■ Switching the sound generator mode

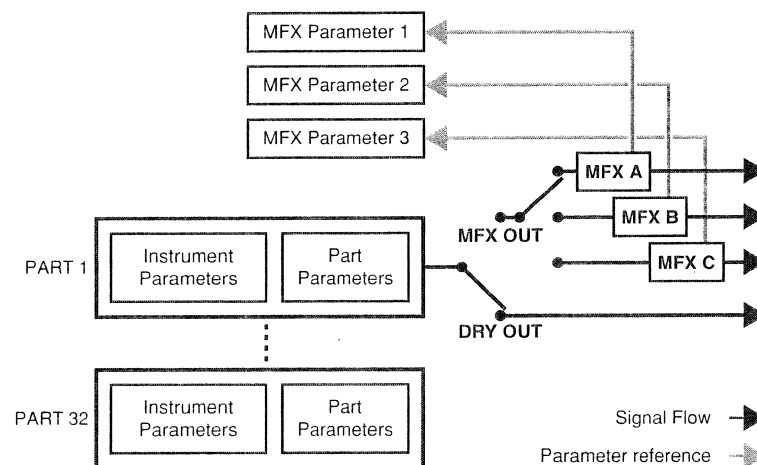
You can use MIDI messages to switch the sound generator mode. Transmit one of the following messages according to the desired sound generator mode. When you switch the sound generator mode, the sound generator will be initialized.

Sound generator modeName of messageMessage

Sound Generator mode	Message
GM2 mode	GM2 System On F0 7E 7F 09 03 F7
Native mode	Native On F0 41 10 00 48 12 00 00 00 00 00 00 F7
GS mode	GS Reset F0 41 10 42 12 40 00 7F 00 41 F7
XGlite mode	XG System On F0 43 10 4C 00 00 7E 00 F7

Features of Native mode

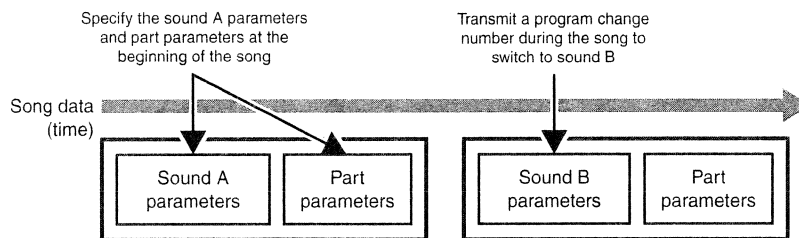
Native mode allows you to take full advantage of the SD-90's sound generator structure. Use this mode when you want to edit the internal sounds or MFX in greater detail. Although this mode lets you control parameters that cannot be edited in other modes, operations in Native mode are not compatible with GM2. In other words, song data created in Native mode cannot be reproduced by playing it back on another GM2 sound generator.



- In Native mode, MFX and sounds (instruments) can be handled independently. For this reason, simply selecting an Enhanced sound will not automatically cause MFX to be applied. You will need to edit the part parameters in order to apply MFX.
- You can also apply effects to sounds other than the Enhanced set, or input the signals from multiple parts into a single MFX.

* For details on using MFX, refer to "Using the effects of the internal sound generator" (p. 38).

- A greater number of the Part parameters can be edited from the SD-90.
- When creating song data, you can select sounds from the Classical/Contemporary/Solo/Enhanced sound sets simply by specifying the Bank MSB/LSB and Program Number.
- You can use system exclusive messages to control the Patch parameters that create the sound; e.g., pitch, TVF (filter), LFO, and envelope.
- * For details on the parameters, refer to "Multi-effect parameters" (MFX_J.pdf) on the included CD-ROM.
- These sounds are selected individually for each of the 32 parts. Unlike the Part parameters, the sound (instrument) parameters belong to the sound (not to the Part), meaning that their settings will be overwritten by the newly selected sound when you switch sounds from the front panel or by using program change messages. (The Part parameters will remain as they were set.) If you want to use sound parameters within your song data, you must select the sound before you modify the parameters.



The structure of the synthesizer

When controlling the sound parameters, it is important to understand the structure of a conventional music synthesizer (oscillator, TVF, TVA, envelope, LFO). We recommend that you understand the following concepts before you use the operations described in this section.

WAVE

Provides for selection of the PCM waveform (wave) that is to form the basis of the sound, and specifies how its pitch will change.

TVF (Time Variant Filter)

Determines how the frequency components of the sound will change.

TVA (Time Variant Amplifier)

Specifies how the volume will change, and set the stereo position.

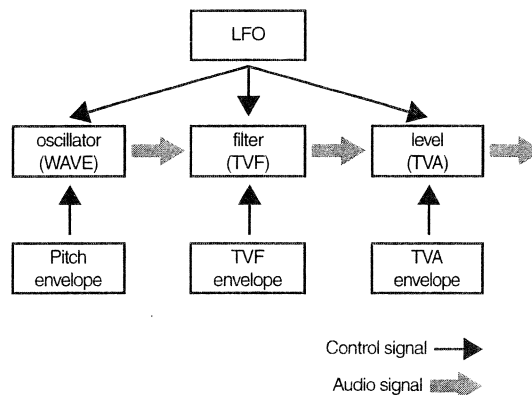
Envelope

Specifies how change will occur over time.

For example if you want to adjust the time over which the sound attacks or decays, you would adjust the TVA envelope to specify the desired volume changes.

LFO (Low Frequency Oscillator)

Specifies cyclic change (modulation). You can create vibrato by applying LFO to the pitch, "wah" by applying LFO to the TVF cutoff frequency, or tremolo by applying LFO to the TVA volume.



■ Switching the sound set

GM2 mode and Native mode each have four sound sets (variations). You can use MIDI messages to switch between these sound sets.

Switching the sound set in GM mode

In GM2 mode, you can switch the sound set by transmitting a system exclusive message.

<Example> Switch the sound set of Part 1 to the Enhanced set

Transmit the following system exclusive data:

Part (pp): 20H = Part 1

:

3FH = Part 32

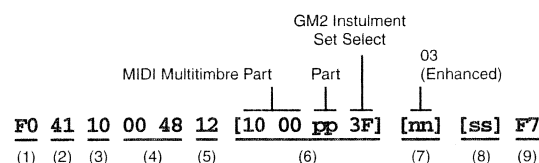
Sound set(nn): 00H = Classical set

01H = Contemporary set

02H = Solo set

03H = Enhanced set

Checksum(ss): For details on the calculation method, refer to "Calculating the checksum" in "MIDI implementation" (MIDIImple_E.pdf) on the included CD-ROM.



- (1) Exclusive status
- (2) ID (Roland : 41H)
- (3) Device ID
- (4) Model ID (SD-90 : 00H 48H)
- (5) Command ID (Data set : 12H)
- (6) Address
- (7) Data
- (8) Checksum
- (9) End of Exclusive

(pp) specifies the part you want to switch, and (nn) selects the sound set.

Switching the sound set in Native mode

In Native mode, you can switch the sound set by transmitting a Bank Select message. The upper byte (MSB) of the MIDI bank number will switch the sound set.

MIDI bank number: CC#00(MSB)= **

**: The set will be switched according to the value you insert here (decimal)

80(50H) = Special 1 set

81(51H) = Special 2 set

96(60H)= Classical set

97(61H)= Contemporary set

98(62H) = Solo set

99(63H) = Enhanced set

After transmitting CC#00, transmit CC#32 (Variation) and PC# (Program Change) messages to switch the sound ("Switching the sound set in Native mode" (p. 79)).

■ Switching the type of part

Switching the Part Mode in GM2 mode

In GM2, transmit a Bank Select message to switch the Part Mode.

MIDI bank number: CC#00(MSB) = **

** : The part mode will be switched according to the value that you insert here (decimal).

121(79H) = Inst part

120(78H) = Drum part

Switching the Part Mode in Native mode

In Native mode, transmit a Bank Select message to switch the Part mode.

MIDI bank number: CC#00(MSB) = **

** : The part mode will be switched according to the value that you insert here (decimal).

Inst part: 80(50H) = Special 1 set
 81(51H) = Special 2 set
 96(60H) = Classical set
 97(61H) = Contemporary set
 98(62H) = Solo set
 99(63H) = Enhanced set
 Drum part: 104(60H) = Classical set
 105(61H) = Contemporary set
 106(62H) = Solo set
 107(63H) = Enhanced set

Switching the Part Mode in GS mode

In GS mode, the Inst mode and Drum Part are normally set as follows:

Inst part: Part 1–9, 11–16

Drum part: Part 10

Transmit system exclusive data to switch the Part Mode.

	address	data	checksum
Address:	40 1* 15	F0 41 10 00 48 12 [40 1x 15] [..] [..]	F7
*	Part number		
Data:	00–02 (00 = Normal, 01 = Drum1, 02 = Drum2)		
Checksum:	For details on the calculation method, refer to “Calculating the checksum” in “MIDI implementation” (MIDIImple_E.pdf) on the included CD-ROM.		

<Example> Switching part 11 to a Drum part

Transmit the following system exclusive data.

After specifying the Part Mode, transmit a Program

Change to part 11 to select a drum set.

	address	data	checksum
	F0 41 10 00 48 12 [40 1A 15] [02] [0F]		F7
	↑	↑	↑
	Part 11	Drum 2	checksum

Correspondence between actual parts and part numbers in GS mode

Actual part	Part number	Actual part	Part number
Part1	1	Part9	9
Part2	2	Part10	0
Part3	3	Part11	A
Part4	4	Part12	B
Part5	5	Part13	C
Part6	6	Part14	D
Part7	7	Part15	E
Part8	8	Part16	F

Data: 00H = OFF (Normal part)
 01H = Set1 (Drum1)
 02H = Set2 (Drum2)

Switching the Part Mode in XGlite mode

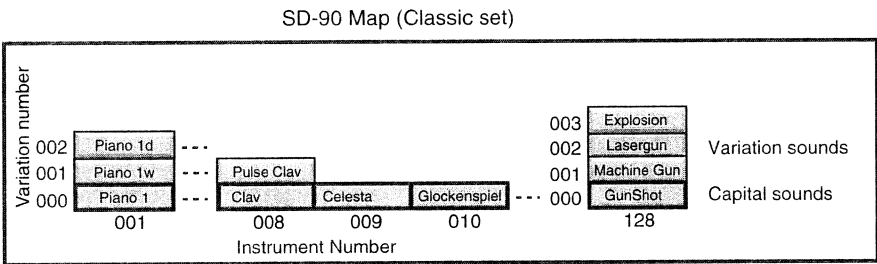
Send a message that causes the sound generator to switch to XGlite mode (F0 43 10 4C 00 00 7E 00 F7), and then use a Bank Select message to select the sound ("**Switching sounds**" (p. 82)).

■ Switching sounds

You can switch the sound (instrument) for each of the SD-90's parts by transmitting MIDI messages from sequencer software running on your computer.

Sounds are specified by their Variation number and Instrument number, but the way in which these numbers are displayed may differ depending on your software. On the SD-90, variation numbers start from 0, and instrument numbers start from 1.

The variation number corresponds to the MIDI bank number, and the instrument number corresponds to the MIDI program number.



How to read the instrument list

The sounds (instruments) built into the SD-90 are listed in the instrument list provided for each sound generator mode.

- "Instrument list (GM2 / Native mode)" (p. 129)
- "Instrument list (GS mode)" (p. 135)
- "Instrument list (XGlite mode)" (p. 137)

Two numbers are used to specify a sound; the **Instrument number** and the **Variation number**. Sounds whose variation number is 000 are "**capital**" sounds, and sounds whose variation number is other than 000 are "**variation**" sounds.

Each instrument list shows the **instrument number**, **variation number**, and the **name of the sound**.

<Example> Native mode instrument list

PC	LSB	MSB	Classic Set	Voice	MSB	Contemp Set	Voice	MSB	Solo Set	Voice	MSB
1	0	96	Piano 1	1	97	Ac.Piano	1	98	St.Piano 1	2	99
	1	96	Piano 1w	1	97	Ac.Piano w	1	98	St.Piano 1w	2	99
	2	96	Piano 1d	1	97	Mild Piano	1	98	European Pf	4	99
2	0	96	Piano 2	1	97	Rock Piano	1	98	St.Piano 2	2	99
	1	96	Piano 2w	1	97	Rock Piano w	1	98	St.Piano 2w	2	99
3	0	96	Piano 3	1	97	E.Grand Pf	2	98	SA Piano	2	99
	1	96	Piano 3w	1	97	E.Grand Pf w	2	98	SA Piano w	2	99
4	0	96	Honky-tonk	2	97	Old Honky	2	98	St.Honky	4	99
	1	96	Honky-tonk w	2	97	Old Honky w	2	98	St.Honky w	4	99

- PC:** Instrument number (program number)
- LSB:** Variation number (value of controller number 32)
Capital sounds (variation number= 0) are printed in bold type.
- MSB:** Sound set number (value of controller number 0)
- Classic Set:** Sound set = Classical set sounds
- Contemp Set:** Sound set = Contemporary set sounds
- Solo Set:** Sound set = Solo set sounds
- Enhance Set:** Sound set = Enhanced set sounds
- Voices:** Number of voices used by that instrument

Switching sounds in GM2 mode

Transmit **bank select LSB** (CC#32) and **program change** (PC#).

- * Bank select MSB (CC#00) is used to switch the part mode. Inst part and Drum part correspond to the following numbers.

Inst part	Drum part
121(79H)	120(78H)

<Example> Specifying part 11 as a GM2 Inst part (009: Celesta 2)

MIDI CH= 11 ... specify MIDI channel 11
 CC#00 121 ... set as a GM2 Inst part
 CC#32 0 ... specify variation number 000
 PC# 9 ... specify program change number 009

Switching sounds in Native mode

Transmit **bank select LSB** (CC#32) and **program change** (PC#).

- * Bank select MSB (CC#0) is used to switch the Part Mode. The number corresponds to Inst part or Drum part as follows:

Inst part		Drum part	
80(50H)	Special 1 set	—	—
81(51H)	Special 2 set	—	—
96(60H)	Classical set	104(60H)	Classical set
97(61H)	Contemporary set	105(61H)	Contemporary set
98(62H)	Solo set	106(62H)	Solo set
99(63H)	Enhanced set	107(63H)	Enhanced set

<Example> Specifying part 11 as an Inst part (009: Celesta 2) of the Classical set

MIDI CH= 11 ... specify MIDI channel 11
 CC#00 96 ... set as an Inst part of the Classical set
 CC#32 0 ... specify variation number 000
 PC# 009 ... specify program change number 009

Switching sounds in GS mode

Transmit bank select MSB and program change.

- * Leave the bank select LSB set at 0.

Actual transmission of MIDI messages

When you input MIDI messages into sequencer software on your computer for transmission to the SD-90, send the messages in the following order.

1. Value of control change 0: MIDI bank number MSB (variation number)
2. Value of control change 32: MIDI bank number LSB (*1)
3. Value of program change: MIDI program number (instrument number)
 (*1)Refer to the explanation of the bank select lower byte (LSB) (see the following section).

The bank select message consists of steps 1 and 2. Bank Select messages are one form of control change message. Processing of the bank select is suspended until the program change is received.

<Example> If you want to select the sound for variation number 8, instrument number 3 (Piano3 w), transmit the following data to the SD-90 (given in decimal form).

1. Value of control change 0: 008 (upper byte of bank number = variation number: 8)
2. Value of control change 32: 0
3. Value of program change: 003 (program number = instrument number: 3)

About the bank select lower byte (LSB)

The SD-90 processes the lower byte (LSB) of the bank select message as follows:

Number	Processing
0	Follows the currently-valid GS mode.

<Example> Switching the sound of a part

To switch the sound of part 2 to **017 Organ 1** (variation 000), transmit the following.

MIDI CH = 02
 CC#00 000 ... set the variation number to 000
 CC#32 0
 PC# 017 ... set the instrument number to 017

<Example> Changing the variation of the part's sound

To switch the sound of part 1 to **008 Detuned EP1** (variation 008), transmit the following.

MIDI CH = 01
 CC#00 008 ... set the variation number to 008
 CC#32 0
 PC# 006 ... set the instrument number to 008

<Example> Changing the sound set and variation of the part's sound

To switch the sound of part 3 to **039 Syn. Bass 3** (variation 008), transmit the following.

MIDI CH = 03
 CC#00 008 ... set the variation number to 008
 CC#32 0
 PC# 039 ... set the instrument number to 039

■ Switching the drum set

In the same way as for instruments, you can switch drum sets by transmitting MIDI messages from sequencer software running on your computer.

The drum set will switch when the program change is received. Transmit the program change message on the same channel as the MIDI receive channel of the drum part. On the SD-90, the drum set number corresponds to the program number.

How to read the drum set list

In normal screens, the drum set number and drum set name will be displayed. Drum sounds (drum instruments) are assigned to each key of the drum set.

The types of drum set built into the SD-90 are listed by number and name in the drum set list for each sound generator mode. The type of sound included in the drum set is also listed by number and name.

- "Drum set list (GM2 / Native mode)" (p. 139)
- "Drum set list (XGlite mode)" (p. 151)
- "Drum set list (GS mode)" (p. 148)

	PC001	PC009	PC017	PC025	PC026
	Standard Set	Room Set	Power Set	Electric Set	Analog Set
	High Q	High Q	High Q	High Q	High Q
28	Slap	Slap	Slap	Slap	Slap
29	Scratch Push	Scratch Push	Scratch Push	Scratch Push	Scratch Push
30	Scratch Pull	Scratch Pull	Scratch Pull	Scratch Pull	Scratch Pull
31	Sticks	Sticks	Sticks	Sticks	Sticks
32	Square Click	Square Click	Square Click	Square Click	Square Click
33	Metron Click	Metron Click	Metron Click	Metron Click	Metron Click
34	Metron Bell	Metron Bell	Metron Bell	Metron Bell	Metron Bell
35	Kick Drum 2	Kick Drum 2	Power Kick 2	Elec.Kick 2	Ana.Kick 2

PC Drum set number (program number)
 Keyboard area Note number
 <- Same sound as percussion instrument sound of Standard Set 1 (PC001)
 — Note number for which no percussion instrument exists

Switching drum sets in GM2 mode

Transmit **bank select LSB** (CC#32) and **program change** (PC#).

- * *Bank select MSB (CC#00) is used to switch the part mode. Inst part and Drum part correspond to the following numbers.*

Inst part	Drum part
121(79H)	120(78H)

<Example> Specifying part 10 as a GM2 drum part (009:Room Set 2)

MIDI CH=	10	
CC#00	120	... set as a GM2 drum part
CC#32	0	... specify variation number 000
PC#	9	... specify program change number 009

Switching drum sets in Native mode

Transmit bank select LSB(CC#32) and program change (PC#).

- * Bank select MSB (CC#0) is used to switch the Part Mode. Inst part and Drum part correspond to the following numbers.

Inst part		Drum part	
80(50H)	Special 1 set	—	—
81(51H)	Special 2 set	—	—
96(60H)	Classical set	104(60H)	Classical set
97(61H)	Contemporary set	105(61H)	Contemporary set
98(62H)	Solo set	106(62H)	Solo set
99(63H)	Enhanced set	107(63H)	Enhanced set

<Example> Specifying part 10 as a Classical set drum part (009: Room Set)

MIDI CH=	10	
CC#00	104	... specify as a Classical set drum part
CC#32	0	... specify variation number 000
PC#	9	... specify program change number 009

Switching drum sets in GS mode

In GS mode, part 10 is specified as a drum part (MIDI receive channel: 10). The note data in the rhythm data you are playing must match the note numbers of the drum set you are using.

Drum Set name and Drum Set number (Program number)

STANDARD 1	---	ROOM	---	TR-808	---	User Set	User Set
001		009		026		065	066

<Example> Switching the drum set

Transmit the following to set part 10 sound to 009: Room.

MIDI CH =	10	
CC#00	000	... specify variation number 000
CC#32	0	
PC#	009	... specify drum set number 009: Room

■ Editing MIDI effect parameters

Editing the reverb (in GM2 mode)

To edit the reverb via MIDI messages, transmit the following system exclusive data (global parameter control).

F0 7F 10 04 05 01 01 01 01 01 pp vv F7

pp: Parameter number

vv: Value (setting)

	VV (setting)
pp = 0 (Reverb Type)	00 Small Room
	01 Medium Room
	02 Large Room
	03 Medium Hall
	04 Large Hall
	08 Plate
pp = 1 (Reverb Time)	00–7F (0–127)

<Example> Setting the reverb type to 04 Large Hall

Transmit the following system exclusive.

F0 7F 10 04 05 01 01 01 01 01 00 04 F7

Editing the chorus (in GM2 mode)

To edit the chorus via MIDI messages, transmit the following system exclusive data (global parameter control).

F0 7FH 10 04 05 01 01 01 01 02 pp vv F7

pp: Parameter number

vv: Value (setting)

	VV (setting)
pp = 0 (Chorus Type)	00 Chorus1
	01 Chorus2
	02 Chorus3
	03 Chorus4
	04 FB Chorus
	05 Flanger
pp = 1 (Mod Rate)	00–7F (0–127)
pp = 2 (Mod Depth)	
pp = 3 (Feedback)	
pp = 4 (Send To Reverb)	

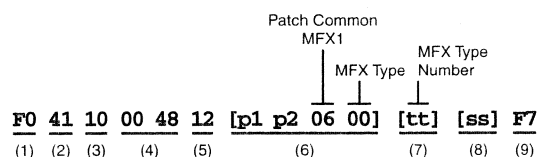
<Example> Setting the chorus type to 3 Chorus4

Transmit the following system exclusive data.

F0 7F 10 04 05 01 01 01 02 01 00 03 F7

Changing the MFX type (Native mode)

To change the effect type of the enhanced sounds selected for parts 1–3, transmit the following system exclusive message.



- (1) Exclusive status
- (2) ID (Roland : 41H)
- (3) Device ID
- (4) Model ID (SD-90 : 00H 48H)
- (5) Command ID (Data set : 12H)
- (6) Address
- (7) Data
- (8) Checksum
- (9) End of Exclusive

Address (p1 p2): when changing the insertion effect of part 1 = 11 00
 when changing the insertion effect of part 2 = 11 20
 when changing the insertion effect of part 3 = 11 40

Data (tt): Effect type number

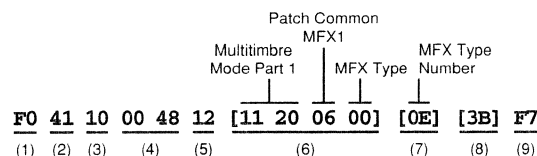
For details on effect types, refer to "MFX parameter list" (p. 105), and to "Multi-effect parameters" (MFX_E.pdf) on the included CD-ROM. No effect is assigned to Effect Type number 00 (THROUGH).

Checksum (ss): For details on the calculation method, refer to the section "Calculating the checksum" within "MIDI implementation" (MIDIImple_E.pdf) on the included CD-ROM.

* This is valid if the MFX select of parts 1–3 has not been changed since a Native Reset message was received.

<Example> Specifying 14: STEREO CHORUS as the effect of an enhanced sound for part 2

Transmit the following system exclusive data.



Using MFX with other parts (Native mode)

By transmitting the following system exclusive message, the insertion effect used by the enhanced sounds selected for parts 1–3 can be used by other parts. The output of all parts that use that MFX will be mixed and sent to the MFX.

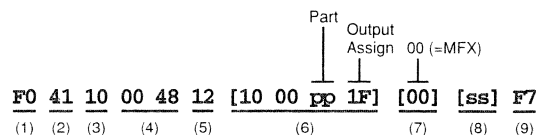
- Do not change the MFX source of the three insertion effects after a Native Reset message is received.
- This will not work if effect type 00 (no effect: THROUGH) has been specified for the enhanced sounds selected for parts 1–3.
- Any control performed on the MFX will apply equally to all parts that use that MFX.

1. Transmit "Output Select=MFX" to specify MFX as the output of the part.

Address (pp): when using the MFX for part 1 = 20
 when using the MFX for part 2 = 21
 :
 when using the MFX for part 32 = 3F

Data: 00(output assign = MFX)

Checksum (ss): For details on the calculation method, refer to "Calculating the checksum" in "MIDI implementation" (MIDIImple_E.pdf) on the included CD-ROM.



- | | | | | | | | | | | | | |
|-----------|-----------|-----------|-----------|-----------|-------------|------------|-----------|-----------|------------|-------------|-------------|-----------|
| | | | | | Temporary | Part | Part | | | | | |
| | | | | | Multitimbre | | Output | | | | | |
| | | | | | | | MFX | | | | | |
| | | | | | Select | | | | | | | |
| <u>F0</u> | <u>41</u> | <u>10</u> | <u>00</u> | <u>48</u> | <u>12</u> | <u>[10</u> | <u>00</u> | <u>pp</u> | <u>20]</u> | <u>[mm]</u> | <u>[ss]</u> | <u>F7</u> |
| (1) | (2) | (3) | (4) | (5) | | (6) | | | | (7) | (8) | (9) |

when using the MFX for part 2 = 21

when using the MFX for part 32 = 3F

when the desired effect (MFX) is used by the enhanced sound of part 2 = 01 (MFX B)

when the desired effect (MFX) is used by the enhanced sound of part 3 = 02 (MFX C)

Transmit the following system exclusive data.

- 2.** F0 41 10 00 48 12 10 00 25 20 02 29 F7

Sharing an MFX between multiple parts

Here's how an MFX can be shared by more than one part.

* When an MFx is shared by more than one part, the effect setting of the enhanced sound of the part using that MFx will be ignored.

- | | | | | | | | | | | |
|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|---------------|-----------------|-------------|------------------|
| | | | | | | Multitimbre
Common | MFX
Source | 00
(=Common) | | |
| <u>F0</u> | <u>41</u> | <u>10</u> | <u>00</u> | <u>48</u> | <u>12</u> | [10 00 00 | mm] | [01] | [ss] | <u>F7</u> |
| (1) | (2) | (3) | (4) | (5) | | (6) | | (7) | (8) | (9) |

when you want to use MFX B from multiple parts = 31

when you want to use MFX C from multiple parts = 32

01(MFX Source=COMMON)

Data: 01(MFX Source=COMMON)

Checksum (ss):For details on the calculation method, refer to “Calculating the checksum” in “MIDI implementation” (MIDIImple_E.pdf) on the included CD-ROM.

- Part
Output Assign 00 (=MFX)
- F0 41 10 00 48 12 [10 00 pp 1F [00] [ss] F7]
- (1) (2) (3) (4) (5) (6) (7) (8) (9)

when you want part 2 to use the MFX =21

when you want part 32 to use the MFX =3F

Data: 00(Output Assign=MFX)

Checksum (ss):For details on the calculation method, refer to “Calculating the checksum” in “MIDI implementation” (MIDIImple_E.pdf) on the included CD-ROM.

- | <div> <div> <div>Temporary</div> <div>Multitimbre</div> </div> <div> <div>Part</div> <div>Part Output</div> <div>MFX Select</div> </div> </div> | | | | | | | | | |
|---|-----------|-----------|-----------|-----------|-----------|----------------------|-------------|-------------|-----------|
| <u>F0</u> | <u>41</u> | <u>10</u> | <u>00</u> | <u>48</u> | <u>12</u> | <u>[10 00 pp 20]</u> | <u>[nm]</u> | <u>[ss]</u> | <u>F7</u> |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | |

Data (nn): when you want to use MFX A =00
 when you want to use MFX B =01
 when you want to use MFX C =02

4. Select the MFX type.

						Multitimbre Common MFX	MFX Type	MFX Number		
F0	41	10	00	48	12	[10 00 nm 00]		[tt]	[ss]	F7
(1)	(2)	(3)	(4)	(5)		(6)		(7)	(8)	(9)

Data (tt): Select the effect type (00–5A)

Checksum (ss):For details on the calculation method, refer to “Calculating the checksum” in “MIDI implementation” (MIDIImple_E.pdf) on the included CD-ROM.

<Example> Share MFX B with the sounds of parts 4, 6, and 7, and set the effect type to 24:REVERB

- 1.** F0 41 10 00 48 12 10 00 00 31 00 3F F7
- 2-1.** F0 41 10 00 48 12 10 00 23 1F 00 2E F7
- 2-2.** F0 41 10 00 48 12 10 00 25 1F 00 2C F7
- 2-3.** F0 41 10 00 48 12 10 00 26 1F 00 2B F7
- 3-1.** F0 41 10 00 48 12 10 00 23 20 01 2C F7
- 3-2.** F0 41 10 00 48 12 10 00 25 20 01 2A F7
- 3-3.** F0 41 10 00 48 12 10 00 26 20 01 29 F7
- 4.** F0 41 10 00 48 12 10 00 08 00 18 40 F7

Editing the MFX effect parameters

You can edit effect parameters such as equalizer gain and frequency, delay time, and feedback level.

- * The MFX effect parameters will sometimes be included in the sound parameters (PART), and sometimes be outside the sound (COMMON). The address will differ depending on which of these is being referenced, as specified by "MFX source."

When MFX source = PART

When MFX source = PART (i.e., when editing the MFX of an enhanced sound), transmit the following system exclusive data.

F0 41 10 00 48 12 [p1 p2 r1 r2] [d1 d2 d3 d4] [ss] F7
 (1) (2) (3) (4) (5) (6) (7) (8) (9)

Address (p1 p2): when editing the insertion effect for part 1 =11 00

when the sound is a drum set =11 10

when editing the insertion effect for part 2 =11 20

when the sound is a drum set =11 30

when editing the insertion effect for part 3 =11 40

when the sound is a drum set =11 50

Addressr1 r2: when editing parameter number 1 =06 11

when editing parameter number 2 =06 15

: (the address will increment 04H each time the parameter number increases by 1)

when editing parameter number 29 =07 01

when editing parameter number 30 =07 05

when editing parameter number 31 =07 09

when editing parameter number 32 =07 0D

Data

(d1, d2, d3, d4): Effect parameter

The lower 4 bits of the four data bytes indicate a signed numerical value.

Data byte expression

The value to be specified is first expressed as a **16-bit hexadecimal** in which **32768 = 8000H** is 0. Each digit is input in the lower place of each data byte.

Parameter value to be specified	Data bytes
-20000 = 031EH	00 03 01 0E
-19999 = 031FH	00 03 01 0F
:	:
-2 = 7FFFH	07 0F 0F 0E
-1 = 7FFFH	07 0F 0F 0F
0 = 8000H	08 00 00 00
1 = 8001H	08 00 00 01
2 = 8002H	08 00 00 02
:	:
19999 = CE1FH	0C 0E 01 0F
20000 = CE20H	0C 0E 02 00

Checksum (ss): For details on the calculation method, refer to "Calculating the checksum" in "MIDI implementation" (MIDIImple_E.pdf) on the included CD-ROM.

<Example> Editing the MFX of part 3

If **MFX type=18:Mod Delay** is applied to the sound of part 3 and you want to change its **DLY Right** setting (parameter number 02) to **80** (=50H), transmit the following system exclusive data.

1. F0 41 10 00 48 12 11 40 06 15 08 00 05 00 07 F7

When MFX source = COMMON

When MFX source = COMMON, transmit the following system exclusive data.

F0	41	10	00	48	12	[10	00	r1	r2]	[d1	d2	d3	d4]	[ss]	F7
(1)	(2)	(3)	(4)	(5)		(6)				(7)				(8)	(9)

Address (p1 p2): when editing MFX A's parameter number 1 =06 11
 (for MFX B =08 11, for MFX C =0A 11)
 when editing MFX A's parameter number 2 =06 15 :
 when editing MFX A's parameter number 3 =06 19 :
 : (the address will increment by 04H each time the parameter number increases by 1)
 when editing MFX A's parameter number 29 =07 01
 (for MFX B =09 11, for MFX C =0B 11)
 when editing MFX A's parameter number 30 =07 05 :
 when editing MFX A's parameter number 31 =07 09 :
 when editing MFX A's parameter number 32 =07 0D :

Data

(d1, d2, d3, d4): Effect parameter
 The lower 4 bits of the four data bytes indicate a signed numerical value. For details on the data byte expression, refer to "**Data byte expression**" (p. 91).

Checksum (ss): For details on the calculation method, refer to "Calculating the checksum" in "MIDI implementation" (MIDIImpl_E.pdf) on the included CD-ROM.

<Example> Editing MFX C COMMON

If MFX C COMMON is set to **MFX type=53:Od2**, and you want to change its **EQ Low Gain** (parameter number 05) to **-3 dB**, transmit the following system exclusive data.

1. F0 41 10 00 48 12 10 00 0A 21 07 0F 0F 0D 13 F7

■ Writing/loading SD-90 settings

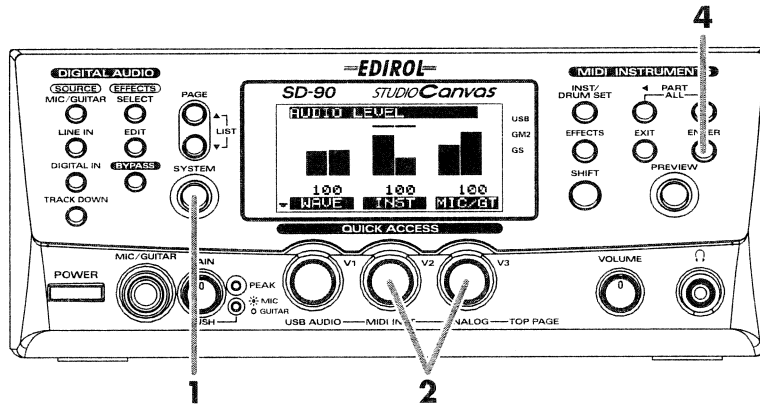
The SD-90 is able to transmit the settings of its sound generator as MIDI data. Two types of data can be transmitted: Bulk data, which transmits a group of parameters; and **Individual data**, which transmits a single parameter. All data is transmitted in the form of **system exclusive data**.

Bulk Dump is used when you want to save SD-90 settings on your sequencer software or an external MIDI sequencer. You can also connect two SD-90 units and transmit a bulk dump to set all parameters of both SD-90 units to the same settings.

By using Individual data you can create song data more efficiently, since you will not have to look up each system exclusive message.

Transmitting a bulk dump

When transmitting or receiving bulk dump data, you must also check settings and procedures on your sequencer software or external MIDI sequencer. Here we will explain how to transmit a bulk dump from the SD-90.



1. Press [SYSTEM].
2. Turn the [V2] knob or [V3] knob to select the contents of the data that will be transmitted. The highlighted data will be transmitted.

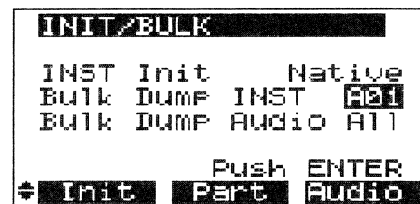
* Bulk Dump INST can be executed only when the sound generator is in Native mode. In other cases, this will be displayed as "—" and cannot be executed.

Bulk Dump INST A01–A16, B1–B16

Specifies the internal sound generator Part whose parameter values will be transmitted when the bulk dump is executed.

Bulk Dump Audio ALL, AFX

Specifies the range of audio settings whose parameter values will be transmitted when the bulk dump is executed.



3. Begin recording on your sequencer software or external MIDI sequencer.
4. When you press [ENTER], transmission of the highlighted data will begin. While the display indicates **Transmit SysEx**, the SD-90 is transmitting data. Press [EXIT] if you want to abort transmission.

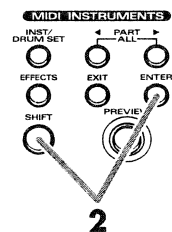
* It is not possible to simultaneously transmit a bulk dump containing both internal sound generator and audio section parameters.

5. When data transmission is completed, the display will indicate **COMPLETED**. Stop recording on your sequencer software or external MIDI sequencer.
By playing back the saved bulk dump data on your sequencer software or external MIDI sequencer, you can restore the SD-90 to the state in which it was when the data was saved.

Transmitting individual data

Individual data can be transmitted in each editing screen.

1. In each editing screen, select the parameter that you want to transmit, and specify its value.
2. Hold down [SHIFT] and press [ENTER]. The highlighted parameter value will be transmitted.



Controlling the audio mixer

To use MIDI messages to control the functionality of the audio mixer, you can transmit the system exclusive messages shown in the examples below.

F0 41 10 00 48 12 [a1 a2 a3 a4] [dd ...] [ss] F7
 (1) (2) (3) (4) (5) (6) (7) (8) (9)

- (1) Exclusive status
- (2) ID (Roland : 41H)
- (3) Device ID
- (4) Model ID (SD-90 : 00H 48H)
- (5) Command ID (Data set : 12H)
- (6) Address
- (7) Data
- (8) Checksum
- (9) End of Exclusive

■ Switching the routing

You can use MIDI messages to switch the routing. Transmit the following system exclusive messages according to the desired routing.

<Example> Switching the routing to 05:Send Return AFX

Transmit the following system exclusive data.

Audio Common
Mixer Preset Mode 05
Audio (Send/Return AFX)

F0 41 10 00 48 12 [02 10 10 00] [05] [59] F7
 (1) (2) (3) (4) (5) (6) (7) (8) (9)

■ Editing mixer parameters

To edit the recording volume (Rec Vol) of the audio mixer via MIDI, transmit the following system exclusive data.

<Example> Setting the audio mixer recording volume to 89

Transmit the following system exclusive data.

Audio Common
Audio Rec Vol 59H(=89)

F0 41 10 00 48 12 [02 10 00 01] [59] [14] F7
 (1) (2) (3) (4) (5) (6) (7) (8) (9)

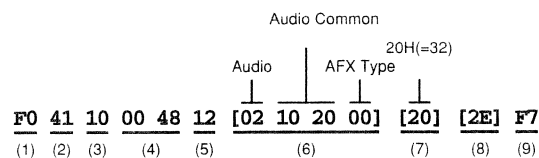
■ Editing audio effect parameters

To edit the drive (OD Drive) of the "Guitar Multi" audio effect via MIDI, transmit the following system exclusive data.

<Example> Setting OD to 89 for the Guitar Multi

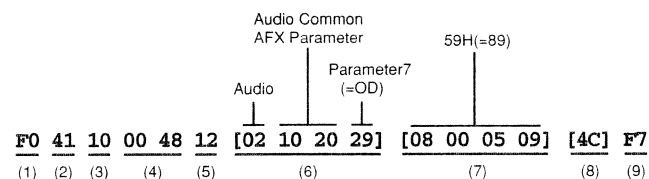
Transmit the following system exclusive data.

1. Transmit AFX TYPE to set the effect type to Guitar Multi.

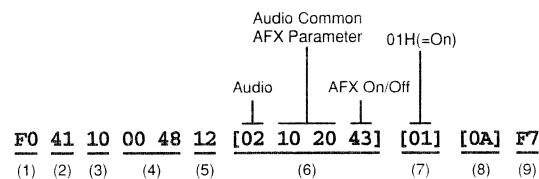


2. Transmit AFX PARAMETER 7 to select OD within Guitar Multi, and set the effect parameter to 89.

* The lower 4 bits of the four data bytes indicate a signed numerical value. For details on the data byte expression, refer to "Data byte expression" (p. 91).



3. Transmit AFX SW to turn on the audio effect.



Appendices

Troubleshooting

If the SD-90 does not function as you expect, please check the following points first. If this does not resolve the problem, please contact a Roland Service Center (refer to the back cover).

■Power won't come on

- Is the power cord of the SD-90 correctly connected to the AC outlet and to the SD-90?
Make the correct connections. -> "Getting Started"

■Insufficient volume on a device connected to the audio input/output jacks

- Could you be using a connection cable with a built-in resistor?
Use a connection cable without a resistor (such as one from the Roland PCS series).
- A cable with a built-in resistor is sometimes included with audio playback equipment.
Using such a cable may cause the playback to be too soft. Please use a cable that does not have a built-in resistor.
- Are input/output jacks selected correctly in the SYSTEM screen?
"Analog connections" (p. 48), "Digital connections" (p. 50),
"Specifying the audio input/output jacks" (p. 75)
- If you are using analog input jacks, the GAIN knob may have been lowered.
"Setting the volume of the source sound" (p. 53)

■A specific part cannot be heard

- Make sure that the MIDI receive channel of the Part matches the MIDI transmit channel of the connected MIDI device.

■There is a part that does not sound even when you press the [PREVIEW] button.

- The Part Level may have been lowered.

■A certain range of notes does not sound

- Keyboard Range settings may have been made.
"Part parameters (Native mode)" (p. 36)

■The sound you expect is not selected

- Are you transmitting a program change number that the SD-90 does not support?
Refer to "Instrument list (GM2 / Native mode)" (p. 129) for details about the sounds provided on the SD-90.
- Is the sound generator mode correct?
Specify the sound generator mode that includes the sound you want to select.
Sound generator mode -> "Switching the sound generator mode (Inst Initialize)" (p. 70)
- Is the sound set correct?
If the sound generator mode is GM2 mode or Native mode, there are four variations of sound set. Specify the sound set that includes the sound you want to select ("Selecting the sound set" (p. 23)).

■Notes do not sound

Compared to other problems, there are a greater number and wider variety of reasons that notes do not sound. However in many cases, this problem is caused by incorrect connections between devices, or by incorrect driver or software settings.

●Is the power of the connected device(s) turned on?

●Has the volume level been lowered by the volume knob?

●Have the MIDI IN and OUT connectors been connected incorrectly?

●Can you hear sound through a connected set of headphones?

If you can hear sound in the headphones, check whether the audio cable conveying the signal to the other device is broken or has a faulty connection, or whether there is a problem with the connected audio device.

●Does the bar indicator move in the display?

If the bar indicator is moving.

The SD-90 is receiving MIDI data correctly. Check the setting of the volume knobs and the cable connections once again.

If the bar indicator is not moving.

Is the lowest dot of the bar indicator in the display dark?

If this is dark, Part Mute is turned on. Turn it off ("Muting a part" (p. 26)).

●The volume level of all parts may have been lowered.

"Adjusting the volume in the main screen" (p. 13)

●The volume level may have been lowered by an expression pedal (or similar device) connected to a connected MIDI device.

●Are the audio routing settings correct?

Refer to "Selecting a routing" (p. 52) and check the settings.

If there is still no sound, it is possible that there is a problem with the driver or software settings. Refer to "Troubleshooting" in the Getting Started manual, and check the appropriate points.

■The bar indicator does not move even when notes sound

●Is PART A shown in the display while you are sending MIDI messages to Part B?

If so, press [PART ◀] or [PART ▶] to view PART B in the display.

■Sound is distorted

●Is an effect that distorts the sound being applied?

If a specific sound or part is distorted, lower the Part Level.

●Is the USB recording level or OUTPUT level too high?

The input level is excessive. Lower the input level of each source as described in "Setting the volume of the source sound" (p. 53).

■Pitch is incorrect

●Is the pitch of all parts or of a specific part incorrect by more than a semitone?

●Did you make Fine Tune settings for a specific part?

●Have Pitch Bend messages been received without returning to the zero value?

■Notes are "stuck" (continue sounding)

Depending on the sequencer software you are using, changing the recording track while playing the keyboard may cause notes to stick.

■Something is wrong with the sound

- You may have switched to another sound after editing sound parameters (such as the filter).
Set all sound parameter values to 0.
- It is possible that the parameter settings of the SD-90 have become corrupted.
Please initialize the sound generator. ("Switching the sound generator mode (Inst Initialize)" (p. 70))

■Notes are interrupted

- If you attempt to use more than 128 voices simultaneously, notes will be interrupted.
"Polyphony and voices" (p. 19)

■Exclusive messages are not received

- Does the device ID number of the transmitted exclusive data match the device ID number of the SD-90?
"Setting the Device ID Number" (p. 72)
- Is the checksum correct?
For details on the calculation method, refer to "Calculating the checksum" in "MIDI implementation" (MIDIImple_E.pdf) on the included CD-ROM.

■The SD-90 does not transmit MIDI data

- If you want to transmit SD-90 data via the USB connector, start up the SD-90 in USB mode.
MIDI data will not be output from the USB connector if the SD-90 is started up in MIDI mode.
("Selecting the startup mode" (p. 70))

■Sequencer software does not play the MIDI sound generator connected to the SD-90

- Of the music data received at the SD-90's USB connector, the data assigned to the outputs "SD-90 MIDI OUT 1" and "SD-90 MIDI OUT 2" will be transmitted from the MIDI OUT 1 connector and MIDI OUT 2 connector, respectively.
Make the correct settings in your sequencer software and in the various drivers.

■When you turn MFX on, all of the system effects you have previously set (such as reverb) are initialized.

- When you turn MFX on, it will no longer be possible to use control changes to set the send level of the system effect.
This means that when you turn MFX on, it will be necessary to send the signal to the system effect via a different route than before.
You can use the MFX SEND LEVEL TO REVERB/CHORUS/DELAY system exclusive message to set the system effect send level (common to the signals that have passed through the insertion effect) for when MFX is turned ON ("Controlling the SD-90 via MIDI" (p. 77)).

■Is it necessary to perform initialization each time the power is turned on?

- When the SD-90 is turned on, it is initialized to the sound generator mode specified in "Sound generator mode at startup."

"Selecting the startup mode" (p. 70)

If an exclusive message initializing the sound generator is inserted (e.g., on your sequencer) at the beginning of a song, the sound generator will be initialized before the song begins.

■ I want to transmit the data for only a specific parameter to the computer (sequencer software)

- In addition to bulk data, which transmits a group of parameters together, the SD-90 can transmit "individual data" for separate parameters. If a bulk dump would involve too much data, you can try using this "individual data."

Individual data lets you create data without having to look up each system exclusive message, and provides an efficient way to create (for example) song data that contains exclusive messages.

"Transmitting a bulk dump" (p. 93)

"Transmitting individual data" (p. 94)

Part parameter list

■ Part parameters (GM2 mode, Native mode)

Parameter		Value
INST/DRUM	INST/DRUM Set	INST, DRUM
Volume	Volume	0– 100 –127
Pan	Pan	L64– 0 –63R
Chorus Send	Chorus Send Level	0 –127
Reverb Send	Reverb Send Level	0– 40 –127
Vibrato Rate	Vibrato Rate	-64– 0 –+63
Vibrato Depth	Vibrato Depth	-64– 0 –+63
Vibrato Delay	Vibrato Delay	-64– 0 –+63
TVF Cutoff Freq	TVF Cutoff Frequency	-64– 0 –+63
TVF Resonance	TVF Resonance	-64– 0 –+63
TVF&TVA Release	TVF&TVA Release	-64– 0 –+63
TVF&TVA Attack	TVF&TVA Attack	-64– 0 –+63
TVF&TVA Decay	TVF&TVA Decay	-64– 0 –+63
Portament SW	Portament SW	ON, OFF
Portament Time	Portament Time	0 –127
Coarse Tuning	Channel Coarse Tuning	-24– 0 –+24
Fine Tuning	Channel Fine Tuning	-100.0– 0.0 –+100.0 cent
Mono/Poly	Mono/Poly mode	Poly, Mono
Rx Channel	Rx Channel	1–16, OFF
PitchBendSens	Pitch Bend Sensitivity	0– +/-24
Modulation Depth	Modulation Depth	0 –127
Scale/Octave Tuning Adjust	Scale/Octave Tuning Adjust	-64– 0 –+63

■ Part parameters (Native mode)

Parameter		Value
Legato ON/OFF	Legato ON/OFF	ON, OFF
Part Velocity Sens Offset	Part Velocity Sens Offset	-63– 0 –+63
Part Keyboard Fade Width Lower	Part Keyboard Fade Width Lower	0 –127
Part Keyboard Range Lower	Part Keyboard Range Lower	C-1 –UPPER
Part Keyboard Range Upper	Part Keyboard Range Upper	LOWER– G9
Part Keyboard Fade Width Upper	Part Keyboard Fade Width Upper	0 –127
PART OUTPUT ASSIGN	Part Output Assign	MFX, A , PAT
PART OUTPUT MFX SELECT	Part Output MFX Select	MFX A, MFX B, MFX C
PART DRY SEND LEVEL	Part Dry Send Level	

■ Parameters common to all parts (GM2 mode, Native mode)

Parameter		Value
Master Volume	Master Volume	0–127
Master Fine Tuning	Master Fine Tuning	415.3– 440.0 –466.2Hz
Master Coarse Tuning	Master Coarse Tuning	-24– 0 –+24

Effect parameter list

■ Effect parameter (GM2 mode)

Reverb (System Effect)

Parameter		Value
Reverb Type	Reverb Type	Small Room, Medium Room, Large Room, Medium Hall, Large Hall, Plate
Reverb Time	Reverb Time	0–127

Chorus (System Effect)

Parameter		Value
Chorus Type	Chorus Type	Chorus1, Chorus2, Chorus3, Chorus4, FB Chorus, Flanger
Mod Rate	Modulation Rate	0–127
Mod Depth	Modulation Depth	0–127
Feedback	Feedback	0–127
Send to Reverb	Send to Reverb	0–127

EQ (Equalizer)

Parameter		Value
EQ Switch	EQ Switch	Off, On
EQL Low Frequency	EQL Low Frequency	200, 400Hz
EQR Low Frequency	EQR Low Frequency	200, 400Hz
EQL Low Gain	EQL Low Gain	-15–+15
EQR Low Gain	EQR Low Gain	-15–+15
EQL High Frequency	EQL High Frequency	2000, 4000, 8000Hz
EQR High Frequency	EQR High Frequency	2000, 4000, 8000Hz
EQL High Gain	EQL High Gain	-15–+15
EQR High Gain	EQR High Gain	-15–+15

■ Effect parameter (Native mode)

Reverb (System Effect)

Parameter		Value
Reverb Type	Reverb Type	0(Off), 1(Reverb), 2(Room), 3(SRV Hall), 4(SRV Plate)(*1)
Reverb Level	Reverb Level	0–127

(*1) When Reverb Type is set to 1 (Reverb)

Parameter		Value
Type	Reverb/Delay Type	*2
Time	Reverb/Delay Time	0–127
HF Damp	Reverb/Delay HF Damp	*3
Feedback	Delay Feedback	0–127

*2: ROOM1, ROOM2, STAGE1, STAGE2, HALL1, HALL2, DELAY, PAN-DELAY

*3: 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

(*1)When Reverb Type is 2 (Room), 3 (SRV Hall), or 4 (SRV Plate)

Parameter		Value
Pre Delay	Pre Delay Time	0.0–100 ms
Time	Reverb Time	0–127
Size	Size	1–8
High Cut	High Cut Frequency	*4
Density	Reverb Density	0–127
Diffusion	Reverb Diffusion	0–127
LF Damp Freq	LF Damp Frequency	*5
LF Damp Gain	LF Damp Gain	-36–0 dB
HF Damp Freq	HF Damp Frequency	*6
HF Damp Gain	HF Damp Gain	-36–0 dB

*4: 160, 200, 250, 320, 400, 500, 640, 800, 1000, 1250, 1600, 2000, 2500, 3200, 4000, 5000, 6400, 8000, 10000, 12500 Hz, BYPASS

*5: 50, 64, 80, 100, 125, 160, 200, 250, 320, 400, 500, 640, 800, 1000, 1250, 1600, 2000, 2500, 3200, 4000 Hz

*6: 4000, 5000, 6400, 8000, 10000, 12500 Hz

Chorus (System Effect)

Parameter		Value
Chorus Type	Chorus Type	0(Off), 1(Chorus), 2(Delay)(*7)
Chorus Output Select	Chorus Output Select	MAIN, REV, MAIN+REV
Chorus Level	Chorus Level	0–127
Chorus Parameter 1-12	Chorus Parameter 1-12	

(*7)When Chorus Type is 1 (CHORUS)

Parameter		Value
Rate	Chorus Rate	0.05–10.00 Hz
Depth	Chorus Depth	0–127
Feedback	Chorus Feedback	0–127
Phase	Phase	0–180 degrees
Pre Delay	Chorus Pre Delay	0.0–100 ms
Type	Filter Type	OFF, LPF, HPF
Cutoff freq	Cutoff Frequency	*8

*8: 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

(*7)When the Chorus Type is 2 (DELAY)

Parameter		Value
Center	Delay Center	200–1000 ms, note value
Left	Delay Left	200–1000 ms, note value
Right	Delay Right	200–1000 ms, note value
HF Damp	HF Damp	*9
Feedback	Feedback	-98–+98 %
Center	Delay Center Level	0–127
Left	Delay Left Level	0–127
Right	Delay Right Level	0–127

*9: 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

MFX (Multi-effects)

Parameter		Value
MFX A-C Type	Multi-effect A–C Type	0–90
MFX A-C Dry Send Level	Multi-effect A–C Dry Send Level	0–127
MFX A-C Chorus Send Level	Multi-effect A–C Chorus Send Level	0–127
MFX A-C Reverb Send Level	Multi-effect A–C Reverb Send Level	0–127
MFX A-C Control 1-4 Source	MFX A–C Control 1–4 Source	OFF, CC01–95, PITCH BEND, AFTERTOUC, SYS-CTRL 1–4
MFX A-C Control 1-4 Sens	MFX A–C Control 1–4 Sensitivity	-63–+63
MFX A-C Parameter 1-32	MFX A–C Parameter	
MFX A SOURCE	MFX A source	COMMON, PART1–32
MFX B SOURCE	MFX B source	COMMON, PART1–32
MFX C SOURCE	MFX C source	COMMON, PART1–32
PART OUTPUT ASSIGN	Part Output Assign	MFX, DRY, PAT
PART OUTPUT MFX SELECT	Part Output MFX Select	MFX A, MFX B, MFX C
PART DRY SEND LEVEL	Part Dry Send Level	0–127

EQ (Equalizer)

Parameter		Value
EQ Switch	EQ Switch	Off, On
EQL Low Frequency	EQL Low Frequency	200, 400Hz
EQR Low Frequency	EQR Low Frequency	200, 400Hz
EQL Low Gain	EQL Low Gain	-15–+15
EQR Low Gain	EQR Low Gain	-15–+15
EQL High Frequency	EQL High Frequency	2000, 4000, 8000Hz
EQR High Frequency	EQR High Frequency	2000, 4000, 8000Hz
EQL High Gain	EQL High Gain	-15–+15
EQR High Gain	EQR High Gain	-15–+15

MFX parameter list

1:Stereo EQ

No.	Display	Setting Value	Value Dec.	Initial
1	Low Freq	200, 400 Hz	0 - 1	0
5	Mid1 Freq	200 - 8000 Hz (*1)	0 - 16	7
8	Mid2 Freq	200 - 8000 Hz (*1)	0 - 16	16
3	High Freq	4000, 8000 Hz	0 - 2	1
2	Low Gain	-15 - +15 dB	0 - 30	22
7	Mid1 Gain	-15 - +15 dB	0 - 30	17
10	Mid2 Gain	-15 - +15 dB	0 - 30	16
4	High Gain	-15 - +15 dB	0 - 30	19
6	Middle1 Q	0.5, 1.0, 2.0, 4.0, 8.0	0 - 4	0
9	Middle2 Q	0.5, 1.0, 2.0, 4.0, 8.0	0 - 4	0
11	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

2:Overdrive

No.	Display	Setting Value	Value Dec.	Initial
1	OD Drive	0 - 127	0 - 127	127
3	AS AmpType	SMALL, BUILT-IN, 2-STACK, 3-STACK	0 - 3	0
4	EQ Low Gain	-15 - +15 dB	0 - 30	15
5	EQ High Gain	-15 - +15 dB	0 - 30	15
6	Output Level	0 - 127	0 - 127	127
2	Output Pan	L64 - 63R	0 - 127	64

3:Dist

No.	Display	Setting Value	Value Dec.	Initial
1	DS Drive	0 - 127	0 - 127	127
3	AS AmpType	SMALL, BUILT-IN, 2-STACK, 3-STACK	0 - 3	3
4	EQ Low Gain	-15 - +15 dB	0 - 30	15
5	EQ High Gain	-15 - +15 dB	0 - 30	15
6	Output Level	0 - 127	0 - 127	127
2	Output Pan	L64 - 63R	0 - 127	64

4:Phaser

No.	Display	Setting Value	Value Dec.	Initial
1	PH Manual	100 - 8000 Hz	0 - 125	30
2	PH Rate	0.05 - 10.00 Hz	0 - 125	19
3	PH Depth	0 - 127	0 - 127	64
4	PH Resonance	0 - 127	0 - 127	0
5	PH Mix Level	0 - 127	0 - 127	127
7	Output Level	0 - 127	0 - 127	127
6	Output Pan	L64 - 63R	0 - 127	64

5:Spectrum

No.	Display	Setting Value	Value Dec.	Initial
1	250Hz Gain	-15 - +15 dB	0 - 30	15
2	500Hz Gain	-15 - +15 dB	0 - 30	15
3	1000Hz Gain	-15 - +15 dB	0 - 30	15

4	1250Hz Gain	-15 - +15 dB	0 - 30	15
5	2000Hz Gain	-15 - +15 dB	0 - 30	15
6	3150Hz Gain	-15 - +15 dB	0 - 30	15
7	4000Hz Gain	-15 - +15 dB	0 - 30	15
8	8000Hz Gain	-15 - +15 dB	0 - 30	15
9	Band Width Q	0.5, 1.0, 2.0, 4.0, 8.0	0 - 4	0
11	Output Level	0 - 127	0 - 127	127
10	Output Pan	L64 - 63R	0 - 127	64

6:Enhancer

No.	Display	Setting Value	Value Dec.	Initial
1	EH Sens	0 - 127	0 - 127	127
2	EH Mix	0 - 127	0 - 127	64
3	EQ Low Gain	-15 - +15 dB	0 - 30	15
4	EQ High Gain	-15 - +15 dB	0 - 30	15
5	Output Level	0 - 127	0 - 127	127

7:Auto Wah

No.	Display	Setting Value	Value Dec.	Initial
1	AW Filter Type	LPF, BPF	0 - 1	0
4	AW Sens	0 - 127	0 - 127	0
5	AW Manual	0 - 127	0 - 127	64
6	AW Peak	0 - 127	0 - 127	100
2	AW LFO Rate	0.05 - 10.00 Hz	0 - 125	19
3	AW LFO Depth	0 - 127	0 - 127	64
7	Output Level	0 - 127	0 - 127	127

8:Rotary

No.	Display	Setting Value	Value Dec.	Initial
5	Rotary Speed	SLOW, FAST	0 - 1	0
2	LF SlowRate	0.05 - 10.00 Hz	0 - 125	39
4	LF FastRate	0.05 - 10.00 Hz	0 - 125	121
7	LF Acceleration	0 - 15	0 - 15	10
9	LF Level	0 - 127	0 - 127	127
10	Separation	0 - 127	0 - 127	127
1	HF SlowRate	0.05 - 10.00 Hz	0 - 125	39
3	HF FastRate	0.05 - 10.00 Hz	0 - 125	121
6	HF Acceleration	0 - 15	0 - 15	10
8	HF Level	0 - 127	0 - 127	127
11	Output Level	0 - 127	0 - 127	127

9:CompCP Attack

No.	Display	Setting Value	Value Dec.	Initial
2	CP Sustain	0 - 127	0 - 127	64
1	CP Post Gain	0, +6, +12, +18 dB	0 - 127	127
4	EQ Low Gain	-15 - +15 dB	0 - 30	0
5	EQ High Gain	-15 - +15 dB	0 - 30	15
6	Output Level	0 - 127	0 - 30	15
7	Output Pan	L64 - 63R	0 - 127	127
3	CP Attack	0 - 127	0 - 127	64

10:Limiter

No.	Display	Setting Value	Value Dec.	Initial
1	LM Thresh	0 - 127	0 - 127	64
3	LM Ratio	1.5:1, 2:1, 4:1, 100:1	0 - 3	2
2	LM Release	0 - 127	0 - 127	32
5	LM Post Gain	0, +6, +12, +18 dB	0 - 3	1
6	EQ Low Gain	-15 - +15 dB	0 - 30	15
7	EQ High Gain	-15 - +15 dB	0 - 30	15
8	Output Level	0 - 127	0 - 127	127
4	Output Pan	L64 - 63R	0 - 127	64

11:Hexa-Cho

No.	Display	Setting Value	Value Dec.	Initial
2	0 - 125	9		
3	CH Rate	0.05 - 10.00 Hz	0 - 127	20
5	CH Depth	0 - 127	0 - 40	20
1	CH Depth Dev	-20 - +20	0 - 125	5
4	CH Pre Delay	0.0 - 100.0 ms	0 - 20	0
6	CH Pre Delay Dev	0 - 127	0 - 20	20
7	CH Pan Dev	0 - 127	0 - 100	50
8	Balance	D100:0W - D0:100W	0 - 127	127

12:Tre Cho

No.	Display	Setting Value	Value Dec.	Initial
2	CH Rate	0.05 - 10.00 Hz	0 - 125	9
3	CH Depth	0 - 127	0 - 127	50
1	CH PreDelay	0.0 - 100.0 ms	0 - 125	0
4	TRE Rate	0.05 - 10.00 Hz	0 - 125	39
6	TRE Phase	0 - 180 degree	0 - 90	90
5	TRE Separation	0 - 127	0 - 127	127
7	Balance	D100:0W - D0:100W	0 - 100	50
8	Output Level	0 - 127	0 - 127	127

13:Space-D

No.	Display	Setting Value	Value Dec.	Initial
2	CH Rate	0.05 - 10.00 Hz	0 - 125	9
3	CH Depth	0 - 127	0 - 127	20
4	CH Phase	0 - 180 degree	0 - 90	90
1	CH PreDelay	0.0 - 100.0 ms	0 - 125	10
5	EQ Low Gain	-15 - +15 dB	0 - 30	15
6	EQ High Gain	-15 - +15 dB	0 - 30	15
7	Balance	D100:0W - D0:100W	0 - 100	50
8	Output Level	0 - 127	0 - 127	127

14:St Chorus

No.	Display	Setting Value	Value Dec.	Initial
4	CH Rate	0.05 - 10.00 Hz	0 - 125	9
5	CH Depth	0 - 127	0 - 127	20
6	CH Phase	0 - 180 degree	0 - 90	90
3	CH PreDelay	0.0 - 100.0 ms	0 - 125	10
1	Filter Type	OFF, LPF, HPF	0 - 2	2
2	Filter Cutoff	200 - 8000 Hz (*1)	0 - 16	7
8	EQ Low Gain	-15 - +15 dB	0 - 30	15
9	EQ High Gain	-15 - +15 dB	0 - 30	15
10	Balance	D100:0W - D0:100W	0 - 100	50

11 Output Level 0 - 127 0 - 127 127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

15:St Flng

No.	Display	Setting Value	Value Dec.	Initial
4	FL LFO Rate	0.05 - 10.00 Hz	0 - 125	9
5	FL LFO Depth	0 - 127	0 - 127	50
7	FL Feedback	-98 - +98%	0 - 98	89
6	FL Phase	0 - 180 degree	0 - 90	90
3	FL PreDelay	0.0 - 100.0 ms	0 - 125	10
1	Filter Type	OFF, LPF, HPF	0 - 2	2
2	Filter Cutoff	200 - 8000 Hz (*1)	0 - 16	7
8	EQ Low Gain	-15 - +15 dB	0 - 30	15
9	EQ High Gain	-15 - +15 dB	0 - 30	15
10	Balance	D100:0W - D0:100W	0 - 100	50
11	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

16:Step Flng

No.	Display	Setting Value	Value Dec.	Initial
2	FL LFO Rate	0.05 - 10.00 Hz	0 - 125	9
3	FL LFO Depth	0 - 127	0 - 127	50
4	FL Feedback	-98 - +98%	0 - 98	89
6	FL Phase	0 - 180 degree	0 - 90	90
1	FL PreDelay	0.0 - 100.0 ms	0 - 125	5
5	Step Rate	0.10 - 20.00 Hz, note*1	0 - 125	49
7	EQ Low Gain	-15 - +15 dB	0 - 30	15
8	EQ High Gain	-15 - +15 dB	0 - 30	15
9	Balance	D100:0W - D0:100W	0 - 100	50
10	Output Level	0 - 127	0 - 127	127

17:St Delay

No.	Display	Setting Value	Value Dec.	Initial
2	DLY Left	0.0 - 500.0 ms	0 - 126	126
3	DLY Right	0.0 - 500.0 ms	0 - 126	126
7	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
6	DLY Feedback	-98 - +98%	0 - 98	59
1	DLY Fbk Mode	NORMAL, CROSS	0 - 1	0
4	Phase Left	NORMAL, INVERT	0 - 1	0
5	Phase Right	NORMAL, INVERT	0 - 1	0
8	EQ Low Gain	-15 - +15 dB	0 - 30	15
9	EQ High Gain	-15 - +15 dB	0 - 30	15
10	Balance	D100:0W - D0:100W	0 - 100	50
11	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

18:Mod Delay

No.	Display	Setting Value	Value Dec.	Initial
2	DLY Left	0.0 - 500.0 ms	0 - 126	126
3	DLY Right	0.0 - 500.0 ms	0 - 126	126
5	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
4	DLY Feedback	-98 - +98%	0 - 98	59
1	DLY Fbk Mode	NORMAL, CROSS	0 - 1	0
6	MOD Rate	0.05 - 10.00 Hz	0 - 125	19
7	MOD Depth	0 - 127	0 - 127	20
8	MOD Phase	0 - 180, degree	0 - 90	90
9	EQ Low Gain	-15 - +15 dB	0 - 30	15
10	EQ High Gain	-15 - +15 dB	0 - 30	15
11	Balance	D100:0W - D0:100W	0 - 100	50
12	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

19:3TapDelay

No.	Display	Setting Value	Value Dec.	Initial
3	DLY Center	200 - 1000 ms, note*1	0 - 125	115
1	DLY Left	200 - 1000 ms, note*1	0 - 125	10
2	DLY Right	200 - 1000 ms, note*1	0 - 125	60
5	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
4	DLY Feedback	-98 - +98%	0 - 98	59
8	DLY CenterLevel	0 - 127	0 - 127	127
6	DLY LeftLevel	0 - 127	0 - 127	127
7	DLY RightLevel	0 - 127	0 - 127	127
9	EQ Low Gain	-15 - +15 dB	0 - 30	15
10	EQ High Gain	-15 - +15 dB	0 - 30	15
11	Balance	D100:0W - D0:100W	0 - 100	50
12	Output Level	0 - 127	0 - 127	127

20:4TapDelay

No.	Display	Setting Value	Value Dec.	Initial
1	DLY Time 1	200 - 1000 ms, note*1	0 - 125	115
2	DLY Time 2	200 - 1000 ms, note*1	0 - 125	90
3	DLY Time 3	200 - 1000 ms, note*1	0 - 125	60
4	DLY Time 4	200 - 1000 ms, note*1	0 - 125	10
5	DLY Level 1	0 - 127	0 - 127	127
6	DLY Level 2	0 - 127	0 - 127	127
7	DLY Level 3	0 - 127	0 - 127	127
8	DLY Level 4	0 - 127	0 - 127	127
10	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
9	DLY Feedback	-98 - +98%	0 - 98	59
11	Balance	D100:0W - D0:100W	0 - 100	50
12	Output Level	0 - 127	0 - 127	127

21:TmCtrlDly

No.	Display	Setting Value	Value Dec.	Initial
1	DLY Time	200 - 1000 ms	0 - 120	10
3	DLY Acceleration	0 - 15	0 - 15	10
4	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
2	DLY Feedback	-98 - +98%	0 - 98	59
6	EQ Low Gain	-15 - +15 dB	0 - 30	15

7	EQ High Gain	-15 - +15 dB	0 - 30	15
8	Balance	D100:0W - D0:100W	0 - 100	50
9	Output Level	0 - 127	0 - 127	127
5	Output Pan	L64 - 63R	0 - 127	64

(*1): 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

22:2VoPchSft

No.	Display	Setting Value	Value Dec.	Initial
2	Coarse A	-24 - +12 semitone	0 - 36	24
4	Fine A	-100 - +100 cent	0 - 100	50
8	Pan A	L64 - 63R	0 - 127	64
6	PreDelay A	0.0 - 500.0 ms	0 - 126	0
1	PitchShifterMode	1, 2, 3, 4, 5	0 - 4	0
3	Coarse B	-24 - +12 semitone	0 - 36	24
5	Fine B	-100 - +100 cent	0 - 100	50
9	Pan B	L64 - 63R	0 - 127	64
7	Pre Delay B	0.0 - 500.0 ms	0 - 126	0
10	Lev Balance	A100:0B - A0:100B	0 - 100	50
11	Balance	D100:0W - D0:100W	0 - 100	50
12	Output Level	0 - 127	0 - 127	127

23:FB PchSft

No.	Display	Setting Value	Value Dec.	Initial
2	CoarsePitch	-24 - +12 semitone	0 - 36	24
3	FinePitch	-100 - +100 cent	0 - 100	50
4	PreDelay	0.0 - 500.0 ms	0 - 126	0
1	PitchShifterMode	1, 2, 3, 4, 5	0 - 4	0
5	Feedback	-98 - +98%	0 - 98	59
7	EQ Low Gain	-15 - +15 dB	0 - 30	15
8	EQ High Gain	-15 - +15 dB	0 - 30	15
9	Balance	D100:0W - D0:100W	0 - 100	50
10	Output Level	0 - 127	0 - 127	127
6	Output Pan	L64 - 63R	0 - 127	64

24:Reverb

No.	Display	Setting Value	Value Dec.	Initial
1	RV Type	ROOM1, ROOM2, STAGE1, STAGE2, HALL1, HALL2	0 - 5	0
2	RV PreDelay	0.0 - 100.0 ms	0 - 125	10
3	RV Time	0 - 127	0 - 127	10
4	RV HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
5	EQ Low Gain	-15 - +15 dB	0 - 30	15
6	EQ High Gain	-15 - +15 dB	0 - 30	15
7	Balance	D100:0W - D0:100W	0 - 100	50
8	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

25:Gated Rev

No.	Display	Setting Value	Value Dec.	Initial
1	RV Type	NORMAL, REVERSE, SWEEP1, SWEEP2	0 - 3	0
2	RV PreDelay	0.0 - 100.0 ms	0 - 125	10
3	RV GateTime	5 - 500 ms	0 - 99	10
4	EQ Low Gain	-15 - +15 dB	0 - 30	15
5	EQ High Gain	-15 - +15 dB	0 - 30	15
6	Balance	D100:0W - D0:100W	0 - 100	50
7	Output Level	0 - 127	0 - 127	127

26:Od → Cho

No.	Display	Setting Value	Value Dec.	Initial
1	OD Drive	0 - 127	0 - 127	64
2	OD Pan	L64 - 63R	0 - 127	64
3	CH PreDelay	0.0 - 100.0 ms	0 - 125	10
4	CH Rate	0.05 - 10.00 Hz	0 - 125	9
5	CH Depth	0 - 127	0 - 127	20
7	CH Balance	D100:0W - D0:100W	0 - 100	50
8	Output Level	0 - 127	0 - 127	127

27:Od → Flng

No.	Display	Setting Value	Value Dec.	Initial
1	OD Drive	0 - 127	0 - 127	64
2	OD Pan	L64 - 63R	0 - 127	64
3	FL Delay	0.0 - 100.0 ms	0 - 125	10
4	FL Rate	0.05 - 10.00 Hz	0 - 125	9
5	FL Depth	0 - 127	0 - 127	40
6	FL Feedback	-98 - +98%	0 - 98	89
7	FL Balance	D100:0W - D0:100W	0 - 100	50
8	Output Level	0 - 127	0 - 127	127

28:Od → Delay

No.	Display	Setting Value	Value Dec.	Initial
1	OD Drive	0 - 127	0 - 127	64
2	OD Pan	L64 - 63R	0 - 127	64
3	DLY Time	0.0 - 500.0 ms	0 - 126	10
4	DLY Feedback	-98 - +98%	0 - 98	59
5	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
6	DLY Balance	D100:0W - D0:100W	0 - 100	50
7	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

29:Dist → Cho

No.	Display	Setting Value	Value Dec.	Initial
1	DS Drive	0 - 127	0 - 127	127
2	DS Pan	L64 - 63R	0 - 127	64
3	CH PreDelay	0.0 - 100.0 ms	0 - 125	10
4	CH Rate	0.05 - 10.00 Hz	0 - 125	9
5	CH Depth	0 - 127	0 - 127	20
7	CH Balance	D100:0W - D0:100W	0 - 100	50
8	Output Level	0 - 127	0 - 127	127

30:Dist → Flng

No.	Display	Setting Value	Value Dec.	Initial
1	DS Drive	0 - 127	0 - 127	127
2	DS Pan	L64 - 63R	0 - 127	64
3	FL Delay	0.0 - 100.0 ms	0 - 125	10
4	FL Rate	0.05 - 10.00 Hz	0 - 125	9
5	FL Depth	0 - 127	0 - 127	40
6	FL Feedback	-98 - +98%	0 - 98	89
7	FL Balance	D100:0W - D0:100W	0 - 100	50
8	Output Level	0 - 127	0 - 127	127

31:Dist → Dly

No.	Display	Setting Value	Value Dec.	Initial
1	DS Drive	0 - 127	0 - 127	127
2	DS Pan	L64 - 63R	0 - 127	64
3	DLY Time	0.0 - 500.0 ms	0 - 126	10
4	DLY Feedback	-98 - +98%	0 - 98	59
5	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
6	DLY Balance	D100:0W - D0:100W	0 - 100	50
7	Output Level	0 - 127	0 - 127	127

(*1): 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

32:Enh → Cho

No.	Display	Setting Value	Value Dec.	Initial
1	EH Sens	0 - 127	0 - 127	127
2	EH Mix Level	0 - 127	0 - 127	64
3	CH PreDelay	0.0 - 100.0 ms	0 - 125	10
4	CH Rate	0.05 - 10.00 Hz	0 - 125	9
5	CH Depth	0 - 127	0 - 127	20
7	CH Balance	D100:0W - D0:100W	0 - 100	50
8	Output Level	0 - 127	0 - 127	127

33:Enh → Flng

No.	Display	Setting Value	Value Dec.	Initial
1	EH Sens	0 - 127	0 - 127	127
2	EH Mix Level	0 - 127	0 - 127	64
3	FL PreDelay	0.0 - 100.0 ms	0 - 125	10
4	FL Rate	0.05 - 10.00 Hz	0 - 125	9
5	FL Depth	0 - 127	0 - 127	40
6	FL Feedback	-98 - +98%	0 - 98	89
7	FL Balance	D100:0W - D0:100W	0 - 100	50
8	Output Level	0 - 127	0 - 127	127

34:Enh → Dly1EH Sens

No.	Display	Setting Value	Value Dec.	Initial
1	2	EH Mix Level	0 - 127	127
2	3	DLY Time	0 - 127	64
3	4	DLY Feedback	0 - 126	10
4	5	DLY HF Damp	0 - 98	59
5	6	DLY Balance	0 - 17	17
7	7	Output Level	0 - 100	50
8	1	EH Sens	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000,

2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

35:Cho→ Dly

No.	Display	Setting Value	Value Dec.	Initial
1	CH PreDelay	0.0 - 100.0 ms	0 - 125	10
2	CH Rate	0.05 - 10.00 Hz	0 - 125	9
3	CH Depth	0 - 127	0 - 127	20
5	CH Balance	D100:0W - D0:100W	0 - 100	50
6	DLY Time	0.0 - 500.0 ms	0 - 126	10
7	DLY Feedback	-98 - +98%	0 - 98	59
8	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
9	DLY Balance	D100:0W - D0:100W	0 - 100	50
10	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

36:Fllg→ Dly

No.	Display	Setting Value	Value Dec.	Initial
1	FL PreDelay	0.0 - 100.0 ms	0 - 125	10
2	FL Rate	0.05 - 10.00 Hz	0 - 125	9
3	FL Depth	0 - 127	0 - 127	40
4	FL Feedback	-98 - +98%	0 - 98	89
5	FL Balance	D100:0W - D0:100W	0 - 100	50
6	DLY Time	0.0 - 500.0 ms	0 - 126	10
7	DLY Feedback	-98 - +98%	0 - 98	59
8	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
9	DLY Balance	D100:0W - D0:100W	0 - 100	50
10	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

37:Cho→ Fllg

No.	Display	Setting Value	Value Dec.	Initial
1	CH PreDelay	0.0 - 100.0 ms	0 - 125	10
2	CH Rate	0.05 - 10.00 Hz	0 - 125	9
3	CH Depth	0 - 127	0 - 127	20
4	CH Balance	D100:0W - D0:100W	0 - 100	50
5	FL PreDelay	0.0 - 100.0 ms	0 - 125	10
6	FL Rate	0.05 - 10.00 Hz	0 - 125	9
7	FL Depth	0 - 127	0 - 127	40
8	FL Feedback	-98 - +98%	0 - 98	89
9	FL Balance	D100:0W - D0:100W	0 - 100	50
10	Output Level	0 - 127	0 - 127	127

38:Cho/Dly

No.	Display	Setting Value	Value Dec.	Initial
1	CH PreDelay	0.0 - 100.0 ms	0 - 125	10
2	CH Rate	0.05 - 10.00 Hz	0 - 125	9
3	CH Depth	0 - 127	0 - 127	20
5	CH Balance	D100:0W - D0:100W	0 - 100	50
6	DLY Time	0.0 - 500.0 ms	0 - 126	10
7	DLY Feedback	-98 - +98%	0 - 98	59
8	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
9	DLY Balance	D100:0W - D0:100W	0 - 100	50

10 Output Level 0 - 127 0 - 127 127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

39:Fllg/Dly

No.	Display	Setting Value	Value Dec.	Initial
1	FL PreDelay	0.0 - 100.0 ms	0 - 125	10
2	FL Rate	0.05 - 10.00 Hz	0 - 125	9
3	FL Depth	0 - 127	0 - 127	40
4	FL Feedback	-98 - +98%	0 - 98	89
5	FL Balance	D100:0W - D0:100W	0 - 100	50
6	DLY Time	0.0 - 500.0 ms	0 - 126	10
7	DLY Feedback	-98 - +98%	0 - 98	59
8	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
9	DLY Balance	D100:0W - D0:100W	0 - 100	50
10	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

40:Cho/Fllg

No.	Display	Setting Value	Value Dec.	Initial
1	CH PreDelay	0.0 - 100.0 ms	0 - 125	10
2	CH Rate	0.05 - 10.00 Hz	0 - 125	9
3	CH Depth	0 - 127	0 - 127	20
4	CH Balance	D100:0W - D0:100W	0 - 100	50
5	FL PreDelay	0.0 - 100.0 ms	0 - 125	10
6	FL Rate	0.05 - 10.00 Hz	0 - 125	9
7	FL Depth	0 - 127	0 - 127	40
8	FL Feedback	-98 - +98%	0 - 98	89
9	FL Balance	D100:0W - D0:100W	0 - 100	50
10	Output Level	0 - 127	0 - 127	127

41:St Phaser

No.	Display	Setting Value	Value Dec.	Initial
1	PH Type	1, 2	0 - 1	0
2	PH Mode	4-STAGE, 8-STAGE	0 - 1	1
3	PH Polarity	INVERSE, SYNCHRO	0 - 1	1
6	PH Manual	0 - 127	0 - 127	64
4	PH Rate	0.05 - 10.00 Hz, note*2	1 - 222	10
5	PH Depth	0 - 127	0 - 127	64
7	PH Resonance	0 - 127	0 - 127	64
8	PH X-Feedback	-98 - +98 %	0 - 98	69
11	PH Mix Level	0 - 127	0 - 127	127
9	StepRate Switch	OFF, ON	0 - 1	0
10	StepRate Rate	0.1 - 20.0 Hz, note*2	1 - 222	50
12	EQ Low Gain	-15 - +15 dB	0 - 30	15
13	EQ High Gain	-15 - +15 dB	0 - 30	15
14	Output Level	0 - 127	0 - 127	127

42:KeySyncFl

No.	Display	Setting Value	Value Dec.	Initial
3	FL PreDelay	0.0 - 100 ms	0 - 125	5
4	FL LFO Rate	0.05 - 10.00 Hz , note*2	1 - 222	10
5	FL LFO Depth	0 - 127	0 - 127	50
6	FL Feedback	-98 - +98 %	0 - 98	89
9	FL Phase	0 - 180 degree	0 - 90	90
1	Filter Type	OFF, LPF, HPF	0 - 2	0
2	Filter Cutoff	200 - 8000 Hz (*1)	0 - 16	7
7	StepRate Switch	OFF, ON	0 - 1	0
8	StepRate Rate	0.1 - 20.0 Hz, note*2	1 - 222	200
10	Keysync Switch	OFF, ON	0 - 1	1
11	Keysync Thres	0 - 127	0 - 127	60
12	Keysync Phase	0 - 360 degree	0 - 180	0
13	EQ Low Gain	-15 - +15 dB	0 - 30	15
14	EQ High Gain	-15 - +15 dB	0 - 30	15
15	Balance	D100:0W - D0:100W	0 - 100	50
16	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

43:FormantFl

No.	Display	Setting Value	Value Dec.	Initial
1	OD Switch	OFF, ON	0 - 1	1
2	OD Drive	0 - 127	0 - 127	127
3	Filter Vowel 1	a, e, i, o, u	0 - 4	0
4	Filter Vowel 2	a, e, i, o, u	0 - 4	1
5	Filter Rate	0.05 - 10.00 Hz, note*2	1 - 222	20
6	Filter Depth	0 - 127	0 - 127	127
9	Filter Manual	0 - 100	0 - 100	50
7	Keysync Switch	OFF, ON	0 - 1	1
8	Keysync Thres	0 - 127	0 - 127	60
10	EQ Low Gain	-15 - +15 dB	0 - 30	15
11	EQ High Gain	-15 - +15 dB	0 - 30	15
13	Output Level	0 - 127	0 - 127	127
12	Output Pan	L64 - 63R	0 - 127	64

44:Ring Mod

No.	Display	Setting Value	Value Dec.	Initial
1	RM Freq	0 - 127	0 - 127	60
2	RM MOD Source	OFF, SOURCE, A, B, C, D	0 - 5	1
3	RM MOD Monitor	OFF, ON	0 - 1	1
4	RM Sens	0 - 127	0 - 127	0
5	RM Polarity	UP, DOWN	0 - 1	0
6	EQ Low Gain	-15 - +15 dB	0 - 30	15
7	EQ High Gain	-15 - +15 dB	0 - 30	15
8	Balance	D100:0W - D0:100W	0 - 100	50
9	Output Level	0 - 127	0 - 127	127

45:MltTapDly

No.	Display	Setting Value	Value Dec.	Initial
1	DLY Time1	0 - 1800 ms, note*2	0 - 1822	1816
2	DLY Time2	0 - 1800 ms, note*2	0 - 1822	1815
3	DLY Time3	0 - 1800 ms, note*2	0 - 1822	1813
4	DLY Time4	0 - 1800 ms, note*2	0 - 1822	1810
13	DLY Feedback	-98 - +98 %	0 - 98	59

14	DLY HFDamp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
9	DLY Level1	0 - 127	0 - 127	127
10	DLY Level2	0 - 127	0 - 127	127
11	DLY Level3	0 - 127	0 - 127	127
12	DLY Level4	0 - 127	0 - 127	127
5	DLY Output Pan1	L64 - 63R	0 - 127	0
6	DLY Output Pan2	L64 - 63R	0 - 127	32
7	DLY Output Pan3	L64 - 63R	0 - 127	96
8	DLY Output Pan4	L64 - 63R	0 - 127	127
15	EQ Low Gain	-15 - +15 dB	0 - 30	15
16	EQ High Gain	-15 - +15 dB	0 - 30	15
17	Balance	D100:0W - D0:100W	0 - 100	50
18	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

46:Rvs Delay

No.	Display	Setting Value	Value Dec.	Initial
2	DLY Time1	0 - 900 ms, note*2	0 - 922	913
3	DLY Time2	0 - 900 ms, note*2	0 - 922	910
4	DLY Time3	0 - 900 ms, note*2	0 - 922	913
5	DLY Time4	0 - 900 ms, note*2	0 - 922	913
6	Feedback1	-98 - +98 %	0 - 98	49
7	Feedback4	-98 - +98 %	0 - 98	54
8	HF Damp1	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
9	HF Damp4	200 - 8000 Hz, BYPASS (*1)0 - 17	17	
13	DLY Level1	0 - 127	0 - 127	127
14	DLY Level2	0 - 127	0 - 127	64
15	DLY Level3	0 - 127	0 - 127	64
10	DLY Pan 1	L64 - 63R	0 - 127	64
11	DLY Pan 2	L64 - 63R	0 - 127	0
12	DLY Pan 3	L64 - 63R	0 - 127	127
1	Threshold	0 - 127	0 - 127	30
17	EQ Low Gain	-15 - +15 dB	0 - 30	15
18	EQ High Gain	-15 - +15 dB	0 - 30	15
16	Balance	D100:0W - D0:100W	0 - 100	50
19	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

47:Sfl Delay

No.	Display	Setting Value	Value Dec.	Initial
1	DLY Time	0 - 1800 ms, note*2	0 - 1822	1813
2	DLY ShuffleRate	0 - 100 %	0 - 100	67
7	DLY Acceleration	0 - 15	0 - 15	10
6	DLY Feedback	-98 - +98 %	0 - 98	59
8	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
3	Pan A	L64 - 63R	0 - 127	0
4	Pan B	L64 - 63R	0 - 127	127
5	Balance	A100:0B - A0:100B	0 - 100	50
9	EQ Low Gain	-15 - +15 dB	0 - 30	15
10	EQ High Gain	-15 - +15 dB	0 - 30	15
11	Balance	D100:0E - D0:100W	0 - 100	50
12	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

48:3D Delay

No.	Display	Setting Value	Value Dec.	Initial
3	DLY Time C	0 - 1800 ms, note*2	0 - 1822	1815
1	DLY Time L	0 - 1800 ms, note*2	0 - 1822	1810
2	DLY Time R	0 - 1800 ms, note*2	0 - 1822	1813
8	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
7	DLY Feedback	-98 - +98 %	0 - 98	59
6	DLY Level C	0 - 127	0 - 127	40
4	DLY Level L	0 - 127	0 - 127	64
5	DLY Level R	0 - 127	0 - 127	64
10	EQ Low Gain	-15 - +15 dB	0 - 30	15
11	EQ High Gain	-15 - +15 dB	0 - 30	15
12	Balance	D100:0E - D0:100W	0 - 100	40
9	Output Mode	SPEAKER, PHONES	0 - 1	0
13	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

49:3VoPchSft

No.	Display	Setting Value	Value Dec.	Initial
2	Coars Pitch1	-24 - +12	0 - 36	12
3	Coars Pitch2	-24 - +12	0 - 36	0
4	Coars Pitch3	-24 - +12	0 - 36	0
5	Fine Pitch1	-100 - +100 cent	0 - 100	50
6	Fine Pitch2	-100 - +100 cent	0 - 100	50
7	Fine Pitch3	-100 - +100 cent	0 - 100	50
1	PS Mode	1, 2, 3, 4, 5	0 - 4	0
11	PS Feedback1	-98 - +98 %	0 - 98	49
12	PS Feedback2	-98 - +98 %	0 - 98	49
13	PS Feedback3	-98 - +98 %	0 - 98	49
8	PS PreDelay1	0.0 - 500 ms	0 - 126	0
9	PS PreDelay2	0.0 - 500 ms	0 - 126	0
10	PS PreDelay3	0.0 - 500 ms	0 - 126	0
20	Balance	D100:0E - D0:100W	0 - 100	100
17	Level1	0 - 127	0 - 127	127
18	Level2	0 - 127	0 - 127	127
19	Level3	0 - 127	0 - 127	127
14	Pan1	L64 - 63R	0 - 127	64
15	Pan2	L64 - 63R	0 - 127	0
16	Pan3	L64 - 63R	0 - 127	127
21	Output Level	0 - 127	0 - 127	127

50:LoFi Comp

No.	Display	Setting Value	Value Dec.	Initial
2	LoFi Type	1 - 9	0 - 8	5
1	PreFilter Type	1 - 6	0 - 5	1
3	PostFilter1 Type	1 - 6	0 - 5	1
4	PostFilter2 Type	OFF, BPF, LPF	0 - 2	1
5	PostFilter2 CutOff	200 - 8000 Hz (*1)	0 - 16	13
7	EQ Low Gain	-15 - +15 dB	0 - 30	15
8	EQ High Gain	-15 - +15 dB	0 - 30	15
6	Balance	D100:0E - D0:100W	0 - 100	100
10	Output Level	0 - 127	0 - 127	127
9	Output Pan	L64 - 63R	0 - 127	64

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

51:LoFiNoise

No.	Display	Setting Value	Value Dec.	Initial
1	LoFi Type	1 - 9	0 - 8	2
2	PostFilter Type	OFF, LPF, HPF	0 - 2	1
3	PostFilter Cutoff	200 - 8000 Hz (*1)	0 - 16	13
4	RadioNoise Detun	0 - 127	0 - 127	0
5	RadioNoise Level	0 - 127	0 - 127	64
6	DiscNoise Type	LP, EP, SP, RND	0 - 3	0
7	DiscNoise LPF	200 - 8000 Hz, BYPASS (*2)	0 - 17	17
8	DiscNoise Level	0 - 127	0 - 127	0
10	EQ Low Gain	-15 - +15 dB	0 - 30	15
11	EQ High Gain	-15 - +15 dB	0 - 30	15
9	Balance	D100:0E - D0:100W	0 - 100	100
13	Output Level	0 - 127	0 - 127	127
12	Output Pan	L64 - 63R	0 - 127	64

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

(*2) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

52:SpeakrSim

No.	Display	Setting Value	Value Dec.	Initial
1	SP Type	(*1)	0 - 15	6
2	Mic Setting	1, 2, 3	0 - 2	1
3	Mic Level	0 - 127	0 - 127	127
4	Mic DirectLevel	0 - 127	0 - 127	0
5	Output Level	0 - 127	0 - 127	127

(*1) Small 1, Small 2, Middle, JC-120, Built In 1, Built In 2, Built In 3, Built In 4, Built In 5, BG Stack 1, BG Stack 2, MS Stack 1, MS Stack 2, Metal Stack, 2 Stack, 3 Stack

53:Od 2

No.	Display	Setting Value	Value Dec.	Initial
1	OD Drive	0 - 127	0 - 127	127
2	OD Tone	0 - 127	0 - 127	50
4	AmpSim Switch	OFF, ON	0 - 1	1
5	AmpSim Type	SMALL, BUILT-IN, 2-STACK, 3-STACK	0 - 3	0
6	EQ Low Gain	-15 - +15 dB	0 - 30	15
7	EQ High Gain	-15 - +15 dB	0 - 30	15
8	Output Level	0 - 127	0 - 127	127
3	Output Pan	L64 - 63R	0 - 127	64

54:Dist 2

No.	Display	Setting Value	Value Dec.	Initial
1	DS Drive	0 - 127	0 - 127	127
2	DS Tone	0 - 127	0 - 127	50
4	AmpSim Switch	OFF, ON	0 - 1	1
5	AmpSim Type	SMALL, BUILT-IN, 2-STACK, 3-STACK	0 - 3	3
6	EQ Low Gain	-15 - +15 dB	0 - 30	15
7	EQ High Gain	-15 - +15 dB	0 - 30	15
8	Output Level	0 - 127	0 - 127	127
3	Output Pan	L64 - 63R	0 - 127	64

55:St Comp

No.	Display	Setting Value	Value Dec.	Initial
2	COMP Attack	0 - 127	0 - 127	64
1	COMP Sustain	0 - 127	0 - 127	127
3	COMP PostGain	0, +6, +12, +18	0 - 3	0
4	EQ Low Gain	-15 - +15 dB	0 - 30	15
5	EQ High Gain	-15 - +15 dB	0 - 30	15
6	Output Level	0 - 127	0 - 127	127

56:St Limit

No.	Display	Setting Value	Value Dec.	Initial
1	Limit Threshold	0 - 127	0 - 127	64
3	Limit Ratio	1.5:1, 2:1, 4:1, 100:1	0 - 3	2
2	Limit Release	0 - 127	0 - 127	32
4	Limit PostGain	0, +6, +12, +18	0 - 3	1
5	EQ Low Gain	-15 - +15 dB	0 - 30	15
6	EQ High Gain	-15 - +15 dB	0 - 30	15
7	Output Level	0 - 127	0 - 127	127

57:Gate

No.	Display	Setting Value	Value Dec.	Initial
4	Gate Mode	GATE, DUCK	0 - 1	0
6	Gate Attack	0 - 127	0 - 127	0
7	Gate Hold	0 - 127	0 - 127	0
8	Gate Release	0 - 127	0 - 127	0
1	GateKey Key	SOURCE, A	0 - 1	0
2	GateKey Threshold	0 - 127	0 - 127	70
3	GateKey Monitor	OFF, ON	0 - 1	1
5	Balance	D100:0W - D0:100W	0 - 100	100
9	Output Level	0 - 127	0 - 127	127

58:Slicer

No.	Display	Setting Value	Value Dec.	Initial
1	Beat11	0 - 127	0 - 127	127
2	Beat12	0 - 127	0 - 127	0
3	Beat13	0 - 127	0 - 127	0
4	Beat14	0 - 127	0 - 127	0
5	Beat21	0 - 127	0 - 127	0
6	Beat22	0 - 127	0 - 127	0
7	Beat23	0 - 127	0 - 127	127
8	Beat24	0 - 127	0 - 127	0
9	Beat31	0 - 127	0 - 127	0
10	Beat32	0 - 127	0 - 127	0
11	Beat33	0 - 127	0 - 127	127
12	Beat34	0 - 127	0 - 127	0
13	Beat41	0 - 127	0 - 127	0
14	Beat42	0 - 127	0 - 127	127
15	Beat43	0 - 127	0 - 127	0
16	Beat44	0 - 127	0 - 127	0
17	Rate	0.05 - 10.00 Hz, note*2	1 - 222	40
18	Attack	0 - 127	0 - 127	50
19	ResetTrigger	SOURCE, A	0 - 1	1
20	Reset Threshold	0 - 127	0 - 127	60
21	Reset Monitor	Off, On	0 - 1	1
22	BeatChange Mode	LEGATO, SLASH	0 - 1	0
23	BeatChange Suffle	0 - 127	0 - 127	0

24 Output Level 0 - 127 0 - 127 127

59:Isolator

No.	Display	Setting Value	Value Dec.	Initial
3	Boost/Cut Low	-60 - +4 dB	0 - 64	60
2	Boost/Cut Mid	-60 - +4 dB	0 - 64	60
1	Boost/Cut High	60 - +4 dB	0 - 64	60
6	AntiPhaseLow SW	OFF, ON	0 - 1	0
7	AntiPhaseLow Lev	0 - 127	0 - 127	127
4	AntiPhaseMid SW	OFF, ON	0 - 1	0
5	AntiPhaseMid Lev	0 - 127	0 - 127	127
8	LowBoost SW	OFF, ON	0 - 1	0
9	LowBoost Lev	0 - 127	0 - 127	127
10	Output Level	0 - 127	0 - 127	127

60:3D Chorus

No.	Display	Setting Value	Value Dec.	Initial
4	CH LFO Rate	0.05 - 10.00 Hz, note*2	1 - 222	10
5	CH LFO Depth	0 - 127	0 - 127	20
6	CH Phase	0 - 180 degree	0 - 90	90
3	CH PreDelay	0.0 - 100 ms	0 - 125	10
1	Filter Type	OFF, LPF, HPF	0 - 2	0
2	Filter Cutoff	200 - 8000 Hz (*1)	0 - 16	7
8	EQ Low Gain	-15 - +15 dB	0 - 30	15
9	EQ High Gain	-15 - +15 dB	0 - 30	15
10	Balance	D100:0W - D0:100W	0 - 100	50
7	Output Mode	SPEAKER, PHONES	0 - 1	0
11	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

61:3D Flng

No.	Display	Setting Value	Value Dec.	Initial
4	FL LFO Rate	0.05 - 10.00 Hz, note*1	1 - 222	10
5	FL LFO Depth	0 - 127	0 - 127	50
6	FL Feedback	-98 - +98 %	0 - 98	89
9	FL Phase	0 - 180 degree	0 - 90	90
3	FL PreDelay	0.0 - 100 ms	0 - 125	5
1	Filter Type	OFF, LPF, HPF	0 - 2	0
2	Filter Cutoff	200 - 8000 Hz (*1)	0 - 16	7
7	StepRate Switch	OFF, ON	0 - 1	0
8	StepRate Rate	0.1 - 20.0 Hz, note*2	1 - 222	200
11	EQ Low Gain	-15 - +15 dB	0 - 30	15
12	EQ High Gain	-15 - +15 dB	0 - 30	15
13	Balance	D100:0W - D0:100W	0 - 100	50
10	Output Mode	SPEAKER, PHONES	0 - 1	0
14	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

62:Tremoro

No.	Display	Setting Value	Value Dec.	Initial
1	TRE Mod Wave	TRI, SQR, SIN, SAW1, SAW2	0 - 4	0
2	TRE Rate	0.05 - 10.0 Hz, note*2	1 - 222	80
3	TRE Depth	0 - 127	0 - 127	96
4	EQ Low Gain	-15 - +15 dB	0 - 30	15

5	EQ High Gain	-15 - +15 dB	0 - 30	15
6	Output Level	0 - 127	0 - 127	127

63:Auto Pan

No.	Display	Setting Value	Value Dec.	Initial
1	AutoPan ModWave	TRI, SQR, SIN, SAW1, SAW2	0 - 4	0
2	AutoPan Rate	0.05 - 10.0 Hz, note*2	1 - 222	40
3	AutoPan Depth	0 - 127	0 - 127	96
4	EQ Low Gain	-15 - +15 dB	0 - 30	15
5	EQ High Gain	-15 - +15 dB	0 - 30	15
6	Output Level	0 - 127	0 - 127	127

64:St Ph 2

No.	Display	Setting Value	Value Dec.	Initial
1	PH Type	1, 2	0 - 1	0
2	PH Mode	4 stage, 8 stage, 12 stage, 16 stage	0 - 3	1
3	PH Polarity	INVERSE, SYNCHRO	0 - 1	1
6	PH Manual	0 - 127	0 - 127	64
4	PH Rate	0.05 - 10.00 Hz, note*2	1 - 222	10
5	PH Depth	0 - 127	0 - 127	64
7	PH Resonance	0 - 127	0 - 127	64
8	PH X-Feedback	-98 - +98 %	0 - 98	69
11	PH Mix Level	0 - 127	0 - 127	127
9	StepRate Switch	OFF, ON	0 - 1	0
10	StepRate Rate	0.1 - 20.0 Hz, note*2	1 - 222	50
12	EQ Low Gain	-15 - +15 dB	0 - 30	15
13	EQ High Gain	-15 - +15 dB	0 - 30	15
14	Output Level	0 - 127	0 - 127	127

65:StAutoWah

No.	Display	Setting Value	Value Dec.	Initial
1	AW FilterType	LPF, BPF	0 - 1	1
4	AW Sens	0 - 127	0 - 127	60
5	AW Manual	0 - 127	0 - 127	100
6	AW Peak	0 - 127	0 - 127	40
2	AW LFORate	0.05 - 10.00 Hz, note*2	1 - 222	20
3	AW LFODepth	0 - 127	0 - 127	40
7	AW Polarity	UP, DOWN	0 - 1	1
8	AW Phase	0 - 180	0 - 90	45
9	EQ Low Gain	-15 - +15 dB	0 - 30	15
10	EQ High Gain	-15 - +15 dB	0 - 30	15
11	Output Level	0 - 127	0 - 127	127

66:StFormFlt

No.	Display	Setting Value	Value Dec.	Initial
1	OD Switch	OFF, ON	0 - 1	1
2	OD Drive	0 - 127	0 - 127	127
3	Filter Vowel1	a, e, i, o, u	0 - 4	0
4	Filter Vowel2	a, e, i, o, u	0 - 4	1
5	Filter Rate	0.05 - 10.00 Hz, note*2	1 - 222	20
6	Filter Depth	0 - 127	0 - 127	127
10	Filter Manual	0 - 100	0 - 100	50
7	Filter Phase	0 - 180 degree	0 - 90	0
8	Keysync Switch	OFF, ON	0 - 1	1

9	Keysync Thres	0 - 127	0 - 127	60
11	EQ Low Gain	-15 - +15 dB	0 - 30	15
12	EQ High Gain	-15 - +15 dB	0 - 30	15
13	Output Level	0 - 127	0 - 127	127

67:MixTapDI2

No.	Display	Setting Value	Value Dec.	Initial
1	DLY Time1	0 - 3000 ms, note*2	0 - 3022	3016
2	DLY Time2	0 - 3000 ms, note*2	0 - 3022	3015
3	DLY Time3	0 - 3000 ms, note*2	0 - 3022	3013
4	DLY Time4	0 - 3000 ms, note*2	0 - 3022	3010
13	DLY Feedback	-98 - +98 %	0 - 98	59
14	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
9	DLY Level1	0 - 127	0 - 127	127
10	DLY Level2	0 - 127	0 - 127	127
11	DLY Level3	0 - 127	0 - 127	127
12	DLY Level4	0 - 127	0 - 127	127
5	DLY Pan 1	L64 - 63R	0 - 127	0
6	DLY Pan 2	L64 - 63R	0 - 127	32
7	DLY Pan 3	L64 - 63R	0 - 127	96
8	DLY Pan 4	L64 - 63R	0 - 127	127
15	EQ Low Gain	-15 - +15 dB	0 - 30	15
16	EQ High Gain	-15 - +15 dB	0 - 30	15
17	Balance	D100:0W - D0:100W	0 - 100	50
18	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

68:Rvs Dly 2

No.	Display	Setting Value	Value Dec.	Initial
2	DLY Time1	0 - 1500 ms, note*2	0 - 1522	1516
3	DLY Time2	0 - 1500 ms, note*2	0 - 1522	1513
4	DLY Time3	0 - 1500 ms, note*2	0 - 1522	1516
5	DLY Time4	0 - 1500 ms, note*2	0 - 1522	1516
6	DLY Feedback1	-98 - +98 %	0 - 98	49
7	DLY Feedback4	-98 - +98 %	0 - 98	54
8	DLY HFDamp1	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
9	DLY HFDamp4	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
13	DLY Level1	0 - 127	0 - 127	127
14	DLY Level2	0 - 127	0 - 127	64
15	DLY Level3	0 - 127	0 - 127	64
10	DLY Pan1	L64 - 63R	0 - 127	64
11	DLY Pan2	L64 - 63R	0 - 127	0
12	DLY Pan3	L64 - 63R	0 - 127	127
1	Threshold Value	0 - 127	0 - 127	30
17	EQ Low Gain	-15 - +15 dB	0 - 30	15
18	EQ High Gain	-15 - +15 dB	0 - 30	15
16	Balance	D100:0W - D0:100W	0 - 100	50
19	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

69:Sfl Dly 2

No.	Display	Setting Value	Value Dec.	Initial
1	DLY Time	0 - 3000 ms, note*2	0 - 3022	3013
2	DLY ShuffleRate	0 - 100 %	0 - 100	67
7	DLY Acceleration	0 - 15	0 - 15	10
6	DLY Feedback	-98 - +98 %	0 - 98	59
8	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
3	DLY Pan A	L64 - 63R	0 - 127	0
4	DLY Pan B	L64 - 63R	0 - 127	127
5	DLY Bal	A100:0B - A0:100B	0 - 100	50
9	EQ Low Gain	-15 - +15 dB	0 - 30	15
10	EQ High Gain	-15 - +15 dB	0 - 30	15
11	Balance	D100:0W - D0:100W	0 - 100	50
12	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

70:3D Dly 2

No.	Display	Setting Value	Value Dec.	Initial
3	DLY Time C	0 - 3000 ms, note*2	0 - 3022	3015
2	DLY Time R	0 - 3000 ms, note*2	0 - 3022	3013
1	DLY Time L	0 - 3000 ms, note*2	0 - 3022	3010
8	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
7	DLY Feedback	-98 - +98 %	0 - 98	59
6	DLY Level C	0 - 127	0 - 127	40
5	DLY Level R	0 - 127	0 - 127	64
4	DLY Level L	0 - 127	0 - 127	64
10	EQ Low Gain	-15 - +15 dB	0 - 30	15
11	EQ High Gain	-15 - +15 dB	0 - 30	15
12	Balance	D100:0W - D0:100W	0 - 100	40
9	Output Mode	SPEAKER, PHONES	0 - 1	0
13	Output Level	0 - 127	0 - 127	127

71:Rotary 2

No.	Display	Setting Value	Value Dec.	Initial
11	Rotary Speed	SLOW, FAST	0 - 1	0
12	Rotary Brake	OFF, ON	0 - 1	0
13	Spread Value	0 - 127	0 - 10	10
1	WF SlowRate	0.05 - 10.00 Hz, note*2	1 - 222	40
2	WF FastRate	0.05 - 10.00 Hz, note*2	1 - 222	160
5	WF Level	0 - 127	0 - 127	127
3	WF TransUp	0 - 127	0 - 127	64
4	WF TransDown	0 - 127	0 - 127	64
6	TW SlowRate	0.05 - 10.00 Hz, note*2	1 - 222	40
7	TW FastRate	0.05 - 10.00 Hz, note*2	1 - 222	160
10	TW Level	0 - 127	0 - 127	127
8	TW TransUp	0 - 127	0 - 127	64
9	TW TransDown	0 - 127	0 - 127	64
14	EQ Low Gain	-15 - +15 dB	0 - 30	15
15	EQ High Gain	-15 - +15 dB	0 - 30	15
16	Output Level	0 - 127	0 - 127	127

72:RotaryMlt

No.	Display	Setting Value	Value Dec.	Initial
1	OD/DS Switch	OFF, ON	0 - 1	1
2	OD/DS Typ	Overdrive, Distortion	0 - 1	0

3	OD/DS Drive	0 - 127	0 - 127	64
4	OD/DS Tone	0 - 127	0 - 127	50
5	OD/DS Level	0 - 127	0 - 127	80
6	AmpSim Switch	OFF, ON	0 - 1	1
7	AmpSim Type	SMALL, BUILT-IN, 2-STACK, 3-STACK	0 - 3	0
8	EQ Switch	OFF, ON	0 - 1	1
9	EQ Low Gain	-15 - +15 dB	0 - 30	15
12	EQ Mid Gain	-15 - +15 dB	0 - 30	15
13	EQ High Gain	-15 - +15 dB	0 - 30	15
10	EQ Mid Freq	200 - 8000 Hz (*1)	0 - 16	7
11	EQ Mid Q	0.5, 1.0, 2.0, 4.0, 8.0	0 - 4	0
14	ROT Switch	OFF, ON	0 - 1	1
19	ROT Speed	SLOW, FAST	0 - 1	0
16	ROT WF Slow	0.05 - 10.00 Hz, note*2	1 - 222	40
18	ROT WF Fast	0.05 - 10.00 Hz, note*2	1 - 222	160
21	ROT WF Accel	0 - 15	0 - 15	10
23	ROT WF Level	0 - 127	0 - 127	127
24	ROT Separation	0 - 127	0 - 127	127
15	ROT TW Slow	0.05 - 10.00 Hz, note*2	1 - 222	40
17	ROT TW Fast	0.05 - 10.00 Hz, note*2	1 - 222	160
20	ROT TW Accel	0 - 15	0 - 15	10
22	ROT TW Level	0 - 127	0 - 127	127
26	Output Level	0 - 127	0 - 127	127
25	Output Pan	L64 - 63R	0 - 127	64

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

73:Kbd Mlt

No.	Display	Setting Value	Value Dec.	Initial
1	RingMod Switch	OFF, ON	0 - 1	1
2	RingMod Freq	0 - 127	0 - 127	60
3	RingMod Bal	D100:0W - D0:100W	0 - 100	50
4	EQ Switch	OFF, ON	0 - 1	1
5	EQ Low Gain	-15 - +15 dB	0 - 30	15
8	EQ Mid Gain	-15 - +15 dB	0 - 30	15
9	EQ High Gain	-15 - +15 dB	0 - 30	15
6	EQ Mid Freq	200 - 8000 Hz (*1)	0 - 16	7
7	EQ Mid Q	0.5, 1.0, 2.0, 4.0, 8.0	0 - 4	0
10	PS Switch	OFF, ON	0 - 1	1
11	PS Mode	1, 2, 3, 4, 5	0 - 4	0
12	PS CoarsTune	-24 - +12	0 - 36	31
13	PS FineTune	-100 - +100	0 - 100	50
14	PS PreDelay	0.0 - 500 ms	0 - 126	0
15	PS Feedback	-98 - +98 %	0 - 98	59
16	PS Balance	D100:0W - D0:100W	0 - 100	50
17	PH Switch	OFF, ON	0 - 1	1
18	PH Mode	4 stage, 8 stage	0 - 1	1
19	PH Manual	0 - 127	0 - 127	64
20	PH Rate	0.05 - 10.0, note*2	1 - 222	10
21	PH Depth	0 - 127	0 - 127	64
22	PH Resonance	0 - 127	0 - 127	64
23	PH Mix Level	0 - 127	0 - 127	64
24	DLY Switch	OFF, ON	0 - 1	1
25	DLY TimeLeft	0 - 3000, note*2	0 - 3022	3013
26	DLY TimeRight	0 - 3000, note*2	0 - 3022	3010
27	DLY Feedback	-98 - +98 %	0 - 98	59
28	DLY HF Damp	200 - 8000 Hz, BYPASS	0 - 17	17
29	DLY Balance	D100:0W - D0:100W	0 - 100	50
30	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000,

2500, 3150, 4000, 5000, 6300, 8000 Hz
 (*2) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000,
 2500, 3150, 4000, 5000, 6300, 8000, BYPASS

74:RhodesMlt

No.	Display	Setting Value	Value Dec.	Initial
1	EH Switch	OFF, ON	0 - 1	1
2	EH Sens	0 - 127	0 - 127	127
3	EH Mix Level	0 - 127	0 - 127	64
4	PH Switch	OFF, ON	0 - 1	1
5	PH Mode	4 stage, 8 stage	0 - 1	1
6	PH Manual	0 - 127	0 - 127	64
10	PH Mix Level	0 - 127	0 - 127	64
7	PH Rate	0.05 - 10.0, note*2	1 - 222	10
8	PH Depth	0 - 127	0 - 127	64
9	PH Resonance	0 - 127	0 - 127	64
11	CH/FL Switch	OFF, ON	0 - 1	1
12	CH/FL Type	CHORUS, FLANGER	0 - 1	0
14	CH/FL Rate	0.05 - 10.0, note*2	1 - 222	10
15	CH/FL Depth	0 - 127	0 - 127	20
16	CH/FL Feedback	-98 - +98 %	0 - 98	89
13	CH/FL PreDelay	0.0 - 100	0 - 125	10
19	CH/FL Bal	D100:0W - D0:100W	0 - 100	50
17	Filter Type	OFF, LPF, HPF	0 - 2	0
18	Filter Cutoff	200 - 8000 Hz (*1)	0 - 16	7
20	TRE/PAN Switch	OFF, ON	0 - 1	1
21	TRE/PAN Type	TREMOLO, AUTO PAN	0 - 1	0
22	TRE/PAN ModWave	TRI, SQU, SIN, SAW1, SAW2	0 - 4	0
23	TRE/PAN Rate	0.05 - 10.0, note*2	1 - 222	80
24	TRE/PAN Depth	0 - 127	0 - 127	64
25	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000,
 2500, 3150, 4000, 5000, 6300, 8000 Hz

75:JD Mlt

No.	Display	Setting Value	Value Dec.	Initial
1	SEQUENCE	0 - 23	0	
2	Dist	Off, On	0 - 1	1
6	Phaser	Off, On	0 - 1	1
12	Spectrum	Off, On	0 - 1	1
20	Enhancer	Off, On	0 - 1	1
3	DSType	(*1)	0 - 6	0
4	DSDrive	0 - 100	0 - 100	50
5	DSLevel	0 - 100	0 - 100	50
7	PH Manual	50 Hz - 15.0 kHz	0 - 99	42
11	PHMix Level	0 - 100	0 - 100	50
8	PH Rate	0.1 - 10.0 Hz	1 - 100	10
9	PH Depth	0 - 100	0 - 100	50
10	PH Resonance	1 - 100	0 - 100	50
19	SpectrumBandWidth	1 - 5	0 - 4	0
13	Spectrum 250Hz	-15 - +15 dB	0 - 30	15
14	Spectrum 500Hz	-15 - +15 dB	0 - 30	15
15	Spectrum 1000Hz	-15 - +15 dB	0 - 30	15
16	Spectrum 2000Hz	-15 - +15 dB	0 - 30	15
17	Spectrum 4000Hz	-15 - +15 dB	0 - 30	15
18	Spectrum 8000Hz	-15 - +15 dB	0 - 30	15
21	EH Sens	0 - 100	0 - 100	50

22	EH Mix level	0 - 100	0 - 100	50
24	Output Level	0 - 127	0 - 127	127
23	Output Pan	0 - 127	0 - 127	64

(*1) MELLOW DRIVE, OVERDRIVE, CRY DRIVE, MELLOW DIST,
 LIGHT DIST, FAT DIST, FUZZ DIST

76:StLoFiCmp

No.	Display	Setting Value	Value Dec.	Initial
2	LoFi Type	1 - 9	0 - 8	5
1	PreFilter Type	1 - 6	0 - 5	1
3	PostFilter1 Type	1 - 6	0 - 5	1
4	PostFilter2 Type	OFF, LPF, HPF	0 - 2	1
5	PostFilter2 Cutoff	200 - 8000 Hz	0 - 16	13
7	EQ Low Gain	-15 - +15 dB	0 - 30	15
8	EQ High Gain	-15 - +15 dB	0 - 30	15
6	Balance	D100:0W - D0:100W	0 - 100	100
9	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000,
 2500, 3150, 4000, 5000, 6300, 8000 Hz

77:StLoFoNoi

No.	Display	Setting Value	Value Dec.	Initial
1	LoFi Type	1 - 9	0 - 8	2
12	Hum Noise Type	50, 60 Hz	0 - 1	0
13	Hum Noise LPF	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
14	Hum Noise Level	0 - 127	0 - 127	0
2	PostFilter Type	OFF, LPF, HPF	0 - 2	1
3	PostFilter Cutoff	200 - 8000 Hz (*2)	0 - 16	13
9	DiscNoise Type	LP, EP, SP, RND	0 - 3	0
10	DiscNoise LPF	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
11	DiscNoise Level	0 - 127	0 - 127	0
4	RadioNoise Detune	0 - 127	0 - 127	0
5	RadioNoise Level	0 - 127	0 - 127	64
6	Noise Type	WHITE, PINK	0 - 1	1
7	Noise LPF	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
8	Noise Level	0 - 127	0 - 127	0
16	EQ Low Gain	-15 - +15 dB	0 - 30	15
17	EQ High Gain	-15 - +15 dB	0 - 30	15
15	Balance	D100:0W - D0:100W	0 - 100	100
18	Output Level	0 - 127	0 - 127	127

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000,
 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

(*2) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000,
 2500, 3150, 4000, 5000, 6300, 8000 Hz

78:GtrAmpSim

No.	Display	Setting Value	Value Dec.	Initial
1	PreAmp Switch	OFF, ON	0 - 1	1
2	PreAmp Type	(*1)	0 - 13	2
3	PreAmp Volume	0 - 127	0 - 127	90
4	PreAmp Master	0 - 127	0 - 127	100
5	PreAmp Gain	LOW, MID, HIGH	0 - 2	1
9	PreAmp Presence	0 - 127 (Match Drive: -127 - 0)	0 - 127	0
10	PreAmp Bright	OFF, ON	0 - 1	0
6	PreAmp Bass	0 - 127	0 - 127	64
7	PreAmp Middle	0 - 127	0 - 127	64
8	PreAmp Treble	0 - 127	0 - 127	75
11	Speaker Switch	OFF, ON	0 - 1	1
12	Speaker Type	(*2)	0 - 15	6
13	Mic Setting	1, 2, 3	0 - 2	1
14	Mic Level	0 - 127	0 - 127	127
15	Mic Direct	0 - 127	0 - 127	0
17	Output Level	0 - 127	0 - 127	127
16	Output Pan	L64 - 63R	0 - 127	64

(*1) JC-120, Clean Twin, Match Drive, BG Lead, MS1959I, MS1959II, MS1959I+II, SLDN Lead, Metal 5150, Metal Lead, OD-1, OD-2 Turbo, Distortion, Fuzz

(*2) Small1, Small2, Middle, JC-120, Built In 1, Built In 2, Built In 3, Built In 4, Built In 5, BG Stack 1, BG Stack 2, MS Stack 1, MS Stack 2, Metal Stack, 2 Stack, 3 Stack

79:St Od

No.	Display	Setting Value	Value Dec.	Initial
1	OD Drive	0 - 127	0 - 127	127
2	OD Tone	0 - 127	0 - 127	50
3	AmpSim Switch	OFF, ON	0 - 1	1
4	AmpSim Type	SMALL, BUILT-IN, 2-STACK, 3-STACK0 - 30		
5	EQ Low Gain	-15 - +15 dB	0 - 30	15
6	EQ High Gain	-15 - +15 dB	0 - 30	15
7	Output Level	0 - 127	0 - 127	127

80:St Dist

No.	Display	Setting Value	Value Dec.	Initial
1	DS Drive	0 - 127	0 - 127	127
2	DS Tone	0 - 127	0 - 127	50
3	AmpSim Switch	OFF, ON	0 - 1	1
4	AmpSim Type	SMALL, BUILT-IN, 2-STACK, 3-STACK0 - 33		
5	EQ Low Gain	-15 - +15 dB	0 - 30	15
6	EQ High Gain	-15 - +15 dB	0 - 30	15
7	Output Level	0 - 127	0 - 127	127

81:Gtr Mlt A

No.	Display	Setting Value	Value Dec.	Initial
1	COMP Switch	OFF, ON	0 - 1	1
2	COMP Attack	0 - 127	0 - 127	64
3	COMP Sustain	0 - 127	0 - 127	127
4	COMP Level	0 - 127	0 - 127	80
5	OD/DS Switch	OFF, ON	0 - 1	1
6	OD/DS Type	OVERDRIVE, DISTORTION	0 - 1	0
7	OD/DS Drive	0 - 127	0 - 127	64
8	OD/DS Tone	0 - 127	0 - 127	50

9	OD/DS Level	0 - 127	0 - 127	80
10	AmpSim Switch	OFF, ON	0 - 1	1
11	AmpSim Type	SMALL, BUILT-IN, 2-STACK, 3STACK	0 - 3	0
12	DLY Switch	OFF, ON	0 - 1	1
13	DLY TimeLeft	0 - 3000 ms, note*2	0 - 3022	3013
14	DLY TimeRight	0 - 3000 ms, note*2	0 - 3022	3010
15	DLY Feedback	-98 - +98 %	0 - 98	59
16	DLY HF Damp	200 - 8000 Hz, BYPASS (*1)	0 - 17	17
17	DLY Balance	D100:0W - D0:100W	0 - 100	50
18	CH/FL Switch	OFF, ON	0 - 1	1
19	CH/FL Type	CHORUS, FLANGER	0 - 1	0
21	CH/FL Rate	0.05 - 10.0 Hz, note*2	1 - 222	10
22	CH/FL Depth	0 - 127	0 - 127	20
23	CH/FL Feedback	-98 - +98 %	0 - 98	89
20	CH/FL PreDelay	0.0 - 100 ms	0 - 125	10
26	CH/FL Balance	D100:0W - D0:100W	0 - 100	50
24	CH/FL FilterType	OFF, LPF, HPF	0 - 2	0
25	CH/FL Cutoff	200 - 8000 Hz (*2)	0 - 16	7
28	Output Level	0 - 127	0 - 127	127
27	Output Pan	L64 - 63R	0 - 127	64

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

(*2) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

82:Gtr Mlt B

No.	Display	Setting Value	Value Dec.	Initial
1	COMP Switch	OFF, ON	0 - 1	1
2	COMP Attack	0 - 127	0 - 127	64
3	COMP Sustain	0 - 127	0 - 127	127
4	COMP Level	0 - 127	0 - 127	80
5	OD/DS Switch	OFF, ON	0 - 1	1
6	OD/DS Type	OVERDRIVE, DISTORTION	0 - 1	0
7	OD/DS Drive	0 - 127	0 - 127	64
8	OD/DS Tone	0 - 127	0 - 127	50
9	OD/DS Level	0 - 127	0 - 127	80
10	AmpSim Switch	OFF, ON	0 - 1	1
11	AmpSim Type	SMALL, BUILT-IN, 2-STACK, 3STACK	0 - 3	0
12	EQ Switch	OFF, ON	0 - 1	1
13	EQ Low Gain	-15 - +15 dB	0 - 30	15
16	EQ Mid Gain	-15 - +15 dB	0 - 30	15
17	EQ High Gain	-15 - +15 dB	0 - 30	15
14	EQ Mid Freq	200 - 8000 Hz (*1)	0 - 16	7
15	EQ Mid Q	0.5, 1.0, 2.0, 4.0, 8.0	0 - 4	0
18	CH/FL Switch	OFF, ON	0 - 1	1
19	CH/FL Type	CHORUS, FLANGER	0 - 1	0
21	CH/FL Rate	0.05 - 10.0 Hz, note*2	1 - 222	10
22	CH/FL Depth	0 - 127	0 - 127	20
23	CH/FL Feedback	-98 - +98 %	0 - 98	89
20	CH/FL PreDelay	0.0 - 100 ms	0 - 125	10
26	CH/FL Balance	D100:0W - D0:100W	0 - 100	50
24	CH/FL FilterType	OFF, LPF, HPF	0 - 2	0
25	CH/FL Cutoff	200 - 8000 Hz (*1)	0 - 16	7
28	Output Level	0 - 127	0 - 127	127
27	Output Pan	L64 - 63R	0 - 127	64

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

83:Gtr Mlt C

No.	Display	Setting Value	Value Dec.	Initial
1	OD/DS Switch	OFF, ON	0 - 1	1
2	OD/DS Type	OVERDRIVE, DISTORTION	0 - 1	0
3	OD/DS Drive	0 - 127	0 - 127	64
4	OD/DS Tone	0 - 127	0 - 127	50
5	OD/DS Level	0 - 127	0 - 127	64
6	AW Switch	OFF, ON	0 - 1	1
7	AW FilterType	LPF, BPF	0 - 1	0
8	AW Rate	0.05 - 10.00 Hz, note*2	1 - 222	20
9	AW Depth	0 - 127	0 - 127	0
10	AW Sens	0 - 127	0 - 127	32
11	AW Manual	0 - 127	0 - 127	32
12	AW Peak	0 - 127	0 - 127	50
13	AmpSim Switch	OFF, ON	0 - 1	1
14	AmpSim Type	SMALL, BUILT-IN,2-STACK, 3STACK	0 - 3	0
15	DLY Switch	OFF, ON	0 - 1	1
16	DLY TimeLeft	0 - 3000 ms, note*2	0 - 3022	3013
17	DLY TimeRight	0 - 3000 ms, note*2	0 - 3022	3010
18	DLY Feedback	-98 - +98 %	0 - 98	59
19	DLY HF Damp	200 - 8000 Hz,BYPASS (*1)	0 - 17	17
20	DLY Bal	D100:0W - D0:100W	0 - 100	50
21	CH/FL Switch	OFF, ON	0 - 1	1
22	CH/FL Type	CHORUS, FLANGER	0 - 1	0
24	CH/FL Rate	0.05 - 10.0 Hz, note*2	1 - 222	10
25	CH/FL Depth	0 - 127	0 - 127	20
26	CH/FL Feedback	-98 - +98 %	0 - 98	89
23	CH/FL PreDly	0.0 - 100 ms	0 - 125	10
29	CH/FL Balanc	D100:0W - D0:100W	0 - 100	50
27	CH/FL FilterType	OFF, LPF, HPF	0 - 2	0
28	CH/FL Cutoff	200 - 8000 Hz (*2)	0 - 16	7
31	Output Level	0 - 127	0 - 127	127
30	Output Pan	L64 - 63R	0 - 127	64

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, BYPASS

(*2) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000

84:CIgtrMltA

No.	Display	Setting Value	Value Dec.	Initial
1	COMP Switch	OFF, ON	0 - 1	1
2	COMP Attack	0 - 127	0 - 127	64
3	COMP Sustain	0 - 127	0 - 127	127
4	COMP Level	0 - 127	0 - 127	80
5	EQ Switch	OFF, ON	0 - 1	1
6	EQ Low Gain	-15 - +15 dB	0 - 30	15
9	EQ Mid Gain	-15 - +15 dB	0 - 30	15
10	EQ High Gain	-15 - +15 dB	0 - 30	15
7	EQ Mid Freq	200 - 8000 Hz (*1)	0 - 16	7
8	EQ Mid Q	0.5, 1.0, 2.0, 4.0, 8.0	0 - 4	0
11	DLY Switch	OFF, ON	0 - 1	1
12	DLY TimeLeft	0 - 3000 ms, note*2	0 - 3022	3013
13	DLY TimeRight	0 - 3000 ms, note*2	0 - 3022	3010
14	DLY Feedback	-98 - +98 %	0 - 98	59
15	DLY HF Damp	200 - 8000 Hz,BYPASS (*2)	0 - 17	17
16	DLY Balance	D100:0E - D0:100E	0 - 100	50
17	CH/FL Switch	OFF, ON	0 - 1	1

18	CH/FL Type	CHORUS, FLANGER	0 - 1	0
20	CH/FL Rate	0.05 - 10.0 Hz	1 - 222	10
21	CH/FL Depth	0 - 127	0 - 127	20
22	CH/FL Feedback	-98 - +98 %	0 - 98	89
19	CH/FL PreDly	0.0 - 100 ms	0 - 125	10
25	CH/FL Balance	D100:0E - D0:100E	0 - 100	50
23	CH/FL FilterType	OFF, LPF, HPF	0 - 2	0
24	CH/FL FiltCut	200 - 8000 Hz (*1)	0 - 16	7
27	Output Level	0 - 127	0 - 127	127
26	Output Pan	L64 - 63R	0 - 127	64

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

(*2) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

85:CIgtrMltB

No.	Display	Setting Value	Value Dec.	Initial
1	AW Switch	OFF, ON	0 - 1	1
2	AW FilterType	LPF, BPF	0 - 1	0
3	AW Rate	0.05 - 10.00 Hz, note*2	1 - 222	20
4	AW Depth	0 - 127	0 - 127	0
5	AW Sens	0 - 127	0 - 127	32
6	AW Manual	0 - 127	0 - 127	32
7	AW Peak	0 - 127	0 - 127	50
8	EQ Switch	OFF, ON	0 - 1	1
9	EQ LowGain	-15 - +15 dB	0 - 30	15
12	EQ MidGain	-15 - +15 dB	0 - 30	15
13	EQ HighGain	-15 - +15 dB	0 - 30	15
10	EQ MidFreq	200 - 8000 Hz (*1)	0 - 16	7
11	EQ MidQ	0.5, 1.0, 2.0, 4.0, 8.0	0 - 4	0
14	DLY Switch	OFF, ON	0 - 1	1
15	DLY TimeLeft	0 - 3000 ms, note*2	0 - 3022	3013
16	DLY TimeRight	0 - 3000 ms, note*2	0 - 3022	3010
17	DLY Feedback	-98 - +98 %	0 - 98	59
18	DLY HFDamp	200 - 8000 Hz,BYPASS (*2)	0 - 17	17
19	DLY Balance	D100:0W - D0:100W	0 - 100	50
20	CH/FL Switch	OFF, ON	0 - 1	1
21	CH/FL Type	CHORUS, FLANGER	0 - 1	0
23	CH/FL Rate	0.05 - 10.0 Hz, note*2	1 - 222	10
24	CH/FL Depth	0 - 127	0 - 127	20
25	CH/FL Feedback	-98 - +98 %	0 - 98	89
22	CH/FL PreDly	0.0 - 100 ms	0 - 125	10
28	CH/FL Balance	D100:0W - D0:100W	0 - 100	50
26	CH/FL FiltType	OFF, LPF, HPF	0 - 2	0
27	CH/FL FiltCut	200 - 8000 Hz (*1)	0 - 16	7
30	Output Level	0 - 127	0 - 127	127
29	Output Pan	L64 - 63R	0 - 127	64

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

(*2) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz, BYPASS

86:Bass Mlt

No.	Display	Setting Value	Value Dec.	Initial
1	COMP Switch	OFF, ON	0 - 1	1
2	COMP Attack	0 - 127	0 - 127	64
3	COMP Sustain	0 - 127	0 - 127	127
4	COMP Level	0 - 127	0 - 127	80
5	OD/DS Switch	OFF, ON	0 - 1	1
6	OD/DS Typ	OVERDRIVE, DISTORTION	0 - 1	0
7	OD/DS Drive	0 - 127	0 - 127	64
8	OD/DS Level	0 - 127	0 - 127	80
9	AmpSim Switch	OFF, ON	0 - 1	1
10	AmpSim Type	SMALL, BUILT-IN, 2-STACK	0 - 2	0
11	EQ Switch	OFF, ON	0 - 1	1
12	EQ Low Gain	-15 - +15 dB	0 - 30	15
15	EQ Mid Gain	-15 - +15 dB	0 - 30	15
16	EQ High Gain	-15 - +15 dB	0 - 30	15
13	EQ Mid Freq	200 - 8000 Hz (*1)	0 - 16	7
14	EQ Mid Q	0.5, 1.0, 2.0, 4.0, 8.0	0 - 4	0
17	CH/FL Switch	OFF, ON	0 - 1	1
18	CH/FL Type	CHORUS, FLANGER	0 - 1	0
20	CH/FL Rate	0.05 - 10.0 Hz, note*2	1 - 222	10
21	CH/FL Depth	0 - 127	0 - 127	20
22	CH/FL Feedback	-98 - +98 %	0 - 98	89
19	CH/FL PreDly	0.0 - 100 ms	0 - 125	10
25	CH/FL Balanc	D100:0W - D0:100W	0 - 100	50
23	CH/FL FilterType	OFF, LPF, HPF	0 - 2	0
24	CH/FL FiltCut	200 - 8000 Hz (*1)	0 - 16	7
27	Output Level	0 - 127	0 - 127	127
26	COMP Switch	OFF, ON	0 - 127	64

(*1) 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000 Hz

87:Isolator2

No.	Display	Setting Value	Value Dec.	Initial
3	Level High	-60 - +4 dB	0 - 64	60
2	Level Mid	-60 - +4 dB	0 - 64	60
1	Level High	-60 - +4 dB	0 - 64	60
6	AntiPhase LowSW	OFF, ON	0 - 1	0
7	AntiPhase Lev	0 - 127	0 - 127	127
4	AntiPhase MidSW	OFF, ON	0 - 1	0
5	AntiPhase Lev	0 - 127	0 - 127	127
8	Filter Switch	OFF, ON	0 - 1	0
9	Filter Type	OFF, LPF, HPF	0 - 3	1
11	Filter Cutoff	0 - 127	0 - 127	80
12	Filter Resonanc	0 - 127	0 - 127	0
10	Filter Slope	-12, -24 dB	0 - 1	0
13	Filter Gain	0 - 24 dB	0 - 24	0
14	LowBoost Switch	OFF, ON	0 - 1	0
15	LowBoost Level	0 - 127	0 - 127	127
16	Output Level	0 - 127	0 - 127	127

88:StSpectrum

No.	Display	Setting Value	Value Dec.	Initial
1	250Hz Gain	-15 - +15 dB	0 - 30	15
2	500Hz Gain	-15 - +15 dB	0 - 30	15
3	1000HzGain	-15 - +15 dB	0 - 30	15
4	1250HzGain	-15 - +15 dB	0 - 30	15
5	2000HzGain	-15 - +15 dB	0 - 30	15
6	3150HzGain	-15 - +15 dB	0 - 30	15
7	4000HzGain	-15 - +15 dB	0 - 30	15
8	8000HzGain	-15 - +15 dB	0 - 30	15
9	Band Width Q	0.5, 1.0, 2.0, 4.0, 8.0	0 - 4	0
10	Output Level	0 - 127	0 - 127	127

89:3D AtSpin

No.	Display	Setting Value	Value Dec.	Initial
1	AutoSpin Azimuth	L180 - R180 (*1)	0 - 30	15
2	AutoSpin Speed	0.05 - 10.0 Hz, note*2	1 - 222	26
3	AutoSpin Clockwise	-, +	0 - 1	1
4	AutoSpin Turn	OFF, ON	0 - 1	1
5	Output Mode	SPEAKER, PHONES	0 - 1	0
6	Output Level	0 - 127	0 - 127	127

(*1) L180, L168, L156, L144, L132, L120, L108, L96, L84, L72, L60, L48, L36, L24, L12, 0, R12, R24, R36, R48, R60, R72, R84, R96, R108, R120, R132, R144, R156, R168, R180

90:3D Manual

No.	Display	Setting Value	Value Dec.	Initial
1	AutoSpin Azimuth	L180 - R180 (*1)	0 - 30	15
2	Output Mode	SPEAKER, PHONES	0 - 1	0
3	Output Level	0 - 127	0 - 127	127

(*1) L180, L168, L156, L144, L132, L120, L108, L96, L84, L72, L60, L48, L36, L24, L12, 0, R12, R24, R36, R48, R60, R72, R84, R96, R108, R120, R132, R144, R156, R168, R180

note*1

♩ (Sixteenth note), ♪ (Eighth-note triplet), ♪ (Dotted sixteenth note), ♪ (Eighth note),

♩ (Half-note triplet), ♪ (Dotted eighth note), ♪ (Quarter note), ♩ (Half-note triplet),

♪ (Dotted quarter note), ♪ (Half note),

note*2

♩ (Sixty-fourth-note triplet), ♪ (Sixty-fourth note), ♩ (Thirty-second-note triplet),

♪ (Thirty-second note), ♩ (Sixteenth-note triplet), ♪ (Dotted thirty-second note),

♪ (Sixteenth note), ♩ (Eighth-note triplet), ♪ (Dotted sixteenth note),

♪ (Eighth note), ♩ (Quarter-note triplet), ♪ (Dotted eighth note),

♪ (Quarter note), ♩ (Half-note triplet), ♪ (Dotted quarter note), ♪ (Half note),

♩ (Whole-note triplet), ♪ (Dotted half note), ♩ (Whole note),

AFX parameter list

■ Space Multi

Enhancer

No.	Display	Name	Range	Values	Initial	Description
1	EH Sw	Enhancer Switch	0 - +1	2	+1	OFF/ON
2	EH Sens	Enhancer Sens	0 - +127	128	+64	-
3	EH Mix	Enhancer Mix Level	0 - +127	128	+64	-

Equalizer

No.	Display	Name	Range	Values	Initial	Description
4	EQ Sw	EQ Switch	0 - +1	2	0	OFF/ON
5	EQ Low	EQ Low Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB
6	EQ MidF	EQ Mid Frequency	0 - +16	17	+7	200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000
7	EQ MidQ	EQ Mid Q	0 - +4	5	+2	0.5 / 1.0 / 2.0 / 4.0 / 8.0
8	EQ MidG	EQ Mid Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB
9	EQ High	EQ High Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB
10	EQ Total	EQ Total Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB

Noise Suppressor

No.	Display	Name	Range	Values	Initial	Description
11	NS Sw	Noise Suppressor Switch	0 - +1	2	+1	OFF/ON
12	NS Thrsh	Noise Suppressor Threshold	0 - +127	128	+4	-

Chorus/Flanger

No.	Display	Name	Range	Values	Initial	Description
13	CF Sw	Chorus/Flanger Switch	0 - +1	2	+1	OFF/ON
14	CF Type	Chorus/Flanger Type	0 - +1	2	0	Chorus / Flanger
15	CF PreDly	Chorus/Flanger Pre Delay	+1 - +300	300	+150	0.1 - 30.0ms, step 0.1ms
16	CF Rate	Chorus/Flanger Rate	+1 - +200	200	+17	0.05 - 10.0Hz, step 0.05Hz
17	CF Depth	Chorus/Flanger Depth	0 - +127	128	+32	-
18	CF Fbk	Chorus/Flanger Feedback	-98 - +98	197	+70	-98% - +98%, step 1%, Flanger only
19	CF Bal	Chorus/Flanger Effect Balance	-50 - +50	101	0	D100:0W - D50:50W - D0:100W

Reverb

No.	Display	Name	Range	Values	Initial	Description
20	RV Sw	Reverb Switch	0 - +1	2	+1	OFF/ON
21	RV Type	Reverb Type	0 - +2	3	0	Hall / Room / Plate
22	RV Time	Reverb Time	+1 - +100	100	+30	0.1s - 10.0s, step 0.1s
23	RV HF	Reverb HF Damp	-10 - 0	11	-3	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0
24	RV Bal	Reverb Effect Balance	-50 - +50	101	+50	D100:0W - D50:50W - D0:100W

Others

No.	Display	Name	Range	Values	Initial	Description
25	Level	Level	0 - +127	128	+127	-

■ Guitar Multi

Compression Sustainer

No.	Display	Name	Range	Values	Initial	Description
1	CS Sw	Compression Sustainer Switch	0 - +1	2	0	OFF/ON
2	CS Atk	Compression Sustainer Attack	0 - +127	128	+64	-
3	CS Sus	Compression Sustainer Sustain	0 - +127	128	+64	-
4	CS Lev	Compression Sustainer Level	0 - +127	128	+127	-

Overdrive/Distortion

No.	Display	Name	Range	Values	Initial	Description
5	OD Sw	Overdrive/Distortion Switch	0 - +1	2	+1	OFF/ON
6	OD Type	Overdrive/Distortion Type	0 - +1	2	0	Overdrive / Distortion
7	OD Drive	Overdrive/Distortion Drive	0 - +127	128	+100	-
8	OD Tone	Overdrive/Distortion Tone	-24 - +24	49	0	-
9	OD Lev	Overdrive/Distortion Level	0 - +127	128	+64	-

Amp Simulator

No.	Display	Name	Range	Values	Initial	Description
10	AS Sw	Amp Simulator Switch	0 - +1	2	+1	OFF/ON
11	AS Type	Amp Simulator Type	0 - +3	4	+1	Small / Built-In / 2-Stack / 3-Stack

Equalizer

No.	Display	Name	Range	Values	Initial	Description
12	EQ Sw	EQ Switch	0 - +1	2	0	OFF/ON
13	EQ Low	EQ Low Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB
14	EQ High	EQ High Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB

Noise Suppressor

No.	Display	Name	Range	Values	Initial	Description
15	NS Sw	Noise Suppressor Switch	0 - +1	2	+1	OFF/ON
16	NS Thrsh	Noise Suppressor Threshold	0 - +127	128	+16	-

Delay

No.	Display	Name	Range	Values	Initial	Description
17	DL Sw	Delay Switch	0 - +1	2	+1	OFF/ON
18	DL Time	Delay Time	+1 - +370	370	+250	1ms - 370ms, step 1ms
19	DL Fbk	Delay Feedback	-98 - +98	197	+32	-98% - +98%, step 1%
20	DL HF	Delay HF Damp	-17 - 0	18	0	200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, Bypass
21	DL Bal	Delay Effect Balance	-50 - +50	101	-32	D100:0W - D50:50W - D0:100W

Chorus/Flanger

No.	Display	Name	Range	Values	Initial	Description
22	CF Sw	Chorus/Flanger Switch	0 - +1	2	+1	OFF/ON
23	CF Type	Chorus/Flanger Type	0 - +1	2	0	Chorus / Flanger
24	CF PreDly	Chorus/Flanger Pre Delay	+1 - +300	300	+32	0.1 - 30.0ms, step 0.1ms
25	CF Rate	Chorus/Flanger Rate	+1 - +200	200	+8	0.05 - 10.0Hz, step 0.05Hz
26	CF Depth	Chorus/Flanger Depth	0 - +127	128	+32	-
27	CF Fbk	Chorus/Flanger Feedback	-98 - +98	197	+70	-98% - +98%, step 1%, Flanger only
28	CF Bal	Chorus/Flanger Effect Balance	-50 - +50	101	0	D100:0W - D50:50W - D0:100W

Other

No.	Display	Name	Range	Values	Initial	Description
29	Panpot	Panpot	-50 - +50	101	0	L100:0R - L50:50R - L0:100R
30	Level	Level	0 - +127	128	+127	-

Vocal/Bass Multi

Comp/Limiter

No.	Display	Name	Range	Values	Initial	Description
1	CL Sw	Comp/Limiter Switch	0 - +1	2	+1	OFF/ON
2	CL Thrsh	Comp/Limiter Threshold	0 - +127	128	+96	-
3	CL Ratio	Comp/Limiter Ratio	0 - +8	9	+5	1.0:1 / 1.2:1 / 1.5:1 / 2.0:1 / 2.8:1 / 4.0:1 / 8.0:1 / 16.0:1 / inf.:1
4	CL Atk	Comp/Limiter Attack	0 - +127	128	+63	0.25 - 100.0ms, step *1 (p. 128)
5	CL Rels	Comp/Limiter Release	0 - +125	126	+65	0.05s - 5.00s, step *2 (p. 128)
6	CL Gain	Comp/Limiter Gain	-12 - +36	49	+12	-6dB - +18dB, step 0.5dB
7	CL Lev	Comp/Limiter Level	0 - +127	128	+100	-

Lo-Fi Processor

No.	Display	Name	Range	Values	Initial	Description
8	LF Sw	Lo-Fi Switch	0 - +1	2	0	OFF/ON
9	LF Drive	Lo-Fi Drive	0 - +127	128	+12	-
10	LF Low	Lo-Fi Low Cut	0 - +15	16	+11	Unlimit, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000
11	LF High	Lo-Fi High Cut	0 - +10	11	+6	1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, Unlimit
12	LF Gain	Lo-Fi Gain	-24 - +24	49	+6	-12dB - +12dB, step 0.5dB

Equalizer

No.	Display	Name	Range	Values	Initial	Description
13	EQ Sw	EQ Switch	0 - +1	2	0	OFF/ON
14	EQ Low	EQ Low Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB
15	EQ High	EQ High Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB

Noise Suppressor

No.	Display	Name	Range	Values	Initial	Description
16	NS Sw	Noise Suppressor Switch	0 - +1	2	+1	OFF/ON
17	NS Thrsh	Noise Suppressor Threshold	0 - +127	128	+4	-

Delay

No.	Display	Name	Range	Values	Initial	Description
18	DL Sw	Delay Switch	0 - +1	2	+1	OFF/ON
19	DL Time	Delay Time	+1 - +370	370	+200	1ms - 370ms, step 1ms
20	DL Fbk	Delay Feedback	-98 - +98	197	+16	-98% - +98%, step 1%
21	DL HF	Delay HF Damp	-17 - 0	18	-4	200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, Bypass
22	DL Bal	Delay Effect Balance	-50 - +50	101	-40	D100:0W - D50:50W - D0:100W

Chorus/Flanger

No.	Display	Name	Range	Values	Initial	Description
23	CF Sw	Chorus/Flanger Switch	0 - +1	2	+1	OFF/ON
24	CF Type	Chorus/Flanger Type	0 - +1	2	0	Chorus / Flanger
25	CF PreDly	Chorus/Flanger Pre Delay	+1 - +300	300	+32	0.1 - 30.0ms, step 0.1ms
26	CF Rate	Chorus/Flanger Rate	+1 - +200	200	+8	0.05 - 10.0Hz, step 0.05Hz
27	CF Depth	Chorus/Flanger Depth	0 - +127	128	+32	-
28	CF Fbk	Chorus/Flanger Feedback	-98 - +98	197	+70	-98% - +98%, step 1%, Flanger only
29	CF Bal	Chorus/Flanger Effect Balance	-50 - +50	101	0	D100:0W - D50:50W - D0:100W

Others

No.	Display	Name	Range	Values	Initial	Description
30	Panpot	Panpot	-50 - +50	101	0	L100:0R - L50:50R - L0:100R
31	Level	Level	0 - +127	128	+127	-

■ Groove Multi

Comp/Limiter

No.	Display	Name	Range	Values	Initial	Description
1	CL Sw	Comp/Limiter Switch	0 - +1	2	+1	OFF/ON
2	CL Thrsh	Comp/Limiter Threshold	0 - +127	128	+96	-
3	CL Ratio	Comp/Limiter Ratio	0 - +8	9	+8	1.0:1 / 1.2:1 / 1.5:1 / 2.0:1 / 2.8:1 / 4.0:1 / 8.0:1 / 16.0:1 / inf.:1
4	CL Atk	Comp/Limiter Attack	0 - +127	128	+63	0.25 - 100.0ms, step *1 (p. 128)
5	CL Rels	Comp/Limiter Release	0 - +125	126	+65	0.05s - 5.00s, step *2 (p. 128)
6	CL Gain	Comp/Limiter Gain	-12 - +36	49	+12	-6dB - +18dB, step 0.5dB
7	CL Lev	Comp/Limiter Level	0 - +127	128	+127	-

Lo-Fi

No.	Display	Name	Range	Values	Initial	Description
8	LF Sw	Lo-Fi Switch	0 - +1	2	+1	OFF/ON
9	LF Drive	Lo-Fi Drive	0 - +127	128	+8	-
10	LF Low	Lo-Fi Low Cut	0 - +15	16	0	Unlimit, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000
11	LF High	Lo-Fi High Cut	0 - +10	11	+10	1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, Unlimit
12	LF Gain	Lo-Fi Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB

Filter

No.	Display	Name	Range	Values	Initial	Description
13	FT Sw	Filter Switch	0 - +1	2	0	OFF/ON
14	FT Cutoff	Filter Cutoff Frequency	0 - +127	128	+64	-
15	FT Reso	Filter Resonance	0 - +127	128	+96	-
16	FT Accl	Filter Acceleration	0 - +15	16	+12	-

Noise Suppressor

No.	Display	Name	Range	Values	Initial	Description
17	NS Sw	Noise Suppressor Switch	0 - +1	2	+1	OFF/ON
18	NS Thrsh	Noise Suppressor Threshold	0 - +127	128	+8	-

Stereo Flanger

No.	Display	Name	Range	Values	Initial	Description
19	FL Sw	Stereo Flanger Switch	0 - +1	2	+1	OFF/ON
20	FL Manu	Stereo Flanger Manual	0 - +127	128	+64	-
21	FL Rate	Stereo Flanger Rate	+1 - +200	200	+4	0.05 - 10.0Hz, step 0.05Hz
22	FL Depth	Stereo Flanger Depth	0 - +127	128	+32	-
23	FL Phase	Stereo Flanger LR Phase	0 - +180	181	+180	0deg - 180deg, step 1deg
24	FL Reso	Stereo Flanger Resonance	0 - +127	128	+64	-
25	FL Bal	Stereo Flanger Effect Balance	-50 - +50	101	-25	D100:0W - D50:50W - D0:100W
26	FL Lev	Stereo Flanger Level	0 - +127	128	+127	-

Others

No.	Display	Name	Range	Values	Initial	Description
27	Level	Level	0 - +127	128	+127	-

■ Isolator

Comp/Limiter

No.	Display	Name	Range	Values	Initial	Description
1	CL Sw	Comp/Limiter Switch	0 - +1	2	+1	OFF/ON
2	CL Thrsh	Comp/Limiter Threshold	0 - +127	128	+96	-
3	CL Ratio	Comp/Limiter Ratio	0 - +8	9	+5	1.0:1 / 1.2:1 / 1.5:1 / 2.0:1 / 2.8:1 / 4.0:1 / 8.0:1 / 16.0:1 / inf.:1
4	CL Atk	Comp/Limiter Attack	0 - +127	128	+63	0.25 - 100.0ms, step *1 (p. 128)
5	CL Rels	Comp/Limiter Release	0 - +125	126	+65	0.05s - 5.00s, step *2 (p. 128)
6	CL Gain	Comp/Limiter Gain	-12 - +36	49	+12	-6dB - +18dB, step 0.5dB
7	CL Lev	Comp/Limiter Level	0 - +127	128	+127	-

Isolator

No.	Display	Name	Range	Values	Initial	Description
8	IS Sw	Isolator Switch	0 - +1	2	+1	OFF/ON
9	IS Low	Isolator Low Level	0 - +127	128	+127	0dB=100, *different from the another level
10	IS Mid	Isolator Mid Level	0 - +127	128	0	0dB=100, *different from the another level
11	IS High	Isolator High Level	0 - +127	128	+127	0dB=100, *different from the another level
12	IS Lev	Isolator Level	0 - +127	128	+127	0dB=100, *different from the another level

Noise Suppressor

No.	Display	Name	Range	Values	Initial	Description
13	NS Sw	Noise Suppressor Switch	0 - +1	2	0	OFF/ON
14	NS Thrsh	Noise Suppressor Threshold	0 - +127	128	+8	-

Pitch Shifter

No.	Display	Name	Range	Values	Initial	Description
15	PS Sw	Pitch Shifter Switch	0 - +1	2	0	OFF/ON
16	PS Pitch	Pitch Shifter Pitch	-36 - +12	49	-12	-36 - +12 semi-tone, step 1 semi-tone
17	PS Fine	Pitch Shifter Fine	-100 - +100	201	0	-100 - +100 cent, step 1 cent
18	PS Bal	Pitch Shifter Effect Balance	-50 - +50	101	0	D100:0W - D50:50W - D0:100W

Others

No.	Display	Name	Range	Values	Initial	Description
19	Level	Level	0 - +127	128	+127	-

■ Center Cancellor

Center Cancellor

No.	Display	Name	Range	Values	Initial	Description
1	CC Sw	Center Cancellor Switch	0 - +1	2	+1	OFF/ON
2	CC Point	Center Cancellor LR Point	-50 - +50	101	0	L100:0R - L50:50R - L0:100R
3	CC Low	Center Cancellor Range Low	0 - +1516	0	Unlimit	40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000
4	CC High	Center Cancellor Range High	0 - +10	11	+10	1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, Unlimit
5	CC Lev	Center Cancellor Level	0 - +127	128	+127	-

Equalizer

No.	Display	Name	Range	Values	Initial	Description
6	EQ Sw	EQ Switch	0 - +1	2	0	OFF/ON
7	EQ Low	EQ Low Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB
8	EQ MidF	EQ Mid Frequency	0 - +16	17	+7	200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000
9	EQ MidQ	EQ Mid Q	0 - +4	5	+2	0.5 / 1.0 / 2.0 / 4.0 / 8.0
10	EQ MidG	EQ Mid Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB
11	EQ High	EQ High Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB
12	EQ Total	EQ Total Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB

Noise Suppressor

No.	Display	Name	Range	Values	Initial	Description
13	NS Sw	Noise Suppressor Switch	0 - +1	2	0	OFF/ON
14	NS Thrsh	Noise Suppressor Threshold	0 - +127	128	+4	-

Others

No.	Display	Name	Range	Values	Initial	Description
15	Level	Level	0 - +127	128	+127	-

Lo-Fi Processor

Lo-Fi

No.	Display	Name	Range	Values	Initial	Description
1	LF Sw	Lo-Fi Switch	0 - +1	2	+1	OFF/ON
2	LF Drive	Lo-Fi Drive	0 - +127	128	+12	-
3	LF BitDwn	Lo-Fi Bit Down	-20 - 0	21	-15	-
4	LF Low	Lo-Fi Low Cut	0 - +15	16	+11	Unlimit, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000
5	LF High	Lo-Fi High Cut	0 - +10	11	+6	1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, Unlimit
6	LF Gain	Lo-Fi Gain	-24 - +24	49	+6	-12dB - +12dB, step 0.5dB
7	LF Lev	Lo-Fi Level	0 - +127	128	+127	-

Noise Suppressor

No.	Display	Name	Range	Values	Initial	Description
8	NS Sw	Noise Suppressor Switch	0 - +1	2	+1	OFF/ON
9	NS Thrsh	Noise Suppressor Threshold	0 - +127	128	+4	-

Noise Generator

No.	Display	Name	Range	Values	Initial	Description
10	NZ Sw	Noise Generator Switch	0 - +1	2	+1	OFF/ON
11	NZ DsType	Noise Generator Disc Type	0 - +3	4	+3	LP / EP / SP / Random
12	NZ DsTone	Noise Generator Disc Tone	-24 - +24	49	0	-
13	NZ DsMix	Noise Generator Disc Mix Level	0 - +127	128	+32	-
14	NZ HmType	Noise Generator Hum Type	0 - +1	2	0	50Hz / 60Hz
15	NZ HmTone	Noise Generator Hum Tone	-24 - +24	49	0	-
16	NZ HmMix	Noise Generator Hum Mix Level	0 - +127	128	+32	-
17	NZ WhTone	Noise Generator White Tone	-24 - +24	49	0	-
18	NZ WhMix	Noise Generator White Mix Level	0 - +127	128	+32	-
19	NZ RdTune	Noise Generator Radio Tune	0 - +127	128	+64	-
20	NZ RdTone	Noise Generator Radio Tune Tone	-24 - +24	49	0	-
21	NZ RdMix	Noise Generator Radio Tune Mix Level	0 - +127	128	+32	-

Others

No.	Display	Name	Range	Values	Initial	Description
22	Level	Level	0 - +127	128	+127	-

Surround Reverb

Noise Suppressor

No.	Display	Name	Range	Values	Initial	Description
1	NS Sw	Noise Suppressor Switch	0 - +1	2	0	OFF/ON
2	NS Thrsh	Noise Suppressor Threshold	0 - +127	128	+4	-

Surround Reverb

No.	Display	Name	Range	Values	Initial	Description
3	RV Sw	Surround Reverb Switch	0 - +1	2	+1	OFF/ON
4	RV Type	Surround Reverb Type	0 - +2	3	0	Large / Middle / Small
5	RV Low	Surround Reverb Low Boost	-50 - +50	101	0	-
6	RV Bal	Surround Reverb Effect Balance	-50 - +50	101	0	D100:0W - D50:50W - D0:100W

Others

No.	Display	Name	Range	Values	Initial	Description
7	Level	Level	0 - +127	128	+127	-

■ Mastering Effect

Enhancer

No.	Display	Name	Range	Values	Initial	Description
1	EH Sw	Enhancer Switch	0 - +1	2	+1	OFF/ON
2	EH Sens	Enhancer Sens	0 - +127	128	+64	-
3	EH Mix	Enhancer Mix Level	0 - +127	128	+64	-

Equalizer

No.	Display	Name	Range	Values	Initial	Description
4	EQ Sw	EQ Switch	0 - +1	2	0	OFF/ON
5	EQ Low	EQ Low Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB
6	EQ MidF	EQ Mid Frequency	0 - +16	17	+7	200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000
7	EQ MidQ	EQ Mid Q	0 - +4	5	+2	0.5 / 1.0 / 2.0 / 4.0 / 8.0
8	EQ MidG	EQ Mid Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB
9	EQ High	EQ High Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB
10	EQ Total	EQ Total Gain	-24 - +24	49	0	-12dB - +12dB, step 0.5dB

Noise Suppressor

No.	Display	Name	Range	Values	Initial	Description
11	NS Sw	Noise Suppressor Switch	0 - +1	2	0	OFF/ON
12	NS Thrsh	Noise Suppressor Threshold	0 - +127	128	+4	-

Band Comp/Lim

No.	Display	Name	Range	Values	Initial	Description
13	BC Sw	Band Comp/Lim Switch	0 - +1	2	+1	OFF/ON
14	BC Cross	Band Comp/Lim Crossover	0 - +10	11	+6	200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000
15	BCL Thrsh	Band Low Comp/Lim Threshold	0 - +127	128	+100	-
16	BCL Ratio	Band Low Comp/Lim Ratio	0 - +8	9	+6	1.0:1 / 1.2:1 / 1.5:1 / 2.0:1 / 2.8:1 / 4.0:1 / 8.0:1 / 16.0:1 / inf.:1
17	BCL Atk	Band Low Comp/Lim Attack	0 - +127	128	+63	0.25 - 100.0ms, step *1 (p. 128)
18	BCL Rels	Band Low Comp/Lim Release	0 - +125	126	+65	0.05s - 5.00s, step *2 (p. 128)
19	BCL Gain	Band Low Comp/Lim Gain	-12 - +36	49	+20	-6dB - +18dB, step 0.5dB
20	BCL Lev	Band Low Comp/Lim Level	0 - +127	128	+127	-
21	BCH Thrsh	Band HighComp/Lim Threshold	0 - +127	128	+100	-
22	BCH Ratio	Band High Comp/Lim Ratio	0 - +8	9	+5	1.0:1 / 1.2:1 / 1.5:1 / 2.0:1 / 2.8:1 / 4.0:1 / 8.0:1 / 16.0:1 / inf.:1
23	BCH Atk	Band High Comp/Lim Attack	0 - +127	128	+63	0.25 - 100.0ms, step *1 (p. 128)
24	BCH Rels	Band High Comp/Lim Release	0 - +125	126	+65	0.05s - 5.00s, step *2 (p. 128)
25	BCH Gain	Band High Comp/Lim Gain	-12 - +36	49	+12	-6dB - +18dB, step 0.5dB
26	BCH Lev	Band High Comp/Lim Level	0 - +127	128	+127	-
27	BC Lev	Band Comp/Lim Total Level	0 - +127	128	+127	-

Others

No.	Display	Name	Range	Values	Initial	Description
28	Level	Level	0 - +127	128	+127	-

■ AFX parameter value conversion table

Value (Hex.)	Value (Dec.)\	(*1) ms	(*2) ms
00	0	0.25	50
01	1	0.30	51
02	2	0.35	52
03	3	0.40	53
04	4	0.45	54
05	5	0.50	55
06	6	0.55	56
07	7	0.60	57
08	8	0.65	58
09	9	0.70	59
0A	10	0.75	60
0B	11	0.80	62
0C	12	0.85	64
0D	13	0.90	66
0E	14	0.95	68
0F	15	1.0	70
10	16	1.1	72
11	17	1.2	74
12	18	1.3	76
13	19	1.4	78
14	20	1.5	80
15	21	1.6	82
16	22	1.7	84
17	23	1.8	86
18	24	1.9	88
19	25	2.0	90
1A	26	2.1	92
1B	27	2.2	94
1C	28	2.3	96
1D	29	2.4	98
1E	30	2.5	100
1F	31	2.6	105
20	32	2.7	110
21	33	2.8	115
22	34	2.9	120
23	35	3.0	125
24	36	3.1	130
25	37	3.2	135
26	38	3.3	140
27	39	3.4	145
28	40	3.5	150
29	41	3.6	160
2A	42	3.7	170
2B	43	3.8	180
2C	44	3.9	190
2D	45	4.0	200
2E	46	4.2	210
2F	47	4.4	220
30	48	4.6	230
31	49	4.8	240
32	50	5.0	250
33	51	5.2	260
34	52	5.4	270
35	53	5.6	280
36	54	5.8	290
37	55	6.0	300
38	56	6.5	320
39	57	7.0	340
3A	58	7.5	360
3B	59	8.0	380
3C	60	8.5	400
3D	61	9.0	420
3E	62	9.5	440
3F	63	10.0	460

Value (Hex.)	Value (Dec.)\	(*1) ms	(*2) ms
40	64	10.5	480
41	65	11.0	500
42	66	11.5	520
43	67	12.0	540
44	68	12.5	560
45	69	13.0	580
46	70	13.5	600
47	71	14.0	620
48	72	14.5	640
49	73	15.0	660
4A	74	15.5	680
4B	75	16.0	700
4C	76	16.5	720
4D	77	17.0	740
4E	78	17.5	760
4F	79	18.0	780
50	80	18.5	800
51	81	19.0	820
52	82	19.5	840
53	83	20	860
54	84	21	880
55	85	22	900
56	86	23	920
57	87	24	940
58	88	25	960
59	89	26	980
5A	90	27	1000
5B	91	28	1050
5C	92	29	1100
5D	93	30	1150
5E	94	31	1200
5F	95	32	1250
60	96	33	1300
61	97	34	1350
62	98	35	1400
63	99	36	1450
64	100	37	1500
65	101	38	1600
66	102	39	1700
67	103	40	1800
68	104	42	1900
69	105	44	2000
6A	106	46	2100
6B	107	48	2200
6C	108	50	2300
6D	109	52	2400
6E	110	54	2500
6F	111	56	2600
70	112	58	2700
71	113	60	2800
72	114	62	2900
73	115	64	3000
74	116	66	3200
75	117	68	3400
76	118	70	3600
77	119	72	3800
78	120	74	4000
79	121	76	4200
7A	122	78	4400
7B	123	80	4600
7C	124	85	4800
7D	125	90	5000
7E	126	95	---
7F	127	100	---

Instrument list (GM2 / Native mode)

Piano

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
1	0	96	Piano 1	1	97	Ac.Piano	1	98	St.Piano 1	2	99	SD Piano	2
	1	96	Piano 1w	1	97	Ac.Piano w	1	98	St.Piano 1w	2	99	SD Piano w	2
	2	96	Piano 1d	1	97	Mild Piano	1	98	European Pf	4	99	Classic Pf	2
2	0	96	Piano 2	1	97	Rock Piano	1	98	St.Piano 2	2	99	Enh.Piano 2	2
	1	96	Piano 2w	1	97	Rock Piano w	1	98	St.Piano 2w	2	99	Enh.Piano 2w	2
3	0	96	Piano 3	1	97	E.Grand Pf	2	98	SA Piano	2	99	Enh.E Grand	2
	1	96	Piano 3w	1	97	E.Grand Pf w	2	98	SA Piano w	2	99	Enh.E Grandw	2
4	0	96	Honky-tonk	2	97	Old Honky	2	98	St.Honky	4	99	Brite Honky	3
	1	96	Honky-tonk w	2	97	Old Honky w	2	98	St.Honky w	4	99	Brite Honkyw	3
5	0	96	E.Piano 1	3	97	Soft Rhodes	2	98	Tremo Rhodes	2	99	Stage 73	3
	1	96	Detuned EP1	2	97	Fat Rhodes	3	98	Sweet Tynes	3	99	NY Rhodes	2
	2	96	Dyno Rhodes	1	97	Rhodes Wide	2	98	Tremo Dyno	4	99	Phase Dyno	1
	3	96	60's E.Piano	2	97	Wurly Soft	2	98	Tremo Wurly	2	99	Whirly	2
6	0	96	E.Piano 2	2	97	FM E.Piano	2	98	FM Hard EP	1	99	Chorus EP	1
	1	96	Detuned EP2	3	97	Soft FM EP	3	98	Brite FM EP	2	99	Phase FM EP	2
	2	96	E.Piano 2v	2	97	SA E.Piano	2	98	Brite FM EP2	2	99	Wah FM EP	2
	3	96	EP Legend	2	97	EP Legend 2	3	98	EP Legend 3	4	99	Enh.Legend	3
	4	96	EP Phase	2	97	EP Phase 2	2	98	EP Phase 3	3	99	Phasing EP	2
7	0	96	Harpsichord	1	97	Harpsi 2	2	98	St.Harpsichd	2	99	Enh.Harpsi	2
	1	96	Coupl hps	2	97	Coupl hps 2	4	98	St.Coupl hps	4	99	Enh.Coupl hp	4
	2	96	Harpsi w	1	97	Harpsi 2 w	2	98	St.Harpsi w	2	99	Enh.Harpsi w	2
	3	96	Harpsi o	1	97	Harpsi 2 o	2	98	St.Harpsi o	2	99	Enh.Harpsi o	2
8	0	96	Clav	1	97	Atack Clav 1	2	98	Atack Clav 2	2	99	Comp Clav	2
	1	96	Pulse Clav	1	97	AnalogClav 1	1	98	AnalogClav 2	2	99	Wah Ana.Clav	2

Chromatic percussion

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
9	0	96	Celesta	1	97	Celesta 2	2	98	St.Celesta	3	99	SpaceCelesta	3
10	0	96	Glockenspiel	1	97	Glocken 2	2	98	St.Glocken	3	99	Trem.Glocken	3
11	0	96	Music Box	1	97	Music Box 2	2	98	St.Music Box	3	99	Panning Box	3
12	0	96	Vibraphone	1	97	Vibraphone 2	2	98	St.Vibra	2	99	Trem.Vibra	2
	1	96	Vibraphone w	1	97	Vibraphone2w	2	98	St.Vibra w	2	99	Trem.Vibra w	2
13	0	96	Marimba	1	97	Marimba 2	2	98	St.Marimba	3	99	Enh.Marimba	3
	1	96	Marimba w	1	97	Marimba 2 w	2	98	St.Marimba w	3	99	Enh.Marimbaw	3
14	0	96	Xylophone	1	97	Xylophone 2	2	98	St.Xylophone	4	99	Enh.Xylophon	4
15	0	96	Tubular-bell	1	97	Tubular-bell2	2	98	St.Tubular	3	99	Trem.Tubula	3
	1	96	Church Bell	1	97	Church Bell2	2	98	St.Church	4	99	Echo Church	4
	2	96	Carillon	1	97	Carillon 2	2	98	St.Carillon	4	99	Trm.Carillon	4
16	0	96	Santur	1	97	Santur 2	2	98	St.Santur	3	99	Enh.Santur	3

Organ

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
17	0	96	Organ 1	2	97	Perky	2	98	Roller	3	99	Perky Spin	2
	1	96	Detuned Or1	2	97	Ballad B	3	98	Rocker	4	99	Gospel Spin	3
	2	96	Organ 60	1	97	Happy 60s	1	98	Soft60' Organ	1	99	96 Year	1
	3	96	Organ 4	2	97	Tone Wheel	2	98	Full Stops	2	99	Tone Wh.Solo	2
18	0	96	Organ 2	2	97	Jazz Organ 1	3	98	Jazz Organ 2	2	99	Jazzy Spin	2
	1	96	Detuned Or2	2	97	Perc.Organ 1	3	98	Perc.Organ 2	3	99	Jazzy Spin 2	3
	2	96	Organ 5	3	97	Dist.JzOrg 1	2	98	Dist.JzOrg 2	2	99	Jazzy Spin 3	2
19	0	96	Organ 3	1	97	Organ 3 fast	1	98	Rock Organ	3	99	Rocker Spin	3
20	0	96	Church 1	1	97	Pipe Organ 1	2	98	Pipe Organ 2	3	99	Amb.Church	4
	1	96	Church 2	2	97	LargeChurch1	4	98	LargeChurch2	3	99	Amb.Church 2	4
	2	96	Church 3	1	97	SmallChurch1	2	98	SmallChurch2	4	99	Amb.Church 3	4
21	0	96	Reed Organ	1	97	Reed Organ 2	2	98	Reed Organ 3	3	99	Old Reed Org	3
	1	96	Puff Organ	2	97	Organ Flute	1	98	Theater	4	99	Enh.Theater	4
22	0	96	Accordion F	1	97	French Acc	2	98	St.FrenchAcc	3	99	Enh.French	3
	1	96	Accordion I	1	97	It Muset	2	98	St.It Muset	3	99	Enh.ItMuset	3
23	0	96	Harmonica	1	97	Harmonica 2	1	98	St.Harmonica	3	99	Ld.Harmonica	3
24	0	96	Bandneon	2	97	Bandneon 1	2	98	St.Bandneon	4	99	Enh.Bandneon	4

Guitar

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
25	0	96	Nylon Gt	1	97	Nylon Gt 2	1	98	Nylon Gt 3	1	99	Enh.Nylon Gt	1
	1	96	Ukulele	1	97	Ukulele 2	1	98	Ukulele 3	1	99	Enh.Ukulele	1
	2	96	Nylon o	2	97	Nylon 2 o	2	98	Nylon 3 o	2	99	Enh.Nylon o	2
	3	96	Nylon Gt.2	1	97	Hard Gut Gt	1	98	Hard Gut Gt2	2	99	Enh.Gut Gt	2
26	0	96	Steel-str.Gt	1	97	OV Steel Gt	1	98	SteelStr.Gt2	1	99	Comp OVSteel	1
	1	96	12-Str.Gt	2	97	12-Str.Gt 2	2	98	12-Str.Gt 3	3	99	3D 12-Str.Gt	2
	2	96	Mandolin	2	97	Mandolin 2	2	98	Mandolin 3	2	99	Enh.Mandolin	2
	3	96	Steel+Body	2	97	Steel+Body 2	2	98	Steel+Body 3	2	99	DelayedSteel	2
27	0	96	Jazz Gt	1	97	Jazz Gt 2	1	98	Jazz Gt 3	1	99	Lead Jazz Gt	1
	1	96	Pedal Steel	1	97	Pedal Steel2	2	98	Pedal Steel3	2	99	Hawaian Gt	1
28	0	96	Clean Rear	1	97	TC Rear	1	98	Strat2 Rear	1	99	Old Clean Gt	1
	1	96	Clean Half	1	97	TC Front	1	98	Chorus Clean	2	99	Jazz Chorus	1
	2	96	Mid Tone Gt	1	97	TC Front 2	1	98	335	1	99	335 Drive	1
29	0	96	Muted Gt	1	97	TC Mute Gt	1	98	TC Mute Gt 2	2	99	Comp Mute Gt	2
	1	96	Funk Gt	1	97	FunkGt Slap	2	98	FunkGt.Slap2	2	99	Enh.Funk Gt	2
	2	96	Funk Gt 2	1	97	Funk Pop	1	98	Funk Pop 2	2	99	Wah Funk Pop	2
	3	96	Jazz Man	2	97	Mute Jazz Gt	2	98	Slap Jazz Gt	1	99	Solo Jazz Gt	1
30	0	96	Overdrive Gt	1	97	Atk Drive Gt	2	98	OverdriveGt2	2	99	TC Lead Gt	1
	1	96	Gt.Pinch	1	97	Gt.Pinch 2	1	98	Gt.Pinch 3	2	99	Gt.PinchLead	1
31	0	96	DistortionGt	1	97	Atk Dist Gt	2	98	Dist.Gt 2	2	99	Heavy DistGt	1
	1	96	Feedback Gt	2	97	FeedbackGt 2	3	98	Feedback OD	3	99	Feedbacker	3
	2	96	DistRythm Gt	1	97	Muted Dist	2	98	Muted Dist 2	2	99	Muted OD	1
32	0	96	Gt.Harmonics	1	97	Gt.Harm 2	2	98	Gt.OctHarm	2	99	Amp.Harm	2
	1	96	Gt.Feedback	1	97	FeedbackOct	2	98	FeedbackHarm	2	99	Amp.FeedBack	2

Bass

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
33	0	96	Acoustic Bs	1	97	Rockabilly	2	98	Fat Aco.Bass	2	99	Enh.Aco Bass	1
34	0	96	Fingered Bs	1	97	Fingered Bs2	1	98	Jazz Bass	1	99	Pre Bass	1
	1	96	FingerJ.Bass	2	97	FingerP.Bass	2	98	Finger Slap	2	99	Comp Finger	2
35	0	96	Picked Bass	1	97	Picked Jz Bs	1	98	Picking Bass	2	99	Rock Bass	2
36	0	96	Fretless Bs	1	97	Fretless Bs2	2	98	PhaseFrtless	3	99	Cho.Fretless	1
37	0	96	Slap Bass 1	1	97	Slap Pop 1	1	98	Jazz Slap	2	99	Phase Slap	2
38	0	96	Slap Bass 2	2	97	Funky Slap	2	98	Slap Pop 2	2	99	Enh.Slap Pop	2
39	0	96	Synth Bass 1	2	97	MG303 Bass	2	98	Fat Syn.Bass	2	99	Dist303 Bass	2
	1	96	SynthBass101	1	97	MG Bass	1	98	SynthSaw Bs	1	99	P.Shift Bass	1
	2	96	Acid Bass	1	97	MG Acid Bass	1	98	AcidBs Dirty	1	99	Acid Dist Bs	1
	3	96	Clavi Bass	2	97	Clavi Bass 2	2	98	Clavi Bass 3	2	99	PhaseClaviBs	2
	4	96	Hammer	2	97	OB Hammer	2	98	MG Hammer	2	99	Enh.Hammer	2
40	0	96	Synth Bass 2	2	97	Seq101 Bass	2	98	Sq SynthBass	2	99	PhaseSq Bass	2
	1	96	Beef FM Bs	2	97	Beef Slap Bs	2	98	Beef Saw Bs	3	99	Enh.Beef Bs	3
	2	96	Rubber Bass	2	97	Rubber Bass2	3	98	JpSaw Rubber	2	99	Fat JpSaw Bs	2
	3	96	Attack Pulse	1	97	Attack Saw	1	98	Attack MG Bs	2	99	Enh.MG Bass	2

Strings / orchestra

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
41	0	96	Violin	1	97	Violin vib	1	98	Violin 2 vib	1	99	Enh.Violin	1
	1	96	Slow Violin	1	97	Slow Vln vib	1	98	SlowVln2 vib	1	99	Enh.Slow Vln	1
42	0	96	Viola	1	97	Viola vib	1	98	Viola2 vib	1	99	Enh.Viola	1
43	0	96	Cello	1	97	Cello vib	1	98	Cello2 vib	1	99	Enh.Cello	1
44	0	96	Contrabass	1	97	Cb vib	1	98	Cb2 vib	1	99	Enh.Cb	1
45	0	96	Tremolo Str	2	97	Tremolo Str2	3	98	St.Trem Str	2	99	St.Trem Str2	4
46	0	96	Pizzicato	1	97	Pizzicato 2	2	98	St.Pizzicato	3	99	Chorus Pizz	1
47	0	96	Harp	1	97	Harp 2	2	98	St.Harp	3	99	Chorus Harp	1
	1	96	Yangqin	1	97	Yangqin 2	2	98	St.Yangqin	3	99	Enh.Yangqin	1
48	0	96	Timpani	1	97	Timpani 2	2	98	St.Timpani	3	99	Enh.Timpani	3

Ensemble

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
49	0	96	Strings	2	97	Strings 2	3	98	St.Strings	2	99	St.Strings 2	4
	1	96	Orchestra	2	97	Orchestra 2	3	98	St.Orchestra	5	99	St.Orchestr2	7
	2	96	60'Strings	2	97	Oct.Strings	2	98	St.OctStr 1	6	99	St.OctStr 2	6
50	0	96	Slow Strings	1	97	SlowStrings2	2	98	St.Slow Str	2	99	St.Slow Str2	4
51	0	96	Syn.Strings1	2	97	BriteSyn.Str	2	98	StackSyn.Str	3	99	JP Strings	2
	1	96	Syn.Strings3	3	97	Oct.SynStr 1	4	98	Oct.SynStr 2	7	99	PhaseSyn.Str	4
52	0	96	Syn.Strings2	2	97	Warm SynStr1	4	98	Warm SynStr2	6	99	OB Strings	4
53	0	96	Choir Aahs	1	97	Large Choir	2	98	St.ChoirAahs	4	99	Rich Choir	8
	1	96	Choir Aahs 2	2	97	Small Choir	2	98	St.Sm Choir	2	99	St.Sm Choir2	5
54	0	96	Voices Oohs	1	97	Voices Oohs 2	2	98	St.Vox Oohs	3	99	Enh.Vox Oohs	1
	1	96	Hamming	2	97	Hamming 2	2	98	St.Hamming	4	99	Enh.Hamming	2
55	0	96	SynVox	1	97	SynVox 2	1	98	St.SynVox	2	99	Phase SynVox	1
	1	96	Ana Voices	1	97	Ana Voices 2	1	98	Ana Voices 3	2	99	Lead Ana.Vox	2
56	0	96	Orchestrahit	2	97	Orc Hit 2	2	98	St.Orc Hit	3	99	Enh.Orc Hit	3
	1	96	Bass Hit	3	97	Bass Hit 2	2	98	St.Bass Hit	3	99	PhaseBassHit	3
	2	96	6th Hit	2	97	6th Hit 2	2	98	St.6th Hit	4	99	Dly.6th Hit	4
	3	96	Euro Hit	2	97	Euro Hit 2	2	98	St.Euro Hit	4	99	Dly.Euro Hit	4

Brass

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
57	0	96	Trumpet	1	97	Solo Trumpet	1	98	Romantic Tp	1	99	Enh.Trumpet	1
	1	96	Dark Trumpet	1	97	Mild Trumpet	2	98	Tp.Dark vib	1	99	Warm Trumpet	2
58	0	96	Trombone	1	97	Solo Bone	1	98	Trombone vib	1	99	Enh.Trombone	1
	1	96	Trombone 2	1	97	Solo Bone 2	1	98	Trombone2vib	1	99	Enh.Bone 2	1
	2	96	Brite Bone	1	97	Brite Bone 2	2	98	Br.Bone vib	2	99	Enh.Br Bone	2
59	0	96	Tuba	1	97	Tuba 2	2	98	Tuba vib	2	99	Chorus Tuba	2
60	0	96	MuteTrumpet	1	97	MuteTrumpet2	1	98	Solo MutedTp	2	99	Enh.Muted Tp	2
	1	96	MuteTrumpet2	1	97	Harmon Mute	2	98	Harmon Mute2	2	99	Enh.MutedTp2	2
61	0	96	French Horns	1	97	FrenchHorns2	2	98	St.Fr Horns	3	99	Enh.StFrHorn	3
	1	96	Fr.Horn	2	97	MildFr.Horns	2	98	St.Fr Horns2	3	99	Warm Horns	3
62	0	96	Brass 1	2	97	Brass FF	2	98	St.Brass	2	99	St.Big Brass	4
	1	96	Brass 2	2	97	BrassSection	3	98	St.Brass 2	5	99	Enh.Brs Sect	4
63	0	96	SynthBrass 1	2	97	JP Syn.Brass	3	98	Hyper Brass	4	99	SuperJP Brs1	3
	1	96	SynthBrass 3	2	97	JPSyn.Brass2	2	98	Stack Brass	4	99	Lead Brass	2
	2	96	Oct.SynBrass	2	97	OctSynBrass2	3	98	OctSynBrass3	3	99	Phase OctBrs	3
	3	96	Jump Brass	1	97	80's Brass	1	98	SuperSaw Brs	3	99	SuperJP Brs2	3
64	0	96	SynthBrass 2	2	97	MG Syn.Horn	2	98	Warm SynHorn	3	99	WarmSynHorn23	
	1	96	SynthBrass 4	2	97	OB Syn.Horn	2	98	Rich SynHorn	5	99	Phase Horn	5
	2	96	Velo Brass	2	97	CS Syn Brass	2	98	P5 Syn.Brass	3	99	Fat Pro Bras	3

Reed

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
65	0	96	Soprano Sax	1	97	Soprano Sax2	1	98	Sop.Sax vib	1	99	Enh.Sop Sax	1
66	0	96	Alto Sax	1	97	Breathy Alto	1	98	AltoSoft vib	1	99	Enh.Alto Sax	1
67	0	96	Tenor Sax	1	97	BreathyTenor	1	98	Blow Tenor	1	99	Enh.TenorSax	1
68	0	96	Bariton Sax	1	97	Barely Bari	1	98	Bari.Sax vib	1	99	Enh.Bari Sax	1
69	0	96	Oboe	1	97	Brite Oboe	1	98	Classic Oboe	1	99	Enh.Oboe	1
70	0	96	EnglishHorn	1	97	EnglishHorn2	1	98	E.Horn vib	2	99	Enh.E Horn	2
71	0	96	Bassoon	1	97	Bassoon 2	1	98	Bassoon vib	1	99	Enh.Bassoon	1
72	0	96	Clarinet	1	97	Br.Clarinet	1	98	JazzClarinet	1	99	Jz.Clarinet2	1

Pipe

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
73	0	96	Piccolo	1	97	Piccolo 2	1	98	Piccolo vib	1	99	Enh.Piccolo	1
74	0	96	Flute	1	97	Flute 2	1	98	Flute vib	1	99	Enh.Flute	1
75	0	96	Recorder	1	97	Recorder 2	2	98	Recorder vib	1	99	Enh.Recorder	2
76	0	96	Pan Flute	2	97	Pan Flute 2	2	98	PanFlute vib	2	99	Cho.PanFlute	2
77	0	96	Bottle Blow	2	97	Bottle Blow2	2	98	Bottle vib	3	99	Phase Bottle	2
78	0	96	Shakuhachi	2	97	Shakuhachi 2	3	98	Shaku.vib	1	99	Delay Shaku	1
79	0	96	Whistle	1	97	Whistle 2	1	98	Whistle vib	1	99	DelayWhistle	1
80	0	96	Ocarina	1	97	Ocarina 2	1	98	Ocarina vib	1	99	DelayOcarina	1

Synth lead

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
81	0	96	Square Wave	2	97	MG Square	2	98	OB Square	3	99	OBSquareLead	3
	1	96	Square	1	97	Fat Square	3	98	Fat Square2	3	99	Phase Square	3
	2	96	Sine Wave	1	97	2600 Sine	1	98	2600 Sine 2	2	99	Sine Lead	2
82	0	96	Saw Wave	1	97	JP Saw Wave	2	98	Oct.JP Saw	3	99	KeySync Saw	2
	1	96	Saw	1	97	MG Saw	2	98	Hybrid Saw	3	99	Flanging Saw	3
	2	96	Doctor Solo	1	97	Fat Saw Solo	2	98	Hybrid Solo	3	99	Doctor Lead	3
	3	96	Natural Lead	2	97	P5 Saw Lead	2	98	MG Saw Lead	3	99	Fat Saw Lead	3
	4	96	SequencedSaw	2	97	MG Sequence	2	98	DelaySequence	2	99	PhaseSequence	2
83	0	96	Syn.Calliope	2	97	SynCalliope2	3	98	SynCalliope3	4	99	LeadCalliope	4
84	0	96	Chiffer Lead	2	97	ChifferLead2	4	98	ChifferLead3	6	99	Chiffers	6
85	0	96	Charang	3	97	Charang 2	3	98	Charang 3	4	99	Charang Lead	3
	1	96	Wire Lead	2	97	Wire Lead 2	3	98	Wire Lead 3	4	99	Phase Wire	4
86	0	96	Solo Vox	4	97	Solo Vox 2	6	98	Solo Vox 3	5	99	SoloVox Lead	5
87	0	96	5th SawWave	3	97	5th SawWave2	3	98	5th SawWave3	6	99	Flanging 5th	6
88	0	96	Bass & Lead	2	97	Bass & Lead2	2	98	Bass & Lead3	4	99	Phase BsLead	4
	1	96	DelayedLead	2	97	DelayedLead2	2	98	DelayedLead3	3	99	Suffle Lead	2

Synth pad, etc

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
89	0	96	Fantasia	2	97	Fantasia 2	3	98	Fantasia 3	4	99	New Fantasia	3
90	0	96	Warm Pad	2	97	Warm Pad 2	2	98	Warm Pad 3	4	99	Phase Pad	4
	1	96	Sine Pad	2	97	Sine Pad 2	2	98	Sine Pad 3	3	99	Chorus Sine	2
91	0	96	Polysynth	2	97	Polysynth 2	2	98	Polysynth 3	3	99	KeySyncSynth	3
92	0	96	SpaceVoices	1	97	SpaceVoices 2	3	98	SpaceVoices 3	5	99	Phase Voices	4
	1	96	Itopia	2	97	Itopia 2	3	98	Itopia 3	5	99	Pan Itopia	5
93	0	96	BowedGlass	2	97	BowedGlass 2	3	98	BowedGlass 3	3	99	Ring Glass	3
94	0	96	Metal Pad	3	97	Metal Pad 2	4	98	Metal Pad 3	4	99	Space Pad	4
95	0	96	Halo Pad	3	97	Halo Pad 2	4	98	Halo Pad 3	6	99	Phase Halo	6
96	0	96	Sweep Pad	2	97	Sweep Pad 2	2	98	Sweep Pad 3	4	99	Flanging Pad	4

Synth SFX

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
97	0	96	Ice Rain	2	97	Ice Rain 2	3	98	Ice Raig 3	4	99	Reverse Rain	4
98	0	96	Soundtrack	2	97	Soundtrack 2	2	98	Soundtrack 3	5	99	Phase Track	5
99	0	96	Crystal	2	97	Crystal 2	3	98	Crystal 3	4	99	3D Crystal	4
	1	96	Syn Mallet	2	97	Syn Mallet 2	3	98	Syn Mallet 3	3	99	Phase Mallet	3
100	0	96	Atmosphere	2	97	Atmosphere 2	3	98	Atmosphere 3	5	99	Pan Atmos	5
101	0	96	Brightness	2	97	Brightness 2	4	98	Brightness 3	6	99	Bright Star	6
102	0	96	Goblin	2	97	Goblin 2	3	98	Goblin 3	4	99	Rev Goblin	4
103	0	96	Echo Drops	1	97	Echo Drops 2	2	98	Echo Drops 3	6	99	Delay Drops	2
	1	96	Echo Bell	2	97	Echo Bell 2	3	98	Echo Bell 3	5	99	Delay Bell	3
	2	96	Echo Pan	3	97	Echo Pan 2	3	98	Echo Pan 3	6	99	Delay Pan	6
104	0	96	Star Theme	2	97	Star Theme 2	3	98	Star Theme 3	5	99	Phase Theme	3

Ethnic, etc

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
105	0	96	Sitar	1	97	Atk Sitar	2	98	St.Sitar	3	99	Enh.Sitar	3
	1	96	Sitar 2	2	97	Atk Sitar 2	3	98	St.Sitar 2	4	99	FantasySitar	3
106	0	96	Banjo	1	97	Banjo 2	2	98	St.Banjo	3	99	St.Banjo 2	4
107	0	96	Shamisen	1	97	Shamisen 2	2	98	St.Shamisen	3	99	St.Shamisen2	4
108	0	96	Koto	1	97	Koto 2	2	98	St.Koto	3	99	St.Koto 2	4
	1	96	Taisho Koto	1	97	Taisho Koto2	2	98	St.T Koto	3	99	St.T Koto 2	4
109	0	96	Kalimba	1	97	Kalimba 2	1	98	St.Kalimba	3	99	Trem.Kalimba	1
110	0	96	Bag Pipe	1	97	Bag Pipe 2	1	98	St.Bag Pipe	3	99	Enh.Bag Pipe	3
111	0	96	Fiddle	1	97	Fiddle vib	1	98	Fiddle 2 vib	1	99	Enh.Fiddle	1
112	0	96	Shanai	1	97	Shanai 2	1	98	St.Shanai	3	99	Enh.Shanai	3

Percussive

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
113	0	96	Tinkle Bell	1	97	→		98	→		99	→	
114	0	96	Agogo	1	97	→		98	→		99	→	
115	0	96	Steel Drums	1	97	→		98	→		99	→	
116	0	96	Woodblock	1	97	→		98	→		99	→	
	1	96	Castanet	1	97	→		98	→		99	→	
117	0	96	Taiko	3	97	→		98	→		99	→	
	1	96	Concert BD	1	97	→		98	→		99	→	
118	0	96	Melo.Tom 1	2	97	→		98	→		99	→	
	1	96	Melo.Tom 2	1	97	→		98	→		99	→	
119	0	96	Synth Drum	1	97	→		98	→		99	→	
	1	96	808 tom	2	97	→		98	→		99	→	
	2	96	Elec Perc	2	97	→		98	→		99	→	
120	0	96	Reverse Cym	1	97	→		98	→		99	→	

SFX

PC	LSB	MSB	Classic Set	Voices	MSB	Contemp Set	Voices	MSB	Solo Set	Voices	MSB	Enhance Set	Voices
121	0	96	GtFret Noise	1	97	→		98	→		99	→	
	1	96	Gt.Cut Noise	1	97	→		98	→		99	→	
	2	96	Slap_St.Bass	1	97	→		98	→		99	→	
122	0	96	Breath Noise	1	97	→		98	→		99	→	
	1	96	Fl.Key Click	1	97	→		98	→		99	→	
123	0	96	Seashore	2	97	→		98	→		99	→	
	1	96	Rain	2	97	→		98	→		99	→	
	2	96	Thunder	2	97	→		98	→		99	→	
	3	96	Wind	2	97	→		98	→		99	→	
	4	96	Stream	2	97	→		98	→		99	→	
	5	96	Bubble	2	97	→		98	→		99	→	
124	0	96	Bird Tweet	2	97	→		98	→		99	→	
	1	96	Dog	1	97	→		98	→		99	→	
	2	96	Horse Gallop	1	97	→		98	→		99	→	
	3	96	Bird Tweet 2	1	97	→		98	→		99	→	
125	0	96	Telephone	1	97	→		98	→		99	→	
	1	96	Telephone 2	1	97	→		98	→		99	→	
	2	96	Door Creak	1	97	→		98	→		99	→	
	3	96	Door	1	97	→		98	→		99	→	
	4	96	Scratch	1	97	→		98	→		99	→	
	5	96	Wind Chimes	2	97	→		98	→		99	→	
126	0	96	Helicopter	1	97	→		98	→		99	→	
	1	96	Car-Engine	1	97	→		98	→		99	→	
	2	96	Car-Stop	1	97	→		98	→		99	→	
	3	96	Car-Pass	1	97	→		98	→		99	→	
	4	96	Car-Crash	2	97	→		98	→		99	→	
	5	96	Siren	1	97	→		98	→		99	→	
	6	96	Train	1	97	→		98	→		99	→	
	7	96	Jetplane	3	97	→		98	→		99	→	
	8	96	Starship	4	97	→		98	→		99	→	
	9	96	Burst Noise	2	97	→		98	→		99	→	
127	0	96	Applause	2	97	→		98	→		99	→	
	1	96	Laughing	1	97	→		98	→		99	→	
	2	96	Screaming	1	97	→		98	→		99	→	
	3	96	Punch	1	97	→		98	→		99	→	
	4	96	Heart Beat	1	97	→		98	→		99	→	
	5	96	Footsteps	1	97	→		98	→		99	→	
128	0	96	Gunshot	1	97	→		98	→		99	→	
	1	96	Machine Gun	1	97	→		98	→		99	→	
	2	96	Laser gun	1	97	→		98	→		99	→	
	3	96	Explosion	2	97	→		98	→		99	→	

Instrument list (Special sound)

* The asterisk (*) indicates that the same sound is used for the Enhanced sound set in GM2/Native mode.

PC	LSB	MSB	Special 1 Set	Voice	LSB	MSB	Special 2 Set	Voice
1	0	80	D.L.A.Pad	8	0	81	Blown Bass	2
2	0	80	BrushingSaw	8	0	81	Enh.Violin	1 *
3	0	80	Xtremities	4	0	81	Solo Violin	1
4	0	80	Atmostrings	2	0	81	Enh.Cello	1 *
5	0	80	Noo Tongs	2	0	81	Overture Str	4
6	0	80	Mistery	1	0	81	St.Trem Str2	4 *
7	0	80	EastmEurope	3	0	81	St.Strings 2	4 *
8	0	80	Harpsi&Str	8	0	81	Intim&String	4
9	0	80	Shout Gt	3	0	81	Str&Brs Orch	5
10	0	80	Clean Chorus	1	0	81	St.Orchestr2	7 *
11	0	80	Mid Boost Gt	1	0	81	St.Slow Str2	4 *
12	0	80	Guitarvibe	3	0	81	ChamberPlyrs	4
13	0	80	Cluster Sect	8	0	81	Prelude	4
14	0	80	Mariachi Tp	1	0	81	Tape Strings	2
15	0	80	NY Tenor	1	0	81	JP Strings	2 *
16	0	80	Jazz Club	3	0	81	PhaseSyn.Str	4 *
17	0	80	Moody Alto	1	0	81	SciFi Choir	3
18	0	80	Fuji Yama	4	0	81	Rich Choir	8 *
19	0	80	SD Piano	2 *	0	81	St.Sm Choir2	5 *
20	0	80	Piano&Str	6	0	81	Tron Choir	2
21	0	80	WarmVoxPiano	5	0	81	ScatterDanze	2
22	0	80	Enh.E Grand	2 *	0	81	Choral Brass	4
23	0	80	Brite Honky	3 *	0	81	Vocal Keys	3
24	0	80	Ambient EP	3	0	81	SampleThe80s	2
25	0	80	Phase Dyno	1 *	0	81	Spectravox	2
26	0	80	Wah Dyno	2	0	81	Formantic	2
27	0	80	Voweling EP	3	0	81	Vocoder Wave	1
28	0	80	Stage 73	3 *	0	81	Enh.Muted Tp	2 *
29	0	80	NY Rhodes	2 *	0	81	St.Big Brass	4 *
30	0	80	Amped Wurlie	2	0	81	ConcertHorns	3
31	0	80	Dirty Wurlie	4	0	81	Brass Orch	4
32	0	80	PhaseFlangEP	1	0	81	Loose Lips	3
33	0	80	Dist Wurlie	2	0	81	Multi Brass	4
34	0	80	Xmod EP	2	0	81	SuperJP Brs3	3 *
35	0	80	EP+Followers	2	0	81	SuperJP Brs2	3 *
36	0	80	Backrhodes	2	0	81	DragginBrass	2
37	0	80	FM Delight	2	0	81	Enh.Alto Sax	1 *
38	0	80	Enh.Legend	3 *	0	81	Enh.TenorSax	1 *
39	0	80	Phasing EP	2 *	0	81	Enh.Bari Sax	1 *
40	0	80	Comp Clav	2 *	0	81	Sax's Sect	4
41	0	80	Vibaramba	2	0	81	Reed Romance	3
42	0	80	FM layer	3	0	81	U.S.Patrol	4
43	0	80	Vibey Flute	2	0	81	Enh.Oboe	1 *
44	0	80	Chime Bells	4	0	81	Jz.Clarinet2	1 *
45	0	80	The Big Spin	3	0	81	Enh.Flute	1 *
46	0	80	Roller Spin	3	0	81	Tron Flutes	2
47	0	80	Rocker Spin	3 *	0	81	Flute&Clari	2
48	0	80	Tone Wh.Solo	2 *	0	81	Orch Reeds	2
49	0	80	Purple Spin	4	0	81	Delay Shaku	1 *
50	0	80	RinginOrgn	2	0	81	DelayOcarina	1 *
51	0	80	60's LeadOrg	2	0	81	DynOrchestra	5
52	0	80	DistLead Org	1	0	81	Celtic Ens	5
53	0	80	Assalt Organ	2	0	81	Early Ens	4
54	0	80	Perky Spin	2 *	0	81	WoodSymphony	7
55	0	80	Gospel Spin	3 *	0	81	ViennaWoods2	3
56	0	80	Boogie Organ	4	0	81	Stage Woods	3
57	0	80	Klubb Organ	3	0	81	TremoloFlute	3
58	0	80	96 Year	1 *	0	81	SupportWoods	3
59	0	80	OrganInStone	1	0	81	Fiddle&Oboe	2
60	0	80	StringsOrgan	2	0	81	Mono Blues	3
61	0	80	Cathdr Pipes	5	0	81	TravinFlutes	3
62	0	80	Enh.Theater	4 *	0	81	DistordedSAW	1
63	0	80	Ld.Harmonica	3 *	0	81	The Leader	3
64	0	80	Guitar&Str	3	0	81	SH-2 Lead	1

PC	LSB	MSB	Special 1 Set	Voice	LSB	MSB	Special 2 Set	Voice
65	0	80	Elec Gut Gt	1	0	81	JP-6 Lead	1
66	0	80	Chorus GutGt	1	0	81	Glassy Saws	3
67	0	80	Enh.Nylon Gt	1 *	0	81	Too Pure	2
68	0	80	CompSteel Gt	1	0	81	Mono Analog	8
69	0	80	Elec Aco.Gt	1	0	81	Charang Lead	3 *
70	0	80	Hard Steel	1	0	81	Phase Wire	4 *
71	0	80	Comp OVSteel	1 *	0	81	Flanging 5th	6 *
72	0	80	DelayedSteel	2 *	0	81	BOG	3
73	0	80	Wah Steel Gt	1	0	81	Solo Twang	2
74	0	80	Soft Steel	1	0	81	Koto Power	2
75	0	80	Lead Jazz Gt	1 *	0	81	Dulcid Solo	2
76	0	80	Hawaian Gt	1 *	0	81	Wine Guitar	2
77	0	80	Solo Jazz Gt	1 *	0	81	Leapin' Keys	4
78	0	80	Old Clean Gt	1 *	0	81	New Fantasia	3 *
79	0	80	Jazz Chorus	1 *	0	81	MilleniumStr	2
80	0	80	Fat Clean	1	0	81	OB Borealis	4
81	0	80	Space-D Gt	1	0	81	Wet Glass	3
82	0	80	Whammy Gt	1	0	81	VintagePhase	4
83	0	80	Trem&Cho Gt	1	0	81	P-layer	4
84	0	80	Long DLY.Gt	1	0	81	Ring Glass	3 *
85	0	80	Comp FeedBK	3	0	81	5th Atm /Aft	2
86	0	80	ChaseDL Mute	2	0	81	Combing	2
87	0	80	Wah Funk Pop	2 *	0	81	Modular Life	4
88	0	80	Old Blues	1	0	81	KeySync Saw	3 *
89	0	80	335 Drive	1 *	0	81	Phase Track	5 *
90	0	80	335 Drive2	1	0	81	3D Crystal	4 *
91	0	80	SmallAMP OD	1	0	81	Bright Star	6 *
92	0	80	CountrySlide	1	0	81	Technoheadz	4
93	0	80	335 Comp	1	0	81	Techno Cave	2
94	0	80	TC Lead Gt	1 *	0	81	Wedo-Wodo	4
95	0	80	Lead Mild Gt	1	0	81	Dance Sweet	4
96	0	80	Crunch Gt	1	0	81	Dancefloor	3
97	0	80	Auto Wah Gt	1	0	81	Frogcillator	2
98	0	80	Folmant Gt	1	0	81	Dance Zipper	4
99	0	80	Fuzz Gt	1	0	81	Lo-fi Chord	4
100	0	80	MonoPhase Gt	1	0	81	Sliced	4
101	0	80	2 Layer Gt	2	0	81	Dance Chop	3
102	0	80	MonoDLY Dist	1	0	81	GO WILD!	1
103	0	80	Step FLG Gt	1	0	81	Tropics	3
104	0	80	335 Fuzz	1	0	81	FM Fx Bells	2
105	0	80	Drive Funk	2	0	81	CrystalGlass	1
106	0	80	Loud & Metal	1	0	81	Borealis	4
107	0	80	Heavy DistGt	1 *	0	81	Circular Pad	4
108	0	80	Power Mute	1	0	81	Oxygenizer	4
109	0	80	Muted OD	1 *	0	81	Quasar	4
110	0	80	Combo Drive	1	0	81	PsycheSweep	4
111	0	80	Ring Gt.	1	0	81	Hell Section	4
112	0	80	Scream Drive	2	0	81	DigitalDrone	1
113	0	80	Gt.Pinch Wah	1	0	81	Harp Drop	4
114	0	80	Power DistGt	1	0	81	Runaway Rez	2
115	0	80	Triple Gt	1	0	81	Wacky Pizzer	3
116	0	80	Reverse Harm	2	0	81	Reverse Rain	4 *
117	0	80	Drivin'Uprit	2	0	81	Starburst	4
118	0	80	Enh.Aco Bass	1 *	0	81	Tongan Delay	4
119	0	80	Pre Bass	1 *	0	81	Cascade	1
120	0	80	Comp Finger	2 *	0	81	Legat→Stacat	2
121	0	80	Octrv Finger	2	0	81	Rev Goblin	4 *
122	0	80	Rock Bass	2 *	0	81	FantasySitar	3 *
123	0	80	Dist Bass	2	0	81	Rising Sun	4
124	0	80	Solo Fretles	1	0	81	Green Tea	4
125	0	80	WahSlapBass	1	0	81	Jimmy's Koto	1
126	0	80	Froggy Bass	1	0	81	Fly 2 India	3
127	0	80	3D TB-303	2	0	81	IndianSpirit	4
128	0	80	Acid Dist Bs	1 *	0	81	Gt/BsNz MENU	1

Instrument list (GS mode)

Piano

PC	CC00	GS Set	Voices
001	000	Piano 1	1
	008	Piano 1w	1
	016	Piano 1d	1
002	000	Piano 2	1
	008	Piano 2w	1
003	000	Piano 3	1
	008	Piano 3w	1
004	000	Honky-tonk	2
	008	HonkyTonk w	2
005	000	E.Piano 1	1
	008	Detuned EP1	2
	016	E.Piano 1v	2
	024	60s E.Piano	1
006	000	E.Piano 2	1
	008	Detuned EP2	2
	016	E.Piano 2v	2
007	000	Harpsichord	1
	008	Coupled Hps	2
	016	Harpsi.w	1
	024	Harpsi.o	2
008	000	Clav.	1

Chromatic percussion

PC	CC00	GS Set	Voices
009	000	Celesta	1
010	000	Glockenspl	1
011	000	Music Box	1
012	000	Vibraphone	1
	008	Vib.w	1
013	000	Marimba	1
	008	Marimba w	1
014	000	Xylophone	1
015	000	Tubularbell	1
	008	Church Bell	1
	009	Carillon	1
016	000	Santur	1

Organ

PC	CC00	GS Set	Voices
017	000	Organ 1	1
	008	Detuned Or1	2
	016	60's Organ1	1
	032	Organ 4	2
018	000	Organ 2	1
	008	Detuned Or2	2
	032	Organ 5	2
019	000	Organ 3	2
020	000	Church Org1	1
	008	Church Org2	2
	016	Church Org3	2
021	000	Reed Organ	1
022	000	Accordion F	2
	008	Accordion I	2
023	000	Harmonica	1
024	000	Bandoneon	2

Guitar

PC	CC00	GS Set	Voices
025	000	Nylon Gt.	1
	008	Ukulele	1
	016	Nylon Gt.o	2
	032	Nylon Gt.2	1
026	000	Steel Gt.	1
	008	12-str.Gt	2
	016	Mandolin	1
027	000	Jazz Gt.	1
	008	Hawaiian Gt	1
028	000	Clean Gt.	1
	008	Chorus Gt.	2
029	000	Muted Gt.	1
	008	Funk Gt.	1
	016	Funk Gt.2	1
030	000	OverdriveGt	1
031	000	Dist.Gt.	1
	008	Feedback Gt	2
032	000	Gt.Harmonix	1
	008	Gt.Feedback	1

Bass

PC	CC00	GS Set	Voices
033	000	Acoustic Bs	1
034	000	Fingered Bs	1
035	000	Picked Bass	1
036	000	Fretless Bs	1
037	000	Slap Bass 1	1
038	000	Slap Bass 2	1
039	000	Syn.Bass 1	1
	001	Syn.Bass101	1
	008	Syn.Bass 3	1
040	000	Syn.Bass 2	2
	008	Syn.Bass 4	2
	016	Rubber Bass	2

Strings / orchestra

PC	CC00	GS Set	Voices
041	000	Violin	1
	008	Slow Violin	1
042	000	Viola	1
043	000	Cello	1
044	000	Contrabass	1
045	000	Tremolo Str	1
046	000	Pizzicato	1
047	000	Harp	1
048	000	Timpani	1

Ensemble

PC	CC00	GS Set	Voices
049	000	Strings	1
	008	Orchestra	2
050	000	SlowStrings	1
051	000	SynStrings1	1
	008	SynStrings3	2
052	000	SynStrings2	2
053	000	Choir Aahs	1
	032	Choir Aahs2	1
054	000	Voice Oohs	1
055	000	SynVox	1
056	000	Orchest.Hit	2

Brass

PC	CC00	GS Set	Voices
057	000	Trumpet	1
058	000	Trombone	1
	001	Trombone 2	2
059	000	Tuba	1
060	000	MuteTrumpet	1
061	000	French Horn	2
	001	Fr.Horn 2	2
062	000	Brass 1	1
	008	Brass 2	2
063	000	Syn.Brass 1	2
	008	Syn.Brass 3	2
	016	Analog Brs1	2
064	000	Syn.Brass 2	2
	008	Syn.Brass 4	1
	016	Analog Brs2	2

Reed

PC	CC00	GS Set	Voices
065	000	Soprano Sax	1
066	000	Alto Sax	1
067	000	Tenor Sax	1
068	000	BaritoneSax	1
069	000	Oboe	1
070	000	EnglishHorn	1
071	000	Bassoon	1
072	000	Clarinet	1

Pipe

PC	CC00	GS Set	Voices
073	000	Piccolo	1
074	000	Flute	1
075	000	Recorder	1
076	000	Pan Flute	1
077	000	Bottle Blow	2
078	000	Shakuhachi	2
079	000	Whistle	1
080	000	Ocarina	1

Synth lead

PC	CC00	GS Map	Voices
081	000	Square Wave	2
	001	Square	1
	008	Sine Wave	1
082	000	Saw Wave	2
	001	Saw	1
	008	Doctor Solo	2
083	000	SynCalliope	2
084	000	ChifferLead	2
085	000	Charang	2
086	000	Solo Vox	2
087	000	5th Saw	2
088	000	Bass & Lead	2

Synth pad, etc

PC	CC00	GS Set	Voices
089	000	Fantasia	2
090	000	Warm Pad	1
091	000	Polysynth	2
092	000	Space Voice	1
093	000	Bowed Glass	2
094	000	Metal Pad	2
095	000	Halo Pad	2
096	000	Sweep Pad	1

Synth SFX

PC	CC00	GS Set	Voices
097	000	Ice Rain	2
098	000	Soundtrack	2
099	000	Crystal	2
100	000	Atmosphere	2
101	000	Brightness	2
102	000	Goblin	2
103	000	Echo Drops	1
	001	Echo Bell	2
	002	Echo Pan	2
104	000	Star Theme	2

Ethnic, etc

PC	CC00	GS Set	Voices
105	000	Sitar	1
	001	Sitar 2	2
106	000	Banjo	1
107	000	Shamisen	1
108	000	Koto	1
	008	Taisho Koto	2
109	000	Kalimba	1
110	000	Bagpipe	1
111	000	Fiddle	1
112	000	Shanai	1

Percussive

PC	CC00	GS Set	Voices
113	000	Tinkle Bell	1
114	000	Agogo	1
115	000	Steel Drums	1
116	000	Woodblock	1
	008	Castanets	1
117	000	Taiko	1
	008	Concert BD	1
118	000	Melo. Tom 1	1
	008	Melo. Tom 2	1
119	000	Synth Drum	1
	008	808 Tom	1
	009	Elec Perc	1
120	000	Reverse Cym	1

SFX

PC	CC00	GS Set	Voices
121	000	Gt.FretNoiz	1
	001	Gt.CutNoise	1
	002	String Slap	1
122	000	BreathNoise	1
	001	Fl.KeyClick	1
123	000	Seashore	1
	001	Rain	1
	002	Thunder	1
	003	Wind	1
	004	Stream	2
	005	Bubble	2
124	000	Bird	2
	001	Dog	1
	002	HorseGallop	1
	003	Bird 2	1
125	000	Telephone 1	1
	001	Telephone 2	1
	002	Creaking	1
	003	Door	1
	004	Scratch	1
	005	Wind Chimes	2
126	000	Helicopter	1
	001	Car-Engine	1
	002	Car-Stop	1
	003	Car-Pass	1
	004	Car-Crash	2
	005	Siren	1
	006	Train	1
	007	Jetplane	2
	008	Starship	2
	009	Burst Noise	2
127	000	Applause	2
	001	Laughing	1
	002	Screaming	1
	003	Punch	1
	004	Heart Beat	1
	005	Footsteps	1
128	000	Gun Shot	1
	001	Machine Gun	1
	002	Lasergun	1
	003	Explosion	2

Instrument list (XGlite mode)

* The instrument names listed here are the proper names for the XGlite sound module mode. Due to the limited number of letters that can be used for the display, the names shown in the display may be slightly different from the instrument names listed here.

Piano

PC	CC00	XG Set	Elements
001	000	Grand Piano	1
	001	Grand Piano KSP	1
	040	Piano Strings	2
	041	Dream	2
002	000	Bright Piano	1
	001	Bright Piano KSP	1
003	000	Electric Grand Piano	2
	001	Electric Grand Piano KSP	2
	032	Detuned CP80	2
004	000	Honky-tonk Piano	2
	001	Honky-tonk Piano KSP	2
005	000	Electric Piano 1	2
	001	Electric Piano 1 KSP	1
	032	Chorus Electric Piano 1	2
006	000	Electric Piano 2	2
	001	Electric Piano 2 KSP	1
	041	DX + Analog Electric Piano	2
	085	Tinker DX Plus	2
007	000	Harpischord	1
	001	Harpischord KSP	1
	035	Harpischord 3	2
008	000	Clavi	2
	001	Clavi KSP	1

Chromatic percussion

PC	CC00	XG Set	Elements
009	000	Celesta	1
010	000	Glockenspiel	1
011	000	Music Box	2
	064	Orgel	2
012	000	Vibraphone	1
	001	Vibraphone KSP	1
013	000	Marimba	1
	001	Marimba KSP	1
	064	Sine Marimba	2
	097	Balimba	2
	098	Log Drums	2
014	000	Xylophone	1
015	000	Tubular Bells	1
	096	Church Bells	2
	097	Carillon	2
016	000	Dulcimer	1
	035	Dulcimer 2	2
	096	Cimbalom	2
	097	Santur	2

Organ

PC	CC00	XG Set	Elements
017	000	Drawbar Organ	1
	032	Detuned Drawbar Organ	2
	033	60's Drawbar Organ 1	2
	034	60's Drawbar Organ 2	2
	035	70's Drawbar Organ 1	2
	037	60's Drawbar Organ 3	2
	040	16+2*2/3	2
	064	Organ Bass	1
	065	70's Drawbar Organ 2	2
	066	Cheezy Organ	2
	067	Drawbar Organ 3	2
018	000	Percussive Organ	1

	024	70's Percussive Organ 1	2
	032	Detuned Percussive Organ	2
	033	Light Organ	2
	037	Percussive Organ 2	2
019	000	Rock Organ	2
	064	Rotary Organ	2
	065	Slow Rotary	2
	066	Fast Rotary	2
020	000	Church Organ	2
	032	Church Organ 3	2
	035	Church Organ 2	2
	040	Notre Dame	2
	064	Organ Flute	2
	065	Tremolo Organ Flute	2
021	000	Reed Organ	1
	040	Puff Organ	2
022	000	Accordion	2
023	000	Hamonica	1
	032	Harmonica 2	2
024	000	Tango Accordion	2
	064	Tango Accordion 2	2

Guitar

PC	CC00	XG Set	Elements
025	000	Nylon Guitar	1
	043	Velocity Guitar Harmonics	2
	096	Cimbalom	2
026	000	Steel Guitar	1
	035	12-string Guitar	2
	040	Nylon & Steel Guitar	2
	041	Steel Guitar with Body Sound2	2
	096	Mandolin	2
027	000	Jazz Guitar	1
	032	Jazz Amp	2
028	000	Clean Guitar	1
	032	Chorus Guitar	2
029	000	Muted Guitar	1
	040	Funk Guitar 1	2
	041	Muted Steel Guitar	2
	045	Jazz Man	1
030	000	Overdriven Guitar	1
	043	Guitar Pinch	2
031	000	Distortion Guitar	1
	040	Feedback Guitar	2
	041	Feedback Guitar 2	2
032	000	Guitar Harmonics	1
	065	Guitar Feedback	1
	066	Guitar Harmonics 2	1

Bass

PC	CC00	XG Set	Elements
033	000	Acoustic Bass	1
	040	Jazz Rhythm	2
	045	Velocity Crosstade Upright Bass	2
034	000	Finger Bass	1
	018	Finger Dark	2
	040	Bass & Distorted Electric Guitar2	2
	043	Finger Slap Bass	2
	045	Finger Bass 2	2
	065	Modulated Bass	2
035	000	Pick Bass	1
	028	Muted Pick Bass	1

036	000	Fretless Bass	1
	032	Fretless Bass 2	2
	033	Fretless Bass 3	2
	034	Fretless Bass 4	2
037	000	Slap Bass 1	1
	032	Punch Thumb Bass	2
038	000	Slap Bass 2	1
	043	Velocity Switch Slap	2
039	000	Synth Bass 1	1
	040	Techno Synth Bass	2
	085	SweePWM	2
040	000	Synth Bass 2	2
	006	Mellow Synth Bass	1
	012	Sequenced Bass	2
	018	Click Synth Bass	2
	019	Synth Bass 2 Dark	1
	041	DX Bass	2

Strings / orchestra

PC	CC00	XG Set	Elements
041	000	Violin	1
	008	Slow Violin	1
042	000	Viola	1
043	000	Cello	1
044	000	Contrabass	1
045	000	Tremolo Strings	1
	008	Slow Tremolo Strings	1
	040	Suspense Strings	2
046	000	Pizzicato Strings	1
047	000	Orchestral Harp	1
	040	Yang Chin	2
048	000	Timpani	1

Ensemble

PC	CC00	XG Set	Elements
049	000	Strings 1	1
	003	Stereo Strings	2
	008	Slow Strings	1
	035	60's Strings	2
	040	Orchestra	2
	041	Orchestra 2	2
	042	Tremolo Orchestra	2
	045	Velocity Strings	2
050	000	Strings 2	1
	003	Stereo Slow Strings	2
	008	Legato Strings	2
	040	Warm Strings	2
	041	Kingdom	2
051	000	Synth Strings 1	2
052	000	Synth Strings 2	2
053	000	Choir Aahs	1
	003	Stereo Choir	2
	032	Mellow Choir	2
	040	Choir Strings	2
054	000	Voice Oohs	1
055	000	Synth Voice	1
	040	Synth Voice 2	2
	041	Choral	2
	064	Analog Voice	1
056	000	Orchestra Hit	2
	035	Orchestra Hit 2	2
	064	Impact	2

Brass

PC	CC00	XG Set	Elements
057	000	Trumpet	1
	032	Warm Trumpet	2
058	000	Trombone	1
	018	Trombone 2	
059	000	Tuba	1
060	000	Muted Trumpet	1
061	000	French Horn	1
	006	French Horn Solo	1
	032	French Horn 2	2
	037	Horn Orchestra	2
062	000	Brass Section	1
	035	Trumpet & Trombone Section	2
063	000	Synth Brass 1	2
	020	Resonant Synth Brass	2
064	000	Synth Brass 2	1
	018	Soft Brass	2
	041	Choir Brass	2

Reed

PC	CC00	XG Set	Elements
065	000	Soprano Sax	1
066	000	Alto Sax	1
	040	Sax Section	2
067	000	Tenor Sax	1
	040	Breathy Tenor Sax	2
068	000	Baritone Sax	1
069	000	Oboe	2
070	000	English Horn	1
071	000	Bassoon	1
072	000	Clarinet	1

Pipe

PC	CC00	XG Set	Elements
073	000	Piccolo	1
074	000	Flute	1
075	000	Recorder	1
076	000	Pan Flute	1
077	000	Blown Bottle	2
078	000	Shakuhachi	2
079	000	Whistle	1
080	000	Ocarina	1

Synth lead

PC	CC00	XG Set	Elements
081	000	Square Lead	2
	006	Square Lead 2	1
	008	LM Square	2
	018	Hollow	1
	019	Shroud	2
	064	Mellow	2
	065	Solo Sine	2
	066	Sine Lead	1
082	000	Sawtooth Lead	2
	006	Sawtooth Lead 2	1
	008	Thick Sawtooth	2
	018	Dynamic Sawtooth	1
	019	Digital Sawtooth	2
	020	Big Lead	2
	096	Sequenced Analog	2
083	000	Calliope Lead	2
	065	Pure Pad	2
084	000	Chiff Lead	2

085	000	Charang Lead	2
	064	Distorted Lead	2
086	000	Voice Lead	2
087	000	Fifths Lead	2
	035	Big Five	2
088	000	Bass & Lead	2
	016	Big & Low	2
	064	Fat & Perky	2
	065	Soft Whirl	2
	067	Mogul	1
	068	Distance	2

Synth pad, etc

PC	CC00	XG Set	Elements
089	000	New Age Pad	2
	064	Fantasy	2
090	000	Warm Pad	2
091	000	Poly Synth Pad	2
092	000	Choir Pad	2
	066	Itopia	2
093	000	Bowed Pad	2
094	000	Metallic Pad	2
095	000	Halo Pad	2
096	000	Sweep Pad	2

Synth SFX

PC	CC00	XG Set	Elements
097	000	Rain	2
	065	African Wind	2
	066	Carib	2
098	000	Sound Track	2
	027	Prologue	2
099	000	Crystal	2
	012	Synth Drum Comp	2
	014	Popcorn	2
	018	Tiny Bells	2
	035	Round Glockenspiel	2
	040	Glockenspiel Chimes	2
	041	Clear Bells	2
	042	Chorus Bells	2
	065	Soft Crystal	2
	070	Air Bells	2
	071	Bell Harp	2
	072	Gamelimba	2
100	000	Atmosphere	2
	018	Warm Atmosphere	2
	019	Hollow Release	2
	040	Nylon Electric Piano	2
	064	Nylon Harp	2
	065	Harp Vox	2
	066	Atmosphere Pad	2
101	000	Brightness	2
102	000	Goblins	2
	064	Goblins Synth	2
	065	Creeper	2
	067	Ritual	2
	068	To Heaven	2
	070	Night	2
	071	Glisten	2
	096	Bell Choir	2
103	000	Echoes	2
104	000	Sci-Fi	2

Ethnic, etc

PC	CC00	XG Set	Elements
105	000	Sitar	1
	032	Detuned Sitar	2
	035	Sitar 2	2
	097	Tamboura	2
106	000	Banjo	1
	028	Muted Banjo	1
	096	Rabab	2
	097	Gopichant	2
	098	Oud	2
107	000	Shamisen	1
108	000	Koto	1
	096	Taisho-kin	2
	097	Kanoon	2
109	000	Kalimba	1
110	000	Bagpipe	2
111	000	Fiddle	1
112	000	Shanai	1
113	000	Tinkle Bell	2
	096	Bonang	2
	097	Altair	2
	098	Gamelan Gongs	2
	099	Stereo Gamelan Gongs	2
	100	Rama Cymbal	2
114	000	Agogo	2
115	000	Steel Drums	2
	097	Glass Percussion	2
	098	Thai Bells	2
116	000	Woodblock	1
	096	Castanets	1
117	000	Taiko Drum	1
	096	Gran Cassa	1
118	000	Melodic Tom	2
	064	Melodic Tom 2	1
	065	Real Tom	2
	066	Rock Tom	2
119	000	Synth Drum	1
	064	Analog Tom	1
	065	Electronic Percussion	2
120	000	Reverse Cymbal	1

SFX

PC	CC00	XG Set	Elements
121	000	Fret Noise	2
122	000	Breath Noise	2
123	000	Seashore	2
124	000	Bird Tweet	2
125	000	Telephone Ring	1
126	000	Helicopter	1
127	000	Applause	1
128	000	Gunshot	1

Drum set list (GM2 / Native mode)

PC	MSB	Classical Set	MSB	Contemporary Set	MSB	Solo Set	MSB	Enhanced Set
001	104	Standard Set	105	StandardSet2	106	St.Standard	107	Amb.Standard
009	104	Room Set	105	Room Set 2	106	St.Room	107	Amb.Room
017	104	Power Set	105	Power Set 2	106	St.Power	107	Gated Power
025	104	Electric Set	105	Dance Set	106	Rust Set	107	Techno Set
026	104	Analog Set	105	Rave Set	106	Analog2 Set	107	Bully Set
033	104	Jazz Set	105	Jazz Set 2	106	St.Jazz	107	Amb.Jazz
041	104	Brush Set	105	Brush Set 2	106	St.Brush	107	Amb.Brush
049	104	OrchestraSet	105	<-	106	<-	107	<-
057	104	SFX Set	105	<-	106	<-	107	<-

■ Classical set drum set (1)

* BANK MSB=104, LSB=0

	PC001	PC009	PC017	PC025	PC026
	Standard Set	Room Set	Power Set	Electric Set	Analog Set
27	High Q	High Q	High Q	High Q	High Q
28	Slap	Slap	Slap	Slap	Slap
29	Scratch Push	Scratch Push	Scratch Push	Scratch Push	Scratch Push
30	Scratch Pull	Scratch Pull	Scratch Pull	Scratch Pull	Scratch Pull
31	Sticks	Sticks	Sticks	Sticks	Sticks
32	Square Click	Square Click	Square Click	Square Click	Square Click
33	Metron Click	Metron Click	Metron Click	Metron Click	Metron Click
34	Metron Bell	Metron Bell	Metron Bell	Metron Bell	Metron Bell
35	Kick Drum 2	Kick Drum 2	Power Kick 2	Elec.Kick 2	Ana.Kick 2
36	Kick Drum 1	Kick Drum 1	Power Kick 1	Elec.Kick 1	Ana.Kick 1
37	Side Stick	Side Stick	Side Stick	Side Stick	Ana.Rim Sho
38	Aco.Snare	Room Snare	PowerSnareDr	E.SnareDrum1	Ana.Snare 1
39	Hand Clap	Hand Clap	Hand Clap	Hand Clap	Hand Clap
40	Elec.Snare	Elec.Snare	Elec.Snare	E.SnareDrum2	Elec.Snare
41	Low Tom 2	Room LowTom2	PowerLowTom2	E.Low Tom 2	Ana.Low Tom2
42	ClosedHi-hat	ClosedHi-hat	ClosedHi-hat	ClosedHi-hat	Closed Hi-ha
43	Low Tom 1	Room LowTom1	PowerLowTom1	E.Low Tom 1	Ana.Low Tom1
44	Pedal Hi-hat	Pedal Hi-hat	Pedal Hi-hat	Pedal Hi-hat	ClosedHi-hat
45	Mid Tom 2	Room MidTom2	PowerMidTom2	E.Mid Tom 2	Ana.Mid Tom2
46	Open Hi-hat	Open Hi-hat	Open Hi-hat	Open Hi-hat	Closed Hi-ha
47	Mid Tom 1	Room MidTom1	PowerMidTom1	E.Mid Tom 1	Ana.Mid Tom1
48	High Tom 2	Room Hi Tom2	Power HiTom2	E.Hi Tom 2	Ana.Hi Tom2
49	CrashCymbal1	CrashCymbal1	CrashCymbal1	CrashCymbal1	Ana.Cymbal
50	High Tom 1	Room Hi Tom1	Power HiTom1	E.Hi Tom 1	Ana.Hi Tom1
51	Ride Cymbal1	Ride Cymbal1	Ride Cymbal1	Ride Cymbal1	Ride Cymbal1
52	China Cymbal	China Cymbal	China Cymbal	Reverse Cym.	China Cymbal
53	Ride Bell	Ride Bell	Ride Bell	Ride Bell	Ride Bell
54	Tambourine	Tambourine	Tambourine	Tambourine	Tambourine
55	SplashCymbal	SplashCymbal	SplashCymbal	SplashCymbal	SplashCymbal
56	Cowbell	Cowbell	Cowbell	Cowbell	Ana.Cowbell
57	CrashCymbal2	CrashCymbal2	CrashCymbal2	CrashCymbal2	CrashCymbal2
58	Vibra-slap	Vibra-slap	Vibra-slap	Vibra-slap	Vibra-slap
59	Ride Cymbal2	Ride Cymbal2	Ride Cymbal2	Ride Cymbal2	Ride Cymbal2
60	High Bongo	High Bongo	High Bongo	High Bongo	High Bongo
61	Low Bongo	Low Bongo	Low Bongo	Low Bongo	Low Bongo
62	MuteHi Conga	MuteHi Conga	MuteHi Conga	MuteHi Conga	Ana.Hi Conga
63	OpenHi Conga	OpenHi Conga	OpenHi Conga	OpenHi Conga	Ana.MidConga
64	Low Conga	Low Conga	Low Conga	Low Conga	Ana.LowConga
65	High Timbale	High Timbale	High Timbale	High Timbale	High Timbale
66	Low Timbale	Low Timbale	Low Timbale	Low Timbale	Low Timbale
67	High Agogo	High Agogo	High Agogo	High Agogo	High Agogo
68	Low Agogo	Low Agogo	Low Agogo	Low Agogo	Low Agogo
69	Cabasa	Cabasa	Cabasa	Cabasa	Cabasa
70	Maracas	Maracas	Maracas	Maracas	Ana.Maracas
71	ShortWhistle	ShortWhistle	ShortWhistle	ShortWhistle	ShortWhistle
72	Long Whistle	Long Whistle	Long Whistle	Long Whistle	Long Whistle
73	Short Guiro	Short Guiro	Short Guiro	Short Guiro	Short Guiro
74	Long Guiro	Long Guiro	Long Guiro	Long Guiro	Long Guiro
75	Claves	Claves	Claves	Claves	Ana.Claves
76	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock
77	LowWoodBlock	LowWoodBlock	LowWoodBlock	LowWoodBlock	LowWoodBlock
78	Mute Cuica	Mute Cuica	Mute Cuica	Mute Cuica	Mute Cuica
79	Open Cuica	Open Cuica	Open Cuica	Open Cuica	Open Cuica
80	MuteTriangle	MuteTriangle	MuteTriangle	MuteTriangle	MuteTriangle
81	OpenTriangle	OpenTriangle	OpenTriangle	OpenTriangle	OpenTriangle
82	Shaker	Shaker	Shaker	Shaker	Shaker
83	Jingle Bell	Jingle Bell	Jingle Bell	Jingle Bell	Jingle Bell
84	Bell Tree	Bell Tree	Bell Tree	Bell Tree	Bell Tree
85	Castanets	Castanets	Castanets	Castanets	Castanets
86	Mute Surdo	Mute Surdo	Mute Surdo	Mute Surdo	Mute Surdo
87	Open Surdo	Open Surdo	Open Surdo	Open Surdo	Open Surdo

■ Classical set drum set (2)

* BANK MSB=104, LSB=0

	PC033	PC041	PC049	PC057
	Jazz Set	Brush Set	OrchestraSet	SFX Set
27	High Q	High Q	ClosedHi-hat	---
28	Slap	Slap	Pedal Hi-hat	---
29	Scratch Push	Scratch Push	Open Hi-hat	---
30	Scratch Pull	Scratch Pull	Ride Cymbal1	---
31	Sticks	Sticks	Sticks	---
32	Square Click	Square Click	Square Click	---
33	Metron Click	Metron Click	Metron Click	---
34	Metron Bell	Metron Bell	Metron Bell	---
35	Jazz Kick 2	Jazz Kick 2	Concert BD 2	---
36	Jazz Kick 1	Jazz Kick 1	Concert BD 1	---
37	Side Stick	Side Stick	Side Stick	---
38	Aco.Snare	Brush Tap	Concert SD	---
39	Hand Clap	Brush Slap	Castanets	High Q
40	Elec.Snare	Brush Swirl	Concert SD	Slap
41	Low Tom 2	BrushLowTom2	Timpani F	Scratch Push
42	ClosedHi-hat	Closed Hi-ha	Timpani F#	Scratch Pull
43	Low Tom 1	BrushLowTom1	Timpani G	Sticks
44	Pedal Hi-hat	ClosedHi-hat	Timpani G#	Square Click
45	Mid Tom 2	BrushMidTom2	Timpani A	Metron Click
46	Open Hi-hat	Closed Hi-ha	Timpani A#	Metron Bell
47	Mid Tom 1	BrushMidTom1	Timpani B	GtFret Noise
48	High Tom 2	Brush HiTom2	Timpani c	Cut Noise Up
49	CrashCymbal1	Brush Crash1	Timpani c#	Cut Noise Dw
50	High Tom 1	Brush HiTom1	Timpani d	Slap_St.Bass
51	Ride Cymbal1	Brush Ride 1	Timpani d#	Fl.Key Click
52	China Cymbal	China Cymbal	Timpani e	Laughing
53	Ride Bell	BrushRideBel	Timpani f	Scream
54	Tambourine	Tambourine	Tambourine	Punch
55	SplashCymbal	SplashCymbal	SplashCymbal	Heart Beat
56	Cowbell	Cowbell	Cowbell	Footsteps 1
57	CrashCymbal2	Brush Crash2	Concert Cym2	Footsteps 2
58	Vibra-slap	Vibra-slap	Vibra-slap	Applause
59	Ride Cymbal2	Ride Cymbal2	Concert Cym1	Door Creak
60	High Bongo	High Bongo	High Bongo	Door
61	Low Bongo	Low Bongo	Low Bongo	Scratch
62	MuteHi Conga	MuteHi Conga	MuteHi Conga	Wind Chimes
63	OpenHi Conga	OpenHi Conga	OpenHi Conga	Car-Engine
64	Low Conga	Low Conga	Low Conga	Car-Stop
65	High Timbale	High Timbale	High Timbale	Car-Pass
66	Low Timbale	Low Timbale	Low Timbale	Car-Crash
67	High Agogo	High Agogo	High Agogo	Siren
68	Low Agogo	Low Agogo	Low Agogo	Train
69	Cabasa	Cabasa	Cabasa	Jetplane
70	Maracas	Maracas	Maracas	Helicopter
71	ShortWhistle	ShortWhistle	ShortWhistle	Starship
72	Long Whistle	Long Whistle	Long Whistle	Gun Shot
73	Short Guiro	Short Guiro	Short Guiro	Machine Gun
74	Long Guiro	Long Guiro	Long Guiro	LaserGun
75	Claves	Claves	Claves	Explosion
76	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock	Dog
77	LowWoodBlock	LowWoodBlock	LowWoodBlock	Horse-Gallop
78	Mute Cuica	Mute Cuica	Mute Cuica	Birds
79	Open Cuica	Open Cuica	Open Cuica	Rain
80	MuteTriangle	MuteTriangle	MuteTriangle	Thunder
81	OpenTriangle	OpenTriangle	OpenTriangle	Wind
82	Shaker	Shaker	Shaker	Seashore
83	Jingle Bell	Jingle Bell	Jingle Bell	Stream
84	Bell Tree	Bell Tree	Bell Tree	Bubble
85	Castanets	Castanets	Castanets	---
86	Mute Surdo	Mute Surdo	Mute Surdo	---
87	Open Surdo	Open Surdo	Open Surdo	---

■ Contemporary set drum set (1)

* BANK MSB=105, LSB=0

	PC001	PC009	PC017	PC025	PC026
	StandardSet2	Room Set 2	Power Set 2	Dance Set	Rave Set
27	High Q	High Q	High Q	High Q	High Q
28	Slap	Slap	Slap	Slap	Slap
29	Scratch Push	Scratch Push	Scratch Push	Scratch Push	Scratch Push
30	Scratch Pull	Scratch Pull	Scratch Pull	Scratch Pull	Scratch Pull
31	Sticks	Sticks	Sticks	Sticks	Sticks
32	Square Click	Square Click	Square Click	Square Click	Square Click
33	Metron Click	Metron Click	Metron Click	Metron Click	Metron Click
34	Metron Bell	Metron Bell	Metron Bell	Metron Bell	Metron Bell
35	Kick Drum 2	Kick Drum 2	Power Kick 2	Dance Kick	808 Kick
36	Kick Drum 1	Kick Drum 1	Power Kick 1	Techno Kick	Round Kick
37	Side Stick	Side Stick	Side Stick	Side Stick	Ana.Rim Shot
38	Aco. Snare	Room Snare	PowerSnareDr	Dance Snare	808 Snare
39	Hand Clap	Hand Clap	Hand Clap	Hand Clap	Hand Clap
40	Elec. Snare	Elec.Snare	Elec.Snare	Raga Snare	Elec.Snare
41	Low Tom 2	Room LowTom2	PowerLowTom2	Ana.Low Tom2	808LowTom 2
42	ClosedHi-hat	ClosedHi-hat	ClosedHi-hat	Closed Hi-ha	Closed Hi-ha
43	Low Tom 1	Room LowTom1	PowerLowTom1	Ana.Low Tom1	808LowTom 1
44	Pedal Hi-hat	Pedal Hi-hat	Pedal Hi-hat	ClosedHi-hat	Closed Hi-ha
45	Mid Tom 2	Room MidTom2	PowerMidTom2	Ana.Mid Tom2	808MidTom 2
46	Open Hi-hat	Open Hi-hat	Open Hi-hat	Open Hi-hat	ClosedHi-hat
47	Mid Tom 1	Room MidTom1	PowerMidTom1	Ana.Mid Tom1	808MidTom 1
48	High Tom 2	Room Hi Tom2	Power HiTom2	Ana.Hi Tom2	808Hi Tom 2
49	CrashCymbal1	CrashCymbal1	CrashCymbal1	CrashCymbal1	Ana.Cymbal
50	High Tom 1	Room Hi Tom1	Power HiTom1	Ana.Hi Tom1	808Hi Tom 1
51	Ride Cymbal1	Ride Cymbal1	Ride Cymbal1	Ride Cymbal1	Ride Cymbal1
52	China Cymbal	China Cymbal	China Cymbal	Reverse Cym.	China Cymbal
53	Ride Bell	Ride Bell	Ride Bell	Ride Bell	Ride Bell
54	Tambourine	Tambourine	Tambourine	Tambourine	Tambourine
55	SplashCymbal	SplashCymbal	SplashCymbal	SplashCymbal	SplashCymbal
56	Cowbell	Cowbell	Cowbell	Cowbell	Ana.Cowbell
57	CrashCymbal2	CrashCymbal2	CrashCymbal2	CrashCymbal2	CrashCymbal2
58	Vibra-slap	Vibra-slap	Vibra-slap	Vibra-slap	Vibra-slap
59	Ride Cymbal2	Ride Cymbal2	Ride Cymbal2	Ride Cymbal2	Ride Cymbal2
60	High Bongo	High Bongo	High Bongo	High Bongo	High Bongo
61	Low Bongo	Low Bongo	Low Bongo	Low Bongo	Low Bongo
62	MuteHi Conga	MuteHi Conga	MuteHi Conga	MuteHi Conga	Ana.Hi Conga
63	OpenHi Conga	OpenHi Conga	OpenHi Conga	OpenHi Conga	Ana.MidConga
64	Low Conga	Low Conga	Low Conga	Low Conga	Ana.LowConga
65	High Timbale	High Timbale	High Timbale	High Timbale	High Timbale
66	Low Timbale	Low Timbale	Low Timbale	Low Timbale	Low Timbale
67	High Agogo	High Agogo	High Agogo	High Agogo	High Agogo
68	Low Agogo	Low Agogo	Low Agogo	Low Agogo	Low Agogo
69	Cabasa	Cabasa	Cabasa	Cabasa	Cabasa
70	Maracas	Maracas	Maracas	Maracas	Ana.Maracas
71	ShortWhistle	ShortWhistle	ShortWhistle	ShortWhistle	ShortWhistle
72	Long Whistle	Long Whistle	Long Whistle	Long Whistle	Long Whistle
73	Short Guiro	Short Guiro	Short Guiro	Short Guiro	Short Guiro
74	Long Guiro	Long Guiro	Long Guiro	Long Guiro	Long Guiro
75	Claves	Claves	Claves	Claves	Ana.Claves
76	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock
77	LowWoodBlock	LowWoodBlock	LowWoodBlock	LowWoodBlock	LowWoodBlock
78	Mute Cuica	Mute Cuica	Mute Cuica	Mute Cuica	Mute Cuica
79	Open Cuica	Open Cuica	Open Cuica	Open Cuica	Open Cuica
80	MuteTriangle	MuteTriangle	MuteTriangle	MuteTriangle	MuteTriangle
81	OpenTriangle	OpenTriangle	OpenTriangle	OpenTriangle	OpenTriangle
82	Shaker	Shaker	Shaker	Shaker	Shaker
83	Jingle Bell	Jingle Bell	Jingle Bell	Jingle Bell	Jingle Bell
84	Bell Tree	Bell Tree	Bell Tree	Bell Tree	Bell Tree
85	Castanets	Castanets	Castanets	Castanets	Castanets
86	Mute Surdo	Mute Surdo	Mute Surdo	Mute Surdo	Mute Surdo
87	Open Surdo	Open Surdo	Open Surdo	Open Surdo	Open Surdo

■ Contemporary set drum set (1)

* BANK MSB=105, LSB=0

	PC033	PC041	PC049	PC057
	Jazz Set 2	Brush Set 2	OrchestraSet	SFX Set
27	High Q	High Q	ClosedHi-hat	---
28	Slap	Slap	Pedal Hi-hat	---
29	Scratch Push	Scratch Push	Open Hi-hat	---
30	Scratch Pull	Scratch Pull	Ride Cymbal1	---
31	Sticks	Sticks	Sticks	---
32	Square Click	Square Click	Square Click	---
33	Metron Click	Metron Click	Metron Click	---
34	Metron Bell	Metron Bell	Metron Bell	---
35	Jazz Kick 2	Jazz Kick 2	Concert BD 2	---
36	Jazz Kick 1	Jazz Kick 1	Concert BD 1	---
37	Side Stick	Side Stick	Side Stick	---
38	Jazz Snare	Brush Tap	Concert SD	---
39	Hand Clap	Brush Slap	Castanets	High Q
40	Elec.Snare	Brush Swirl	Concert SD	Slap
41	Low Tom 2	BrushLowTom2	Timpani F	Scratch Push
42	ClosedHi-hat	Closed Hi-ha	Timpani F#	Scratch Pull
43	Low Tom 1	BrushLowTom1	Timpani G	Sticks
44	Pedal Hi-hat	Closed Hi-ha	Timpani G#	Square Click
45	Mid Tom 2	BrushMidTom2	Timpani A	Metron Click
46	Open Hi-hat	ClosedHi-hat	Timpani A#	Metron Bell
47	Mid Tom 1	BrushMidTom1	Timpani B	GtFret Noise
48	High Tom 2	Brush HiTom2	Timpani c	Cut Noise Up
49	CrashCymbal1	Brush Crash1	Timpani c#	Cut Noise Dw
50	High Tom 1	Brush HiTom1	Timpani d	Slap_St.Bass
51	Ride Cymbal1	Brush Ride 1	Timpani d#	Fl.Key Click
52	China Cymbal	China Cymbal	Timpani e	Laughing
53	Ride Bell	BrushRideBel	Timpani f	Scream
54	Tambourine	Tambourine	Tambourine	Punch
55	SplashCymbal	SplashCymbal	SplashCymbal	Heart Beat
56	Cowbell	Cowbell	Cowbell	Footsteps 1
57	CrashCymbal2	Brush Crash2	Concert Cym2	Footsteps 2
58	Vibra-slap	Vibra-slap	Vibra-slap	Applause
59	Ride Cymbal2	Ride Cymbal2	Concert Cym1	Door Creak
60	High Bongo	High Bongo	High Bongo	Door
61	Low Bongo	Low Bongo	Low Bongo	Scratch
62	MuteHi Conga	MuteHi Conga	MuteHi Conga	Wind Chimes
63	OpenHi Conga	OpenHi Conga	OpenHi Conga	Car-Engine
64	Low Conga	Low Conga	Low Conga	Car-Stop
65	High Timbale	High Timbale	High Timbale	Car-Pass
66	Low Timbale	Low Timbale	Low Timbale	Car-Crash
67	High Agogo	High Agogo	High Agogo	Siren
68	Low Agogo	Low Agogo	Low Agogo	Train
69	Cabasa	Cabasa	Cabasa	Jetplane
70	Maracas	Maracas	Maracas	Helicopter
71	ShortWhistle	ShortWhistle	ShortWhistle	Starship
72	Long Whistle	Long Whistle	Long Whistle	Gun Shot
73	Short Guiro	Short Guiro	Short Guiro	Machine Gun
74	Long Guiro	Long Guiro	Long Guiro	LaserGun
75	Claves	Claves	Claves	Explosion
76	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock	Dog
77	LowWoodBlock	LowWoodBlock	LowWoodBlock	Horse-Gallop
78	Mute Cuica	Mute Cuica	Mute Cuica	Birds
79	Open Cuica	Open Cuica	Open Cuica	Rain
80	MuteTriangle	MuteTriangle	MuteTriangle	Thunder
81	OpenTriangle	OpenTriangle	OpenTriangle	Wind
82	Shaker	Shaker	Shaker	Seashore
83	Jingle Bell	Jingle Bell	Jingle Bell	Stream
84	Bell Tree	Bell Tree	Bell Tree	Bubble
85	Castanets	Castanets	Castanets	
86	Mute Surdo	Mute Surdo	Mute Surdo	
87	Open Surdo	Open Surdo	Open Surdo	

■ Solo set drum set (1)

* BANK MSB=106, LSB=0

	PC001	PC009	PC017	PC025	PC026
	St.Standard	St.Room	St.Power	Rust Set	Analog2 Set
27	High Q	High Q	High Q	High Q	High Q
28	Slap	Slap	Slap	Slap	Slap
29	Scratch Push	Scratch Push	Scratch Push	Scratch Push	Scratch Push
30	Scratch Pull	Scratch Pull	Scratch Pull	Scratch Pull	Scratch Pull
31	Sticks	Sticks	Sticks	Sticks	Sticks
32	Square Click	Square Click	Square Click	Square Click	Square Click
33	Metron Click	Metron Click	Metron Click	Metron Click	Metron Click
34	Metron Bell	Metron Bell	Metron Bell	Metron Bell	Metron Bell
35	Kick Drum 2	Rock Kick Dr	Rock Kick Dr	70s Kick 1	909 Kick 2
36	Kick Drum 1	Kick Drum 1	Round Kick	Dance Kick	909 Kick 1
37	Side Stick	Side Stick	Side Stick	Side Stick	Ana.Rim Shot
38	Snare Drum 1	Rock SnareDr	Rock SnareDr	Old Fill SN	909 Snare 1
39	Hand Clap	Hand Clap	Hand Clap	Hand Clap	Hand Clap
40	Snare Drum 2	Snare Drum 2	Piccolo SN	Rock SN	909 Snare 2
41	Low Tom 2	Room LowTom2	PowerLowTom2	Elec.Tom L2	Ana.Low Tom2
42	ClosedHi-hat	ClosedHi-hat	ClosedHi-hat	Closed Hi-ha	Closed Hi-ha
43	Low Tom 1	Room LowTom1	PowerLowTom1	Elec.Tom L1	Ana.Low Tom1
44	Pedal Hi-hat	Pedal Hi-hat	Pedal Hi-hat	ClosedHi-hat	ClosedHi-hat
45	Mid Tom 2	Room MidTom2	PowerMidTom2	Elec.Tom M2	Ana.Mid Tom2
46	Open Hi-hat	Open Hi-hat	Open Hi-hat	Open Hi-hat	Open Hi-hat
47	Mid Tom 1	Room MidTom1	PowerMidTom1	Elec.Tom M1	Ana.Mid Tom1
48	High Tom 2	Room Hi Tom2	Power HiTom2	Elec.Tom H2	Ana.Hi Tom2
49	CrashCymbal1	CrashCymbal1	CrashCymbal1	CrashCymbal1	CrashCymbal1
50	High Tom 1	Room Hi Tom1	Power HiTom1	Elec.Tom H1	Ana.Hi Tom1
51	Ride Cymbal1	Ride Cymbal1	Ride Cymbal1	Ride Cymbal1	Ride Cymbal1
52	China Cymbal	China Cymbal	China Cymbal	Reverse Cym.	China Cymbal
53	Ride Bell	Ride Bell	Ride Bell	Ride Bell	Ride Bell
54	Tambourine	Tambourine	Tambourine	Tambourine	Tambourine
55	SplashCymbal	SplashCymbal	SplashCymbal	SplashCymbal	SplashCymbal
56	Cowbell	Cowbell	Cowbell	Cowbell	Ana.Cowbell
57	CrashCymbal2	CrashCymbal2	CrashCymbal2	CrashCymbal2	CrashCymbal2
58	Vibra-slap	Vibra-slap	Vibra-slap	Vibra-slap	Vibra-slap
59	Ride Cymbal2	Ride Cymbal2	Ride Cymbal2	Ride Cymbal2	Ride Cymbal2
60	High Bongo	High Bongo	High Bongo	High Bongo	High Bongo
61	Low Bongo	Low Bongo	Low Bongo	Low Bongo	Low Bongo
62	MuteHi Conga	MuteHi Conga	MuteHi Conga	MuteHi Conga	Ana.Hi Conga
63	OpenHi Conga	OpenHi Conga	OpenHi Conga	OpenHi Conga	Ana.MidConga
64	Low Conga	Low Conga	Low Conga	Low Conga	Ana.LowConga
65	High Timbale	High Timbale	High Timbale	High Timbale	High Timbale
66	Low Timbale	Low Timbale	Low Timbale	Low Timbale	Low Timbale
67	High Agogo	High Agogo	High Agogo	High Agogo	High Agogo
68	Low Agogo	Low Agogo	Low Agogo	Low Agogo	Low Agogo
69	Cabasa	Cabasa	Cabasa	Cabasa	Cabasa
70	Maracas	Maracas	Maracas	Maracas	Ana.Maracas
71	ShortWhistle	ShortWhistle	ShortWhistle	ShortWhistle	ShortWhistle
72	Long Whistle	Long Whistle	Long Whistle	Long Whistle	Long Whistle
73	Short Guiro	Short Guiro	Short Guiro	Short Guiro	Short Guiro
74	Long Guiro	Long Guiro	Long Guiro	Long Guiro	Long Guiro
75	Claves	Claves	Claves	Claves	Ana.Claves
76	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock	Ana.WoodBlock
77	LowWoodBlock	LowWoodBlock	LowWoodBlock	LowWoodBlock	LowWoodBlock
78	Mute Cuica	Mute Cuica	Mute Cuica	Mute Cuica	Mute Cuica
79	Open Cuica	Open Cuica	Open Cuica	Open Cuica	Open Cuica
80	MuteTriangle	MuteTriangle	MuteTriangle	MuteTriangle	MuteTriangle
81	OpenTriangle	OpenTriangle	OpenTriangle	OpenTriangle	OpenTriangle
82	Shaker	Shaker	Shaker	Shaker	Shaker
83	Jingle Bell	Jingle Bell	Jingle Bell	Jingle Bell	Jingle Bell
84	Bell Tree	Bell Tree	Bell Tree	Bell Tree	Bell Tree
85	Castanets	Castanets	Castanets	Castanets	Castanets
86	Mute Surdo	Mute Surdo	Mute Surdo	Mute Surdo	Mute Surdo
87	Open Surdo	Open Surdo	Open Surdo	Open Surdo	Open Surdo

Solo set drum set (2)

* BANK MSB=106, LSB=0

	PC033	PC041	PC049	PC057
	St.Jazz	St.Brush	OrchestraSet	SFX Set
27	High Q	High Q	ClosedHi-hat	---
28	Slap	Slap	Pedal Hi-hat	---
29	Scratch Push	Scratch Push	Open Hi-hat	---
30	Scratch Pull	Scratch Pull	Ride Cymbal1	---
31	Sticks	Sticks	Sticks	---
32	Square Click	Square Click	Square Click	---
33	Metron Click	Metron Click	Metron Click	---
34	Metron Bell	Metron Bell	Metron Bell	---
35	Jazz Kick 2	Jazz Kick 2	Concert BD 2	---
36	Jazz Kick 1	Jazz Kick 1	Concert BD 1	---
37	Side Stick	Side Stick	Side Stick	---
38	Snare Drum 1	Brush Tap	Concert SD	---
39	Hand Clap	Brush Slap	Castanets	High Q
40	Snare Drum 2	Brush Swirl	Concert SD	Slap
41	Low Tom 2	BrushLowTom2	Timpani F	Scratch Push
42	ClosedHi-hat	Closed Hi-ha	Timpani F#	Scratch Pull
43	Low Tom 1	BrushLowTom1	Timpani G	Sticks
44	Pedal Hi-hat	ClosedHi-hat	Timpani G#	Square Click
45	Mid Tom 2	BrushMidTom2	Timpani A	Metron Click
46	Open Hi-hat	Closed Hi-ha	Timpani A#	Metron Bell
47	Mid Tom 1	BrushMidTom1	Timpani B	GtFret Noise
48	High Tom 2	Brush HiTom2	Timpani c	Cut Noise Up
49	CrashCymbal1	Brush Crash1	Timpani c#	Cut Noise Dw
50	High Tom 1	Brush HiTom1	Timpani d	Slap_St.Bass
51	Ride Cymbal1	Brush Ride 1	Timpani d#	Fl.Key Click
52	China Cymbal	China Cymbal	Timpani e	Laughing
53	Ride Bell	BrushRideBel	Timpani f	Scream
54	Tambourine	Tambourine	Tambourine	Punch
55	SplashCymbal	SplashCymbal	SplashCymbal	Heart Beat
56	Cowbell	Cowbell	Cowbell	Footsteps 1
57	CrashCymbal2	Brush Crash2	Concert Cym2	Footsteps 2
58	Vibra-slap	Vibra-slap	Vibra-slap	Applause
59	Ride Cymbal2	BrushCymbal2	Concert Cym1	Door Creak
60	High Bongo	High Bongo	High Bongo	Door
61	Low Bongo	Low Bongo	Low Bongo	Scratch
62	MuteHi Conga	MuteHi Conga	MuteHi Conga	Wind Chimes
63	OpenHi Conga	OpenHi Conga	OpenHi Conga	Car-Engine
64	Low Conga	Low Conga	Low Conga	Car-Stop
65	High Timbale	High Timbale	High Timbale	Car-Pass
66	Low Timbale	Low Timbale	Low Timbale	Car-Crash
67	High Agogo	High Agogo	High Agogo	Siren
68	Low Agogo	Low Agogo	Low Agogo	Train
69	Cabasa	Cabasa	Cabasa	Jetplane
70	Maracas	Maracas	Maracas	Helicopter
71	ShortWhistle	ShortWhistle	ShortWhistle	Starship
72	Long Whistle	Long Whistle	Long Whistle	Gun Shot
73	Short Guiro	Short Guiro	Short Guiro	Machine Gun
74	Long Guiro	Long Guiro	Long Guiro	Lasergun
75	Claves	Claves	Claves	Explosion
76	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock	Dog
77	LowWoodBlock	LowWoodBlock	LowWoodBlock	Horse-Gallop
78	Mute Cuica	Mute Cuica	Mute Cuica	Birds
79	Open Cuica	Open Cuica	Open Cuica	Rain
80	MuteTriangle	MuteTriangle	MuteTriangle	Thunder
81	OpenTriangle	OpenTriangle	OpenTriangle	Wind
82	Shaker	Shaker	Shaker	Seashore
83	Jingle Bell	Jingle Bell	Jingle Bell	Stream
84	Bell Tree	Bell Tree	Bell Tree	Bubble
85	Castanets	Castanets	Castanets	---
86	Mute Surdo	Mute Surdo	Mute Surdo	---
87	Open Surdo	Open Surdo	Open Surdo	---

Enhanced set drum set (1)

* BANK MSB=107, LSB=0

	PC001	PC009	PC017	PC025	PC026
	Amb.Standard	Amb.Room	Gated Power	Techno Set	Bully Set
27	High Q	High Q	High Q	High Q	High Q
28	Slap	Slap	Slap	Slap	Slap
29	Scratch Push	Scratch Push	Scratch Push	Scratch Push	Scratch Push
30	Scratch Pull	Scratch Pull	Scratch Pull	Scratch Pull	Scratch Pull
31	Sticks	Sticks	Sticks	Sticks	Sticks
32	Square Click	Square Click	Square Click	Square Click	Square Click
33	Metron Click	Metron Click	Metron Click	Metron Click	Metron Click
34	Metron Bell	Metron Bell	Metron Bell	Metron Bell	Metron Bell
35	Kick Drum 2	Rock Kick Dr	Rock Kick Dr	909 Kick 1	909 Kick 3
36	Kick Drum 1	Kick Drum 1	Kick Drum 1	909 Kick 2	909 Kick 4
37	Side Stick	Side Stick	Side Stick	Side Stick	Ana.Rim Shot
38	Snare Drum 1	Rock SnareDr	Rock SnareDr	Techno Snare	909 Snare
39	Hand Clap	Hand Clap	Hand Clap	Hand Clap	Hand Clap
40	Snare Drum 2	Snare Drum 2	Snare Drum 2	Punch Snare	808 Snare
41	Low Tom 2	Room LowTom2	Room LowTom2	Elec.Tom L2	Ana.Low Tom2
42	ClosedHi-hat	ClosedHi-hat	ClosedHi-hat	ClosedHi-hat	ClosedHi-hat
43	Low Tom 1	Room LowTom1	Room LowTom1	Elec.Tom L1	Ana.Low Tom1
44	Pedal Hi-hat	Pedal Hi-hat	Pedal Hi-hat	Closed Hi-ha	Closed Hi-ha
45	Mid Tom 2	Room MidTom2	Room MidTom2	Elec.Tom M2	Ana.Mid Tom2
46	Open Hi-hat	Open Hi-hat	Open Hi-hat	Open Hi-hat	Open Hi-hat
47	Mid Tom 1	Room MidTom1	Room MidTom1	Elec.Tom M1	Ana.Mid Tom1
48	High Tom 2	Room Hi Tom2	Room Hi Tom2	Elec.Tom H2	Ana.Hi Tom2
49	CrashCymbal1	CrashCymbal1	CrashCymbal1	CrashCymbal1	CrashCymbal1
50	High Tom 1	Room Hi Tom1	Room Hi Tom1	Elec.Tom H1	Ana.Hi Tom1
51	Ride Cymbal1	Ride Cymbal1	Ride Cymbal1	Ride Cymbal1	Ride Cymbal1
52	China Cymbal	China Cymbal	China Cymbal	Reverse Cym.	China Cymbal
53	Ride Bell	Ride Bell	Ride Bell	Ride Bell	Ride Bell
54	Tambourine	Tambourine	Tambourine	Tambourine	Tambourine
55	SplashCymbal	SplashCymbal	SplashCymbal	SplashCymbal	SplashCymbal
56	Cowbell	Cowbell	Cowbell	Cowbell	Ana.Cowbell
57	CrashCymbal2	CrashCymbal2	CrashCymbal2	CrashCymbal2	CrashCymbal2
58	Vibra-slap	Vibra-slap	Vibra-slap	Vibra-slap	Vibra-slap
59	Ride Cymbal2	Ride Cymbal2	Ride Cymbal2	Ride Cymbal2	Ride Cymbal2
60	High Bongo	High Bongo	High Bongo	High Bongo	High Bongo
61	Low Bongo	Low Bongo	Low Bongo	Low Bongo	Low Bongo
62	MuteHi Conga	MuteHi Conga	MuteHi Conga	MuteHi Conga	Ana.Hi Conga
63	OpenHi Conga	OpenHi Conga	OpenHi Conga	OpenHi Conga	Ana.MidConga
64	Low Conga	Low Conga	Low Conga	Low Conga	Ana.LowConga
65	High Timbale	High Timbale	High Timbale	High Timbale	High Timbale
66	Low Timbale	Low Timbale	Low Timbale	Low Timbale	Low Timbale
67	High Agogo	High Agogo	High Agogo	High Agogo	High Agogo
68	Low Agogo	Low Agogo	Low Agogo	Low Agogo	Low Agogo
69	Cabasa	Cabasa	Cabasa	Cabasa	Cabasa
70	Maracas	Maracas	Maracas	Maracas	Ana.Maracas
71	ShortWhistle	ShortWhistle	ShortWhistle	ShortWhistle	ShortWhistle
72	Long Whistle	Long Whistle	Long Whistle	Long Whistle	Long Whistle
73	Short Guiro	Short Guiro	Short Guiro	Short Guiro	Short Guiro
74	Long Guiro	Long Guiro	Long Guiro	Long Guiro	Long Guiro
75	Claves	Claves	Claves	Claves	Ana.Claves
76	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock
77	LowWoodBlock	LowWoodBlock	LowWoodBlock	LowWoodBlock	LowWoodBlock
78	Mute Cuica	Mute Cuica	Mute Cuica	Mute Cuica	Mute Cuica
79	Open Cuica	Open Cuica	Open Cuica	Open Cuica	Open Cuica
80	MuteTriangle	MuteTriangle	MuteTriangle	MuteTriangle	MuteTriangle
81	OpenTriangle	OpenTriangle	OpenTriangle	OpenTriangle	OpenTriangle
82	Shaker	Shaker	Shaker	Shaker	Shaker
83	Jingle Bell	Jingle Bell	Jingle Bell	Jingle Bell	Jingle Bell
84	Bell Tree	Bell Tree	Bell Tree	Bell Tree	Bell Tree
85	Castanets	Castanets	Castanets	Castanets	Castanets
86	Mute Surdo	Mute Surdo	Mute Surdo	Mute Surdo	Mute Surdo
87	Open Surdo	Open Surdo	Open Surdo	Open Surdo	Open Surdo

Enhanced set drum set (2)

* BANK MSB=107, LSB=0

	PC033	PC041	PC049	PC057
	Amb.Jazz	Amb.Brush	OrchestraSet	SFX Set
27	High Q	High Q	ClosedHi-hat	---
28	Slap	Slap	Pedal Hi-hat	---
29	Scratch Push	Scratch Push	Open Hi-hat	---
30	Scratch Pull	Scratch Pull	Ride Cymbal1	---
31	Sticks	Sticks	Sticks	---
32	Square Click	Square Click	Square Click	---
33	Metron Click	Metron Click	Metron Click	---
34	Metron Bell	Metron Bell	Metron Bell	---
35	Jazz Kick 2	Jazz Kick 2	Concert BD 2	---
36	Jazz Kick 1	Jazz Kick 1	Concert BD 1	---
37	Side Stick	Side Stick	Side Stick	---
38	Snare Drum 1	Brush Tap	Concert SD	---
39	Hand Clap	Brush Slap	Castanets	High Q
40	Snare Drum 2	Brush Swirl	Concert SD	Slap
41	Low Tom 2	BrushLowTom2	Timpani F	Scratch Push
42	ClosedHi-hat	ClosedHi-hat	Timpani F#	Scratch Pull
43	Low Tom 1	BrushLowTom1	Timpani G	Sticks
44	Pedal Hi-hat	Closed Hi-ha	Timpani G#	Square Click
45	Mid Tom 2	BrushMidTom2	Timpani A	Metron Click
46	Open Hi-hat	Closed Hi-ha	Timpani A#	Metron Bell
47	Mid Tom 1	BrushMidTom1	Timpani B	GtFret Noise
48	High Tom 2	Brush HiTom2	Timpani c	Cut Noise Up
49	CrashCymbal1	Brush Crash1	Timpani c#	Cut Noise Dw
50	High Tom 1	Brush HiTom1	Timpani d	Slap_St.Bass
51	Ride Cymbal1	Brush Ride 1	Timpani d#	Fl Key Click
52	China Cymbal	China Cymbal	Timpani e	Laughing
53	Ride Bell	BrushRideBel	Timpani f	Scream
54	Tambourine	Tambourine	Tambourine	Punch
55	SplashCymbal	SplashCymbal	SplashCymbal	Heart Beat
56	Cowbell	Cowbell	Cowbell	Footsteps 1
57	CrashCymbal2	Brush Crash2	Concert Cym2	Footsteps 2
58	Vibra-slap	Vibra-slap	Vibra-slap	Applause
59	Ride Cymbal2	Ride Cymbal2	Concert Cym1	Door Creak
60	High Bongo	High Bongo	High Bongo	Door
61	Low Bongo	Low Bongo	Low Bongo	Scratch
62	MuteHi Conga	MuteHi Conga	MuteHi Conga	Wind Chimes
63	OpenHi Conga	OpenHi Conga	OpenHi Conga	Car-Engine
64	Low Conga	Low Conga	Low Conga	Car-Stop
65	High Timbale	High Timbale	High Timbale	Car-Pass
66	Low Timbale	Low Timbale	Low Timbale	Car-Crash
67	High Agogo	High Agogo	High Agogo	Siren
68	Low Agogo	Low Agogo	Low Agogo	Train
69	Cabasa	Cabasa	Cabasa	Jetplane
70	Maracas	Maracas	Maracas	Helicopter
71	ShortWhistle	ShortWhistle	ShortWhistle	Starship
72	Long Whistle	Long Whistle	Long Whistle	Gun Shot
73	Short Guiro	Short Guiro	Short Guiro	Machine Gun
74	Long Guiro	Long Guiro	Long Guiro	Lasergun
75	Claves	Claves	Claves	Explosion
76	Hi WoodBlock	Hi WoodBlock	Hi WoodBlock	Dog
77	LowWoodBlock	LowWoodBlock	LowWoodBlock	Horse-Gallop
78	Mute Cuica	Mute Cuica	Mute Cuica	Birds
79	Open Cuica	Open Cuica	Open Cuica	Rain
80	MuteTriangle	MuteTriangle	MuteTriangle	Thunder
81	OpenTriangle	OpenTriangle	OpenTriangle	Wind
82	Shaker	Shaker	Shaker	Seashore
83	Jingle Bell	Jingle Bell	Jingle Bell	Stream
84	Bell Tree	Bell Tree	Bell Tree	Bubble
85	Castanets	Castanets	Castanets	
86	Mute Surdo	Mute Surdo	Mute Surdo	
87	Open Surdo	Open Surdo	Open Surdo	

Drum set list (GS mode)

* The instrument names listed here are the proper names for the XGlite soundmodule mode. Due to the limited number of letters that can be used for the display, the names shown in the display may be slightly different from the instrument names listed here.

PC	GS Set
001	STANDARD
009	ROOM
017	POWER
025	ELECTRONIC
026	TR-808
033	JAZZ
041	BRUSH
049	ORCHESTRA
057	SFX

GS mode drum set (1)

	PC 1 / PC 33 STANDARD / JAZZ	PC 9 ROOM	PC 17 POWER	PC 25 ELECTRONIC	PC 26 TR-808	PC 41 BRUSH	PC 49 ORCHESTRA
	25	----	----	----	----	----	----
	26	----	----	----	----	----	----
	27	High Q	<-	<-	<-	<-	Closed Hi-hat
	28	Slap	<-	<-	<-	<-	Pedal Hi-hat
	29	Scratch Push	<-	<-	<-	<-	Open Hi-hat
	30	Scratch Pull	<-	<-	<-	<-	Ride Cymbal1
	31	Sticks	<-	<-	<-	<-	<-
	32	Square Click	<-	<-	<-	<-	<-
	33	Metronome Click	<-	<-	<-	<-	<-
	34	Metronome Bell	<-	<-	<-	<-	<-
	35	Kick Drum2 / Jazz	<-	<-	<-	Jazz BD2	Concert BD2
C2	36	Kick Drum1 / Jazz	<-	MONDO Kick	Elec BD	808 Bass Drum	Jazz BD1
	37	Side Stick	<-	<-	808 Rim Shot	<-	<-
	38	Snare Drum1	<-	Gated SD	Elec SD	808 Snare Drum	Brush Tap
	39	Hand Clap	<-	<-	<-	Brush Slap	Concert SD
	40	Snare Drum2	<-	Gated SD	<-	Brush Swirl	Castanets
	41	Low Tom2	Room Low	Room Low	Elec Low Tom2	808 Low Tom2	Concert SD
	42	Closed Hi-hat	<-	<-	808 CHH	<-	Timpani F
	43	Low Tom1	Room Low	Room Low	Elec Low Tom1	808 Low Tom1	Timpani F#
	44	Pedal Hi-hat	<-	<-	808 CHH	<-	Timpani G
	45	Mid Tom2	Room Mid Tom2	Room Mid Tom2	Elec Mid Tom2	808 Mid Tom2	Timpani G#
	46	Open Hi-hat	<-	<-	808 OHH	<-	Timpani A
	47	Mid Tom1	Room Mid Tom1	Room Mid Tom1	Elec Mid Tom1	808 Mid Tom1	Timpani A#
C3	48	High Tom2	Room Hi Tom2	Room Hi Tom2	Elec Hi Tom2	808 Hi Tom2	Timpani B
	49	Crash Cymbal1	<-	<-	808 Cymbal	<-	Timpani c
	50	High Tom1	Room Hi Tom1	Room Hi Tom1	Elec Hi Tom1	808 Hi Tom1	Timpani c#
	51	Ride Cymbal1	<-	<-	<-	<-	Timpani d
	52	Chinese Cymbal	<-	<-	Reverse Cymbal	<-	Timpani d#
	53	Ride Bell	<-	<-	<-	<-	Timpani e
	54	Tambourine	<-	<-	<-	<-	Timpani f
	55	Splash Cymbal	<-	<-	<-	<-	<-
	56	Cowbell	<-	<-	808 Cowbell	<-	<-
	57	Crash Cymbal2	<-	<-	<-	<-	Concert
	58	Vibra-slap	<-	<-	<-	<-	<-
	59	Ride Cymbal2	<-	<-	<-	<-	Concert
C4	60	High Bongo	<-	<-	<-	<-	<-
	61	Low Bongo	<-	<-	<-	<-	<-
	62	Mute High Conga	<-	<-	<-	808 High Conga	<-
	63	Open High Conga	<-	<-	<-	808 Mid Conga	<-
	64	Low Conga	<-	<-	<-	808 Low Conga	<-
	65	High Timbale	<-	<-	<-	<-	<-
	66	Low Timbale	<-	<-	<-	<-	<-
	67	High Agogo	<-	<-	<-	<-	<-
	68	Low Agogo	<-	<-	<-	<-	<-
	69	Cabasa	<-	<-	<-	<-	<-
	70	Maracas	<-	<-	<-	808 Maracas	<-
	71	Short Hi Whistle	<-	<-	<-	<-	<-
C5	72	Long Low Whistle	<-	<-	<-	<-	<-
	73	Short Guiro	<-	<-	<-	<-	<-
	74	Long Guiro	<-	<-	<-	<-	<-
	75	Claves	<-	<-	<-	808 Claves	<-
	76	High Wood Block	<-	<-	<-	<-	<-
	77	Low Wood Block	<-	<-	<-	<-	<-
	78	Mute Cuica	<-	<-	<-	<-	<-
	79	Open Cuica	<-	<-	<-	<-	<-
	80	Mute Triangle	<-	<-	<-	<-	<-
	81	Open Triangle	<-	<-	<-	<-	<-
	82	Shaker	<-	<-	<-	<-	<-
	83	Jingle Bell	<-	<-	<-	<-	<-
C6	84	Bell Tree	<-	<-	<-	<-	<-
	85	Castanets	<-	<-	<-	<-	<-
	86	Mute Surdo	<-	<-	<-	<-	<-
	87	Open Surdo	<-	<-	<-	<-	<-
	88	----	----	----	----	----	Applause

■ GS mode drum set (2)

		PC 57
		SFX
	35	----
C2	36	----
	37	----
	38	----
	39	High Q
	40	Slap
	41	Scratch Push
	42	Scratch Pull
	43	Sticks
	44	Square Click
	45	Metronome Click
	46	Metronome Bell
	47	Guitar Fret Noise
	48	Guitar cutting
C3	49	Guitar cutting
	50	String slap of double
	51	Fl.Key Click
	52	Laughing
	53	Scream
	54	Punch
	55	Heart Beat
	56	Footsteps1
	57	Footsteps2
	58	Applause
	59	Door Creaking
	60	Door
C4	61	Scratch
	62	Wind Chimes
	63	Car-Engine
	64	Car-Stop
	65	Car-Pass
	66	Car-Crash
	67	Siren
	68	Train
	69	Jetplane
	70	Helicopter
	71	Starship
	72	Gun Shot
C5	73	Machine Gun
	74	Lasergun
	75	Explosion
	76	Dog
	77	Horse-Gallop
	78	Birds
	79	Rain
	80	Thunder
	81	Wind
	82	Seashore
	83	Stream
	84	Bubble
C6	85	----
	86	----
	87	----
	88	----
	89	----
	90	----
	91	----
	92	----
	93	----
	94	----
	95	----

Drum set list (XGLite mode)

* The instrument names listed here are the proper names for the XGLite sound module mode. Due to the limited number of letters that can be used for the display, the names shown in the display may be slightly different from the instrument names listed here.

PC	MSB	LSB	XG Set	MSB	LSB	XG Set
001	127	0	Standard Kit	126	0	SFX Kit 1
002	127	0	Standard Kit 2	126	0	SFX Kit 2
009	127	0	Room Kit			
017	127	0	Rock Kit			
025	127	0	Electro Kit			
026	127	0	Analog Kit			
033	127	0	Jazz Kit			
041	127	0	Brush Kit			
049	127	0	Classic Kit			

■ XGlite mode drum set (1)

* BANK MSB=127, LSB=0

	PC001	PC002	PC009	PC017	PC025
	Standard Kit	Standard Kit 2	Room Kit	Rock Kit	Electro Kit
C012	13 Surdo Mute	<-	<-	<-	<-
14	Surdo Open	<-	<-	<-	<-
15	Hi Q	<-	<-	<-	<-
16	Whip Slap	<-	<-	<-	<-
17	Scratch H	<-	<-	<-	<-
18	Scratch L	<-	<-	<-	<-
19	Finger Snap	<-	<-	<-	<-
20	Click Noise	<-	<-	<-	<-
21	Metronome Click	<-	<-	<-	<-
22	Metronome Bell	<-	<-	<-	<-
23	Seq Click L	<-	<-	<-	<-
C124	Seq Click H	<-	<-	<-	<-
25	Brush Tap	<-	<-	<-	<-
26	Brush Swirl	<-	<-	<-	<-
27	Brush Slap	<-	<-	<-	<-
28	Brush Tap Swirl	<-	<-	<-	Reverse Cymbal
29	Snare Roll	Snare Roll 2	<-	<-	<-
30	Castanet	<-	<-	<-	Hi Q 2
31	Snare Soft	Snare Soft 2	<-	Snare Noisy	Snare Snappy Elec-
32	Sticks	<-	<-	<-	<-
33	Kick Soft	<-	<-	Kick Tight 2	Kick 3
34	Open Rim Shot	Open Rim Shot H	<-	<-	<-
35	Kick Tight	Kick Tight Short	<-	Kick 2	Kick Gate
C236	Kick	Kick Short	<-	Kick Gate	Kick Gate Heavy
37	Side Stick	<-	<-	<-	<-
38	Snare	Snare Short	Snare Snappy	Snare Rock	Snare Noisy 2
39	Hand Clap	<-	<-	<-	<-
40	Snare Tight	Snare Tight H	Snare Tight Snappy	Snare Rock Rim	Snare Noisy 3
41	Floor Tom L	<-	Tom Room 1	Tom Rock 1	Tom Electro 1
42	Hi-Hat Closed	<-	<-	<-	<-
43	Floor Tom H	<-	Tom Room 2	Tom Rock 2	Tom Electro 2
44	Hi-Hat Pedal	<-	<-	<-	<-
45	Low Tom	<-	Tom Room 3	Tom Rock 3	Tom Electro 3
46	Hi-Hat Open	<-	<-	<-	<-
47	Mid Tom L	<-	Tom Room 4	Tom Rock 4	Tom Electro 4
C348	Mid Tom H	<-	Tom Room 5	Tom Rock 5	Tom Electro 5
49	Crash Cymbal 1	<-	<-	<-	<-
50	High Tom	<-	Tom Room 6	Tom Rock 6	Tom Electro 6
51	Ride Cymbal 1	<-	<-	<-	<-
52	Chinese Cymbal	<-	<-	<-	<-
53	Ride Cymbal Cup	<-	<-	<-	<-
54	Tambourine	<-	<-	<-	<-
55	Splash Cymbal	<-	<-	<-	<-
56	Cowbell	<-	<-	<-	<-
57	Crash Cymbal 2	<-	<-	<-	<-
58	Vibraslap	<-	<-	<-	<-
59	Ride Cymbal 2	<-	<-	<-	<-
C460	Bongo H	<-	<-	<-	<-
61	Bongo L	<-	<-	<-	<-
62	Conga H Mute	<-	<-	<-	<-
63	Conga H Open	<-	<-	<-	<-
64	Conga L	<-	<-	<-	<-
65	Timbale H	<-	<-	<-	<-
66	Timbale L	<-	<-	<-	<-
67	Agogo H	<-	<-	<-	<-
68	Agogo L	<-	<-	<-	<-
69	Cabasa	<-	<-	<-	<-
70	Maracas	<-	<-	<-	<-
71	Samba Whistle H	<-	<-	<-	<-

		PC001 Standard Kit	PC002 Standard Kit 2	PC009 Room Kit	PC017 Rock Kit	PC025 Electro Kit
C5	72	Samba Whistle L	<-	<-	<-	<-
	73	Guero Short	<-	<-	<-	<-
	74	Guero Long	<-	<-	<-	<-
	75	Claves	<-	<-	<-	<-
	76	Wood Block H	<-	<-	<-	<-
	77	Wood Block L	<-	<-	<-	<-
	78	Cuica Mute	<-	<-	<-	Scratch H 2
	79	Cuica Open	<-	<-	<-	Scratch L 2
	80	Triangle Mute	<-	<-	<-	<-
	81	Triangle Open	<-	<-	<-	<-
	82	Shaker	<-	<-	<-	<-
	83	Jingle Bells	<-	<-	<-	<-
C6	84	Bell Tree	<-	<-	<-	<-

■ XGlite mode drum set (2)

* BANK MSB=127, LSB=0

		PC001 Standard Kit	PC026 Analog Kit	PC033 Jazz Kit	PC041 Brush Kit	PC049 Classic Kit
C0	12	Surdo Mute	<-	<-	<-	<-
	14	Surdo Open	<-	<-	<-	<-
	15	Hi Q	<-	<-	<-	<-
	16	Whip Slap	<-	<-	<-	<-
	17	Scratch H	<-	<-	<-	<-
	18	Scratch L	<-	<-	<-	<-
	19	Finger Snap	<-	<-	<-	<-
	20	Click Noise	<-	<-	<-	<-
	21	Metronome Click	<-	<-	<-	<-
	22	Metronome Bell	<-	<-	<-	<-
	23	Seq Click L	<-	<-	<-	<-
C1	24	Seq Click H	<-	<-	<-	<-
	25	Brush Tap	<-	<-	<-	<-
	26	Brush Swirl	<-	<-	<-	<-
	27	Brush Slap	<-	<-	<-	<-
	28	Brush Tap Swirl	Reverse Cymbal	<-	<-	<-
	29	Snare Roll	<-	<-	<-	<-
	30	Castanet	Hi Q 2	<-	<-	<-
	31	Snare Soft	Snare Noisy 4	<-	Brush Slap 2	<-
	32	Sticks	<-	<-	<-	<-
	33	Kick Soft	Kick Tight 2	<-	<-	Kick Soft 2
	34	Open Rim Shot	<-	<-	<-	<-
	35	Kick Tight	Kick Analog Short	<-	<-	Gran Cassa
C2	36	Kick	Kick Analog	Kick Jazz	Kick Small	Gran Cassa Mute
	37	Side Stick	Side Stick Analog	<-	<-	<-
	38	Snare	Snare Analog	<-	Brush Slap 3	Band Snare
	39	Hand Clap	<-	<-	<-	<-
	40	Snare Tight	Snare Analog 2	<-	Brush Tap 2	Band Snare 2
	41	Floor Tom L	Tom Analog 1	Tom Jazz 1	Tom Brush 1	Tom Jazz 1
	42	Hi-Hat Closed	Hi-Hat Closed Ana-	<-	<-	<-
	43	Floor Tom H	Tom Analog 2	Tom Jazz 2	Tom Brush 2	Tom Jazz 2
	44	Hi-Hat Pedal	Hi-Hat Closed Ana-	<-	<-	<-
	45	Low Tom	Tom Analog 3	Tom Jazz 3	Tom Brush 3	Tom Jazz 3
	46	Hi-Hat Open	Hi-Hat Open Analog	<-	<-	<-
	47	Mid Tom L	Tom Analog 4	Tom Jazz 4	Tom Brush 4	Tom Jazz 4
C3	48	Mid Tom H	Tom Analog 5	Tom Jazz 5	Tom Brush 5	Tom Jazz 5
	49	Crash Cymbal 1	Crash Analog	<-	<-	Hand Cymbal
	50	High Tom	Tom Analog 6	Tom Jazz 6	Tom Brush 6	Tom Jazz 6
	51	Ride Cymbal 1	<-	<-	<-	Hand Cymbal Short
	52	Chinese Cymbal	<-	<-	<-	<-

		PC001 Standard Kit	PC026 Analog Kit	PC033 Jazz Kit	PC041 Brush Kit	PC049 Classic Kit
53		Ride Cymbal Cup	<-	<-	<-	<-
	54	Tambourine	<-	<-	<-	<-
55		Splash Cymbal	<-	<-	<-	<-
	56	Cowbell	Cowbell Analog	<-	<-	<-
57		Crash Cymbal 2	<-	<-	<-	Hand Cymbal 2
	58	Vibraslap	<-	<-	<-	<-
59		Ride Cymbal 2	<-	<-	<-	Hand Cymbal 2 Short
C4	60	Bongo H	<-	<-	<-	<-
	61	Bongo L	<-	<-	<-	<-
62		Conga H Mute	Conga Analog H	<-	<-	<-
	63	Conga H Open	Conga Analog M	<-	<-	<-
64		Conga L	Conga Analog L	<-	<-	<-
65		Timbale H	<-	<-	<-	<-
	66	Timbale L	<-	<-	<-	<-
67		Agogo H	<-	<-	<-	<-
	68	Agogo L	<-	<-	<-	<-
69		Cabasa	<-	<-	<-	<-
	70	Maracas	Maracas 2	<-	<-	<-
71		Samba Whistle H	<-	<-	<-	<-
C5	72	Samba Whistle L	<-	<-	<-	<-
	73	Guiro Short	<-	<-	<-	<-
74		Guiro Long	<-	<-	<-	<-
	75	Claves	Claves 2	<-	<-	<-
76		Wood Block H	<-	<-	<-	<-
77		Wood Block L	<-	<-	<-	<-
	78	Cuica Mute	Scratch H 2	<-	<-	<-
79		Cuica Open	Scratch L 3	<-	<-	<-
	80	Triangle Mute	<-	<-	<-	<-
81		Triangle Open	<-	<-	<-	<-
	82	Shaker	<-	<-	<-	<-
83		Jingle Bells	<-	<-	<-	<-
C6	84	Bell Tree	<-	<-	<-	<-

■ XGlite mode drum set (3)

* BANK MSB=126, LSB=0

		PC001	PC002
		SFX Kit 1	SFX Kit 2
C2	36	Cutting Noise	---
	37	Cutting Noise 2	Door Squeak
	38	---	Door Slam
	39	String Slap	Scratch Cut
	40	---	Scratch H 3
	41	---	Wind Chime
	42	---	Telephone Ring 2
	43	---	---
	44	---	---
	45	---	---
C3	46	---	---
	47	---	---
	48	---	---
	49	---	---
	50	---	---
	51	---	---
	52	Flute Key Click	Car Engine Igni-
	53	---	Car Tires Squeal
	54	---	Car Passing
	55	---	Car Crash
C4	56	---	Siren
	57	---	Train
	58	---	Jet Plane
	59	---	Starship
	60	---	Burst
	61	---	Roller Coaster
	62	---	Submarine
	63	---	---
	64	---	---
	65	---	---
C5	66	---	---
	67	---	---
	68	Shower	Laugh
	69	Thunder	Scream
	70	Wind	Punch
	71	Stream	Heart Beat
	72	Bubble	Foot Steps
	73	---	---
	74	---	---
	75	---	---
C6	76	---	---
	77	---	---
	78	---	---
	79	---	---
	80	---	---
	81	---	---
	82	---	---
	83	---	---
	84	Dog	Machine Gun
	85	Horse	Laser Gun
C6	86	Bird Tweet 2	Explosion
	87	---	Firework
	88	---	---
	89	---	---
	90	Ghost	---

STUDIO CANVAS
Model :SD-90
(GM2/Native mode)

MIDI Implementation Chart

Date : Sep. 18, 2001
Version : 1.00

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default	X	1-16	
	Changed	X	1-16	
Mode	Default	X	Mode 3	* 2
	Messages Altered	X *****	Mode 3, 4 (M = 1)	
Note Number : True Voice		X *****	0-127 0-127	
Velocity	Note On	X	O	
	Note Off	X	O	
After Touch	Key's	X	O *1	
	Channel's	X	O *1	
Pitch Bend		O	O *1	
Control Change	0, 32	O *4	O *1	Bank select
	1	X	O *1	Modulation
	5	O *4	O	Portamento time
	6, 38	O *4	O	Data entry
	7	O *4	O	Volume
	10	O *4	O	Panpot
	11	X	O	Expression
	64	X	O	Hold 1
	65	O *4	O	Portamento
	66	X	O	Sostenuto
	67	X	O	Soft
	68	X	O	Legato Foot Switch
	71	O *4	O	Resonance
	72	O *4	O	Release Time
	73	O *4	O	Attack Time
	74	O *4	O	Cutoff
	75	O *4	O	Decay Time
	76	O *4	O	Vibrato Rate
	77	O *4	O	Vibrato Depth
	78	O *4	O	Vibrato Delay
	80	X	O (Tone 1 Level)	General Purpose Controller 5
	81	X	O (Tone 2 Level)	General Purpose Controller 6
	82	X	O (Tone 3 Level)	General Purpose Controller 7
	83	X	O (Tone 4 Level)	General Purpose Controller 8
	84	X	O	Portamento control
	91	O *4	O (Reverb)	General purpose effects 1
	93	O *4	O (Chorus)	General purpose effects 3
	1-5, 7-31, 64-95 *3	X	O	CC1, 2 (General purpose controller 1, 2)
	1-5, 7-31, 64-95 *3	X	O	CC3, 4 (General purpose controller 3, 4)
	98, 99	X	X	NRPN LSB, MSB
	100, 101	O *4	O	RPN LSB, MSB
Program Change : True Number		O *4 *****	O *1 0-127	Program No. 1-128
System Exclusive		O *5	O *1	
System Common	: Song Position	X	X	
	: Song Select	X	X	
	: Tune Request	X	X	
System Real Time	: Clock	X	X	
	: Commands	X	X	
Aux Messages	: All Sound Off	X	O (120, 126, 127)	
	: Reset All Controllers	X	O	
	: Local On/Off	X	X	
	: All Notes Off	X	O (123-127)	
	: Active Sensing	O	O	
	: System Reset	X	X	
Notes		* 1 O X is selectable. * 2 Recognized as M=1 even if M≠1. * 3 Can be changed settings. * 4 Transmits when GM Data Transfer is executed . * 5 Transmits when Data Transfer is executed or RQ1 received.		

Mode 1 : OMNI ON, POLY
Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON, MONO
Mode 4 : OMNI OFF, MONO

O : Yes
X : No

STUDIO CANVAS
Model :SD-90
(GS mode)

MIDI Implementation Chart

Date : Sep. 18, 2001
Version : 1.00

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default	X	1-16	
	Changed	X	1-16	
Mode	Default	X	Mode 3	*2
	Messages Altered	X *****	Mode 3, 4 (M = 1)	
Note Number : True Voice		X *****	0-127 0-127	
Velocity	Note On	X	O	
	Note Off	X	X	
After Touch	Key's	X	O *1	
	Channel's	X	O *1	
Pitch Bend		X	O *1	
Control Change	0, 32	O	O *1	Bank select
	1	X	O *1	Modulation
	5	O	O *1	Portamento time
	6, 38	O	O *1	Data entry
	7	O	O *1	Volume
	10	O	O *1	Panpot
	11	X	O *1	Expression
	64	X	O *1	Hold 1
	65	O	O *1	Portamento
	66	X	O *1	Sostenuto
	67	X	O *1	Soft
	84	X	O *1	Portamento control
	91	O	O (Reverb) *1	General purpose effects 1
	93	O	O (Chorus) *1	General purpose effects 3
	1-95 *3	X	O *1	CC1(General purpose controller 1)
	1-95 *3	X	O *1	CC1(General purpose controller 2)
	98, 99	X	X *1	NRPN LSB, MSB
	100, 101	O	O *1	RPN LSB, MSB
Program Change : True Number		X *****	O *1 0-127	Program No. 1-128
System Exclusive		X	O	
System Common	: Song Position	X	X	
	: Song Select	X	X	
	: Tune Request	X	X	
System Real Time	: Clock	X	X	
	: Commands	X	X	
Aux Messages	: All Sound Off	X	O (120, 126, 127)	
	: Reset All Controllers	X	O	
	: Local On/Off	X	X	
	: All Notes Off	X	O (123-127)	
	: Active Sensing	O	O	
	: System Reset	X	X	
Notes		*1 O X is selectable. *2 Recognized as M=1 even if M=1. *3 Can be changed settings.		

Mode 1 : OMNI ON, POLY
Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON, MONO
Mode 4 : OMNI OFF, MONO

O : Yes
X : No

Specifications

Model: Studio Canvas SD-90
(General MIDI2 / GS format / XGlite format)

Audio Component

●USB Audio IN/OUT channel

IN: 1 (Stereo)
OUT: 1 (Stereo)

●Signal Processing

AD/DA Conversion: 24 bit
USB Audio: 16 / 24 bit

●Sampling Rates

Digital input/output: 44.1 kHz / 48 kHz
AD/DA Conversion: 44.1 kHz / 48 kHz

●Audio Effect

Audio: multi-effects (9 types)

Instrument Component

●Number of parts

32

●Maximum Polyphony

128 (voices)

●Internal Sounds

Internal sounds: 1050
Drum sound sets: 30

●Effects

Insertion Effects: Multi-effects x 3
System Effects: Reverb (6 types) x 1,
Chorus (6 types) x 1

Others

●Display

Graphic LCD (128 x 64 dots)

●Connectors

USB connector
Digital Audio IN/OUT Connector
COAXIAL type (conforms to EIAJ CP-1201)
OPTICAL type (conforms to S/P DIF)
Audio Input jack (Stereo)
Audio Output jack x 2 (Stereo)
Headphones jack
MIC/Guitar Input jack
MIDI connector (IN/OUT) x 2

●Power Supply

AC 120 V, AC 230 V or AC 240 V

●Power Consumption

11W (AC 120 V)
12W (AC 230 V)
13W (AC 240 V)

●Dimensions

218 (W) x 289.5 (D) x 90 (H) mm
8-5/8" (W) x 11-7/16" (D) x 3-9/16" (H) inches

●Weight

2.1 kg
4 lbs 11 oz

●Accessories

USB Cable
AC Cord
Owner's Manual
Getting Started
Driver/Demo song CD-ROM

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

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For EU Countries

This product complies with the requirements of European Directives EMC 89/336/EEC and LVD 73/23/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.

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.

Tested To Comply With FCC Standards

FOR HOME OR OFFICE USE

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.

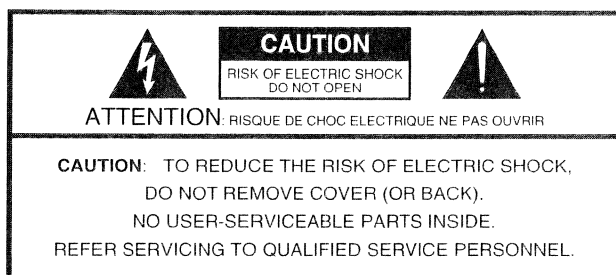
For Canada

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.



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



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

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

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

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

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any of the ventilation openings. Install in accordance with the manufacturers instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Never use with a cart, stand, tripod, bracket, or table except as specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



For the U.K.

WARNING: THIS APPARATUS MUST BE EARTHED

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

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

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

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

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

For the USA

DECLARATION OF CONFORMITY Compliance Information Statement

Model Name : SD-90
Type of Equipment : USB Audio & MIDI Processing Unit
Responsible Party : Edirol Corporation North America
Address : 425 Sequoia Drive, Suite 114, Bellingham, WA 98226
Telephone : (360) 594-4276

Information

When you need repair service, call your nearest EDIROL/Roland Service Center or authorized EDIROL/Roland distributor in your country as shown below.

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EDIROL Australia Pty. Ltd.
72 Central Avenue
Oak Flats NSW 2529
AUSTRALIA
TEL: (02) 4257 9091
http://www.edirol.com.au

EUROPE

EDIROL (Europe) Ltd.
Studio 3.4 114 Power Road
London W4 5PY
U. K.
TEL: +44 (0)20 8747 5949
FAX: +44 (0)20 8747 5948
http://www.edirol.com/europe

Deutschland
TEL: 0700 33 47 65 20
France
TEL: 0810 000 371
Italia
TEL: 02 93778329

U. S. A. / CANADA

EDIROL Corporation North America
425 Sequoia Drive, Suite 114
Bellingham, WA 98226
U. S. A.
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FAX: (360) 594-4271
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El Horrieh Heliopolis, Cairo,
EGYPT
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VIETNAM
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Florida 656 2nd Floor
Office Number 206A
Buenos Aires
ARGENTINA, CP1005
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MEXICO
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URUGUAY, CP11200
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VENEZUELA

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Av. Francisco de Miranda,
Centro Parque de Cristal, Nivel
C2 Local 20 Caracas
VENEZUELA
TEL: (02) 285 9218

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Roland Austria GES.M.B.H.
Siemensstrasse 4, P.O. Box 74,
A-6063 RUM, AUSTRIA
TEL: (0512) 26 44 260

BELGIUM/HOLLAND/ LUXEMBOURG

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Houtstraat 3, B-2260, Oevel
(Westerlo) BELGIUM
TEL: (014) 575811

DENMARK

Roland Scandinavia A/S
Nordhavnsvej 7, Postbox 880,
DK-2100 Copenhagen
DENMARK
TEL: (039)16 6200

FRANCE

Roland France SA
4, Rue Paul Henri SPAAK,
Parc de l'Esplanade, F 77 462 St.
Thibault, Lagny Cedex FRANCE
TEL: 01 600 73 500

FINLAND

Roland Scandinavia As,
Filial Finland
Lautasaarentie 54 B
Fin-00201 Helsinki, FINLAND
TEL: (9) 682 4020

GERMANY

Roland Elektronische
Musikinstrumente HmbH.
Oststrasse 96, 22844 Norderstedt,
GERMANY
TEL: (040) 52 60090

GREECE

STOLLAS S.A.
Music Sound Light
155, New National Road
26422 Patras, GREECE
TEL: 061-435400

HUNGARY

Intermusica Ltd.
Warehouse Area 'DEPO' Pf.83
H-2046 Torokbalint, HUNGARY
TEL: (23) 511011

IRELAND

Roland Ireland
Audio House, Belmont Court,
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Republic of IRELAND
TEL: (01) 2603501

ITALY

Roland Italy S. p. A.
Viale delle Industrie 8,
20020 Arese, Milano, ITALY
TEL: (02) 937-78300

NORWAY

Roland Scandinavia Avd.
Kontor Norge
Lilleakerveien 2 Postboks 95
Lilleaker N-0216 Oslo
NORWAY
TEL: 273 0074

POLAND

P. P. H. Brzostowicz
Ul. Gibraltarska 4,
PL-03664 Warszawa POLAND
TEL: (022) 679 44 19

PORTUGAL

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PORTUGAL
TEL: (022) 608 00 60

ROMANIA

FBS LINES
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RO-4200 Gheorgheni
TEL: (066) 164-609
RUSSIA
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3-Bogatyrskaya Str. 1.k.1
107 564 Moscow, RUSSIA
TEL: 095 169 5043

SPAIN

Roland Electronics
de España, S. A.
Calle Bolivia 239, 08020
Barcelona, SPAIN
TEL: (93) 308 1000

SWEDEN

Roland Scandinavia A/S
SWEDISH SALES OFFICE
Danvik Center 28, 2 tr.
S-131 30 Nacka SWEDEN
TEL: (08) 702 0020

SWITZERLAND

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Musitronic AG
Gerberstrasse 5, Postfach,
CH-4110 Liestal, SWITZERLAND
TEL: (061) 921 1615

UKRAINE

TIC-TAC
Mira Str. 19/108
P.O. Box 180
295400 Munkachevo, UKRAINE
TEL: (03131) 414-40

UNITED KINGDOM

Roland (U.K.) Ltd.
Atlantic Close, Swansea
Enterprise Park, SWANSEA
SA7 9FJ,
UNITED KINGDOM
TEL: (01792) 700139

MIDDLE EAST

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86/6, Taksim. Istanbul. TURKEY
TEL: (0212) 2499324

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02783801 '01-12-E2-12N

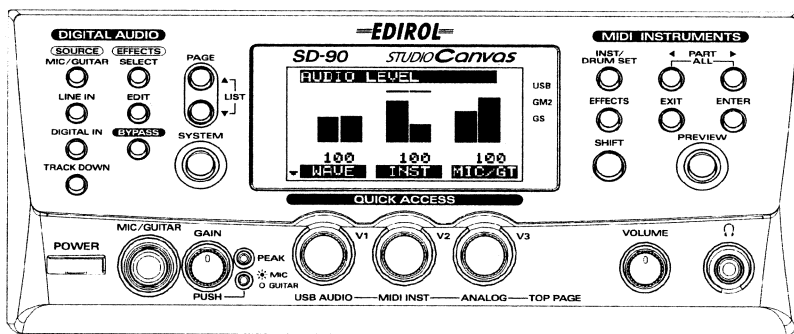
EDIROL

STUDIO Canvas SD-90

Getting Started

Thank you, and congratulations on your choice of the Edirol SD-90.

Before using this unit, carefully read the sections entitled: "IMPORTANT SAFETY INSTRUCTIONS" (Owner's manual p. 2), "USING THE UNIT SAFELY" (Owner's manual p. 2, 3), and "IMPORTANT NOTES" (Owner's manual p. 4, 5). These sections provide important information concerning the proper operation of the unit. Additionally, in order to feel assured that you have gained a good grasp of every feature provided by your new unit, Owner's manual should be read in its entirety. The manual should be saved and kept on hand as a convenient reference.



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What is USB?

USB stands for Universal Serial Bus. It is a new interface used to connect various peripheral devices to a computer.s

USB allows more than one peripheral device to be connected via a single USB cable, and also allows data to be transmitted more rapidly than conventional serial ports.

Peripherals can also be connected or disconnected with the power turned on, and the computer will automatically recognize the peripheral that has been plugged in. (Some peripherals may require settings or other operations to be performed.)

About SCMS

SCMS (Serial Copy Management System) is a function that protects the rights of the copyright owner by prohibiting second-generation or later copying via a digital connection to a consumer digital audio device such as a DAT recorder or MD recorder. When a recording is made via a digital connection on a digital recorder that has this function, SCMS data will be recorded along with the digital audio signal. A digital audio signal containing this SCMS data cannot be recorded again via a digital connection.

SCMS on the SD-90

On the SD-90, SCMS will affect operation only for digital signals input from an external device. If a digital audio signal containing SCMS data is input from a MD or other media that was digitally copied from a commercial music CD, the SD-90 will operate as follows.

When inputting from the SD-90's digital input connector:

- The SD-90 cannot record this signal on your computer.
- Nor will the sound be output from the analog output (master output jacks, headphone jack) or digital output connector.

When inputting from the SD-90's analog inputs (line in jacks):

- Recording can be performed as usual.

A note regarding copyright

** Unauthorized recording, public performance, broadcast, sale, or distribution of a work (CD recording, video, broadcast, etc.) whose copyright is owned by a third party is forbidden by law. Any infringement on the rights of a third party you may commit using the SD-90 is solely your own responsibility, and no responsibility shall be born by the manufacturer of the SD-90. Unauthorized duplication, even for purposes of personal use, of a copyrighted work belonging to a third party by circumventing technical means of protection such as SCMS constitutes infringement of the copyright of that third party, and is forbidden by law.*

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What is a driver?	24
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* GS () is a registered trademark of Roland Corporation.

* XGlite () is a registered trademark of YAMAHA Corporation.

* Microsoft and Windows are registered trademarks of Microsoft Corporation.

* Windows® 98 is known officially as: "Microsoft® Windows® 98 operating system."

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

* Windows® 2000 is known officially as: "Microsoft® Windows® 2000 operating system."

* Apple, Macintosh and MacOS are registered trademarks of Apple Computer, Inc.

* OMS is a registered trademark of Opcode Systems, Inc.

* All product names mentioned in this document are trademarks or registered trademarks of their respective owners.

Check the contents of the package

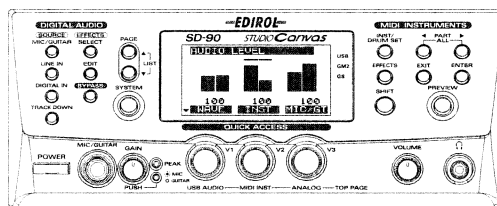
The following items are included in the SD-90 package. After opening the package, check to see whether any items are missing. If any items are missing, please contact the dealer from whom you purchased the SD-90.

* The SD-90 package does not include an external amp or speakers, headphones, or audio cables. You will need to provide these separately.

SD-90

This is a **Studio Canvas** unit with digital input/output jacks and USB audio interface.

It supports **General MIDI 2**, **GS format** (the universal specification for Roland sound generators), and the **XGlite** promoted by Yamaha Corporation.



MEMO

You may want to mark the relevant check box as you confirm the presence of each item.



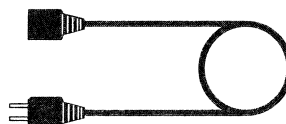
MEMO

For details on General MIDI 2, GS format, and XGlite, please refer to the SD-90 owner's manual.

AC cord

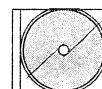
This is the only AC cord you should use with the SD-90.

Do not use any AC cord other than the supplied one, since doing so may cause malfunction.



CD-ROM

This contains drivers used by the SD-90, and demo songs.



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.



MEMO

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.

USB cable

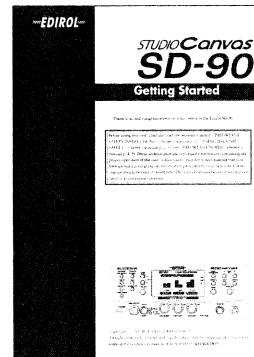
This connects the SD-90 to your computer.



☒ Getting Started

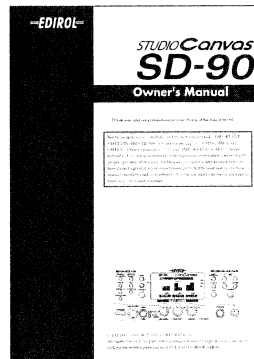
This is the manual you are holding. Please read this first.

This manual explains how to install the drivers and make the settings required in order to use the SD-90. Starting at the beginning, please read the sections that are relevant to your system.



☐ Owner's Manual

This is the owner's manual for the SD-90. Read this to gain in-depth information concerning the use of the SD-90, and the numerous functions it offers.



Connections with audio equipment

Connect the audio outputs (analog) of the SD-90 to your audio playback equipment. You will need the following items.

- SD-90
- Audio cables (RCA phono - RCA phono)
- Audio playback equipment such as an amp and speakers, or a stereo system

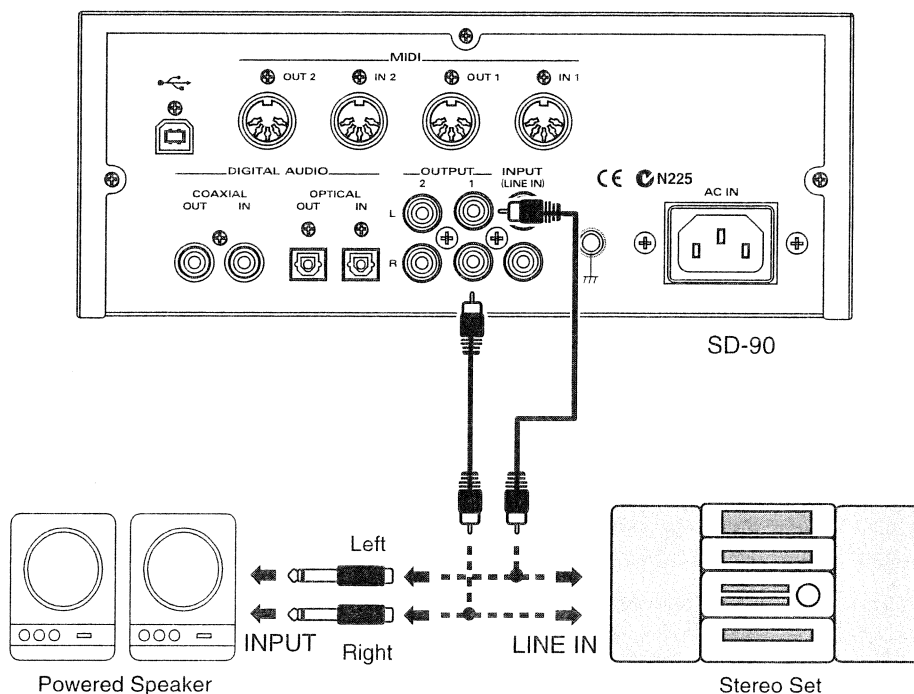
- * Before making connections to other equipment, you must turn down the volume of all equipment to avoid malfunctions or speaker damage.
- * To avoid short circuits or broken connections, grasp the plug when disconnecting a cable.
- * Use the included cables to make connections. If you are using a connection cable made by another manufacturer, please note the following.
 - Some connection cables contain a resistor. Do not use a cable with a built-in resistor to connect with the SD-90. Doing so may make the sound extremely weak, or inaudible. For details on your cable, please contact its manufacturer.

1

Lower the volume of your audio playback equipment.

2

Connect the SD-90's **OUTPUT1 (audio output 1) jacks** to the input jacks of your audio playback equipment. If you are using headphones, connect them to the **headphone jack** located on the front panel of the SD-90.



Getting Connected and Installing Drivers (Windows)

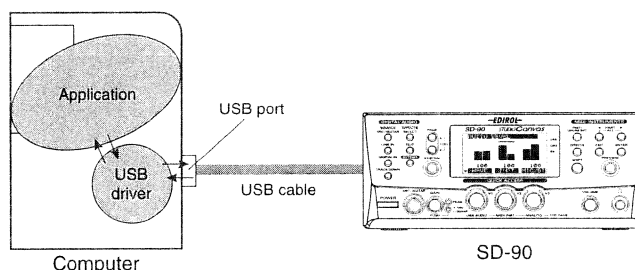
If you are using a Macintosh computer, please proceed to **Getting Connected and Installing Drivers (Macintosh)** (p. 24).

The following items are required for connections and installation. Remove them from the SD-90 package, and have them ready.

- SD-90
- AC cord
- USB cable
- CD-ROM

What is a driver?

A “driver” is software that transfers data between the SD-90 and application software running on your computer, when your computer and the SD-90 are connected by a USB cable. The driver sends data from your application to the SD-90, and from the SD-90 to your application.



Installing the driver and settings

The installation procedure will differ depending on your system.

Please proceed to one of the following sections, depending on the system you use.

- Windows 2000 users (p. 7)
- Windows Me/98 users (p. 16)

■ Windows 2000 users

WDM driver and MME driver

The CD-ROM contains two types of driver for Windows 2000.

Before you install the driver, select the driver that will be appropriate for the application you want to use.

WDM driver

You should use this driver if you have specified WDM driver mode for SONAR or a similar application. This will provide the highest-quality audio performance.

* *It is not possible to use 24-bit audio with applications that do not have a WDM driver mode, such as Cool Edit or Media Player.*

MME driver

This driver allows you to use 24-bit audio even from applications that do not have a WDM driver mode, such as Cool Edit.

** It is not possible to use the MME driver from WDM driver mode of an application such as SONAR.*

It is not possible to install both the WDM driver and the MME driver. You must select one beforehand, and install only that driver. If after installing one of these drivers you decide to change drivers, you must first delete the already-installed driver and then install the new driver.

(->**Deleting the driver** (p. 47))

Installing the driver

The WDM driver and the MME driver can be installed using the same procedure.

1

With the SD-90 disconnected, start up Windows.

Disconnect all USB cables except for a USB keyboard and USB mouse (if used).

2

Log on to Windows as a **user with administrative privileges** (such as Administrator).

3

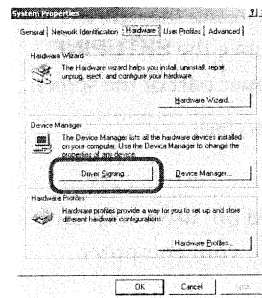
Open the **System Properties** dialog box.

Click the Windows **Start** button, and from the menu that appears, select **Settings | Control Panel**. In **Control Panel**, double-click the **System** icon.

4

Open the **Driver Signature Options** dialog box.

Click the **Hardware** tab, and then click **[Driver Signing]**.

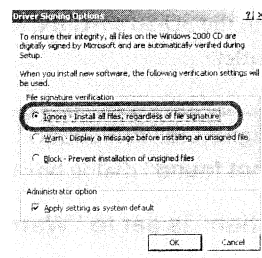


5

Make sure that "**File signature verification**" is set to "**Ignore**."

If it is set to "**Ignore**", simply click **[OK]**.

If it is not set to "**Ignore**", make a note of the current setting ("**Warn**" or "**Block**"). Then change the setting to "**Ignore**" and click **[OK]**.



6

Close the **System Properties** dialog box.

Click **[OK]**.

7

Exit all currently running software (applications).

Also close any open windows. If you are using virus checking or similar software, be sure to exit it as well.

8

Prepare the CD-ROM.

Insert the CD-ROM into the CD-ROM drive of your computer.



If you have already connected the SD-90 to your computer and the "**Add new hardware wizard**" is displayed, find the **Readme_e.htm** file in the **Driver\Win2000\WDM** or **Driver\Win2000\MME** folder of the CD-ROM, and under "**Troubleshooting**," read the section entitled "**You attempted to install using the above procedure, but were not able to.**"

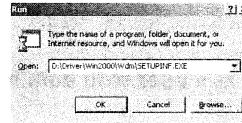


If you changed "**File signature verification**" in **step 5**, you must restore the previous setting after you have installed the driver. (**->If you changed "File signature verification" (p. 12)**)

- 9** Open the “Run...” dialog box.
Click the Windows **Start** button.
From the menu that appears, select “Run...”



- 10** In the dialog box that appears, input the following into the “Open” field, and click [OK].



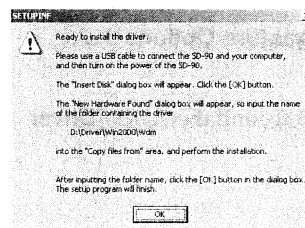
If installing the WDM driver

D:\Driver\Win2000\WDM\Setupinf.exe

If installing the MME driver

D:\Driver\Win2000\MME\Setupinf.exe

- 11** The **SETUPINF** dialog box will appear.
You are now ready to install the driver.
Drag the title bar to move the **SETUPINF** dialog box into the upper part of the screen.



* Do not click [OK] at this time.

- 12** With the power turned off, use a USB cable to connect the SD-90 to your computer.

- 13** Set the SD-90's mode select switch to the ON position.

Connect the AC cord to the SD-90's AC IN, and connect the plug of the AC cord to an electrical outlet.

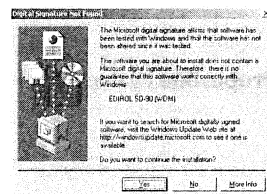
If in **step 5** the “File signature verification” setting was not set to “Ignore”, a “Digital signature not found” dialog box will appear.

If “File signature verification” is set to “Warn,”

1. Click [Yes].
2. Continue the installation.

If “File signature verification” is set to “Block”

1. Click [OK].
2. When the “New hardware detection wizard” appears, click [Finish].
3. Perform the installation as described in the “Troubleshooting” section on **Device Manager** shows “?”, “!”, or “USB Composite Device” (p. 37).



MEMO

In this manual, the location of folders and files is given in terms of the file path, using \ as the delimiter.

For example,
WDM\Setupinf.exe
indicates the **Setupinf.exe** file found in the **WDM** folder

NOTE

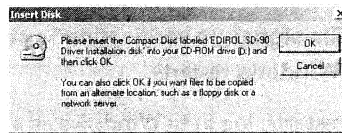
The drive name “D:” may be different for your system. Specify the drive name of your CD-ROM drive.

MEMO

If a message of “The driver is already installed” appears, you can connect the SD-90 to your computer and use it.

14

The **Insert disk** dialog box will appear.
Click **[OK]**.

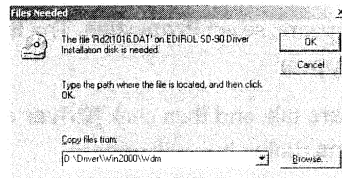


If the **Insert disk** dialog box does not appear, please read **The “Insert Disk” dialog box does not appear** (p. 37)

15

The **Files Needed** dialog box will appear.

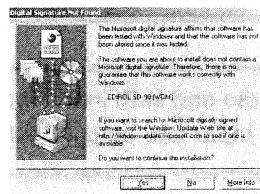
In the **Copy files from** field, type the folder name that is shown in the **Setupinf** dialog box, and click **[OK]**.



If in **step 5** the **“File signature verification”** setting was not set to **“Ignore”**, a **“Digital signature not found”** dialog box will appear.

If **“File signature verification”** is set to **“Warn,”**

1. Click **[Yes]**.
2. Continue the installation.



If **“File signature verification”** is set to **“Block”**

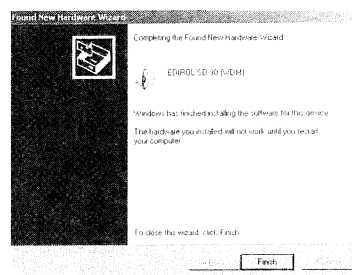
1. Click **[OK]**.
2. When the **“New hardware detection wizard”** appears, click **[Finish]**.
3. Perform the installation as described in the **“Troubleshooting”** section on **Device Manager** shows **“?”**, **“!”**, or **“USB Composite Device”** (p. 37).

16

The **“Found New Hardware Wizard”** may be displayed.

Verify that **“EDIROL SD-90 (WDM)”** or **“EDIROL SD-90 (MME)”** is displayed, and click **[Finish]**.

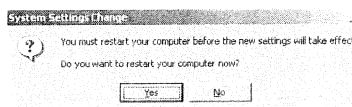
If the **“Find new hardware wizard”** dialog box is not displayed, proceed to **step 17**.

**17**

Restart Windows.

The **System Settings Change** dialog box may appear. Click **[Yes]**. Windows will restart automatically.

If the **System Settings Change** dialog box does not appear, restart Windows from the **Start** menu.



If you changed “File signature verification”

If you changed the “**File signature verification**” setting in **step 5**, restore the original setting after Windows restarts.

- 1.** After Windows restarts, log in to Windows as a user with **administrative privileges**, (such as **Administrator**).
- 2.** In the Windows desktop, right-click the **My Computer** icon, and from the menu that appears, select **Properties**. The **System Properties** dialog box will appear.
- 3.** Click the **Hardware** tab, and then click **[Driver signature]**. The **Driver signature options** dialog box will appear.
- 4.** Return the “**File signature verification**” setting to the original setting (either “**Warn**” or “**Block**”), and click **[OK]**.
- 5.** Click **[OK]**. The System properties dialog box will close.

Next, specify the **audio and MIDI input and output** destinations.
(-> **Audio and MIDI input and output destinations** (p. 13))

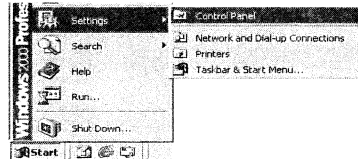
Audio and MIDI input and output destinations

In order to perform the following steps, you must log on and make settings as the same user who will be actually using the SD-90 (**a user with administrative privileges**, such as **Administrator**).

1

Open **Control Panel**.

Click the Windows Start button, and select Settings - Control Panel.



2

Open the **Sounds and Multimedia Properties** dialog box.

Double-click the **Sounds and Multimedia** icon.

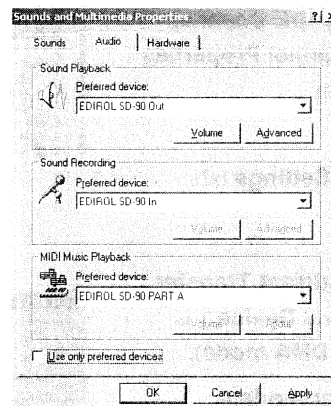


Sounds and
Multimedia

3

Specify the “**Preferred device**.” Click the **Audio** tab. Click the **Sound playback** field, **Sound Recording** field, and **MIDI Music Playback** field, and make the following selections from the list that appears.

Sound Playback	EDIROL SD-90 Out
Sound Recording	EDIROL SD-90 In
MIDI Music Playback	EDIROL SD-90 PART A



4

Close the **Sound and Multimedia Properties** dialog box.

Click **[OK]**.

Next, you need to specify the **hard disk transfer mode**.
(-> **Specifying the hard disk transfer mode** (p. 14))

Specifying the hard disk transfer mode

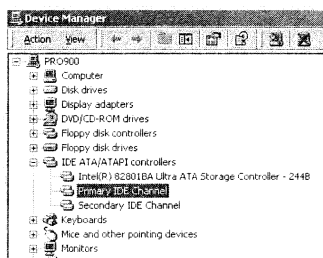
1 Click the Windows **Start** button, and from the menu that appears, choose **Settings | Control Panel**. The **Control Panel** will appear.

2 Double-click the **System** icon. The **System Properties** dialog box will appear.

3 Click the **Hardware** tab.

4 Click **Device Manager** located at the right of the **Device Manager** field.

5 In the list that appears, double-click **IDE ATA/ATAPI controller**.



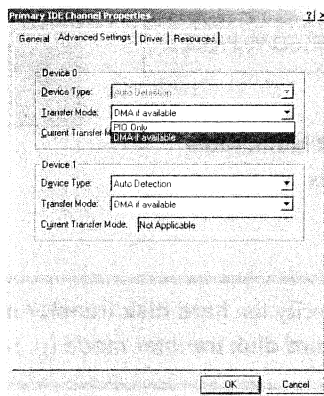
6 Double-click **Primary IDE Channel**. The **Primary IDE Channel Properties** dialog box will appear.

7 Click the **Advanced Settings** tab.

8 Check whether the **Current Transfer Mode** for **Device 0** and **Device 1** is **UltraDMA mode** (or **DMA mode**).

If the **current transfer mode** is **UltraDMA mode** (or **DMA mode**), proceed to **step 10**.

If it is **PIO mode**, select **DMA if available** from the pulldown menu of **Transfer Modes**.



9 Click **[OK]**. If a dialog box appears, recommending that you restart your computer, click **[Yes]**. The computer will restart automatically.

10 Click the **X** button of the **Device Manager**.

11

In the **System Properties** dialog box, click **[Close]** (or **[OK]**). The **System Properties** dialog box will close.

Next, you need to check whether the connections, driver installation, and settings were made correctly.

(->**Check whether there is sound** (p. 22))

MEMO

If the **current transfer mode** was already set to **UltraDMA mode** in **step 8**, click **[OK]** in **step 11**.

■ Windows Me/98 users

Installing the driver

1

With the SD-90 disconnected, start up Windows.

Disconnect all USB cables other than those for a USB keyboard or USB mouse.

2

Exit all currently running software (applications).

Also, close any open windows. If you are using a virus checker or similar software, be sure to exit this as well.

3

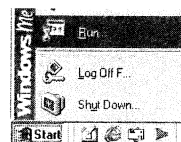
Prepare the CD-ROM.

Insert the CD-ROM into the CD-ROM drive of your computer.

4

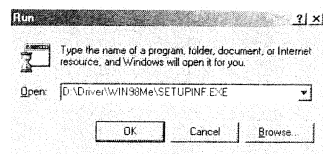
Open the **Run...** dialog box.

Click the Windows **Start** button. From the menu that appears, select **Run...**



5

In the “**Open**” field of the dialog box that appears, type “**D:\Driver\Win98Me\Setupinf.exe**” and click **[OK]**.



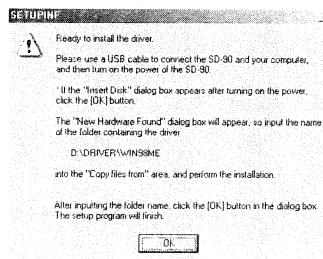
6

Open the **SETUPINF** dialog box.

You are now ready to install the driver.

Drag the title bar to move the **SETUPINF** dialog box into the upper part of the screen.

* Do not click **[OK]** at this time.



7

With the power turned off, use a USB cable to connect the SD-90 to your computer.

8

Turn on the power of the SD-90.

Connect the AC cord to the SD-90's AC IN jack, and insert the AC cord's plug into an AC power outlet. Then, turn on the power of the SD-90.



If the SD-90 is already connected to your computer and a message of “**Add New Hardware Wizard**” is displayed, go to the **CD-ROM** folder named **Driver\Win98Me**, open the file **Readme_e.htm**, and read the “**Troubleshooting**” section entitled “**You attempted to install using the above procedure, but were notable to.**”



In this manual, the location of folders and files is given in terms of the file path, using \ as the delimiter. For example, **Win98Me\Setupinf.exe** indicates that the **Setupinf.exe** file is located in the **Win98Me** folder.



The drive name “**D:**” may be different depending on your system. Type the name of your CD-ROM drive.



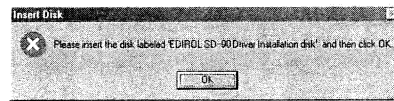
If a message of “**The driver is already installed**” appears, you can connect the SD-90 to your computer and use it.



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

9

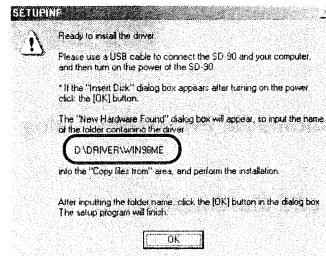
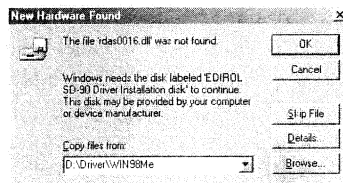
If you are using Windows 98, an **Insert disk** dialog box will appear.
Click [OK].



10

The New Hardware dialog box will appear.

In the File copy source field, type the folder name that is shown in the SETUPINF dialog box, and click [OK].



11

Once the driver has been installed, the New hardware dialog box will close.
In the SETUPINF dialog box, click [OK]. The SETUPINF dialog box will close.

Next, specify the audio and MIDI input and output destinations.
(-> **Audio and MIDI input and output destinations** (p. 18))

MEMO

If you are using Windows 98 and the **Insert disk** dialog box does not appear, please read **The "Insert Disk" dialog box does not appear** (p. 37)

NOTE

If the New Hardware dialog box does not appear, re-install the driver using the same procedure as described in **The "Insert Disk" dialog box does not appear** (p. 37)

Audio and MIDI input and output destinations

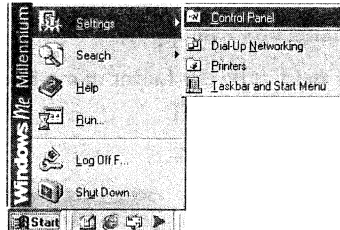
Windows Me users

If you are using a Windows 98, please proceed to page 19.

1

Open **Control Panel**.

Click the Windows **Start** button, and select **Settings - Control Panel**.



2

Open the **Sounds and Multimedia Properties** dialog box.

Double-click the **Sounds and Multimedia** icon.

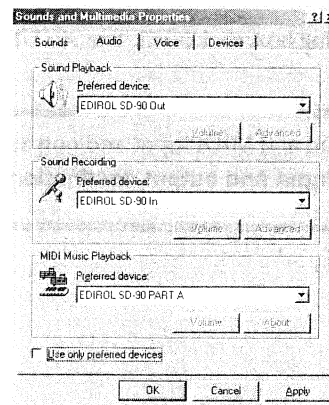


Sounds and Multimedia

3

Specify the "**Preferred device**." Click the **Audio** tab. Click the **Sound Playback** field, **Sound Recording** field, and **MIDI Music Playback** field, and make the following selections from the list that appears.

Sound Playback	EDIROL SD-90 Out
Sound Recording	EDIROL SD-90 In
MIDI Music Playback	EDIROL SD-90 PART A



4

Close the **Sound and Multimedia Properties** dialog box.

Click **[OK]**.

MEMO

Depending on your system, the Sound and Multimedia icon may not be displayed in the Control Panel. In this case, click the text "Show all Control Panel options" located in the left of the Control Panel.

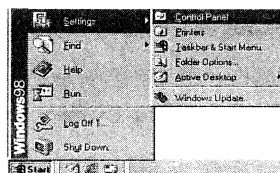
Next you will specify the hard disk transfer mode.
(->Specifying the hard disk transfer mode (p. 20)

Windows 98 users

1

Open **Control Panel**.

Click the Windows **Start** button, and select **Settings - Control Panel**.



2

Open the **Multimedia Properties** dialog box.

Double-click the **Multimedia** icon.

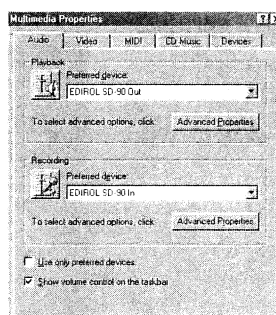


Multimedia

3

Specify the "**Preferred device**." Click the **Audio** tab. Click the **Playback** field and **Recording** field, make the following selections from the list that appears, and click **[Apply]**.

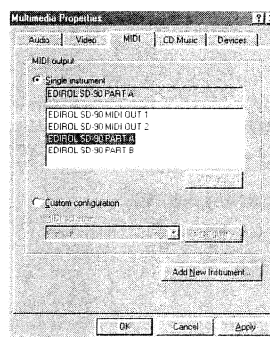
Playback	EDIROL SD-90 Out
Recording	EDIROL SD-90 In



4

Specify the "**MIDI output**."

Click the **MIDI** tab. Add a check mark to **[Single instrument]**, click **[EDIROL SD-90 PART A]** in the list, and then click **[Apply]** (or **[OK]**).



5

Close the **Multimedia Properties** dialog box.

Click **[OK]**.

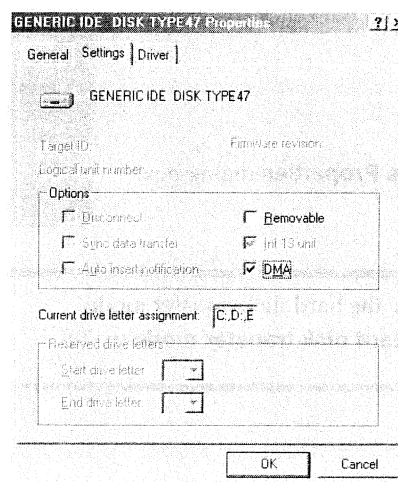
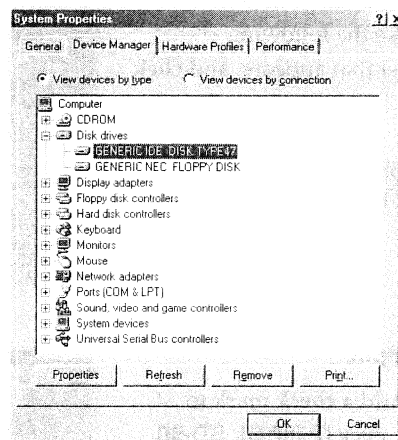
Next you will specify the hard disk transfer mode.
 (-> **Specifying the hard disk transfer mode** (p. 20))

MEMO

Depending on your system, the Sound and Multimedia icon may not be displayed in the Control Panel. In this case, click the text "Show all Control Panel options" located in the left of the Control Panel.

Specifying the hard disk transfer mode

- 1 Click the Windows **Start** button, and from the menu that appears, choose **Settings | Control Panel**. The **Control Panel** will appear.
- 2 Double-click the **System** icon. The **System Properties** dialog box will appear.
- 3 Click the **Device Manager** tab.
- 4 Double-click the **Disk drives** in the list. A list of the connected disk drives will appear.
- 5 Double-click the hard disk drive that you are using (example: **GENERIC IDE DISK TYPE47**). The hard disk properties dialog box will appear.
- 6 Click the **Settings** tab.
- 7 Verify whether the **DMA** option has a check mark. If it has a check mark, click **[Cancel]**, and proceed to **step 10**. If it does not have a check mark, check **DMA**.
- 8 If the unsupported hardware warning dialog box appears, click **[OK]**.
- 9 Click **[OK]**.
The **hard disk properties** dialog box will close.



MEMO

DMA

DMA is an abbreviation for Direct Memory Access. It is a transfer method used to exchange audio data between your sequencer program and the SD-90 (the audio device).

10 In the **System Properties** dialog box, click **[Close]** (or **[OK]**). The **System Properties** dialog box will close.

11 If a dialog box appears, suggesting that you restart your computer, click **[Yes]**. The computer will restart automatically.

Connections and driver installation have now been completed.

Next you will check whether connections, driver installation, and settings were made correctly.

(->Playing back the sample data (audio) (p. 22)

MEMO

If **DMA** already had a check mark in **step 7** (i.e., if you clicked **[Cancel]**), click **[OK]** in **step 10**.

Check whether there is sound

Next, play back the sample data to verify that the driver installation and settings were performed correctly.

■ Playing back the sample data (audio)

Here we will use standard Windows functionality to play back the sample data (audio). The sample data is found on the CD-ROM.

1

Prepare the CD-ROM.

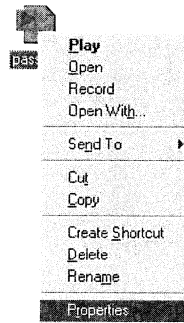
Insert the CD-ROM into the CD-ROM drive of your computer.

2

From the **DemoSong \ Wav** folder of the CD-ROM, drag **passing(.wav)** to your desktop, copying it.

3

Right-click the copied file **passing(.wav)**, and select **Properties (Play for Windows 2000)**.

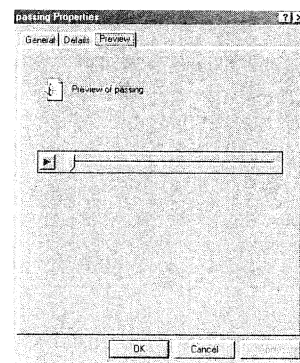


4

Play back the sample data.

Click the **Preview** tab, and then click the

 button.



Was the sample data played back?

If it was played back correctly, this means that the computer and the SD-90 are connected correctly, and that the drivers have been installed correctly.



Unauthorized use of the song data included with this product for any purpose other than personal enjoyment is forbidden by law. You may not duplicate this data or use it in a derivative work without the permission of the copyright holder.



What you actually see on your computer screen may be different, depending on your computing environment and the operating system you're using.



If it did not play back correctly, refer to **Troubleshooting** (p. 34) to determine the reason. This section contains information on how to solve problems such as no sound, or failure to play back correctly.

■ Playing back the sample data (MIDI)

Here we will use standard Windows functionality to play back the sample data (MIDI). The sample data is found on the CD-ROM.

1

Prepare the CD-ROM.

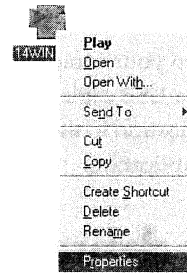
Insert the CD-ROM into the CD-ROM drive of your computer.

2

From the **DemoSong \ MIDI** folder of the CD-ROM, drag **14WINDOC(.MID)** to your desktop, copying it.

3

Right-click the copied file **14WINDOC(.MID)**, and select **Properties** (**Play** for Windows 2000).

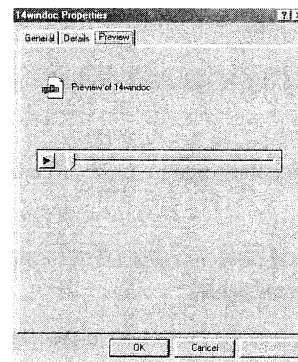


4

Play back the sample data.

Click the **Preview** tab, and then click the

 button.



Was the sample data played back?

If it was played back correctly, this means that the computer and the SD-90 are connected correctly, and that the drivers have been installed correctly.

MEMO

What you actually see on your computer screen may be different, depending on your computing environment and the operating system you're using.

MEMO

If it did not play back correctly, refer to **Troubleshooting** (p. 34) to determine the reason. This section contains information on how to solve problems such as no sound, or failure to play back correctly.

Getting Connected and Installing Drivers (Macintosh)

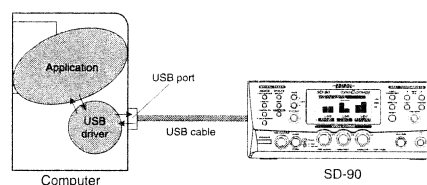
If you are using a Windows computer, please proceed to **Getting Connected and Installing Drivers (Windows)** (p. 7).

The following items are required for connections and installation. Remove them from the SD-90 package, and have them ready.

- SD-90
- USB cable
- AC cord
- CD-ROM

What is a driver?

A “driver” is software that transfers data between the SD-90 and application software running on your computer, when your computer and the SD-90 are connected by a USB cable. The driver sends data from your application to the SD-90, and from the SD-90 to your application.



Installing the driver and settings

■ Connecting your Macintosh

- 1** Turn off the power of the Macintosh and all peripheral devices connected to the Macintosh.
- 2** With the power turned off, use the USB cable to connect the SD-90 and the Macintosh.
- 3** Turn on the peripheral devices connected to the Macintosh, except for the SD-90. Then turn on the power of the Macintosh itself.

* Do not turn on the power of the SD-90 at this time.

If the power of the SD-90 is turned on, a message like the following will appear when the Macintosh is started up. Perform the steps described below as appropriate for the message that is displayed.

If the screen indicates:

“Driver required for USB device ‘unknown device’ is not available. Search for driver on the Internet?”

-> click **[Cancel]**.

If the screen indicates:

“Software required for using device ‘unknown device’ cannot be found. Please refer to the manual included with the device, and install the necessary software.”

-> click **[OK]**.

Use either OMS or FreeMIDI as the MIDI driver.

If you are using OMS (p. 25)

If you are using FreeMIDI (p. 29)

* Either OMS or FreeMIDI must be installed in your Macintosh, as appropriate for the sequencer software you are using.

■ Installing the SD-90 driver (OMS)

Use the following procedure to install the SD-90 driver.

The included **SD-90 OMS driver** is an add-on module for using the SD-90 with OMS. In order for you to use it, **OMS must already be installed on the hard disk from which you started up.**

* Disconnect the SD-90 from the Macintosh before you perform the installation.

About OMS

If you would like to learn more about **OMS**, refer to **OMS_2.3_Mac.pdf** (online manual) in the **OMS2.3.8E** folder within the OMS folder of the CD-ROM. You will need the Adobe Acrobat Reader in order to view **OMS_2.3_Mac.pdf**.



OMS can be found in the **OMS2.3.8E** folder within the OMS folder of the CD-ROM.



The latest version of Adobe Acrobat Reader can be downloaded from the Adobe website.
<http://www.adobe.com>
(This URL may change without notice.)

1

Exit all currently running software (applications).

If you are using a virus checker or similar software, be sure to exit this as well.

2

Prepare the CD-ROM.

Insert the CD-ROM into the CD-ROM drive.

3

Double-click the **SD-90 OMS Driver-E Installer** icon (found in the **Driver E - OMS** folder of the CD-ROM) to start up the installer.



SD-90 OMS Driver-E Installer

4

Verify the installation location, and click **[Install]**.

5

If a message like the following is displayed, click **[Continue]**.

The other currently running applications will exit, and installation will continue.



This installation requires your computer to restart after installing this software. Click **Continue** to automatically quit all other running applications. Click **Cancel** to leave your disks untouched.

Cancel **Continue**

6 A dialog box will indicate **Installation completed**.

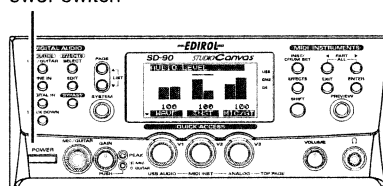
Click **[Restart]** to restart your Macintosh.

7 With the power turned off, use a USB cable to connect to the SD-90 to your computer

8 Switch ON the SD-90's Power switch.

Connect the AC cord to the SD-90's AC IN, and insert the AC cord's plug into an AC power outlet. Then, turn on the power of the SD-90.

Power switch



MEMO

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

OMS settings

1 From the CD-ROM, drag the **Driver E-OMS-Settings** folder to the hard disk of your Macintosh to copy it.



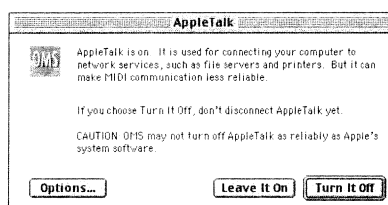
Settings

2 In the **Opcode-OMS Application** folder where you installed OMS, double-click **OMS Setup** to start it up.



OMS Setup

3 If a dialog box like the one shown here appears, click **[Turn It Off]**. A confirmation dialog box will then appear, so click **[OK]**.



4 The Create New Setup dialog box will appear.

Click **[Cancel]**. If you accidentally clicked OK, click **[Cancel]** in the next screen.

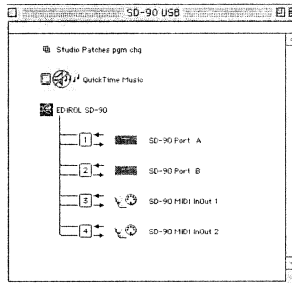
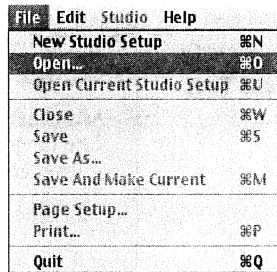


5

Choose “Open” from the File menu.

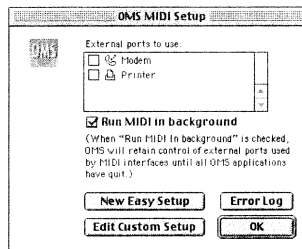
From the **Settings** folder that you copied in **step 1**, select the **SD-90 USB** file, and click [Open].

A screen like the one shown here will appear.



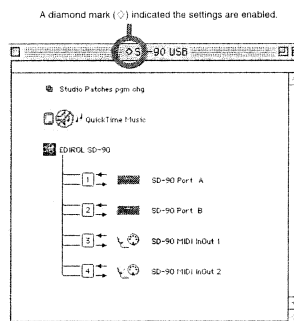
6

From the **Edit** menu, select **OMS MIDI Setup**. In the **OMS MIDI Setup** dialog box that appears, check **Run MIDI in background**, and click [OK].



7

From the **File** menu, choose **Make Current**. If you are unable to select **Make Current**, it has already been applied, and you may continue to the next step.



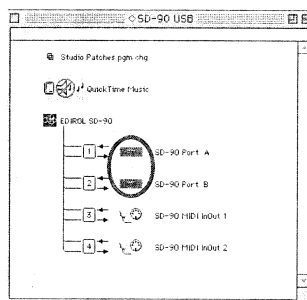
8

Verify that MIDI transmission and reception can be performed correctly. From the **Studio** menu, choose **Test Studio**.



9

When you move the mouse cursor near the sound generator icon, the cursor will change to a musical note shape. Click on the sound generator icons that are encircled in the following illustration. If sound is heard from the SD-90, the settings are correct. If MIDI is not being transmitted, the Macintosh will produce an alert sound.



Does the SD-90's INST level meter move?

If the INST level meter in the SD-90's display is moving but you do not hear sound, check whether the volume of the SD-90 or your speaker system has been lowered. If the INST level meter does not move, check the connections and OMS settings once again.

After you have made settings correctly, choose Test once again from the Studio menu, and perform step 9.

MEMO

If the SD-90 does not produce sound, refer to **No sound** (p. 39).

10

Exit **OMS Setup**.

From the File menu, choose **[Exit]**. If the **AppleTalk confirmation** dialog box appears, click **[OK]** to close the dialog box.

This completes connections for the SD-90 and Macintosh, and installation of the MIDI driver. Now, MIDI data can be input and output (recorded and played).

Next, you need to install the ASIO driver.
(-> **Installing the ASIO driver** (p. 31))

MEMO

Additional information about the ports

SD-90 Port A:

Sends/receives data for SD-90 part group A

SD-90 Port B:

Sends/receives data for SD-90 part group B

SD-90 MIDI InOut1:

Sends/receives data from the SD-90's MIDI IN 1/OUT 1 connectors

SD-90 MIDI InOut2:

Sends/receives data from the SD-90's MIDI IN 2/OUT 2 connectors

■ Installing the SD-90 driver (FreeMIDI)

Use the following procedure to install the SD-90 driver. The included **SD-90 FreeMIDI driver** is an add-on module for using the SD-90 with FreeMIDI. In order to use it, **FreeMIDI must be installed on the hard disk from which you started up.**

** Disconnect the SD-90 from the Macintosh before beginning the installation.*

Use the following procedure to install the SD-90 driver.

- 1** Exit all currently running software (applications).
If you are using a virus checker or similar software, be sure to exit this as well.
- 2** Prepare the CD-ROM.
Insert the CD-ROM into the CD-ROM drive.
- 3** Double-click the **SD-90 FM Driver - E Installer** icon (found in the **Driver E - FreeMIDI** folder of the CD-ROM) to start up the installer.
- 4** Click **[Install]**.
- 5** A dialog box will inform you that you will need to restart your Macintosh when installation is finished. Click **[Continue]**.
- 6** When the installation is complete, click **[Restart]**.
- 7** With the power turned off, use a USB cable to connect to the SD-90 to your computer
- 8** Switch ON the SD-90's Power switch.
Connect the AC cord to the SD-90's AC IN, and insert the AC cord's plug into an AC power outlet. Then, turn on the power of the SD-90.

MEMO

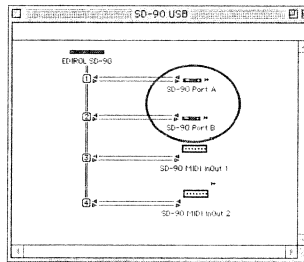
This unit is equipped with a protection circuit. A brief interval (a few seconds) after power up is required before the unit will operate normally.

FreeMIDI settings

- 1** From the CD-ROM, copy the **Driver E - FreeMIDI - Settings** folder onto the hard disk of your Macintosh.
- 2** Open the **FreeMIDI Applications** folder from the location into which you installed FreeMIDI, and double-click the **FreeMIDI Setup** icon to start it up.

- 3** When “OMS is installed on this computer...” appears, click **[FreeMIDI]**.
- 4** The first time the software is started up, a dialog box saying “Welcome to FreeMIDI!” will appear. Click **[Continue]**.
- 5** When the **FreeMIDI Preferences** dialog box appears, click **[Cancel]**.
- 6** When the **About Quick Setup** dialog box appears, click **[Cancel]**. From the **File** menu, choose **Open**. Select **SD-90USB** from the **Settings** folder you copied in **step 1**, and click **Open**.
- 7** Verify that MIDI transmission and reception occur correctly.
From the **MIDI** menu, choose **Check Connections**.
- 8** The mouse cursor will change to the shape of a note. Click the sound generator icons encircled in the diagram at right.

If you hear sound, MIDI messages are being sent from the Macintosh to the SD-90.



Does the SD-90's INST level meter move?

If the INST level meter in the SD-90's display is moving but you do not hear sound, check whether the volume of the SD-90 or your speaker system has been lowered. If the INST level meter does not move, check the connections and OMS settings once again.

After settings have been made correctly, choose the **MIDI** menu command **Check Connections** once again, and perform **step 8**.

- 9** Once again choose the **MIDI** menu command **Check Connections** to end the test.
- 10** From the **File** menu, choose **Quit** to exit **FreeMIDI Setup**.

Next you will install the ASIO driver.
(->Installing the ASIO driver (p. 31))



Additional information about the ports

SD-90 Port A:

Sends/receives data for SD-90 part group A

SD-90 Port B:

Sends/receives data for SD-90 part group B

SD-90 MIDI InOut1:

Sends/receives data from the SD-90's MIDI IN 1/OUT 1 connectors

SD-90 MIDI InOut2:

Sends/receives data from the SD-90's MIDI IN 2/OUT 2 connectors



If the SD-90 does not produce sound, refer to **No sound** (p. 39).

■ Installing the ASIO driver

About the ASIO driver

This section explains how to install the ASIO driver that allows the SD-90 to be used by your sequencer software or audio editing software. For details on installation and settings of the ASIO driver, be sure to also read the **Driver E - ASIO - Setting ASIO Driver-E** document on the CD-ROM.

The SD-90 cannot play back audio data from the Macintosh's sound manager (such as audio CDs and alert sounds).
You can use it from sequencer software or audio editing software that supports ASIO 1.0.

The ASIO driver of the SD-90 supports the following audio input/output channels.

- Audio input 24/16 bit 1 stereo ch. (2 monaural chs.)
- Audio output 24/16 bit 1 stereo ch. (2 monaural chs.)

Installing the ASIO driver

First you must install your ASIO-compatible software.
Here we will explain how to install the ASIO 1.0 16 bit-compatible driver.

1

From the [Driver]-[ASIO] folder of the CD-ROM, copy [SD-90 ASIO1.0 16bit] to the [ASIO Drivers] folder within the folder of the ASIO-compatible software you are using (e.g., Cubase VST, Logic Audio, Digital Performer, or Metro).



If your ASIO-compatible software supports ASIO 2.0 or recording/playback of 24 bit audio data, using the following drivers will provide a higher quality environment.

ASIO-compatible software		Driver to use
ASIO2.0-compatible	24 bit compatible	
×	×	SD-90 ASIO 1.0 16 bit
×	○	SD-90 ASIO 1.0 24 bit
○	×	SD-90 ASIO 2.0 16 bit
○	○	SD-90 ASIO 2.0 24 bit

2

If the power of the SD-90 is not turned on, turn on the power.

MEMO

ASIO (Steinberg Audio Stream In/Out Interface)
This is an audio interface standard promoted by the Steinberg Corporation. When the SD-90 is used with ASIO-compatible software, the synchronization precision will be improved, allowing a more sophisticated music production environment.

NOTE

Roland cannot guarantee the operation of, nor provide support regarding sequencer software and audio editing software produced by another manufacturer. Please contact the manufacturer of the software you are using.

NOTE

If you use **SD-90 ASIO 2.0 16-bit** or **SD-90 ASIO 2.0 24-bit** with software that does not support ASIO 2.0, it will not operate correctly.

NOTE

If you use **SD-90 ASIO 1.0 24-bit** or **SD-90 ASIO 2.0 24-bit** with software that does not support 24-bit audio data, it will not operate correctly.

- 3** Start up your ASIO-compatible software (e.g., Cubase VST, Logic Audio, Digital Performer, Metro).
- 4** Open the Audio setting dialog box of your ASIO-compatible software, and select **[SD-90 ASIO 16bit]** as the **ASIO Device**.

MEMO

The Audio setting dialog box will be named differently depending on your software. For details refer to the manual of your software.

■ Settings for your sequencer software

As an example, we will describe how to make settings in Cubase VST.

If your sequencer software is set to monitor audio data during recording, the audio data will loop, and will not be recorded correctly. Monitoring of audio data during recording must be turned off. For details on this setting, refer to the manual of the sequencer software you are using.



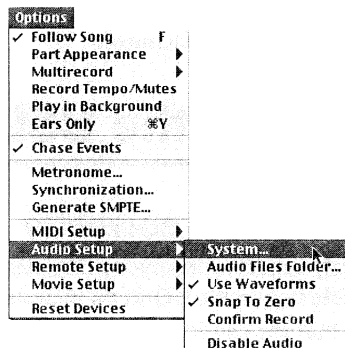
Roland cannot guarantee operation of or provide support regarding sequencer software and audio editing software produced by another manufacturer. Please contact the manufacturer of the software you are using.

Settings for Cubase VST

The explanation in this manual is based on the English version of Cubase VST 5.0. Please be aware that some screens and menu items may be named differently in other versions of the software.

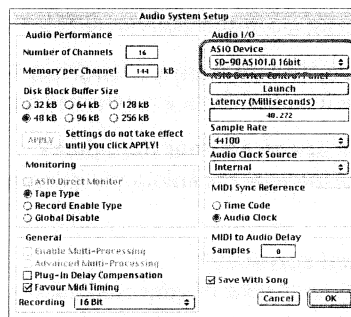
1

In Cubase VST, execute **Options - AudioSetup - System...**



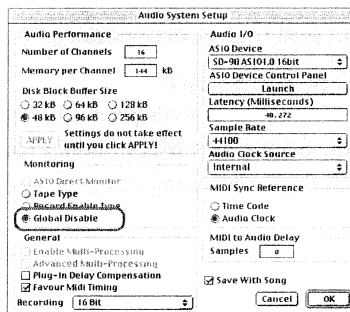
2

As the **ASIO Device**, select **SD-90ASIO16bit**.



3

For the **Monitoring** setting, select **Global Disable**.



4

Click [OK].



For details on how to synchronize the audio data and MIDI data, refer to the manual for your sequencer software.

Troubleshooting

If an unexpected problem occurs while using the SD-90, read this chapter first. It contains numerous tips for resolving problems.

If you are using Windows or Macintosh for the first time, and as a result find it difficult to follow the procedural explanations, please refer to the manuals that came with your computer or operating system.

Troubleshooting is organized according to different operating systems. Refer to the icon(s) at the left of the title to find the items you need.



Problems common to Windows and Macintosh



Problems occurring only in Windows



Problems occurring only in Macintosh

Problems related to the USB driver



Cannot install the driver correctly

- **Is the CD-ROM correctly inserted into your CD-ROM drive?**
Installation is not possible unless the CD-ROM included with the SD-90 is inserted in your CD-ROM drive. Make sure that the CD-ROM is correctly inserted into your CD-ROM drive.
- **Is the CD-ROM or the lens of the CD-ROM dirty?**
If the CD-ROM or the lens of the CD-ROM drive is dirty, the installer may not work correctly. Clean the disc and/or lens using a commercially-available CD cleaner or lens cleaner.
- **Are you installing the software from a networked CD-ROM drive?**
The software cannot be installed from a networked CD-ROM drive.
- **Is there sufficient free space on your hard disk?**
Delete unneeded files to increase the amount of free space. After deleting the unneeded files, empty the recycling bin.
- **Is the SD-90 connected correctly?**
Make sure that the USB connector of your computer is connected to the SD-90 by a USB cable. Check this, and if you are using Windows, close the **Sound and Multimedia Properties** dialog box (**Multimedia Properties** in Windows 98), re-open the same dialog box once again, and specify the audio and MIDI input/output destinations.
("Audio and MIDI input and output destinations" (p. 13), (p. 18))
- **Is the power of the SD-90 turned on?**
Make sure that the SD-90's POWER switch has been pressed inward. Check this, and if you are using Windows, close the **Sound and Multimedia Properties** dialog box (**Multimedia Properties** in Windows 98), re-open the same dialog box once again, and specify the audio and MIDI input/output destinations.



- Using the procedure for "**Deleting the driver**" (p. 47), delete the USB audio device driver installed in your computer, and then re-install the SD-90 driver as described in "**Getting Connected and Installing Drivers (Windows)**" (p. 7). Also check whether there is any "**Unknown device**" in "**Other devices**" or "**Universal Serial Bus Controllers**." If you find any, delete them.



- **Is OMS or FreeMIDI installed?**
The SD-90 driver cannot be installed unless **OMS** or **FreeMIDI** are installed. Please install **OMS** or **FreeMIDI**. (OMS -> p. 25, FreeMIDI -> p. 29)



SD-90 is not detected when making OMS or FreeMIDI settings

- **Is the SD-90 detected?**
Turn the power of the SD-90 off, then on again.

Reconnect the USB cable.

If other USB devices are connected, connect only the SD-90.

It is possible that the Macintosh did not correctly detect and initialize the SD-90. Leave the SD-90's USB cable connected, and restart your Macintosh. If it is still not detected, shut down your Macintosh, and then restart it.

The SD-90 will not be detected if it is connected to the USB connector on the Macintosh keyboard. Please connect the SD-90 to a USB connector on the Macintosh itself.

- **Are you using only OMS?**
If you are using OMS, the system will not operate correctly if FreeMIDI is installed. Delete FreeMIDI-related files from the Extensions folder.



An “Unknown driver found” dialog box appears, and you are unable to install the driver



”Find new hardware wizard” does not execute automatically



”Find new hardware wizard” ends before the process is completed

- It may take about 15 seconds (or more) after the USB cable is connected for the SD-90 to be detected.
- Is the USB cable connected correctly?
Make sure that the SD-90 and your computer are correctly connected via a USB cable.
- Is USB enabled on your computer?
Refer to the operation manual for your computer, and make sure that USB is enabled.
- It has been found that in some cases, not all of the Windows 98 files required to support audio via USB are installed when a computer is shipped.
Please contact the manufacturer of your computer.
- Does your computer meet the USB specifications?
If you are using a computer that does not fulfill the electrical requirements of the USB specifications, operation may be unstable. In this case, you may be able to solve the problem by connecting a USB hub.
- Does “Unknown device” appear for “Other device” or “Universal serial bus controller”?
Use the following procedure to delete “Other device” (Universal Serial Bus Controller) “Unknown device,” and then restart your computer.
 1. In the Windows **Control Panel**, double-click System. The **System Properties** dialog box will appear.
 2. Click the **Device Manager** tab. For Windows 2000, click the **Hardware** tab, and then click the [Device Manager] button.
 3. Double-click “Other device” or “Universal Serial Bus Controller” to display a list of devices.
 4. From the list, select the unknown device and click [Delete].
 5. In the dialog box that asks you to confirm the deletion, click [OK].
 6. Verify that “Other device” or “Unknown device” is not displayed in the list, and click [Close] to close the dialog box.



”Found unknown device” appears even though you installed the driver

If your computer or USB hub has two or more USB connectors, and you connect the SD-90 to a USB connector to which the SD-90 has never been connected before, the “Unknown device” dialog box may appear even on a computer onto which you have already installed the driver.

Refer to “**Getting Connected and Installing Drivers (Windows)**” (p. 7), and install the driver once again. This is not a malfunction.



Can't install/delete/use the driver in Windows 2000

- **Did you log on to Windows as a user with administrative privileges?**
In order to install/delete/re-install the driver in Windows 2000, you must be logged into Windows as a user with administrative privileges, such as Administrator. For details, please contact the system administrator for your computer system.
- **Did you make "Driver signature settings"?**
In order to install/re-install the driver, you must make "File signature settings." Make settings as described in "Installing the driver" (p. 9).



Windows 2000 displays a "Digital signature was not found" dialog box

- **Did you perform the steps in "Make file signature settings"?**
In order to install/re-install the driver, you must make the settings described in "File signature settings." Use the following procedure to check the settings.
 1. Open the **Control Panel**, and double-click **System**.
 2. Click the **Hardware** tab, and then click **[Driver signature]** button. The "Driver signature options" dialog box will appear.
 3. Make sure that the "File signature verification" setting is "Ignore." If it is set to "Ignore," click the **[OK]** button. If not, make a note of the current setting, change it to "Ignore," and then click the **[OK]** button.



Device Manager shows "?", "!", or "USB Composite Device"



The "Insert Disk" dialog box does not appear

Use the following procedure to re-install the driver.

1. Turn off the power of your computer, and start up Windows with all USB cables disconnected (except for keyboard and mouse).
2. After Windows restarts, use a USB cable to connect the SD-90 to your computer.
3. Turn on the power of SD-90.
4. Click the Windows **[Start]** button, and from the menu that appears, choose **Settings | Control Panel**.
5. Double-click the **System** icon. The **System Properties** dialog box will appear.
6. Click the **Device Manager** tab.
7. Check whether you can see an indication of "?Composite USB Device, ?USB Device, !USB Device," or "USB composite device" displayed below "Sound, Video, and Game Controllers, Other Devices," or "Universal Serial Bus Controller." If you find any such indication, select it and click **[Delete]**.
8. A dialog box will ask you to confirm deletion of the device. Verify the contents of the dialog box, and then click **[OK]**. In the same way, delete all indications of "?Composite USB Device," "?USB Device," "USB Device," and "USB composite device" that you find.

9. If you find **EDIROL SD-90** USB Driver with a yellow "!" or a red "?" displayed beside it, delete this in the same way.
10. When you have finished deleting the unwanted devices, click **[OK]** in the **System Properties** dialog box.
11. Turn off the power of the SD-90, then delete the driver. "**Deleting the driver**" (p. 47)
12. Restart Windows. Then install the driver once again. "**Getting Connected and Installing Drivers (Windows)**" (p. 7).

** If the problem still occurs after you have taken the above measures, please refer also to the Readme file for the USB driver. The Readme file is on the CD-ROM.*

[Location]

Windows 2000 users:

In the CD-ROM,

Driver\Win2000\WDM\README_E (if using the WDM driver)

Driver\Win2000\MME\README_E (if using the MME driver)

Windows Me/98 users:

In the CD-ROM,

Driver\Win98ME\WDM\README_E

Problems when using the SD-90



Operating system becomes unstable

- **Operation becomes unstable when the computer is started up with the SD-90 already connected**

Please start up your computer with the SD-90 disconnected, and then connect the SD-90. On a computer that uses a USB keyboard, starting up the computer with the SD-90 already connected may cause operation to become unstable. In this case, start up the computer with the SD-90 disconnected, and then connect the SD-90.



No sound

- **Have you specified the audio data output destination for your operating system?**
You must specify the **SD-90** as the audio data output destination for your computer. For details on how to make this setting, refer to Settings and checking.
(Windows, "**Audio and MIDI input and output destinations**" (p. 13), (p. 18) /
Macintosh, "**OMS settings**" (p. 26), "**FreeMIDI settings**" (p. 29))
- **Have you specified the audio data output destination for your playback software?**
For some software such as Cool Edit Pro LE, you must specify the **SD-90** as the audio data output destination. For details on this setting, refer to the operation manual for your application.
- **Are you running multiple applications?**
If multiple applications are running simultaneously, an error message may be displayed. If this occurs, click **[OK]** and exit the other applications.
Even if an application window is closed, it is still running if it appears in the taskbar. Be sure to exit unneeded applications displayed in the taskbar.
- **Was the driver installed correctly?**
In order for you to play back audio data via the SD-90, the driver must be installed. For installation and settings, refer to "**Getting Connected and Installing Drivers**" (Windows, p. 7 / Macintosh, p. 24).
- **Is your audio playback equipment (e.g., stereo system) connected correctly?**
Make sure that the USB connector of your computer is connected to the SD-90 by a USB cable. Make sure that the SD-90's **OUTPUT 1** (audio output 1) jacks are connected by audio cables to the input jacks of your audio playback equipment. For details on connections, refer to "**Connections with audio equipment**" (p. 6).
- **Is the power of your audio equipment turned on?**
Make sure that the power is turned on for your audio equipment (e.g., stereo) and the SD-90.
- **Are the various volume settings of the SD-90 set appropriately?**
The front panel of the SD-90 has separate knobs that adjust the audio and MIDI volumes. Adjust each knob.
- **Is your computer in Suspend or Sleep mode?**
If so, get your computer to resume normal operation, then exit all applications that are using the SD-90. Next, turn the SD-90's power off, then switch it on again.
- **Did you reconnect the USB cable or turn the power of the SD-90 off and on?**
Exit all applications that are using the SD-90, and turn the power of the SD-90 off and then on once again.

- **As the output of the audio tracks, have you selected “Game compatible device” or “Voice modem”?**

If a game compatible device or a voice modem (the actual names will differ depending on your computer) is selected as the port for the audio tracks of your software, the audio tracks may not play back. Do not select these devices as ports.



- **Is OMS/FreeMIDI set correctly?**

As described in **"OMS settings"** (p. 26) or **"FreeMIDI settings"** (p. 29), check the OMS or FreeMIDI settings. Also make sure that the device for MIDI IN/OUT is correctly selected in the MIDI settings of your MIDI sequencer software.



- **Does the INST level meter move in the SD-90 display?**

If the INST level meter is moving but you do not hear sound, check whether the volume of the SD-90 or your speakers has been lowered. If the INST level meter of the SD-90 is not moving, recheck the connections and **"OMS settings"** (p. 26)/**"FreeMIDI settings"** (p. 29).



- **Is the OMS setup enabled?**

If a diamond-shaped symbol is not displayed at the left edge of the title area in the OMS setup window, the setup is not enabled. From the OMS File menu, choose “Enable setup.” (**"OMS settings"** (p. 26))



- **Has your computer been set to enter Sleep mode?**

If your computer enters Sleep mode, exit the software you are using, and then restart your computer. We recommend that you set your computer to not use Sleep mode.

Can't play back MIDI



- **Has the MIDI device you are using been set correctly?**

In order to record/play MIDI tracks using the SD-90, you must correctly install the SD-90 driver (**"Installing the driver and settings"** (p. 7)). Also make sure that the input port and output port are set as follows in your software.

INPUT port	OUTPUT port
EDIROL SD-90 MIDI IN 1	EDIROL SD-90 PART A
EDIROL SD-90 MIDI IN 2	EDIROL SD-90 PART B



- **Has the MIDI device you are using been selected correctly?**

Select either **[SD-90 Port A]** or **[SD-90 Port B]** as the MIDI output device. MIDI will not be output if you select **[EDIROL SD-90]**.



- **Are the track outputs set correctly?**

MIDI tracks to which no MIDI playback device is assigned will not be heard. If you want to play back a MIDI track, you must make sure that the MIDI device you want to use is displayed in your software as the MIDI output port. For details, refer to the owner's manual for your software.



Can't record MIDI

- **Has the MIDI input device you are using been selected correctly?**

Select either [SD-90InOut 1] or [SD-90MIDI InOut 2] as the **MIDI input device**. MIDI will not be input if you select [EDIROL SD-90] as the input port.



Distortion occurs in the sound from devices connected to the input jacks

- **Is the Peak indicator lit in red?**

If you are inputting audio through the **MIC/GUITAR jack** or the **INPUT jacks**, use the **GAIN knob** to reduce the input level.



Sound from devices connected to the input jack is not heard in the headphones

- **Is the GAIN knob turned up far enough?**

Turn the knobs clockwise to adjust the volume.

- **Is the recording source set correctly on the SD-90 itself?**

Refer to the SD-90 owner's manual for details on the SD-90's recording source settings.



Volume from a device connected to the input jacks is too low

- **Are you using a cable that has a built-in resistor?**

Use a cable without a built-in resistor (e.g., Roland PCS series).

- **Is the external input level of the SD-90 itself raised appropriately?**

Refer to the SD-90 owner's manual for details on setting the external input level of the SD-90.



Mic sound is not loud enough

Press the **GAIN knob** to switch the **GUITAR/MIC indicator** to **MIC (lit)**.



Cannot hear the audio sound



Noise is heard during audio playback

In some cases, you may also be able to solve this problem by grounding the chassis of your computer, or the grounding connector of the AC power-supply plug of your computer. In addition, you can check whether any devices that produce a strong magnetic field are located nearby, such as a television or microwave oven.

Also check the troubleshooting item "**Sound is interrupted during audio playback / recording**" (p. 43)

- **Is a mic or guitar still connected?**
If a mic or guitar is connected to the SD-90, disconnect the mic or guitar, and turn the **Gain knob** all the way to the left.
Disconnect any audio devices you are not using.
- **Are two or more audio devices such as the SD-90 or a mixer connected to your computer?**
Try connecting only a single SD-90 unit, and check whether the noise disappears. If numerous audio devices are connected to a computer, noise may occur depending on your system. In such cases, connect only the SD-90 to your computer.



- **Does your sequencer software support ASIO 2.0?**
If your ASIO-compatible software does not support ASIO 2.0, it will not operate correctly if you use **[SD-90 ASIO2.0 16bit]** or **[SD-90 ASIO2.0 24bit]** as the ASIO driver.
In this case, select either **[SD-90 ASIO1.0 16bit]** or **[SD-90 ASIO1.0 24bit]** as the ASIO driver.



- **Does your sequencer software support 24-bit audio?**
If your ASIO-compatible software does not support 24-bit audio input/output, it will not operate correctly if you select **[SD-90 ASIO1.0 24bit]** or **[SD-90 ASIO2.0 24bit]** as the ASIO driver. In this case, select either **[SD-90 ASIO1.0 16bit]** or **[SD-90 ASIO2.0 16bit]** as the ASIO driver.



- **Is the SD-90 connected to a USB hub?**
Try connecting the SD-90 directly to the USB connector of the Macintosh itself.



- **Are you using a USB device other than the SD-90?**
Try turning off the power of all USB audio devices other than the SD-90.



Noise occurs while recording audio

- **Is audio data monitoring turned on?**
If the setting in your sequencer software that allows audio data to be monitored during recording is turned on, the audio data will loop, and will not be recorded correctly. Audio data monitoring must be turned off during recording. For details on this setting, refer to the owner's manual for the software you are using.

Sound is interrupted during audio playback / recording



- **Are many applications running on your computer?**
If you use many applications or start up other applications during playback, playback may be interrupted, depending on your computer system. Please exit unneeded applications, and try again. If this does not resolve the problem, try restarting your computer.
- **Have you switched the mixer routing?**
Do not switch the mixer routing during playback/recording. The sound will be interrupted the instant you switch the routing.



- **Graphic accelerators may cause noise to be heard during audio playback.**
Use the following procedure to turn the graphic accelerator "Off."
 1. In the Windows **Control Panel**, double-click the **Screen Properties** dialog box, and click the **Settings** tab.
 2. Click **Details**, and in the properties that appear, click the **Performance** tab. For Windows 2000, click the **Troubleshooting** tab.
 3. In the graphic, set the **Hardware accelerator** slider to **None**, and click **[OK]**.
 4. In the **Screen Properties** dialog box, click **[OK]** to close the dialog box. Then restart your computer.



- **Try using the following procedure to change your disk drive settings.**
The following setting item may not exist on some computers.
 1. In the Windows **Control Panel**, double-click **System**.
 2. Click the **Device Manager** tab.
 3. Double-click **Disk Drives** to see the **list of devices**.
 4. From the list, select **GENERIC IDE DISK TYPE??**, and click **Properties** to access the **GENERIC IDE DISK TYPE?? Properties** dialog box.
 - * In the **??** field of **GENERIC IDE DISK TYPE??**, there will be a number that differs depending on your computing environment.
 5. Click the **Settings** tab, place a check mark in the check box for the **DMA** option, and click **[OK]** to close the dialog box.
 - * Depending on your system, a **DMA Settings** dialog box may appear. Check the contents, and click either **[OK]** or **[Cancel]**.
 6. In the **System Properties** dialog box, click **[OK]** to close the dialog box. Then restart your computer.



- **Try installing more memory.**
Installing more memory will increase the performance of your computer. For details on how to install more memory, refer to the operation manual for your computer.



- **Does your computer satisfy the requirements of the USB standard?**
If you are using a computer (such as a computer that you yourself assembled) that does not satisfy the electrical requirements of the USB specifications, you may experience interruptions in the audio. If this occurs, you may be able to solve the problem by connecting a USB hub that contains its own power supply.



- **On some computers, audio playback may be interrupted due to the Power Management settings in the Control Panel.**
The Power Supply Properties that you see when you double-click **Power Management** will differ depending on your computer system. One example is given below, but you should also refer to the operation manual for your computer. Some computers may not have all of the following setting items.
 1. Click the Windows Start button, and select **Settings | Control Panel** to open the **[Control Panel]**.
 2. In **Control Panel**, double-click **System** to open the **System Properties** dialog box.
 3. Click the **Device Manager** tab.
 4. Double-click **System Devices** to display the **list of devices**.
 5. From the list, select **Advanced Power Management Support**. Then click **Properties** to open the **Advanced Power Management Support Properties** dialog box.
 6. Click the **Settings** tab, and in **Troubleshooting**, place a check in the check box for **Don't Poll Power Supply Status**. Then click **[OK]**.
 7. In the System Properties dialog box, click **[OK]**.
 8. Restart Windows.



- **In some cases you may be able to solve this problem in the “EDIROL SD-90Driver settings” dialog box.**
For details, refer to the section “**Part of the playbacks wrong: e.g., notes are broken off prematurely, or some notes are lost**” within the **README_E** file located in the folder in which you installed the CD-ROM.



Depending on the virtual memory setting or network-related settings, noise may occur.

Please make the following settings before use.

- In Chooser of the **Apple menu**, set AppleTalk to **"Inactive."** (This setting is not changed as a result of turning off **AppleTalk**, as requested by OMS when sequencer software is started up. You must change the setting yourself using the **"Chooser."**)
- In the **"Memory"** Control Panel, set Virtual Memory to **"Off."**
- Depending on the way in which you connect to the Internet, use the SD-90 with the following settings.

If you connect to the Internet via a LAN cable

Use while the LAN cable is connected.

If you connect to the Internet via the internal modem port, or are not connected to the Internet

In the **"TCP/IP" Control Panel**, set **"Connect via"** to **"PPP."**

After you have made the settings, restart your Macintosh.

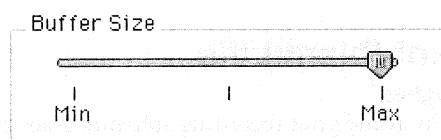
- * Do not use software that accesses the network (such as a Web browser) at the same time that you are using sequencer software or audio editing software.



- **Try increasing the Buffer Size in the ASIO Driver control panel. The name of the settings dialog box will differ depending on your software.**

* If you change the **buffer size**, you must exit the software and then restart it.

* Roland can make no guarantee of, nor provide support regarding the operation of sequencer software and audio editing software made by another manufacturer. Please contact the manufacturer of the software you are using.



● **Cubase VST users**

Execute the **Options - Audio Setup - System...** menu command, and click the **Launch** button in the dialog box that appears.

● **Logic Audio users**

Execute the **Audio - Audio Hardware & Drivers...** menu command, and click the **Control Panel** in the dialog box that appears.

● **Digital Performer users**

Execute the **Basics - MOTU Audio System options - Configure Hardware Driver...** menu command, and click the **Configure Driver** button in the dialog box that appears.

● **Metro users**

Execute the **Setup - Digital Audio** menu command, and in the dialog box that appears, click the **Recording Options ...** button. In the ASIO Setup dialog box that then appears, click the **Control Panel** button.



Digitally recorded sound is distorted, is at the wrong pitch, or contains noise

If you are using a long optical digital cable, noise may be produced when the cable is connected, or the sound may be distorted. We recommend that you use optical digital cables that are no longer than one meter in length.

- **Does the sampling frequency setting of your application match the setting of the SD-90's sampling frequency switch?**
Set the sampling frequency of the SD-90 itself to match the sampling frequency of your application.



Playback or recording halts midway through, and then becomes impossible

- **Was a heavy processing load experienced while using the SD-90, such as accessing the CD-ROM drive or a network?**
If an operation involving a heavy processing load is performed while the SD-90 is in use, it may not operate correctly. If this occurs, stop playback/recording, and then try resuming playback/recording. If you are still unable to play back/record, exit all applications that use the SD-90, switch off the SD-90, then turn it on again.



Can't record/play 48 kHz audio data

- **Does your software support 48 kHz audio data?**
- **Is the sampling frequency of the SD-90 set to 48 kHz?**
For details on how to switch the sampling frequency, refer to the SD-90 owner's manual.



Can't record/play 24-bit audio data

- **Does your software support 24-bit audio data?**
- **Is your software set to record/play 24-bit audio data?**
Have you selected [SD-90 ASIO1.0 24bit] or [SD-90 ASIO2.0 24bit] as the ASIO driver?



Recording produces a silent (blank) file

- **Try setting the bit rate to "16 bit or higher."**
If you are using Windows 98 Second Edition and your recording software is set to a bit rate setting of 8 bits, a silent file may be created, effectively making recording impossible. If this occurs, set the bit rate to "16 bit or higher," and you will be able to record normally.
- **In your operating system, is the audio data input destination set correctly?**
- **On your recording software, is the audio data input destination set correctly?**



Can't record digitally

- **Data containing SCMS flags cannot be recorded digitally.**
The SD-90 implements SCMS (p. 2), so when data containing SCMS flags (e.g., data that's been digitally copied from a commercial music CD to an MD or other medium) is input via the digital input connector, the SD-90 will not permit this to be recorded on the computer.
- **Does the sampling frequency setting of your application match the setting of the SD-90's sampling frequency switch?**
Set the sampling frequency of the SD-90 itself to match the sampling frequency of your application.
- **Digital data that is not of the consumer digital audio device format cannot be recorded.**

Deleting the driver

If you were unable to install the driver according to the procedure given, the SD-90 may not be recognized correctly by the computer. In this case, use the following procedure to delete the driver, and then follow the procedure in “**Getting Connected and Installing Drivers**” (Windows, p. 7; Macintosh, p. 24) to install the driver once again.

Windows 2000 users

In order to delete (uninstall) the driver, a user with **administrative privileges** such as **Administrator** must be logged onto Windows. For details, contact the system administrator of your computer.

1. With all USB cables disconnected, start Windows. (USB keyboard and USB mouse excepted)
2. Log on to Windows as a user with **administrative privileges** (such as **Administrator**).
3. After connecting the SD-90 to your computer via a USB cable, turn on the power of the SD-90.
4. Exit all applications before deleting the driver.
5. Open the **Control Panel**, and double-click **System**.
6. Click the **Hardware** tab, and in the “**Device Manager**” area, click [**Device Manager**].
7. Double-click “**Sound, Video, and Game Controllers**” to view the **list of devices**.
8. From the list, click “**EDIROL SD-90 (WDM)**” or “**EDIROL SD-90 (MMX)**” to select it. Then right-click, and from the menu that appears, select “Delete.”

* If “**EDIROL SD-90 (WDM)**” or “**EDIROL SD-90 (MMX)**” does not appear in the list, refer to the “**Can’t install/delete/use the driver in Windows 2000**” (p. 37) in “**Troubleshooting**.”
9. A dialog box will ask you to confirm that you want to delete the device. Verify the contents of the dialog box, and click [**OK**].
10. Close the **Device Manager** window, and click [**OK**] in **System Properties**.
11. Disconnect the USB cable from the SD-90.
12. Restart Windows.

Windows Me/98 users

1. With all USB cables disconnected, start up Windows. (USB keyboard and USB mouse excepted)
2. After connecting the SD-90 to your computer via a USB cable, turn on the power of the SD-90.
3. Exit all applications before deleting the driver.
4. Open the **Control Panel**, and double-click **System**.
** Depending on the state of your computer, **System** may not appear in the **Control Panel**. In this case, click "**Show all control panel options**."*
5. Click the **Device Manager** tab.
6. Double-click "**Sound, video, and game controllers**" to see a list of devices.
7. From the list, click "**EDIROL SD-90**" to select it, and click **[Delete]**.
8. A dialog box will appear, asking you to confirm that you want to **delete the driver**. Verify the contents, and click **[OK]**.
9. Click **[Close]** to close System Properties.
10. Disconnect the USB cable from the SD-90.
11. In **Control Panel**, click **Folder Options** and then click the **Display** tab. (In Windows 98, click **Start | Settings | Folder Options**)
12. In **Detailed Settings** of the **Display** tab, remove the check mark for "**Don't display extensions of associated files**," click "**Show all files and folders**," and then click **[OK]**. (In Windows 98, this will be "**Show all files**.")
13. Click **Start | Find | Files or folders**.
14. In "Search location," select "Local hard drive." Then in "Name of file or folder," type "***0016.***" and click **[Begin search]**.
15. Of the files that are found, delete the five files **Rdas0016.DLL**, **Rddp0016.dat**, **Rddv0016.driv**, **Rdvx0016.vxd**, and **Rdwm0016.sys**. If the list shows **Rdif0016.inf** or **RolandRDIF0016.INF**, delete these files as well.
** Never delete any file other than the files specified here.*
16. Restart Windows.

Macintosh users

1. Turn off the power of the SD-90.
 Also disconnect the USB cable (by which the SD-90 is connected) from your Macintosh.
2. From the system extensions folder, drag "**USB SD-90 Driver**" into the trash to delete it.
3. Drag the ASIO driver that you installed in "**Installing the ASIO driver**" (p. 31) into the trash to delete it.

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MEMO

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