Roland®

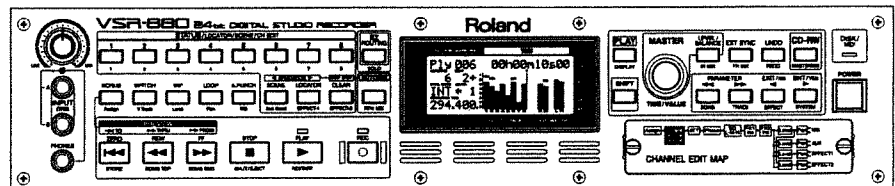## 24-BIT DIGITAL STUDIO RECORDER
VSR-880

OWNER'S MANUAL

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. 1), and "IMPORTANT NOTES" (Owner's Manual p. 3). 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, User Guide and Owner's Manual should be read in its entirety. The manuals should be saved and kept on hand as a convenient reference.

Roland International Website http://www.roland.co.jp/

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 all the instructions before using the product.
2. Do not use this product near water — for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
3. This product should be used only with a cart or stand that is recommended by the manufacturer.
4. This product, 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 consult an audiologist.
5. The product should be located so that its location or position does not interfere with its proper ventilation.
6. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
7. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.

8. The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time.
9. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
10. The product should be serviced by qualified service personnel when:
    A. The power-supply cord or the plug has been damaged; or
    B. Objects have fallen, or liquid has been spilled into the product; or
    C. The product has been exposed to rain; or
    D. The product does not appear to operate normally or exhibits a marked change in performance; or
    E. The product has been dropped, or the enclosure damaged.
11. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

─── For the USA ─

GROUNDING INSTRUCTIONS

This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock.

This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER: Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the product is properly grounded.
Do not modify the plug provided with the product — if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

─── 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.

The product which is equipped with a THREE WIRE GROUNDING TYPE LINE PLUG must be grounded.

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. (The only exception would be where this manual provides specific instructions which should be followed in order to put in place user-installable options; see User Guide p. 6, 7.)

- When using the unit with a rack or stand recommended by Roland, the rack or stand must be carefully placed so it is level and sure to remain stable. If not using a rack or stand, you still need to make sure that any location you choose for placing the unit provides a level surface that will properly support the unit, and keep it from wobbling.

- 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!

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

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

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

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

⚠ CAUTION

- 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 (User Guide p. 13).

3

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

- Install only the specified hard disk (model no. HDP88 series) or circuit board (model no. VS8F-2). Remove only the specified screws (User Guide p. 6, 7.)

- 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.

IMPORTANT NOTES

In addition to the items listed under "IMPORTANT SAFETY INSTRUCTIONS" and "USING THE UNIT SAFELY" on pages 2 and 3, 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

- Unfortunately, it may be impossible to restore the contents of data that was stored on a storage device (e.g., hard disk, Zip disk or CD-R disc etc.) once it has been lost. Roland Corporation assumes no liability concerning such loss of data.

- Use a reasonable amount of care when using the unit's buttons, sliders, or other controls; and when using its jacks and connectors. Rough handling can lead to malfunctions.

- Never strike or apply strong pressure to the display.

- When connecting / disconnecting all cables, grasp the connector itself—never pull on the cable. This way you will avoid causing shorts, or damage to the cable's internal elements.

- A small amount of heat will radiate from the unit during normal operation.

- To avoid disturbing your neighbors, try to keep the unit's volume at reasonable levels. 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.

- If an internal IDE hard disk (HDP88 series) is installed, then remove the hard disk. Place the hard disk in its carton and set this in the specified place inside the VSR-880 shipping carton. The unit is now ready to be transported. Moving the VSR-880 with the hard disk installed may result in loss of song data or damage to the hard disk.

- 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.

Contents

Main Features

The VSR-880 is a high-quality, multifunction, Modular Digital Multitrack recorder (MDM) that offers the following features.

The Latest in Compact Home Studio Environments

The VSR-880 retains all of the features of Roland's VS-880EX workstation; a revolution in the world of the home studio, with the disk recorder, digital mixer, and multi effects systematically and more organically integrated. From when you start picking mics to when you actually record to mixdown, adding effects, and on to creating the master data for playing through a PA or mastering on a CD, you can get a handle on every aspect of the recording process with the VSR-880 in your home studio.

Disk Recorder Section

The digital disk recorder section provides eight playback tracks, and allows eight tracks to be recorded simultaneously. Each track has eight supplementary tracks (**V-tracks**), and each song can have two sets of these 64 tracks (8 tracks x 8 V-tracks). This means that a song can have a total of 128 tracks (64 V-tracks x 2 banks), giving you flexibility when you need to record multiple takes, or need a location for temporary storage for editing.

NOTE

- Up to 8 tracks can be recorded simultaneously, and up to 8 tracks can be played back simultaneously. However, depending on the organization of the song data or the disk drive performance etc., the number of tracks which can be simultaneously recorded or played back may be limited.
- When the **Sample Rate** (User Guide p. 23) is selected to "48 kHz," up to **6 tracks** can be recorded simultaneously. *(Up to 8 tracks can be played back simultaneously.)*
- When the **Vari-Pitch function** (p. 39) is "**On**," up to **4 tracks** can be recorded simultaneously. *(Up to 8 tracks can be played back simultaneously.)*

You can instantly find the location of sections in a song you want to hear repeatedly or places that you wish to record over (**Locator**) by placing marks at such points (**Marker**). These Markers are recalled by simple procedure, and you will never wait for any rewinding or fast-forwarding time.

The VSR-880 uses **"non-destructive editing."** This allows you to cancel and recover up to 999 previous recording and editing operations (**Undo/Redo**).

Digital Mixer Section

You can store all mixer settings, including fader levels, pan, and effects (**Scene**). Stored settings can be recalled very simply, making it convenient in adjusting balances during mixdown and comparing mixes with effects.

Changes in settings over time, such as levels and pan, can also be stored (**Snapshot; AutoMix**), so you can realize easy fade-ins and fade-outs in your mixes.

You can easily make the most appropriate mixer condition settings, including those for recording, track bouncing, mixdown and mastering (**EZ Routing**).

Effects Section

The VSR-880 features the optional VS8F-2 effects expansion board. With the VS8F-2 effects installed in the VSR-880, up to 2 high-quality stereo effects will be available for your use.

The effect provides not only basic effects such as reverb and delay, but also effects ideal for vocals and guitar (such as Guitar Amp Simulator), ideal for mastering (such as Mastering Tool Kit or Speaker Simulator) and even special effects such as RSS. The way in which each of these effects are organized by the 36 "algorithms" so that you can create new sounds easily.

The effect provides 240 read only effects setting (**Preset Patches**) which designed for various uses. In addition, the effect provides 100 read and write effects setting (**User Patches**) for changing and saving that contents. You can instantly switch between a variety of effects simply by selecting a patch.

Simple Operation

The VSR-880 can be operated as easily as conventional multi-track recorders. You will be able to enjoy the advantages of home studio from the day that you purchase it.

The custom LCD screen provides visual confirmation of many settings at once. In particular, the bar display provides a graphical indication of the level meter, pan and fader settings, and the track record status. The LCD screen is backlit, so it is easy to read when used on stage or wherever high visibility is required.

Connectivity

As unbalanced inputs, eight RCA phono jacks (INPUT 1–8)
are provided.

There are two sets of balanced input jacks (INPUT A/B),
handling a wide input sensitivity range, from line level
(+4 dBu) to mic level (-50 dBu).

As unbalanced outputs, eight RCA phono jacks
(OUTPUT 1–8) are provided.

The VSR-880 provides both coaxial and optical digital I/O
connectors. With these, you can make digital connections
with popular consumer electronic devices such as CD
players, DAT recorders, MD recorders, and so on.

An R-BUS (RMDB2) connector is provided. Roland V-mixing
system devices with an R-BUS connector (such as the
VM-3100Pro or VM-7200) can be directly connected to
transfer 8-in/8-out 24-bit digital audio data. By going
through a Roland DIF-AT, you can also connect to
equipment such as the Alesis ADAT or TASCAM DA series.

A SCSI connector (DB-25 type) is also provided, allowing
you to connect to external SCSI devices such as the CD-RW
drive (Roland CD Recorder).

MIDI IN and MIDI OUT/THRU connectors are also
provided. You can synchronize the VSR-880 with an external
MIDI sequencer, use the MIDI sequencer to control the
VSR-880's mixer, sound an external MIDI sound generator
with the metronome, and more.

Front and Rear Panels

Front Panel

-7, 8, 9, 10, 11
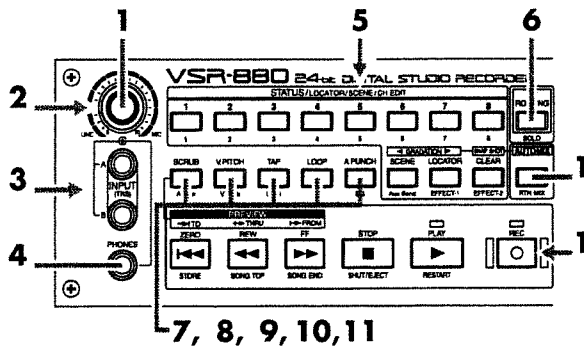
1 INPUT (TRS) knob

This knob adjusts the sensitivity of the input jacks (INPUT A, B). Turn a knob fully to the right for mic level (-50 dBu), and fully to the left for line level (+4 dBu).

NOTE

You cannot adjust the input sensitivity of the INPUT A and B individually. Please adjust the Input Mixer **Mix Level** of each channel.

2 PHONES knob

This knob adjusts the volume of the headphones.

3 INPUT (TRS) jacks (A, B)

These are input jacks for analog audio signals. These are balanced phone jacks, the input sensitivity of both jack is adjusted by the INPUT knob on the front panel.

4 PHONES Jack

An optional set of headphones can be connected here. The PHONES jack outputs the same sound as the MONITOR jacks.

5 STATUS/LOCATOR/SCENE (CH EDIT) button

These buttons are used to switch the status of each track, to register and recall **locator** and **marker** points (p. 33), and to register and recall **scenes** (mixer settings) (p. 38).

[1]–[8]: These select the channel, locator, or scene whose settings you wish to modify.

[SHIFT] + [1]–[8]: Select the channels that you wish to change the settings.

[SCENE]: This is pressed when storing, recalling, and deleting Scenes.

[LOCATOR]: Press this when you wish to register/ recall/delete locator data.

[CLEAR]: This button deletes Locators, Markers, and Scenes.

6 EZ ROUTING (SOLO) button

This button opens the **EZ Routing screen** (p. 49). In conjunction with **[SHIFT]**, this switches the **Solo function** on/off (p. 84).

7 SCRUB button

Switches the **Scrub function** on/off. (p. 37) When used in conjunction with the transport control buttons, this plays back the specified range before or after the current location (**Preview function**: p. 36).

8 V.PITCH button

Switches the **Vari-pitch function** on/off. (p. 39)

9 TAP button

This button is pressed to set Markers. (p. 34)

10 LOOP button

This button turns **Loop Recording** on and off (p. 45). Pressed with the **LOCATOR** ([1]–[8]) buttons, it specifies the range to be recorded in Loop Recording.

11 A.PUNCH (Auto Punch) button

This button turns **Auto Punch-In Recording** on and off (p. 43). Pressed with the **LOCATOR** ([1]–[8]) buttons, it specifies the range to be recorded in Auto Punch-In Recording.

12 AUTOMIX Button

This button switches the Auto Mix function on and off. When AutoMix is on, the AUTOMIX indicator lights.

13 Transport Control Buttons

These buttons are used to operate the recorder.

[ZERO]:This returns the current time to "00h00m00s00" (zero return).

[REW]:The current time is moved back only while this button is held down. This corresponds to the rewind button on a tape recorder.

[FF]: While the button is held down, the current time is moved forward. This corresponds to the fast-forward button on a tape recorder.

[STOP]:Stops recording or playback of the song.

[PLAY]:Starts recording or playback from the current time.

[REC]: Press this button to record a song.

Display section

display example

INPUT/TRACK   AUX MASTER

INPUT/TRACK   AUX MASTER
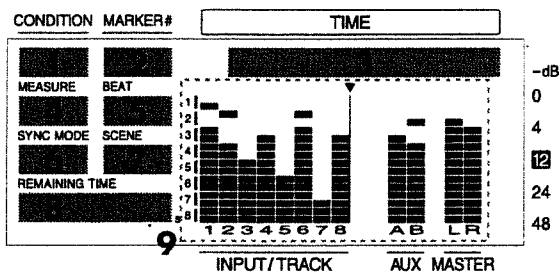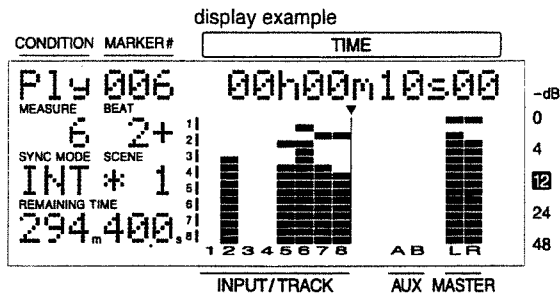
1   CONDITION

This indicates the current condition.

PLY: Normal status (Play condition).

INn: Change the input mixer settings (n=1–8, a–d).

TRn: Change the track mixer settings (n=1–8, a–d).

RTN: Change the return mixer settings.

MST: Change the master block settings.

SNG: Song edit

LOC: Locator edit

TRK: Track edit

FX: Effect edit

SYS: System edit

NOTE

If Song Protect (User Guide p. 52) is turned on, the Play Condition display will be "Ply." The input/track mixer display will indicate 1–8 for channels whose Channel Link is OFF, and a–d for channels which are turned ON (p. 82).

2   MARKER #(marker number)

This shows the marker number for the current time. If a mark point has not been assigned to the current time, the closest marker number located before the current time will be shown.

3   TIME

The current time of the song is displayed as SMPTE time code.

?

SMPTE Time Code (p. 149)

4   MEASURE

This shows the current measure of the song.

5   BEAT

This shows the current beat of the song.

6   SYNC MODE

This indicates the current sync mode (method of synchronization).

7   SCENE

This shows the currently used scene number (mixer setting). An asterisk "⋇" shown at the beginning of the scene number indicates that the current mixer settings have been modified since the scene was recalled.

8   REMAINING TIME

This shows the remaining length of time available for recording (p. 40).

9   Bar display

In normal condition, the item selected by **[SHIFT] + [DISPLAY (PLAY)]** are shown graphically. While you are making a setting, data for the setting being made is displayed graphically.
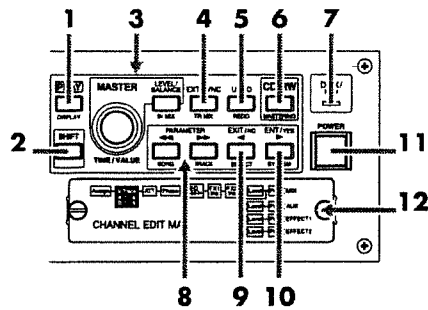
1 PLAY (DISPLAY) Button

Press this button to return to the screen that appears when the VSR-880 is turned on (normal playback status). In conjunction with **[SHIFT]**, this switches the item shown in the bar display.

2 SHIFT Button

This button is pressed in conjunction with other buttons to access additional functions of those buttons. The functions of the buttons when used in conjunction with **[SHIFT]** are imprinted in blue characters on the front panel.

3 MASTER section

TIME/VALUE dial:
In normal (playback) status, this dial adjusts the time of playback. This is used to change the settings values for each parameter when settings are changed.

[LEVEL/BALANCE]:
This accesses the Master Block setting page. (p. 85)

4 EXT SYNC (External Sync) Button

Press this button to select the device, whether the VSR-880 or an external MIDI device, to act as the master or main controlling device. (p. 117)

5 UNDO (REDO) button

Press this button to cancel a recording or editing step that you have made (**Undo function:** p. 47). Pressed with **[SHIFT]**, this button cancels the last performed Undo function (**Redo function:** p. 48).

6 CD-RW button

This button accesses the **Mastering Room** or **CD-RW backup** screens (p. 105).

7 MIDI/DISK Indicator

This indicator lights green when MIDI messages are being received, and red when data is being written or read on the disk drive. If both of these are occurring, the indicator lights orange.

8 PARAMETER button

Use these buttons to switch the parameter display.

9 EXIT/NO button

This is pressed to cancel the current operation or exit the current screen. If two or more setting items (parameters) are shown in the display, this moves the cursor toward the left to select the item that you wish to set.

10 ENT/YES button

This is pressed to execute the current operation or select the current screen. If two or more setting items (parameters) are shown in the display, this moves the cursor toward the left to select the item that you wish to set.

11 POWER Switch

This switch turns power of the VSR-880 on and off.

12 Front Cover

A separately sold hard disk drive unit **HDP88 series** can be installed here (User Guide p. 6).

Rear Panel
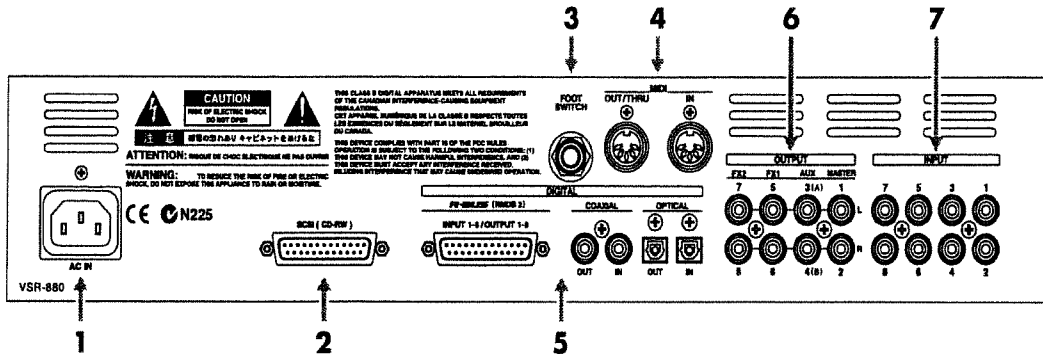
1 AC IN (AC Inlet)

Connect the included power cable here.

NOTE

Do NOT connect using any power cord other than the one provided. Using any other power cord may result in damage to the device.

2 SCSI (CD-RW) Connector

This is a DB-25 type SCSI connector for connecting disk drives such as the CD-RW drive (Roland CD Recorder).

NOTE

Connect the SCSI connector of your unit with external SCSI-type devices that is described in Owner's Manual only. **Be careful not to connect any other devices** (such as RS-232C-type devices, parallel-type devices, etc.) even though that have similar-looking connectors.

3 FOOT SWITCH jack

An optional foot switch (such as the DP-2 or the BOSS FS-5U) can be connected here when you want to control recorder operations, mark point settings, and punch in/out operations, and so on with a foot switch. With the factory settings, a foot switch is set to start and stop the recorder.

4 MIDI Connectors (IN, OUT/THRU)

External MIDI devices (SI-80SP, MIDI controllers, MIDI sequencers, etc.) can be connected here.

IN:

This connector receives MIDI messages. Connect it to the MIDI OUT connector of the external MIDI device.

OUT/THRU:

This connector can be used either as a MIDI OUT or as a MIDI THRU connector. With the factory settings, it will

function as a MIDI OUT connector, which means it is set to transmit MIDI messages.

5 DIGITAL Connectors

These input and output digital audio signals (multitrack or stereo).

R-BUS (RMDB2): This is an 8-in/8-out 24-bit digital audio connector. It can be connected to a Roland VM-3100Pro or DIF-AT.

COAXIAL: Coaxial type digital in/out connectors.

OPTICAL: Optical type digital in/out connectors.

NOTE

Only the R-BUS devices listed in the Owner's Manual may be connected to the R-BUS (RMDB2) connector. You risk malfunction if you connect other devices. **Even if their connector appears to be one of a similar size and shape, never connect devices that employ SCSI, RS-232C, or parallel connectors. Use only the specially designed R-BUS (RMDB2) cable to make connections.**

NOTE

To record a digital audio signal, it is not sufficient to simply connect a digital audio device to the DIGITAL IN connector. When inputting a digital audio signal, refer to "Recording Digital Signals" (User Guide p. 38). It is not able to input or output analog audio signals.

MEMO

Both coaxial and optical digital I/O connectors conforming to S/P DIF.

MEMO

RMDB II, RMDB2 and R-BUS are the same standard of the Roland.

6 OUTPUT jacks (1–8)

These are output jacks for analog audio signals (RCA phono type). The output is determined by the block settings of the mixer's master section and the settings of each channel.

MASTER: This outputs the signal of the mix bus.

AUX: This outputs the signal of the auxiliary bus.

FX1: This outputs the signal of the FX1 bus.

FX2: This outputs the signal of the FX2 bus.

7 INPUT jacks (1–8)

These are input jacks for analog audio signals (RCA phono type). The input sensitivity of each jack is adjusted by the input mixer.

Before You Start

This chapter explains basic concepts, internal structure, and basic operation that you will need to know in order to operate the VSR-880. Please read this chapter thoroughly to gain a better understanding of the VSR-880.

Saving and Managing Data

Managing Disk Contents (Partitioning)

The VSR-880 saves all of the data such as — performance data, mixing data, system data, etc. — on the disk drive. Thus, it cannot operate without either having an internal disk. **Furthermore, the hard disk used by the VSR-880 cannot be used by another device.**

The VSR-880 is able to manage which 500 MB or 1000 MB of disk space at once. If you use a disk drive with a capacity that is larger than this, you will need to divide it into two or more. Each of these area is referred as the **"partition."** Up to 10 partitions can be created in one disk drive. For creating songs in a enough space, we recommend you to set the partitions to 1000 MB.

Ex. 1: When the disk drive is 3.2 GB, and the partition size is 500 MB.

Disk Drive (3.2GB)	
Partition 0 (500MB)	Partition 1 (500MB)
Partition 2 (500MB)	Partition 3 (500MB)
Partition 4 (500MB)	Partition 5 (500MB)
Partition 6 (200MB)	
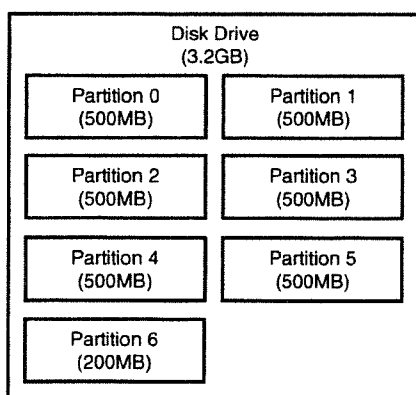
Ex. 2: When the disk drive is 3.2 GB, and the partition size is 1000 MB.

Disk Drive (3.2GB)	
Partition 0 (1000MB)	Partition 1 (1000MB)
Partition 2 (1000MB)	Partition 3 (200MB)
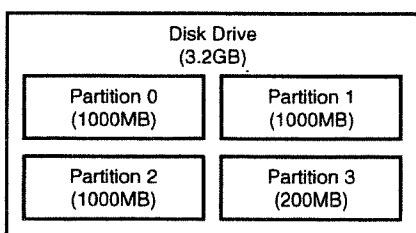
Specify the Disk Which will be Used for Recording/Playback (Drive Select)

Each partition on the VSR-880's disk drive is treated as an independent drive, with each partition automatically given a partition number (0–9). When a single hard disk has multiple partitions, you can specify which partition of which drive will be used. This disk drive partition currently used is referred to as the **current drive**.

1. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS Drive Select" appears in the display.

2. Press **[ENT/YES]**.

3. Use the TIME/VALUE dial to select the desired disk drive. The internal hard disk is shown as "IDE:*" and external disk drives are shown as "SC0:*–SC7:*" (the number is the SCSI ID number). The number following each disk drive name is the partition number. For example if you wish to select internal hard disk partition 1, you would select "IDE:1."

```
CONDITION  MARKER#          TIME
 SYS Select  Drv=IDE:1  -dB
 MEASURE     BEAT
```
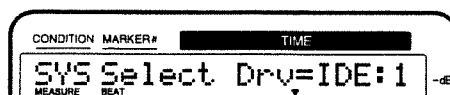
4. Press **[ENT/YES]**. A confirmation message appears on the screen.

5. Press **[ENT/YES]**. "STORE Current?" (Store the current song?) appears in the display.

6. If you wish to save the current song, press **[ENT/YES]**; if not, then press **[EXIT/NO]. If you have selected a demo song, then press [EXIT/NO]**.

7. After you have switched the current drive, return to Play condition.

⚠ NOTE

If you wish to use hard disks or song data on both the VSR-880 and the VS-880/840/880EX/1680, because of factors such as differing partition sizes and numbers of tracks, there will be limitations as to what you can do. For more detailed information, please see "Compatibility" (p. 26).

📝 MEMO

The VSR-880 accepts installation of Internal hard disks (designated by Roland). For simultaneous recording or playback of a number of tracks, for getting more out of the available hard disk space, and in order to get the fullest performance in general from the VSR-880, we recommend using the 2.1 GB or larger Internal Hard Disk.

The Location Where a Performance is Recorded (Song)

The location where a performance data is recorded is referred to as the **song**. For example on a cassette MTR, this would correspond to cassette tape. In each partition, you can save up to 200 songs for each model (VS-880/1680/880EX/VSR-880). **However, the total number of songs that can be saved in one partition is a maximum of 500.**

Normally, you should set the partition size at 1000 MB. When dealing with large numbers of songs at the same time, setting the partition size to 500 MB is recommended. The song currently being recorded, played back, or edited is referred to as the **current song**. Following data are included in a song.

- All data recorded on V-tracks
- MIDI clocks of the sync track
- Points specified within songs (locator, marker, punch-in/out points, loop-in/out points) (p. 33)
- Scenes (mixer settings; p.38)
- Vari Pitch settings (p. 39)
- System settings (system, MIDI, disk, sync, Scene) (p. 106)
- Effect settings (When the VS8F-2 is installed.)
- Auto Mix Data (p. 68)

Sources, Tracks, and Channels

On the VSR-880, the recorder section and mixer section use term **sources, tracks,** and **channels**. These terms may appear similar to each other, and will be confusing unless their differences are clarified.

Source: A signal which is input to the mixer section or recorded in the recorder section. On the VSR-880, this term refers in particular to the signals of the analog input jacks (1–8) and the digital in connector (Coaxial, Optical and R-BUS).

Track: A signal that is being input to or output from the recorder section. It also refers to the location of a signal that is being recorded onto or played back from the hard disk.

Channel: A signal that is being input to or output from the mixer section. This term refers in particular to the faders and buttons of the mixer section on the front panel.

About Events

The smallest unit of memory used by the VSR-880 to store recorded results on disk is called an **event**. A newly created song is provided approximately 10,000 events.

For each track, one recording pass uses two events. Operations such as punch-in/out or track copy also use up events. The number of events that are used up will fluctuate in a complex way. For example, auto mix (p. 68) uses up 5 events for each Marker.

Even when your disk has ample free space, one song can use up all the available events, in which case no more data could be recorded to the song.

Remaining number of Events can be saved with the following procedures. Please try the most appropriate one with your situation.

Execute Song Store (User Guide p. 50)

Please Execute Song Store if in UNDO condition ([UNDO] indicator is lit.). Events served for REDO will be released. But please note that you cannot cancel (REDO) the last UNDO if you once execute STORE.

Execute Song Optimize (User Guide p. 49)

Please execute Song Optimize if you have done a lot of Punch In recording. Events served for unnecessary audio data will be released. But please note that you can only do single level UNDO.

Erase AutoMix data (p. 71)

If you have recorded AutoMix data, erase unnecessary data. Events served for unnecessary AutoMix data will be released.

Mixer Section

The digital mixer specifies input or output status of the recorder section.
The VSR-880 contains an Input Mixer located before the recorder section, a Track Mixer located after the recorder section, an Effect Return Mixer which controls the effect return and Stereo In (p. 87), and a Master Block which determines the output jacks from which the signal of each mixer will be output.

NOTE

For more detailed information about the mixer section, please refer to the "Mixer Section Block Diagram" (p. 217).

■ Signal Flow (Buses)

On the VSR-880, signals flow through buses. buses are shared lines through which multiple signals can be routed efficiently to multiple tracks or channels. It may be easier to understand this if we use the analogy of water pipes. For example, the water that is supplied by the water company to your house is branched to a variety of locations within the house (kitchen, bathroom, toilet, etc.). The water that is used at each of these locations is then collected into the sewer, and carried away.
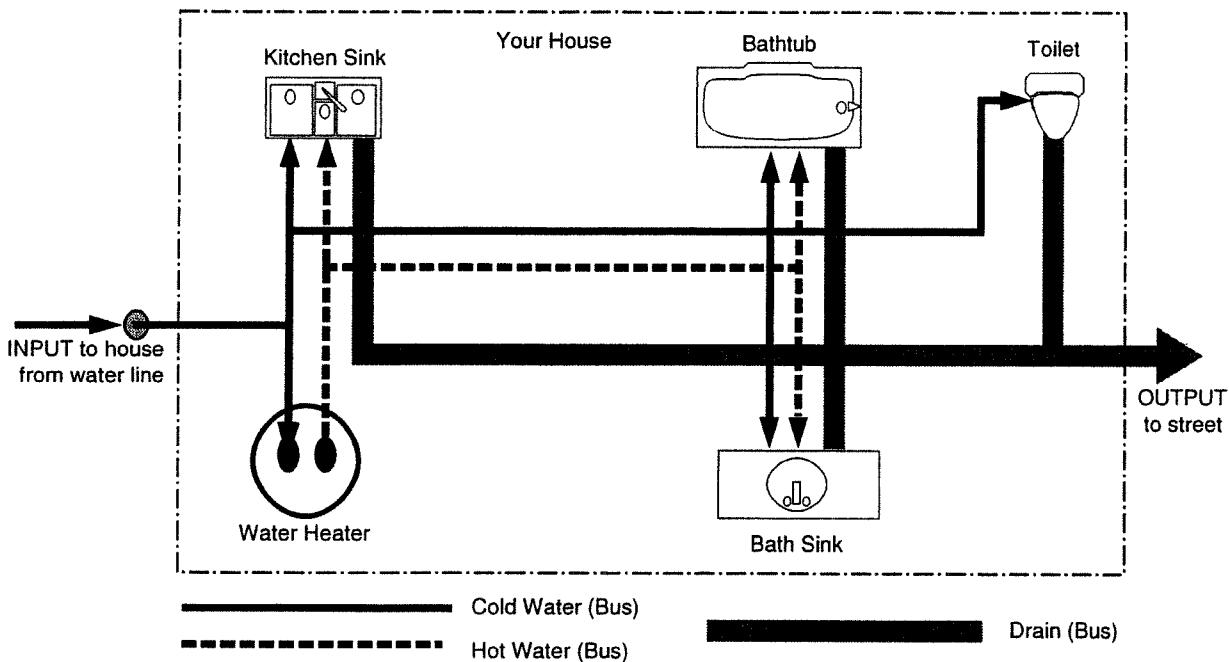
If we think of the VSR-880 as the house, the water being supplied from the water company corresponds to inputs such as mic or guitar. Some of these inputs are sent to recording tracks and are recorded. Other portions are sent to the effects, and reverb or chorus are applied before they are output.
The basic principle of the VSR-880 is that by specifying in this way from where and to where the common lines run, you can determine which input signals will be recorded on which track or sent to which effects, and where they will be output.
The VSR-880 has the following buses.

RECORDING Bus:
Signals assigned to the RECORDING bus are routed to the recorder section to be recorded. There are eight channels which can be assigned to the output of the input mixer, track mixer, and effects (Return). Signals assigned to the RECORDING bus cannot be routed to the MIX bus.

MIX Bus:
Signals assigned to the MIX bus are sent to the MASTER jacks for monitoring. It has two channels (L and R), and can take output signals from the input mixer, track mixer, and effects (Return). Signals assigned to the MIX bus cannot be routed to the RECORDING bus.

EFFECT Bus:
Signals assigned to the EFFECT bus are sent to the effect to apply effects added to them. It has two channels (FX1, FX2), and can process signals from the input mixer and the track mixer. Signals assigned to the RECORDING bus as well as the MIX bus can also be routed to the EFFECT bus.

AUX Bus:
Signals assigned to the AUX bus are routed to the AUX SEND jacks to allow addition mixes for monitoring. This bus features two channels (AUX A, AUX B), and can take signals from the input mixer and the track mixer. Signals assigned to the RECORDING bus as well as the MIX bus can also be routed to the AUX bus. This is convenient if, for example, you want to connect an external effects device, or when you want an addition output separate from that of the MASTER Out jacks (individual out).

■ Input Mixer

Input mixer is placed before the recorder section, and correspond to the external input sources (INPUT 1–8, INPUT A–B, OPTICAL, COAXIAL and R-BUS).

Input Mixer (Channel 1–8)
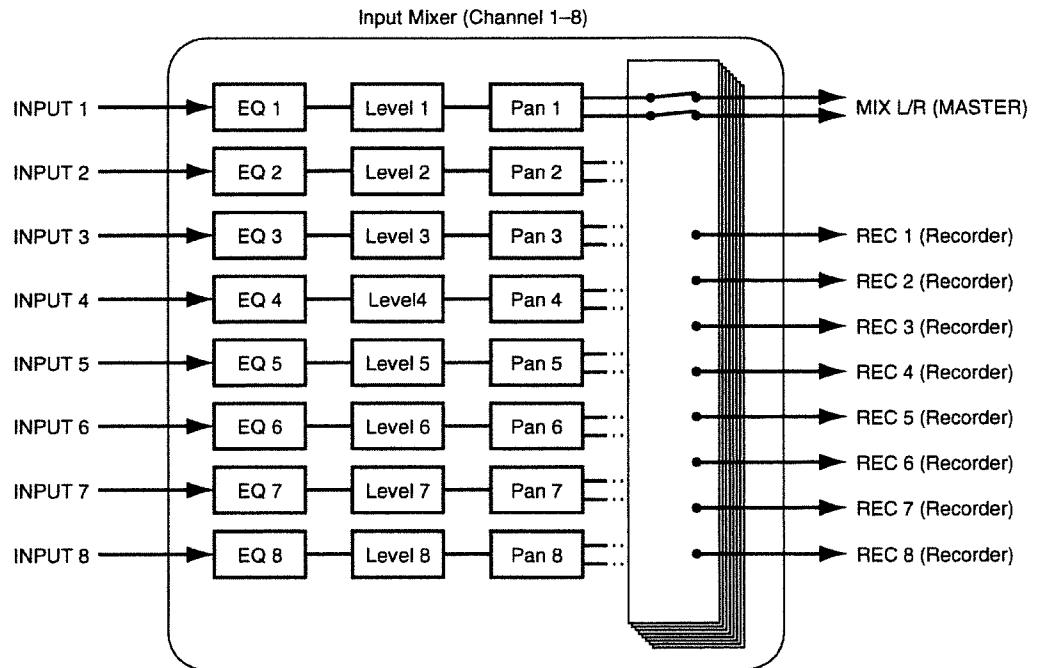
The output of each channel is assigned to tracks to be recorded. Channels not assigned to tracks are output directly from the MASTER jacks. Additionally, the status of tracks with signals assigned to them when not in record standby (STATUS indicator blinking red), also are output from the MASTER jacks.

■ Track Mixer

Track mixer is placed after the recorder section, and correspond to the tracks (1–8).

Recorder   Track Mixer (Track 1–8)

REC 1 ▶	Track 1	EQ 1	Level 1	Pan 1	MIX L/R (MASTER)
REC 2 ▶	Track 2	EQ 2	Level 2	Pan 2	
REC 3 ▶	Track 3	EQ 3	Level 3	Pan 3	REC 1 (Recorder)
REC 4 ▶	Track 4	EQ 4	Level 4	Pan 4	REC 2 (Recorder)
					REC 3 (Recorder)
REC 5 ▶	Track 5	EQ 5	Level 5	Pan 5	REC 4 (Recorder)
REC 6 ▶	Track 6	EQ 6	Level 6	Pan 6	REC 5 (Recorder)
REC 7 ▶	Track 7	EQ 7	Level 7	Pan 7	REC 6 (Recorder)
					REC 7 (Recorder)
REC 8 ▶	Track 8	EQ 8	Level 8	Pan 8	REC 8 (Recorder)

All of the tracks are output from the MASTER jacks. Additionally, tracks can also be routed back to the RECORDING bus for overdubbing, or re-rerecording.

■ Effect Return Mixer

This mixer adjusts the return level/balance from effects connected in send/return fashion, and the level/balance of the stereo input.

FX Return Mixer (Channel 6–8)

Stereo In	StIn Level	StIn Bal	MIX L/R (MASTER)
			REC 1 (Recorder)
			REC 2 (Recorder)
FX1 Return	FX1 RTNLev	FX1 RTNBal	REC 3 (Recorder)
			REC 4 (Recorder)
FX2 Retuen	FX2 RTNLev	FX2 RTNBal	REC 5 (Recorder)
			REC 6 (Recorder)
			REC 7 (Recorder)
			REC 8 (Recorder)
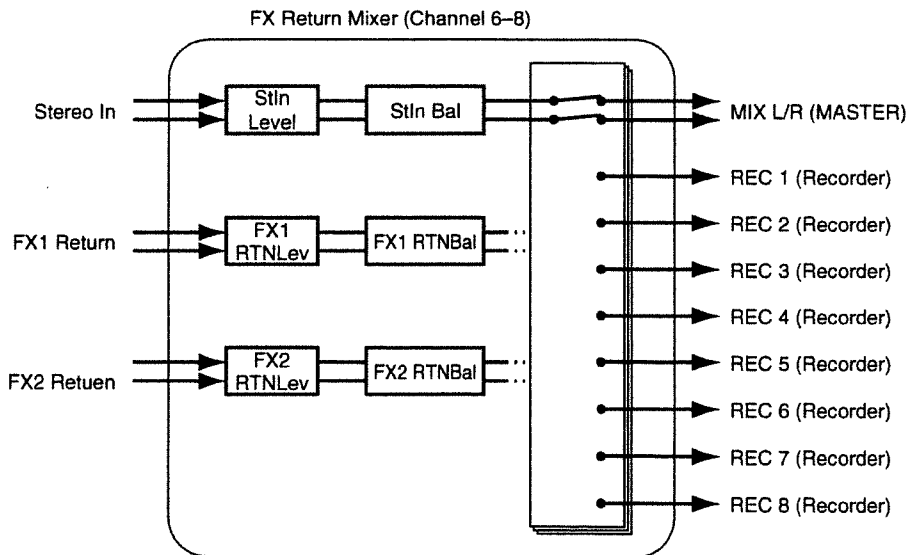
Each channel is output from the MASTER jacks. It is also possible to assign them to the recording bus for recording. In this case, the channel faders correspond to the following signals.

Channel 6: The INPUT jack assigned to Stereo In
Channel 7: FX1 return
Channel 8: FX2 return

Master Block

This selects the jacks or connectors connected to external equipment to which the output of each mixer is sent.

Masterblock

Input	Output
MIX bus L, R	OUTPUT 1–2 (MASTER L, R)
AUX bus A, B	OUTPUT 3–4 (AUX L, R)
FX1 bus L, R	OUTPUT 5–6 (FX1 L, R)
FX2 bus L, R	OUTPUT 7–8 (FX2 L, R)
Track 1–8	PHONES L/R
REC bus 1–8	COAXIAL OUT L, R
	OPTICAL OUT L, R
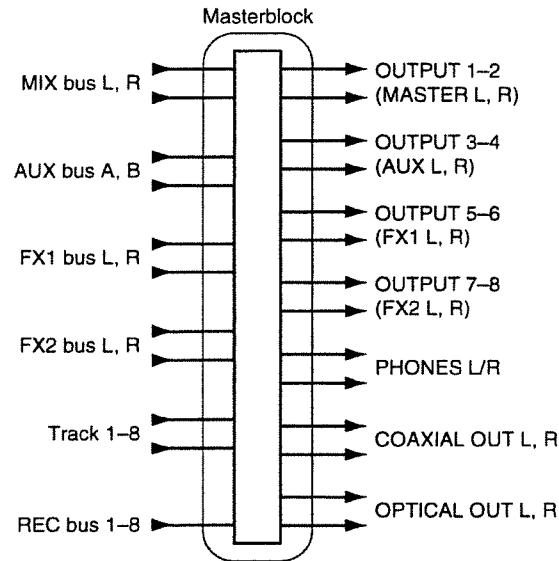
Recorder Section

■ Differences with a Tape-Type MTR

Unlike DAT recorders, which use tape, digital disk recorders record performances (sounds) on a disk, as do MD recorders. Music that is recorded on disk can be recalled and played back immediately, no matter where it is located on the disk. This is also obvious from the difference in speed at which you can move to the beginning of a song on a DAT recorder and on an MD recorder. The ability to freely move to data regardless of the time or sequence at which it was recorded is known as **random access**. In contrast, having to move to data in the order of the time or sequence at which it was recorded is known as **sequential access**.
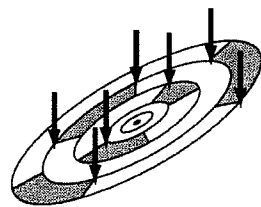
random access

sequential access

23
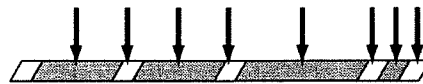
■ Track Minutes and Recording Time

With cassette tape recorders, the amount of time you can record on a tape is predetermined by the length of that tape. Moreover, any unused portion of the tape is wasted.
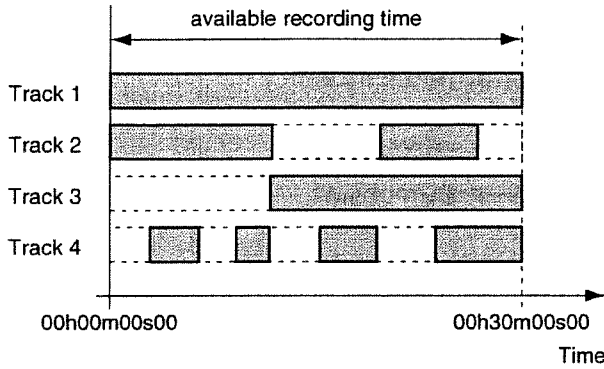
In Case of Tape Recording (using 30-minute tape)

In contrast, with disk recording, although available recording time is determined by the amount of disk space, only the disk space used in recording is taken, and beyond that, has no affect on the disk's remaining free space. Thus, depending on how you use tracks and phrases, the amount of available recording time will vary. Thus, this calls for a standard unit corresponding to the time of one continuous monaural signal recorded to one track. This unit is referred to as a **track minute**.
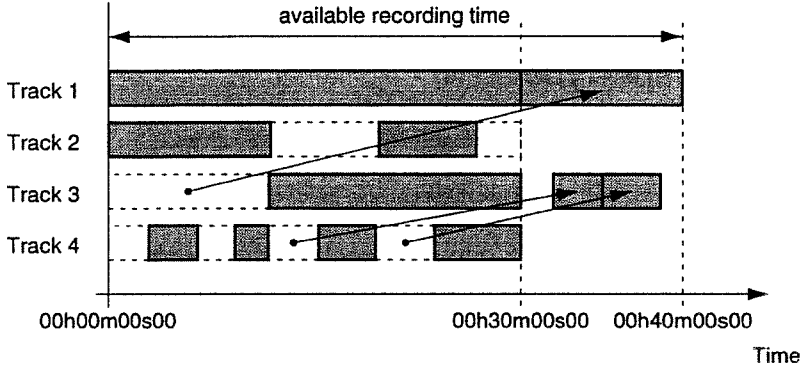
In Case of Disk Recording

For example, 10 track minutes be used for 10 minutes of monaural recording, 5 minutes of stereo recording, 2 minutes and 30 seconds of recording on four tracks, and so on.
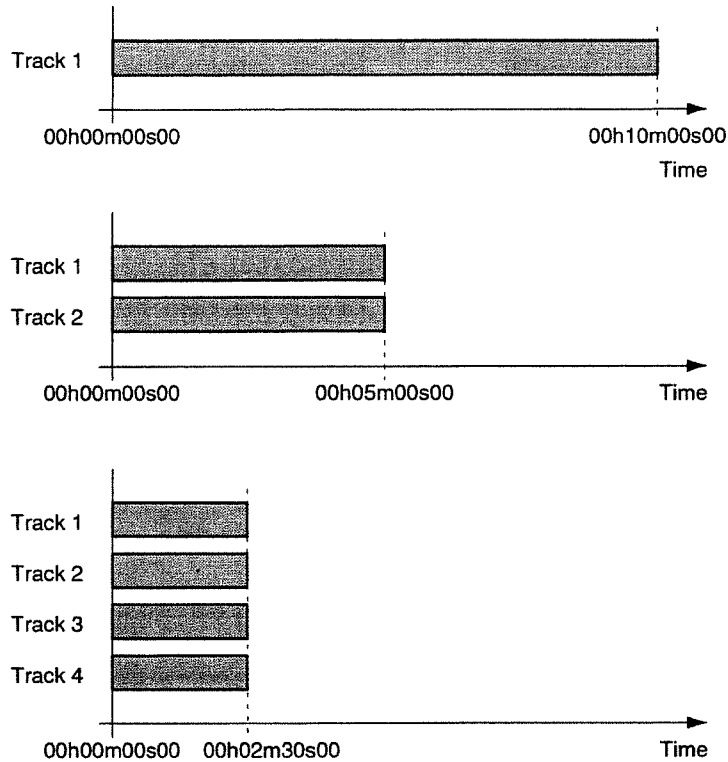
■ Auxiliary Tracks for Each Track

The VSR-880 provides 8 playback tracks, and allows 8 tracks to be recorded simultaneously. Each track is composed from the features 8 supplementary tracks, each on of which can be used for recording or playback. These auxiliary tracks are called **V-tracks**.

One song can contain two sets (banks) of 64 V-tracks (these 8 tracks x 8 V-tracks). In other words, a maximum of 8 tracks x 8 V-tracks x 2 banks = 128 performance tracks can be recorded. For actual recording/playback, you will specify the bank that you wish to use, and then select one of the V-tracks.

MEMO
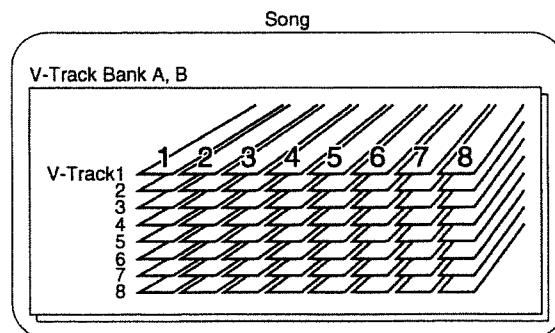
This Owner's Manual provides a blank virtual track sheet to help you keep track of your virtual track recordings (p. 219). Feel free to copy the sheet to use when you record.

Disks used with Roland's Digital Studio Workstation VS-880, VS-1680 and VS-880EX models can also be used by the VSR-880. Additionally, song data recorded on such disks can be loaded by the VSR-880. However, because differences in the structure of disk space and song data on disks that can be used, there are a number of precautions concerning the loading and saving of data that should be observed.

⚠ NOTE

The VSR-880 does not have a DAT recovery function.
Thus, song data backed up to DAT on another device cannot be recovered by the VSR-880.

📖 MEMO

If you wish to recover song data that was backed up to DAT by another device, you must first restore (DAT recover) the song to the device that performed the DAT backup. Then you must use a method such as CD-R Backup or Archive Store to save the song data on a disk that the VSR-880 is able to use (CD-RW disc, Zip disk).

Disk Compatibility

Using a disk from another model of device on the VSR-880

VS-880 → VSR-880

When internal hard disks that have been used by the VS-880 are installed in the VSR-880, or when Zip disks (playable type) that have been used by the VS-880 are inserted into a Zip drive connected to the VSR-880, they are recognized as the initialization disk. In this case, the VSR-880 can be used for playing back songs recorded with the VS-880 and creating new songs as well. However, you cannot use the VSR-880 to edit songs that were recorded on the VS-880 or save new versions of songs. If you wish to edit VS-880 song data with VSR-880, convert it to VSR-880 song data (Song Import; p. 28).

Song data that has been saved using the CD-R backup procedure on the VS-880 (Ver.3.0 or later) can be restored (CD-R recovered) with the VSR-880. However, the VSR-880 cannot edit or save new versions of the extracted songs. In this case, you should first execute CD-R Recover (Use Guide p. 97). Then convert the extracted song data for use with the VSR-880 (Song Import; p.28).

Song data that has been saved using the Archive Copy procedure on the VS-880 can be restored (archive extracted) with the VSR-880. However, the VSR-880 cannot edit or save new versions of the extracted songs. In this case, you should first execute Song Archive Extract (p. 77). Then convert the extracted song data for use with the VSR-880 (Song Import; p. 28).

VS-880EX → VSR-880

When internal hard disks that have been used by a VS-880EX are installed in the VSR-880, or when Zip disks (playable type) that have been used by a VS-880EX are inserted into a Zip drive connected to the VSR-880, they are recognized as the initialization disk. In this case, the VSR-880 can be used for playing back songs recorded with the VS-880EX and creating new songs as well. However, you cannot use the VSR-880 to edit songs that were recorded on the VS-880EX or save new versions of songs. If you wish to edit VS-880EX song data with VSR-880, convert it to VSR-880 song data (Song Import; p. 28).

Song data that has been saved using the CD-R backup procedure on the VS-880EX (Ver.1.0 or later) can be restored (CD-R recovered) with the VSR-880. However, the VSR-880 cannot edit or save new versions of the extracted songs. In this case, you should first execute CD-R Recover (User Guide p. 98). Then convert the extracted song data for use with the VSR-880 (Song Import; p. 28).

Song data that has been saved using the Archive Copy procedure on the VS-880EX (Ver.1.0 or later) can be restored (archive extracted) with the VSR-880. However, the VSR-880 cannot edit or save new versions of the extracted songs. In this case, you should first execute Song Archive Extract (p. 77). Then convert the extracted song data for use with the VSR-880 (Song Import; p.28).

VS-1680 → VSR-880

A disk that was used by the VS-1680 (internal hard disk or playable Zip disk) will be recognized as a properly initialized disk only if the partition size is 1 GB.
In this case, however, the VSR-880 can create new songs on the disk. Furthermore, the VSR-880 cannot recognize songs recorded on the VS-1680.

📖 MEMO

Even if the disk has been initialized with the "Partition" set to "2000 MB," the disk can be used if the actual partition is 1 GB or less (such as Zip disks, etc.).

Song data that has been saved using the CD-R backup procedure on the VS-1680 (Ver.1.0 or later) can be restored (CD-R recovered) with the VSR-880. However, the VSR-880 cannot play, edit or save new versions of the extracted songs. In this case, you should first execute CD-R Recover (User Guide p. 98). Then convert the extracted song data for use with the VSR-880 (Song Import; p. 28).

Song data that has been saved using the Archive Copy procedure on the VS-1680 (Ver.1.0 or later) can be restored (archive extracted) with the VSR-880. However, the VSR-880 cannot play, edit or save new versions of the extracted songs. In this case, you should first execute Song Archive Extract (p. 77). Then convert the extracted song data for use with the VSR-880 (Song Import; p. 28).

NOTE

On the VSR-880, a VS-1680 song name obtained by CD-R Recover or Song Archive Extract will not be displayed in the Song Select screen (it cannot be recognized).

VS-840 → VSR-880

When a Zip disk used by a VS-840 (Ver.1.0 or EX) is inserted in a Zip drive connected to the VSR-880, it is recognized as an un-initialized disk.

If you wish to playback/edit an VS-840 song on the VSR-880, you must convert that song data into the VSR-880 format (Song Import; p. 28). However in this case, only the performance data (audio data) and the data specifying the track on which each audio data is recorded will be converted.

Using a VSR-880 disk on a different device

VSR-880 → VS-880

A disk used on the VSR-880 (internal hard disk or playable Zip disk) will be recognized as an initialized disk for partitions 0–3 only. **Partitions 4–9 will not be recognized.**
In this case, however, the VS-880 can create new songs on the disk. **Furthermore, the VS-880 cannot recognize songs recorded on the VSR-880.** If you wish to edit VSR-880 song data with VS-880, convert it to VS-880 song data (Song Export; p. 30).

Song data that has been saved using the CD-R Backup procedure on the VSR-880 cannot be restored (CD-R recovered) by the VS-880.

Song data that has been saved using the Archive Copy procedure on the VSR-880 cannot be restored (archive extracted) by the VS-880.

VSR-880 → VS-880EX

A disk used on the VSR-880 (internal hard disk or playable Zip disk) will be recognized as an initialized disk for partitions 0–3 only. **Partitions 4–9 will not be recognized.**

In this case, the VS-880EX can be used for playing back songs recorded with the VSR-880 and creating new songs as well. **However, you cannot use the VS-880EX to edit songs that were recorded on the VSR-880 or save new versions of songs.** If you wish to edit VSR-880 song data with VS-880EX, convert it to VS-880EX song data (Song Export; p. 30).

Song data that has been saved using the CD-R backup procedure on the VSR-880 cannot be restored (CD-R recovered) with the VS-880EX.

Song data that has been saved using the Archive Copy procedure on the VSR-880 cannot be restored (archive extracted) with the VS-880EX.

VSR-880 → VS-1680

A disk used on the VSR-880 (internal hard disk or playable Zip disk) will be recognized as an initialized disk for partitions 0–7 only. **Partitions 8–9 will not be recognized.**

In this case, the VS-1680 can be used for playing back songs recorded with the VSR-880 and creating new songs as well. However, you cannot use the VS-1680 to edit songs that were recorded on the VSR-880 or save new versions of songs. If you wish to edit VSR-880 song data with VS-1680, convert it to VS-1680 song data (Song Export; p. 30).

Song data that has been saved using the CD-R backup procedure on the VSR-880 cannot be restored (CD-R recovered) with the VS-1680.

Song data that has been saved using the Archive Copy procedure on the VSR-880 cannot be restored (archive extracted) with the VS-1680.

VSR-880 → VS-840

When a Zip disk used by a Zip drive connected to the VSR-880 is inserted in a VS-840 (Ver.1.0 or EX), it is recognized as an un-initialized disk.

If you wish to playback/edit an VSR-880 song on the VS-840, you must first convert the VSR-880 song data into VS-880 format, and save it on a Zip disk (the VSR-880's Song Export; p. 30). Then you must convert that song data into the VS-840 format (the VS-840's Song Convert function). However in this case, only the performance data (audio data) and the data specifying the track on which each audio data is recorded will be converted.

Song Data Compatibility

Loading The Other VS-series Performance Data into the VSR-880 (Song Import)

You can convert songs created on the other VS-series for use with the VSR-880 and copy them as new songs to the current drive. This is referred to as **Song Import**.

* All the data such as mixer setting including equalizer and stereo link, system setting including sync track and tempo map, locators and markers, and effect setting will be copied.
* The sample rate and recording mode of the newly created song will be the same as the original song. If the song whose recording mode is set to "LIV2" (VS-1680, VS-840), Song Import cannot be carried out.
* If the recording mode of the VS-1680 song is "MTPro (MTP)," it is imported by converting into the VSR-880 song with "VSR." And the EQ settings are invalid.
* When importing a VS-1680 song, you must select either tracks 1–8 or tracks 9–16. V-tracks 1–8 of the selected tracks will be imported to V-track bank A of the VSR-880, and V-tracks 9–16 will be imported to V-track bank B of the VSR-880.
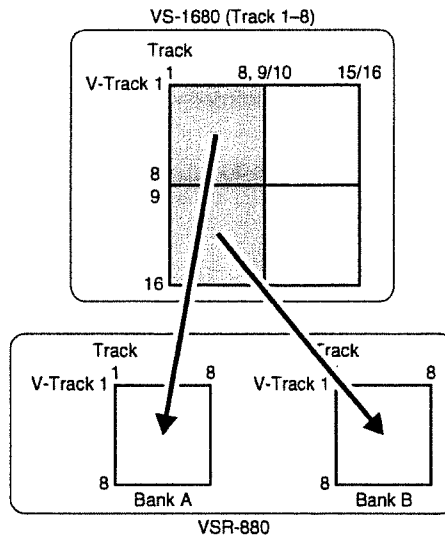
* If there is insufficient free space on the current drive, Song Import cannot be carried out.

Here we will explain the procedure by which a song from another device that was copied to a Zip disk as a playable copy can be converted for use by the VSR-880 via a Zip drive connected to the VSR-880. If you wish to convert a song via Song Archive Extract by the VSR-880, or a song via CD-R Recovery (for another device: saved on the internal hard disk), begin reading from step 3.

1. Make settings as shown below.
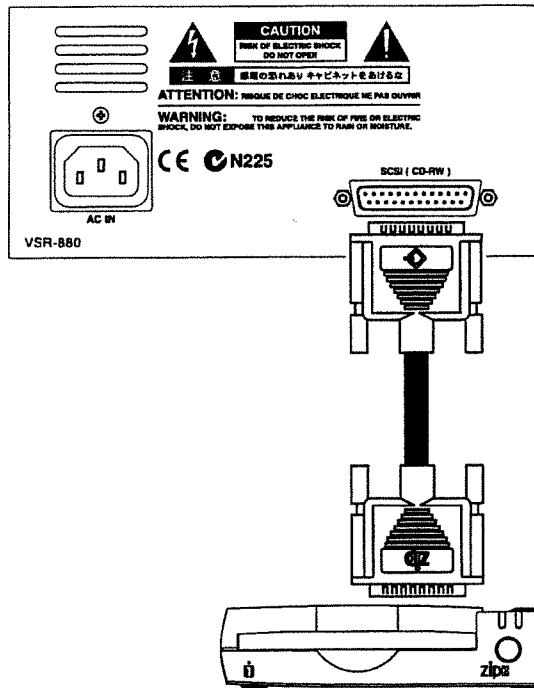
2. Insert the disk onto which the other VS-series song data has been recorded into the Zip drive.

3. For the current drive, select the drive (internal IDE hard disk) you want to be the load destination.

4. Press **[SHIFT] + [SONG]** several times until "Song Import ?" appears in the display.

5. Press **[ENT/YES]**.

6. "Source Drv=" (the drive from which the data will be read) appears in the display. Use the **TIME/VALUE dial** to select the drive which contains the song you wish to convert. For example if the source drive is the Zip drive, select "SC5:0."

Load source drive (In the example, a Zip drive)
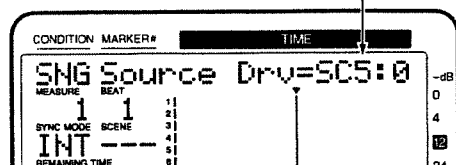
MEMO

In the case of a song of another model that is saved on the VSR-880's hard disk, select "IDE:0" or whatever else is appropriate.

7. Press **PARAMETER [▶▶]**.

8. "Sel=" appears in the display. Use the **TIME/VALUE dial** to select the song you want to convert.

Song Type (In the example, VS-880's song)

Song Number   Song Name

Sample Rate   Recording Mode
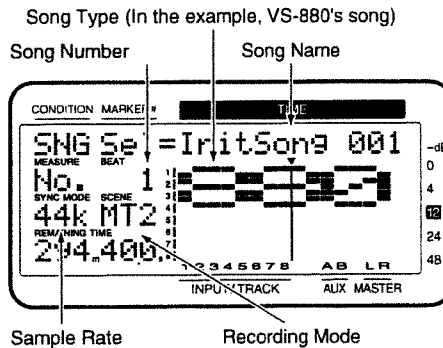
Different types of songs (for the VS-880, VS-1680 or VS-880EX) are distinguished.

VS-880EX's song

VS-880's song
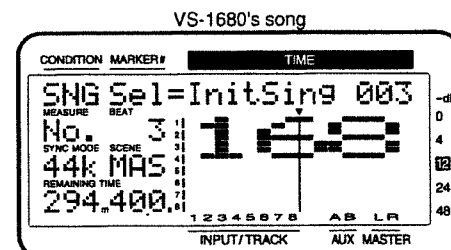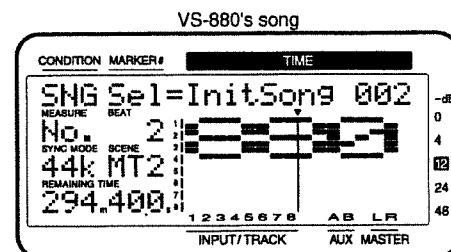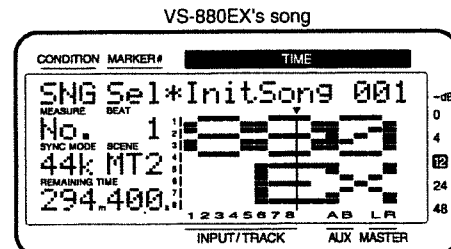
VS-1680's song

9. Press **[ENT/YES]**. A confirmation message appears in the display.

   9-1. When importing a VS-1680 song, the display will indicate "Target Trk=."

   9-2. Use the **TIME/VALUE dial** to select the tracks (1–8 or 9–16) that you wish to import, and press **[ENT/YES]**.

10. Press **[ENT/YES]**. "STORE Current?" (Store the current song?) appears in the display.

11. If you wish to save the current song, press **[ENT/YES]**; if not, then press **[EXIT/NO]. If you have selected a demo song, then press [EXIT/NO].**

12. After Song Import is completed, return to Play condition. The song converted for use by the VSR-880 will be the current song.

Converting The VSR-880 Song Data for Use with the other VS-series (Song Export)

You can convert the current song for use with the other VS-series and copy it as a new songs to a Zip drive connected to the VSR-880's SCSI connector. This is referred to as **Song Export**.

NOTE

When you export to a VS-880 song, V-track bank A song data (tracks 1–8, V-tracks 1–8) will be copied. Please copy the data in the V-track bank B to the V-track bank A beforehand, by using Track Exchange. (P. 92)
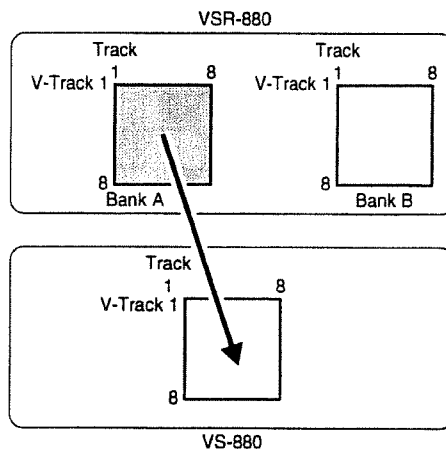
- All song data, including mixer settings such as equalizer and Stereo Link, system settings such as sync tracks and Tempo Maps, locator and markers, effects settings, and so on are copied.

- The sample rate and recording mode of the newly created song will be the same as the original song. It is not possible to export a song whose recording mode is "CDR."

- If the recording mode of the VSR-880 song is "VSR," it is imported by converting into the VS-1680 song with "MTP."

- If there is insufficient free space on the conversion destination drive, Song Export cannot be carried out.

Here we will explain the procedure of converting a VSR-880 song for use by the other VS-series (for this example, VS-880), and saving it in playable format to a Zip disk. VSR-If you wish to perform Song Archive Store or CD-R Backup after converting the song on the VSR-880 for use on another model (and saving it on the internal hard disk), begin reading from step 3.

1. Make settings as shown below.
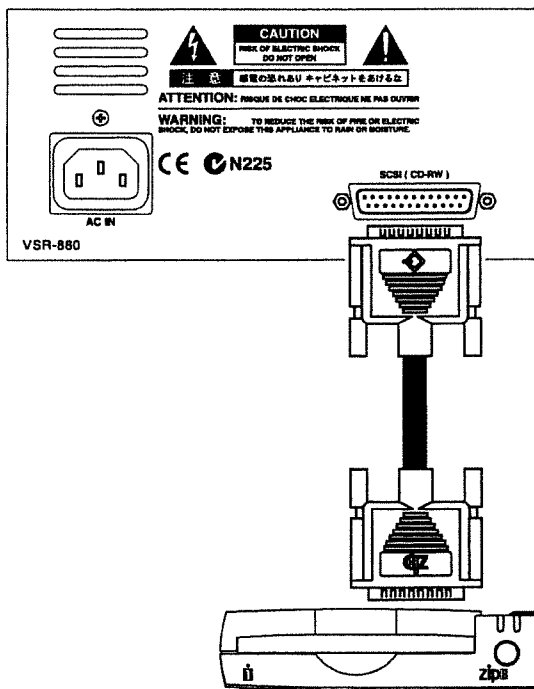
2. Insert a disk into the Zip drive.

3. Select the song you want to convert as the current song. (User Guide p. 26)

4. Press **[SHIFT] + [SONG (◄◄)]** several times until "Song Export ?" appears in the display.

5. Press **[ENT/YES]**.

6. "Save As =" appears in the display. Use the **TIME/VALUE dial** to select the model (VS-880, VS-1680, VS-880EX) for which you wish to convert the song, and press **PARAMETER[►►]**.
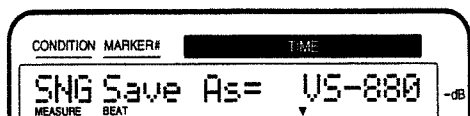
7. "Dest. Drv=" (the save destination drive) appears in the display. Use the **TIME/VALUE dial** to select the drive on which you wish to save the converted song data. For example if you wish to save the data to the Zip drive, select "SC5:0."

Write destination drive (In the example, a Zip drive)
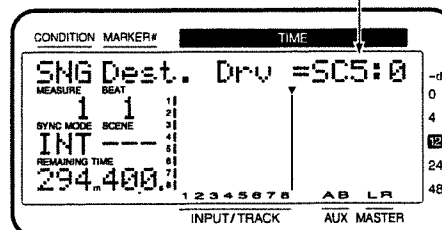
MEMO

If you wish to save a song of another model on the VSR-880's hard disk, select "IDE:0" or whatever else is appropriate.

8. Press **[ENT/YES]**. A confirmation message appears in the display.

9. Press **[ENT/YES]** again. "STORE Current?" (Store the current song?) appears in the display.

10. If you wish to save the current song, press **[ENT/YES]**; if not, then press **[EXIT/NO]**. **If you have selected a demo song, then press [EXIT/NO]**.

11. After Song Export is completed, return to Play condition.

Basic Operation

This chapter explains the basic operation of the VSR-880. This covers all of the fundamental processes, including recording and editing, so please read and understand this chapter.

NOTE

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

Changing the Current Time

The current playback time in the display is shown in SMPTE time code. The current measure, beat, and Marker number are also displayed. Use the following procedure to change the current playback time.

?

SMPTE Time Code (p. 149)

Moving in Frame Units

- To move in one-frame units, rotate the **TIME/VALUE** dial.
- To move in ten-frame units, hold down **[SHIFT]** and rotate the **TIME/VALUE dial.**
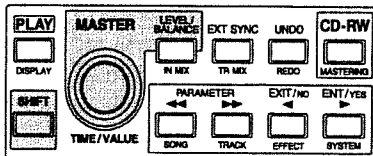
- To move in units of approximately 1/10 frame, first press [▶] until "←" appears. The frame numerical display will switch to sub-frame units (approximately 1/100 frame). Then rotate the **TIME/VALUE dial.** To return to the frame units, press [◀].
- To move in units of approximately 1/100 frame, hold down **[SHIFT]** and rotate the **TIME/VALUE** dial.
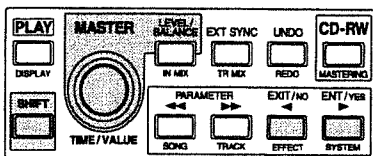
Moving in Measure/Beat Units

The MEASURE field in the display will indicate the measure number of the current location, and the BEAT field will indicate the beat number of the current location. For details on setting the measure and beat, and how they correspond to the song, refer to "Sounding the Metronome" (p. 40).

- To move in measure units, use [◀] or [▶] to move the cursor to the MEASURE field, and rotate the **TIME/VALUE dial.**
- To move in beat units, use [◀] or [▶] to move the cursor to the BEAT field, and rotate the **TIME/VALUE dial.**

MEMO

A "+" shown following the beat display indicates that this time location is not at the beginning of the measure/beat. When the time location is at the beginning of the measure/beat, the "+" indication will disappear.

Moving to the Beginning or End of the Performance

You can move directly from within any of the V-tracks in the currently selected track to the first or last location in the song that contains recorded sound. Use the following procedure.

To go to the first location in the song containing recorded sound:

Hold down **[SHIFT]** and press **[SONG TOP (REW)]**.

To go to the last location in the song containing recorded sound:

Hold down **[SHIFT]** and press **[SONG END (FF)]**.

Song Top   Song End
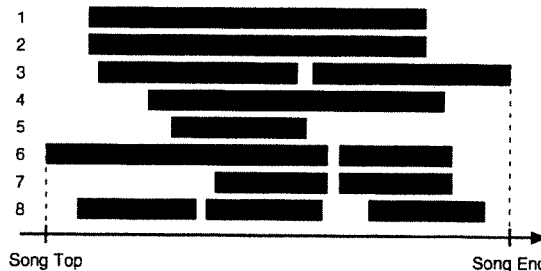
Storing a Time Location

With the VSR-880, there are two ways you can mark and easily recall sections of a song that you want to record over or listen to repeatedly. One is called the Locator function, and the other one is referred to as the Marker function. Use each method according to its intended function.

Locator:

Store "locator," or time locations to the **LOCATOR** ([1]–[8]) buttons on the front panel of the VSR-880. You can move immediately to a registered location simply by pressing a button. There are four banks for each button, providing you with up to 32 (8 x 4) locators.

Marker:

Up to 1000 locate points (000–999) can be set in rapid succession in each song. You can also store Auto Mix data (p. 68), and there is a sync track provided as well (p. 124).

Using the Locator

Time locations are stored with **LOCATOR** ([1]–[8]) on the top panel of the VSR-880. In conjunction with **[LOCATOR]**, you can register up to eight time locations, and move immediately to a registered location simply by pressing a button. There are four banks for each button, providing you with up to 32 (8 x 4) locators. The locators are also a useful and convenient way to define sections of a song to be repeated in Loop Recording or for marking points in Punch-In Recording.
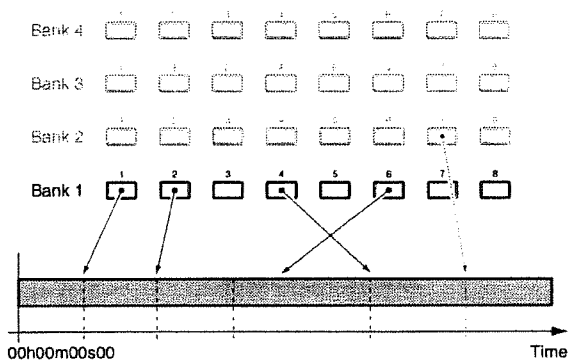
Storing Locators
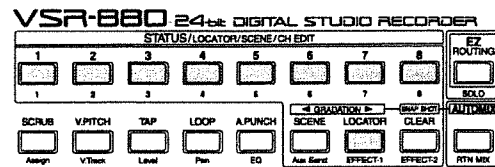
MEMO

These can be used in recording / playback or while the song is stopped.

1. Move to the location in a song where you want to set a locator.

2. Press **[LOCATOR]**. The LOCATOR indicator will light.

3. Press **[1]–[8]** (dark). For example, if you wish to set Locator 1, press **[1]**. When a locator is set, the corresponding indicator lights.

4. Press **[LOCATOR]** again. The LOCATOR indicator will go dark. If you wish to cancel the operation, then press **[LOCATOR]** before step 3.

Moving to a Stored Time Location

1. Press **[LOCATOR]**. The LOCATOR indicator will light.

2. Press **[1]–[8]** (lights for the locate point to which you want to move. For example, if you wish to move to the Locator 1, then press **[1]**.

3. Press **[LOCATOR]** again. The LOCATOR indicator will go dark. If you wish to cancel the operation, then press **[LOCATOR]** before step 3.

Changing the Locator Bank

1. Hold down **[LOCATOR]**. The current locator bank number will be displayed as "Locate Bank = 1" etc. Simultaneously, the [1]–[8] indicator corresponding to the current bank number will blink.

2. Continue holding [LOCATOR], and press **LOCATOR** ([1]–[4]) for the bank number that you wish to change.

MEMO

[LOCATOR] is used both to recall the Locator condition and to switch the Locator Bank. If you take your finger off **[LOCATOR]** without changing the Locator Bank, the display screen may change.

3. Release your finger from **[LOCATOR]**.

4. As described in the procedure for "Storing a Time Location," register the locator point.

Making Fine Adjustments to Stored Locators

1. Press **[PLAY (DISPLAY)]** + **[LOCATOR]**.

2. Press **PARAMETER** [◄◄] or [►►] to let "LOC Loc*" (* is the locator number that you wish to change) is displayed.

3. Move to the locator whose time you wish to change.
   3-1. Press **[LOCATOR]**.
   3-2. Press **[1]–[8]** (lights).

4. Use the **TIME/VALUE dial** to adjust the desired time.
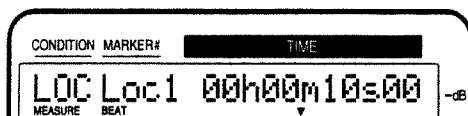
```
CONDITION  MARKER#          TIME
 LOC Loc1  00h00m10s00  -dB
 MEASURE    BEAT
```

5. When you finish making adjustments, press **[PLAY(DISPLAY)]**. Return to Play condition.

Deleting a Stored Time Location

VSR-880 24-bit DIGITAL STUDIO RECORDER
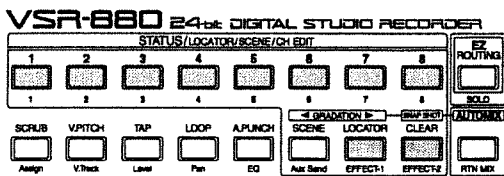
1. Press **[LOCATOR]**. The LOCATOR indicator will light.

2. While holding down **[CLEAR]**, press **LOCATOR** ([1]–[8]) for locate point that you wish to delete. For example, if you wish to delete the Locator 1, then press **[CLEAR]** and **[1]** simultaneously.

3. Press **[LOCATOR]** again. The LOCATOR indicator will go dark. If you wish to cancel the operation, then press **[LOCATOR]** before step 2.

Using Markers

Along with the playback locate points, you can set up to 1000 Markers in sequence. The Markers are also a useful and convenient way to define sections of a song to be repeated in Loop Recording or for marking points in Punch-In Recording.

NOTE

An interval of at least 0.1 seconds must left between markers. It will not be possible to add a new markers if a markers already exists at a location less than 0.1 seconds away.

Marking a Time Location

VSR-880 24-bit DIGITAL STUDIO RECORDER
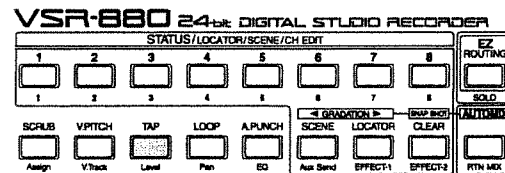
1. Press **[TAP]**, and a marker will be added to the current location. This can be done during recording or playback of the song as well as when the song is stopped.
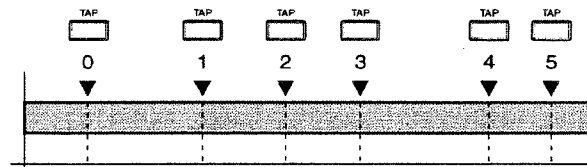
00h00m00s00

About Marker Numbers

Each marker is assigned a number 000–999, in the order of its time location. This means that if you add a new marker at a location earlier than an existing marker, the numbers of the subsequent markers will be incremented.

Before setting a Marker

After setting a Marker

‌
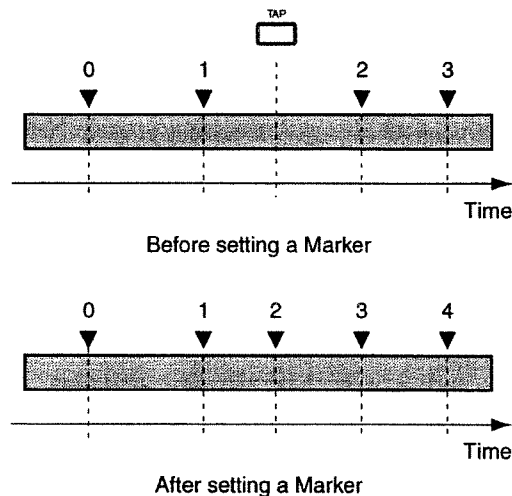
Moving the Location of Markers 1
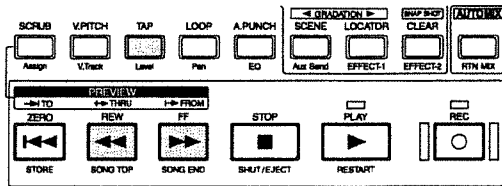
1. To move to the Marker immediately preceding the current playback time, press **[TAP] + [REW]**. You move ahead one marker at a time in the order they are placed each time the button is pressed. To move to the Marker immediately following the current playback time, press **[TAP] + [FF]**.
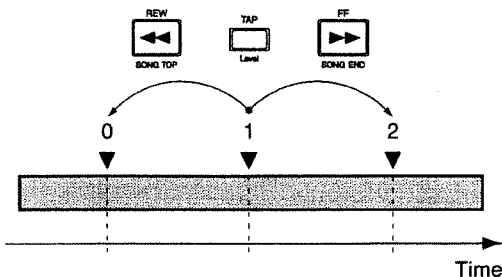
Displaying Markers

The Marker number at any playback location is indicated in the display. If there is no Marker number in the current location, then the closest preceding Marker number is displayed. If there are no markers in the song, "—" is indicated. If "***" is shown in the display, it indicates that although there are markers placed in the song, the current location is before the first marker.

Moving the Location of Markers 2
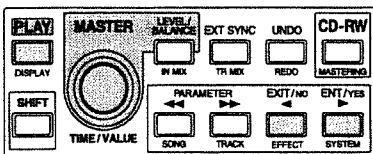
1. Press **[PLAY(DISPLAY)]**.

2. In the display, the "MARKER" field will indicate the marker number of the current location. Use **[◄]** or **[►]** to move the cursor to the MARKER field.

3. Rotate the **TIME/VALUE dial**.

Making Fine Adjustments to Marked Locations

1. Press **[PLAY (DISPLAY)] + [LOCATOR]**.

2. Press **PARAMETER [◄◄]** to let "LOC ***" appears in the display (*** is the marker number that you wish to modify).

3. Move to the marker where you want to change. Press **[TAP] + [FF]** or **[TAP] + [REW]** to move the marker.

4. Use the **TIME/VALUE** dial to set the marker where you wish to change. The time of a marker can be modified only within the range between the preceding and following markers.

Possible range of change

5. When you finish making adjustments, press **[PLAY(DISPLAY)]**. Return to Play condition.
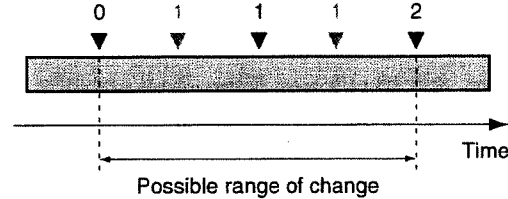
Deleting a Marked Location

Setting markers makes it much easier to search for places within a song, but having too many of them actually cam make it more difficult to find the location you're looking for. It is a good idea to delete unneeded markers whenever you can.
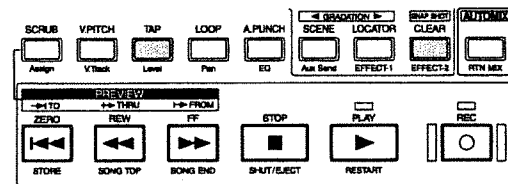
1. Move to the marker you wish to delete.

2. While holding down **[CLEAR]**, press **[TAP]**. Delete the marker. Marker numbers for any markers after the deleted mark point shift one number ahead.

Before deleting a Marker
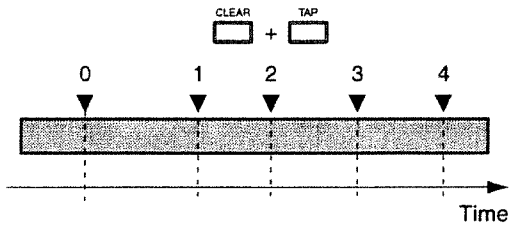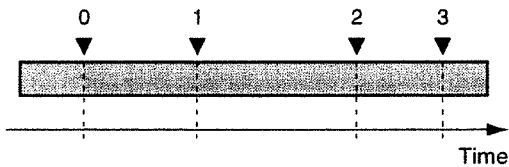
After deleting a Marker

To Delete All Markers Simultaneously

1. Hold down **[CLEAR]** and **[TAP]** for a while.

2. "Clear ALLMarker ?" appears in the display. If you want to delete the markers, press **[ENT/YES]**. If you want to cancel the procedure, the press **[EXIT/NO]**.
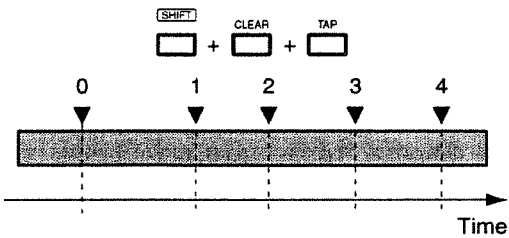
Before deleting a Marker
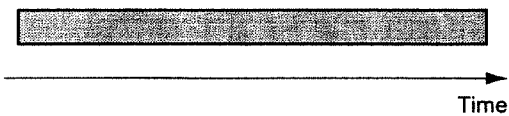
After deleting a Marker

Previewing Techniques (Preview)

When editing a song, you will likely want to find precise points in the song, for example the point where sound begins or where the climax begins, when using Auto Punch-In Recording, and in other editing situations. In such instances, you can specify the amount of time for playback leading up to or following a designated point as well as monitor the data on the tracks while gradually shifting the current time in the song. This is referred to as the **Preview function**.

There are four Preview buttons, and each one works differently. Select the one whose function is most appropriate for what you are trying to accomplish.

Using [TO], [THRU] or [FROM]

You can set the length of playback time for the tracks you want to monitor for 1.0–10.0 seconds leading up to or starting from the current point in the song.
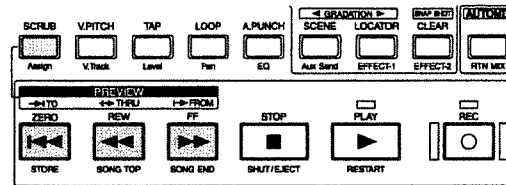
1. Press **[STOP]**. (The song is stopped.)

2. Press **[SCRUB]**. The SCRUB indicator will light.

3. Press **PREVIEW**.

[TO (ZERO)]
A preview of the song is played back one time for the specified period of time up to the current time in the song (Preview To).

[THRU (REW)]
A preview of the song is played back for the specified period of time both up to and from the designated point in the song, i.e., with the current time placed at the center of the playback (Preview Thru).

[FROM (FF)
A preview of the song is played back one time for the specified period of time starting from the current time in the song (Preview From).

Current Time

Preview Length

Time

PREVIEW TO PREVIEW FROM

PREVIEW THRU
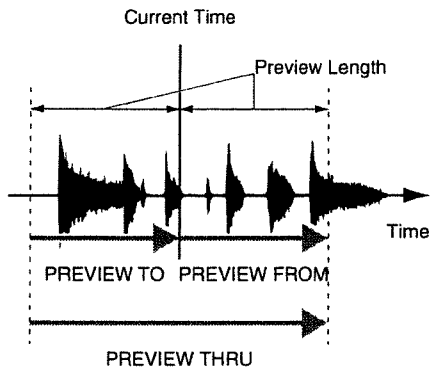
4. Press **[SCRUB]** again. The SCRUB indicator will go dark.

Finding the Location Where the Sound Begins (example)

1. While pressing **[STOP]**, press **STATUS** ([1]–[8]) for the track you want to monitor. The STATUS indicator lights green.

2. Press **[PLAY]** to begin playback of the song.

3. Play back the song until you reach the point you are looking for. Press **[STOP]** to stop playback.

4. Press **[SCRUB]**. The SCRUB indicator will light.

5. Alternately press **[TO (ZERO)] and [FROM (FF)]**. The song before and after the current time is played back. Determine whether the beginning of the sound is earlier or later than the current time.

6. Next, rotate the **TIME/VALUE dial** to move the current time until you can hear a bit of the beginning of the sound when you press **[TO (ZERO)]**.

7. Finally, rotate the **TIME/VALUE dial** to move the current time until the sound begins precisely when you press **[FROM (FF)]**.

8. Now you can easily find the precise location where the sound begins. Place a marker (p. 34) at the current time or store the current time in a locator (p. 33) so that you will be able to easily find it later.

9. Press **[SCRUB]** again. The SCRUB indicator will go dark.

Adjusting the Preview Length

1. Press [SCRUB]. The SCRUB indicator will light.

2. Hold down **[SHIFT]** and press **PREVIEW** ([TO], [THRU] or [FROM]).

3. Rotate the TIME/VALUE dial to adjust length of playback time (1.0–10.0 sec) in the preview function.

Preview Length (1.0 sec)
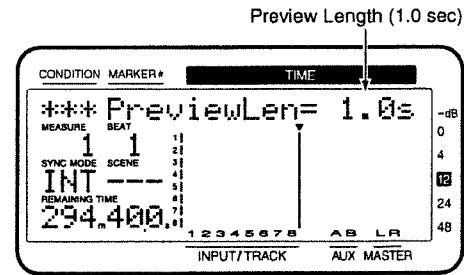
4. Press **[PLAY (DISPLAY)]**. Return to Play condition.

5. Press **[SCRUB]** again. The SCRUB indicator light goes off.

Using [SCRUB]

This function is used to repeat playback of the song before and after a designated point on a selected track for a more precisely specified length of time (25–100 msec).

1. Press **[STOP]**. (The song is stopped.)

2. Press **[SCRUB]**. The SCRUB indicator will light. The specified section (scrub length) is played back repeatedly. The playback time (25–100 msec) is shorter than when Preview as used. Press the following buttons while the SCRUB indicators is lit.

[SHIFT] + [1]–[8] Selects the track to be played back.

[TO (ZERO)] The song is played back repeatedly up to the designated point.

[FROM (FF)] The song is played back repeatedly starting from the designated point.
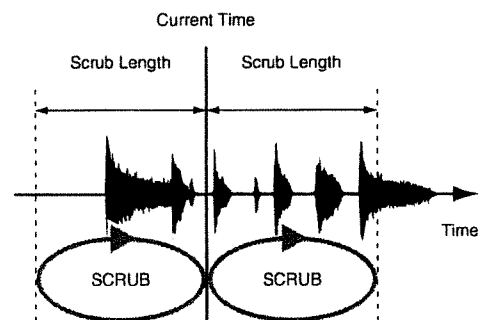
Current Time

Scrub Length   Scrub Length

Time

SCRUB   SCRUB

Finding the Location Where the Sound Begins (example)

1. While pressing **[STOP]**, press **STATUS** ([1]–[8]) for all tracks that you want to monitor. The STATUS indicator lights green.

2. Press **[PLAY]** to begin playback of the song.

3. Play back the song until you reach the point you are looking for. Press **[STOP]** to stop playback.

4. Press **[SCRUB]**. The SCRUB indicator lights, and the specified section is played back repeatedly. Press **[TO (ZERO)]** or **[FROM (FF)]** to select the range before or after the current time that you want to play back.

5. Press **[SHIFT]** + **[1]–[8]** for the track on which you want to use Scrub playback.

6. If you pressed **[TO (ZERO)]** in Step 4, rotate the **TIME/VALUE dial** to move the current time until you can just hear the very beginning of the sound. If you pressed **[FROM (FF)]** is Step 4, rotate the **TIME/VALUE dial** to move the current time until the sound begins precisely. The sound (waveform) being played back will be displayed for your reference.

Waveform display
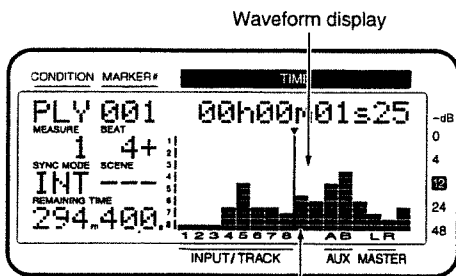
Displayed blinking (Scrub Length)

7. Now you can easily find the precise location where the sound begins. Press **[SCRUB]** once more. The SCRUB indicator light goes off.

8. Place a marker (p. 34) at the current time or store the current time in a locator (p. 33) so that you will be able to easily find it later.

Adjusting the Scrub Length

1. Hold down **[SCRUB]**. he "Scrub Length" is displayed.

2. Rotate the **TIME/VALUE dial** to adjust the length of playback time (25–100 msec) in the scrub function.
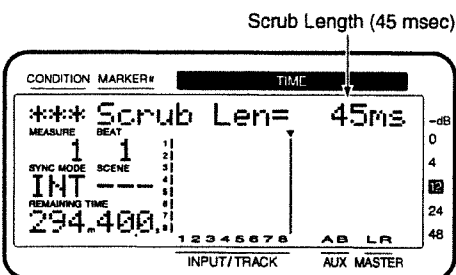
Scrub Length (45 msec)

Scrub Length

This sets a length (25–100 msec) of playback time when the Preview function **[SCRUB]** button is pressed.

3. Press **[PLAY (DISPLAY)]**. Return to Play condition.

4. Press **[SCRUB]** again. The SCRUB indicator light goes off.

Storing the Current Condition of the Mixer (Scene)

Up to 8 sets of settings, values included, that define the total condition of the mixer can be stored for each song, and can be recalled instantly at the touch of a button. A stored set of mixer settings is called a **Scene**. A Scene includes not only the volume and pan settings, but also connections (e.g., the track to which the source from the INPUT 1 jack is recorded), V-track settings (the track to which each is recorded), and effects (such as the selection of the effect to be applied). This feature is convenient when you want to compare different balances of volume, pan, equalizer, and other settings during mixdown.

MEMO

If the VS8F-2 is not installed, there will be no effect (p. 98).

Storing a Scene
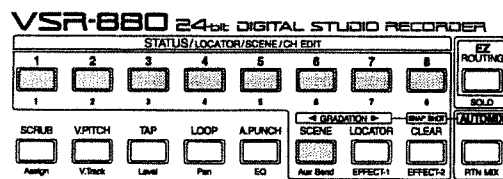
1. Press **[SCENE]**. The SCENE indicator lights.

2. Press **[1]–[8]** whose button indicator does not light. For example, if you want to record to Scene 1, then press **[1]**.

3. Press **[SCENE]** once more. The SCENE indicator will go dark. If you wish to halt the registration procedure, press **[SCENE]** before step 2.

Recalling a Scene

1. Press **[STOP]**.

NOTE

You cannot select a Scene during recording or playback.

2. Press **[SCENE]**. The SCENE indicator lights.

3. Press **[1]–[8]** whose button indicator lights. For example, if you want to recall the Scene 1, then press **[1]**.

4. Press **[SCENE]** once more. The SCENE indicator will go dark. If you wish to halt the recall procedure, press **[SCENE]** before step 3.

Deleting a Scene

VSR-880 24-bit DIGITAL STUDIO RECORDER

STATUS/LOCATOR/SCENE/CH EDIT

1 2 3 4 5 6 7 8 EZ ROUTING

SCRUB V.PITCH TAP LOOP A.PUNCH SCENE LOCATOR CLEAR SOLO AUTOMIX

Assign V.Track Level Pan EQ Aux Send EFFECT-1 EFFECT-2 RTN MIX
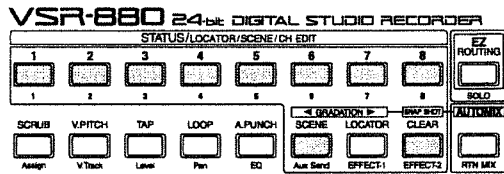
1. Press **[SCENE]**. The SCENE indicator lights.

2. Hold down **[CLEAR]**, and press **[1]–[8]** for the scene that you wish to clear. For example if you wish to clear the mixer settings that were stored in scene 1, hold down **[CLEAR]** and press **[1]**.

3. Press **[SCENE]** once more. The SCENE indicator will go dark. If you wish to halt the clear procedure, press **[SCENE]** before step 3.

Changing the Pitch During Playback (Vari-Pitch)

When recording an ensemble performance, all the instruments normally tune to an instrument such as an acoustic piano whose tuning cannot easily be changed. However, it is sometimes necessary to record (overdub) an acoustic piano onto an existing recording. In this case, if the pitch of the recording is different than that of the acoustic piano, something must be done about it.

In such cases, by changing the playback speed of the recorder, you can change the pitch of the performance being played back to match the pitch of the instrument you want to record. This is referred to as the **Vari-Pitch function**. Vari-Pitch can be used not only to compensate for pitch differences, but can also be used when you want to purposely produce special effects. To use the Vari-Pitch function, use the following procedure.

NOTE

When vari-pitch is on, the number of tracks which can be simultaneously recorded/played back may be limited, depending on the range of pitch change.

1. Hold down **[V.PITCH]**. The current sample rate appears in the display.

Sample Rate (In the example, 44.1 kHz)

```
CONDITION  MARKER#          TIME

*** VariPitch=44.10k    -dB
MEASURE   BEAT                  0
   1   1                        4
SYNC MODE  SCENE                12
INT ---                        24
REMAINING TIME                 48
294.400     1 2 3 4 5 6 7 8   AB  LR
            INPUT/TRACK  AUX MASTER
```
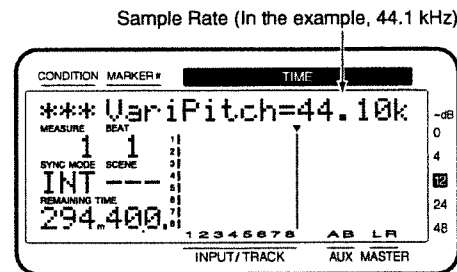
2. Press **[PLAY]** to begin playback of the song.

3. Rotate the **TIME/VALUE dial** to change the pitch of the playback. Check the playback to see how the pitch actually sounds.

4. Press **[PLAY (DISPLAY)]**. Return to Play condition. Now, Vari-Pitch turns on and off each time **[V.PITCH]** is pressed. If vari-pitch is on, the VARI PITCH indicator will light.

NOTE

When the Vari-Pitch Function is "On," up to 4 tracks can be recorded simultaneously. (Up to 8 tracks can be played back simultaneously.)

Checking the Size of a Recorded Performance

You can see the Song Name, Song Number, Sample Rate, Recording Mode, and the actual used capacity of the current song by the following operation.

1. Stop the song playback. When the song is performed, press **[STOP]**.

2. Press **[PLAY (DISPLAY)]**. Return to Play condition.

3. Hold down **[PLAY (DISPLAY)]** and press **[SONG (◄◄)]**. The display will indicate Song Information briefly.

Song Number   Song Name
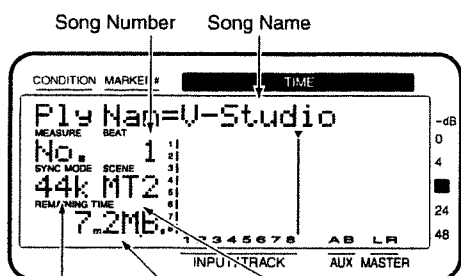
Sample Rate   Recording Mode
Song Capacity (In the example, 72 MB)

MEMO

The actual used capacity of the song is displayed as 1 MB = 1,000,000 bytes. The displayed value is the approximate standard value.

Sounding the Metronome

No matter how accurately one tries to play, listening to the recording play back sometimes reveals inaccuracies in rhythm or tempo. The VSR-880 provides a metronome (click track) that can be sounded at a specified tempo. By listening to the metronome as you play your instrument, you will be able to record your performance with more accurate timing. At the same time, since this allows you to specify segments for song editing by measure and beat, you can edit songs in a more musical way.

The metronome tempo can be controlled by the Tempo Map or Sync Track MIDI Clock. When using this feature, set up the Tempo Map (p. 122) or Sync Track (p. 120) beforehand. When you create a new song, the Tempo Map default settings include a 4/4 rhythm and tempo of 120.

NOTE

The metronome (click sound) will be output from OUTPUT 1-2 (MASTER). If Direct Out (p. 86) is on, the metronome will not sound.

> **Using the Metronome During Recording**
>
> The metronome will begin sounding when recording or playback begins. However you may sometimes wish to hear a count-in on the metronome to help you catch the tempo before recording begins. In such cases, you can set aside the first few measures of the recording to be only for the count-in, and not record on those measures.
>
> The metronome sound is only for the purpose of helping you keep your playing in time.

1. Press **[SHIFT]** + **[SYSTEM (►)]** several times until "SYS Sync/Tempo ?" appears in the display.

2. Press **[ENT/YES]**.

3. Press **PARAMETER [►►]** several times until "SYS Gen.=" appears in the display.

4. Rotate the **TIME/VALUE dial**.

Gen. (Generator)

This selects the MIDI Clock on which the Metronome will be based. Select "MIDIclk" if you wish to use the Tempo Map, and "SyncTr" if you are going to use Sync Track.

Off: The MIDI Clock is not transmitted.

MTC: MIDI Time Code is transmitted (the metronome does not sound).

MIDIclk: The Tempo Map MIDI Clock is transmitted.

SyncTr: The Sync Track MIDI Clock is transmitted.

R-BUS: MIDI Time Code is transmitted via the R-BUS connector (the metronome will not sound).

5. Press **[SHIFT] + [SYSTEM]** several times until "SYS System PRM ?" appears in the display.

6. Press **[ENT/YES]**.

7. Press **PARAMETER [►►]** several times until "SYS MetroOUT=" appears in the display.

8. Rotate the **TIME/VALUE dial**.

MetroOUT (Metronome Out)

This selects how the metronome is output. For now, select "INT."

Selecting "Off" prevents you from making any settings related to the Metronome.

Off: The metronome sound is not output.

INT: The metronome sound is output from the MONITOR jacks.

MIDI: The metronome signal is transmitted via the MIDI OUT connector.

9. Use **PARAMETER[◄◄], [►►]** and the **TIME/VALUE dial** to make the following settings.

MetroLevel (Metronome Level)

This adjusts the volume level (0–127) of the metronome sound.

MetroMd (Metronome Mode)

This is for selecting when the metronome sound is played.

Rec Only: The metronome sounds only during recording.

Rec&Play: The metronome sounds during both recording and playback.

10. This completes the metronome settings. Press **[PLAY (DISPLAY)]** to return to Play condition.

Using an External MIDI Sound Source to Play the Metronome

A MIDI sound source can be used to play the metronome with a sound of your choosing. To do this, use the following procedure.

1. Connect the VSR-880 and the MIDI sound generator as shown below.
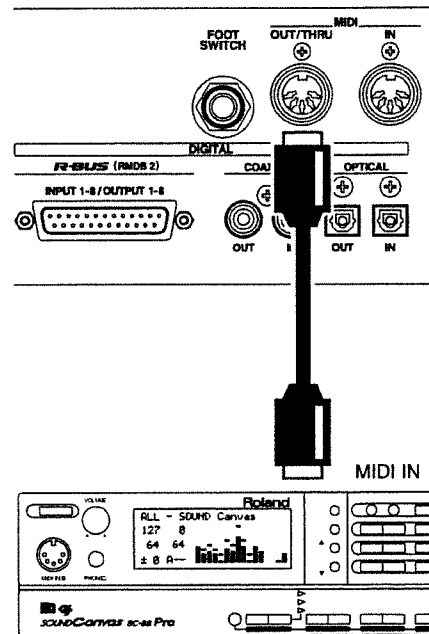
MIDI Sound Generator

2. Press **[SHIFT] + [SYSTEM (►)]** several times until "SYS Sync/Tempo ?" appears in the display.

3. Press **[ENT/YES]**.

4. Press **PARAMETER [►►]** several times until "SYS Gen.=" appears in the display.

5. Rotate the **TIME/VALUE dial**.

Gen. (Generator)

This selects the MIDI Clock on which the Metronome will be based. Select "MIDIclk" if you wish to use the Tempo Map, and "SyncTr" if you are going to use Sync Track.

Off: The MIDI Clock is not transmitted.

MTC: MIDI Time Code is transmitted (the metronome does not sound).

MIDIclk: The Tempo Map MIDI Clock is transmitted.

SyncTr: The Sync Track MIDI Clock is transmitted.

R-BUS: MIDI Time Code is transmitted via the R-BUS connector (the metronome will not sound).

6. Press **[SHIFT]** + **[SYSTEM]** several times until "SYS System PRM ?" appears in the display.

7. Press **[ENT/YES]**.

8. Press **PARAMETER** [►►] several times until "SYS MetroOUT=" appears in the display.

9. Rotate the **TIME/VALUE dial**.

MetroOUT (Metronome Out)

This selects how the metronome is output. For now, select "MIDI."

Selecting "Off" prevents you from making any settings related to the Metronome.

Off: The metronome sound is not output.

INT: The metronome sound is output from the MONITOR jacks.

MIDI: The metronome signal is transmitted via the MIDI OUT connector.

10. Press **PARAMETER** [►►].

11. Rotate the **TIME/VALUE dial**.

MetroMd (Metronome Mode)

This is for selecting when the metronome sound is played.

Rec Only: The metronome sounds only during recording.

Rec&Play: The metronome sounds during both recording and playback.

12. Press **[SHIFT]** + **[SYSTEM (►)]** several times until "SYS MIDI PRM ?" appears in the display.

13. Press **[ENT/YES]**.

14. Press **PARAMETER** [►►] several times until "SYS MID: MIDIThr=" appears in the display.

15. Rotate the **TIME/VALUE dial**.

MIDIThr (MIDI Thru Switch)

This switches the function of the MIDI OUT/THRU connector. Here, select "Out."

Out: MIDI messages are sent from the VSR-880. Select this when sending metronome sound note messages or mixer parameter settings (Control Change messages or Exclusive messages).

Thru: This sends MIDI messages received via the MIDI IN connector without change.

16. Use **PARAMETER** [◄◄], [►►] and the **TIME/ VALUE dial** to make the following settings.

MetroCh (Metronome Channel)

This sets the MIDI channel (1–16) for transmitting Metronome sound Note Messages.

Acc.Note (Accent Note)

This sets note numbers (C0–G9) for the downbeat. When the Drum set is playing, this selects specific percussion sounds.

Nrm.Note (Normal Note)

This sets note numbers (C0–G9) for the upbeats. When the Drum set is playing, this selects specific percussion sounds.

Acc.Velo (Accent Velocity)

This sets the velocity (1–127) for the downbeat.

Nrm.Velo (Normal Velocity)

This sets the velocity (1–127) for the upbeats.

17. This completes the settings for sounding the metronome with an external MIDI device. Press **[PLAY (DISPLAY)]**. Return to Play condition.

Recording Over a Portion of a Performance (Punch-In/Punch-Out)

Sometimes, when listening to a recorded performance, even if you don't find it necessary to discard the entire song, there may be sections containing mistakes or lyrics that are hard to hear. In such instances, you will find the following procedure convenient for rerecording only selected parts of a recording. The switching from playback to recording status is called **punch-in**, and the switch back from recording to playback is referred to as **punch-out**. (User Guide p. 47)

Using the Foot switch

Use a foot switch to punch in and out. Using Punch-In/Punch-Out when both performing on an instrument and recording at the same time is difficult. In such instances, it is convenient to use a foot switch (such as the DP-2 or the BOSS FS-5U) to do your switches.

1. Connect an optional foot switch (such as the DP-2 or the BOSS FS-5U) to the VSR-880's FOOT SWITCH jack.
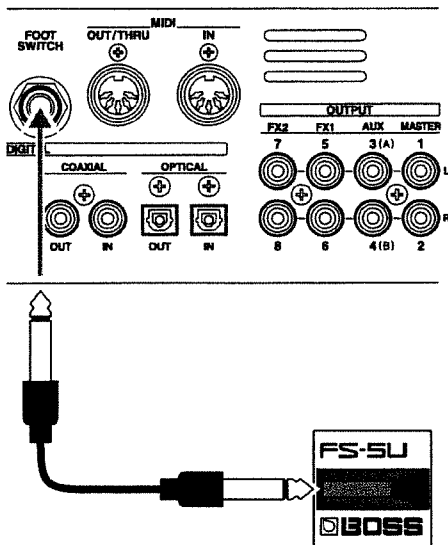
2. Press **[SHIFT] + [SYSTEM (►)]** several times until "SYS System PRM?" appears in the display.

3. Press **[ENT/YES]**.

4. Press **PARAMETER [►►]** several times until "SYS FootSw=" appears in the display.
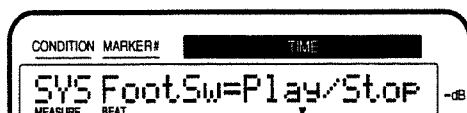
FootSw (Foot switch assign)

Set the function of the foot switch connected to the FOOT SWITCH jack.

Play/Stop:	Repeats playback and recording each time the foot switch is pressed.
Record:	Performs the same function as [REC]. This is used for switching between recording and playback during manual Punch-In Recording.
TapMarker:	Performs the same function as **[TAP]**. Pressing the foot switch sets a Marker at the mark point.
Next:	Performs the same function as **[TAP] + [FF]**. Moves to the beginning or end of the following phrase each time the foot switch is pressed.
Previous:	Performs the same function as **[TAP] + [REW]**. Moves to the beginning or end of the previous phrase each time the foot switch is pressed.
GPI:	Controls playback and recording of the song depending on the GPI trigger signal received from the FOOT SWITCH jack.

?

GPI (p. 148)

5. Select "Record" with the **TIME/VALUE dial**.

6. Press **[PLAY (DISPLAY)]**. Return to Play condition.
   Now, you can switch the setting of the FOOT SWITCH jack between Punch-In and Punch-Out by the foot switch. Carry out Manual Punch-In as described in "Using the RECORD Button (Manual Punch-In 1" (User Guide p. 47). However, use the foot switch instead of [REC] to perform the operation.

Specifying Beforehand the Location for Rerecording (Auto Punch-In)

You can automatically punch in and punch out at previously specified locations. This function is called Auto Punch-In. This is convenient when you need to punch in or out at a precise time. Before you begin recording, set the times for punch-in/punch-out. There are three ways to set these times as described below. Use the method appropriate for your situation.

Using Locators

VSR-880 24-bit DIGITAL STUDIO RECORDER
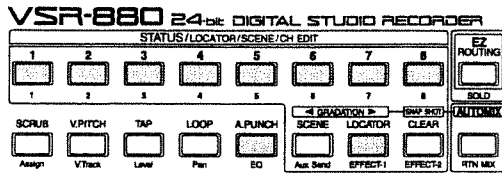
1. Preset locate points where you want to punch in/punch out.

2. Press **[LOCATOR]**.

3. While holding down **[A.PUNCH]**, press **LOCATOR** ([1]–8]) specifying the locate point for the time at which you want to punch in.

4. Then, without releasing **[AUTO PUNCH]**, press **LOCATOR** ([1]–[8]) specifying the locate point for the punch-out time.

Using Markers

The space between two adjacent mark points can be used to define the segment for Punch-In Recording.
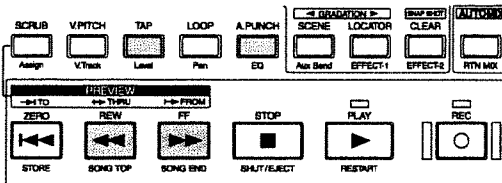
1. Preset Markers where you want to punch in and then punch out.

2. Move to the mark point located at the desired punch-in time.

3. While holding down **[A.PUNCH]**, press **[TAP] + [FF]**.

4. Without releasing **[A.PUNCH]**, press **[TAP] + [REW]**.

Specifying the Points While the Song Plays Back
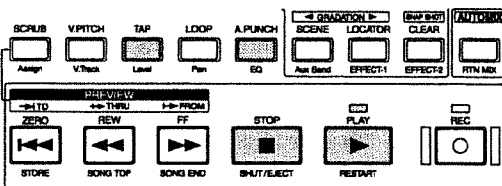
1. Press **[PLAY]** to begin playback of the song.

2. When you reach the desired punch-in location, hold down [AUTO PUNCH] and press **[TAP]**.

3. Continue holding down **[A.PUNCH]**, wait for the desired punch-out location, and then press **[TAP]** once again.

4. Press **[STOP]**.

Making Fine Adjustments to the Punch-In Segment

1. Press **[PLAY (DISPLAY)] + [LOCATOR]**.

2. Press **PARAMETER** [◄◄] or [►►] to let "LOC APin" appears in the display.

3. The punch-in time will be displayed. (If no punch-in time has been specified, the display will indicate "–h–m–s–f–.") Use the **TIME/VALUE dial** to adjust the time.

CONDITION MARKER#   TIME

LOC APin 00h00m15s29
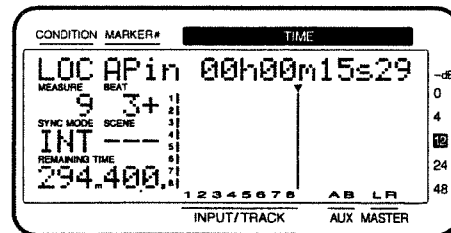
4. Press **PARAMETER** [►►]. "LOC APOt" appears in the display.

5. The punch-out time will be displayed. (If no punch-out time has been specified, the display will indicate "–h–m–s–f–.") Use the **TIME/VALUE dial** to adjust the time.

6. Press **[PLAY (DISPLAY)]**. Return to Play condition.

Recording Procedure

1. Hold down **[REC]** and press **STATUS** ([1]–[8]) for the track you wish to re-record.

2. Press **[ZERO]** to return to the beginning of the song.

3. Press **[PLAY]** to begin playback of the song. At this point, the performance that has already been recorded on the track or tracks that you want to re-record is monitored.

4. Press the **STATUS** ([1]–[8]) again. The STATUS indicator alternately blinks red and orange. Now, confirm that you can hear source you want recorded to the track coming from the monitors.

5. During playback of the song, each time **STATUS** is pressed, the monitor switches between source and track. Adjust the volume of the source so that it matches that of the prerecorded performance.

6. Once you have adjusted the input sensitivity, press **[STOP]**.

7. Press **[A.PUNCH]**. The A.PUNCH indicator lights, and Auto Punch-In Recording is enabled.

8. Move to a previous locate point where you want to re-record.

9. Press **[REC]**.

10. Press **[PLAY]** again. Playback of the song begins.

11. The VSR-880 automatically goes into record mode at the point where the punch-in is set. Start the song or performance now.

12. When you reach the point where the punch-out is set, the VSR-880 automatically returns to playback mode. Press **[STOP]** to stop the song.

13. Listen to the results of the rerecording. Return to the beginning of the song and press **[PLAY]**.

Repeatedly Recording Over the Same Area (Loop Recording)

You can repeatedly play back a specified area (the loop) and use Auto Punch-In Recording in that area. This is called **Loop Recording**. This is convenient for when you want to check the results immediately after recording, or if you want to record a number of takes of a guitar solo and compare the different takes.

Loop start   Punch-in   Punch-out   Loop end

Playback	Recording	Playback
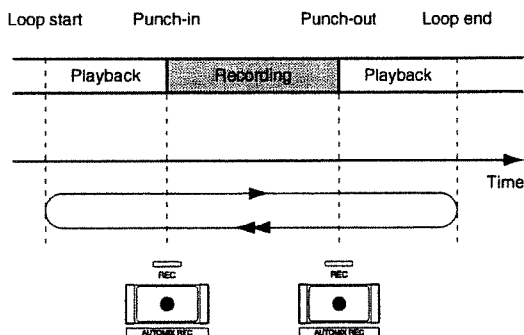
Time

Before you begin recording, specify the begin and end times for the loop. There are three ways to specify the loop times. Use the method appropriate for your situation.

NOTE

To specify the area re-recording (the punch-in point and punch-out point), refer to the previous section "Auto Punch-In."

NOTE

Make settings so that the loop completely includes the area to be rerecorded (i.e., from the punch-in point to the punch-out point). If the area to be rerecorded is not completely within the loop, recording may not start at the specified location, or may be interrupted in the middle of the area for recording.

Using Locators

VSR-880 24-bit DIGITAL STUDIO RECORDER
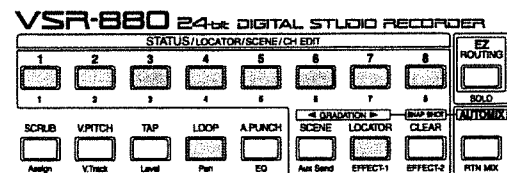
1. First store locate points where you want to begin and end the loop.

2. Press **[LOCATOR]**.

3. While holding down **[LOOP]**, press **LOCATOR** ([1]–[8]) for the locate point where you want the loop to begin.

4. Without releasing **[LOOP]**, press **LOCATOR** ([1]–[8]) which specified the end of the loop.

To Use Markers

Adjacent markers can be used to set the beginning and end of the loop.
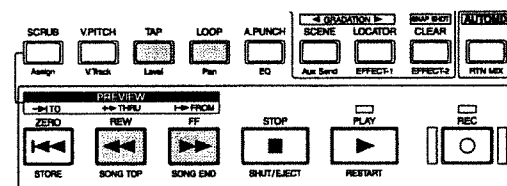
1. First, set mark points where you want to punch in and punch out.

2. Move to the mark point at the beginning of the loop.

3. While holding down **[LOOP]**, press **[TAP]** + **[FF]**.

4. Without releasing **[LOOP]**, press **[TAP]** + **[REW]**.

Specifying The Points While the Song Plays Back
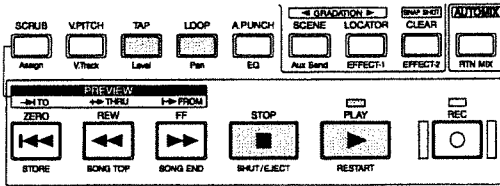
1. Press **[PLAY]** to begin playback of the song.

2. When you reach the desired location for the beginning of the loop, hold down **[LOOP]** and press **[TAP]**.

3. Continue holding down **[LOOP]**, and when you reach the desired location for the end of the loop, press **[TAP]** once again.

4. Press **[STOP]**.

Making Fine Adjustments to the Loop

1. Press **[PLAY (DISPLAY)] + [LOCATOR]**.

2. Press **PARAMETER** [◄◄] or [►►] to let "LOC LpSt" appears in the display.

3. The loop start time will be displayed. (If no loop start time has been specified, the display will indicate "–h–m–s–f–.") Use the **TIME/VALUE dial** to adjust the time.
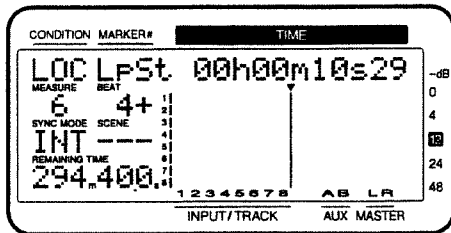
4. Press **PARAMETER** [►►]. "LOC LpEd" appears in the display.

5. The loop end time will be displayed. (If no loop end time has been specified, the display will indicate "–h–m–s–f–.") Use the **TIME/VALUE dial** to adjust the time.

6. Press **[PLAY (DISPLAY)]**. Return to Play condition.

Recording Procedure

1. Hold down **[REC]** and press **STATUS** ([1]–[8]) for the track you wish to re-record.

2. Press **[ZERO]** to return to the beginning of the song.

3. Press **[PLAY]** to begin playback of the song. At this point, the performance that has already been recorded on the track or tracks that you want to re-record is monitored.

4. Press **STATUS** ([1]–[8]) again. The STATUS indicator alternately blinks red and orange. Now, confirm that you can hear source you want recorded to the track coming from the monitors.

5. During playback of the song, each time **STATUS** is pressed, the monitor switches between source and track. Adjust the Input channel **Mix Level** so that it matches that of the prerecorded performance.

6. Once you have adjusted the input sensitivity, press **[STOP]**.

7. Press **[LOOP]**. The LOOP indicator lights, and Auto Punch-In Recording is enabled.

8. Press **[A.PUNCH]**. The AUTO PUNCH indicator lights. You are now set to do Loop Recording.

9. Press **[PLAY]**. Playback of the song begins. The song is played back until the end of the loop is reached, playback will return to the loop start point, and repeat.

10. Press **[REC]** where you want to re-record. The VSR-880 will then automatically go into record mode at the point where the punch-in is set. Start the song or performance then.

11. When you reach the point where the punch-in is set, the VSR-880 automatically returns to playback mode. Playback continues until the end of the loop, and the loop repeats from the start point once again.

12. With the next playback of the loop, listen to what you recorded to check the result. If the recording hasn't turned out as you intended, repeat Steps 10 and 11.

13. Press **[STOP]** to stop the song.

14. Listen to the results of the recording once more. Press **[LOOP]**. The LOOP indicator goes off.

15. Press **[A.PUNCH]**. The AUTO PUNCH indicator goes off.

16. Return to the beginning of the song and press **[PLAY]**.

Undoing Recordings and Edits (Undo)

When using the VSR-880, recordings may not sound as you intend, settings for editing may be made incorrectly, or there may be other situations where you want to go back and try something again. In such instances, you can restore the previous conditions at each of the steps where something was changed. This is referred to as the **Undo function**. Moreover, you can restore conditions as they were before the last undo. This is called the **Redo function**.

When using the Undo function, you will specify the number of previous steps that will be undone. For example, suppose that you use punch-in recording to perform five consecutive re-recordings of the same location. If you later decide to return to the condition of the second recording (step 2), you would set the Undo function to return to the condition of three steps earlier (Undo Level 3).
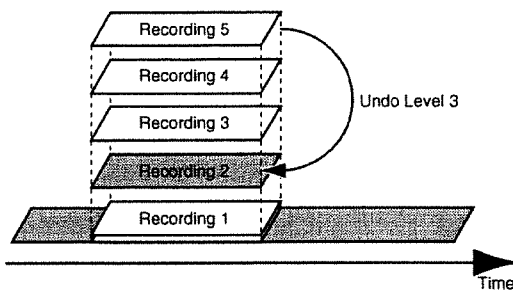
If, after executing the Undo operation, you decide to return to the condition of step 5, execute the Redo operation.
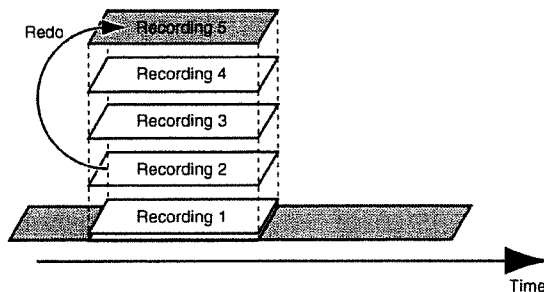
However if you once again record (step 3') after returning to the condition of recording number 2, the recordings 3–5 that were canceled by the Undo operation will be lost. This means that if after step 3' you use the Undo operation to return to the previous step, you will return to the condition of step 2.
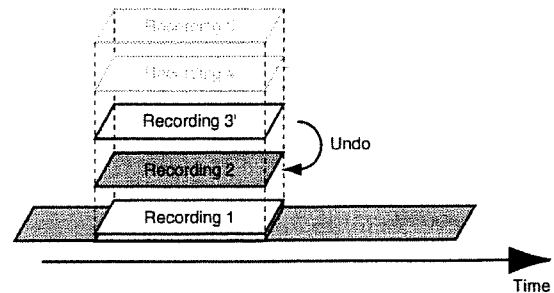
Recording and Editing Operations Which Can Be Undone (Undo)

Recording or editing operations performed after creating a song are recorded together with the song data as its operation history, and the data itself is also preserved without being erased. For example, suppose that you perform 10 recording operations on song 1 and then create song 2. The operation history of song 2 is newly recorded from the time when song 2 was created. If you subsequently select song 1 again, the history of the 10 previous recording operations will still be there.

The Undo function refers to the operation history of the currently selected song, and restores the song to the condition in which it was the specified number of operations ago. In the case of song 1 in this example, you will be able to cancel the 10 recording operations that were performed. A maximum of 999 levels of operation history may be recorded for each song.

1. Press **[UNDO]**. "Level=" appears in the display.

2. Rotate the **TIME/VALUE dial** to select the number of previous steps the conditions of which you want to have restored.

Undo Level (In the example, 1)
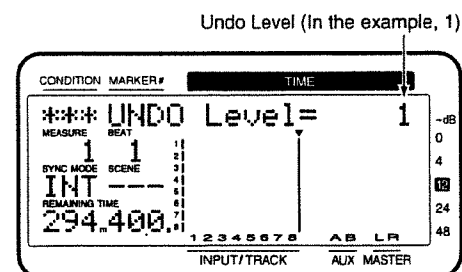
3. Press **[ENT/YES]** to execute Undo. The UNDO indicator lights. If you want to cancel the Undo, press **[EXIT/NO)]**.

Canceling the Last-Performed Undo (Redo)

The Redo function can be executed when the UNDO indicator is lit. When the song data is saved, for example by your doing Song Store or selecting another song, the UNDO indicator will go out, indicating that the Undo function will no longer be available.

1. While the UNDO indicator is lit, hold down [SHIFT] and press [REDO (UNDO)].

2. "REDO last UNDO?" appears in the display. Press [EXT/ YES]. The UNDO indicator light goes off. If you wish to cancel, press [EXIT/NO)].

Canceling Only the Very Last-Performed Operation

If you most frequently use the Undo function to undo just the previously performed recording/editing operation (i.e., undo level 1), you may prefer not to be bothered with the messages that appear when the [UNDO] button is pressed. In this case, make the following settings so that just the previous operation will be undone immediately when the [UNDO] button is pressed.

1. Press [SHIFT] + [SYSTEM (▶)] several times until "SYS System PRM ?" appears in the display.

2. Press [ENT/YES].

3. Press PARAMETER [▶▶] several times until "SYS UNDO MSG=" appears in the display.

4. Rotate the TIME/VALUE dial. For now select "Off."
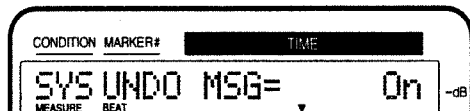
```
 ┌─────────────────────────────────┐
 │ CONDITION MARKER#    ████ TIME ████     │
 │ ┌──────────────────────────────┐  │
 │ │ SYS UNDO MSG=        On │-dB│
 │ │ MEASURE  BEAT           ▼        │  │
 └─────────────────────────────────┘
```

UNDO MSG (UNDO message)

This selects whether or not the Undo confirmation message is displayed.

On: The message is displayed, asking how many levels you want to undo.

Off: The message is not displayed, and only the immediately preceding operation is undone.

5. Press [PLAY (DISPLAY)]. Return to Play condition.

Calling Up Stored Connections (EZ Routing)

Settings related to mixer connections, including settings for routing of inputs to tracks for recording, for determining where signals are output, and for determining which output is to be monitored can be stored and recalled easily with the VSR-880. This is referred to as **EZ Routing**.

For example, when setting tracks to be played back or recorded during track bouncing, or when dealing with effects settings during mixdown there are settings which remain the same, regardless of the song. In such situations, by preparing stored mixer settings to be recalled later, you can easily get the most effective and appropriate mixer settings for each parameter.

At the time of purchase, your VSR-880 came with 5 read-only EZ Routing settings (**Preset Routings**) already configured. In addition to these, the VSR-880 offers 25 rewritable EZ Routing settings (**User Routings**), allowing you to make changes to the settings provided and then save these to the User Routings.

Easy Routing can be used in the following situations.

Recording:
When you want to record the performance input via the INPUT jacks.

Mixdown:
When you want adjust the balance of each track or to record a MD player or similar input in two-channel stereo.

Bouncing:
When recording the performance data from multiple tracks onto a number of other tracks.

Rack Recorder:
Select when you use the VSR-880 as a modular recorder in combination with the external 8-bus mixer. each of INPUT 1 to 8 is assigned to the track 1 to 8. Each source of the tracks 1 to 8 is output from OUTPUT 1 to 8.

Mastering:
Select when you mix down the tracks 1 to 6 into the tracks 7 and 8. Mastering Tool Kit (FX) is inserted to the mix bus. (Optional VS8F-2 is needed.)

Recalling a setup (Template)

Recall a read-only setting (preset routing) or a previously stored setting (user routing) without change.

■ Recalling Recording Settings

Select this when you want to record the performance input via the INPUT jacks. Recall a preset routing (recording) which has been pre-registered when the VSR-880 was shipped.

1. Press **[EZ ROUTING]** several times until "EZR Recording ?" appears in the display.

2. Press **[ENT/YES]**. "EZR Use Template" (do you wish to apply the template?) appears in the display.

3. Press **[ENT/YES]** again.

4. When the routing has been recalled, "Complete" appears in the display, and return to Play condition. At this time, the mixer settings will be as follows.
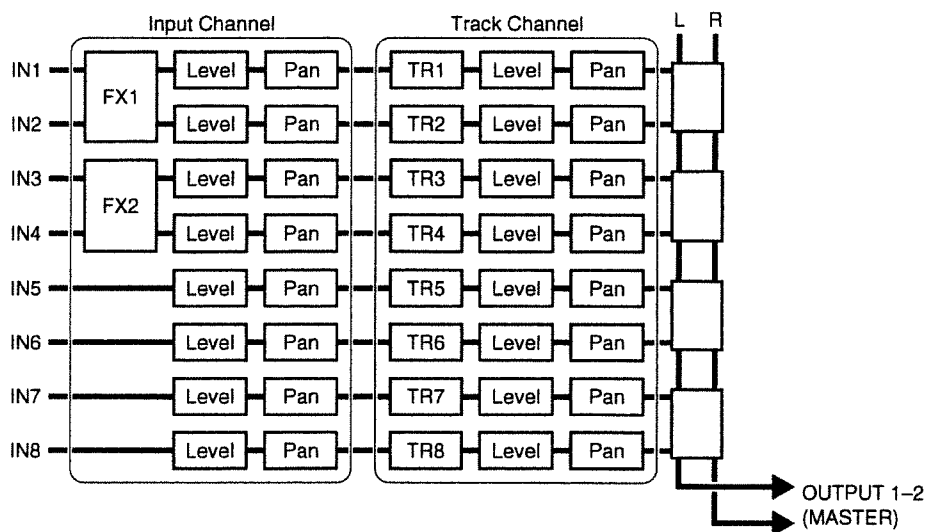
INPUT Jack	Recording Track
INPUT 1	1
INPUT 2	2
INPUT 3	3
INPUT 4	4
INPUT 5	5
INPUT 6	6
INPUT 7	7
INPUT 8	8

Display	IN MIX	TR MIX
MIX Sw	Off	On
MIX Level	100	100
MIX Pan	0 (IN7 = L63, IN8 = R63)	0
AUX Sw	Off	Off
Channel Link	Off	Off
FX1 Ins	— (IN1 = InsertL, IN2 = InsertR)	—
FX1 InsSend	100	—

Display	IN MIX	TR MIX
FX1 InsRtn	100—	
EFFECT1	Off	Off
FX2 Ins	— (IN3 = InsertL, IN4 = InsertR)	—
FX2 InsSend	100	—
FX2 InsRtn	100	—
EFFECT2	Off	Off

Display	MASTER
Master Sel	MIX
MST FX1 Ins Sw	—
MST FX2 Ins Sw	—
EQ Sel	3bandEQ
Direct Out	Off

Display	Effects
FX1 Sel	A96:DualComp/Lim
FX2 Sel	A96:DualComp/Lim

■ Recalling Track Bouncing Settings

Select this when recording the performance data from multiple tracks onto a number of other tracks. Recall a preset routing (bouncing) which has been pre-registered when the VSR-880 was shipped.

1. Press **[EZ ROUTING]** several times until "EZR Bouncing ?" appears in the display.

2. Press **[ENT/YES]**. "EZR Use Template" (do you wish to apply the template?) appears in the display.

3. Press **[ENT/YES]**.

4. When the routing has been recalled, "Complete" appears in the display, and return to Play condition. At this time, the mixer settings will be as follows.
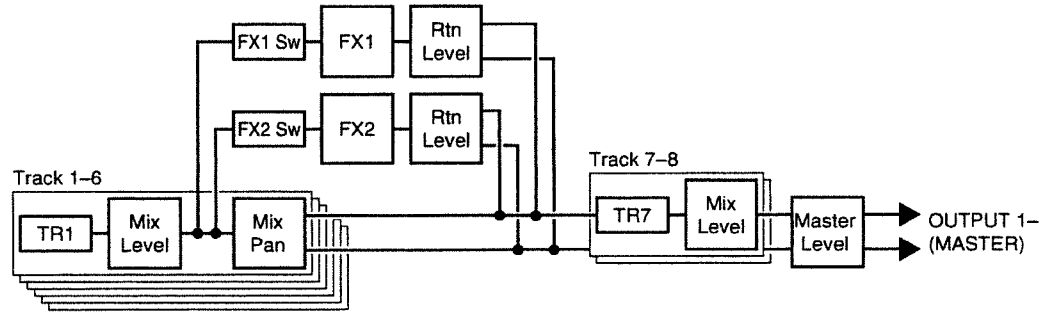
Recording Track:
　　　　TRACK 7-8
Input jack/track/effect assigned to the recording track:
　　　　INPUT 1-8
　　　　TRACK 1-6
　　　　FX1 Return
　　　　FX2 Return

Display	IN MIX	TR MIX
MIX Sw	Off	Off (1–6), On (d)
MIX Level	100	100
MIX Pan	0	0
AUX Sw	Off	Off
Channel Link	Off	Off (1–6), On (d)
FX1 Ins	Off	Off
EFFECT1	PstFade	PstFade (1–6), Off (d)
EFFECT1 Send	100	
EFFECT1 Pan	0	
FX2 Ins	Off	Off
EFFECT2	PstFade	PstFade (1–6), Off (d)
EFFECT2 Send	100	
EFFECT2 Pan	0	

Display	MASTER
Master Sel	MIX
MST FX1 Ins Sw	—
MST FX2 Ins Sw	—
EQ Sel	3bandEQ
Direct Out	Off

Display	Effects
FX1 Sel	A00:RV:LargeHall
FX2 Sel	A22:Short Dly

■ Recalling Mixdown Settings

Select this when you want adjust the balance of each track or to record a MD recorder or similar input in two-channel stereo. Recall a preset routing (mixdown) which has been pre-registered when the VSR-880 was shipped.

1. Press **[EZ ROUTING]** several times until "EZR Mix Down ?" appears in the display.

2. Press **[ENT/YES]**. "EZR Use Template" (do you wish to apply the template?) appears in the display.

3. Press **[ENT/YES]**.

4. When the routing has been recalled, "Complete" appears in the display, and return to Play condition. At this time, the mixer settings will be as follows.
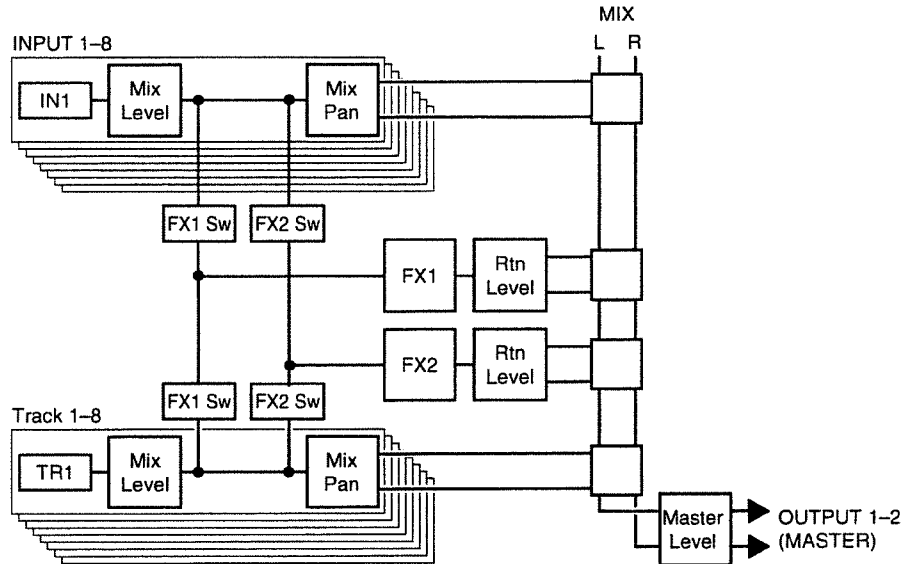
Playback Track:
TRACK 1-8
Input jack/track/effect assigned to the master out:
INPUT 1-8
TRACK 1-8
FX1 Return
FX2 Return

Display	IN MIX	TR MIX
MIX Sw	On	On
MIX Level	100	100
MIX Pan	0	0
AUX Sw	Off	Off
Channel Link	Off	Off
FX1 Ins	Off	Off
EFFECT1	PstFade	PstFade
EFFECT1 Send	100	100
EFFECT1 Pan	0	0
FX2 Ins	Off	Off
EFFECT2	PstFade	PstFade
EFFECT2 Send	100	100
EFFECT2 Pan	0	0

Display	MASTER
Master Sel	MIX
MST FX1 Ins Sw	—
MST FX2 Ins Sw	—
EQ Sel	2bandEQ
Direct Out	Off

Display	Effects
FX1 Sel	A00:RV:LargeHall
FX2 Sel	A22:DL:Short Dly

■ Recalling Rack Recorder Settings

Select when you use the VSR-880 as a modular recorder in combination with the external 8-bus mixer. Recall a preset routing (rack recorder) which has been pre-registered when the VSR-880 was shipped.

1. Press **[EZ ROUTING]** several times until "EZR Rack Recorder?" appears in the display.

2. Press **[ENT/YES]**. "EZR Use Template?" appears in the display.

3. Press **[ENT/YES]** again.

4. When the routings has been recalled, "Complete" appears in the display, and return to Play condition. At this time, the mixer setting will be as follows.

```
          Input Channel    Track Channel

IN1 ──┤ Level ├─┤ Pan ├─┤──┤ TR1 ├──► OUT1

IN2 ──┤ Level ├─┤ Pan ├─┤──┤ TR2 ├──► OUT2

IN3 ──┤ Level ├─┤ Pan ├─┤──┤ TR3 ├──► OUT3

IN4 ──┤ Level ├─┤ Pan ├─┤──┤ TR4 ├──► OUT4

IN5 ──┤ Level ├─┤ Pan ├─┤──┤ TR5 ├──► OUT5

IN6 ──┤ Level ├─┤ Pan ├─┤──┤ TR6 ├──► OUT6

IN7 ──┤ Level ├─┤ Pan ├─┤──┤ TR7 ├──► OUT7

IN8 ──┤ Level ├─┤ Pan ├─┤──┤ TR8 ├──► OUT8
```
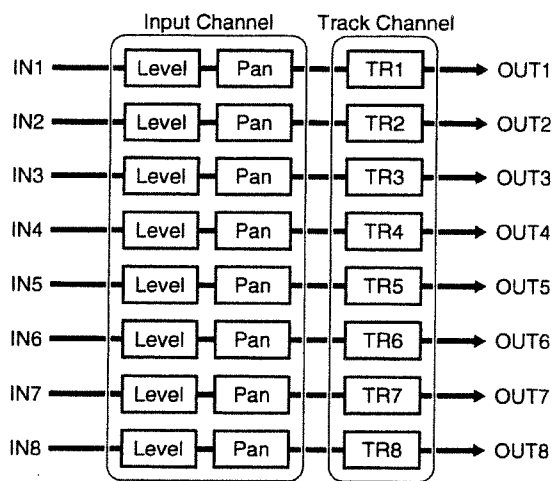
Playback Track: TRACK 1–8

Display	IN MIX	TR MIX
MIX Sw	Off	On
MIX Level	100	100
MIX Pan	0	0
AUX Sw	Off	Off
Channel Link	Off	Off
FX1 Ins	Off	Off
EFFECT1	Off	Off
FX2 Ins	Off	Off
EFFECT2	Off	Off

Display	MASTER
Master Sel	MIX
MST FX1 Ins Sw	—
MST FX2 Ins Sw	—
EQ Sel	3bandEQ
Direct Out	On

Display	Effects
FX1 Sel	A96:DualComp/Lim
FX2 Sel	A96:DualComp/Lim

■ Recalling Mastering Settings

Select when you mix down the tracks 1 to 6 into the tracks 7 and 8. Mastering Tool Kit (FX) is inserted to the mix bus. (Optional VS8F-2 is needed.) Recall a preset routing (mastering) which has been pre-registered when the VSR-880 was shipped.

1. Press **[EZ ROUTING]** several times until "EZR Mastering?" appears in the display.

2. Press **[ENT/YES]**. "EZR Use Template?" appears in the display.

3. Press **[ENT/YES]** again.

4. When the routings has been recalled, "Complete" appears in the display, and return to Play condition. At this time, the mixer setting will be as follows.
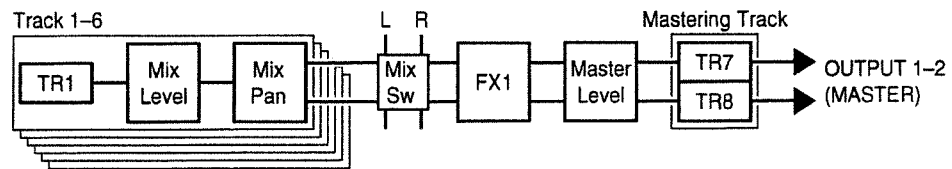
| Playback Track: | TRACK 1-6 |
| Recording Track: | TRACK 7-8 (Mastering Track) |

Display	IN MIX	TR MIX
MIX Sw	On	On
MIX Level	100	100
MIX Pan	0	0 (1-6)
AUX Sw	Off	Off
Channel Link	Off	Off (1-6)
FX1 Ins	—	—
EFFECT1	Off	Off
FX2 Ins	Off	Off
EFFECT2	Off	Off

Display	MASTER
Master Sel	MIX
MST FX1 Ins Sw	On
MST FX2 Ins Sw	Off
EQ Sel	3bandEQ
Direct Out	Off

Display	Effects
FX1 Sel	C10:MTK:Mixdown

Modifying internal connections in logical sequence (Step Edit)

Reply to questions in dialog format to make settings in a logical sequence.

Storing Recording Settings

Select this when you want to record the performance input via the INPUT jacks.

MEMO

You can return to the previous screen by pressing **PARAMETER [◄◄]**.

1. Press **[EZ ROUTING]** several times until "EZR Recording ?" appears in the display.

2. Press **[ENT/YES]**. "EZR Use Template" (do you wish to apply the template?) appears in the display.

3. Press **[EXIT/NO]**.

4. "REC Track =" appears in the display. Specify the track on which you will record. Press **STATUS** ([1]–[8]) of the track that you wish to record. The STATUS indicator will blink red. Each time you press the STATUS button, you will cycle between recording and not recording. You can rotate the **TIME/VALUE dial** to select the V-track that you wish to record. Then press **PARAMETER [►►]**.
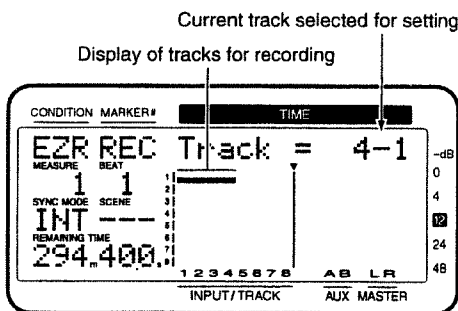
Current track selected for setting
Display of tracks for recording

5. "TR* Link=" ("*" is the displayed track) appears in the display. Specify the tracks for which you will turn Channel Link ON. Press **STATUS** ([1]–[8]) of the tracks for which you wish to turn Channel Link ON, and rotate the **TIME/VALUE dial**. Then Press **PARAMETER [►►]**.
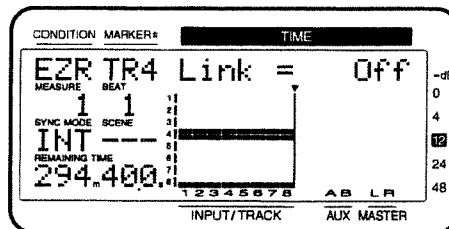
6. "IN* Link=" ("*" is the displayed input) appears in the display. Specify the inputs for which you will turn Channel Link ON. Press **STATUS** ([1]–[8]) of the inputs for which you wish to turn Channel Link ON, and rotate the **TIME/VALUE dial**. Then Press **PARAMETER [►►]**.
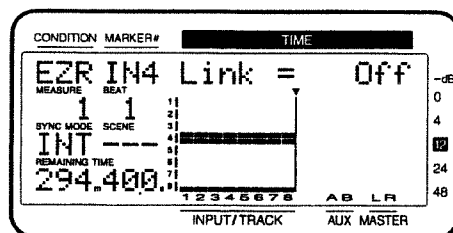
7. "IN* to =" appears in the display. Specify which source is to be recorded on each track. First press the source input **[SHIFT] + [1]–[8]**, then press the track **[1]–[8]** for the track to which the source is to be recorded. You can also use the **TIME/VALUE dial** to select the recording destination track. If you select "—," that input will not be output anywhere (i.e., the sound will not be heard). If you select "MIX," the source will be assigned to a mix bus (i.e., sound will be heard but will not be recorded). Then press **PARAMETER [►►]**.
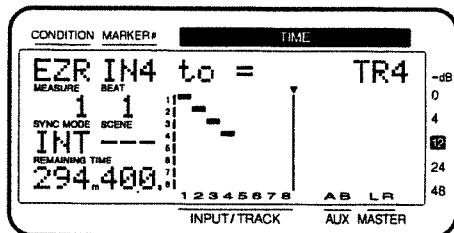
NOTE

Sources that have Channel Link set to "On" cannot be recorded to tracks on which Channel Link is set to "Off" with the EZ Routing.

8. "IN* Pan =" appears in the display. Adjust the pan of the source. Press **[SHIFT] + [1]–[8]** for the input whose pan you wish to adjust, and use the **TIME/VALUE dial**. You

can also use the pan knobs on the top panel to adjust the pan. Then press **PARAMETER** [►►].

MEMO

When Channel Link is on, adjust the Offset Balance of the sources. (p. 82)

```
CONDITION  MARKER#          TIME
EZR IN4 Pan =      R63     -dB
MEASURE  BEAT                      0
    1     1   :!
SYNC MODE  SCENE   :!               4
INT ---  :!                  🔋
REMAINING TIME  :!                 24
294.400.:!                       48
        12345678    AB  LR
        INPUT/TRACK    AUX  MASTER
```

9. "IN* Level =" appears in the display. Adjust the level of the source. Press **[SHIFT]** + **[1]–[8]** for the input whose level you wish to adjust, and use the **TIME/VALUE dial**. You can also use the channel faders on the top panel to adjust the level. Then press **PARAMETER** [►►].

```
CONDITION  MARKER#          TIME
EZR IN4 Level = 100       -dB
MEASURE  BEAT                      0
    1     1   :!
SYNC MODE  SCENE   :!               4
INT ---  :!                  🔋
REMAINING TIME  :!                 24
294.400.:!                       48
        12345678    AB  LR
        INPUT/TRACK    AUX  MASTER
```

MEMO
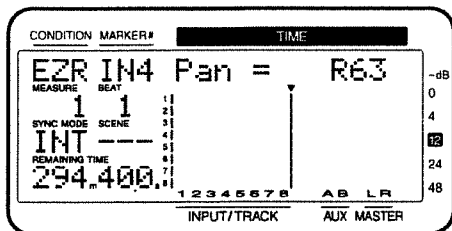
When Channel Link is on, adjust the Offset Level of the sources. (p. 82)

10. "Use EFFECT1 ?" appears in the display. If you wish to use effect 1, press **[ENT/YES]**. If you do not wish to use effect 1, press **[EXIT/NO]** and proceed to step 14.

11. The effect patch will be displayed. Use the **TIME/VALUE dial** to select the effect patch that you wish to use (i.e. A96:DualComp/Lim). Then press **PARAMETER** [►►].

```
CONDITION  MARKER#          TIME
EZR A96=DualComp/Lim      -dB
MEASURE  BEAT                      0
    1     1   :!
SYNC MODE  SCENE   :!               4
INT ----  :!                 🔋
REMAINING TIME  :!                 24
294.400.:!                       48
        12345678    AB  LR
        INPUT/TRACK    AUX  MASTER
```

12. "IN* FX1 Ins=" appears in the display. Rotate the **TIME/VALUE dial**. If you wish to insert effect 1, select either "Ins," "InsL," "InsR," or "InsS," and press **PARAMETER**
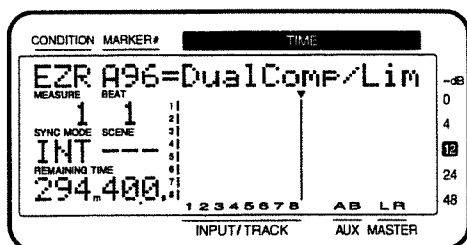
[►►]. If you wish to use effect 1 in a send/return configuration, select "Off" and press **PARAMETER** [►►].

```
CONDITION  MARKER#          TIME
EZR IN4 FX1 Ins= Ins      -dB
MEASURE  BEAT                      0
    1     1   :!
SYNC MODE  SCENE   :!               4
INT ---  :!                  🔋
REMAINING TIME  :!                 24
294.400.:!                       48
        12345678    AB  LR
        INPUT/TRACK    AUX  MASTER
```
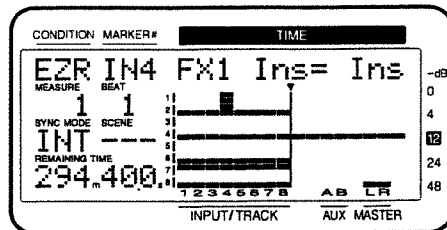
12-1. "IN* InsSnd =" appears in the display. Use the **TIME/VALUE dial** to adjust the insert send level. Then press **PARAMETER** [►►].

12-2. "IN* InsRtn =" appears in the display. Use the **TIME/VALUE dial** to adjust the insert return level. Then press **PARAMETER** [►►].

13. "IN* FX1Snd=" appears in the display. Rotate the **TIME/VALUE dial**. If you wish to send the input to the effect 1 bus, select either "Pre" or "Pst," and press **PARAMETER** [►►]. If you do not wish to send the input to the effect 1 bus, select "Off," and press **PARAMETER** [►►].

```
CONDITION  MARKER#          TIME
EZR IN4 FX1 Snd= Off      -dB
MEASURE  BEAT                      0
    1     1   :!
SYNC MODE  SCENE   :!               4
INT ---  :!                  🔋
REMAINING TIME  :!                 24
294.400.:!                       48
        12345678    AB  LR
        INPUT/TRACK    AUX  MASTER
```
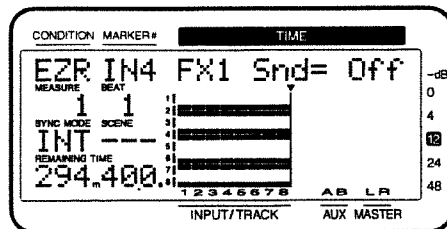
13-1. "IN* SndLev =" appears in the display. Use the **TIME/VALUE dial** to adjust the send level. Then press **PARAMETER** [►►]. If in step 12 you selected except "Off," the sound already processed by the effect will be sent to the effect bus. (It will not be re-input to effect 1.)

13-2. "IN* SndPan" appears in the display. Use the **TIME/VALUE dial** to adjust the send pan. Then press **PARAMETER** [►►].

13-3. "REC FX1 =" appears in the display. If you wish to record the effect which you are using in a send/return configuration, press **STATUS** ([1]–[8]) for the recording destination track. Then press **PARAMETER** [►►]. However if in step 12 you selected except "Off," this display will not appear. (The sound with the inserted effect will be recorded.)

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CONDITION MARKER# ▮▮▮▮ TIME ▮▮▮▮
EZR REC FX =   TR4
MEASURE BEAT
  1   1
SYNC MODE SCENE
INT ---
REMAINING TIME
294.400.
12345678   AB LR
INPUT/TRACK   AUX MASTER
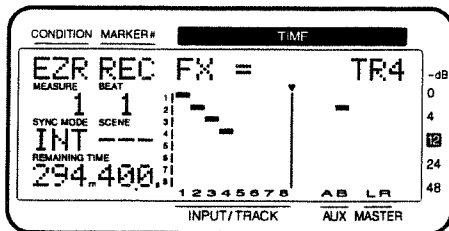
14. "Use EFFECT2 ?" appears in the display. Make settings for effect 2 as described in steps 10–13.

15. "IN* AUX Snd" appears in the display. Rotate the **TIME/ VALUE dial**. If you wish to send the input to the AUX bus, select either "Pre" or "Pst," and press **PARAMETER** [▶▶]. If you do not wish to send the input to the AUX bus, select "Off," and press **PARAMETER** [▶▶].

CONDITION MARKER# ▮▮▮▮ TIME ▮▮▮▮
EZR IN4 AUX Snd= Pst
MEASURE BEAT
  1   1
SYNC MODE SCENE
INT ---
REMAINING TIME
294.400.
12345678   AB LR
INPUT/TRACK   AUX MASTER
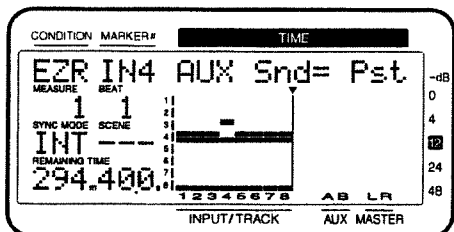
15-1. "IN* SndLev =" appears in the display. Use the **TIME/VALUE dial** to adjust the send level. Then press **PARAMETER** [▶▶].

15-2. "IN* SndPan" appears in the display. Use the **TIME/VALUE dial** to adjust the send pan. Then press **PARAMETER** [▶▶].

16. "Master Sel=" appears in the display. Use the **TIME/ VALUE dial** to select the bus (MIX, AUX, FX1, FX2, REC) that you wish to output from the MASTER jacks. Then press **PARAMETER** [▶▶].

CONDITION MARKER# ▮▮▮▮ TIME ▮▮▮▮
EZR Master Sel = MIX
MEASURE BEAT
  1   1
SYNC MODE SCENE
INT ---
REMAINING TIME
294.400.
12345678   AB LR
INPUT/TRACK   AUX MASTER

17. "EQ Sel=" appears in the display. Rotate the **TIME/ VALUE dial** to select the equalizer type, and press **PARAMETER** [▶▶].

CONDITION MARKER# ▮▮▮▮ TIME ▮▮▮▮
EZR EQ Sel=   2BandEQ
MEASURE BEAT
  1   1
SYNC MODE SCENE
INT ---
REMAINING TIME
294.400.
12345678   AB LR
INPUT/TRACK   AUX MASTER

18. "Direct Out =" appears in the display. Rotate the **TIME/ VALUE dial** to switch the Direct OUT On/Off. Then press **PARAMETER** [▶▶].

CONDITION MARKER# ▮▮▮▮ TIME ▮▮▮▮
EZR Direct Out = Off
MEASURE BEAT
  1   1
SYNC MODE SCENE
INT ---
REMAINING TIME
294.400.
12345678   AB LR
INPUT/TRACK   AUX MASTER

19. "FX1 MstIns=" appears in the display. If you wish to insert FX1 into the master out, select "On." If not, select "Off." Then press **PARAMETER** [▶▶]. If FX1 has been inserted in another channel, the display will indicate "–" and this item cannot be set.

CONDITION MARKER# ▮▮▮▮ TIME ▮▮▮▮
EZR FX1 MstIns = Off
MEASURE BEAT
  1   1
SYNC MODE SCENE
INT ---
REMAINING TIME
294.400.
12345678   AB LR
INPUT/TRACK   AUX MASTER

20. "FX2 MstIns=" appears in the display. If you wish to insert FX2 into the master out, select "On." If not, select "Off." Then press **PARAMETER** [▶▶]. If FX2 has been inserted in another channel, the display will indicate "–" and this item cannot be set.

CONDITION MARKER# ▮▮▮▮ TIME ▮▮▮▮
EZR FX2 MstIns = On
MEASURE BEAT
  1   1
SYNC MODE SCENE
INT ---
REMAINING TIME
294.400.
12345678   AB LR
INPUT/TRACK   AUX MASTER

21. "Change Routing ?" appears in the display. Press **[ENT/ YES]**. When the routing has been finalized, "Complete" appears in the display, and you will return to Play condition. If you decide to discard the routing that was set, press **[EXIT/NO]**.

Storing Track Bouncing Settings

Select this when recording the performance data from multiple tracks onto a number of other tracks.

MEMO

You can return to the previous screen by pressing **PARAMETER [◄◄]**.

1. Press **[EZ ROUTING]** several times until "EZR Bouncing ?" appears in the display.

2. Press **[ENT/YES]**. "EZR Use Template" (do you wish to apply the template?) appears in the display.

3. Press **[EXIT/NO]**.

4. "REC Track =" appears in the display. Specify the track on which you will record. Press **STATUS** ([1]–[8]) for the track that you wish to record. The STATUS indicator will blink red. Each time you press the STATUS button, you will alternate between recording and not recording. Use the **TIME/VALUE dial** to select the V-track on which you will record. Then press **PARAMETER [►►]**.
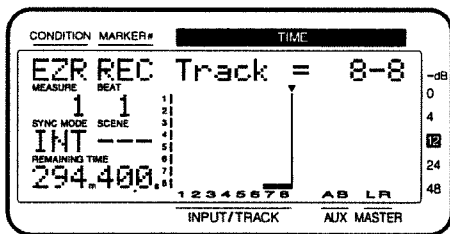
5. "TR* Link=" ("*" is the displayed track) appears in the display. Specify the playback tracks/recording tracks for which you will turn Channel Link ON. Press **STATUS** ([1]–[8]) of the tracks for which you wish to turn Channel Link ON, and rotate the **TIME/VALUE dial**. Then press **PARAMETER [►►]**.
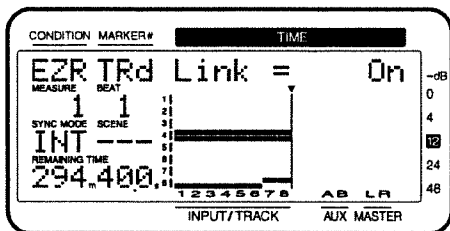
6. "TR* to =" appears in the display. Specify which track will be recorded to which track. First press **[SHIFT] +** [1]–[8] for the playback track, and then press [1]–[8] for the track that you wish to record. Then press **PARAMETER [►►]**. You can also use the **TIME/ VALUE dial** to select the recording destination track. If

you select "—," that track will not be played back (it will not be heard). If you select "MIX," the playback track will be assigned to the mix bus (it will be heard but not recorded).
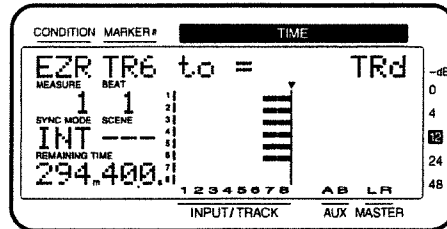
NOTE

Playback tracks that have Channel Link set to "On" cannot be recorded to tracks on which Channel Link is set to "Off" with the EZ Routing.

7. "TR* Pan =" appears in the display. Adjust the pan of the playback track. Press **[SHIFT] + [1]–[8]** for the playback track whose pan you wish to adjust, and use the **TIME/ VALUE dial**. Then press **PARAMETER [►►]**.

NOTE

When Channel Link is on, adjust the Offset Balance of the sources/tracks. (p. 82)

8. "TR* Level =" appears in the display. Adjust the level of the playback track. Press **[SHIFT] + [1]–[8]** for the playback track whose level you wish to adjust, and use the **TIME/VALUE dial**. Then press **PARAMETER [►►]**.
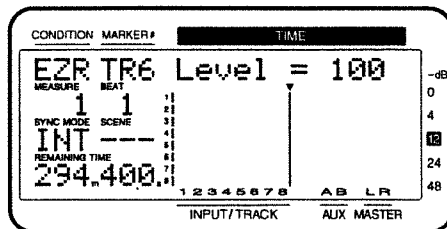
NOTE

When Channel Link is on, adjust the Offset Level of the tracks. (p. 82)

9. "Use EFFECT1 ?" appears in the display. If you wish to use effect 1, press **[ENT/YES]**. If you do not wish to use effect 1, press **[EXIT/NO]** and proceed to step 13.

10. The effect patch will be displayed. Use the **TIME/VALUE dial** to select the effect patch (for example, C10:MTK:Mixdown) that you wish to use. Then press **PARAMETER [▶▶]**.

11. "TR* FX1 Ins=" appears in the display. Rotate the **TIME/VALUE dial**. If you wish to insert effect 1, select either "Ins," "InsL," "InsR," or "InsS," and press **PARAMETER [▶▶]**. If you wish to use effect 1 in a send/return configuration, select "Off" and press **PARAMETER [▶▶]**.
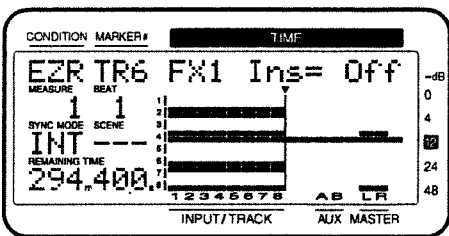
11-1. "TR* InsSnd =" appears in the display. Use the **TIME/VALUE dial** to adjust the insert send level. Then press **PARAMETER [▶▶]**.

11-2. "TR* InsRtn =" appears in the display. Use the **TIME/VALUE dial** to adjust the insert return level. Then press **PARAMETER [▶▶]**.

12. "TR* FX1 Snd=" appears in the display. Rotate the **TIME/VALUE dial**. If you wish to send the playback track to the effect 1 bus, select either "Pre" or "Pst," and press **PARAMETER [▶▶]**. If you do not wish to send the playback track to the effect 1 bus, select "Off," and press **PARAMETER [▶▶]**.
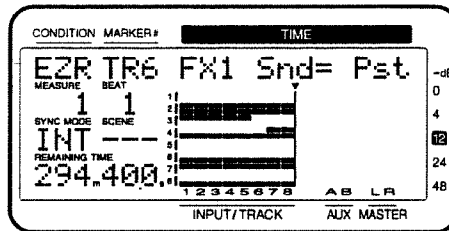
12-1. "TR* SndLev =" appears in the display. Use the **TIME/VALUE dial** to adjust the send level. Then press **PARAMETER [▶▶]**. If in step 11 you selected except "Off," the sound already processed by the effect will be sent to the effect bus. (It will not be re-input to effect 1.)

12-2. "TR* SndPan" appears in the display. Use the **TIME/VALUE dial** to adjust the send pan. Then press **PARAMETER [▶▶]**.

12-3. "REC FX1 =" appears in the display. If you wish to record the effect which you are using in a send/return configuration, press **STATUS** ([1]–[8]) for the recording destination track. Then press **PARAMETER [▶▶]**. However if in step 11 you selected except "Off," this display will not appear. (The sound with the inserted effect will be recorded.)
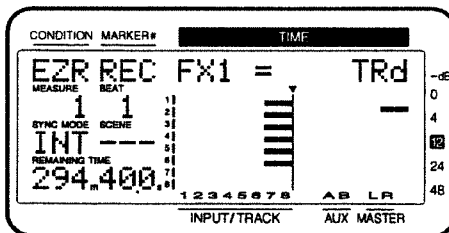
13. "Use EFFECT2 ?" appears in the display. Make settings for effect 2 as described in steps 9–12.

14. "TR* AUX Snd" appears in the display. Rotate the **TIME/VALUE dial**. If you wish to send the playback track to the AUX bus, select either "Pre" or "Pst," and press **PARAMETER [▶▶]**. If you do not wish to send the playback track to the AUX bus, select "Off," and press **PARAMETER [▶▶]**.
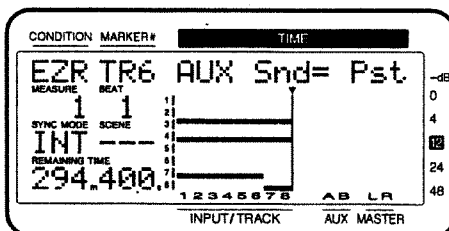
14-1. "TR* SndLev =" appears in the display. Use the **TIME/VALUE dial** to adjust the send level. Then press **PARAMETER [▶▶]**.

14-2. "TR* SndPan =" appears in the display. Use the **TIME/VALUE dial** to adjust the send pan. Then press **PARAMETER [▶▶]**.

15. "Master Sel=" appears in the display. Use the **TIME/VALUE dial** to select the bus (MIX, AUX, FX1, FX2, REC) that you wish to output from the MASTER jacks. Then press **PARAMETER [▶▶]**.
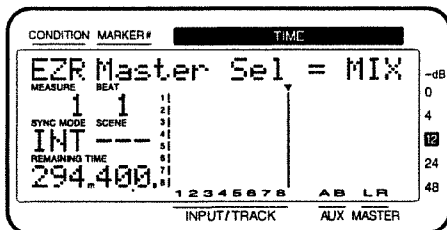
16. "EQ Sel=" appears in the display. Rotate the **TIME/VALUE dial** to select the equalizer type, and press **PARAMETER [▶▶]**.
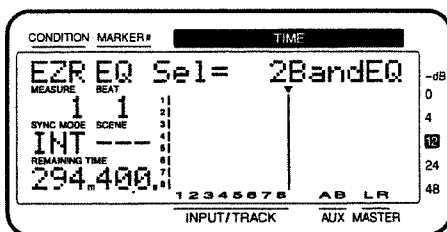
17. "Direct Out =" appears in the display. Rotate the **TIME/VALUE dial** to switch the Direct OUT On/Off. Then press **PARAMETER [▶▶]**.
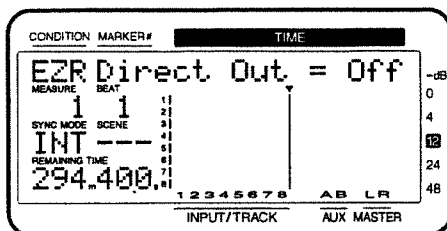
18. "FX1 MstIns=" appears in the display. If you wish to insert FX1 into the master out, select "On." If not, select "Off." Then press **PARAMETER [▶▶]**. If FX1 has been inserted in another channel, the display will indicate "–" and this item cannot be set.

19. "FX2 MstIns=" appears in the display. If you wish to insert FX2 into the master out, select "On." If not, select "Off." Then press **PARAMETER [▶▶]**. If FX2 has been inserted in another channel, the display will indicate "–" and this item cannot be set.
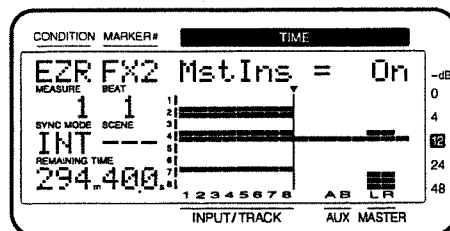
20. "Change Routing ?" appears in the display. Press **[ENT/YES]**. When the routing has been finalized, "Complete" appears in the display, and you will return to Play condition. If you decide to discard the routing that was set, press **[EXIT/NO]**.

Storing Mixdown Settings

Select this when you want adjust the balance of each track or to record a MD recorder or similar input in two-channel stereo. Additionally, when playing back all 8 tracks, by mixing the output of the VSR-880 along with the output of a synchronized MIDI sequencer or other such device, you can also record to MD recorders or similar devices.

NOTE

By Step Editing a mixdown, you can change the track and source settings to be the same. If you wish to change the track settings, press **[SHIFT] + [IN MIX (LEVEL/BALANCE)]**. If you wish to change the source settings press **[SHIFT] + [TR MIX (EXT SYNC)]**. Here we will explain the example of how to change the track settings.

MEMO

You can return to the previous screen by pressing **PARAMETER [◀◀]**.

1. Press **[EZ ROUTING]** several times until "EZR Mix Down ?" appears in the display.

2. Press **[ENT/YES]**. "EZR Use Template" (do you wish to apply the template?) appears in the display.

3. Press **[EXIT/NO]**.

4. "TR* Link=" or "IN* Link=" ("*" is the displayed track/ source) appears in the display. Select the tracks/sources for which you wish to turn Channel Link ON. Press **STATUS** ([1]–[8]) for the track/source for which you wish to turn on Channel Link, and use the **TIME/VALUE dial**. Then press **PARAMETER [▶▶]**.
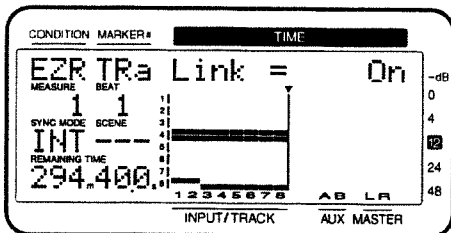
5. "TR* =" or "IN* =" appears in the display. Specify the tracks/sources that you wish to output to the mix bus. Press **STATUS** ([1]–[8]) for the corresponding track/ source, and use the **TIME/VALUE dial**. Tracks/sources which are turned "On" will be output. Then press **PARAMETER [▶▶]**.
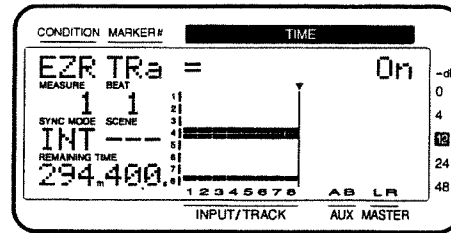
6. "Pan =" appears in the display. Adjust the pan of the track/source. Press **[SHIFT] + [1]–[8]** for the track/ source whose pan you wish to adjust, and use the **TIME/ VALUE dial**. You can also adjust the pan using the pan knobs on the top panel. Then press **PARAMETER [▶▶]**.
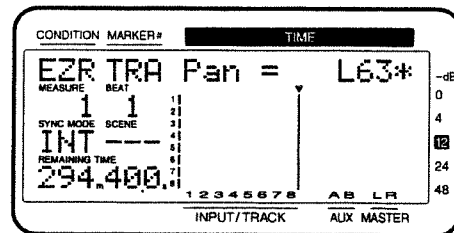
MEMO

When Channel Link is on, adjust the Offset Balance of the sources/tracks. (p. 82)

7. "Level =" appears in the display. Adjust the level of the track/source. Press **[SHIFT] + [1]–[8]** for the track/ source whose level you wish to adjust, and use the **TIME/ VALUE dial**. Then press **PARAMETER [▶▶]**.
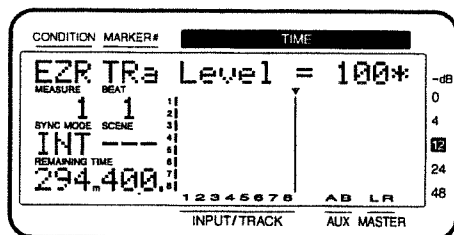
MEMO

When Channel Link is on, adjust the Offset Level of the sources/tracks. (p. 82)

8. "Use EFFECT1 ?" appears in the display. If you wish to use effect 1, press **[ENT/YES]**. If you do not wish to use effect 1, press **[EXIT/NO]** and proceed to step 12.

9. The effect patch will be displayed. Use the **TIME/VALUE dial** to select the effect patch (for example, C10:MTK:Mixdown) that you wish to use. Then press **PARAMETER [▶▶]**.
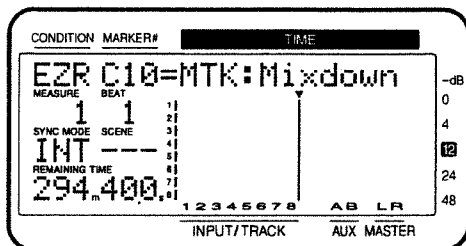
10. "FX1 Ins=" appears in the display. Rotate the **TIME/ VALUE dial**. If you wish to insert effect 1, select either "Ins," "InsL," "InsR," or "InsS," and press **PARAMETER** [►►]. If you wish to use effect 1 in a send/return configuration, select "Off" and press **PARAMETER** [►►].
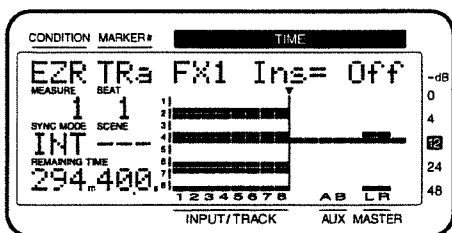
   10-1. "InsSnd =" appears in the display. Use the **TIME/ VALUE dial** to adjust the insert send level. Then press **PARAMETER** [►►].

   10-2. "InsRtn =" appears in the display. Use the **TIME/ VALUE dial** to adjust the insert return level. Then press **PARAMETER** [►►].

11. "FX1 Snd=" appears in the display. Rotate the **TIME/ VALUE dial**. If you wish to send the track/source to the effect 1 bus, select either "Pre" or "Pst," and press **PARAMETER** [►►]. If you do not wish to send the track/source to the effect 1 bus, select "Off," and press **PARAMETER** [►►].
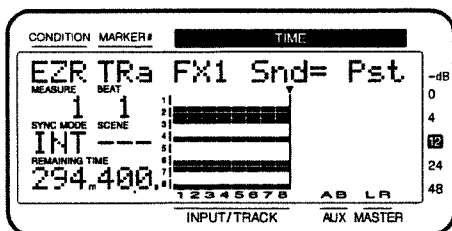
   11-1. "SndLev =" appears in the display. Use the **TIME/ VALUE dial** to adjust the send level. Then press **PARAMETER** [►►]. If in step 10 you selected except "Off," the sound already processed by the effect will be sent to the effect bus. (It will not be re-input to effect 1.)

   11-2. "SndPan" appears in the display. Use the **TIME/ VALUE dial** to adjust the send pan. Then press **PARAMETER** [►►].

12. "Use EFFECT2 ?" appears in the display. Make settings for effect 2 as described in steps 8–11.

13. "AUX Snd=" appears in the display. Rotate the **TIME/ VALUE dial**. If you wish to send the track/source to the AUX bus, select either "Pre" or "Pst," and press **PARAMETER** [►►]. If you do not wish to send the track/source to the AUX bus, select "Off," and press **PARAMETER** [►►].
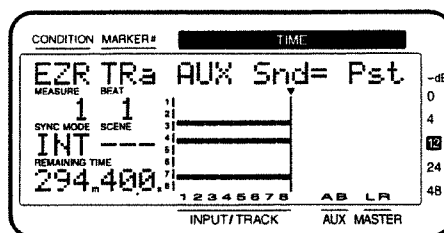
   13-1. "TR* SndLev =" appears in the display. Use the **TIME/VALUE dial** to adjust the send level. Then press **PARAMETER** [►►].

   13-2. "TR* SndPan" appears in the display. Use the **TIME/VALUE dial** to adjust the send pan. Then press **PARAMETER** [►►].

14. "Master Sel=" appears in the display. Use the **TIME/ VALUE dial** to select the bus (MIX, AUX, FX1, FX2, REC) that you wish to output from the MASTER jacks. Then press **PARAMETER** [►►].
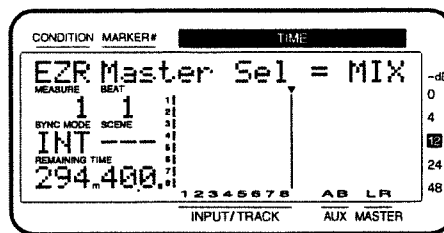
15. "EQ Sel=" appears in the display. Rotate the **TIME/ VALUE dial** to select the equalizer type, and press **PARAMETER** [►►].
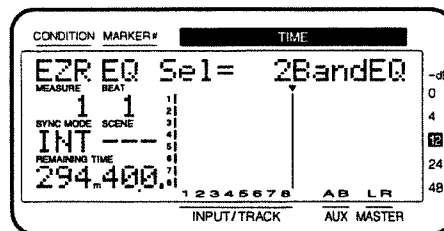
16. "Direct Out =" appears in the display. Rotate the **TIME/ VALUE dial** to switch the Direct OUT On/Off. Then press **PARAMETER [►►]**.
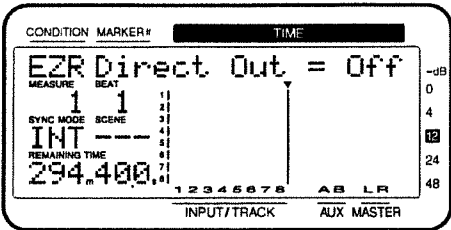
17. "FX1 MstIns=" appears in the display. If you wish to insert FX1 into the master out, select "On." If not, select "Off." Then press **PARAMETER [►►]**. If FX1 has been inserted in another channel, the display will indicate "–" and this item cannot be set.

18. "FX2 MstIns=" appears in the display. If you wish to insert FX2 into the master out, select "On." If not, select "Off." Then press **PARAMETER [►►]**. If FX2 has been inserted in another channel, the display will indicate "–" and this item cannot be set.
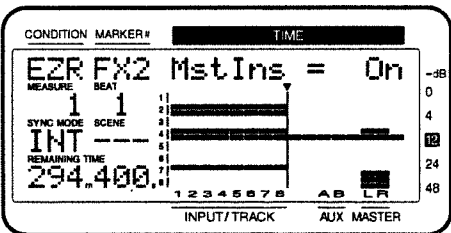
19. "Change Routing ?" appears in the display. Press **[ENT/ YES]**. When the routing has been finalized, "Complete" appears in the display, and you will return to Play condition. If you decide to discard the routing that was set, press **[EXIT/NO]**.

Storing Rack Recorder Settings

Select when you use the VSR-880 as a modular recorder in combination with the external 8-bus mixer. each of INPUT 1 to 8 is assigned to the track 1 to 8. Each source of the tracks 1 to 8 is output from OUTPUT 1 to 8.

MEMO
You can return to the previous screen by pressing **PARAMETER [◄◄]**.

1. Press **[EZ ROUTING]** several times until "EZR Rack Recorder ?" appears in the display.

2. Press **[ENT/YES]**. "EZR Use Template" (do you wish to apply the template?) appears in the display.

3. Press **[EXIT/NO]**.

4. "TR* Link=" ("*" is the displayed track) appears in the display. Specify the tracks for which you will turn Channel Link ON. Press **STATUS** ([1]–[8]) of the tracks for which you wish to turn Channel Link ON, and rotate the **TIME/VALUE dial**. Then Press **PARAMETER [►►]**.
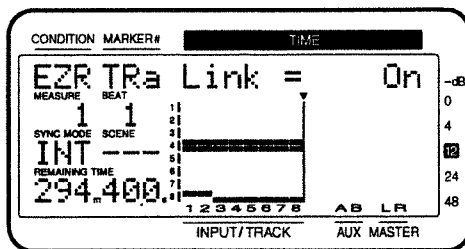
5. "IN* Link=" ("*" is the displayed input) appears in the display. Specify the inputs for which you will turn Channel Link ON. Press **STATUS** ([1]–[8]) of the inputs for which you wish to turn Channel Link ON, and rotate the **TIME/VALUE dial**. Then Press **PARAMETER [►►]**.
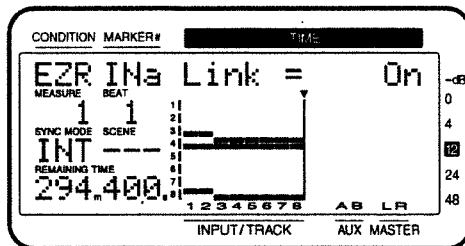
6. "Use EFFECT1 ?" appears in the display. If you wish to use effect 1, press **[ENT/YES]**. If you do not wish to use effect 1, press **[EXIT/NO]** and proceed to step 9.

7. The effect patch will be displayed. Use the **TIME/VALUE dial** to select the effect patch that you wish to use (i.e. A96:DualComp/Lim). Then press **PARAMETER [▶▶]**.

```
CONDITION  MARKER#            TIME
EZR A96=DualComp/Lim     -dB
MEASURE   BEAT      1¦               0
    1    1      2¦               4
SYNC MODE  SCENE   3¦
INT ---    4¦               12
REMAINING TIME     5¦               24
294.400.¦
              12345678   AB  LR    48
              INPUT/TRACK   AUX MASTER
```

8. "IN* FX1 Ins=" appears in the display. Rotate the **TIME/VALUE dial**. If you wish to insert effect 1, select either "Ins," "InsL," "InsR," or "InsS," and press **PARAMETER [▶▶]**.
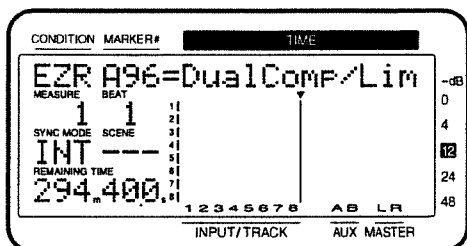
```
CONDITION  MARKER#            TIME
EZR INa FX1 Ins= Ins     -dB
MEASURE   BEAT      1¦               0
    1    1      2¦               4
SYNC MODE  SCENE   3¦
INT ---    4¦               12
REMAINING TIME     5¦               24
294.400.¦
              12345678   AB  LR    48
              INPUT/TRACK   AUX MASTER
```
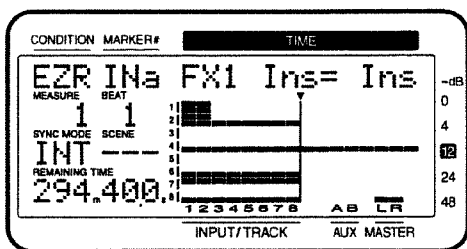
8-1. "IN* InsSnd =" appears in the display. Use the **TIME/VALUE dial** to adjust the insert send level. Then press **PARAMETER [▶▶]**.

8-2. "IN* InsRtn =" appears in the display. Use the **TIME/VALUE dial** to adjust the insert return level. Then press **PARAMETER [▶▶]**.

9. "Use EFFECT2 ?" appears in the display. Make settings for effect 2 as described in steps 6–8.

10. "Change Routing ?" appears in the display. Press **[ENT/YES]**. When the routing has been finalized, "Complete" appears in the display, and you will return to Play condition. If you decide to discard the routing that was set, press **[EXIT/NO]**.

Storing Mastering Settings

Select when you mix down the tracks 1 to 6 into the tracks 7 and 8. Mastering Tool Kit (FX) is inserted to the mix bus. (Optional VS8F-2 is needed.)

MEMO

You can return to the previous screen by pressing **PARAMETER [◀◀]**.

1. Press **[EZ ROUTING]** several times until "EZR Mastering ?" appears in the display.

2. Press **[ENT/YES]**. "EZR Use Template" (do you wish to apply the template?) appears in the display.

3. Press **[EXIT/NO]**.

4. "TR* Link=" ("*" is the displayed track) appears in the display. Specify the tracks for which you will turn Channel Link ON. Press **STATUS** ([1]–[8]) of the tracks for which you wish to turn Channel Link ON, and rotate the **TIME/VALUE dial**. Then Press **PARAMETER [▶▶]**.

```
CONDITION  MARKER#            TIME
EZR TR1 Link =    Off      -dB
MEASURE   BEAT      1¦               0
    1    1      2¦               4
SYNC MODE  SCENE   3¦
INT ---    4¦               12
REMAINING TIME     5¦               24
294.400.¦
              12345678   AB  LR    48
              INPUT/TRACK   AUX MASTER
```

5. "TR* Pan =" appears in the display. Adjust the pan of the playback track. Press **[SHIFT] + [1]–[8]** for the playback track whose pan you wish to adjust, and use the **TIME/VALUE dial**. Then press **PARAMETER [▶▶]**.

```
CONDITION  MARKER#            TIME
EZR TR1 Pan =        0      -dB
MEASURE   BEAT      1¦               0
    1    1      2¦               4
SYNC MODE  SCENE   3¦
INT ---    4¦               12
REMAINING TIME     5¦               24
294.400.¦
              12345678   AB  LR    48
              INPUT/TRACK   AUX MASTER
```

MEMO

When Channel Link is on, adjust the Offset Balance of the tracks. (p. 82)

6. "TR* Level =" appears in the display. Adjust the level of the playback track. Press **[SHIFT] + [1]–[8]** for the playback track whose level you wish to adjust, and use

the **TIME/VALUE dial**. Then press **PARAMETER**
[►►].
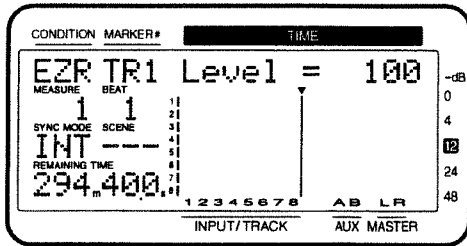
MEMO

When Channel Link is on, adjust the Offset Level of the tracks. (p. 82)

7. "IN* Link=" ("*" is the displayed input) appears in the display. Specify the inputs for which you will turn Channel Link ON. Press **STATUS** ([1]–[8]) of the inputs for which you wish to turn Channel Link ON, and rotate the **TIME/VALUE dial**. Then Press **PARAMETER** [►►].
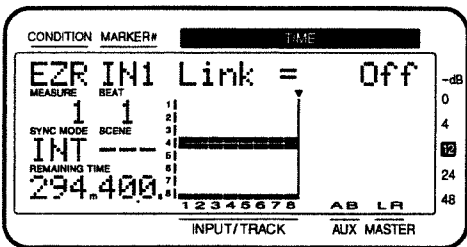
8. "IN* Pan =" appears in the display. Adjust the pan of the source. Press **[SHIFT] + [1]–[8]** for the input whose pan you wish to adjust, and use the **TIME/VALUE dial**. You can also use the pan knobs on the top panel to adjust the pan. Then press **PARAMETER** [►►].

MEMO

When Channel Link is on, adjust the Offset Balance of the sources. (p. 82)

9. "IN* Level =" appears in the display. Adjust the level of the source. Press **[SHIFT] + [1]–[8]** for the input whose level you wish to adjust, and use the **TIME/VALUE dial**.

You can also use the channel faders on the top panel to adjust the level. Then press **PARAMETER** [►►].
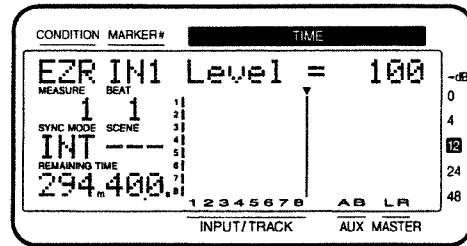
MEMO

When Channel Link is on, adjust the Offset Level of the sources. (p. 82)

10. "Change Routing ?" appears in the display. Press **[ENT/YES]**. When the routing has been finalized, "Complete" appears in the display, and you will return to Play condition. If you decide to discard the routing that was set, press **[EXIT/NO]**.

Saving the Current Routing (User Routing)

1. Use Template or Step Edit to finalize the routing that you wish to save.

2. Press **[EZ ROUTING]** several times until "SaveCurRouting ?" appears in the display.

3. Press **[ENT/YES]**. The number and name of the user routing will be displayed.

Routing Number   Routing Name
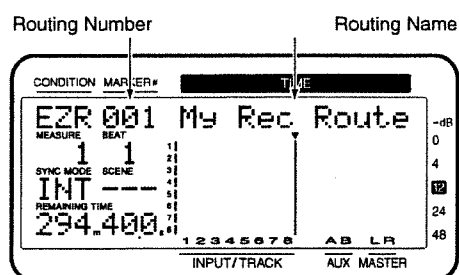
4. Use the **TIME/VALUE dial** to select the routing number for the desired save destination.

5. Press **PARAMETER [►►]**.

6. Use **[◄◄]** or **[►►]** to move the cursor. Use the **TIME/VALUE dial** to assign a name to the user routing.

7. Press **PARAMETER [⬤]**. The cursor will move to the routing number.

8. Press **[ENT/YES]**.

9. If you are overwriting a previously saved user routing, a message will ask for confirmation. Press **[ENT/YES]**.

10. When the user routing has been saved, "Complete" appears in the display, and return to Play condition.

Recalling User Routing

1. Press **[EZ ROUTING]** several times until "User Routing ?" appears in the display.

2. Press **[ENT/YES]**. The number and name of the user routing will be displayed.

3. Use the **TIME/VALUE dial** to select the routing number that you wish to recall. If not even one user routing has been saved, "EZR No User Routing" appears in the display, and return to step 1.

4. Press **[ENT/YES]**.

5. When the user routing has been recalled, "Complete" appears in the display, and return to Play condition.

Deleting User Routings

1. Press **[EZ ROUTING]** several times until "DelUserRouting ?" appears in the display.

2. Press **[ENT/YES]**. The number and name of the user routing will be displayed.

3. Use the **TIME/VALUE dial** to select the routing number that you wish to delete. If not even one user routing has been saved, "EZR No User Routing" appears in the display, and return to step 1.

4. Press **[ENT/YES]**.
A confirmation message is displayed.

5. Press **[ENT/YES]**.

6. When the user routing has been deleted, "Complete" appears in the display, and you will return to Play condition.

Recording Mixer Settings (Auto Mix)

With the VSR-880, you can record the present status or condition of the mixer as a **Scene**. Unlike with Scenes, you can alternatively store information at specific times during playback to markers. Referred to as **Snapshot**, this includes the mixer settings, time-based channel levelmovements, and other settings. When during playback you reach a point where a marker is set, the mixer settings automatically switch to those stored at the marker (**AutoMix**). This is convenient when mixing with complicated settings that are difficult to reproduce manually.

The following mixer settings can be recorded in **Snapshot**.

Input Mixer   ([SHIFT] + [IN MIX (LEVEL/BALANCE)]) or Track Mixer ([SHIFT] + [TR MIX (EXT SYNC)])

Mix Level

Mix Pan

AUX Level

AUX Pan

EFFECT1 Send (Effect 1 Send Level)

EFFECT1 Pan (Effect 1 Send Pan)

EFFECT2 Send (Effect 2 Send Level)

EFFECT2 Pan (Effect 2 Send Pan)

Effect Return Mixer ([SHIFT] + [RTN MIX (AUTOMIX)])

StIn Level (Stereo In Level)

StIn Bal (Stereo In Balance)

FX1 RTNLev (Effect 1 Return Level)

FX1 RTNBal (Effect 1 Return Balance)

FX2 RTNLev (Effect 2 Return Level)

FX2 RTNBal (Effect 2 Return Balance)

MasterBlock ([LEVEL/BALANCE])

MasterLevel

Master Bal (Master Balance)

AUX Level (Master AUX Send Level)

AUX Bal (Master AUX Send Balance)

FX1 SND Lev (Master Effect 1 Send Level)

FX1 SND Bal (Master Effect 1 Send Balance)

FX2 SND Lev (Master Effect 2 Send Level)

FX2 SND Bal (Master Effect 2 Send Balance)

Effect ([SHIFT] + [EFFECT (◄)] -> [ENT/YES])

FX1 Sel (Effect 1 Program Number)

FX2 Sel (Effect 2 Program Number)

The automix status of each channel will be displayed as follows.
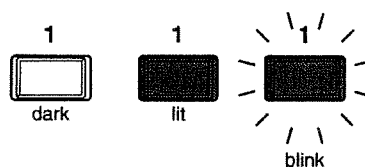
Indicator off: Auto Mix is disabled.

Indicator on: Auto Mix playback is enabled.

Indicator blinking:Auto Mix is enabled for recording and playback.

Recording the Mixer Settings, Method 1 (Snapshot)

Mixer settings recorded with Auto Mix can be recorded directly to markers. This method is known as taking a Snapshot. When you move to that marker, the mixer settings that were recorded will be reproduced. For example, this is convenient when you want the intro and ending to have different volume levels or different effect send levels for guitar parts during intros or solos.
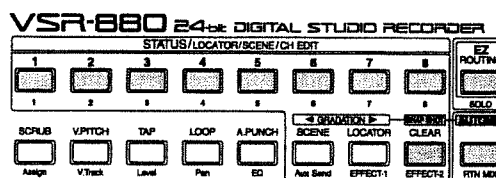
1. Move to the time location where you wish to record the auto mix.

2. Press **[AUTOMIX]**. The AUTOMIX indicator lights, indicating that the VSR-880 is in Auto Mix mode.

3. Select the channels which you want to record using AutoMix.

    3-1. Select Input Mixer ([SHIFT] + [IN MIX (LEVEL BALANCE)]), Track Mixer ([SHIFT] + [TR MIX (EXT SYNC)]) or Return Mixer ([SHIFT] + [RTN MIX (AUTOMIX)]).

    3-2. While pressing **[AUTOMIX]**, so that the button indicators to blink, press **STATUS) ([1]–[8] or [EZ ROUTING]** (Master Block).

4. Hold down **[AUTOMIX]** and press
[SNAP SHOT (CLEAR)]. A marker is added at the
current time location. At the same time, a Snapshot of the
mixer settings is recorded at the marker. A marker in
which mixer settings are recorded will be indicated by an
asterisk "*" following it.

NOTE
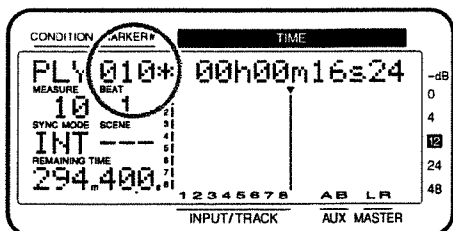
If a marker already exists within 0.1 seconds before the time
location where you are attempting to place a new marker
(i.e., the current time), the Snapshot is recorded at the earlier
marker. A marker will not be newly assigned. If a marker
already exists within 0.1 seconds after the time location at
which you are attempting to place a new marker (i.e., the
current time), the Snapshot is recorded at the later marker.

5. Press **[AUTOMIX]**. The AUTOMIX indicator will go out,
indicating that Automix mode has been turned off.

Recording the Mixer Settings, Method 2 (Gradation)

This creates an auto mix that smoothly connects Snapshots
recorded in two adjacent markers. This method is called
Gradation. For example, this is convenient when you wish to
specify the length of a fade-in or fade-out.
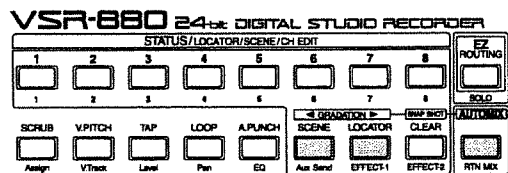
1. Follow the operation as described in "Recording the
Mixer Settings, Method 1," record a Snapshot with the
time locations at which you want Gradation to begin and
end.

2. Press **[AUTOMIX]**. The AUTOMIX indicator lights,
indicating that the VSR-880 is in Auto Mix mode.

3. Select the channels which you want to record using
AutoMix.

3-1. Select Input Mixer ([SHIFT] + [IN MIX (LEVEL
BALANCE)]), Track Mixer ([SHIFT] + [TR MIX
(EXT SYNC)]) or Return Mixer ([SHIFT] + [RTN
MIX (AUTOMIX)]).

3-2. While pressing **[AUTOMIX]**, so that the button
indicators to blink, press **STATUS) ([1]–[8] or [EZ
ROUTING]** (Master Block).

4. Hold down **[AUTOMIX]** and press
[GRADATION ◄ (SCENE)] or
[GRADATION ► (LOCATOR)].

5. A confirmation message appears on the screen. Press
[ENT/YES]. A new mark point is automatically added
between the two mark points, and Gradation is executed.
Press [CANCEL (NO)] if you wish to cancel Gradation.

When the current time is included in an adjacent marker

Press either **[GRADATION ◄ (SCENE)]** or
[GRADATION ► (LOCATOR)], the gradation range will
be specified in a same range.

Gradation Range
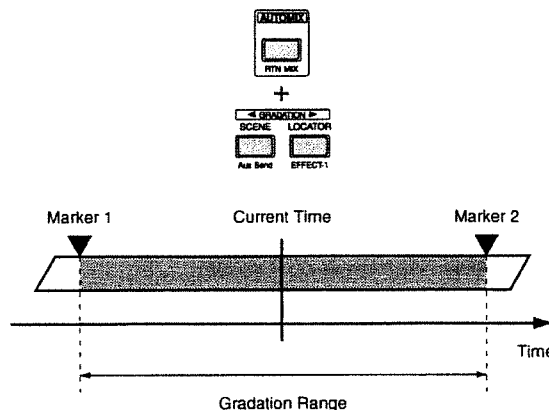
When the current time matches with a marker

When you press **[GRADATION ◄ (SCENE)]**, the
gradation includes the preceding marker; pressing
[GRADATION ► (LOCATOR)] creates a gradation
including the following marker.

Current Time
Marker 1   Marker 2   Marker 3

Time

Gradation Range   Gradation Range
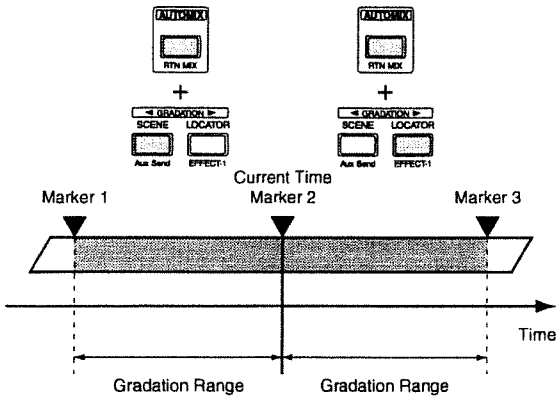
6. Press **[AUTOMIX]**. The AUTOMIX indicator will go out, indicating that Automix mode has been turned off.

If You Don't Want to Record Master Level Settings (Mask Master Level)

You can specify that the **Master Level** setting is not recorded when you record a snapshot.

1. Press **[SHIFT] + [SYSTEM (►)]** several times until "SYS Scene / Auto Mix?" appears in the display.

2. Press **[ENT/YES]**.

3. Press **PARAMETER [►►]** several times until "SYS A.Mix Snap=" appears in the display.

4. Rotate the **TIME/VALUE dial**.

A.Mix Snap (Auto Mix Snapshot Mode)
This selects the settings that will be recorded by the snapshot.

All: All settings are recorded.

MaskM: Master Level will be ignored.

5. Press **[PLAY (DISPLAY)]**. Return to Play condition.

6. Record the Snapshot as described in "Recording the Mixer Settings, Method 1."

Playing Back the Auto Mix
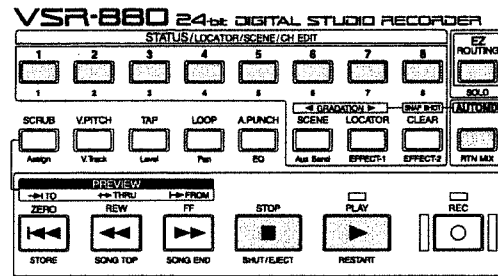
1. Press **[AUTOMIX]**. The AUTOMIX indicator lights, indicating that the VSR-880 is in Auto Mix mode.

2. Select the channels for which you want Auto Mix played back.

   2-1. Select Input Mixer ([SHIFT] + [IN MIX (LEVEL BALANCE)]), Track Mixer ([SHIFT] + [TR MIX (EXT SYNC)]) or Return Mixer ([SHIFT] + [RTN MIX (AUTOMIX)]).

   2-2. While pressing **[AUTOMIX]**, so that the button indicators to light, press **STATUS) ([1]–[8] or [EZ ROUTING]** (Master Block).

3. Press **[PLAY]**. Playback of Auto Mix begins.

4. When the playback is finished, press **[STOP]**.

Disabling Auto Mix on All Channels

1. Press **[SHIFT] + [SYSTEM]** several times until "SYS Scene/Auto Mix?" appears in the display.

2. Press **[ENT/YES]**.

3. Press **PARAMETER [▶▶]** several times until "SYS A.Mix Erase?" appears in the display.

4. Press **[ENT/YES]**.

5. Use [◀] or [▶] and the **TIME/VALUE dial** to specify the markers for the area in which you wish to erase the automix.

```
CONDITION MARKER#              TIME
SYS Erase     000<=>004  -dB
MEASURE   BEAT
              ↑      ▼    ↑
          Erase From   Erase To
```
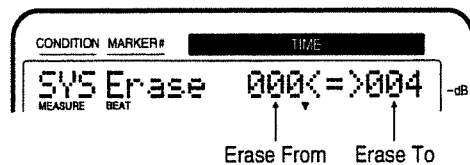
Erase From

Specify the first marker in the range that you want Auto Mix erased.

Erase To

Specify the last marker in the range that you want Auto Mix erased.

6. Press **PARAMETER [▶▶]**. "SYS EraseMode=" appears in the display.

7. Rotate the **TIME/VALUE dial**.

Erase Mode

Select the auto mix data which will be erased.

Event: Only Auto Mix events will be erased.

Marker: Both markers and Auto Mix events will be erased.

8. Press **PARAMETER [▶▶]**. "SYS Erase___<=>___?" appears in the display. The marker you specified in steps 5 will be displayed in the underlined area.

9. Press **[ENT/YES]**. A confirmation message appears on the screen.

10. Press **[ENT/YES]** again. If you wish to cancel the erase, press **[EXIT/NO]**.

11. When the automix data has been deleted, the display will indicate "—Complete—," and you will return to Play condition.

Song Condition

[SHIFT] + [SONG (◄◄)]

This section explains the following song-related operations.

```
┌──────────────────────┐
│ SNG Song Select ?    │
├──────────────────────┤
│ SNG Song New ?       │
├──────────────────────┤
│ SNG Song Name/Prtct? │
├──────────────────────┤
│ SNG Song Copy ?      │
├──────────────────────┤
│ SNG Song Erase ?     │
├──────────────────────┤
│ SNG Song Optimize ?  │
├──────────────────────┤
│ SNG Song Import ?    │
├──────────────────────┤
│ SNG Song Export ?    │
└──────────────────────┘
```

PARAMETER ◄◄ ►► SONG TRACK
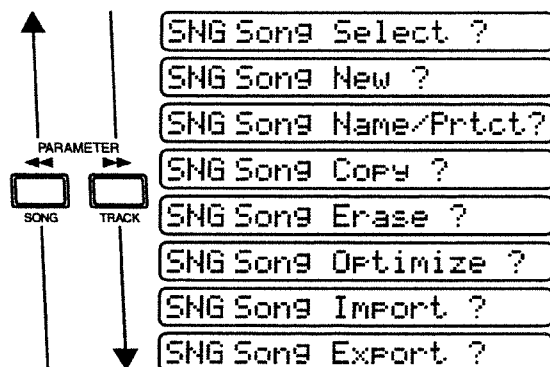
- Selecting a Song (Song Select) (User Guide p. 26)
- Creating a New Song (Song New) (User Guide p. 23)
- Saving Performance Data to a Zip Drive (Song Copy) (p. 72)
- Deleting Unneeded Songs (Song Erase) (User Guide p. 100)
- If "Disk Full!" appears in the display (Song Optimize) (User Guide p. 49)
- Loading The Other VS-series Performance Data into the VSR-880 (Song Import) (p. 28)
- Converting VSR-880 Song Data for Use with the other VS-series (Song Export) (p. 76)

Saving Performance Data to a Zip Drive (Song Copy)

You can save song data created on the VSR-880 to an external disk. This is a convenient way to have song data backed up in the event of possible disk drive problems or to save data when there is little free disk space.

Furthermore, since Zip disks are easy to handle and manage, you can use them when sharing song data with friends or when you have a VSR-880 both in the studio and at home. We recommend keeping copies of important song data on multiple disks.

NOTE

Incorrectly conducting the Song Copy procedure may result in loss of data. Roland Corporation assumes no liability concerning such loss of data. Furthermore, Roland does not warrant any copied data, regardless of the performance or condition of the Zip Drive.

Before You Use a Zip Drive

Handling the Zip Drive

- Install the unit on a solid, level surface in an area free from vibration. If the unit is tilted excessively, the Zip drive may malfunction or require service.
- Avoid using the unit immediately after it has been moved to a location with a level of humidity that is greatly different than its former location. Rapid changes in the environment can cause condensation to form inside the Zip drive, which will adversely affect the operation of the Zip drive and/or damage Zip disks. When the unit has been moved, allow it to become accustomed to the new environment (allow a few hours) before operating it.
- To insert a Zip disk, push it gently but firmly into the Zip drive—it will click into place. To remove a Zip disk, press the EJECT button firmly. Do not use excessive force to remove a Zip disk which is lodged in the Zip drive.
- Never attempt to remove a Zip disk from the Zip drive while the Zip drive is operating (the indicator is lit); damage could result to both the Zip disk and the Zip drive.
- Remove any Zip disk from the Zip drive before powering up or down.
- To prevent damage to the Zip disk drive's heads, always try to hold the Zip disk in a level position (not tilted in any direction) while inserting it into the Zip drive. Push it in firmly, but gently. Never use excessive force.
- Do not insert disks other than the specified Zip disks.
- If approximately thirty minutes pass without data being written to or read from a disk, a Zip drive will automatically stop rotation of the disk. This is referred to as Auto Power Save mode (Sleep mode). This function limits the power consumption and extends the life of the disk. Before you perform a read or write operation on the disk, press **[STOP]**. Then, it will return to its normal state. This will take two or three seconds.

Handling Zip Disks

- Zip disks contain a plastic disk with a thin coating of magnetic storage medium. Microscopic precision is required to enable storage of large amounts of data on such a small surface area. To preserve their integrity, please observe the following when handling Zip disks:
  - Never touch the magnetic medium inside the Zip disk.
  - Do not use or store Zip disks in dirty or dusty areas.
  - Do not subject Zip disks to temperature extremes (e.g., direct sunlight in an enclosed vehicle). Recommended temperature: -22–51° C (-7.6 to 123.8° F), storage humidity: 10–90 %.)
  - Do not expose Zip disks to strong magnetic fields, such as those generated by loudspeakers.

- The identification label should be firmly affixed to the Zip disk. Should the label come loose while the Zip disk is in the Zip drive, it may be difficult to remove the Zip disk.
- Put the Zip disk back into its case for storage.
- Zip disks do not have a protect tab to prevent data from being erased accidentally. If necessary, use Song Protect to protect your data (User Guide p. 51).
- Store all disks in a safe place to avoid damaging them, and to protect them from dust, dirt, and other hazards. By using a dirty or dust-ridden disk, you risk damaging the disk, as well as causing the disk drive to malfunction.

Connecting the Zip Drive

Use the following procedure to connect the Zip drive to the VSR-880.

NOTE

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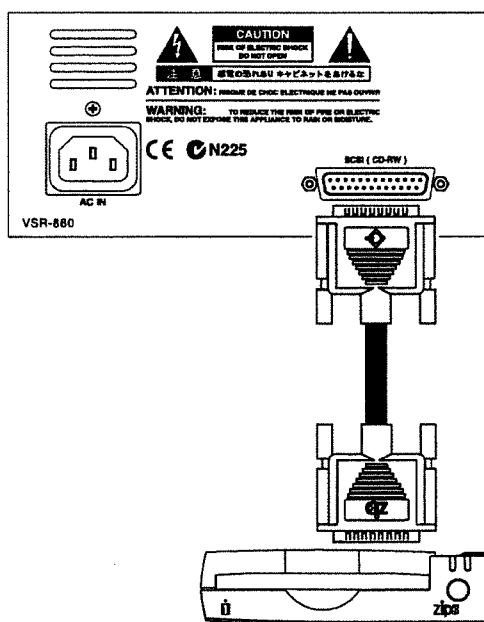
1. Turn on the power of the Zip drive.

2. Turn on the power of the VSR-880 with the POWER switch on the rear panel.

3. Turn on the power of connected audio equipments.

4. Raise the volume of the audio devices to appropriate levels.

About Song Copy procedure

There are two ways to carry out the Song Copy procedure. Select the method depend on the amount of free space on the destination disk (100 MB for Zip disks). The size of the current song is shown in the display. To see the size of the current song, hold down **[PLAY(DISPLAY)]** and press **[SONG (◄◄)]** (p. 40).

Playable:

Use this method to copy songs that use relatively little data onto disks with sufficient memory to hold them. If the destination drive or disk already has saved song data on it, then you can copy additional songs that will fit within the remaining free space.
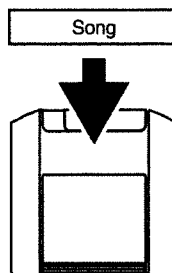
MEMO

When operations such as punch-in recording are repeated, old (now unused) performance data still remains on the disk drive. By erasing this unnecessary data from the disk drive, you can free up a significant amount of disk space. When you find that you cannot save something to a single disk, then try the "Song Optimize" procedure (User Guide p. 49). This way, you can reduce the memory required to save a song, enabling you to save to a single disk.

Archives:

Use this method to copy songs that are too large to be saved on a single disk. The song data is converted into a data format specifically for saving (archives format), and is copied onto multiple disks according to the free space on the disks. This means that it will not be possible to directly play back the song data. If you wish to play back song data copied in archive format, you will need to reload the archive data into the current drive using the appropriate procedure. Furthermore, song data cannot be copied onto disks that already have songs recorded on them.
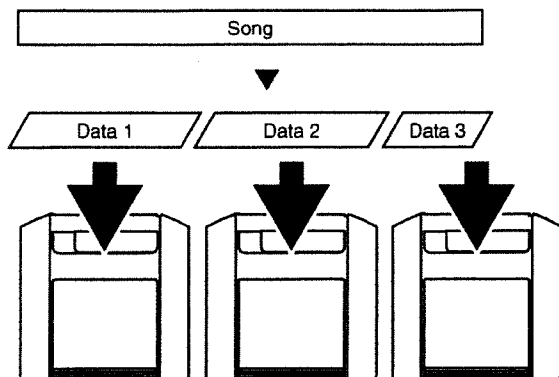
Saving a Song to a Single Disk (Playable)

Here, the procedure for saving a playable copy of a song on the VSR-880's internal hard disk to a Zip disk which is set to SCSI ID Number 5 is explained.

The approximate times which can be copied to one Zip disk (100 Mbyte) are as follows (calculated as one track, unit:mimutes, all times approximate).

Recording Mode	Sample Rate		
	48.0 kHz	44.1 kHz	32.0 kHz
VSR	34	37	52
CDR	17	18	26
MAS	17	18	26
MT1	34	37	52
MT2	46	50	69
LIV	55	60	83

1. Select the disk containing the source song you want to copy as the current drive. (User Guide p. 26)

2. Press **[SHIFT] + [SONG (◄◄)]** several times until "SNG Song Copy ?" appears in the display.

3. Press **[ENT/YES]**. "SNG CpyMode=" appears in the display.

4. Rotate the **TIME/VALUE dial**. Here, select "Playable."
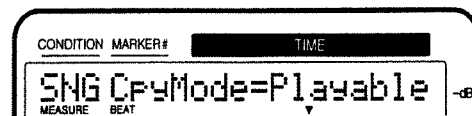
CpyMode (Copy Mode)

Select how the song will be copied.

Playable: Playable type.

Archives: Archives type.

5. Press **PARAMETER [►►]**. "SNG CpyTarget=" appears in the display.

6. Rotate the **TIME/VALUE dial**. If you wish to copy the current song, select "1 Song." To copy all songs from the current drive, select "All."
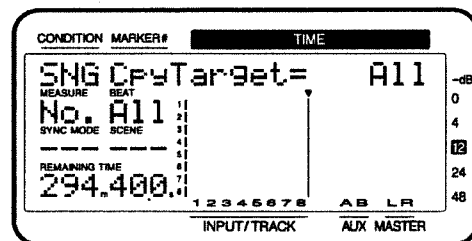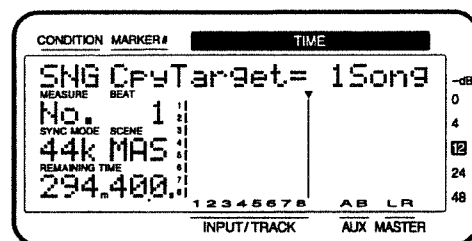
7. Press **PARAMETER [►►]**. "SNG Dest.Drive=" appears in the display.

8. Rotate the **TIME/VALUE dial**. Select the copy destination disk drive. The internal hard disk will be shown as "IDE," and external disk drives will be shown as "SC0–SC7." The number following each disk drive indicates the partition number. For example if you wish to copy to a Zip disk, select "SC5:0."

```
CONDITION  MARKER#  ▐        TIME        ▌
SNG Dest.Drive=SC5:0      -dB
MEASURE   BEAT                            0
No.    1                                  4
SYNC MODE  SCENE                          ▇
44k MAS                                   ▇
REMAINING TIME                            24
294.400.                                  48
          1 2 3 4 5 6 7 8   A B   L R
           INPUT/TRACK       AUX MASTER
```
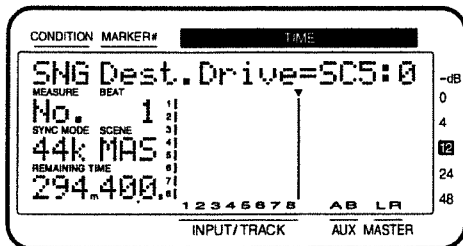
9. Press **[ENT/YES]**. A message asking if you want to continue appears in the display.

10. If "ALL" is specified as the target in step 6, a confirmation message will ask you whether you want to initialize the copy destination disk drive. If you wish to initialize the copy destination disk drive and copy the song data, press **[ENT/YES]**. In this case, all song data that had been saved on the copy destination disk drive will be lost. If you wish to copy without initializing, press **[EXIT/NO]**.

11. Press **[ENT/YES]**. "STORE Current?" (Store the current song?) appears in the display.

12. If you wish to save the current song, press **[ENT/YES]**; if not, then press **[EXIT/NO]**. **If you have selected a demo song, then press [EXIT/NO].**

13. When the Playable Copy procedure is finished, return to Play condition.

NOTE

If "Disk Memory Full" appears in the display, this indicates that the destination disk has insufficient free space, or that the number of songs on the disk has exceeded the maximum number (200 songs) that can be stored on the disk, and that the copy procedure was canceled. However, you can still use the song data copied up to that point.

MEMO

The destination disk needs to be initialized with the VS series before you start copying.

To Load Data from Disks (Drive Select)

If you want to take playable songs that have been copied to Zip disks and load them onto the VSR-880's hard disk, first switch the current drive to the Zip drive (Drive Select). This is referred to as Drive Select. Afterwards, you can make playable copies onto the internal hard disk from the Zip disk.

NOTE

Even if you remake a playable copy of a song from the Zip disk to the internal hard disk without first deleting an existing playable copy of the song from the hard disk (even if you return it to the hard disk), the original song is not overwritten. In this case, a new song is created with the same song name as that of the original and is written to the lowest available song number.
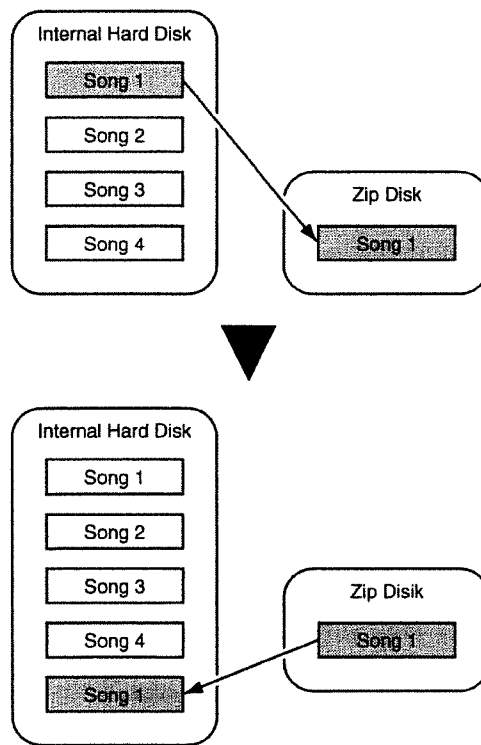
1. Confirm that power of both the Zip drive and the VSR-880 is turned on.

2. Insert a disk into the Zip drive.

3. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS Drive Select" appears in the display.

4. Press **[ENT/YES]**. The connected disk drives will be detected.

5. Rotate the **TIME/VALUE dial**. Select the disk drive to which you want to change. The internal hard disk will be shown as "IDE," and external disk drives will be shown as "SC0–SC7." The number following each disk drive indicates the partition number. For example if you wish to switch to the Zip drive, select "SC5:0."

```
CONDITION  MARKER#          TIME
SYS Select Drv=SC5:0  -dB
MEASURE   BEAT             ▾
```
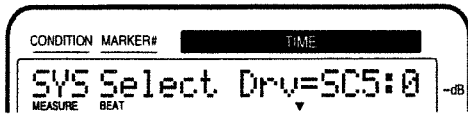
6. Press **[ENT/YES]**. A confirmation message appears on the screen.

7. Press **[ENT/YES]**. "STORE Current?" (Store the current song?) appears in the display.

8. If you wish to save the current song, press **[ENT/YES]**; if not, then press **[EXIT/NO]**. **If you have selected a demo song, then press [EXIT/NO]**.

9. After you have switched the current drive, return to Play condition.

10. Following the procedure described in "Saving a Song to a Single Disk" (p. 74), make a playable copy of the song on the Zip disk to the internal hard disk.

11. After you have made the copy, repeat Steps 3–9 to reselect the internal hard disk as the current drive.

When You Cannot Save a Song to a Single Disk (Archives)

To save songs in archives format, the destination disk must be initialized. This initialization procedure differs from the usual Drive Initialize formatting (User Guide p. 106). This procedure lets you carry out Archives Copy with newly purchased disks, disks which previously have been used with a personal computer or other device, or other disks which have not been formatted with Drive Initialize. However, any song data saved to the disk is lost once the Archives Copy procedure is performed.

Additionally, you cannot designate a disk containing archive format songs as the current drive. If you try to do this, the disk is identified as being an un-initialized disk.

Saving to Disks (Store)

Here we will explain the example of when a Zip drive with SCSI ID number 5 is connected as an external disk drive.

1. Make the drive (internal hard disk) containing the song you want to copy the current drive. (User Guide p. 26)

2. Insert a disk into the Zip drive.

3. Press **[SHIFT] + [SONG (◄◄)]** several times until "SNG Song Copy ?" appears in the display.

4. Press **[ENT/YES]**. "SNG CpyMode=" appears in the display.

5. Rotate the **TIME/VALUE dial**. Here, select "Archives."

```
CONDITION  MARKER#          TIME
SNG CpyMode=Archives  -dB
MEASURE   BEAT             ▾
```

CpyMode (Copy Mode)
Select how the song will be copied.
Playable: Playable type.
Archives: Archives type.

6. Press **PARAMETER [►►]**. "SNG ArcTarget=" appears in the display.

7. Rotate the **TIME/VALUE dial**. If you wish to copy the current song, select "1 Song." To copy all songs from the current drive, select "All."

```
CONDITION  MARKER#          TIME
SNG ArcTarget=1 Song  -dB
MEASURE   BEAT        ▾        0
No.     1 ;                    4
SYNC MODE  SCENE  ;            12
44k MAS ;                     24
REMAINING TIME  ;             48
294.400.;  12345678   AB LR
           INPUT/TRACK  AUX MASTER
```

```
CONDITION  MARKER#          TIME
SNG ArcTarget=      All  -dB
MEASURE   BEAT     ▾           0
No. All ;                     4
SYNC MODE  SCENE  ;            12
--- ---- ;                    24
REMAINING TIME  ;             48
294.400.;  12345678   AB LR
           INPUT/TRACK  AUX MASTER
```

8. Press **PARAMETER [►►]**. "SNG Arc.Drive=" appears in the display.

9. Rotate the **TIME/VALUE dial**. Select the copy destination disk drive. For this operation, you will be able to select only removable disk drives which are connected to the SCSI connector. It is not possible to select the current drive (the internal hard disk) as the copy destination drive. For example if you wish to copy to a Zip disk, select "SC5:0."

```
CONDITION MARKER#          TIME
SNG Arc.Drive= SC5:0  -dB
MEASURE   BEAT          ▾
```

10. Press **PARAMETER [►►]**. "SNG Arc.Func=" appears in the display.

11. Rotate the **TIME/VALUE dial**. Here, select "Store."

```
CONDITION MARKER#          TIME
SNG Arc.Func= Store  -dB
MEASURE   BEAT        ▾
```
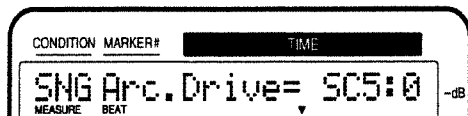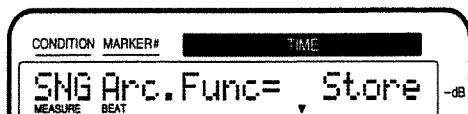
Arc.Func (Archives Function)

Select the Archive Type copy method.

Store: Saving to Zip Disks.

Extract: Loading from Zip Disks.

12. Press **[ENT/YES]**. A message asking if you want to continue appears in the display.

13. Press **[ENT/YES]**. "STORE Current?" (Store the current song?) appears in the display.

14. If you wish to save the current song, press **[ENT/YES]**; if not, then press **[EXIT/NO]. If you have selected a demo song, then press [EXIT/NO].**

15. The display will ask, "You'll Lose Data/Continue ?." Press **[ENT/YES]**. If you decide to cancel the Archives Copy operation, press **[EXIT/NO]**.

⚠ NOTE

All data saved on the Zip disk will be deleted. Do not use any Zip disk containing song data that you need.

16. If the song holds a large amount of data, and cannot be contained on a single Zip disk, the disk is ejected, and the message "Please Insert Disk" appears in the display. Insert the next disk and press **[ENT/YES]**. At this time, be sure to write the disk numbers on the labels so that you can keep track of the order in which the disks were inserted into the drive.

17. When copying over multiple Zip disks, "Insert Disk #" (# indicates the number in the order of insertion) appears in the display. Insert each of the disks once more in the proper order and press **[ENT/YES]**.

18. When the Archives Store procedure is finished, return to Play condition.

Loading Data From Disks (Extract)

1. Select the load (restore) destination drive (internal hard disk) as the current drive.

2. Insert a disk that was copied by Archives Store into the Zip drive.

3. Press **[SHIFT] + [SONG (◄◄)]** several times until "SNG Song Copy ?" appears in the display.

4. Press **[ENT/YES]**. "SNG CpyMode=" appears in the display.

5. Rotate the **TIME/VALUE dial**. Here, select "Archives."

```
CONDITION MARKER#          TIME
SNG CpyMode=Archives  -dB
MEASURE   BEAT         ▾
```

CpyMode (Copy Mode)

Select how the song will be copied.

Playable: Playable type.

Archives: Archives type.

6. Press **PARAMETER [►►]**. "SNG ArcTarget=" appears in the display.

7. Rotate the **TIME/VALUE dial**. If you wish to copy the current song, select "1 Song." To copy all songs from the current drive, select "All."

```
CONDITION  MARKER#  ████████ TIME ████████
SNG ArcTarget=1 Son9    -dB
MEASURE    BEAT                          0
No.      1 :!                            4
SYNC MODE  SCENE   :!
44k MAS :!                              12
REMAINING TIME      :!                  24
294.400.:!                             48
          12345678   AB  LR
          INPUT/TRACK   AUX MASTER
```

```
CONDITION  MARKER#  ████████ TIME ████████
SNG ArcTarget=    All    -dB
MEASURE    BEAT                          0
No. All :!                              4
SYNC MODE  SCENE   :!
--- --- :!                             12
REMAINING TIME      :!                  24
294.400.:!                             48
          12345678   AB  LR
          INPUT/TRACK   AUX MASTER
```

8. Press **PARAMETER [▶▶]**. "SNG Arc.Drive="
appears in the display.

9. Rotate the **TIME/VALUE dial**. select the disk drive from
which the data will be loaded. For this operation, you
will be able to select only removable disk drives which
are connected to the SCSI connector. It is not possible to
select the current drive (the internal hard disk) as the
copy destination drive. For example if you wish to copy
from a Zip disk, select "SC5:0."
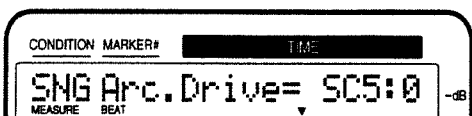
```
CONDITION  MARKER#  ████████ TIME ████████
SNG Arc.Drive= SC5:0   -dB
MEASURE    BEAT
```

10. Press **PARAMETER [▶▶]**. "SNG Arc.Func=" appears
in the display.

11. Rotate the **TIME/VALUE dial**. Here, select "Extract."
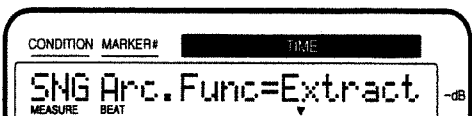
```
CONDITION  MARKER#  ████████ TIME ████████
SNG Arc.Func=Extract   -dB
MEASURE    BEAT
```

Arc.Func (Archives Function)

Select the Archive Type copy method.

Store: Saving to Zip Disks.

Extract: Loading from Zip Disks.

12. Press **[ENT/YES]**. A message asking if you want to
continue appears in the display.

13. Press **[ENT/YES]**. In step 7, select "1 Song." If two or
more songs were saved to the Zip disk, the names of the
saved songs will also be displayed. Use the **TIME/VALUE
dial** to select the name of the song you wish to copy.

14. Press **[ENT/YES]**. "STORE Current?" (Store the current
song?) appears in the display.

15. If you wish to save the current song, press **[ENT/YES]**; if
not, then press **[EXIT/NO]**. **If you have selected a demo
song, then press [EXIT/NO]**.

16. If you have selected "All" in step 3, the display will ask
"Init. IDE:0 OK?" This message is asking you to confirm
that you wish to initialize the loading destination drive
(the internal hard disk). If you wish to initialize the drive
and then load, press **[ENT/YES]**. If you decide not to
initialize, press **[EXIT/NO]**.

NOTE

If at this point you press **[ENT/YES]**, all songs saved on the
internal hard disk will be lost. Normally you should press
[EXIT/NO]. If the loading destination hard disk does not have
sufficient space, you should first make a backup copy of the
internal hard disk, and then press **[ENT/YES]**.

17. Execute the load. When copying over multiple disks,
"Insert Disk #" (# indicates the number in the order of
insertion) appears in the display. Insert the next disk and
press **[ENT/YES]**.

18. When the Archive Extract procedure is finished, return
to Play condition.

Channel Condition

[SHIFT] + [IN MIX] or [SHIFT] + [TR MIX]

This section explains the parameters which can be set for each channel of the mixer.

Settings for each channel

1. **[SHIFT] + [IN MIX (LEVEL/BALANCE)]** or
   [SHIFT] + [TR MIX (EXT SYNC)]

2. **[SHIFT] + STATUS ([1]–[8])**

3. PARAMETER [◄◄] or [►►] → TIME/VALUE dial

```
IN1 Input=        REAR
IN1 ATT =          0dB
IN1 Phase =        NRM
IN1 MIX Sw=         ON
IN1 MIX Level =    100
IN1 MIX Pan =      L63
IN1 EQ Switch=     Off
IN1 AUX Sw =       Off
IN1 Channel Link=Off
IN1 Level Link=    Off
IN1 FX1 Ins =      Off
IN1 EFFECT1=       Off
IN1 FX2 Ins =      Off
IN1 EFFECT2=       Off
```

```
TR1 Assign  IN1=    On
TR1 ATT =          0dB
TR1 Phase =        NRM
TR1 MIX Sw=         ON
TR1 MIX Level =    100
TR1 MIX Pan =      L63
TR1 V.Track=       A:1
TR1 EQ Switch=     Off
TR1 AUX Sw =       Off
TR1 Channel Link=Off
TR1 Level Link=    Off
TR1 FX1 Ins =      Off
TR1 EFFECT1=       Off
TR1 FX2 Ins =      Off
TR1 EFFECT2=       Off
```

4. **[PLAY (DISPLAY)]**

Assign the input source

[SHIFT] + [Assign (SCRUB)]

Specify the source, track, or effect return that you wish to assign to the track to be recorded.

Assign *

Specify the source/track/effect return which will assigned to each track for recording. If you press **[ENT/YES]** the display will indicate "On," showing that it has been assigned for recording. If you press **[EXIT/NO]**, the display will indicate "Off," and the signal will not be assigned (it will not be recorded).

The symbols displayed in "***" indicate the following signals.

IN1–IN8:   INPUT Jack 1–INPUT Jack 8

TR1–TR8:   Track 1–Track 8 (*1)

FX1:   Effect 1 Return

FX2:   Effect 2 Return

StIn: Stereo In

For example, a display of "TR1 Assign IN1= On" indicates that "the source from INPUT jack 1 has been assigned to track 1 for recording."

(*1)   With the VSR-880, you can perform track bouncing on the same track. However, when you do this, each record or playback track is counted as a single track, with a limit of 8 tracks in total. For example, when you set the routing so that Track 1 is bounced to Track 1, then the STATUS indicator for Track 8 goes off, indicating the Track 8 is now not being played back. And the STATUS indicator for Track 1 blinks green and red alternatively, indicating the Track 1 is now special recording.

Select the source to input to the input mixer

Select the source to adjust in the input mixer (when using the input mixer).

Input

REAR: INPUT 1–8 jacks of rear panel

FRONT: INPUT A and B jacks of front panel

DIGITAL: OPTICAL IN or COAXIAL IN connectors of rear panel

R-BUS: R-BUS connector of rear panel

* Same sources are always assigned to the input channel pairs 1 and 2, 3 and 4, 5 and 6, 7 and 8. For example, you cannot assign "R-BUS" to input channel 1, and "DIGITAL" to input channel 2.

* When "REAR" is selected, each of the INPUT jacks 1 to 8 is assigned to the input channel 1 to 8.
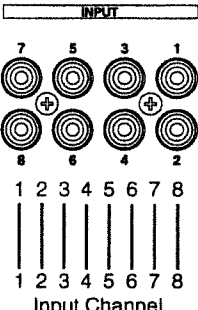
Input Channel

* When "R-BUS" is selected, each input source of the R-BUS (MULTI IN 1-8) is assigned to the input channel 1 to 8.
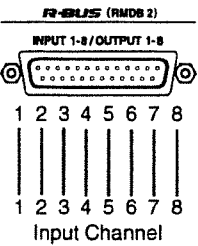
Input Channel

* When "FRONT" is selected, INPUT A is assigned to the input channels 1, 3, 5 and 7, and INPUT B to the input channels 2, 4, 6 and 8.
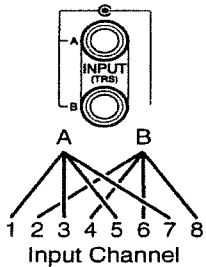
Input Channel

* When "DIGITAL" is selected, digital left channel is assigned to the input channels 1, 3, 5 and 7, and digital right channel to the input channels 2, 4, 6 and 8.
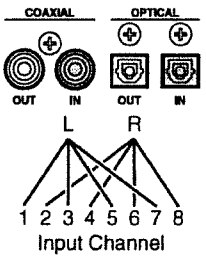
Input Channel

Adjusting the attenuation of the Channel Input Level (Attenuator)

You can adjust the volume level of each input and track channel without using the Mix Level. You can raise the volume when playing back tracks that were recorded at low levels, avoid distorted sound that may occur when adjusting the channel equalizers, and be able to operate with the Mix Levels near "100".

ATT (Attenuator)

Adjusts the volume level (-12 to +12 dB) of each channel's input signal.

Inverting the phase (Phase)

The VSR-880 features balanced (TRS) INPUT jacks, each one configure as follows.

```
TIP     HOT
RING    COLD
SLEEVE  GND
```

However, some audio devices have the opposite HOT (TIP) and COLD (RING) configuration. Using such equipment as is may result in poor sound placement, disintegration of the left-right balance, and a loss of the separation between left and right sounds when using stereo inputs. In such instances, you need to switch the phase of each channel.

Phase

This selects the phase (NRM, INV) for each channel. Usually, "NRM" is selected.

NRM: Normal phase (same phase as the input)

INV: Inverted phase (opposite phase)

Adjusting the output to the MIX bus

[SHIFT] + [Level (TAP)]

[SHIFT] + [Pan (LOOP)]

Adjust the volume/pan of each channel that is output to the MIX bus.

MIX Sw (Mix Switch)

This selects the bus to which the source or track output will be assigned. For this example select "On."

On: The source or track will be sent to the mix bus. Set this to "On" when, for example, you simply want to mix the inputs without recording the source. However, the sources that are assigned to the RECORDING bus are disabled.

Off: The source or track will not be assigned to the mix bus. If it is not assigned to a recording bus either, then that source/track will not be output anywhere.

MIX Level

This adjusts the level setting (0–127) of the signal sent to the MIX bus and the RECORDING bus.

MIX Pan

This adjusts the pan setting (L63–0–R63) of the signal sent to the MIX bus and the RECORDING bus.

Switching V-Tracks

[SHIFT] + [V.Track (V.PITCH)]

V.Track

Selects the V-Track (1–8) for recording or playback. (at Track Mixer)

Adjusting the Equalizer (EQ)

[SHIFT] + [EQ (A.PUNCH)]

Adjust the equalizer for each channel.

NOTE

The 2-band/3-band equalizer configuration is switched by the Master block setting **EQ Sel** (equalizer select) (p. 86).

NOTE

If **Record Mode** (recording mode) is set to "VSR," it is not possible to use the equalizer (it will not be displayed).

NOTE

If you adjust the equalizer while sound is playing, you may notice "blips" in the sound. This is not a malfunction. If you find it annoying, adjust the equalizer when the sound is not playing.

EQ Switch (Equalizer Switch)

If you wish to use the equalizer, set this "On." If not, set this "Off." When equalizer settings are being made, the equalization curve will be shown graphically in the bar display. If this is "Off" the equalizer-related parameters will not be available. For this example, select "On" so that the equalizer will be applied.

EQL (Equalizer Low)

This adjusts the gain (-12 to 12 dB) and the center frequency (40 Hz to 1.5 kHz) of the low-range (shelving) equalizer.

EQM (Equalizer Mid Gain)

This adjusts the gain (-12 to 12 dB) of the mid-range (peaking) equalizer.

EQM (Equalizer Mid)

This adjusts the center frequency (200 Hz to 8 kHz) and Q (definition: 0.5 to 16) of the mid-range (peaking) equalizer.

EQH (Equalizer High)

This adjusts the gain (-12 to 12 dB) and the center frequency (500 Hz to 18 kHz) of the high-range (shelving) equalizer.

Using auxiliary output (AUX)

[SHIFT] + [AUX Send (SCENE)]

Assign the source or the track output to an AUX bus.

AUX Sw (AUX Switch)

Sets how the source or track signal is sent to the AUX bus.

Off: The signal is not sent.

PreFade: The signal after passing through the **ATT (attenuator)** is sent.

PstFade: The signal after passing through the **Mix Level** is sent.

AUX Level

Adjusts the level (0–127) of the signal sent to the AUX bus. Set the initial value to "100."

AUX Pan

This adjusts the stereo placement of the signal (L63–0–R63) sent to the AUX bus.

Simultaneously Adjusting a Stereo Source (Channel Link)

When recording or playing back a stereo source, normal mixer operations require you to control the left and right channels separately, which can make it inconvenient to adjust equalizer, effects, and other settings. In such cases, you can have the settings for a pair of channels, with the exception of the mix level and pan settings, linked so that they adjusted in the same way. This is called the **Channel Link**.

When Channel Link is on, adjacent odd- and even-numbered channels are paired as shown below. The settings of each odd-numbered channel will be the same as the settings of the corresponding even-numbered channel. When the setting of one channel are modified, the settings of the paired channel will change in the same way.

Channel a	Channel 1
	2
Channel b	Channel 3
	4
Channel c	Channel 5
	6
Channel d	Channel 7
	8
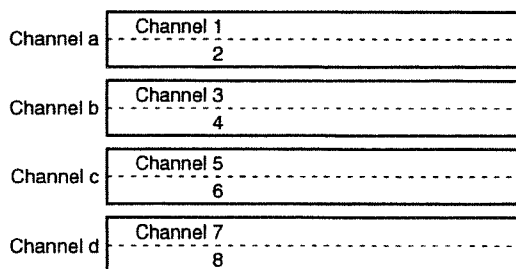
Channel Link

This turns the Channel Link function on and off.

Adjusting the Mix Level

When Channel Link is on, the balance of both channels is preserved, and the total volume level controlled with Mix Level for the odd-numbered channel. If you want the Mix Levels to act independently, use the following procedure.

MIX Sw (Mix Switch)

This selects the bus to which the source or track output will be assigned. For this example select "On."

On: The input or track will not be assigned to a recording bus, but will be sent directly to the mix bus. Set this to "On" when, for example, you simply want to mix the inputs without recording the source. However, the sources that are assigned to the RECORDING bus are disabled.

Off: The source or track will not be assigned to the mix bus. If it is not assigned to a recording bus either, then that source/track will not be output anywhere.

MIX Level

Adjust the volume level (0–127) of the signal that is output to the mix bus or the recording bus.

Ofs Level (Offset Level)

Adjust the overall volume level (0–127) while maintaining the volume balance of the two channels.

Adjusting the Pan

When Channel Link is on, this adjusts the total left-right balance while preserving the pan settings for both channels. If you want to adjust the pan for each channel independently.

NOTE

If you adjust the Pan while sound is playing, you may notice "blips" in the sound. This is not a malfunction. If you find it annoying, adjust the equalizer when the sound is not playing.

MIX Bal (Mix Balance)

Adjust the pan (L63–0–R63) of the signal that is output to the mix bus or the recording bus.

Ofs Bal (Offset Balance)

Adjust the overall left/right level (L63–0–R63) while maintaining the panning of both channels. This will operate linked with the pan knob of the odd-numbered channel.

Linking Only the Mix Levels (Level Link)

The **Mix Levels** alone of adjacent odd- and even-numbered channels can be linked so that the volume balance of the channel pair can be maintained as you adjust the overall volume level. This is referred to as **Level Link**. When level link is turned on, equalizer settings and effect send level settings etc. for the two channels can be made (independently) for either channel.

NOTE

Level Link is valid only when Channel Link is turned "Off." If Channel Link is also turned on, settings such as equalizer and effect send level will also be linked.

Level Link

This turns the Level Link function on and off.

Using Internal Effects

Send/Return

[SHIFT] + [EFFECT-1 (LOCATOR)]
[SHIFT] + [EFFECT-2 (CLEAR)])

EFFECT 1 (Effect 1 Send Select Switch)
EFFECT 2 (Effect 2 Send Select Switch)

This selects the how the signal is sent to the EFFECT bus (1 or 2; send).

Off: The signal is not sent.

PreFade: The sound after passing through the **ATT (attenuator)** is sent.

PstFade: The sound after passing through the **Mix Level** is sent.

EFFECT1 Send (Effect 1 Send Level)
EFFECT2 Send (Effect 2 Send Level)

This adjusts the volume level of the signal (0–127) sent to the EFFECT bus (1 or 2). Set the initial value to "100."

FFFECT1 Pan (Effect 1 Send Pan)
FFFECT2 Pan (Effect 2 Send Pan)

This adjusts the stereo placement of the signal (L63–0–R63) sent to the EFFECT bus (1 or 2).

Insert

FX1 Ins (Effect 1 Insert Switch)
FX2 Ins (Effect 2 Insert Switch)

This sets how the effects are connected.

Insert: Inserts in the between the equalizer and Mix Level.

InsertL: Inserts in the left channel of the stereo effect.

InsertR: Inserts in the right channel of the stereo effect.

InsertS: Inserts in the combined left and right channels of the stereo effect in series.

Ins Send (Insert Send Level)

This adjusts the level of the signal (0–127) sent to the Insert effect. Set the initial value to "100."

Ins Rtn (Insert Return Level)

This adjusts the level of the signal (0–127) returned from the Insert effect. Set the initial value to "100."

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Listening Only to a Specific Channel (Solo)

When making equalizer adjustments or checking the balance during mixdown, it is often desirable to be able to monitor the sound of one specific channel. Although it would be possible to individually mute each of the channels that you didn't want to hear with **STATUS** ([1]–[8]), this is inconvenient. In such cases, you can monitor only a specific channel and mute all the other channels. This is called the **Solo function**.

1. Hold down **[SHIFT]** and press **[SOLO (EZ ROUTING)]**. The display will briefly indicate "SOLO Mode ON," indicating that the Solo function is on. The display in the CONDITION field will alternate between the name of the current condition and "sol," also indicating that the Solo function is on. In the present status, all channels are monitored.
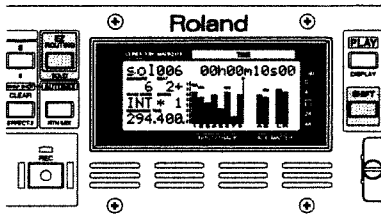
2. Press **STATUS** ([1]–[8]) for the channel you wish to monitor. Only that channel is now monitored. At this time you can make adjustments to mix level, balance, equalizer, effects, and other settings.

3. Monitor and Mute alternate each time you press **STATUS** ([1]–[8]) for the channel you wish to monitor. The STATUS indicator stays blink, and only that channel is now monitored. At this time you can make adjustments to mix level, balance, equalizer, effects, and other settings. Furthermore, you can monitor two or more channels. However, channels which were muted before the Solo function was turned on cannot be monitored even when their SELECT buttons are pressed. Additionally, when you are monitoring just one channel, pressing the SELECT button of that channel allows you to then monitor all channels.

4. To turn off the Solo function, hold down **[SHIFT]** and press the **[SOLO (EZ ROUTING)]** once again. Return to Play condition.

Master Condition

This section explains the parameters which can be set in the master section and return mixer.

Master Block Settings

[LEVEL/BALANCE]

Make settings for the Master block.

1. **[LEVEL/BALANCE]**

2. **PARAMETER [◄◄] or [►►] → TIME/VALUE dial**


```
MST Master Sel = MIX
MST MasterLevel= 100
MST Master Bal=      0
MST AUX Out =     AUX
MST AUX Level=       0
MST AUX Bal=         0
MST FX1 Ins Sw = Off
MST FX2 Ins Sw = Off
MST FX1 SND Lev =100
MST FX1 SND Bal =    0
MST FX2 SND Lev =100
MST FX2 SND Bal =    0
MST EQ Sel=   3BandEQ
MST Digital Coa= MST
MST Digital Opt= MST
MST Phones Sel=   MST
MST Direct Out = Off
```

3. **[PLAY(DISPLAY)]**

MEMO
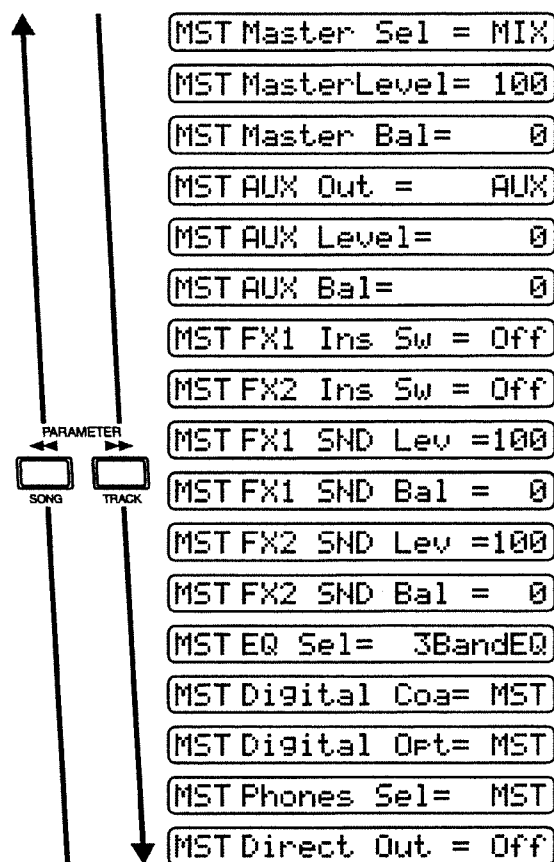
Pressing [LEVAL/BALANCE] toggles between the Master Level and the Master Balance.

Determining the Output of the MASTER Jacks

Adjust the signal/level/balance that is output from the OUTPUT 1-2 (MASTER) jacks.

Master Sel (Master Select)

This selects what sounds are heard through the OUTPUT 1-2 (MASTER) jacks.

MIX: The sounds assigned to the MIX bus.

AUX: The sounds assigned to the AUX bus.

FX1: The sounds assigned to the (FX1) EFFECT bus.

FX2: The sounds assigned to the (FX2) EFFECT bus.

REC: All sounds assigned to the RECORDING bus.

MasterLevel

Adjusts the volume (0–127) of the sound that is output from the OUTPUT 1-2 (MASTER) jacks.

Master Bal (Master Balance))

Adjusts the left/right balance (L63–0–R63) of the sound that is output from the OUTPUT 1-2 (MASTER) jacks.

Determining the Output of the AUX Jacks

Adjust the signal/level/balance that is output from the OUTPUT 3-4 (AUX A, B) jacks.

AUX Out

This selects what sounds are heard through the OUTPUT 3-4 (AUX A, B)) jacks.

AUX: The sounds assigned to the AUX bus.

FX1: The sounds assigned to the (FX1) EFFECT bus.

FX2: The sounds assigned to the (FX2) EFFECT bus.

AUX Level

Adjusts the volume (0–127) of the sound that is output from the OUTPUT 3-4 (AUX A, B) jacks.

AUX Bal (AUX Balance)

Adjusts the left/right balance (L63–0–R63) of the sound that is output from the OUTPUT 3-4 (AUX A, B) jacks.

Inserting an Effect into the Master Block

MST FX1 INS Sw (Master Effect 1 Insert Switch)

MST FX2 INS Sw (Master Effect 2 Insert Switch)

Sets how the effects are connected.

Off: There is no Insert.

On: Inserts in both channels of the MIX bus.

MST FX1 Ins Send (Master Effect 1 Insert Send Level)

MST FX2 Ins Send (Master Effect 2 Insert Send Level)

This adjusts the level of the signal (0–127) sent to the Insert effect. Set the initial value to "100."

MST FX1 Ins Rtn (Master Effect 1 Insert Return Level)

MST FX1 Ins Rtn (Master Effect 1 Insert Return Level)

This adjusts the level of the signal (0–127) returned from the Insert effect. Set the initial value to "100."

Adjusting the overall send amount of the effect send

You can adjust the balance of the total effect send level for each effect with the effect send level and send pan settings that are assigned to each individual channel left as they are.

MST FX1 SND Lev (Master Effect 1 Send Level)

MST FX2 SND Lev (Master Effect 2 Send Level)

This adjusts the total volume level of the signal (0–127) sent to the effect. Set the initial value to "100."

MST FX1 SND Bal (Master Effect 1 Send Balance)

MST FX2 SND Bal (Master Effect 2 Send Balance)

This adjusts the balance (L63–0–R63) of the total signal sent to the effect. Set the initial value to "0" (center).

Switching between 2-band and 3-band equalizers

EQ Sel (Equalizer Select)

Select the type of equalizer that you wish to use.

2BandEQ: 2-band equalizer.

3BandEQ: 3-band equalizer.

Determining the Output of the DIGITAL OUT Connectors

Select the signal that will be output from the digital out connectors (OPTICAL OUT, COAXIAL OUT).

Digital Coa (Digital Coaxial Out)

Selects what sounds are heard through the DIGITAL Coaxial connector.

MST: Same sound as is heard from the MASTER jacks (MIX bus).

AUX: The sounds assigned to the AUX bus.

FX1:   The sounds assigned to the (FX1) EFFECT bus.

FX2:   The sounds assigned to the (FX2) EFFECT bus.

Digital Opt (Digital Optical Out)

Selects what sounds are heard through the DIGITAL Optical connector.

MST: Same sound as is heard from the MASTER jacks (MIX bus).

AUX: The sounds assigned to the AUX bus.

FX1:   The sounds assigned to the (FX1) EFFECT bus.

FX2:   The sounds assigned to the (FX2) EFFECT bus.

Determining the Output of the Headphones Jack

Phones Sel (Headphones Select)

Selects what sounds are heard through the PHONES jack.

MST: Same sound as is heard from the MASTER jacks (MIX bus).

AUX: The sounds assigned to the AUX bus.

FX1:   The sounds assigned to the (FX1) EFFECT bus.

FX2:   The sounds assigned to the (FX2) EFFECT bus.

Output each track individually (Direct Out)

Specify how analog out (OUTPUT 1–8) will be used.

Direct Out

If this is turned "On," the sound from tracks 1–8 will be output directly from the OUTPUT1–8 jacks. In this case you will be able to adjust **EQ** (equalizer), use this setting when you wish to connect the OUTPUT1–8 jacks to an external mixer and use the external mixer to adjust the

level and pan of each track. With the factory settings, this
is turned "On."

If this is turned "Off," the sound from tracks 1–8 will be
sent to the MIX bus, and output from OUTPUT1–2
(MASTER). Use this setting when you wish to connect
the OUTPUT1–2 (MASTER) jacks to a power amp, and
use the VSR-880's internal mixer (track mixer) to adjust
the level and pan of each track.

Return Mixer Settings

[SHIFT] + [RTN MIX (AUTOMIX)]

1. **[SHIFT] + [RTN MIX (EZ ROUTING)]**

2. **PARAMETER [◄◄] or [►►] → TIME/VALUE dial**
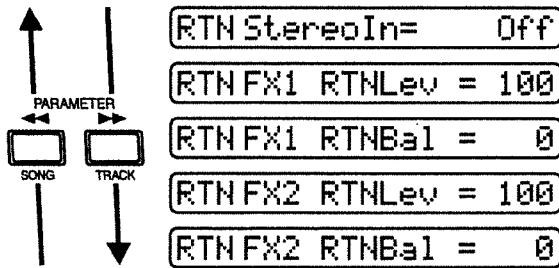
3. **[PLAY (DISPLAY)]**

Mixing In a Stereo Source (Stereo In)

[SHIFT] + [6]

You can assign input signals from the INPUT jacks or
DIGITAL IN connector to the MIX bus or RECORDING bus,
without having them pass through the input mixer. You can
also monitor these signals without having them pass through
the input mixer or output mixer. This is referred to as **Stereo
In**. This can be convenient when, for example, the same input
source features sounds with effects and sounds without
effects recorded on separate tracks.

StereoIn

Selects the external input connector or jack using Stereo
In.

Off: Stereo In is not used.

Input 12: Selects INPUT jacks 1/2 for use with Stereo In.

Input 34: Selects INPUT jacks 3/4 for use with Stereo In.

Input 56: Selects INPUT jacks 5/6 for use with Stereo In.

Input 78: Selects INPUT jacks 7/8 for use with Stereo In.

StIn Level (Stereo In Level)

Adjusts the volume level (0–127) for Stereo In.

StIn Bal (Stereo In Balance)

Adjusts the balance (L63–0–R63) for Stereo In.

Adjusting the effect return level

[SHIFT] + [7] or [SHIFT] + [8]

RTN FX1 RTNLev (Master Effect 1 Return Level)
RTN FX2 RTNLev (Master Effect 2 Return Level)

Adjusts the return level (0–127) of the effect sound. Set
the initial value to "100."

RTN FX1 RTNBal (Master Effect 1 Return Balance)
RTN FX2 RTNBal (Master Effect 2 Return Balance)

Adjusts the left/right balance (L63–0–R63) of the effect
sound. Set the initial value to "0" (center).

Track Condition

[SHIFT] + [TRACK (►►)]

This section explains the content and procedures for editing sound that has been recorded. Please read this chapter to gain an understanding of the concepts of "editing" described in this section.


```
TRK Track Copy ?
TRK Track Move ?
TRK Track Exchange ?
TRK Track Insert ?
TRK Track Cut ?
TRK Track Erase ?
TRK Time Comp/Exp. ?
```
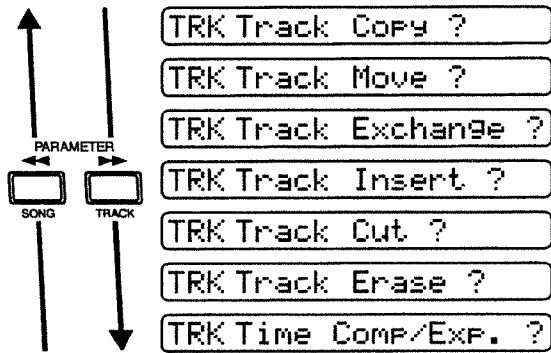
About Editing Operations

On a tape recorder, in order to modify a performance that has been recorded you have to erase the performance which you recorded previously. Additionally, if you wish to change the composition of a song, you must re-record it from the beginning, or use scissors and tape to splice sections or the recording. In either case, with the tape itself subject to handling, it can never be returned to its original condition. This type of editing is known as **destructive editing**.

Compare with a tape recorder, with digital disk recording, since copying data has negligible effect on the sound, you can copy the original data before editing and back it up. It is also easy to copy parts of the data to different locations, or to erase specified portions of the data (Track Edit).
Furthermore, even if you make a mistake during Punch-In Recording or Track Bouncing, you can restore data to its condition any number of steps before the edit, without the edited content being deleted (Undo function). Editing of this type which allows the original data to be recovered is known as **non-destructive editing**.

Track Edit Range

To edit the sound, you will need to specify the track or V-track and the location where you wish to edit.
Only tracks or V-tracks within the same V-track bank can be selected for track editing. For example, it is not possible to copy or move track 1 / V-track 1 of V-track bank A to V-track bank B.
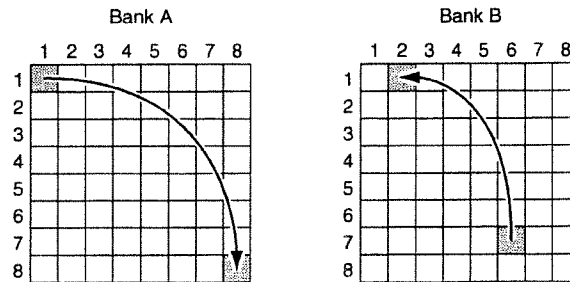
Example of when track editing is possible
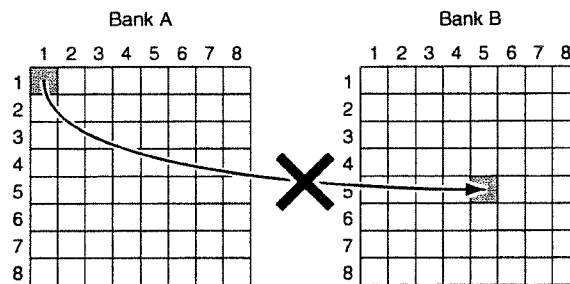
Example of when track editing is not possible

MEMO

However, Track Exchange (p. 92) is able to edit between different V-track banks.

About the Bar Display

When you are selecting a track, the bar display will indicate the track selection status. The numbers on the horizontal axis are the track numbers, and the numbers on the vertical axis are the V-track numbers. Locations corresponding to tracks which contain data will light. Tracks which are selected for modification will blink.
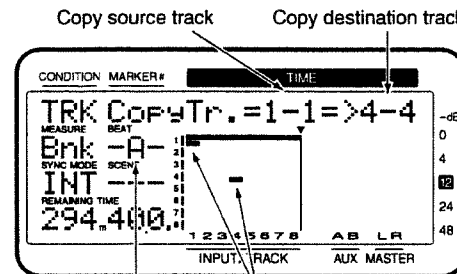
At this time, you can view a Play List in the bar display. Hold down **[SHIFT]** and press **[PLAY (DISPLAY)]**. To return to the previous display, once again hold down **[SHIFT]** and press **[PLAY (DISPLAY)]**.

```
CONDITION  MARKER#          TIME
TRK CopyTr.=1-1=>4-4  -dB
MEASURE   BEAT                         0
Brk -A-                               4
SYNC MODE  SCENE                      12
INT ---                             24
REMAINING TIME                        48
294.400
          12345678    AB   LR
          INPUT/TRACK    AUX MASTER
```
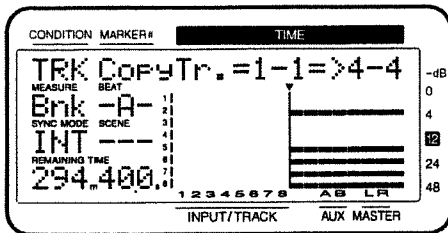
If you have selected an item which specifies a time, a play list will appear in the bar display. In this case if you wish to view an amplitude profile or the track selection status in the bar display, hold down **[SHIFT]** and press **[PLAY (DISPLAY)]**. The amplitude profile allows you to view the sound recorded in the selected track as a waveform. Use **STATUS** ([1]–[8]) to select the track which will be viewed as an amplitude profile.

Waveform display   Playback time

```
CONDITION  MARKER#          TIME
TRK St. =00h00m16s02  -dB
MEASURE   BEAT                         0
   9    3+                            4
SYNC MODE  SCENE                      12
INT ---                             24
REMAINING TIME                        48
294.400
          12345678    AB   LR
          INPUT/TRACK    AUX MASTER
```
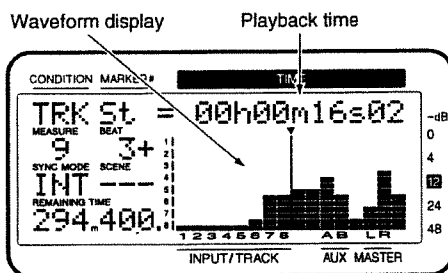
MEMO

For more detailed information, please refer to "Viewing the Level Meter and Playlists" (User Guide p. 19).

Repeating Performance Data (Track Copy)

This operation copies the playback data of a specified area to another location. For example, this is convenient when you play the same chorus both at the beginning and end of a song. If playback data exists at the copy destination, that data will be overwritten.

Example 1: Copying twice to the same track
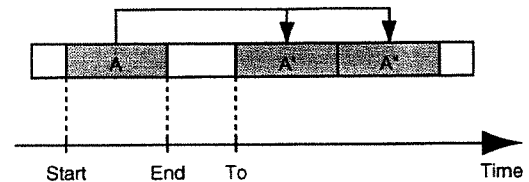
Example 2: Copying twice to a defferent track
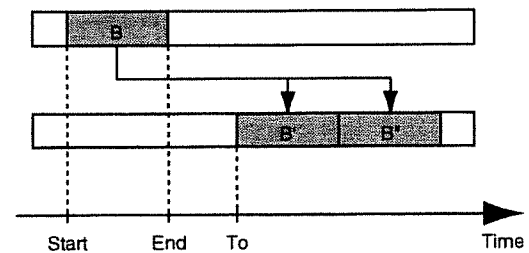
NOTE

Playback data of a track for which Channel Link is ON cannot be copied to a track whose channel has a Channel Link setting of OFF. In the same way, playback data of a track for which Channel Link is OFF cannot be copied to a track whose channel has a Channel Link setting of ON.

NOTE

The length of the data to be copied must be greater than 0.5 seconds. If data shorter than 0.5 seconds is copied, the sound will not playback.

1. You can use Track Copy with the tracks that are currently audible. Select the V-track that contains the copy source playback data, and prepare that data for playback.

2. Press **[SHIFT] + [TRACK (▶▶)]** several times until "TRK Track Copy ?" appears in the display.

3. Press **[ENT/YES]**.

4. Press **[◀]** several times until "TRK CopyTr.=?-?=>?-?" appears in the display.

5. Hold down **[SHIFT]** and press **STATUS** ([1]–[8]) for the copy source track. The STATUS indicator will light orange. You can also use the **TIME/VALUE dial** to select the copy source track.

6. Press **STATUS** ([1]–[8]) for the copy destination track. The STATUS indicator will blink red.

7. Rotating the **TIME/VALUE dial** allows you to specify the copy destination V-track. For example, "1-1" indicates "Track 1, V-track 1."

Copy source track　　Copy destination track
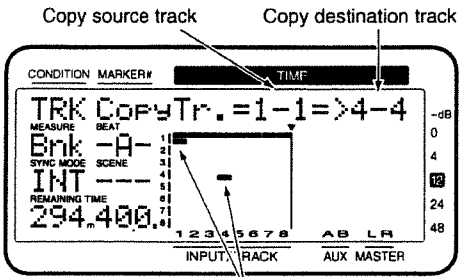
Displayed blinking

8. If you want to copy multiple tracks simultaneously, repeat Steps 5–7.

NOTE

Do not designate V-tracks that have already been specified as copy destinations for other Tracks.

9. If there are any tracks which you decide not to copy, press that track's **[SELECT (CH EDIT)]** once again, and press **[EXIT/NO]** twice. Or use **PARAMETER [◄◄]** or **[►►]** to access the settings for that track, and press **[EXIT/NO]** twice. The STATUS indicator will blink green.

10. Press **PARAMETER [►►]** several times until "TRK St=" appears in the display.

11. Rotate the **TIME/VALUE dial**.

St (Start point)

Specifies the starting time of the copy range.

12. Press **PARAMETER [►►]**. "TRK Frm=" appears in the display.

13. Rotate the **TIME/VALUE dial**.

Frm (From point)

Specifies the time of the copy source playback data in relation to the "To" point. Normally you will set this to be the same as the Start point.

Using "Frm" Effectively

Normally, the data is copied starting at the specified copy destination time. However, if you want to have the copy made with reference to a point within the designated range where a specific sound occurs, set this with "Frm."

For example, suppose that you wish to copy a sound effect of a time bomb ticking and then exploding, and that you want to place the explosion at a specific timing location. Normally, in order to specify the copy destination time, you would have to calculate the time until the explosion occurs. In such cases, however, you can specify "Frm" as "the copy source time at which the explosion begins" and "TO" (the reference time of the copy destination) as "the copy destination time at which you want the explosion to occur." This lets you copy the data with the explosion placed with precisely the right timing.

Example 3: Copying using the "Frm" setting

14. Press **PARAMETER [►►]**. "TRK End=" appears in the display.

15. Rotate the **TIME/VALUE dial**.

End (End point)

Specifies the ending time of the copy range.

16. Press **PARAMETER [►►]**. "TRK To =" appears in the display.

17. Rotate the **TIME/VALUE dial**.

To (To point)

Specifies the reference time of the copy destination.

18. Press **PARAMETER [►►]**. "TRK Copy Time=" appears in the display.

19. Rotate the **TIME/VALUE dial**.

Copy Time

This specifies the number of times (1–99) the data is to be copied.

20. Press **PARAMETER** [▶▶]. "TRK Track Copy OK ?" appears in the display.

21. Press **[ENT/YES]**. This executes Track Copy. If you wish to cancel, press **[EXIT/NO]**.

22. When the copy is completed correctly, "Complete" appears in the display, and return to Play condition.

Moving Performance Data (Track Move)

This operation moves the playback data in a specified range to another location. This is convenient for correcting timing mistakes that can occur during recording. If playback data exists at the move destination, that data will be overwritten.

Example 1: Moving with in the same track
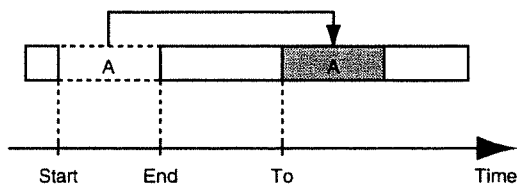
Example 2: Moving to a different track
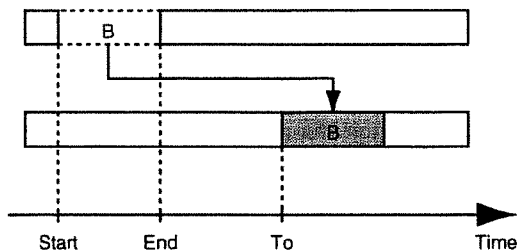
NOTE
Playback data of a track for which Channel Link is ON cannot be moved to a track whose channel has a Channel Link setting of OFF. In the same way, playback data of a track for which Channel Link is OFF cannot be moved to a track whose channel has a Channel Link setting of ON.

NOTE
The length of the data to be moved must be greater than 0.5 seconds. If data shorter than 0.5 seconds is moved, the sound will not playback. Also do NOT leave sound within 0.5 seconds before or after the section of data that is moved. Any sound which was within 0.5 seconds of the moved data will not playback.

1. You can move the tracks that are currently audible. Select the V-track that contains the move source playback data, and prepare that data for playback.

2. Press **[SHIFT] + [TRACK (▶▶)]** several times until "TRK Track Move ?" appears in the display.

3. Press **[ENT/YES]**.

4. Press [◀] several times until "TRK MoveTr.=?-?=>?-?" appears in the display.

5. Hold down **[SHIFT]** and press **STATUS** ([1]–[8]) for the channel containing the move source track. You can also use the **TIME/VALUE dial** to select the move source track.

6. Press **STATUS** ([1]–[8]) for the move destination track. The STATUS indicator will blink red.

7. Rotating the **TIME/VALUE dial** allows you to specify the move destination V-track. For example, "1-1" indicates "Track 1, V-track 1."

Move source track   Move destination track

Displayed blinking
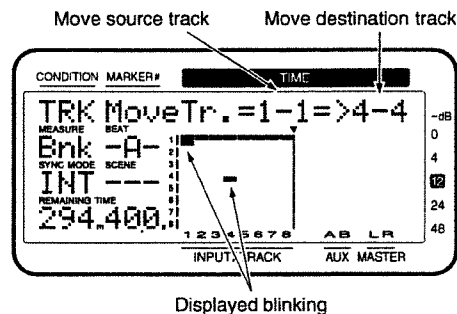
8. If you want to move multiple tracks simultaneously, repeat Steps 5–7.

NOTE
Do not designate V-tracks that have already been specified as move destinations for other Tracks.

9. If there are any tracks which you decide not to move, press that track's **STATUS** ([1]–[8]) once again, and press **[EXIT/NO]** twice. Or use **PARAMETER** [◀◀] or [▶▶] to access the settings for that track, and press **[EXIT/NO]** twice. The STATUS indicator will blink green.

10. Press **PARAMETER** [▶▶] several times until "TRK St=" appears in the display.

11. Rotate the **TIME/VALUE dial**.
St (Start point)
Specifies the starting time of the move range.

12. Press **PARAMETER** [▶▶]. "TRK Frm=" appears in the display.

13. Rotate the **TIME/VALUE dial.**

Frm (From point)

Specifies the time of the move source playback data in relation to the To point. Normally you will set this to be the same as the Start point.

Using "Frm" Effectively

Normally, the data is copied starting at the specified move destination time. However, if you want to have the move made with reference to a point within the designated range where a specific sound occurs, set this with "Frm."

For example, suppose that you wish to move a sound effect of a time bomb ticking and then exploding, and that you want to place the explosion at a specific timing location. Normally, in order to specify the move destination time, you would have to calculate the time until the explosion occurs. In such cases, however, you can specify "Frm" as "the move source time at which the explosion begins" and "TO" (the reference time of the move destination) as "the move destination time at which you want the explosion to occur." This lets you move the data with the explosion placed with precisely the right timing.

Example 3: Moving using the "Frm" setting
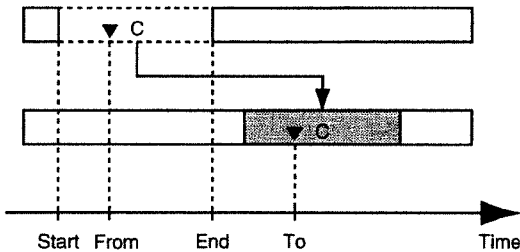
Start   From   End   To   Time

---

14. Press **PARAMETER [►►].** "TRK End=" appears in the display.

15. Rotate the **TIME/VALUE dial.**

End (End point)

Specifies the ending time of the move range.

16. Press **PARAMETER [►►].** "TRK To =" appears in the display.

17. Rotate the **TIME/VALUE dial.**

To (To point)

Specifies the reference time of the move destination.

18. Press **PARAMETER [►►].** "TRK Track Move OK ?" appears in the display.

19. Press **[ENT/YES].** This executes Track Move. If you wish to cancel, press **[EXIT/NO].**

20. When the move is completed correctly, "Complete" appears in the display, and return to Play condition.

Exchanging Performance Data Between Tracks (Track Exchange)

This operation exchanges the playback data of two tracks.

Example: Exchanging tracks 1 and 2

Time
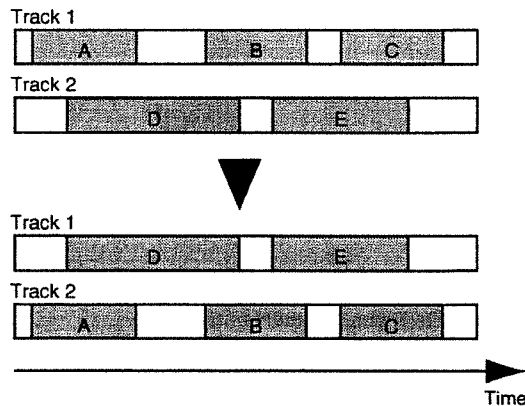
NOTE

Playback data of a track for which Channel Link is ON cannot be exchanged to a track whose channel has a Channel Link setting of OFF. In the same way, playback data of a track for which Channel Link is OFF cannot be exchanged to a track whose channel has a Channel Link setting of ON.

Track Exchange with a different V-track bank

You can use Track Exchange to swap tracks or V-tracks of different V-track banks. For example if you wish to copy track 1 / V-track 1 of V-track bank A (hereafter referred to as A-1-1) to track 1 / V-track 1 of V-track bank B (referred to as B-1-1), you can use the following procedure. (If A-2-1 is NOT used.)

1. Track exchange A-2-1 and B-1-1

2. Copy A-1-1 to B-2-1.

3. Once again, track exchange A-2-1 and B-1-1.

---

1. You can exchange the tracks that are currently audible. Select the V-track containing the source playback data to be exchanged.

2. Press [SHIFT] + [TRACK (►►)] several times until "TRK Track Exchange ?" appears in the display.

3. Press [ENT/YES].

4. Press [◄] several times until "TRK Tr.=?-*:?=>?-?:?" ("*" is the current V-track bank) appears in the display.

5. Hold down [SHIFT] and press STATUS ([1]-[8]) for the channel containing the exchange source track. The STATUS indicator will light orange. You can also use the TIME/VALUE dial to select the exchange source track.

6. Press STATUS ([1]-[8]) for the exchange destination track. The STATUS indicator will light red.

7. Rotating the TIME/VALUE dial allows you to specify the exchange destination V-track. For example, "1-A:1" indicates "V-track 1 of track 1 in V-track bank A."

Exchange source track   Exchange destination track

Displayed blinking
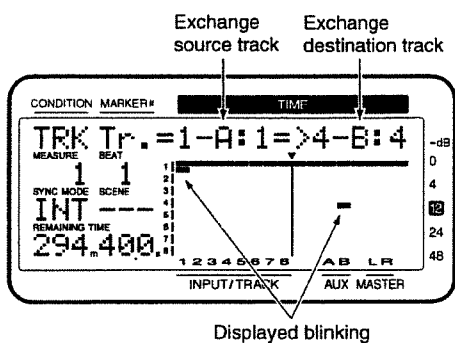
8. If you want to exchange multiple tracks simultaneously, repeat Steps 5-7.

NOTE

Do not designate V-tracks that have already been specified as exchange destinations for other Tracks.

9. If there are any tracks which you decide not to exchange, press that track's STATUS ([1]-[8]) once again, and press [EXIT/NO] twice. Or use PARAMETER [◄◄] or [►►] to access the settings for that track, and press [EXIT/NO] twice. The STATUS indicator will blink green.

10. Press PARAMETER [►►]. "TRK TrackExchangeOK ?" appears in the display.

11. Press [ENT/YES]. This executes Track Exchange. If you wish to cancel, press [EXIT/NO].

12. When the exchange is completed correctly, "Complete" appears in the display, and return to Play condition.

Inserting a Blank Space Into Performance Data (Track Insert)

This operation inserts blank space at the specified location.
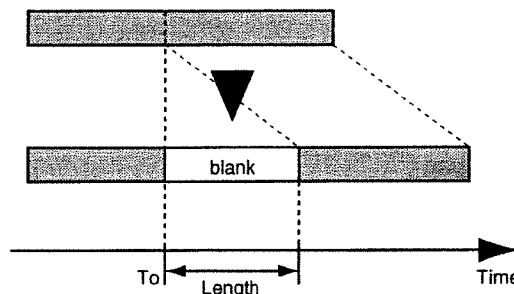
NOTE

Do not leave sound within 0.5 seconds before or after the area into which the data will be inserted. Any sound which was within 0.5 seconds of the inserted data will not playback.

1. Press [SHIFT] + [TRACK (►►)] several times until "TRK Track Insert ?" appears in the display.

2. Press [ENT/YES].

3. Press [◄] several times until "TRK Insert Tr.=?-?" appears in the display.

4. Press STATUS ([1]-[8]) for the channel containing the insert source track. The STATUS indicator will blink red.

5. Rotating the TIME/VALUE dial allows you to specify the insert destination V-track. For example, "1-1" means "V-track 1 of track 1," "1-*" means "all V-tracks of track 1," and "*-*" means "all V-tracks of all tracks."

Displayed blinking   Insert destination track
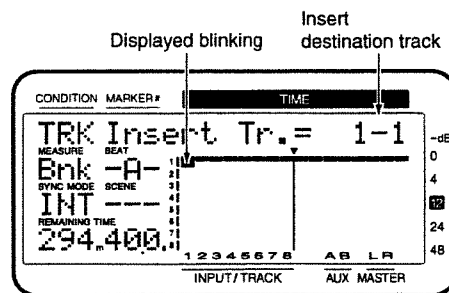
6. If you want to insert multiple tracks simultaneously, repeat Steps 4 and 5.

7. If there are any tracks which you decide not to insert, press that track's STATUS ([1]-[8]) once again, and press [EXIT/NO]. Or use PARAMETER [◄◄] or [►►] to access the settings for that track, and press [EXIT/NO]. The STATUS indicator will blink green.

8. Press **PARAMETER [►►]** several times until "TRK To=" appears in the display.

9. Rotate the **TIME/VALUE dial**.

To (To point)

Specify the time location at which the blank will be inserted.

10. Press **PARAMETER [►►]**. "TRK Len=" appears in the display.

11. Rotate the **TIME/VALUE dial**.

Len (Length)

Specify the time (length) length of the blank.

12. Press **PARAMETER [►►]**. "TRK Track Insert OK ?" appears in the display.

13. Press **[ENT/YES]**. This executes Track Insert. If you wish to cancel, press **[EXIT/NO]**.

14. When the insert is completed correctly, "Complete" appears in the display, and return to Play condition.

Deleting Performance Data (Track Cut)

This operation cuts playback data from the specified area. When playback data is cut using this operation, any playback data following the data that was cut will move forward to fill the gap. To use the analogy of a tape recorder, this operation is like cutting an unwanted portion out of an audio tape, and splicing the ends.
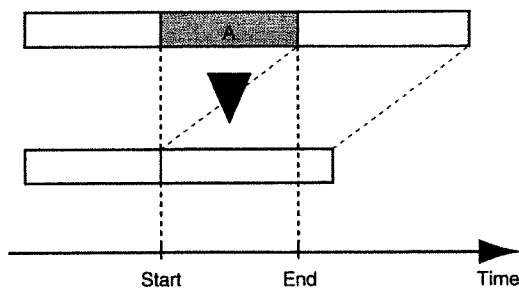
NOTE

Do not leave sound within 0.5 seconds before or after the area to be cut. Any sound which was within 0.5 seconds of the cut data will not playback.

NOTE

While it may seem that the performance data has disappeared, the data itself is not deleted from the hard disk. Thus, even when you carry out the Track Cut procedure, the

free disk space shown in the display does not change. If you wish to increase the available recording time, please read "If "Disk Full!" appears in the display (Song Optimize)" (User Guide p. 49).

1. Press **[SHIFT] + [TRACK (►►)]** several times until "TRK Track Cut ?" appears in the display.

2. Press **[ENT/YES]**.

3. Press **[◄]** several times until "TRK Cut Tr.=?-?" appears in the display.

4. Press **STATUS** ([1]–[8]) for the track on which you want to carry out Track Cut. The STATUS indicator will blink red.

5. You can use the **TIME/VALUE dial** to specify the V-track that you wish to delete. For example, "1-1" means "V-track 1 of track 1," "1-*" means "all V-tracks of track 1," and "*-*" means "all V-tracks of all tracks."
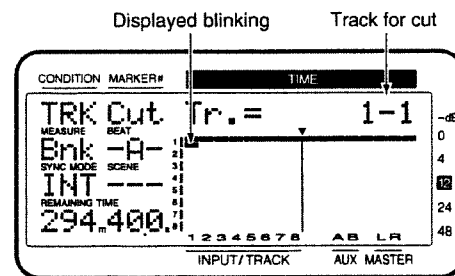
6. If you want to cut multiple tracks simultaneously, repeat Steps 4 and 5.

7. If there are any tracks which you decide not to cut, press that track's **STATUS** ([1]–[8]) once again, and press **[EXIT/NO]**. Or use **PARAMETER [◄◄]** or **[►►]** to access the settings for that track, and press **[EXIT/NO]**. The STATUS indicator will blink green.

8. Press **PARAMETER [►►]** several times until "TRK St=" appears in the display.

9. Rotate the **TIME/VALUE dial**.

St (Start point)

Specifies the starting time of the segment to be cut.

10. Press **PARAMETER [►►]**. "TRK End=" appears in the display.

11. Rotate the **TIME/VALUE dial**.

End (End point)

Specifies the ending time of the segment to be cut.

12. Press **PARAMETER [►►]**. "TRK Track Cut OK ?" appears in the display.

13. Press **[ENT/YES]**. This executes Track Cut. If you wish to cancel, press **[EXIT/NO]**.

14. When the cut is completed correctly, "Complete" appears in the display, and return to Play condition.

Erasing Performance Data (Track Erase)

This operation erases playback data from the specified area. If this operation is used to erase playback data, even if playback data exists after the area that was erased, it will not be moved forward. To use the analogy of a tape recorder, this operation is like recording silence over an unwanted section of the tape.

Start   End   Time
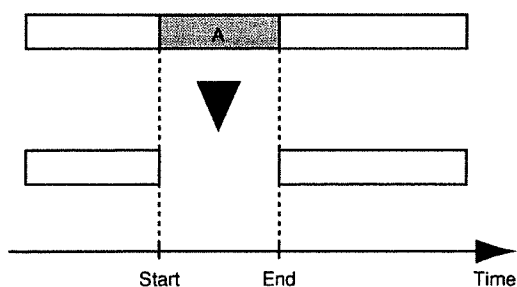
NOTE

Do not leave sound within 0.5 seconds before or after the area to be erased. Any sound which was within 0.5 seconds of the erased data will not playback.

NOTE

While it may seem that the performance data has disappeared, the data itself is not deleted from the hard disk. Thus, even when you carry out the Track Erase procedure, the free disk space shown in the display does not change. If you wish to increase the available recording time, please read "If "Disk Full!" appears in the display (Song Optimize)" (User Guide p. 47).

1. Press **[SHIFT] + [TRACK (▶▶)]** several times until "TRK Track Erase ?" appears in the display.

2. Press **[ENT/YES]**.

3. Press **[◀]** several times until "TRK Erase Tr.=?-?" appears in the display.

4. Press **STATUS** ([1]–[8]) for the track on which you want to carry out Track Erase. The STATUS indicator will blink red.

5. You can use the **TIME/VALUE dial** to specify the V-track that you wish to erase. For example, "1-1" means "V-track 1 of track 1," "1-*" means "all V-tracks of track 1," and "*-*" means "all V-tracks of all tracks."

Displayed blinking   Track for erase
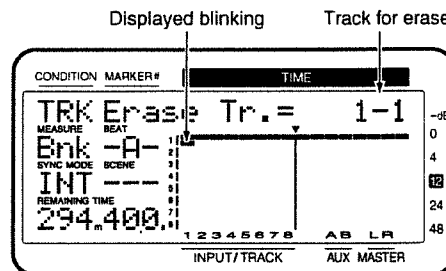
6. If you want to erase multiple tracks simultaneously, press repeat Steps 4 and 5.

7. If there are any tracks which you decide not to erase, press that track's **STATUS** ([1]–[8]) once again, and press **[EXIT/NO]**. Or use **PARAMETER [◀◀]** or **[▶▶]** to access the settings for that track, and press **[EXIT/NO]**. The STATUS indicator will blink green.

8. Press **PARAMETER [▶▶]**. "TRK St=" appears in the display.

9. Rotate the **TIME/VALUE dial**.
St (Start point)
Specifies the starting time of the segment to be erased.

10. Press **PARAMETER [▶▶]**. "TRK End=" appears in the display.

11. Rotate the **TIME/VALUE dial**.
End (End point)
Specifies the ending time of the segment to be erased.

12. Press **PARAMETER [▶▶]**. "TRK Track Erase OK ?" appears in the display.

13. Press **[ENT/YES]**. This executes Track Erase. If you wish to cancel, press **[EXIT/NO]**.

14. When the erase is completed correctly, "Complete" appears in the display, and return to Play condition.

Modifying the Playback Time of the Performance Data (Time Compression/ Expansion)

This operation allows you to expand or compress the playback time of a song to a specified length of time. You can specify the amount of compression or expansion in a range of 75–125%, but the more extreme the settings, the more adverse the effect will be on the sound quality. We recommend that you normally keep compression and expansion within a range of 93–107 %.

Example 1: Compression

Start   To   End   Time
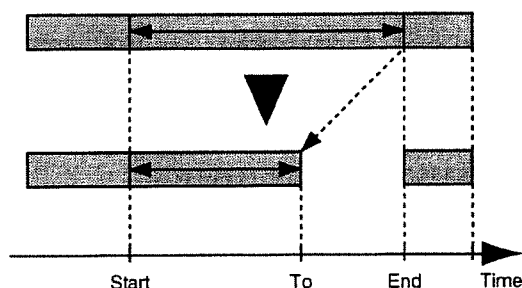
Example 2: Expansion

Start   End To   Time
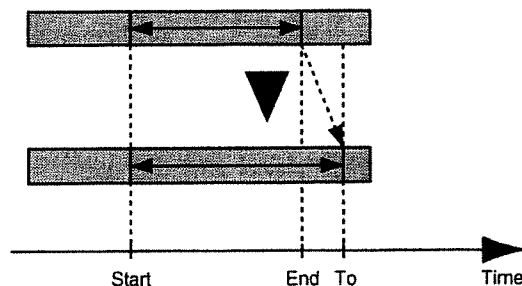
In general, when you compress or expand the playback time, the pitch changes in proportion to the amount of compression or expansion. For example, if the playback time is shortened, the pitch of the sound played back then rises. On the VSR-880, you can select whether the playback pitch changes in accordance with the ratio of compression or expansion, or whether the original playback pitch is preserved.

NOTE

If "CDR" is selected as the **Record Mode** (recording mode) (for a song or for mastering tracks), it is not possible to execute Time Compression/Expansion.

NOTE

Time Compression/Expansion creates new performance data with a different playback time. For this reason, it cannot be executed if there is not sufficient space on the current drive.

It is not possible to make Track Compression/Expansion settings when the elapsed time from the Start Point to the End Point or from the Start Point to the To Point is less than 0.5 seconds.

Do not compress data to a period of 0.5 seconds or shorter. If it is compressed to 0.5 seconds or less, the sound will not be played.

1. Press **[SHIFT] + [TRACK (▶▶)]** several times until "TRK Time Comp/Exp. ?" appears in the display.

2. Press **[ENT/YES]**.

3. Press [◄] several times until "TRK CompExpTr.=?-?" appears in the display.

4. Press **STATUS** ([1]–[8]) for the track on which you want to compress or expand. The STATUS indicator will blink red.

5. You can use the **TIME/VALUE dial** to specify the V-track that you wish to compress or expand. For example, "1-1" means "V-track 1 of track 1," "1-*" means "all V-tracks of track 1," and "*-*" means "all V-tracks of all tracks."

Track for
Displayed blinking   compress or expand
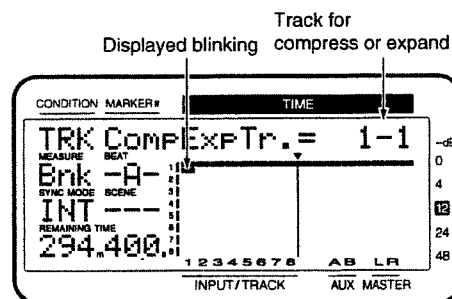
6. If you want to compress or expand multiple tracks simultaneously, repeat Steps 4 and 5.

7. If there are any tracks which you decide not to compress or expand, press that track's **STATUS** ([1]–[8]) once again, and press **[EXIT/NO]**. Or use **PARAMETER** [◄◄] or [▶▶] to access the settings for that track, and press **[EXIT/NO]**. The STATUS indicator will blink green.

8. Press **PARAMETER** [▶▶]. "TRK St=" appears in the display.

9. Rotate the **TIME/VALUE dial**.

St (Start point)

This specifies when compression or expansion of the playback time starts.

10. Press **PARAMETER** [▶▶]. "TRK End=" appears in the display.

11. Rotate the **TIME/VALUE dial**.

End (End point)

This specifies when compression or expansion of the playback time ends.

12. Press **PARAMETER** [▶▶]."TRK To=" appears in the display.

13. Rotate the **TIME/VALUE dial**.

To (To point)

This specifies the ending time location that will result from the compression or expansion.

14. Press **PARAMETER** [▶▶]. "TRK Pitch Mode=" appears in the display.

15. Rotate the **TIME/VALUE dial**.

Pitch Mode

If you want the playback pitch to change as a result of the compression or expansion, set this to "Variable"; if not, set this to "Fixed."

16. Press **PARAMETER** [▶▶]. "TRK Type=" appears in the display.

17. Rotate the **TIME/VALUE dial**.

Type

This specifies the type of conversion. Select the setting that fits your needs or that matches the type song you are working with.

A: For vocals or narration.

B: For slow-tempo songs such as slow ballads.

C: For fast-tempo songs such as rock.

18. Press **PARAMETER** [▶▶]. "TRK Amplitude=" appears in the display.

19. Rotate the **TIME/VALUE dial**.

Amplitude

This specifies the volume level ratio (50, 60, 70, 80, 90, 100%) that will result from the conversion. Normally, the default value of 60% is recommended. If the volume level after conversion is too low, use the Undo function to return to the original data, increase the amplitude settings, and try the operation again. However, excessively high settings can introduce noise in the data.

20. Press **PARAMETER** [▶▶]. "TRK TimeComp/Exp. OK ?" appears in the display.

21. Press **[ENT/YES]**. This executes Time Compression/ Expansion. If you wish to cancel, press **[EXIT/NO]**.

NOTE

Be aware that, depending on conditions, it may take some time for compression or expansion to be completed. This is not a malfunction. Progress of the operation is shown in the display: do not turn off the power until the compression or expansion the track is completed. You can cancel compression or expansion by pressing **[EXIT/NO]**.

22. When the compression or expansion is completed correctly, "Complete" appears in the display, and return to Play condition.

Track Condition

Effect Condition

[SHIFT] + [EFFECT (◄)]

The VSR-880 comes with the optional **VS8F-2** effect
expansion board. One effect expansion board can be installed
in the VSR-880. With the VS8F-2 installed in the VSR-880, up
to 2 high-quality stereo effects will be available for your use.

This section explains how to use these internal effects.

🔺**NOTE**

For instructions on how to install the VS8F-2, please read
"Installing the Effect Expansion Board" (User Guide p. 7).

Composition of the Effects

A maximum of one VS8F-2 can be installed in the VSR-880,
allowing you to use two different effects (**FX1** and **FX2**)
simultaneously. For each channel of the mixer you can
specify the effect which will be used.

```
┌─────────────────────────────────────────┐
│                 EFFECTS                  │
│    ┌──────────────┐  ┌──────────────┐    │
│    │     FX1      │  │     FX2      │    │
│    └──────────────┘  └──────────────┘    │
└─────────────────────────────────────────┘
```
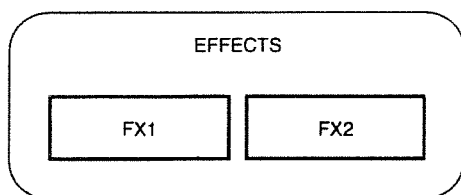
Connecting the Effects

Changing the Source Sound Itself (Insert)

The effect is directly added either between each channel's
equalizer and mix level or before the master level. Connect
the effect in this way if you want to use effects applied to
change the output of the sound itself, such as when using
distortion or overdrive effects.

When inserting an effect into one of the channels or into the
Master Block, that effect cannot be used in send/return.

🔺**NOTE**
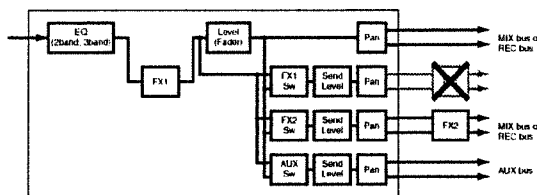
Depending on the effects used, when mixing with different
effects inserted into each channel, or mixing channels having
effects inserted with other channels having no effects, timing
shifts may occur, or you may not be able to achieve the effect
you desire.

Inserting with Input and Track Channels

1. If you wish to insert the effect into the input mixer, press
   [SHIFT] + [IN MIX (LEVEL/BALANCE)]. If you wish to
   insert the effect into the track mixer, press **[SHIFT]+[TR
   MIX (EXT SYNC)]**.

2. Hold down **[SHIFT]** and press **STATUS** ([1]–[8]) for the
   channel to which you want to apply the effect.

3. Press **PARAMETER** [◄◄] or [►►] to let "FX1
   Ins=" appears in the display. Now you can make settings
   for effect 1.

📖**MEMO**

You can insert FX2 in the same way. In this case, perform
step 3 so that "FX2 Ins=" is displayed.

4. Rotate the **TIME/VALUE dial** to select how the effect will
   be connected.

CONDITION MARKER#   TIME

TR1 FX1 Ins = Insert.
MEASURE BEAT
  1   1
SYNC MODE SCENE
INT ---
REMAINING TIME
294.400.
12345678   A B L R
INPUT/TRACK   AUX MASTER
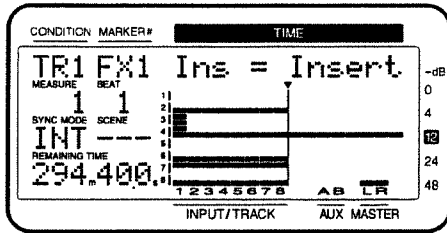
FX1 Ins (Effect 1 Insert Switch)

Sets how the effects are connected.

Insert: Inserts in the between the equalizer and mix level.

InsertL: Inserts the left channel of the stereo effect.

InsertR: Inserts the right channel of the stereo effect.

InsertS: Inserts the combined left and right channels of the stereo effect in series.

Insert

Insert L
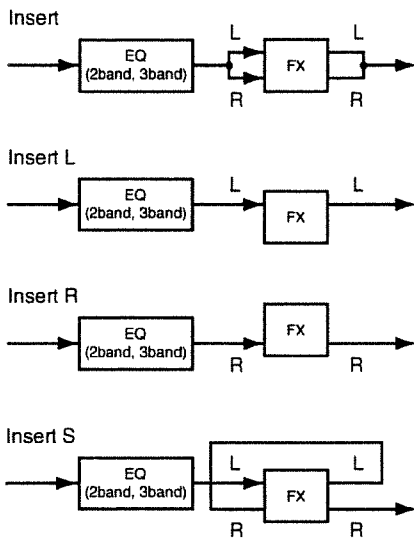
Insert R

Insert S

NOTE

When Insert or Insert S is selected, that effect cannot be used on any other channel. Furthermore, when Insert L or Insert R is selected, that effect can be inserted on only one other channel.

5. Press **PARAMETER [▶▶]**. "FX1 Ins Send=" appears in the display.

NOTE

Steps 5–8 can be adjusted only when the effect is being used as an insertion effect.

6. Rotate the **TIME/VALUE dial**.

Ins Send (Insert Send Level)

This adjusts the level of the signal (0–127) sent to the Insert effect. Set the initial value to "100."

7. Press **PARAMETER [▶▶]**. "FX1 Ins Rtn=" appears in the display.

8. Rotate the **TIME/VALUE dial**.

Ins Rtn (Insert Return Level)

This adjusts the level of the signal (0–127) returned from the Insert effect. Set the initial value to "100."

9. At this point, you are ready to insert FX1 into the selected channel. Press **[PLAY (DISPLAY)]**. Return to Play condition.

Inserting an Effect into the Master Block

This inserts the effect into the MASTER Out. After the mix for each channel is completed, the entire song is put through the compressor, which is convenient at such times as when you listen to the total volume while mixing down.

1. Press **[LEVEL/BALANCE)]**.

2. Press **PARAMETER [◀◀] or [▶▶]** to let "MST FX1 INS Sw=" appears in the display. If FX1 has been inserted into another channel, the display will indicate "MST FX1 INS Sw=—" (the setting cannot be made).

MEMO

You can insert FX2 in the same way. In this case, perform step 2 so that "MST FX2 INS Sw=" is displayed.

3. Rotate the **TIME/VALUE dial**.

MST FX1 INS Sw (Master Effect 1 Insert Switch)

This sets how the effects are connected.

Off: There is no Insert.

On: Inserts in both channels of the stereo effect.

CONDITION MARKER#   TIME

MST FX1 INS Sw = On
MEASURE BEAT
  1   1
SYNC MODE SCENE
INT ---
REMAINING TIME
294.400.
12345678   A B L R
INPUT/TRACK   AUX MASTER
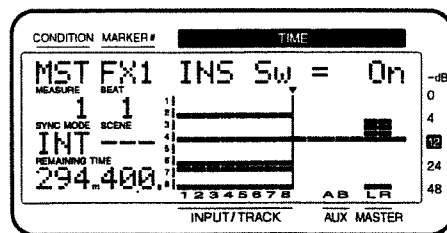
4. Press **PARAMETER [▶▶]**. "MST FX1 Ins Send=" appears in the display.

5. Rotate the **TIME/VALUE dial.**

   MST FX1 Ins Send (Master Effect 1 Insert Send Level)

   This adjusts the level of the signal (0–127) sent to the Insert effect. Set the initial value to "100."

6. Press **PARAMETER [▶▶].** "MST FX1 Ins Rtn=" appears in the display.

7. Rotate the **TIME/VALUE dial.**

   MST FX1 Ins Rtn (Master Effect 1 Insert Return Level)

   This adjusts the level of the signal (0–127) returned from the Insert effect. Set the initial value to "100."

8. Press **[PLAY (DISPLAY)].** Return to Play condition.

Adding the Sound with the Effect Applied to the Direct Sound (Send/Return)

When adding the sound with effect to the direct sound, such as is done with reverb or delay, use the EFFECT bus.

With some effects, while you can have output of both the direct sound and effect sound, it's usually better to have the effect sound output separately. The direct sound and effect sound are adjusted with each channel mix level. The present signal flow is shown below.
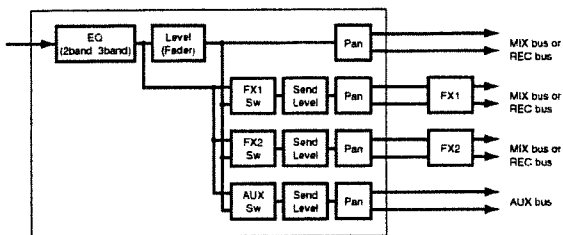
Settings for Each Channel

1. If you wish to use the effect in the input mixer with a send/return connection, press **[SHIFT] +
   [IN MIX (LEVEL/BALANCE)].** If you wish to use the effect in the track mixer with a send/return connection, press **[SHIFT]+[TR MIX (EXT SYNC)].**

2. Hold down **[SHIFT]** and press **STATUS** ([1]–[8]) for the channel to which you want to apply the effect.

3. Hold down **[SHIFT]** and press **[EFFECT-1 (LOCATOR)].** The upper line of the display will indicate "EFFECT 1," and you can make settings for effect 1.

MEMO

You can use the same method to make settings for each channel for FX2 as well. In this case, hold down **[SHIFT]** and press **[EFFECT-2 (CLEAR)] in step 3.**
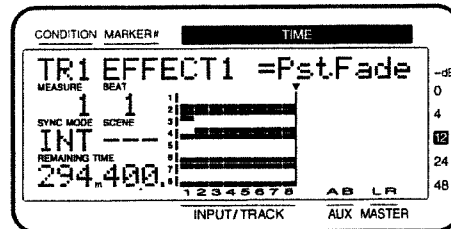
4. Rotate the **TIME/VALUE dial** to select how the effect will be connected.

EFFECT 1 (Effect 1 Send Select Switch)

This selects the how the signal is sent to the EFFECT 1 bus (send).

Off: The signal is not sent.

PreFade: The sound after passing through the channel **ATT (attenuator)** is sent.

PstFade: The sound after passing through the channel **Mix Level** is sent.

5. Press **PARAMETER [▶▶].** "EFFECT1 Send=" appears in the display.

6. Rotate the **TIME/VALUE dial.**

   EFFECT1 Send (Effect 1 Send Level)

   This adjusts the volume level of the signal (0–127) sent to the EFFECT 1 bus. Set the initial value to "100."

7. Press **PARAMETER [▶▶].** "EFFECT1 Pan=" appears in the display.

8. Rotate the **TIME/VALUE dial.**

   EFFECT1 Pan (Effect 1 Send Pan)

   This adjusts the stereo placement of the signal (L63–0–R63) sent to the EFFECT 1 bus.

9. Press [PLAY (DISPLAY)]. Return to Play condition.

Master Block Settings 1 (Send Level Adjustment)

You can adjust the balance of the total effect send level for each effect with the effect send level and send pan settings that are assigned to each individual channel left as they are.

NOTE

If FX1 has been inserted into another channel, or if it has been inserted into the MASTER OUT jacks, these displays will not appear (settings cannot be made).

1. Press **[LEVEL/BALANCE].**

2. Press **PARAMETER** [◄◄] until "MST FX1 SND Lev=" appears in the display.

MEMO

You can adjust the send level in the same way for FX2 as well. In this case, access the "MST FX2 SND Lev=" display in step 2.

3. Rotate the **TIME/VALUE dial**.

MST FX1 SND Lev (Master Effect 1 Send Level)

This adjusts the total volume level of the signal (0–127) sent to the effect. Set the initial value to "100."

4. Press **PARAMETER** [►►]. "MST FX1 SND Bal=" appears in the display.

5. Rotate the **TIME/VALUE dial**.

MST FX1 SND Bal (Master Effect 1 Send Balance)

This adjusts the balance (L63–0–R63) of the total signal sent to the effect. Set the initial value to "0" (center).

6. Press **[PLAY (DISPLAY)]**. Return to Play condition.

Master Block Settings 2 (Return Level Adjustment)

You can adjust the effect on volume (return level).

1. Hold down **[SHIFT]** and press **[RTN MIX (AUTOMIX)]**.

2. Hold down **[SHIFT]** and press **[7]**. The STATUS indicator lights.

MEMO

You can make master block settings in the same way for FX2 as well. For step 2 in this case, Hold down **[SHIFT]** and press **[8]**.

3. Rotate the **TIME/VALUE dial**.

RTN FX1 RTNLev (Master Effect 1 Return Level)

Adjust the return level (0–127) of the effect sound. Set the initial value to "100."

4. Press **PARAMETER** [►►]. "RTN FX1Bal=" appears in the display.

5. Rotate the **TIME/VALUE dial**.

RTN FX1 RTNBal (Master Effect 1 Return Balance)

Adjust the left/right balance (L63–0–R63) of the effect sound. Set the initial value to "0" (center).

6. Press **[PLAY (DISPLAY)]**. Return to Play condition.

Selecting Effects (Patch)

An effect settings is referred to as a **patch**. The VSR-880 provides 240 (A00–A99, B00–B99, C00–C39) read-only effects (**Preset Patches**) and 100 (U00–U99) read and write effects (**User Patches**). Please take a moment to check these effects.

NOTE

If used in combination with the Vari Pitch function (p. 39), delay times may change somewhat, and for distortion effects (distortion, overdrive, etc.), there may be some change in the quality of the tone.

NOTE

With some of the effects, you may not want the direct sound output, or other special setting may be required. Please refer to "Algorithm List" (p. 161) when making these settings.

1. Press **[SHIFT]** + **[EFFECT(◄)]** several times until "EFFECT-1 PRM?" appears in the display.

MEMO

You can use the same procedure to hear the effect of FX2 as well. For step 1 in this case, make the display read "EFFECT-2 PRM?"

2. Press **[ENT/YES]**. The number and name of the currently selected effect will be displayed, and you will be able to select the effect.

3. Use the **TIME/VALUE dial** to select the effect you wish to use.

Effect Number   Effect Name
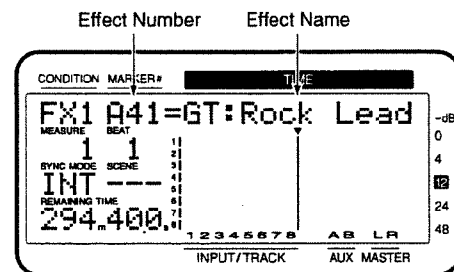
4. After selecting the effect, press **[ENT/YES]**.

5. Check the effect to make sure that the sound is actually being played. Repeat Steps 3–5 for any other patches whose effects you want to confirm.

6. After you have checked the patches, press **[PLAY (DISPLAY)]**. Return to Play condition.

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NOTE

Patches using the following algorithms can not be selected for FX2. A horizontal line is drawn through the effect name in such cases. Please select patches using these algorithms for use with FX1.

- Reverb (p. 162)
- Gated Reverb (p. 188)
- Vocoder 2 (p. 170)
- Voice Transformer (p. 203)
- Mastering Tool Kit (p. 214)

Creating New Effects Sounds

When creating a new effect, first select the existing patch whose sound is closest to the "image" of the patch you wish to create, and then alter that patch settings.

Since changes to effects settings are temporary, they are lost once you select another patch or recall a different Scene. When saving changed effects settings, either save them to the User Patches or store the mixer settings as a Scene.

About Algorithms

An algorithm determines the composition or structure of an effect. The VSR-880 features 36 different algorithms. The settings for the effects in each patch use at least one of these algorithms. Check the algorithms used in each patch in "Preset Patch List" (p. 156). For details on each algorithm, refer to "Algorithm List" (p. 161).

---

1. Using the procedure described in "Selecting Effects (Patch)" (p. 101), call up the patch containing the effect on which you will base your new effect.

2. Press **PARAMETER** [▶▶]. When you select a patch with an algorithm in which the effect can be turned on and off, the following screen is displayed. An effect block which is currently ON is displayed as " ■ " and an effect block which is currently OFF is displayed as

" ☐ ."
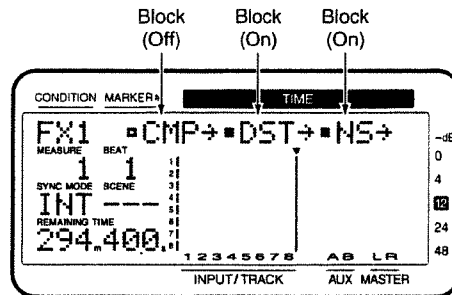
3. Press [◀] or [▶] to move the cursor to the effect block that you wish to turn on/off.

4. Rotate the **TIME/VALUE dial**. If an effect block is turned off, parameters related to that effect cannot be set.

5. Use **PARAMETER** [◀◀] or [▶▶] to access the parameter that you wish to adjust.

6. Rotate the **TIME/VALUE dial**. Check the effect.

7. Repeat the Steps 5–6 to create new effects sounds.

8. Press **PARAMETER** [▶▶] several times until "FX1 Nam=" appears in the display.

9. Assign a patch name. [◀] or [▶] so that the character you wish to change is blinking. Use the **TIME/VALUE dial** to select the desired character. A name of up to 12 characters can be assigned.

10. Save the effect. If you wish to keep the effect settings that you have modified, you must save the settings either as a User Patch or as mixer settings in a Scene. If you wish to use the effect settings in another song, save them as a User Patch. If you wish to use the effect settings in the currently selected song, save them as a Scene.

When Saving to User Patches

When you save effect settings to a User Patch, the User Patch that had previously been in that location is lost. At the time of purchase, the effects in the VSR-880's User Patches are the same as those stored in the Preset Patches.

1. Press **PARAMETER [▶▶]**. "Save User Patch?" appears in the display.

2. Press **[ENT/YES]**.

3. Rotate the **TIME/VALUE dial** to select the destination patch number (U00–U99).

4. Press **[ENT/YES]**. When the User Patch has been saved, the display will indicate "Complete."

5. Press **[PLAY (DISPLAY)]**. Return to Play condition.

When Storing to a Scene

For more detailed information, please refer to "Recording the Current Condition of the Mixer (Scene)" (p. 38).

1. Press **[SCENE]**. The SCENE indicator lights.

2. Press **STATUS** ([1]–[8]) whose indicators are not blinked. For example, if you want to store the settings to Scene 1, then press **[1]**.

3. Hold down **[SHIFT]** and press **[STORE (ZERO)]**. "STORE OK?" appears in the display.

4. Press **[ENT/YES]**.

5. Press **[SCENE]** once more. The SCENE indicator will go dark. If you wish to halt the registration procedure, press **[SCENE]** before step 2.

6. Press **[PLAY (DISPLAY)]**. Return to Play condition.

CD-RW Mastering Condition

[CD-RW]

You can connect a CD-RW drive which is designated by Roland, to the VSR-880's SCSI connector. This chapter explains the procedures involved in creating your own original audio CDs and in backing up song data to CD-RW discs. Refer to the owner's manual of the Roland CD recorder (CD-RW drive) as you proceed.

Before You Use a CD-RW Drive

Handling the CD-RW Drive

- Install the unit on a solid, level surface in an area free from vibration. If the unit must be installed at an angle, be sure the installation does not exceed the permissible range: upward, 5°; downward, 5°.
- Avoid using the unit immediately after it has been moved to a location with a level of humidity that is greatly different than its former location. Rapid changes in the environment can cause condensation to form inside the CD-RW drive, which will adversely affect the operation of the CD-RW drive and/or damage CD-RW discs. When the unit has been moved, allow it to become accustomed to the new environment (allow a few hours) before operating it.
- Remove any disc from the loading tray before powering up or down.
- When transporting the CD-RW drive, remove the disc from the loading tray. Also, avoid having the loading tray face downwards when carrying it.

Handling CD-R/RW Discs

- DO NOT play a CD-R/RW disc (CD-R disc on which song data has been backed up) 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.
- Please observe the following when handling discs:
  - Never touch the shiny underside (encoded surface) the disc.
  - Do not use or store discs in dirty or dusty areas.
  - Do not subject discs to temperature extremes (e.g., direct sunlight in an enclosed vehicle). Recommended temperature range: 10 to 50° C (50 to 122° F).
- Put the disc back into its case for storage.
- Do not leave discs in the CD-RW drive for extended periods.
- Do not affix stickers, labels, or other such items to the face of discs.
- 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.
- Using a soft, dry cloth, wipe the disc from the center to the outer rim. Do not wipe the disc about the center in a circular direction.
- Do not apply record cleaners or sprays, benzene, or other solvents.
- Avoid bending or twisting discs, as this can adversely affect them to extent that data can no longer be read from, nor written to them. Device malfunction can be caused as well.

Connecting the CD-RW Drive

Use the following procedure to connect the CD-RW drive to the VSR-880.

NOTE

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

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.

VSR-880

To Power Outlet   SCSI Cable

Roland CD Recorder

To Power Outlet
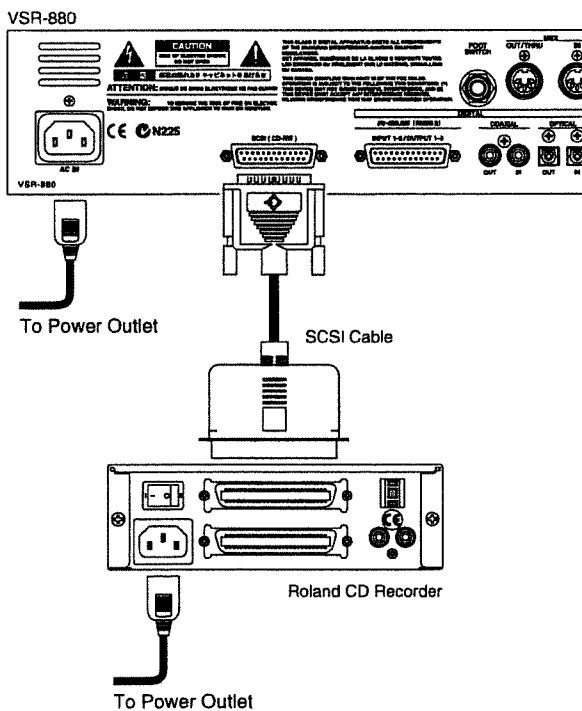
1. Turn on the power of the Roland CD Recorder.

2. Turn on the power of the VSR-880.

3. Turn on the power of connected audio equipment.

4. Raise the volume of the audio devices to appropriate levels.

Functions used in conjunction with a CD-RW drive


```
CDR Mastering Room ?
CDR CD-R Write ?
CDR CD Player ?
CDR CD-R Backup ?
CDR CD-R Recover ?
```
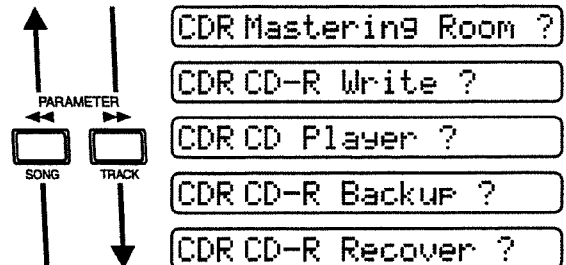
- Creating an Audio CD (CD-R Write) (User Guide p. 91)
- Auditioning (Test Listening) Songs Written to CDs (CD Player Function) (User Guide p. 94)
- Backup the song (CD-RW backup) (User Guide p. 96)
- Loading Songs From CD-RW Discs (CD-RW recover) (User Guide p. 98)

System Condition

This section describes the settings that affect the overall functioning of the VSR-880.

```
SYS System PRM ?
SYS MIDI PRM ?
SYS DISK PRM ?
SYS Sync/Tempo   ?
SYS Scene/Auto Mix ?
SYS Drive Select ?
SYS DriveInitialize?
SYS Drive Check ?
```

PARAMETER
◄◄   ►►
SONG TRACK
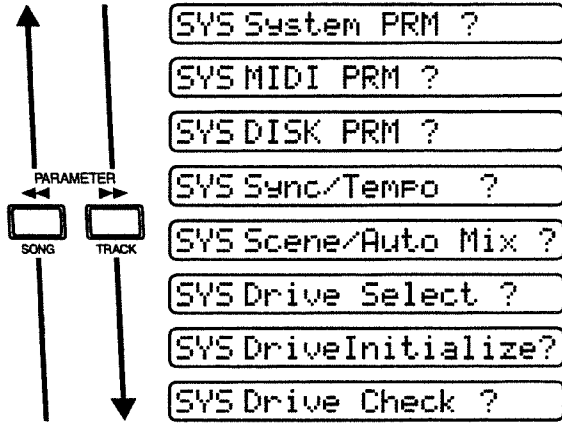
- System Settings (System PRM) (p. 106)
- MIDI Settings (MIDI PRM) (p. 112)
- Disk Drive Settings (DISK) (p. 113)
- Synchronization Settings (Sync/Tempo) (p. 114)
- Scene/AutoMIx Settings (Scene/Auto MIx) (p. 115)
- Change partitions (Drive Select) (User Guide p. 105)
- Initializing the Disk (Drive Initialize) (User Guide p. 106)
- Confirming That a Drive is Not Damaged (Drive Check) (User Guide p. 101)

System Settings (System PRM)

1. [SHIFT] + [SYSTEM] → "SYS System PRM?"

2. [ENT/YES]

3. PARAMETER [◄◄] or [►►] → TIME/VALUE dial

```
SYS MasterClk=    INT
SYS TimeDispFmt= ABS
SYS Ofs= 00h00m00s00
SYS Marker Stop= Off
SYS RecordMon=   AUTO
SYS VariPitch=44.10k
SYS FootSw=Play/Stop
SYS FadeLength= 10ms
SYS Scrub Len=   45ms
SYS PreviewLen= 1.0s
SYS MetroOut=     Off
SYS UNDO MSG       On
SYS LCD Contrast=   7
SYS RemainDsp=   Time
SYS MeasurDsp=Always
SYS D.CpyProtect=Off
SYS Shift Lock=   Off
SYS PeakHoldSw=   Off
SYS SysPrmKeepSw=Off
SYS V.Track Bank = A
SYS SwitchTime= 0.5s
SYS Init Mix/SysPRM?
SYS DC Cut Sw =    On
SYS CD DigiREC→ On ?
SYS SCSI Term  =   On
```

PARAMETER
◄◄   ►►
SONG TRACK

4. [PLAY (DISPLAY)]

Select the Master Clock

This sets the VSR-880's reference clock, then press **[ENT/YES]**.

MasterClk (Master Clock)

INT: Based on the VSR-880's reference clock.

D.COA: Based on the digital signal received from the DIGITAL IN connector (coaxial).

D.OPT: Based on the digital signal received from the DIGITAL IN connector (optical).

R-BUS: Based on the digital signal received from the R-BUS (RMDB2) connector.

Synchronizing with an External MIDI Device

When the VSR-880 is running under the control of the MTC from an external MIDI device, you can synchronize the song's playback time and the MTC time. This time is called the offset.

NOTE

With the VSR-880, continuous playback from "23h59m59s29f99" to "00h00m00s00f00" does not correspond to (overnight mode). The song that crosses over "00h00m00s00f00" momentarily stops at "23h59m59s29f99" then resumes playback.

23h59m59s00   00h00m00s00f   Time

TimeDispFmt (Time Display Format)

Select one of the reference times (REL, ABS) that appear in the display. For now, choose "ABS."

REL: The starting time of the song is displayed as "00h00m00s00f00."

ABS: The time displayed includes the addition of the offset time.

Ofs (Offset)

When the VSR-880 is running under the control of the MTC from an external MIDI device, you can synchronize the song's playback time and the MTC time. The offset settings range varies depending on the MTC type selected for the current song.

Stopping Automatically

You can cause song playback to stop automatically at a marker.

Marker Stop

When this is set to "On," playback of the song stops automatically when a designated marker is reached.

Constantly Monitoring the Input Source

On channels for which Track Status is set to REC, playing back the song in record ready mode (REC indicator blinking) will allow you to monitor the performance that is recorded in the track, and during recording (REC indicator lit) you will be able to monitor the input source. At this time, pressing [STATUS] will let you switch between monitoring the track and monitoring the input source. It is also possible to make settings so that the input source is always monitored.

Record Mon (Record Monitor)

This switches between track and source monitoring.

AUTO: This switches monitoring between track and source.

SOURCE: This sets the VSR-880 to monitor the source at all times.

	While stopped	During playback	During recording
AUTO	SOURCE	TRACK/SOURCE	SOURCE
SOURCE	SOURCE	SOURCE	SOURCE

Changing the Pitch During Playback

By changing the playback speed of the recorder, you can change the pitch of the performance being played back to match the pitch of the instrument you want to record.

Vari Pitch

Set the playback pitch (24.06–50.48 kHz; depends on the sample rate) for when the Vari-Pitch function is used.

Using the Foot Switch

Sets the function of the foot switch connected to the FOOT SWITCH jack.

FootSw (Foot switch assign)

Play / Stop: Repeats playback and recording each time the foot switch is pressed.

Record: Performs the same function as [REC]. This is used for switching between recording and playback during manual Punch-In Recording.

TapMarker: Performs the same function as [TAP]. Pressing the foot switch sets a Marker at the mark point.

Next: Performs the same function as **[TAP] + [FF]**. Moves to the beginning or end of the following phrase each time the foot switch is pressed.

Previous: Performs the same function as **[TAP] + [REW]**. Moves to the beginning or end of the previous phrase each time the foot switch is pressed.

GPI: Controls playback and recording of the song depending on the GPI trigger signal received from the FOOT SWITCH jack.

❓

GPI (p. 148)

If Noise Between Segments is Obtrusive

In the seams or breaks that occur when recording is begun or ended or when a phrase is copied, obtrusive noise may occur. The VSR-880 fades-in and fades-out these breaks so that this noise will not be heard. If objectionable noise occurs, you can adjust the length of the fade-in and fade-out.

📝 NOTE

It is not possible to set the fade-in/fade-out time to 0. Thus in some cases, such as if you copy a sustained sound such as strings and use it elsewhere, the break may be even more noticeable than if there had been no fade.

Fade Length

This sets the length (2, 10, 20, 30, 40 or 50 ms) of the fade-in or fade-out.

Adjusting the Scrub Length

This function is used to repeat playback of the song before and after a designated point on a selected track for a more precisely specified length of time (25–100 msec).

Scrub Length

This sets a length (25–100 msec) of playback time when the Preview function **[SCRUB]** button is pressed.

Adjusting the Preview Length

You can set the length of playback time for the tracks you want to monitor for 1.0–10.0 seconds leading up to or starting from the current point in the song.

PreviewLen (Preview Length)

It sets a length of playback time in the preview function.

Sounding the Metronome

Play the metronome sound (click or MIDI sound module) at the specified tempo.

MetroOUT (Metronome Out)

This selects how the metronome is output. Selecting "Off" prevents you from making any settings related to the Metronome.

Off: The metronome sound is not output.

INT: The metronome sound is output from the MONITOR jacks.

MIDI: The metronome signal is transmitted via the MIDI OUT connector.

MetroMd (Metronome Mode)

This is for selecting when the metronome sound is played.

Rec Only: The metronome sounds only during recording.

Rec&Play: The metronome sounds during both recording and playback.

Canceling Only the Very Last-Performed Operation

If you most frequently use the Undo function to undo just the previously performed recording/editing operation (i.e., undo level 1), you may prefer not to be bothered with the messages that appear when **[UNDO]** is pressed. In this case, make the following settings so that just the previous operation will be undone immediately when **[UNDO]** is pressed.

UNDO MSG (UNDO message)

This selects whether or not the Undo confirmation message is displayed.

On: The message is displayed, asking how many levels you want to undo.

Off: The message is not displayed, and only the immediately preceding operation is undone.

Adjusting the Display Contrast

The text or icons in the VSR-880's display may be difficult to read immediately after the unit is turned on or after it has been used for long periods, or depending on the environment in which the unit is used.

LCD Contrast

Adjusts the contrast (1–15) of the display. Higher values will produce a darker display.

Checking the Remaining Disk Space

The amount of free disk space available for recording the current song is displayed as "REMAINING TIME" field in the display. You can select the type of display for this.
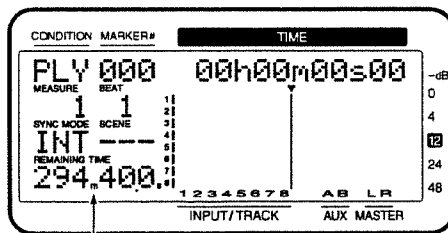
Remaining amount (In the example, 294 minutes 40 seconds)

RemainDsp (Remaining Display)

Selects how the remaining disk space is shown.

Time: This indicates the time (minutes/seconds) left for recording.

CapaMB: This shows the actual memory (in megabytes).

Capa %: This indicates the remaining space as a percentage of the total disk space.

Event: This shows the number of events used in the recording.

Displaying Measures and Beats

If both the metronome is being used and MIDI clock messages are being transmitted, the measure and beat of the song can be displayed in the graphic display. When you are running in synchronization with an external device or recording a song along with a previously-created tempo map, this allows you to operate the VSR-880 just as though you were operating a MIDI sequencer. Set the metronome to sound as described in "Sounding the Metronome" (p. 40).

MeasureDsp (Measure Display)

Use this to select whether or not the measure and beat appear in the graphic display.

Always: The measure and beat are constantly displayed.

Auto: The measure and beat are not displayed when the metronome is not in use.

To Prohibit Digital Copying

When mixing down from the VSR-880 to a DAT recorder or similar recorder via a digital connection, you can prevent digital copying of the tape to which the mixdown has been recorded.

For example, you are allowed to make only one copy of a regular audio CD onto a DAT tape. Once the digital copy has been made to the DAT tape, you cannot make further copies onto other digital devices using digital connections. This function makes DAT tapes copied digitally from the VSR-880 behave as those copied digitally from CDs.

D.CpyProtect (Digital Copy Protect Switch)

Determines whether or not the digitally mixed down tape can be later copied digitally. If you wish to prohibit digital copying, set this "On."

MEMO

Some DAT recorders do not conform to SCMS standards or cannot be connected digitally to CD players. If you are using such a DAT recorder, then if you set the Digital Protect Switch to "On," the digital output from the VSR-880 cannot be copied to the DAT recorder. In such instances, set the Digital Protect Switch to "Off."

Holding the function of [SHIFT]

You can temporarily hold functions by pressing [SHIFT]. Operations such as switching V-tracks or saving songs can be performed with one hand.

Shift Lock (Shift Lock Switch)

Setting to "On" temporarily holds the [SHIFT] button function. Afterwards, the [SHIFT] button indicator light goes on and off each time the button is pressed. [SHIFT] is in effect when the indicator is lit. The hold is lifted the next time another button is pressed or if the TIME/VALUE dial is rotated.

Example Procedure for Switching the Solo Function ON

1. Press [SHIFT] and immediately release the button. The SHIFT indicator lights. The display will briefly indicate "Shift Lock." The display in the "CONDITION" field will alternate between the name of the current condition and "sft," also indicating that the Shift Lock function is on.

2. Press [SOLO (EZ ROUTING)]. The display will briefly indicate "SOLO Mode ON," indicating that the Solo function is on. The SHIFT indicator goes off.

When Holding Down [SHIFT]

If [SHIFT] is held down during the operation, the Shift Lock function will be ignored. For example, if you hold down the [SHIFT] and press [SONG (▶▶)], Shift Lock will not be turned on when you take your finger off [SHIFT]. The function of [SHIFT] itself remains in effect, so the Song Menu appears in the display. Additionally, rotating the TIME/VALUE dial while holding down [SHIFT] increases or decreases the value of some parameter setting by a factor of ten (or 1/10).

Holding Level Meter Peaks

You can hold the display of maximum values (peaks) while the level meter appears in the graphic display.
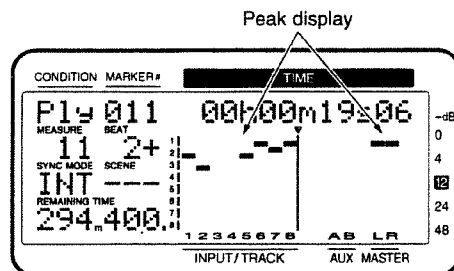
Peak display

PeakHoldSw (Peak Hold Switch)

With this set to "On," the level meter in the graphic display holds the display of peak levels. The peak display is reset (cleared) each time [PLAY (DISPLAY)] is pressed.

Creating a Song which maintains the current system settings

It is possible to create a new Song (Song New), with the current system parameter setting remained. You can start recording/editing with the current environment of system parameters, without re-customizing the Preview Length (p. 36) or Metronome (p. 40) settings. Operation is as follows.

SysPrmKeepSw (System Parameter Keep Switch)

This setting determines whether the system parameter setting should be maintained or not in the newly created Song, upon executing Song New,

Off: Create a new Song with all the parameters initialized.

On: Create a new Song which maintains the system parameters of the current Song.

NOTE

Vari Pitch setting (p. 39) cannot be maintained, but initialized to the sample rate you select upon Song New.

MEMO

If you press **[EXIT/NO]** to "STORE Current?" message, the new Song will contain the last-stored system parameters. But only for the following parameters, current status will be maintained.

- LCD Contrast (p. 109)
- Shift Lock (p. 110)
- System Parameter Keep Switch
- IDE drive (p. 113)
- SCSI self ID number (p. 113)

Switching V-Track Bank

V.Track Bank
Selects the V-Track bank (A, B).

Adjusting the Button Sensitivity

Some buttons, such as **STATUS** ([1]–[8]) or **[SCRUB]**, have different functions depending on whether they are pressed and released immediately, or pressed and held down. You can specify the time that such buttons must be held down.

SwitchTime (Switching Time)
This designates the time the buttons must be held down (0.3–2.0 seconds) in order to change functions.

Removing direct current offset from the mix bus

Direct current offset on the mix bus can be removed. For example in some cases, the level meters of a device (mixer etc.) connected to the output of the VSR-880 may move even though no sound is being output. This is caused by a direct current offset on the mix bus (MASTER output, etc.). This component can be removed.

DC Cut Sw (DC Cut Switch)
When this is turned "On," any direct current offset on the mix bus will be removed before output.

Resetting Mixer and System Settings to Their Original State

Return the state of the mixer and the system settings to their initial state.

Init Mix/SysPRM ?
(Initialize Mixer and System Parameter?)

To restore the state of the mixer and the system settings to their initial state, display this message and press **[ENT/YES]**.

In Order to Make a Digital Connection with Your CD Player

At the time of purchase, the VSR-880 is not able to record the output of CD players via its DIGITAL IN connectors. Perform the following procedure when you wish to make a digital connection with your CD player.

CD DigiREC→ On ?
CD DigiREC→ Off ?
To allow/prohibit digital connection to a CD player, display this message and press **[ENT/YES]**.

Turning the SCSI terminator on/off

Since the VSR-880 has only one SCSI connector, it will always be at one end of the SCSI chain. For this reason, its terminator will normally be on. It is also possible to switch this terminator on/off.

SCSI Term (SCSI Terminator)
If this is turned "Off," the VSR-880's terminator will be turned off. Normally you should leave this "On."

NOTE

In the following cases with SCSI Term: "OFF," the VSR-880 may not be booted up correctly upon turning the power on.

- No SCSI device is connected to the VSR-880's SCSI connector.
- Terminator power is not supplied from the SCSI device connected to the VSR-880's SCSI connector.

If the VSR-880 is booted up incorrectly, solve the problem as follows.

1. Turn off the power of the VSR-880 by pressing **POWER Switch** on the front panel.

2. Turn on the power of the VSR-880 again by pressing **POWER Switch** on the front panel while holding **[EZ ROUTING]** and **[AUTOMIX]**.

3. Release **[EZ ROUTING]** and **[AUTOMIX]** if "Scanning Drive" appears in the display. VSR-880 is booted up with SCSI Term: "ON."

MIDI Settings (MIDI)

1. [SHIFT] + [SYSTEM] → SYS MIDI PRM?"

2. [ENT/YES]

3. PARAMETER [◄◄] or [►►] → TIME/VALUE dial

```
SYS MID:DeviceID= 17
SYS MID:MIDIThr= Out
SYS MID:SysEx.Rx= On
SYS MID:SysEX.Tx=Off
SYS MID:MMC=   MASTER
SYS MID:CtrType= Off
SYS MID:P.C.Scne=Off
SYS MID:P.C.Eff= Off
SYS MID:C.C.Eff= Off
SYS MID:ModelID= VSR
```

PARAMETER
◄◄ ►►
SONG TRACK
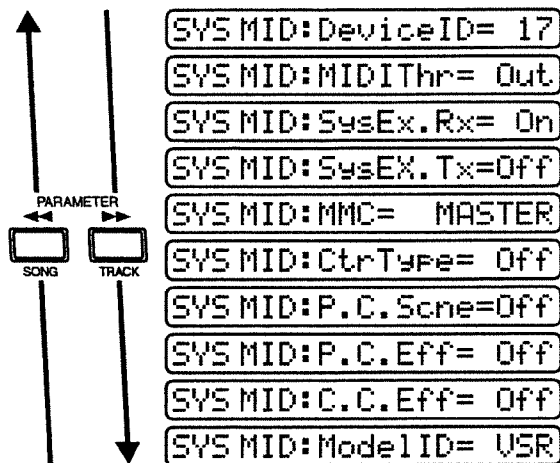
4. [PLAY (DISPLAY)]

Settings for MIDI Transmission or Reception

DeviceID

This sets the Device ID number (1–32) that is used when exchanging exclusive messages (mixer parameters) with an external MIDI device. Exclusive messages can be transmitted and received between devices which have the same Device ID number setting.

MIDIThr (MIDI Thru Switch)

This switches the function of the MIDI OUT/THRU connector.

Out: The connector transmits MIDI message such as metronome Note messages or MTC from the VSR-880.

Thru: MIDI messages received at the MIDI IN connector are retransmitted from the connector without any changes.

SysEx.Rx. (System Exclusive Receive Switch)

Exclusive messages are received when this is set to "On." At this time, set this to "On." The Exclusive messages can be received when the VSR-880 is in Play condition.

SysEx.Tx. (System Exclusive Transmit Switch)

Exclusive messages are transmitted when this is set to "On."

MMC (MMC Mode)

This setting determines how the VSR-880 implements MMC. Set this to "MASTER."

Off/RBUS: MMC (via MIDI connector) is neither transmitted nor received.
MMC (via R-BUS connector) is received

MASTER: MMC is transmitted. The VSR-880 functions as the master device for external MIDI equipment.

SLAVE: MMC is received. The VSR-880 functions as a slave device for external MIDI equipment.

Using an External MIDI Sound Source to Play the Metronome

When the **MetroOUT** (System Parameter; p. 108) is set to "MIDI," you can edit these parameters.

MetroCh (Metronome Channel)

This sets the MIDI channel (1–16) for transmitting Metronome sound Note Messages.

Acc.Note (Accent Note)

This sets note numbers (C0–G9) for the downbeat. When the Drum set is playing, this selects specific percussion sounds.

Nrm.Note (Normal Note)

This sets note numbers (C0–G9) for the upbeats. When the Drum set is playing, this selects specific percussion sounds.

Acc.Velo (Accent Velocity)

This sets the velocity (1–127) for the downbeat.

Nrm.Velo (Normal Velocity)

This sets the velocity (1–127) for the upbeats.

Switching Scenes

You can switch Scenes with MIDI Program Change messages sent by the external MIDI controller.

P.C.Scene (Program Change Scene)

With this set to "On," the scene is changed when program change messages are received. For now, select "On."

NOTE

Scenes cannot be switched during playback of a song. Because of this, the VSR-880 stops momentarily if it receives a program change message during playback instructing it to change scenes. While it is stopped, the scene is switched, and then playback resumes. Furthermore, during recording, only effect program change messages can be received. Scenes cannot be switched during recording.

MEMO

Use MIDI channel 15 for switching scenes. For more detailed information, please refer to "MIDI Implementation" (p. 220).

Switching Effects

You can use MIDI control change messages transmitted from an external MIDI controller to switch effects.

P.C.Eff (Program Change Effect)

With this set to "On," the effect is switched when program change messages are received. For now, select "On."

MEMO

Use MIDI channel 1 to switch effect 1, and MIDI channel 2 to switch effect 2. The relationship between the bank number received by the VSR-880 and the Effect Patch Number it switches to is shown below. For more detailed information, please refer to "MIDI Implementation" (p. 220).

Bank No.MSB	Bank No.LSB	Program No.	Patch No.
0	0	0–99	Preset A00–A99
0	1	0–99	Preset B00–B99
0	2	0–99	User U00–U99
0	3	0–39	Preset C00–C39

Adjusting Effects

You can use MIDI control change messages transmitted from an external MIDI controller to control effects.

C.C.Eff (Control Change Effect)

With this set to "On," the effect is adjusted when control change messages are received. For now, select "On."

MEMO

If you wish to use control change messages to switch effects, use NRPN (Non Registered Parameter Numbers). For more detailed information, please refer to "MIDI Implementation" (p. 220).

Switching the Model ID

You can change the model ID of the VSR-880.

Model ID

Usually set to "VSR." Select "88EX" if you use the MIDI data created with the VS-880EX on the VSR-880.

Disk Drive Settings (DISK)

1. [SHIFT] + [SYSTEM] → "SYS DISK PRM?"

2. [ENT/YES]

3. PARAMETER [◄◄] or [►►] → TIME/VALUE dial


```
SYS DSK:IDE Drv= On
SYS DSK:SCSI Self= 7
```
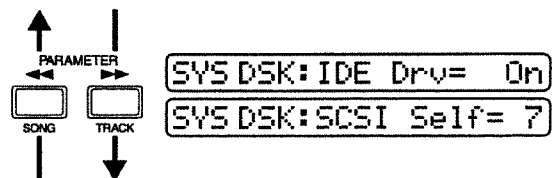
4. [PLAY (DISPLAY)]

When There Is No Hard Disk Installed

Even when there is no hard disk installed in the VSR-880, it still can be used with only a Zip drive connected to the SCSI connector. In such instances, it takes approximately 30 seconds after the power is turned on of the VSR-880 to check its internal hard disk connection status. To avoid this wait, you can preset the VSR-880 not to attempt to use the internal hard disk.

IDE Drv (IDE Drive)

When not using the internal hard disk, set this to "Off." Normally, this is set to "On."

Changing the VSR-880's SCSI ID Number

When connecting SCSI devices with the VSR-880, the SCSI ID number of each device must be set so that none of the devices have the same ID number. The VSR-880's SCSI ID number is set to "7" at the factory. When connecting the VSR-880 to other SCSI devices (for example, Zip drives or CD-R drives), be sure to set the SCSI ID number for these other devices to a number other than "7."

SCSI Self (SCSI Self ID Number)

This sets the VSR-880's own SCSI ID number (0–7).

Synchronization Settings (Sync/Tempo)

1. [SHIFT] + [SYSTEM] → "SYS Sync/Tempo ?"

2. [ENT/YES]

3. PARAMETER [◀◀] or [▶▶] → TIME/VALUE dial

```
SYS Syn:Source=   INT
SYS Syn:InSel=   MIDI
SYS Syn:Gen.=     Off
SYS Syn:ErrLevel=   5
SYS Syn:MTC Type= 30
SYS Syn:Tmap 1=120.0
SYS Ofs= 00h00m00s00
SYS Syn:Sync.Tr Rec?
SYS Syn:Sync.Tr Cnv?
```

PARAMETER ◀◀ ▶▶
SONG   TRACK
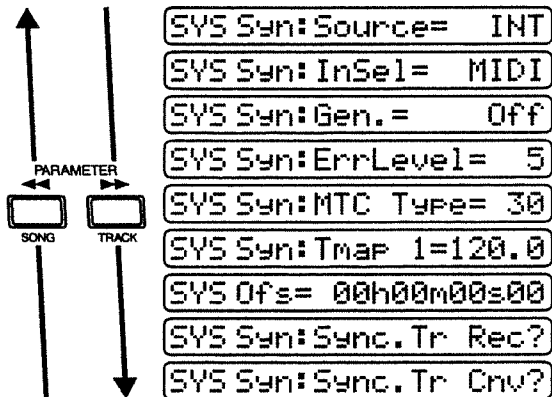
4. [PLAY (DISPLAY)]

MTC Settings

Sync Source

This determines how the VSR-880 is synchronized with other devices. You can select "INT" or "EXT" by [EXT SYNC] of the front panel.

INT: The VSR-880 runs according to its own internal clock. Select this setting when you are not synchronizing with other devices or when you want external MIDI devices to be controlled by synchronization signals from the VSR-880.

EXT: The VSR-880 is controlled with synchronization signals (MTC) from the connected external MIDI device. In this case, the VSR-880 does not operate unless it is receiving MTC signals. Select this setting when you want to use the MTC from an external MIDI device to control the VSR-880.

InSel (Input Select)

When synchronized operation, selects the connector that is received the MIDI Time Code

MIDI: MTC is received via MIDI IN connector. Connect to the external MIDI devices.

R-BUS: MTC is received via R-BUS connector. Connect to the devices that provides the R-BUS (such as VM-3100Pro, VM-7200 etc.).

Gen. (Generator)

This selects the type of synchronization signal transmitted from the MIDI OUT connector. For now, set this to "MTC."

Off: Synchronization signals are not transmitted.

MTC: MIDI Time Code is transmitted.

MIDIclk: MIDI Clock according to the Tempo Map is transmitted.

SyncTr: MIDI Clock data recorded on the sync track is transmitted.

R-BUS: MIDI Time Code is transmitted to the R-BUS connector. (MIDI Time Code is NOT transmitted to the MIDI connector.)

ErrLevel (Error Level)

This sets the interval (0–10) for checking MTC receiving status when synchronize VSR-880 with MTC from an external MIDI device. If the MTC is not being sent continuously, the VSR-880 checks the MTC and if there is an error, cancels synchronization. By setting a longer interval under such circumstances, synchronization can continue, even if there is a certain degree of error. Normally, set this to "5."

MTC Type

Selects the type of MTC (30, 29N, 29D, 25, or 24). Set this to conform to the type of MTC on the slave VSR-880. Here, select "30."

Creating a Tempo Map

You can use the Tempo Map to synchronize operation. First, create a Tempo Map.

Tmap (Tempo Map)

Specifies the tempo map.

Delaying Sync Track and Tempo Map Start Times

Usually, a sync track or tempo map is created with "00h00m00s00f00" as the beginning of the song. However, recording usually doesn't actually start from "00h00m00s00f00." In this kind of situation, you can determine how much later recording begins after the start of the song. This time is referred to as offset. For example, if you want recording to begin ten seconds after the start of the song (with time to spare), set the offset time to "00h00m10s00f00."

Ofs (Offset)

Specifies the time at which the sync track/tempo map will begin.

MEMO

During recording or playback, when the beginning of a sync track or tempo map is reached, the start message is sent from the MIDI OUT connector. This is convenient when you wish to synchronize operation with an external MIDI sequencer.

Recording MIDI Clock Messages

The MIDI clock of the MIDI song data to which you want to synchronize must ne recorded onto the sync track.

Sync Tr. Rec? (Sync Track Recording ?)

To recording MIDI clock onto the sync track, display this message and press **[ENT/YES]**.

Various Operations Related to Synchronized Operation

You can then create a sync track or tempo map beginning at the Markers.

Sync Tr. Cnv? (Sync Track Convert ?)

To create a sync track or tempo map beginning at markers, display this message and press **[ENT/YES]**.

Scene/AutoMIx Settings (Scene/Auto MIx)

1. **[SHIFT] + [SYSTEM]** → "SYS Scene/Auto Mix ?"

2. **[ENT/YES]**

3. **PARAMETER [◄◄] or [►►]** → **TIME/VALUE dial**
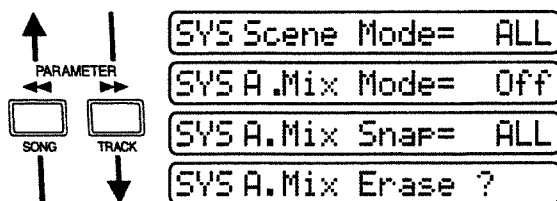
4. **[PLAY (DISPLAY)]**

Recalling a Scene Without Affecting the Master Level Values

If you want just the Master Level values to remain unchanged when you recall a Scene, make the following settings.

Scene Mode

This setting determines the master level settings when a Scene is recalled.

All: This changes the mixer settings to those of the Scene being recalled. In this case, when a Scene is recalled, the location of the faders on the top panel may no longer match the actual fader settings.

KeepM: This changes the mixer settings to those of the Scene being recalled, with the exception of the fader settings. This means that even when a Scene is recalled, fader settings will still match the fader positions on the top panel.

Switching the AutoMix Function On and Off

A.MIX MODE (AutoMIx Mode)

Switches the AutoMix function on and off. You can switch the AutoMix function by **[AUTOMIX]** of the front panel.

If You Don't Want to Record Master Level Settings (Mask Master Level)

You can specify that the **Master Level** setting is not recorded when you record a snapshot.

A.Mix Snap (Auto Mix Snapshot Mode)

This selects the settings that will be recorded by the snapshot.

All: All settings are recorded.

MaskM: Master Level will be ignored.

Disabling Auto Mix

A.MIX Erase ? (AutoMix Erase ?)

To delete the AutoMix data, display this message and press **[ENT/YES]**.

Use with MIDI Devices

This chapter describes the MIDI messages that can be handled by the VSR-880 and the operations that the VSR-880 can perform using MIDI messages.

About MIDI

This section explains the basic concepts of MIDI, and how the VSR-880 handles MIDI messages.

What is MIDI

MIDI stands for **Musical Instrument Digital Interface**. It is a worldwide standard that allows electronic musical instruments and personal computer to exchange musical performance data and messages such as sound selections. Any MIDI-compatible device can transmit musical data (as appropriate for the type of device) to any other MIDI-compatible device, regardless of its manufacturer or model type.

MIDI connectors

MIDI messages (the data handled by MIDI) are transmitted and received using the following three types of connectors. On the VSR-880, MIDI OUT and MIDI THRU are handled by a single connector, which can be switched to act as the desired connector. (p. 16)

MIDI IN: This receives MIDI messages from external MIDI devices.

MIDI OUT: This transmits MIDI messages from the VSR-880.

MIDI THRU: This re-transmits all MIDI messages that were received at MIDI IN, without modifying them.

MIDI channels

MIDI is able to send information over a single MIDI cable independently to two or more MIDI devices. This is made possible by the concept of MIDI channels. You can think of MIDI channels as being somewhat similar in function to the channels on a television. By changing the channel of a TV set, you can view a variety of programs being transmitted by different broadcast stations. This is because data is received only from the transmitter whose channel is selected on the receiver. In the same way, a MIDI device whose receive channel is set to "1" will receive only the data being transmitted by another MIDI device whose transmit channel is also set to "1."

MIDI messages

The VSR-880 uses the following types of MIDI message.

Note messages:
These messages are used to play notes. On a keyboard, these message transmit the key (note number) that was pressed, and how strongly it was pressed (velocity). On the VSR-880, these messages are used when you use a MIDI sound source to play the metronome sound.

Program Change messages:
These messages are for the purpose of selecting sounds, and contain a program number of 1–128. The VSR-880 uses these messages to select scenes and effects. (p. 112)

Control Change messages:
In general, these messages are used to transmit information such as vibrato, hold, and volume etc., that makes a performance more expressive. The various functions are differentiated by a controller number from 0–127, and the controller number is defined for each function. The functions that can be controlled on any given device will depend on that device. On the VSR-880, these messages are used in a completely different way than on most instruments; they are used to control mixer parameters.

Exclusive messages:
Unlike note messages and control change messages, exclusive messages are used to transmit settings that are unique to a particular device. On the VSR-880, exclusive messages can be used to control mixer parameters (in the same way as control change messages). Normally, control change messages are easier to handle, so they should be used rather than exclusive messages. Exclusive messages intended for different units are distinguished by their Device ID, rather than by MIDI channel. When exclusive messages are to be transmitted or received, you must set the Device ID of both units to a matching setting.

MIDI implementation chart

MIDI allows a variety of electronic musical instruments to communicate with each other. However it is not necessarily the case that all devices will be able to communicate using all types of MIDI message. They can only communicate using those types of MIDI message that they have in common. Each owner's manual for a MIDI device includes a MIDI Implementation Chart. This chart shows you at a glance the types of MIDI message that can be transmitted and received. By comparing the implementation charts of two devices, you will be able to see the types of message with which they will be able to communicate.

Synchronizing with MIDI Sequencers

The VSR-880 can be operated in synchronization with a MIDI sequencer. Refer to the owner's manual for your sequencer in conjunction with this manual. There are two main ways to accomplish synchronization, one is method using MTC (MIDI time code) and the other one is method using MIDI Clock, with MIDI Clock further divided into two types, Sync Track and Tempo Map, either if which can be selected. Use the method that is appropriate for your situation.

- Using MTC (MIDI time code) (p. 117)
- Using the sync track (p. 120)
- Using the tempo map (p. 122)

?

MTC (p. 148)

Items Necessary for Synchronization

- VSR-880 (1)
- Internal IDE hard disk (HDP88 series)
- Audio equipment to be connected to the MASTER jack, or stereo headphones
- External MIDI sequencer or computer sequencer software (such as Cakewalk Pro Audio)
- MIDI cables

Master and Slave

When synchronizing the VSR-880 with a MIDI sequencer, the device that sends, or transmits MTC or MIDI Clock and acts as the reference device is referred to as the master.
Conversely, the device that receives the MTC or MIDI Clock signals from the controlling device is called the slave.
When using MTC, you can choose whether to have the MIDI sequencer be the master that controls the VSR-880, or to have the VSR-880 be the master that controls the MIDI sequencer. In contrast, when you use MIDI Clock, whereas you can synchronize a MIDI sequencer from the VSR-880 (VSR-880 as master), it will not be possible to synchronize the VSR-880 from the sequencer (VSR-880 as slave).

Using MTC

This section explains how the VSR-880 can be synchronized with a MIDI sequencer that implements MTC (MIDI Time Code). When using MTC, you can choose to have the VSR-880 be the master that controls the MIDI sequencer, or to have the MIDI sequencer be the master that controls the VSR-880.

MTC Type

The VSR-880 can work with the following types of MTC. Check the specifications of the MIDI devices that you are using, and select the appropriate type of MTC on the VSR-880.

30: 30 frames per second non-drop format. This is used by audio devices such as analog tape recorders, and for NTSC format black and white video.

29N: 29.97 frames per second non-drop format. This is used for NTSC format color video.

29D: 29.97 frames per second drop format. This is used for NTSC format broadcast color video.

25: 25 frames per second. This is used for SECAM or PAL format video, audio equipment, and film.

24: 24 frames per second. This is used for video, audio devices, and film in the US.

Drop Frame and Non-Drop Frame

There are two types of time code used by NTSC format video cassette recorders, drop, in which the time code is not continuous, and non-drop, which features continuous time code. In drop, which is used for NTSC color video format, the first two frames of every minute are dropped, except for those at ten-minute intervals.

Non-Drop Frame (29N)

00m59s   01m00s

... 25 26 27 28 29 00 01 02 03 04 05f ...

Drop Frame (29D)

00m59s   01m00s

... 25 26 27 28 29 02 03 04 05 06 07f ...

MEMO
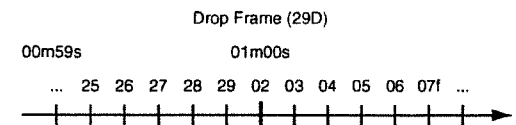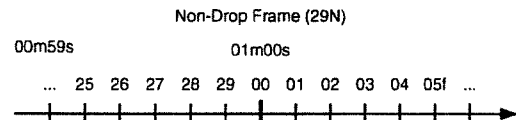
In most video and audio production, since formats with continuous frames are easier to deal with, non-drop is generally used. In contrast, in situations such as in broadcast, where the time code must match actual clock time, drop is used.

?

Frame (p. 148), NTSC Format (p. 149), SECAM Format/PAL Format (p. 149)

Synchronization with the VSR-880 as the Reference (Master)

When you are having the VSR-880 act to control the MIDI sequencer, use the following procedure.

1. Connect the VSR-880 and the MIDI sequencer as shown below.

VSR-880 (Rear panel)

MIDI IN

MIDI Sequencer
(implements MTC)
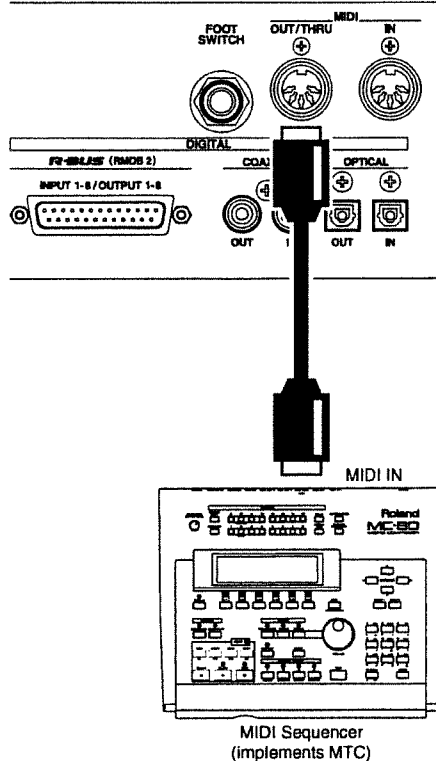
2. Press **[SHIFT] + [SYSTEM (►)]** several times until "SYS MIDI PRM ?" appears in the display.

3. Press **[ENT/YES]**.

4. Press PARAMETER [►►] several times until "SYS MID: MIDIThr=" appears in the display.

5. Rotate the **TIME/VALUE dial.**
   MIDI Thru (MIDI Thru Switch)
   Selects the function of the MIDI OUT/THRU connector. For now, select "Out."

   Out: The connector transmits MIDI messages from the VSR-880. Select this when you want to transmit metronome Note messages or mixer parameter settings (control change messages or exclusive messages).

   Thru: MIDI messages received at the MIDI IN connector will be retransmitted from the connector without change.

6. Press **[SHIFT] + [SYSTEM (►)]** several times until "SYS Sync/Tempo ?" appears in the display.

7. Press **[ENT/YES]**.

8. Press **PARAMETER [►►]** several times until "SYS Gen.=" appears in the display.

9. Rotate the **TIME/VALUE dial.**
   Gen. (Generator)
   Selects the type of synchronization signal that will be transmitted from the MIDI OUT connector. At this point, select "MTC."

   Off: Synchronization signals are not transmitted.

   MTC: MIDI Time Code is transmitted.

   MIDIClk: MIDI Clock according to the Tempo Map is transmitted.

   SyncTr: MIDI Clock data recorded on the sync track is transmitted.

   R-BUS: MIDI Time Code is transmitted via the R-BUS connector. (MIDI Time Code is NOT transmitted to the MIDI OUT connector.)

10. Press **PARAMETER [►►]**. "SYS MTC Type=" appears in the display.

11. Rotate the **TIME/VALUE dial.**
    MTC Type
    Selects the MTC type (30, 29N, 29D 25, 24). Select the MTC that matches your MIDI sequencer.

12. Press **[PLAY (DISPLAY)]**. Return to Play condition.

13. Set your MIDI sequencer so that it can operate according to the MIDI Time Code received from external devices, and set it so that it can play back MIDI song data. When playback begins on the VSR-880, the MIDI sequencer begins playback as well.

Synchronization with the MIDI Sequencer as the Reference (Slave)

When the MIDI sequencer is used as the basis to control the VSR-880, use the following procedure.

MEMO

When using MIDI sequencer software for personal computers, then depending on the hardware specifications and the playing conditions, the MTC signal sent to the VSR-880 may be unstable. As much as possible, try to synchronize using the VSR-880 as the master.

1. Connect the VSR-880 and the MIDI sequencer as shown below.
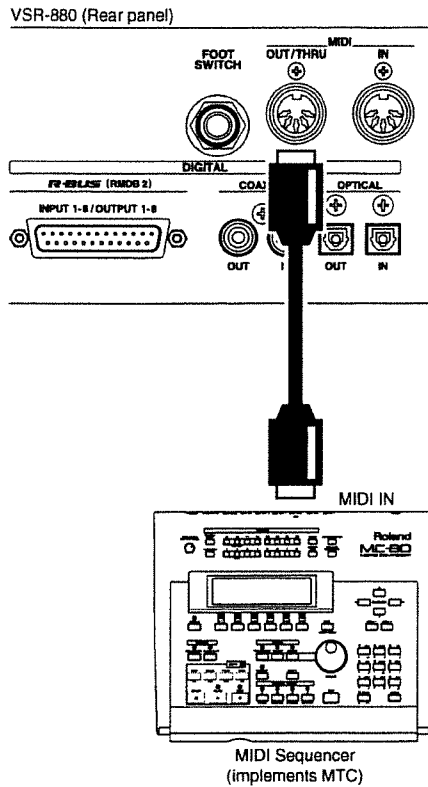
VSR-880 (Rear panel)

MIDI IN

MIDI Sequencer
(implements MTC)

2. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS Sync/Tempo ?" appears in the display.

3. Press **[ENT/YES]**.

4. Press **PARAMETER [▶▶]** several times until "SYS Sync/Tempo ?" appears in the display.

5. Rotate the **TIME/VALUE dial**.

ErrLevel (Error Level)

This sets the interval (0–10) for checking MTC reception when synchronizing the VSR-880 as MTC is transmitted by an external MIDI device. When MTC is not sent continuously, the VSR-880 checks the MTC and cancels synchronization if there is an error. By setting a longer interval under such circumstances, synchronization can continue, even if there is a certain degree of error.

6. Press **PARAMETER [▶▶]**. "SYS MTC Type=" appears in the display.

7. Rotate the **TIME/VALUE dial**.

MTC Type

This selects the MTC type (30, 29N, 29D 25, 24). Select the MTC that matches your MIDI sequencer.

8. Press **[PLAY (DISPLAY)]**. Return to Play condition.

9. Set your MIDI sequencer to send MTC.

10. Press **[EXT SYNC]**. The EXT SYNC indicator will light. At the same time, the "SYNC MODE" field of the display will show "EXT," indicating that the unit will now operate in synchronization with MTC received from a MIDI sequencer.

11. Press **[PLAY]**.The PLAY indicator blinks green, indicating that the VSR-880 is in MTC receive standby mode. When the MIDI sequencer begins playback, then playback also begins on the VSR-880. During synchronization, the PLAY indicator are lit.

12. When you stop the MIDI sequencer, the VSR-880 will also stop. The PLAY indicator blinks green.

13. Press **[STOP]**. The PLAY indicator goes off.

14. Press **[EXT SYNC]**. The EXT SYNC indicator will go dark. At the same time, the "SYNC MODE" field of the display will show "INT," indicating that the unit will no longer operate in synchronization.

Synchronizing with an External MIDI Device (Offset)

When the VSR-880 is running under the control of the MTC from an external MIDI device, you can synchronize the song's playback time and the MTC time. This time is called the **offset**. For example, if the MTC time is "01h00m00s00f00," and the song's time is "00h10m00s00f00," the "offset" is as follows.

(Offset)
= (MTC time) - (destined time of the song)
= (01h00m00s00f00) - (00h10m00s00f00)
= (00h50m00s00f00)

If the offset value turns out to be negative, add "24h00m00s00f00" to the MTC time before subtracting the destined time of the song. For example, if the MTC time transmitted is 00h00m50s00f00," and you want the song to play back at "00h01m00s00f00," then the offset works out as shown below.

(Offset)
= (MTC time) - (destined time of the song)
= (00h00m50s00f00) - (00h01m00s00f00)
= ((24h00m00s00f00) + (00h00m50s00f00)) - (00h01m00s00f00)
= (23h59m50s00f00)

NOTE

With the VSR-880, continuous playback from "23h59m59s29f99" to "00h00m00s00f00" does not correspond to (overnight mode). The song that crosses over "00h00m00s00f00" momentarily stops at "23h59m59s29f99" then resumes playback.


```
23h59m59s00    00h00m00s00f              Time
```
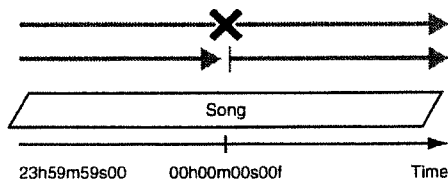
1. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS System PRM ?" appears in the display.

2. Press **[ENT/YES]**.

3. Press **PARAMETER [▶▶]**.

4. "TimeDispFmt=" appears in the display. Rotate the **TIME/VALUE dial**.

   TimeDispFmt (Time Display Format)

   Select one of the reference times (REL, ABS) that appear in the display. For now, choose "ABS."

   REL: The starting time of the song is displayed as "00h00m00s00f00."

   ABS: The time displayed includes the addition of the offset time.

5. Press **PARAMETER [▶▶]**.

6. "Ofs=" appears in the display. Rotate the **TIME/VALUE dial**.

   Ofs (Offset)

   When the VSR-880 is running under the control of the MTC from an external MIDI device, you can synchronize the song's playback time and the MTC time. The offset settings range varies depending on the MTC type selected for the current song.

7. Press **[PLAY (DISPLAY)]**. Return to Play condition.

Using the Sync Track (Master)

If your MIDI sequencer supports Song Position Pointer messages, you can use the MIDI Clock to synchronize operations. There are two methods of synchronization using the MIDI Clock: one is using the sync track, and the other one is using the tempo map. Here is an explanation of how to control the MIDI sequencer from the VSR-880 using the sync track.

What is the Sync Track?

In addition to the tracks for recording audio signals, the VSR-880 has a separate track for recording MIDI Clock signals. This is called the sync track. Unlike conventional multi-track recorders, it is not necessary to reserve one of the audio tracks for recording the sync signal.

To use the sync track, first the MIDI clock of the MIDI song data to which you want to synchronize must first be recorded onto the sync track. Then, transmit the recorded MIDI clock data to the MIDI sequencer to synchronize the MIDI song data. This is a convenient method to use when the MIDI song data has been created earlier than the VSR-880 song.

In particular, when synchronizing to MIDI song data in which the tempo gradually increases or decreases, using the tempo map allows more precise following of tempo changes, compared to the tempo map in which tempo is set for each measure.

Recording MIDI Clock Messages

1. Connect the VSR-880 and the MIDI sequencer as shown below.
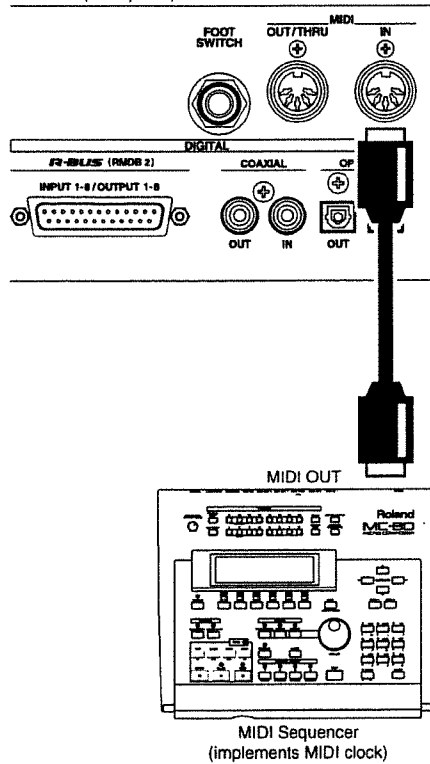
VSR-880 (Rear panel)

MIDI OUT

MIDI Sequencer
(implements MIDI clock)

2. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS Sync/Tempo ?" appears in the display.

3. Press **[ENT/YES]**.

4. Press **PARAMETER [▶▶]** several times until "SYS SYN: Sync Tr. Rec?" appears in the display.

5. Press **[ENT/YES]**. "Wait for Start" appears in the display, and the sync track is ready for record MIDI clock data.

6. Start playback of the MIDI song data. The MIDI clock data is recorded on the sync track. While MIDI clock data is being recorded onto the sync track, the input sources can be monitored, but audio tracks cannot be recorded or played back.

7. When the MIDI song data is finished playing back, the VSR-880 automatically stops recording MIDI clock data. Return to Play condition.

Synchronized Operation

1. Connect the VSR-880 and the MIDI sequencer as shown below.

VSR-880 (Rear panel)

MIDI IN

MIDI Sequencer
(implements MIDI clock)

2. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS MIDI PRM ?" appears in the display.

3. Press **[ENT/YES]**.

4. Press **PARAMETER [▶▶]** several times until "SYS MID: MIDIThr=" appears in the display.

5. Rotate the **TIME/VALUE dial**.
   MIDI Thru (MIDI Thru Switch)

   This selects the function of the MIDI OUT/THRU connector. For now, select "Out."

   Out: The connector transmits MIDI messages from the VSR-880. Select this when you want to transmit metronome Note messages or mixer parameter settings (control change messages or exclusive messages).

   Thru: MIDI messages received at the MIDI IN connector will be retransmitted from the connector without change.

6. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS Sync/Tempo ?" appears in the display.

7. Press [ENT/YES].

8. Press **PARAMETER** [▶▶] several times until "SYS Gen.=" appears in the display.

9. Rotate the **TIME/VALUE dial**.

Gen. (Generator)

This selects the type of synchronization signal that will be transmitted from the MIDI OUT connector. At this point, select "SyncTr."

Off: Synchronization signals are not transmitted.

MTC: MIDI Time Code is transmitted.

MIDIClk: MIDI Clock according to the Tempo Map is transmitted.

SyncTr: MIDI Clock data recorded on the sync track is transmitted.

R-BUS: MIDI Time Code is transmitted via the R-BUS connector. (MIDI Time Code is NOT transmitted to the MIDI OUT connector.)

10. Press [PLAY (DISPLAY)]. Return to Play condition.

11. Set your MIDI sequencer so that it can operate according to the MIDI Clock messages received from external devices, and set it so that it can play back MIDI song data. When playback begins on the VSR-880, the MIDI sequencer begins playback as well.

Using the Tempo Map (Master)

If your MIDI sequencer supports Song Position Pointer messages, you can use the MIDI Clock to synchronize operations. There are two methods of synchronization using the MIDI Clock: one is using the sync track, and the other one is using the tempo map. This section gives an explanation of how to control the MIDI sequencer from the VSR-880 using the tempo map.

What is a Tempo Map?

A tempo map is a song's measure, beat, and tempo information. Transmitting this information to MIDI sequencers and other devices, it can be used in synchronizing operations with external MIDI devices. The tempo map sets tempo changes for each measure, so you can record information specifying changes in rhythm and tempo to be played from any designated measure. With the VSR-880, tempo maps are numbered sequentially from the beginning of the song, with Tempo Map 1 first, followed by Tempo Map 2, Tempo Map 3, and so on. Tempo Map 1 is already specified at the beginning of the song, and determines the initial tempo of the song. To change the tempo at a subsequent measure, create a new tempo map at each location where you want the tempo to change. Up to 50 tempo maps can be created.

Example 1: Song with no tempo changes

Tempo Map 1(120BPM)
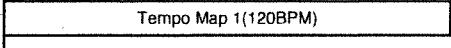
Example 2: Song with tempo changes occurring during the song

Tempo Map 1 (120BPM)	Tempo Map 2 (117BPM)	Tempo Map 3 (108PBM)
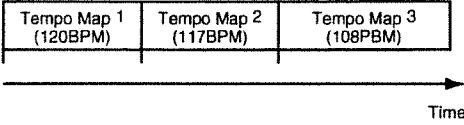
→ Time

Creating a Tempo Map

1. Press [SHIFT] + [SYSTEM (▶)] several times until "SYS Sync/Tempo ?" appears in the display.

2. Press [ENT/YES].

3. Press **PARAMETER** [▶▶] several times until "SYS Syn: Tmap1=" appears in the display.

4. Tempo Map 1 (the song's initial tempo) is displayed. The measure appearing in the display and its beat, metronome sound, and MIDI Clock transmitted from the VSR-880 follow the tempo map settings. The following example indicates that a tempo map with time signature of 4/4 and quarter note=120 begins at measure 1.
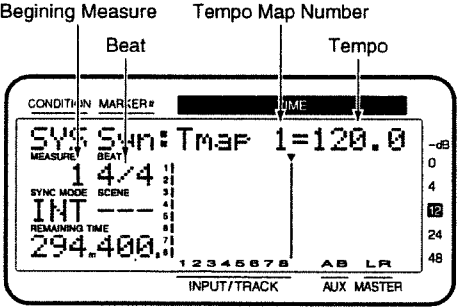
5. Use [▶] and **TIME/VALUE dial** to adjust these parameters.

(Tempo)

Sets the tempo map tempo (25.0–250.0).

Measure

Selects the beginning measure (1–999) for each tempo map.

NOTE

Tempo Map 1 is the song's initial tempo. You cannot be changed or deleted the beginning measure setting of "1."

Beat

This sets the tempo map time signature (1/1–8/1, 1/2–8/2, 1/4–8/4, 1/8–8/8).

6. If you wish to change the tempo during the song, press [►]. The cursor will move to the tempo map number display.

By pressing [◄] while the tempo map number is displayed by the cursor, you can delete the tempo map.

7. Rotate the **TIME/VALUE dial** clockwise. "<New>" appears in the display.

8. Press **[ENT/YES]**.

9. Repeat steps 4–7 to specify the tempo map. By rotating the **TIME/VALUE dial** counterclockwise in step 7, you can modify a previously-specified tempo/starting measure/time signature.

Limitations on changing the starting measure

Tempo maps are numbered from the beginning of the song as tempo map 1, tempo map 2, tempo map 3, etc. This means that it is not possible to modify the starting measure of a tempo map to make it earlier than the starting measure of the previous tempo map, or later than the starting measure of the following tempo map. For example if tempo map 2 has a starting measure of "8" and tempo map 4 has a starting measure of "16," the starting measure of tempo map 3 can be modified only in the range of "9–15."

---

10. When you are finished making tempo map settings, press **[PLAY (DISPLAY)]**. Return to Play condition.

Synchronized Operation

1. Connect the VSR-880 and the MIDI sequencer as shown below.

VSR-880 (Rear panel)

MIDI Sequencer
(implements MIDI clock)

2. Press **[SHIFT] + [SYSTEM (►)]** several times until "SYS MIDI PRM ?" appears in the display.

3. Press **[ENT/YES]**.

4. Press **PARAMETER [►►]** several times until "SYS MID: MIDIThr=" appears in the display.

5. Rotate the **TIME/VALUE dial**.

MIDI Thru (MIDI Thru Switch)

This selects the function of the MIDI OUT/THRU connector. For now, select "Out."

Out: The connector transmits MIDI messages from the VSR-880. Select this when you want to transmit metronome Note messages or mixer parameter settings (control change messages or exclusive messages).

Thru: MIDI messages received at the MIDI IN connector will be retransmitted from the connector without change.

6. Press **[SHIFT] + [SYSTEM (►)]** several times until "SYS Sync/Tempo ?" appears in the display.

7. Press **[ENT/YES]**.

8. Press **PARAMETER [▶▶]** several times until "SYS Gen.=" appears in the display.

9. Rotate the **TIME/VALUE dial**.

Gen. (Generator)

This selects the type of synchronization signal that will be transmitted from the MIDI OUT connector. At this point, select "MIDIClk."

Off: Synchronization signals are not transmitted.

MTC: MIDI Time Code is transmitted.

MIDIClk: MIDI Clock according to the Tempo Map is transmitted.

SyncTr: MIDI Clock data recorded on the sync track is transmitted.

R-BUS: MIDI Time Code is transmitted via the R-BUS connector. (MIDI Time Code is NOT transmitted to the MIDI OUT connector.)

10. Press **[PLAY (DISPLAY)]**. Return to Play condition.

11. Set your MIDI sequencer so that it can operate according to the MIDI Clock messages received from external devices, and set it so that it can play back MIDI song data. When playback begins on the VSR-880, the MIDI sequencer begins playback as well.

Various Operations Related to Synchronized Operation

There may be times when you want to use MIDI Clock to synchronize with an external MIDI sequencer or other device, even without recording using the metronome. In such instances, to synchronize with the tempo of the recorded song, first set a Marker. You can then create a sync track or tempo map beginning at that Marker.

Setting Markers Along with the Tempo

1. Press **[ZERO]**.

2. Press **[PLAY]** to begin playback of the song.

3. While listening to the song, press **[TAP]** at the downbeat at the each beat.

4. When you have finished setting the Markers, press **[STOP]**.

⚠️ **NOTE**

To correctly place Markers on the downbeats of other song, we recommend using the Preview and Scrub functions. (p. 36)

Creating a Sync Track from the Marker

A sync track can be generated from markers that were assigned according to the tempo of a previously recorded performance. This is convenient when you have already recorded a performance of an acoustic instrument such as guitar or vocal, and now you wish to synchronize a MIDI sequencer etc. to the recording.

1. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS Sync/Tempo?" appears in the display.

2. Press **[ENT/YES]**.

3. Press **PARAMETER [▶▶]** several times until "SYS MIDI PRM ?" appears in the display.

4. Press **[ENT/YES]**.

5. Rotate the **TIME/VALUE dial**.

CV (Convert)

Here you can select how the sync track / tempo map will be created. For this example, select "CV1."

6. Press **PARAMETER [▶▶]**. "SYS CV:Beat=" appears in the display.

7. Rotate the **TIME/VALUE dial**.

Beat

Specify the number of beat (1/1–8/1, 1/2–8/2, 1/4–8/4, 1/8–8/8) in one measure.

8. Press **PARAMETER [▶▶]**. "SYS CV:Tap Beat=" appears in the display.

9. Rotate the **TIME/VALUE dial**.

Tap Beat

Specify the number of marks (1–8) in each measure.

10. Press **[ENT/YES]**.

11. A confirmation message asking if you want to save the changes to the sync track appears in the display. If you want to save the changes, press **[ENT/YES]**. If you wish to cancel, then press **[EXIT/NO]**.

12. When the sync track has been completed, "— Complete —" appears in the display.

13. Press **[PLAY (DISPLAY)]**. Return to Play condition.

Creating a Sync Track from the Marker

A sync track can be generated from markers that were assigned according to the tempo of a previously recorded performance. This is convenient when you have already recorded a performance of an acoustic instrument such as guitar or vocal, and now you wish to synchronize a MIDI sequencer etc. to the recording.

1. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS Sync/Tempo?" appears in the display.

2. Press **[ENT/YES]**.

3. Press **PARAMETER [▶▶]** several times until "SYS Sync.Tr Cnv?" appears in the display.

4. Press **[ENT/YES]**.

5. Rotate the **TIME/VALUE dial**.

   CV (Convert)

   Here you can select how the sync track / tempo map will be created. For this example, select "CV2."

6. Press **PARAMETER [▶▶]**. "SYS CV:Beat=" appears in the display.

7. Rotate the **TIME/VALUE dial**.

   Beat

   Specifies the number of beat (1/1–8/1, 1/2–8/2, 1/4–8/4, 1/8–8/8) in one measure.

8. Press **PARAMETER [▶▶]**. "SYS CV:Tap Beat=" appears in the display.

9. Rotate the **TIME/VALUE dial**.

   Tap Beat

   Specifies the number of marks (1–8) in each measure.

10. Press **[ENT/YES]**.

11. A confirmation message asking if you want to save the changes to the tempo map appears in the display. If you want to save the changes, press **[ENT/YES]**. If you wish to cancel, then press **[EXIT/NO]**.

12. When the tempo map has been completed, "— Complete —" appears in the display.

13. Press **[PLAY (DISPLAY)]**. Return to Play condition.

Creating a Tempo Map from a Sync Track

You can create a tempo map from sync track stored in the VSR-880. This is convenient when you want to change a sync track's MIDI Clock with the VSR-880.

1. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS Sync/Tempo?" appears in the display.

2. Press **[ENT/YES]**.

3. Press **PARAMETER [▶▶]** several times until "SYS Sync.Tr Cnv?" appears in the display.

4. Press **[ENT/YES]**.

5. Rotate the **TIME/VALUE dial**.

   CV (Convert)

   Here you can select how the sync track / tempo map will be created. For this example, select "CV3."

6. Press **PARAMETER [▶▶]**. "Sync Trk Beat=" appears in the display.

7. Rotate the **TIME/VALUE dial**.

   Sync Trk Beat (Sync Track Beat)

   Specifies the number of beats (1/1–8/1, 1/2–8/2, 1/4–8/4, 1/8–8/8) per measure in the MIDI clock that is recorded in the sync track.

8. Press **[ENT/YES]**.

9. A confirmation message asking if you want to save the changes to the tempo map appears in the display. If you want to save the changes, press **[ENT/YES]**. If you wish to cancel, then press **[EXIT/NO]**.

10. When the tempo map has been completed, "— Complete —" appears in the display.

11. Press **[PLAY (DISPLAY)]**. Return to Play condition.

Creating a Sync Track Automatically

You can automatically create a sync track by specifying the start and end times of the song, and the number of measures that it contains. This is convenient when you already know the length of the song, such as with commercials.

1. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS Sync/Tempo?" appears in the display.

2. Press **[ENT/YES]**.

3. Press **PARAMETER [▶▶]** several times until "SYS Sync.Tr Cnv?" appears in the display.

4. Press **[ENT/YES]**.

5. Rotate the **TIME/VALUE dial**.

   CV (Convert)

   Here you can select how the sync track / tempo map will be created. For this example, select "CV4."

6. Press **PARAMETER [▶▶]**. "Start Time=" appears in the display.

7. Rotate the **TIME/VALUE dial**.

   Start Time

   Specifies the song start time.

8. Press **PARAMETER [▶▶]**. "End Time=" appears in the display.

9. Rotate the **TIME/VALUE dial**.

   End Time

   Specifies the song end time.

10. Press **PARAMETER [▶▶]**. "Measure=" appears in the display.

11. Rotate the **TIME/VALUE dial**.

    Measure

    Specifies the number of measures (1–999) within a specified time.

12. Press **PARAMETER [▶▶]**. "Beat=" appears in the display.

13. Rotate the **TIME/VALUE dial**.

    Beat

    Specifies the number of beat (1/1–8/1, 1/2–8/2, 1/4–8/4, 1/8–8/8) in one measure.

14. Press **[ENT/YES]**.

15. A confirmation message asking if you want to save the changes to the sync track appears in the display. If you want to save the changes, press **[ENT/YES]**. If you wish to cancel, then press **[EXIT/NO]**.

16. When the sync track has been completed, "— Complete —" appears in the display.

17. Press **[PLAY (DISPLAY)]**. Return to Play condition.

Delaying Sync Track and Tempo Map Start Times

Usually, a sync track or tempo map is created with "00h00m00s00f00" as the beginning of the song. However, recording usually doesn't actually start from "00h00m00s00f00." In this kind of situation, you can determine how much later recording begins after the start of the song. This time is referred to as offset. For example, if you want recording to begin ten seconds after the start of the song (with time to spare), set the offset time to "00h00m10s00f00."

MEMO

During recording or playback, when the beginning of a sync track or tempo map is reached, the start message is sent from the MIDI OUT connector. This is convenient when you wish to synchronize operation with an external MIDI sequencer.

1. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS Sync/Tempo?" appears in the display.

2. Press **[ENT/YES]**.

3. Press **PARAMETER [▶▶]** several times until "SYS Ofs=" appears in the display.

4. Rotate the **TIME/VALUE dial**.

   Ofs (Offset)

   Specifies the time at which the sync track/tempo map will begin.

5. Press **[PLAY (DISPLAY)]**. Return to Play condition.

Use with a MIDI Controller

The VSR-880 can transmit its mixer settings and functions as MIDI messages. Conversely, MIDI messages from an external MIDI controller can be used to control the VSR-880's track status and mixer settings.

The Correspondence Between MIDI Channels and Controller Numbers

MIDI channels correspond to the mixer channels as shown below. For channel pairs linked with the Stereo Link function, Control Change messages can be exchanged using the odd-numbered channel's MIDI channel. Control Change messages transmitted via the even-numbered channel's MIDI channel are ignored.

MIDI ch	IN NIX	TR MIX	RTN MIX	MASTER
1	1	1	-	-
2	2	2	-	-
3	3	3	-	-
4	4	4	-	-
5	5	5	-	-
6	6	6	-	-
7	7	7	-	-
8	8	8	-	-
11	-	-	ST IN	-
12	-	-	FX1	-
13	-	-	FX2	-
16	-	-	-	MST

Controller numbers correspond to the track mixer parameters as follows.

Ctrl #	TR MIX
3	TRACK STATUS
7	MIX Send Level
10	MIX Send Pan
12	EQ L Freq.
13	EQ L Gain
14	EQ M Freq.
15	EQ M Gain
16	EQ M Q
17	EQ H Freq.
18	EQ H Gain
19	FX1 SND Level
20	FX1 SND Pan/Bal

Ctrl #	TR MIX
21	FX2 SND Level
22	FX2 SND Pan/Bal
23	AUX Send Level
24	AUX Send Pan/Bal
29	MIX Offset Level
30	MIX Offset Bal

Controller numbers correspond to the input mixer parameters as follows.

Ctrl #	IN MIX
68	MIX Send Level
70	MIX Send Pan/Bal
71	EQ L Freq.
72	EQ L Gain
73	EQ M Freq.
74	EQ M Gain
75	EQ M Q
76	EQ H Freq.
77	EQ H Gain
78	FX1 SND Level
79	FX1 SND Pan/Bal
80	FX2 SND Level
81	FX2 SND Pan/Bal
82	AUX Send Level
83	AUX Send Pan/Bal
88	MIX Offset Level
89	MIX Offset Bal

Controller numbers correspond to the effect return mixer parameters as follows.

Ctrl #	RTN MIX
68	MIX Send Level
70	MIX Send Balance

Controller numbers correspond to the Master section parameters as follows.

Ctrl #	MASTER
68	Master Level
70	Master Balance
78	FX1 SND Level
79	FX1 SND Balance
80	FX2 SND Level

Ctrl #	TR MIX
81	FX2 SND Balance
82	AUX Level
83	AUX Balance

Switching Track Status

You can use MIDI control change messages to switch the status of each track (track status). MIDI channels 1–8 correspond to Tracks 1–8 respectively. Use controller number 3 to switch the track status.

Depending on the value of controller number 3, the track status changes as shown below.

When stopped

VALUE	0–31	32–63	64–95	96–127
STATUS	MUTE	MUTE	MUTE	MUTE
	→ OFF	→ PLAY	→ REC	→ SOURCE
	PLAY	PLAY	PLAY	PLAY
	→ MUTE	→ PLAY	→ REC	→ SOURCE
	REC	REC	REC	REC
	→ MUTE	→ PLAY	→ REC	→ SOURCE
	SOURCE	SOURCE	SOURCE	SOURCE
	→ MUTE	→ PLAY	→ REC	→ SOURCE

During playback or recording

VALUE	0–31	32–63	64–95	96—127
STATUS	- (*1)	MUTE -	(*1)	- (*1)
		→ PLAY		
	PLAY	PLAY	- (*1)	-(*1)
	→ MUTE	→ PLAY		
	- (*1)	- (*1)	REC	REC
			→ REC	→ SOURCE (*2)
	SOURCE	- (*1)	SOURCE	SOURCE
	→ MUTE		→ REC (*2)	→ SOURCE

(*1)   Ignored.

(*2)   Cannot be switched while recording. Also, "SOURCE" here indicates "the status in which the track indicator blinks alternately red and orange," and is valid only when Record Monitor is set to "AUTO" (p. 107).

Take Advantages of the VSR-880 (idea and examples)

Synchronizing with the VS-880EX

The VSR-880 is compatible with **MMC**. Here, we will see an example of synchronizing the VSR-880 with the VS-880EX as track expansion module. Here, we explain how the operation of the VS-880EX and the VSR-880 can be synchronized. The VS-880EX acts as the MMC/MTC master, and the VSR-880 as the MMC/MTC slave. Make connections as described below.

INPUT 1, 2   MIDI OUT   MASTER L, R   MIDI IN

VSR-880 (SLAVE)

VS-880EX (MASTER)
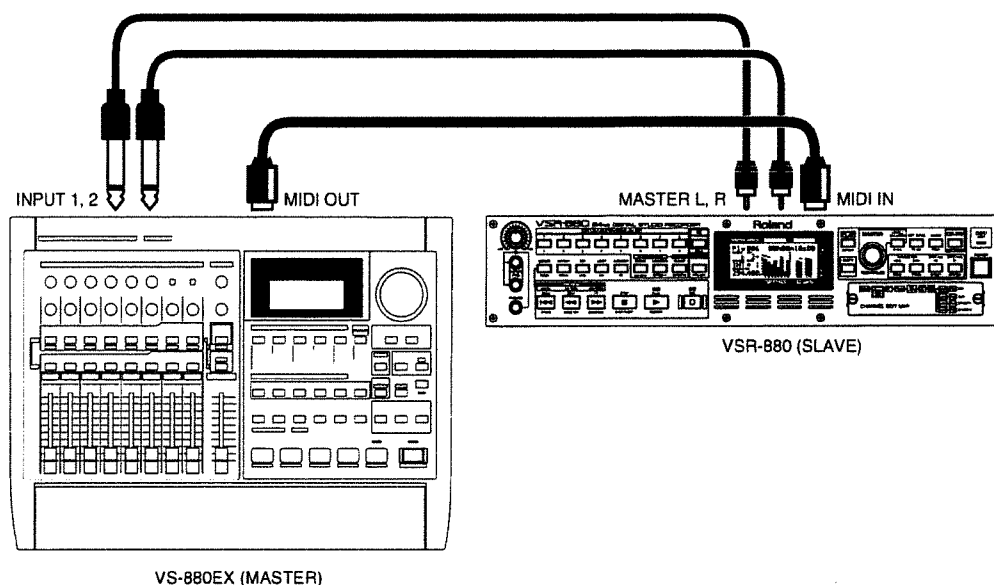
NOTE
In this example, you can use the VS-880EX's Stereo In function for the mix balance between the VS-880EX and the VSR-880. First adjust the individual track balances on both machines. Of course, you can also send the output of the VS-880EX and the VSR-880 to a separate mixer. However, the VS-880EX and the VSR-880 cannot be connected using digital connections.

■ Settings for the VS-880EX (Master)

Set the system parameters of the VS-880EX as follows. For more detailed information, please refer to VS-880EX Owner's manual.

MIDI	**DeviceID:**	Set this to match the Device ID used by VSR-880. (initial value = 17)
	MIDIThr:	Out
	SysEx.Tx.:	On
	MMC:	MASTER
	CtrType:	Off
Sync/Tempo	**Sync Source:**	INT
	Gen.:	MTC
	MTC Type:	Set this to match the MTC used by VSR-880. (initial value = 30)

?
MMC (p. 148)

MEMO
When "C.C." or "Excl" is selected as **CtrType**, making mixer adjustments on the VS-880EX makes the same adjustments to the VSR-880 mixer. For more detailed information about Exclusive messages, please refer to "MIDI Implementation" (p. 220).

■ Settings for the VSR-880 (Slave)

Set the system parameters of the VSR-880 as follows.

MIDI	**DeviceID:**	Set this to match the Device ID used the VS-880EX (initial value = 17)
	MIDIThr:	Out
	SysEx.Rx.:	On
	MMC:	SLAVE
Sync/Tempo	**Sync Source:**	EXT
	InSel:	MIDI
	Gen.:	MTC
	MTC Type:	Set this to match the MTC used the VS-880EX (initial value = 30)

1. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS MIDI PRM ?" appears in the display.

2. Press **[ENT/YES]**. "SYS MID:DeviceID=" appears in the display.

3. Rotate the **TIME/VALUE dial.**
   DeviceID
   This sets the Device ID number (1–32) that is used when exchanging exclusive messages (mixer parameters) with an external MIDI device. With the factory settings, the VSR-880 is set to Device ID number 17. Set this to conform to the Device ID on the VS-880EX.

4. Press **PARAMETER [▶▶]**. "SYS MID:MIDIThr=" appears in the display.

5. Rotate the **TIME/VALUE dial.**
   SysEx.Rx. (System Exclusive Receive Switch)
   Exclusive messages are received when this is set to "On." At this time, set this to "On." The Exclusive messages can be received when the VSR-880 is in Play condition.

6. Press **PARAMETER [▶▶]**. "SYS MID:MMC=" appears in the display.

7. Rotate the **TIME/VALUE dial.**
   MMC (MMC Mode)
   This setting determines how the VSR-880 implements MMC. Set this to "SLAVE."

8. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS Sync/Tempo ?" appears in the display.

9. Press **[ENT/YES]**.

10. Press **PARAMETER [▶▶]** several times until "SYS Syn:ErrLevel=" appears in the display.

11. Rotate the **TIME/VALUE dial.**
    ErrLevel (Error Level)
    This sets the interval (0–10) for checking MTC receiving status when synchronize VSR-880 with MTC from an external MIDI device. If the MTC is not being sent continuously, the VSR-880 checks the MTC and if there is an error, cancels synchronization. By setting a longer interval under such circumstances, synchronization can continue, even if there is a certain degree of error. Normally, set this to "5."

12. Press **PARAMETER [►►]**. "SYS Syn:InSel=" appears in the display.

13. Rotate the **TIME/VALUE dial**.

InSel (Input Select)

When synchronized operation, selects the connector that is received the MIDI Time Code. For this example, select "MIDI."

14. Press **PARAMETER [►►]**. "SYS Syn:MTC Type=" appears in the display.

15. Rotate the **TIME/VALUE dial**.

MTC Type (MTC Type)

This selects the type of MTC (30, 29N, 29D, 25, or 24). With the factory settings, the VSR-880 is set to MTC 30. Set this to conform to the type of MTC on the VS-880EX.

16. Press **[PLAY (DISPLAY)]**. Return to Play condition.

17. Press **[EXT SYNC]**. The EXT SYNC indicator will light. At the same time, The "SYNC MODE" field of the display will show "EXT," indicating that the unit is waiting to receive MTC. In this condition, the VSR-880 is operated synchrony when the master VS-880EX is operated.

If You Want To Make Digital Connection

Make connections as described below.

VS-880EX	**Sync Source**	INT
	MasterClk	INT
VSR-880	**Sync Source**	EXT
	MasterClk	D.OPT or D.COA

VS-880EX (MASTER)   VSR-880 (SLAVE)
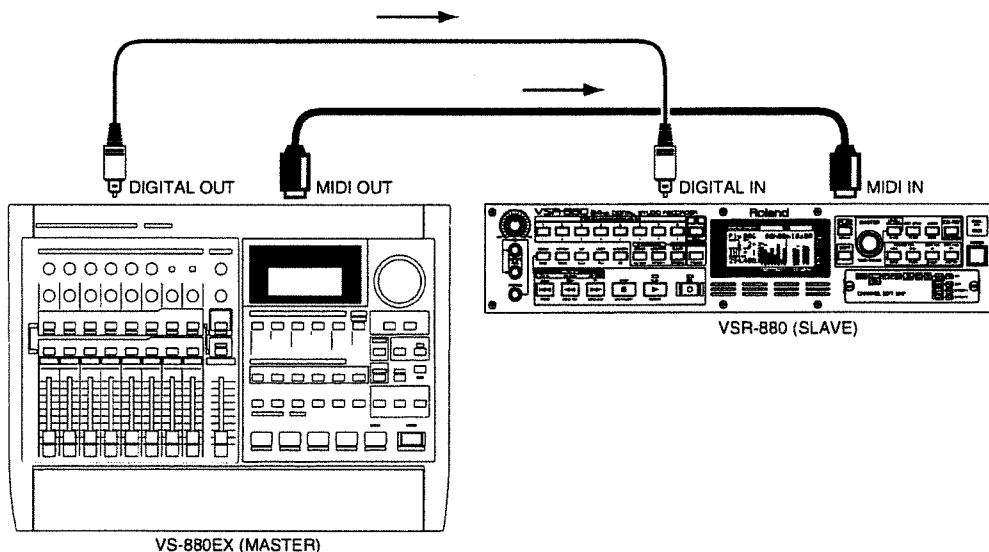
Digital Connection Can NOT Be Used

When the master Clock of VS-880EX is set to "DIGIN1" or "DIGIN2," the VSR-880 operates according to the Clock (digital signal) transmitted by the connected MIDI device. You can thus make MTC the master Clock. However, in this case, the slave VSR-880 attempts to operate according to the MTC transmitted by the master VS-880EX, while the master VS-880EX attempts to operate according to the digital signals transmitted by the slave VSR-880. In such instances, since this ends up in there being no reference clock, the VSR-880 cannot operate correctly.

DIGITAL IN   MIDI OUT   DIGITAL OUT   MIDI IN

VSR-880 (SLAVE)

VS-880EX (MASTER)
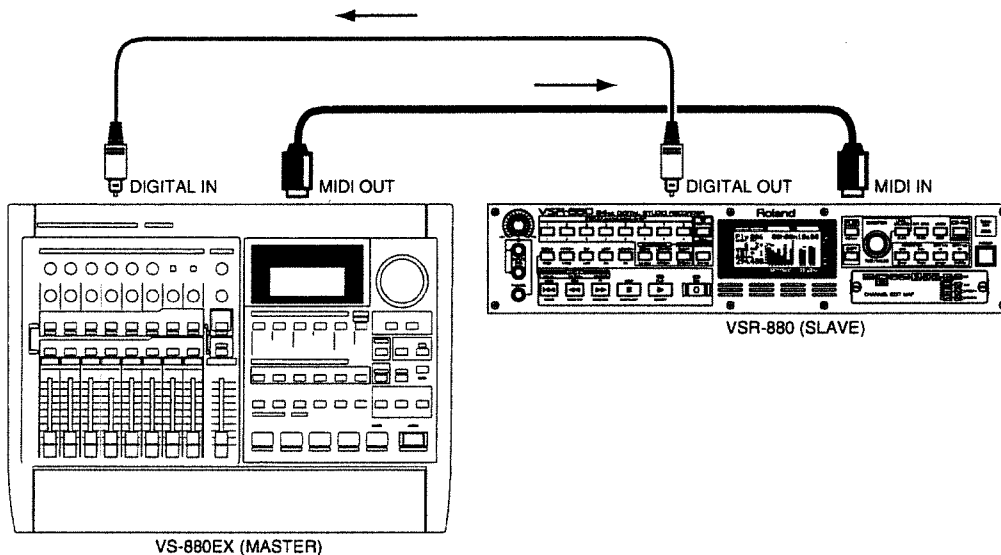
Synchronizing with Cakewalk Pro Audio (MMC/MTC)

The VSR-880 supports **MMC**. This means that when two VSR-880 units are synchronized or when a VSR-880 is used in conjunction with an MMC-supporting MIDI sequencer etc., operations such as song playback, stop and fast-forward can be performed by operating only the master device.

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MMC (p. 148)

NOTE Some MIDI devices are not compatible with the MMC used by the VSR-880. If you are using such a device, the VSR-880 cannot be operated in the manner described in this Owner's Manual. For more detailed information about MMC functions for the VSR-880, please refer to "MIDI Implementation" (p. 220).

Here, we will see an example of synchronizing the VSR-880 with the Cakewalk Pro Audio software application. Cakewalk Pro Audio is a computer-based sequencer program compatible with MMC and MTC (for Windows 95). Make the connections as shown below, referring to the Cakewalk owner's manual as you go along.
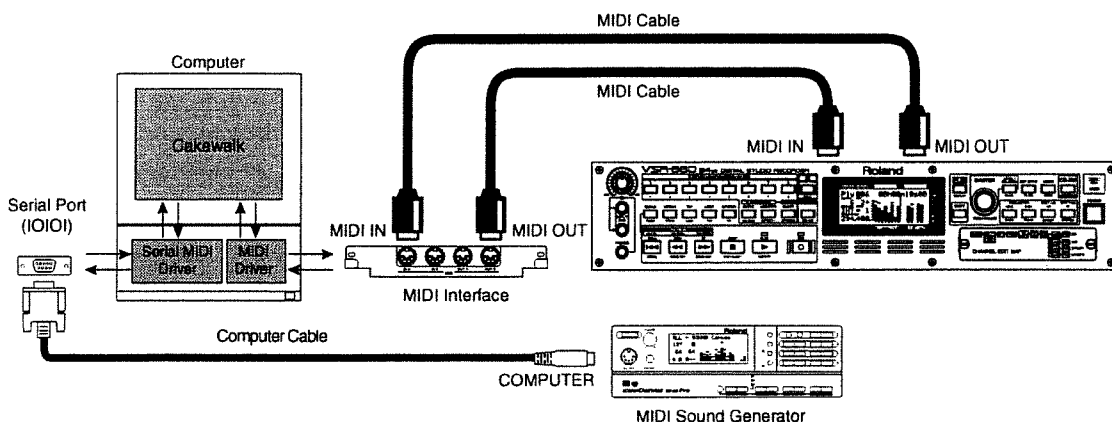
In this example, Cakewalk is the master device when MMC is used, and the VSR-880 is the master device when using MTC. Cakewalk can be used to control such operations of the VSR-880 as playback, stopping, switching track status, and more.

NOTE Use a MIDI interface when connecting the VSR-880 to a computer. You can also use a MIDI interface in connecting a computer to a sound generator.

■ Settings for the VSR-880

Set the system parameters of the VS-880EX as follows.

MIDI	**MIDIThr:**	Out
	SysEx.Rx.:	On
	MMC:	SLAVE
Sync/Tempo	**Sync Source:**	INT
	Gen.:	MTC
	MTC Type:	Set this to match the MTC used the Cakewalk (initial value = 30)

1. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS MIDI PRM ?" appears in the display.

2. Press **[ENT/YES]**.

3. Press **PARAMETER [▶▶]** several times until "SYS MID:MIDIThr=" appears in the display.

4. Rotate the **TIME/VALUE dial**.
   MIDIThr (MIDI Thru Switch)
   This switches the function of the MIDI OUT/THRU connector. For now, set this to "Out."

5. Press **PARAMETER [▶▶]** several times until "SYS MID:SysEx.Rx.=" appears in the display.

6. Rotate the **TIME/VALUE dial**.
   SysEx.Rx. (System Exclusive Receive Switch)
   Exclusive messages are received when this is set to "On." At this time, set this to "On." The Exclusive messages can be received when the VSR-880 is in Play condition.

7. Press **PARAMETER [▶▶]**. "SYS MID:MMC=" appears in the display.

8. Rotate the **TIME/VALUE dial**.
   MMC (MMC Mode)
   This setting determines how the VSR-880 implements MMC. Set this to "SLAVE."

9. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS Sync/Tempo ?" appears in the display.

10. Press **[ENT/YES]**. "SYS Syn:Source=" appears in the display.

11. Press **PARAMETER [▶▶]** several times until "SYS Syn:Gen.=" appears in the display.

12. Rotate the **TIME/VALUE dial**.
    Gen. (Generator)
    This selects the type of synchronization signal transmitted from the MIDI OUT connector. For now, set this to "MTC."

13. Press **PARAMETER [▶▶]** several times until "SYS Syn:MTC Type=" appears in the display.

14. Rotate the **TIME/VALUE dial**.
    MTC Type (MTC Type)
    This selects the type of MTC (30, 29N, 29D, 25, or 24). Set this to conform to the type of MTC on the slave Cakewalk. Here, select "30."

15. Press **[PLAY (DISPLAY)]**. Return to Play condition.

16. Make sure that the EXT SYNC indicator is go dark. If the EXT SYNC indicator is blinked, press **[EXT SYNC]**.

■ Settings for Cakewalk Pro Audio

Make the settings for Cakewalk Pro Audio as described below. For more detailed information about Cakewalk, please refer to the Cakewalk owner's manual.

Setting I Clock:	MTC (receives MTC)
Setting I MIDI Out:	Check "Transmit MMC" (sends MMC)
Setting I Time Format:	MTC from the VSR-880 (here, set "30")

Under this condition, when playback is begun with Cakewalk, MMC is transmitted to the VSR-880, and upon receiving the MMC, the VSR-880 also begins playback. During playback, MTC is sent from the VSR-880 to Cakewalk, thus synchronizing operations.

NOTE

"30 Frame Drop" in Cakewalk corresponds to "29D" on the VSR-880.

Making Digital Connections with Cakewalk

When you have a sound card (such as Audiomedia III or CardD) that features digital input and output connectors installed in your computer, you can connect Cakewalk and your VSR-880 digitally. This is convenient when, for example, you want to record the audio tracks from the VSR-880 to Cakewalk via a digital connection, edit the material in Cakewalk, and then send it back via the digital connection to the VSR-880 for mixdown. Be sure to read the owner's manuals for Cakewalk as well as the sound card you are using.

About Sound Cards

Even when using the digital connections as described in the example, noise originating inside the computer in the vicinity of the sound card may be introduced into the sound. The level of noise will vary according to the computer's exterior panels, interior boards, the condition of the cable connections, etc. In general, high-performance sound cards that tend to resist this kind of noise better.
With sound cards that feature both analog and digital input and output, it may be necessary to set the card to use the digital input and output. After carefully reading the owner's manual for your sound card, make the necessary settings to enable the sound card to use the digital input and output connectors.

About the Recording Mode

Even when using the digital connections as described in the example, since audio tracks are recorded from the VSR-880 to Cakewalk, edited, and then sent back to the VSR-880, this can be likened to repeated track bouncing. Thus, we recommend that you to use a recording mode featuring higher quality sound, such as "VSR" or "MT1."

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■ Recording to Cakewalk

1. Make the connections as shown below.
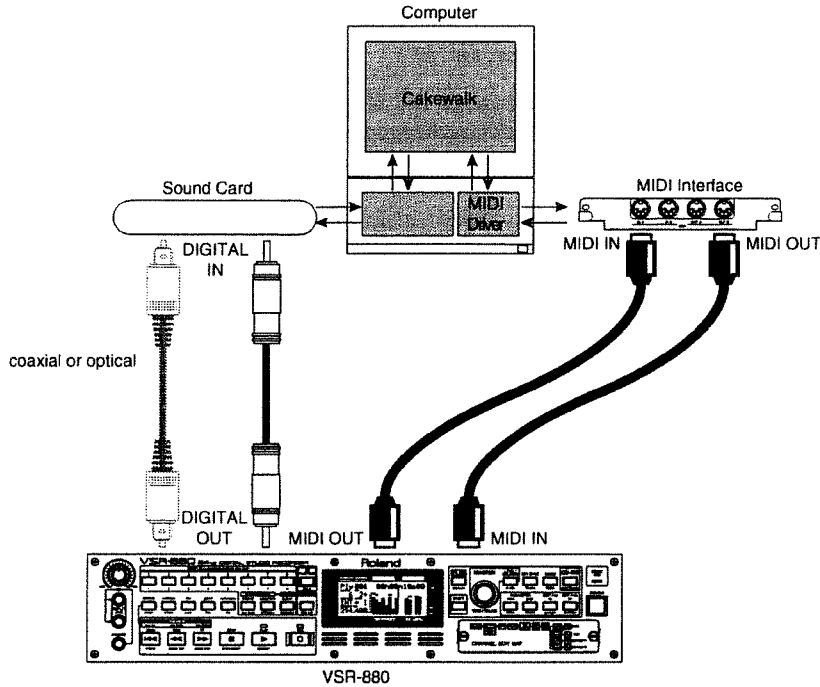
2. Follow the procedure as described in "Settings for the VSR-880" (p. 133) and "Settings for Cakewalk Pro Audio" (p. 135), set up the system so that the VSR-880 and Cakewalk are synchronized.

3. Make the settings to Cakewalk as shown below. For more detailed information, please refer to your Cakewalk owner's manual.
Settings I Audio Options... I Advanced I SMPTE/MTC Sync: "High-Quality"

In the present status/condition, when record is begun with Cakewalk, MMC is transmitted to the VSR-880, and upon receiving the MMC, the VSR-880 also begins playback. During playback, MTC is sent from the VSR-880 to Cakewalk, thus synchronizing operations.

NOTE

If your computer does not feature adequate performance, even with the above settings, you may not be able to get stable digital audio output, meaning the sound will suffer when digital connections are used.

■ Recording to the VSR-880

1. Make the connections as shown below.
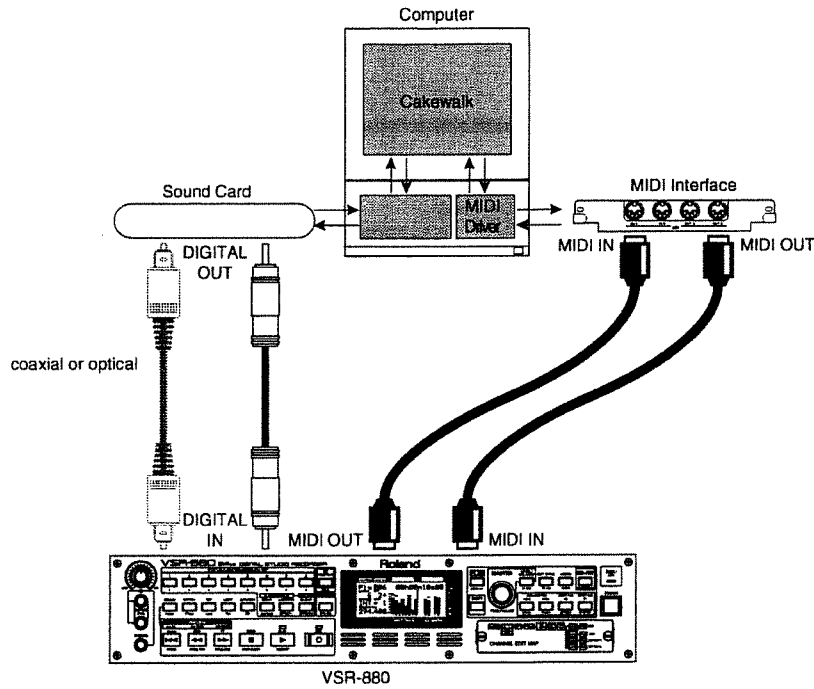
2. Follow the procedure as described in "Settings for the VSR-880" (p. 133) and "Settings for Cakewalk Pro Audio" (p. 135), set up the system so that the VSR-880 and Cakewalk are synchronized.

3. Make the settings to Cakewalk as shown below. For more detailed information, please refer to your Cakewalk owner's manual.
   Settings I Audio Options... I Advanced I SMPTE/MTC Sync: High-Quality

4. Press [SYSTEM] several times until "SYS System PRM?" appears in the display.

5. Press **[ENT/YES]**.

6. Press **PARAMETER** [►►] several times until "SYS MasterClk=" appears in the display.

7. Rotate the **TIME/VALUE dial**.
   Master Clock
   This is used to select the reference clock for the VSR-880 operations. Here, set this to "D.COA" or "D.OPT."

8. Press **[PLAY (DISPLAY)]**. Return to Play condition.

9. Make the settings for the VSR-880 by following the procedure as described in "Recording Digital Signals" (User Guide p. 38). Under this condition, when playback is begun with Cakewalk, MMC is transmitted to the VSR-880, and upon receiving the MMC, the VSR-880 also begins record. During playback, MTC is sent from the VSR-880 to Cakewalk, thus synchronizing operations.

NOTE

If your computer does not feature adequate performance, even with the above settings, you may not be able to get stable digital audio output, meaning the sound will suffer when digital connections are used. Additionally, Cakewalk Pro Audio 5.0 and Cakewalk Professional 5.0 do not feature the above-mentioned settings. We recommend upgrading to Version 6.0.

Synchronizing with Video Equipment

When used in combination with the Roland SI-80SP, you can control playback and stop functions on the VSR-880 with video equipment featuring a consumer video interface that conforms to (RCTC: LANC or SYSTEM E) time code. Make the connections as shown below, and refer to the SI-80SP owner's manual and the owner's manual for your video device.

Video Cassette Recorder etc.

SI-80SP
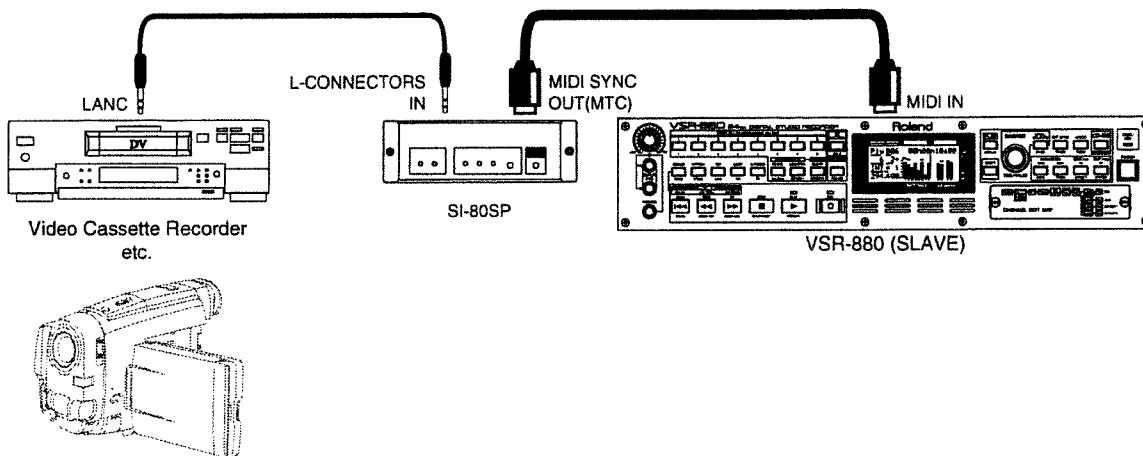
VSR-880 (SLAVE)

Set the system parameters of the VSR-880 as follows.

MIDI	SysEx.Rx.:	On
	MMC:	SLAVE
Sync/Tempo	Sync Source:	EXT
	ErrLevel:	5
	MTC Type:	Set this to match the MTC used SI-80SP and video equipment (initial value = 30)

1. Press **[SHIFT] + [SYSTEM (►)]** several times until "SYS MIDI PRM ?" appears in the display.

2. Press **[ENT/YES]**.

3. Press **PARAMETER [►►]** several times until "SYS MID:SysEx.Rx.=" appears in the display.

4. Rotate the **TIME/VALUE dial.**
   SysEx.Rx. (System Exclusive Receive Switch)
   Exclusive messages are received when this is set to "On." At this time, set this to "On." The Exclusive messages can be received when the VSR-880 is in Play condition.

5. Press **PARAMETER [►►]**. "SYS MID:MMC=" appears in the display.

6. Rotate the **TIME/VALUE dial.**
   MMC (MMC Mode)
   This setting determines how the VSR-880 implements MMC. Set this to "SLAVE."

7. Press **[SHIFT] + [SYSTEM (►)]** several times until "SYS Sync/Tempo ?" appears in the display.

8. Press **[ENT/YES]**.

9. Press **PARAMETER [►►]** several times until "SYS Syn:ErrLevel=" appears in the display.

10. Rotate the **TIME/VALUE dial**.

ErrLevel (Error Level)

This sets the interval (0–10) for checking MTC receiving status when synchronize VSR-880 with MTC from an external MIDI device. If the MTC is not being sent continuously, the VSR-880 checks the MTC and if there is an error, cancels synchronization. By setting a longer interval under such circumstances, synchronization can continue, even if there is a certain degree of error. Normally, set this to "5."

11. Press **PARAMETER [▶▶]**. "SYS Syn:MTC Type=" appears in the display.

12. Rotate the **TIME/VALUE dial**.

MTC Type (MTC Type)

This selects the type of MTC (30, 29N, 29D, 25, or 24). Set this to conform to the type of MTC on the slave VSR-880. Here, select "30."

13. Press **[PLAY (DISPLAY)]**. Return to Play condition.

14. Press **[EXT SYNC]**. The EXT SYNV indicator will light. At the same time, the "SYNC MODE" field of the display will show "EXT," indicating that the unit will operate in synchronization to MTC received from the SI-80SP.

Synchronized operation of two or more VSR-880 units

When used in conjunction with the Roland V-mixing system (console and processor: e.g., VM-C7200 and VM-7200), a maximum of three VSR-880 units can operate in synchronization, each transferring 8-in/8-out streams of 24-bit digital audio data via R-BUS. Make the connections described below, and read the Owner's Manual of the V-mixing system in conjunction with this.

NOTE
In order to add a R-BUS connector to the processor (VM-7200/7100), you must install a **VM-24E** I/O expansion board (sold separately).

VM-7200/7100 (Rear panel)
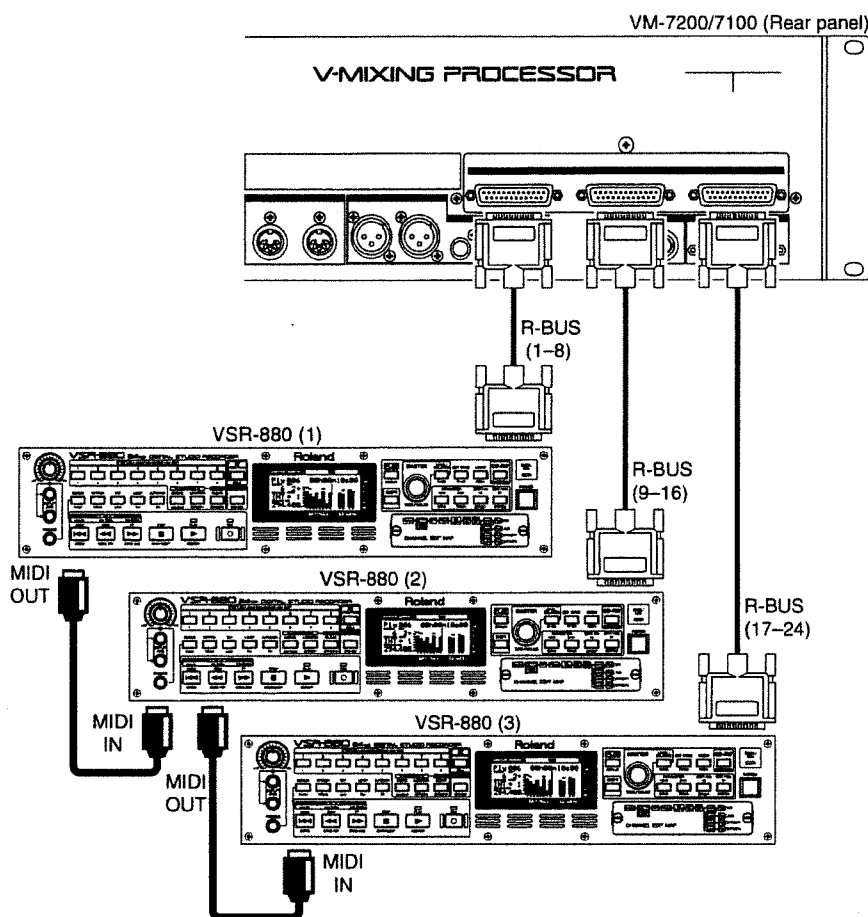
Set the parameters of the VSR-880 (1–3) as follows.

MASTER	**Direct Out:**	On
SYSTEM:System PRM	**MasterClk:**	R-BUS
SYSTEM:MIDI PRM	**MIDIThr:**	Out (1), Thru (2)
	SysEx.Rx.:	On
	SysEx.Tx.:	On (1)
	MMC:	MASTER (1), SLAVE (2, 3)
SYSTEM:Sync/Tempo	**Sync Source:**	EXT
	InSel.:	R-BUS (1), MIDI (2, 3)
	MTC Type:	Set this to match the MTC used the VSR-880 (1–3; initial value =17)

1. Press **[LEVEL/BALANCE]**.

   1-1. Press **PARAMETER** [**▶▶**] several times until "Direct Out=" appears in the display.

   1-2. Rotate the **TIME/VALUE dial** to select "On."

2. Press **[SHIFT] + [SYSTEM (▶)]** several times until "SYS System PRM?" appears in the display.

   2-1. Press **[ENT/YES]**.

   2-2. Press **PARAMETER** [**▶▶**] several times until "SYS MasterClk=" appears in the display.

   2-3. Rotate the **TIME/VALUE dial** to select "R-BUS," then press **[ENT/YES]**.

3. Press **[SHIFT] + [SYSTEM]** several times until "SYS MIDI PRM?" appears in the display.

   3-1. Press **[ENT/YES]**.

   3-2. Use **PARAMETER** [**◀◀**], [**▶▶**] and the **TIME/VALUE dial** to set the MIDI parameters.

MIDIThr:	Out (1), Thru (2)
SysEx.Rx.:	On
SysEx.Tx	On (1)
MMC	MASTER (1), SLAVE (2, 3)

4. Press **[SHIFT] + [SYSTEM]** several times until "SYS Sync/Tempo?" appears in the display.

   4-1. Press **[ENT/YES]**.

   4-2. Use **PARAMETER** [**◀◀**], [**▶▶**] and the **TIME/VALUE dial** to set the Sync/Tempo parameters.

Gen.:	R-BUS (1), MIDI (2, 3)
MTC Type:	30

5. In this state, you can control playback and stop of the VSR-880 (1–8) from the console (VM-C7200/C7100).

Troubleshooting

When the VSR-880 does not perform the way you expect, check the following points before you suspect a malfunction. If this does not resolve the problem, contact servicing by your dealer or qualified Roland Service Center.

Recording and Playback

No Sound

- The power of the VSR-880 and the connected devices is not turned on.
- The audio cables are not connected correctly.
- The audio cables are broken.
- The volume is turned down on the connected mixer or amp.
- Each Levels of the VSR-880 is turned down.
    - →Mix Level (p. 81)
    - →Master Level (p. 85)
- The output jacks which are connected are different than the output jacks selected in the master section of the mixer (p. 85)
- Short phrases less than 0.5 seconds cannot be played back.
- The volume level of the instrument connected to the VSR-880 is too low.
    - → Could you be using a connection cable that contains a resistor? Use a connection cable that does not contain a resistor.

A specific channels does not sound

- The track is off (the STATUS indicator is off).
- The Mix Switch (p. 81) is set to "Off."
- The Solo function (p. 84) is being used.

Cannot record

- The recording track has not been selected (the STATUS indicator is not blinking red).
- Recording source tracks, playback tracks, or effects have not been assigned.
- The disk drive has insufficient capacity.
- The song has an insufficient number of events. (p. 19)

Cannot record digitally

- The CD player's digital connection is not accepted. (User Guide p. 36)
- "MasterClk" (the master clock) is set to "INT" (p. 107).
- The DIGITAL IN connector (Optical, Coaxial or R-BUS) was not properly selected. (p. 107)

- The digital in connectors are not assigned to the Input Mixer. (p. 79)
- The sampling rate of the recording destination song is different than the sampling rate of the digital audio device.
    - → Match the sample rate setting of the digital audio device to the setting of the song. If it is not possible to change the sample rate of the digital audio device, create a new song with that sample rate.
- The digital signal is not being transmitted from the digital audio device.
    - → Some digital audio devices do not output a digital signal unless they are in play mode. If this is the case, put your digital audio device in standby (pause) mode before putting the VSR-880 into record mode.
- The digital signal format is different.
    - → Some digital audio devices may use a special digital signal format. Please connect to a digital audio device that is compatible with S/P DIF.

Noise and distortion appear in the recorded sound

- Input sensitivity settings are incorrect.
    - → If input sensitivity settings are too high, the recorded sound will be distorted. Conversely, if they are too low, the recorded sound will be obscured by noise. Adjust the **MixLevel** of the input channel so that the level meters move at as high a level as possible, within the range of -12 dB to 0 dB.
- The equalizer is being used with the input mixer.
    - → Some equalizer settings may cause the sound to distort even if the PEAK indicator does not light. Readjust the equalizer.
- "ATT" (attenuator) setting is incorrect. (p. 80)
    - → If noise or distortion occurred as a result of track bouncing, the track output levels were too high.
- A mic is connected directly to the VSR-880.
    - → The VSR-880 is designed with a large headroom margin. Also, since INPUT-1–8 jacks are low impedance, the recording level may be low, depending on the characteristics of your mic. Pass the mic signal through a mic preamp before connecting it to the VSR-880, to convert the signal to line level for recording.

The playback pitch is strange

- The Vari-Pitch function is turned on (the V.PITCH indicator is lit). (p. 39)
- The time compression/expansion function is being used (p. 96).

Disk drive problems

The internal hard disk is not being recognized

- The hard disk has not been installed correctly.
- "IDE Drive" is set to "Off." (p. 113)
- The "Partition" settings are not right.
    - → When a high-capacity hard disk is installed in the VSR-880, we recommend setting the partition size to "1000MB."

The Zip drive is not recognized

- The Zip drive is not connected correctly.
- The same device ID number is assigned to two or more SCSI devices (Zip drives, CD-R/RW drives, etc.).
- The Zip disk has not been initialized.
- No Zip disk is inserted in the drive.
    - → When switching Zip disks, be sure to select the newly inserted disk as the current drive.
- An archives copy Zip disk is inserted.

Internal Effects problems

Effects cannot be used

- The VS8F-2 has not been installed correctly. (User Guide p. 7)
- You are attempting to select the algorithm for Reverb, Gated Reverb, Vocoder 2, Voice Transformer or Mastering Tool Kit with FX2.
- You are already attempting to select the algorithm for Vocoder 2, Voice Transformer or Mastering Tool Kit with FX1.

CD-R Drive Problems

The Roland CD recorder (CD-R/RW drive) is not being recognized

- The CD-R/RW drive is not connected correctly.
- The same device ID number is assigned to two or more SCSI devices (Zip drives, CD-R/RW drives, etc.).

- No CD-R/RW disc is inserted in the drive.
- A CD recorder (CD-R/RW drive) that is not designated by Roland.

Cannot write to CD-R/RW discs

- The song's sample rate is set to something other than 44.1 kHz.
- No IDE hard disk is installed.
- The internal IDE hard disk does not have sufficient free disk space.
- The CD-R/RW disc does not have sufficient free space.
- You are trying to write to a commercial CD software disc.
- You are trying to write to a CD-R disc that has been finalized.

Cannot backup to a CD-R/RW disc

- You are attempting to backup a song from an externally connected Zip drive.
- You are attempting to backup to a CD-R/RW disc to which data has already been written.

MIDI Devices problems

With the VSR-880 as master, the sequencer does not respond to commands

- The MIDI cable is not connected correctly.
- The MIDI cable is broken.
- "MIDIThr" (the MIDI thru switch) is not set to "Out."
- "Gen." (the sync generator) is not set to the appropriate synchronization method. (MTC, MIDI Clock, Sync Track)
- The EXT SYNC indicator is blinking. The "SYNC MODE" field in the display indicates "EXT." ("Sync Source" is set to "EXT").
- The two devices are not set to the same type of MTC (during MTC synchronization).
- The MIDI clock data has not been recorded on the sync track (if you are using the sync track for synchronization).
- The settings of the MIDI sequencer are not correct.
- The MIDI sequencer is not ready to playback.

Troubleshooting

When synchronizing using a MIDI sequencer as the master, the VSR-880 does not respond to the sequencer messages

- The MIDI cable is not connected correctly.
- The MIDI cable is broken.
- You are trying to synchronize using the MIDI clock.
  - → The VSR-880 cannot be run in slave mode using a method other than MTC.
- The EXT SYNC indicator is off. The "SYNC MODE" field in the display indicates "INT." ("Sync Source" is set to "INT").
- The two devices are not set to the same type of MTC (during MTC synchronization).
- The settings of the MIDI sequencer are not correct.
- The VSR-880 is not in playback standby mode (with the PLAY indicator blinking).
- MTC reception is in poor condition.
  - → Setting the "Error Level" to "5" or higher may improve conditions.

With a video device as the master, the VSR-880 does not respond

- The cable connected to the L-connector or the MIDI cable is not properly connected.
- The MIDI cable is broken.
- The EXT SYNC indicator is off. The "SYNC MODE" field in the display indicates "INT." ("Sync Source" is set to "INT").
- "SysEX.Rx." (System Exclusive Receive Switch) is not set to "On."
- "MMC" (MMC mode) is not set to "SLAVE."
- The MTC frame rate of the video device differs from that of the SI-80SP (Roland Video MIDI Sync Interface), or the video and the VSR-880 are not set to the same type of MTC.
- MTC reception is in poor condition.
  - → Setting the "Error Level" to "5" or higher may improve conditions.

Other problems

Data on the disk drive was not saved properly

- The VSR-880's power was turned off without performing the shutdown process.
- The power was turned off while the disk drive was operating.
- A strong shock was applied to the disk drive.
- The disk drive or SCSI cable was connected or disconnected while the power was still turned on.
  - → Reinitialize the disk drive (and also execute physical formatting). Also, we recommend that you execute Surface Scan as well.

Error Messages

Aborted Command!

Illegal Request!

This disk drive cannot be used by the VSR-880.

Already Selected

The currently selected disk drive was selected. If you wish to switch to another disk drive, re-select the disk drive.

Arbitration Failed!

Busy Status!

Check Condition!

Status Error!

Normal communication with the disk drive could not be accomplished. Make sure that the disk drive is connected correctly.

Blank Disc

You have tried to run the CD player function using a disc that has no performance data on it. Insert a commercial CD or CD-R/RW with material already recorded on it.

Can't Communicate!

Drive Time Out!

Message Error!

Phase Mismatch!

Undefined Sense!

Drive Unknown Error!

There is a problem with the connections to the disk drive. Make sure that the disk drive is connected correctly.

Can't REC CD !

With the factory setting, digital connections cannot be made with a CD player. Please read "To Recording Digital Signals" (User Guide p. 38).

Can't Recover

The drive check Recover procedure could not be executed because there was insufficient free space on the disk. Delete unneeded songs. Alternatively, perform the Song Optimize procedure.

Can't Set Marker

No more than two track number mark points can be set within a four-second interval.

Complete

The operation ended normally.

Change Int CLK ?

No digital signal is being received at the DIGITAL IN connector. Select whether or not to switch the sample rate reference clock to the internal clock. Pressing **[ENT/YES]** switches the VSR-880 to the internal clock. After checking to make sure that all digital devices are properly connected and those sample rates for all devices match, carry out the operation once more.

Digital In Lock

The sample rate reference clock is set to the digital signal coming from the DIGITAL IN connector. You can record using the digital connection.

Digital In Unlock

The digital signal is not being input through the DIGITAL IN connector, or the sample rate set for the song and the sample rate of the digital device connected to the DIGITAL IN connector are different. In this state, you cannot record using the digital connection.

The sample rate specified for the song is different than the sample rate of the digital device connected to the DIGITAL IN connector. Press **[ENT/YES]**, and set the sample rates of both devices to match.

Disk Memory Full!

There is insufficient free area on the disk. Erase unneeded data. Or, select a different disk drive. The maximum number of songs that can be recorded on one partition (200) has been exceeded. Delete unneeded songs. Or, select a different disk drive.

Drive Busy!

If this message appears when you first begin using a disk drive with the VSR-880, the disk drive is not fast enough. When using this disk, create a new song with a lower sample rate or recording mode, and record using this song.

If this message appears after you have been using the disk drive with the VSR-880, the data on the disk drive has become fragmented, causing delays in reading and writing data. Either use the track bouncing operation to re-record playback data to another track, or use the optimize operation. If the same message appears even after these measures have been taken, copy the song data to another disk drive and initialize the disk drive that produced the problem.

Event Memory Full!

The VSR-880 has used up all the events that can be handled by one song. Delete unneeded auto mix data. Alternatively, perform the Song Optimize operation.

Finalized CD !

This message appears when an attempt is made to write to a commercial CD or a finalized CD-R disc. Replace the disc with a blank disc or one that has not been finalized.

Function Failed

Processing was halted due to insufficient memory or due to an error which occurred in the disk drive itself. Check connections and reliability.

Hardware Error!

There is a problem with the disk drive. Contact the manufacturer or dealer of the disk drive.

Lack of CD-R Memory!

There is insufficient free space to write the songs to the CD-R/RW disc.

Lack of EVENT !!

You have tried to UNDO or REDO when the remaining number of Event is less than 200. You cannot continue the current operation.

Lack of IDE Memory!

There is insufficient free space on the internal IDE hard disk to make the image data file.

MARKER Memory Full!

The VSR-880 has used up all Marker Memory (1000 Markers) that can be handled by one song. Delete unneeded Marker.

Medium Error!

There is a problem with the disk drive media. This disk cannot be used by the VSR-880. In some case's recovery can be achieved by executing Drive Check.

No CD-R Drive !

Either no CD recorder (CD-R/RW drive) is connected, or the power is not turned on.

No Data to Write

The track that you have selected to write to CD-R/RW disc contains no song data.

No Disc

There is no disc in the Roland CD recorder (CD-R/RW drive). Please insert a disc.

No Drive Ready

No disk drive is connected. Or, an internal hard disk is not installed. Make sure that the disk drive is connected correctly.

No IDE Drive !

The unit has no IDE-type disk drive. Install an internal hard disk.

Not 44.1k Song !

The sample rate of the song is not 44.1 kHz, so the data cannot be written to the CD-R/RW disc.

Not 512byte/sector

The disk that you are using is not 512 bytes/sector. This disk cannot be used by the VSR-880.

Not Ready!

The disk drive is not ready. Wait a short time.

Obey Copyrights ?

This message asks if you agree to the terms and conditions regarding the reproduction, broadcast, and sale of the software. Please carefully read the License Agreement.

Please Insert CD-R Disc !

Either the Roland CD recorder (CD-R/RW drive) loading tray is still open, there is no CD-R/RW disc loaded, or the CD-R/RW drive is otherwise not ready. Insert CD-R/RW disc.

Please Wait...

Operation is in progress. Please wait momentarily.

SCSI ID Error!

The SCSI ID numbers of two or more disk drives are conflicting. Make settings so that the SCSI ID numbers do not conflict.

SPC Not Available!

The SCSI components of the VSR-880 have malfunctioned. Contact servicing by your dealer or qualified Roland service personnel.

Song Protected!

Since Song Protect is ON, the operation cannot be executed.

TOC Read Error!

An error occurred in reading from the CD-R/RW disc. There is a problem with the Roland CD recorder (CD-R/RW drive) or the CD-R/RW disc.

Too Many Markers!

You have tried to set track number mark points in excess of the maximum (98) you can set for one CD.

Unformatted!

The disk drive has not been initialized by the VSR-880. Initialize the disk drive.

If this appears for a disk drive that has been initialized by the VSR-880, there is a problem with the connections to the disk drive. Make sure that the disk drive is connected correctly.

User Aborted!

The procedure has canceled by pressing **[EXIT/NO]**.

Write Another ?

Writing to the disc is complete. Select whether or not you want to write the same data to a new disc. Press **[ENT/YES]** or **[EXIT/NO]**.

Write Protected!

The disk drive is protected.

Glossary

Active Terminator

A type of terminator (a terminating resistance) place at each end of a SCSI chain. A new addition to SCSI-2 specifications, compared with ordinary terminators, it provides greater operating stability for SCSI devices, thus improving signal transmission performance.

CD-R

Short for **Compact Disc Recordable**. This is a system for reading and writing discs in the same format as that used for CDs (CD-ROMs and music CDs). A specialized CD-R drive allows one-time only writing of discs.

However, as long as the data has not been finalized and there is sufficient capacity remaining on the disc, the CD-R drive can be used for multiple additions to, and changes in the material.

Sometimes they are referred to as "Write Once CD," "CD-Write Once," or something similar.

CD-RW

Short for **Compact Disc ReWritable**. This is a system allowing creation of discs that can be read using the same format as regular CDs (CD-ROMs and Music CDs). While resembling the CD-R system in that it uses a special CD-RW drive, these discs can be rewritten any number of times.

COSM

Stands for **Composite Object Sound Modeling**. This is "a technology which combines multiple sound models to create new sounds," which was first used on the Roland's VG-8 V-Guitar System. For example, sounds created on the VG-8 are the result of a variety of sound models (elements) such as the pickup, the body of the guitar, the guitar amp, mic, and speaker etc.

Current Song

The song currently being recorded, played back, or edited is referred to as the current song.

DAT

Short for **Digital Audio Tape**. This refers both to the system of recording digitized sound to magnetic tape, as well as to the tapes themselves. Besides digital audio signals, all song information is recorded on the tape, including starts and track data, information to allow or prevent copying, etc.

Finalize

This is the operation that writes the TOC to a prepared audio disc. Whereas additions and changes can be made to discs that have not yet been finalized, such discs are not playable on regular CD players.

Formants

A formant is an important element which determine the character of a vocal sound. It is a fixed overtone whose location is determined by the size of the vocal chords.

Conventional pitch shifters modify the pitch in a way that changes even the location of the formants (which by nature do not change). For example when a conventional pitch shifter raises the pitch, a "duck voice" is produced as if the vocal chords had shrunk, and when the pitch is lowered a "giant voice" is produced as if the vocal chords had expanded.

The Voice Transformer modifies the basic pitch and the formant separately, allowing a variety of voice characters to be created.

Frame

Similar to the individual frames in a roll of movie film, the numerous still pictures that are displayed in rapid succession to create a moving video image are also known as "frames." About thirty of these frames are shown each second. When hard disk recorders, sequencers, and other such equipment are synchronized with video, it is generally assumed that there should be one frame every 1/30th of a second.

GPI

GPI stands for **General Purpose Interface**. This is a control jack provided on professional and consumer video devices such as video editors and title superimpoters. By connecting this control jack to the foot switch jack of the VSR-880 and setting the Foot Switch Assign to "GPI," the connected device will be able to playback/stop the VSR-880.

IDE

IDE stands for **Integrated Device and Electronics**. This is the standard data transmission method used by the hard disk drives of recent personal computers. The HDP88 series hard disk drives (sold separately) that can be installed in the VSR-880 are IDE compatible.

MMC

MMC is an acronym for **MIDI Machine Control**. This is rule that defines how MIDI system exclusive message can be used to control multiple recording devices from a single device. The VSR-880 supports MMC. In addition to song playback, stop and fast-forward, you can also select the tracks for recording, etc.

MTC

MTC stands for **MIDI Time Code**. This is a group of messages which are transmitted and received between MIDI devices to synchronize their operation. Unlike MIDI Clock

messages, MTC specifies an absolute time. Like SMPTE time code, MTC also supports a variety of frame rates. If you wish to use MTC to synchronize the operation of two devices, both devices must be set to the same frame rate.

NTSC Format

Color television format used in Japan, the United States, and other countries. Tapes recorded in the NTSC format cannot be played back on video decks utilizing the SECAM/PAL formats.

Removable Disk Drives

Disk drives that have been able to remove the disk, such as a Zip drive, are referred to as the "removable disk drives."

RSS

RSS stands for **Roland Sound System**. This is an effect which allows a sound source to be placed in three-dimensional space when played back on a conventional stereo system. The sound can be placed not only in front of the listener, but also directly to the side, above, below, and behind the listener.

S/P DIF

S/P DIF stands for **Sony/Philips Digital Interface Format**. This is a specifications for transmitting and receiving stereo digital audio signals between digital audio devices. The VSR-880 provides coaxial connectors which support S/P DIF.

SCMS

SCMS stands for **Serial Copy Management System**. This is a function that protects the rights of copyright holders by prohibiting recording via a digital connection for more than two generations. When digital connections are made between digital recorders that implement this function, SCMS data will be recorded along with the audio data. Digital audio data which contains this SCMS data cannot again be recorded via a digital connection.

SCSI

SCSI stands for **Small Computer System Interface**. This is a data transmission method that can transmit large amounts of data in a short time. Since the VSR-880 has a SCSI connector, external SCSI devices such as hard disks or removable disk drive etc. can be connected.

SECAM Formats/PAL Formats

Color television formats used in Europe and other areas. Tapes recorded in the SECAM or PAL formats cannot be played back on video decks designed for the NTSC format.

Shutdown

In order to turn the power off safely, you must first make sure that the performance has been saved to hard disk, and that the hard disk heads are parked. This procedure is referred to as Shutdown.

SMPTE time code

This is a signal format defined by the American organization SMPTE (Society of Motion Picture and Television Engineers) which is used to synchronize the operation of video or audio devices. SMPTE specifies "hours:minutes:seconds:frames" to indicate the address of each frame of a video image. For this reason, there are a variety of frame rates.

Terminator Power

This refers to the power supplied to external type active terminators.

TOC

Short for Table of Contents. This is the region on the CD-R disc that handles information such as song times, end times, sequence, and so on. Although the songs on a disc and their playing time can be displayed when an audio CD is placed in a CD player, this is because they can be read automatically from the TOC. The TOC is recorded differently than music data, with its main characteristic being disc access, such as the ability to go to the start of any song instantly.

Track Minutes

The amount of available recording time that is called for a standard unit corresponding to the time of one continuous monaural signal recorded to one track.

Zip Drive

A magnetic disk drive format standardized by Iomega Corporation. Disks that can be used for reading and writing data with Zip drives are call Zip disks. Similar to 3.5-inch floppy disks in size and usage, one Zip disk can store 100 MB of data.

Shortcut Key Operations

Here is a list of the functions that can be performed by pressing multiple buttons, or using the
TIME/VALUE dial in conjunction with a button.

■ STATUS/LOCATOR/SCENE/CH EDIT buttons

[SHIFT] + [Assign (SCRUB)]	To the Input setting page (IN MIX). Or, to the Assign setting page (TR MIX).
[SHIFT] + [V.Track (V.PITCH)]	To the V-track setting page (TR MIX)
[SHIFT] + [Level (TAP)]	To the Mix Level setting page
[SHIFT] + [Pan (LOOP)]	To the Mis Pan setting page
[SHIFT] + [EQ (A.PUNCH)]	To the Equalizer switch setting page
[SHIFT] + [AUX Send (SCENE)]	To the AUX switch setting page
[SHIFT] + [EFFECT-1 (LOCATOR)]	To the Effect 1 switch setting page
[SHIFT] + [EFFECT-2 (CLEAR)]	To the Effect 2 switch setting page
[SHIFT] + [SOLO (EZ ROUTING)]	Solo mode on/off
[AUTOMIX] + [1]–[8]	Switch the AutoMIx recording, playback or disable (when AUTOMIX mode is "On.")

■ EDIT CONDITION buttons

[SHIFT] + [IN MIX (LEVEL/BALANCE)]	To the Input Mixer setting page
[SHIFT] + [TR MIX (EXT SYNC)]	To the Track Mixer setting page
[SHIFT] + [RTN MIX (AUTOMIX)]	To the Effect Return Mixer setting page
[SHIFT] + [SONG (◄◄)]	To the Song Menu page
[SHIFT] + [TRACK (►►)]	To the Track Menu page
[SHIFT] + [EFFECT (◄)]	To the Effect Menu page
[SHIFT] + [SYSTEM (►)]	To the System Menu page

■ Transport Control buttons

[SHIFT] + [STORE (ZERO)]	Store song data to the disk drive
[SHIFT] + [SONG TOP (REW)]	Move to the time where the first sound of the song is recorded
[SHIFT] + [SONG END (FF)]	Move to the time where the last sound of the song is recorded
[SHIFT] + [SHUT/EJECT (STOP)]	Shut down
[SHIFT] + [RESTART (PLAY)]	Restart (after shut down)
[REC] + [1]–[8]	Switch the track status to REC (STATUS indicator blinks red)
[STOP] + [1]–[8]	Switch the track status to PLAY (STATUS indicator lights green)

■ LOCATOR buttons

[CLEAR] + [1]–[8]	Clear the setting of a locator 1–8
[CLEAR] + [TAP]	Erase markers
[SHIFT] + [CLEAR] + [TAP] → [EXT/YES]	Erase all markers
[CD-RW] + [TAP]	Register a marker for audio CD track number
[TAP] + [REW]	Move to the previous number marker
[TAP] + [FF]	Move to the next number marker
[LOCATOR] + [1]–[4]	Switch locate banks
[PLAY (DISPLAY)] + [TAP]	To the Tempo Map setting page

■ AUTOMIX buttons

[AUTOMIX] + [SNAP SHOT (CLEAR)]	Execute Snapshot (when Automix is "on")
[AUTOMIX] + [◄ GRADATION (SCENE)]	Gradation to mixer setting of previous marker (when Automix is "on")
[AUTOMIX] + [GRADATION ► (LOCATOR)]	Gradation to mixer setting of next marker (when Automix is "on")

■ Other

[SHIFT] + [PLAY (DISPLAY)]	Switch the bar display
[SHIFT] + [UNDO]	Execute Redo (when UNDO indicator lights)
[SHIFT] + [TO]	To the Preview length setting page (when SCRUB mode is "On.")
[SHIFT] + [FROM]	To the Preview length setting page (when SCRUB mode is "On.")
[PLAY (DISPLAY)] + [(◄)]	When modifying the time, move the cursor left (Play condition)
[PLAY (DISPLAY)] + [(►)]	When modifying the time, move the cursor right (Play condition)
STATUS ([1]–[8])+[CLEAR]	Cancel all routing
[PLAY]+ TIME/VALUE dial	Adjust the display contrast directly
[SHIFT]+ TIME/VALUE dial	Modify the value at 10 times the usual speed
	In Play condition, move the current time in 10-frame units
	In Play condition when an "←" is displayed at the beginning of the time code display, move the current time in units of approximately 1/100 frame

Parameter List

■ Input Mixer [SHIFT] + [IN MIX (LEVEL/BALANCE)]

Parameter name	Display	Value, Initial value
Input	Input	**REAR**, FRONT, DIGITAL, R-BUS
Attenuator	ATT	-12–**0**–+12 dB
Phase	Phase	**NRM**, INV
Mix Switch	MIX Sw	Off, **On**
Offset Level	Ofs Level	0–**100**–127 (*1)
Mix Level	MIX Level	0–**100**–127
Offset Balance	Ofs Bal	L63–**0**–R63 (*2)
Mix Pan/Balance	MIX Pan/MIX Bal	L63–**0**–R63 (*3)
Equalizer Switch	EQ Switch	Off, **On**
Equalizer Low Gain	EQL	-12–**0**–12 dB
Equalizer Low Frequency	EQL	40 Hz–**300 Hz**–1.5 kHz
Equalizer Mid Gain	EQM	-12–**0**–12 dB (*4)
Equalizer Mid Q	EQM Q	**0.5**–16 (*4)
Equalizer Mid Frequency	EQM F	200 Hz–**1.4 kHz**–8 kHz (*4)
Equalizer High Gain	EQH	-12–**0**–12 dB
Equalizer High Frequency	EQH	500 Hz–**4 kHz**–18 kHz
AUX Switch	AUX Sw	**Off**, PreFade, PstFade
AUX Level	AUX Level	0–**100**–127 (*7)
AUX Pan/Balance	AUX Pan/AUX Bal	L63–**0**–R63 (*3) (*7)
Channel Link	Channel Link	**Off**, On
Level Link	Level Link	**Off**, On
Effect 1 Insert Switch	FX1 Ins	**Off**, Insert, InsertL, InsertR, InsertS
Effect 1 Insert Send Level	FX1 InsSend	**0**–127 dB (*5)
Effect 1 Insert Return Level	FX1 InsRtn	**0**–127 dB (*5)
Effect 1 Send Switch	EFFECT1	**Off**, Prefade, PstFade
Effect 1 Send Level	EFFECT1 Send	0–**100**–127 (*8)
Effect 1 Pan/Balance	EFFECT1 Pan/Bal	L63–**0**–R63 (*3) (*8)
Effect 2 Insert Switch	FX2 Ins	**Off**, Insert, InsertL, InsertR, InsertS
Effect 2 Insert Send Level	FX2 InsSend	**0**–127 dB (*6)
Effect 2 Insert Return Level	FX2 InsRtn	**0**–127 dB (*6)
Effect 2 Send Switch	EFFECT2	**Off**, PreFade, PstFade
Effect 2 Send Level	EFFECT2 Send	0–**100**–127 (*9)
Effect 2 Pan/Balance	EFFECT2 Pan/Bal	L63–**0**–R63 (*3) (*9)

*1 Valid when Channel Link or Level Link is "On."
*2 Valid when Channel Link is "On."
*3 If Channel Link is On, the "Pan" parameter will change to the balance parameter.
*4 Valid when Master Block Equalizer Select is "3 Band EQ."
*5 Valid when Effect 1 Insert Switch is except "Off."
*6 Valid when Effect 2 Insert Switch is except "Off."
*7 Valid when AUX Switch is except "Off."
*8 Valid when Effect 1 Send Switch is except "Off."
*9 Valid when Effect 2 Send Switch is except "Off."

■ Track Mixer [SHIFT] + [TR MIX (EXT SYNC)]

Parameter name	Display	Value, Initial value
Assign	Assign ***	Off, On (*1)
Attenuator	ATT	-12–**0**–+12 dB
Phase	Phase	**NRM**, INV
Mix Switch	MIX Sw	Off, **On**
Offset Level	Ofs Level	0–**100**–127
Mix Level	MIX Level	0–**100**–127
Offset Balance	Ofs Bal	L63–**0**–R63 (*3)
Mix Pan/Balance	MIX Pan/MIX Bal	L63–**0**–R63 (*4)
V-Track	V.Track	**1**–8
Equalizer Switch	EQ Switch	Off, **On**
Equalizer Low Gain	EQL	-12–**0**–12 dB
Equalizer Low Frequency	EQL	40 Hz–**300 Hz**–1.5 kHz
Equalizer Mid Gain	EQM	-12–**0**–12 dB (*5)
Equalizer Mid Q	EQM Q	**0.5**–16 (*5)
Equalizer Mid Frequency	EQM F	200 Hz–**1.4 kHz**–8 kHz (*5)
Equalizer High Gain	EQH	-12–**0**–12 dB
Equalizer High Frequency	EQH	500 Hz–**4 kHz**–18 kHz

Parameter name	Display	Value, Initial value
AUX Switch	AUX Sw	**Off**, PreFade, PstFade
AUX Level	AUX Level	0–**100**–127 (*8)
AUX Pan/Balance	AUX Pan/AUX Bal	L63–**0**–R63 (*4) (*8)
Channel Link	Channel Link	**Off**, On
Level Link	Level Link	**Off**, On
Effect 1 Insert Switch	FX1 Ins	**Off**, Insert, InsertL, InsertR, InsertS
Effect 1 Insert Send Level	FX1 InsSend	**0**–127 dB (*6)
Effect 1 Insert Return Level	FX1 InsRtn	**0**–127 dB (*6)
Effect 1 Send Switch	EFFECT1	**Off**, PreFade, PstFade
Effect 1 Send Level	EFFECT1 Send	0–**100**–127 (*9)
Effect 1 Pan/Balance	EFFECT1 Pan/Bal	L63–**0**–R63 (*4) (*9)
Effect 2 Insert Switch	FX2 Ins	**Off**, Insert, InsertL, InsertR, InsertS
Effect 2 Insert Send Level	FX2 InsSend	**0**–127 dB (*7)
Effect 2 Insert Return Level	FX2 InsRtn	**0**–127 dB (*7)
Effect 2 Send Switch	EFFECT2	**Off**, Prefade, PstFadeOff
Effect 2 Send Level	EFFECT2 Send	0–**100**–127 (*10)
Effect 2 Pan/Balance	EFFECT2 Pan/Bal	L63–**0**–R63 (*4) (*10)

*1 ***=IN1–IN8, TR1–TR8, FX1, FX2, StIn
*2 Valid when Channel Link or Level Link is "On."
*3 Valid when Channel Link is "On."
*4 If Channel Link is On, the "Pan" parameter will change to the balance parameter.
*5 Valid when Master Block Equalizer Select is "3 Band EQ."
*6 Valid when Effect 1 Insert Switch is except "Off."
*7 Valid when Effect 2 Insert Switch is except "Off."
*8 Valid when AUX Switch is except "Off."
*9 Valid when Effect 1 Send Switch is except "Off."
*10 Valid when Effect 2 Send Switch is except "Off."

■ Stereo In/Effect Return [SHIFT] + [RTN MIX (AUTOMIX)]

Parameter name	Display	Value, Initial value
Stereo In Select	StereoIn	**Off**, Input12, Input34, Input56, Input78
Stereo In Level	StIn Level	0–**100**–127 (*)
Stereo In Balance	StIn Bal	L63–**0**–R63 (*)
Effect 1 Return Level	FX1 RTN Lev	0–**100**–127
Effect 1 Return Balance	FX1 RTN Bal	L63–**0**–R63
Effect 2 Return Level	FX2 RTN Lev	0–**100**–127
Effect 2 Return Balance	FX2 RTN Bal	L63–**0**–R63

* Valid when Stereo In Select is except "Off."

■ Marterblock [LEVEL/BALANCE]

Parameter name	Display	Value, Initial value
Master Select	Master Sel	**MIX**, AUX, FX1, FX2, REC
Master Level	MasterLevel	0–**100**–127
Master Balance	Master Bal	L63–**0**–R63
AUX Out	AUX Out	**AUX**, FX1, FX2
AUX Send Level	AUX Level	0–**100**–127
AUX Send Balance	AUX Bal	L63–**0**–R63
Effect 1 Insert Switch	FX1 Ins Sw	**Off**, On
Effect 1 Insert Send Level	FX1 Ins Send	0–**100**–127 (*1)
Effect 1 Insert Return Level	FX1 Ins Rtn	0–**100**–127 (*1)
Effect 1 Send Level	FX1 SND Lev	0–**100**–127
Effect 1 Send Balance	FX1 SND Bal	L63–**0**–R63
Effect 2 Insert Switch	FX2 Ins Sw	**Off**, On
Effect 2 Insert Send Level	FX2 Ins Send	0–**100**–127 (*2)
Effect 2 Insert Return Level	FX2 Ins Rtn	0–**100**–127 (*2)
Effect 2 Send Level	FX2 SND Lev	0–**100**–127
Effect 2 Send Balance	FX2 SND Bal	L63–**0**–R63
Equalizer Select	EQ Sel	**2BandEQ**, 3BandEQ
Digital Coaxial Out	Digital Coa	**MST**, AUX, FX1, FX2
Digital Optical Out	Digital Opt	**MST**, AUX, FX1, FX2
Headphones Select	Phones Sel	**MST**, AUX, FX1, FX2

Parameter name	Display	Value, Initial value
Direct Out	Direct Out	**Off**, On

*1   Valid when Effect 1 Insert Switch is "On."
*2   Valid when Effect 2 Insert Switch is "On."

■ System Parameter [SHIFT] + [SYSTEM (►)] → "SYSTEM PRM?" → [ENT/YES]

Parameter name	Display	Value, Initial value
Master Clock	MasterClk	**INT**, D.COA, D.OPT, R-BUS
Time Display Format	Time Disp Fmt	**ABS**, REL
Offset	Ofs	**00h00m00s00**–23h59m59s29 (*1)
Marker Stop	Marker Stop	**Off**, On
Record Monitor	Record Mon	**AUTO**, SOURCE
Vari Pitch	Vari Pitch	21.96–**48.00 kHz**–50.43 kHz (48.00 kHz)
		22.05–**44.10 kHz**–50.48 kHz (44.1 kHz)
		21.96–**32.00 kHz**–50.43 kHz (32.00 kHz)
Foot Switch Assign	FootSw	**Play/Stop**, Record, TapMarker, Next, Previous, GPI
Fade Length	Fade Length	2, **10**, 20, 30, 40, 50 ms
Scrub Length	Scrub Len	25–**45**–100 ms
Preview Length	Preview Len	**1.0**–10.0 s
Metronome Out	MetroOut	**Off**, INT, MIDI
Metronome Level	MetroLevel	0–**100**–127 (*2)
Metronome Mode	MetroMd	**Rec Only**, Rec&Play (*3)
Undo Message	UNDO MSG	Off, **On**
LCD Contrast	LCD Contrast	0–**7**–15
Remaining Display	RemainDsp	**Time**, CapaMB, Capa%, Event
Measure Display	MeasurDsp	**Always**, Auto
Digital Copy Protect Switch	D.CpyProtect	**Off**, On
Shift Lock	Shift Lock	**Off**, On
Peak Hold Switch	PeakHoldSw	**Off**, On
System Parameter Keep Switch	SysPrmKeepSw	**Off**, On
V-Track Bank	V.Track Bank	**A**, B
Switching Time	SwitchTime	0.3–**0.5**–2.0 sec
DC Cut Switch	DC Cut Sw	Off, **On**
CD Digital Recording	CD DigiREC	**Off**, On
SCSI Terminator	SCSI Term	Off, **On**

*1   The settable value for Offset will change slightly depending on the MTC type.
*2   Valid when Metronome Out is "INT."
*3   Valid when Metronome Out is except "Off."

■ MIDI Parameter [SHIFT] + [SYSTEM (►)] → "MIDI PRM?" → [ENT/YES]

Parameter name	Display	Value, Initial value
Device IDID	DeviceID	1–**17**–32
MIDI through Switch	MIDI Thr	**Out**, Thru
System Exclusive Receive Switch	SysEx.Rx	Off, **On**
System Exclusive Transmit Switch	SysEx.Tx	**Off**, On
MMC Mode	MMC	Off/RBUS, **MASTER**, SLAVE
Metronome Channel	MetroCh	1–**10**–16 (*)
Accent Note	Acc.Note	C_0–**C*2**–G_9 (*)
Accent Velocity	Acc.Velo	1–**100**–127 (*)
Normal Note	Nrm.Note	C_0–**C*2**–G_9 (*)
Normal Velocity	Nrm.Velo	1–**60**127 (*)
Control Type	Ctr Type	**Off**, C.C., Excl
Program Change Scene	P.C.Scne	**Off**, On
Program Change Effect	P.C.Eff	**Off**, On
Control Change Effect	C.C.Eff	**Off**, On
Model ID	ModelID	**VSR**, 88EX

*   Valid when Metronome Out is "MIDI."

■ Disk Parameter [SHIFT] + [SYSTEM (►)] → "DISK PRM?" → [ENT/YES]

Parameter name	Display	Value, Initial value
IDE Drive	IDE Drv	Off, **On**
SCSI Self ID	SCSI Self	0–7

■ Sync/Tempo Parameter [SHIFT] + [SYSTEM (►)] → "Sync/Tempo?" → [ENT/YES]

Parameter name	Display	Value, Initial value
Sync Source	Source	**INT**, EXT
Input Select	InSel	R-BUS, **MIDI**
Sync Generator	Gen.	**Off**, MTC, MIDIclk, SyncTr, R-BUS
Error Level	ErrLevel	0–**5**–10
MTC Type	MTC Type	**30**, 29N, 29D, 25, 24
Offset	Ofs	**00h00m00s00**–23h59m59s29 (*)

* The settable value for Offset will change slightly depending on the MTC type.

■ Sync Track Convert [SHIFT] + [SYSTEM (►)] → "Sync/Tempo?" → [ENT/YES] → PARAMETER [►►] → "Sync.Tr Cnv?" → [ENT/YES]

Parameter name	Display	Value, Initial value
Beat	Beat	1/1–8/1, 1/2–8/2, 1/4–**4/4**–8/4, 1/8–8/8
Tap Beat	Tap Beat	1–**4**–8
Sync Track Beat	Sync Trk Beat	1/1–8/1, 1/2–8/2, 1/4–**4/4**–8/4, 1/8–8/8
Start Time	Start Time	**00h00m00s00**–23h59m59s29 (*)
End Time	End Time	**00h00m00s00**–23h59m59s29 (*)
Measure	Measure	**1**–999

* The settable value for Start Time/End Time will change slightly depending on the MTC type.

■ Tempo Map [SHIFT] + [SYSTEM (►)] → "Scene/Auto Mix?" → [ENT/YES]

Parameter name	Display	Value, Initial value
Tempo Map Number	(none)	1–501
Tempo	(none)	25.0–250.0**120.0**
Measure	MEASURE	1–999**1**
Beat	BEAT	1/1–8/1, 1/2–8/2, 1/4–8/4, 1/8–8/8**4/4**

■ Scene/Automix [SHIFT] + [SYSTEM (►)] → "Sync/Tempo?" → [ENT/YES] → PARAMETER [►►] →"Tmap"

Parameter name	Display	Value, Initial value
Scene Mode	Scene Mode	**All**, KeepM
Auto Mix Mode	A.Mix Mode	**Off**, On
Auto Mix Snapshot Mode	A.Mix Snap	**ALL**, MaskM
Erase From	(none)	0–999
Erase To	(none)	0–999
Erase Mode	Erase Mode	**Event**, Marker

■ Drive Initialize [SHIFT] + [SYSTEM (►)] → "DriveInitialize?" → [ENT/YES]

Parameter name	Display	Value, Initial value
Initialize Drive	Init Drive	IDE, SC0–SC7
Physical Format	PhysicalFmt	**Off**, On
Partition	Partition	500, **1000 MB**
Surface Scan	SurfaceScan	**Off**, On

Preset Patch List

On the VSR-880, you can access the range of effects listed below.

Snd/Rtn: Direct Level is set to "0." Connect this Patch to the effects bus.

Insert: This Patch mixes the direct sound and effected sound. Insert it into a channel.

You cannot select preset Patches A00–A21, A80, A97, B98 or C10–C28 for FX2. These Patches must be used for FX1.

■ Reverb (18 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
A00	RV:LargeHall	Reverb	Snd/Rtn	Mono	Large concert hall reverberation.
A01	RV:SmallHall	Reverb	Snd/Rtn	Mono	Small hall reverberation.
A02	RV:Strings	Reverb	Snd/Rtn	Mono	Reverberation optimized for delicate highs of strings.
A03	RV:PianoHall	Reverb	Snd/Rtn	Mono	Rich and warm reverberation optimized for pianos.
A04	RV:Orch Room	Reverb	Snd/Rtn	Mono	Reverberation of large-capacity rooms such as big banquet halls.
A05	RV:VocalRoom	Reverb	Snd/Rtn	Mono	Room reverb suitable for vocals and chorus.
A06	RV:MediumRm	Reverb	Snd/Rtn	Mono	Warm and naturally spacious room reverb.
A07	RV:LargeRoom	Reverb	Snd/Rtn	Mono	Simulated acoustics of wide rooms with lots of reverberation.
A08	RV:CoolPlate	Reverb	Snd/Rtn	Mono	Distinctive bright plate reverb.
A09	RV:Short Plt	Reverb	Snd/Rtn	Mono	Shorter plate reverb.
A10	RV:Vocal Plt	Reverb	Snd/Rtn	Mono	Crystal-clear reverb optimized for vocals.
A11	RV:Soft Amb.	Reverb	Snd/Rtn	Mono	Simulated reverberation of a room with minimal wall reflections.
A12	RV:Room Amb.	Reverb	Snd/Rtn	Mono	Natural reverberation of rooms with good acoustics, suitable for drums and guitars.
A13	RV:Cathedral	Reverb	Snd/Rtn	Mono	Acoustics of a very large, high-ceilinged church.
A14	RV:Long Cave	Reverb	Snd/Rtn	Mono	Simulated reverberation of deep caves.
A15	RV:GarageDr.	Reverb	Snd/Rtn	Mono	Natural reverb that enhances unique drum sounds.
A16	RV:Rock Kick	Reverb	Snd/Rtn	Mono	Reverb with many low-frequency components, suitable for rock kicks.
A17	RV:RockSnare	Reverb	Snd/Rtn	Mono	Rich and thick sounding reverb suitable for rock snares.

■ Gate Reverb (4 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
A18	RV:BriteGate	Gate Reverb	Snd/Rtn	Mono	Slightly brighter gate reverb.
A19	RV:Fat Gate	Gate Reverb	Snd/Rtn	Mono	Dynamic reverb sound with powerful mids and lows.
A20	RV:ReverseGt	Gate Reverb	Snd/Rtn	Mono	A reverse gate commonly used as a special effect.
A21	RV:PanningGt	Gate Reverb	Snd/Rtn	Mono	A special effect with gate reverb shifting from left to right.

■ Delay (9 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
A22	DL:Short Dly	Delay	Snd/Rtn	Mono	An ambience effect that adds depth to the sound by doubling.
A23	DL:MediumDly	Delay	Snd/Rtn	Mono	Natural echo optimized for vocals.
A24	DL:LongDelay	Delay	Snd/Rtn	Mono	Long delay suited for brass and analog synth solos.
A25	DL:AnalogDly	Delay	Snd/Rtn	Mono	Analog sound with gradually diminishing feedbacking highs.
A26	DL:Tape Echo	Stereo Delay Chorus	Snd/Rtn	Stereo	Simulated tape echo with distinctive wow flutter.
A27	DL:Karaoke	Stereo Delay Chorus	Snd/Rtn	Stereo	Intense reverberation that effectively enhances karaoke vocals.
A28	DL:Multi-Tap	Stereo Delay Chorus	Snd/Rtn	Stereo	Spacious reflections using positioning delay at any point along the stereo soundfield.
A29	DL:MltTapAmb	Multi Tap Delay	Snd/Rtn	Mono	An ambience effect using 10 short delay units.
A30	DL:Ping Pong	Multi Tap Delay	Snd/Rtn	Mono	A special effect using tap delay.

■ Vocal (10 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
A31	VO:Vocal Efx	Vocal Multi	Insert	Mono	Basic setup for recording/mixdown of vocals.
A32	VO:JazzVocal	Vocal Multi	Insert	Mono	A natural sounding jazz club-like ambience for warm reverb well-suited for vocals.
A33	VO:RockVocal	Vocal Multi	Insert	Mono	Sound featuring limiter/enhancer processing as well as a unison effect.
A34	VO:Narration	Vocal Multi	Insert	Mono	An effect with heavy compression, used for narration.
A35	VO:BigChorus	Vocal Multi	Insert	Mono	A spacious-sounding stereo effect similar to increasing the number of vocalists.
A36	VO:Club DJ	Vocal Multi	Insert	Mono	A club DJ-tailored effect that uses a pitch shifter to make voices lower.
A37	VO:AM-Radio	Vocal Multi	Insert	Mono	Sound featuring hard compression and narrower frequency range.
A38	VO:PlusTwo	Stereo PSD	Insert	Stereo	A special effect that adds two more voices using a pitch shifter.
A39	VO:Robot Efx	Stereo PSD	Insert	Stereo	SF movie-like effect using a pitch shifter.
A40	VO:Bull Horn	Guitar Multi 3	Insert	Mono	Simulated effect of sound produced from a Bull Horn or old radio.

* PSD = Pitch Shifter Delay

■ Guitar (11 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
A41	GT:Rock Lead	Guitar Multi 2	Insert	Mono	Straight distortion sound with delay.
A42	GT:LA Lead	Guitar Multi 2	Insert	Mono	Lead guitar sound with tasty compression and chorus applied.
A43	GT:MetalLead	Guitar Multi 1	Insert	Mono	Metal sound with dynamic, ultrahigh gain distortion.
A44	GT:Metal Jet	Guitar Multi 1	Insert	Mono	Distortion together with a metallic effect achieved by flanging.
A45	GT:CleanRthm	Guitar Multi 1	Insert	Mono	Clean sound with compression and chorus applied.

No.	Patch Name	Algorithm	Type	Input	Comment
A46	GT:DIedClean	Vocal Multi	Insert	Mono	Superclean sound like line recording directly into the console.
A47	GT:Delay Rif	Guitar Multi 2	Insert	Mono	Delay sounds at dotted eighth note intervals when a 120 BPM riff is played.
A48	GT:Acoustic	Vocal Multi	Insert	Mono	Optimized for electroacoustic guitars.
A49	GT:BluesDrv.	Guitar Multi 3	Insert	Mono	Crunchy overdrive sound suited to blues and R&R.
A50	GT:Liverpool	Guitar Multi 3	Insert	Mono	Crunchy sound often heard on '60s British rock.
A51	GT:Country	Guitar Multi 3	Insert	Mono	Clean sound featuring distinctive compression and delay.

■ Guitar Amp Simulator (9 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
A52	GA:JazChorus	Guitar Amp Sim.	Insert	Mono	Roland JC-120 amp. Sounds more authentic when used with chorus for mixdown.
A53	GA:CleanTwin	Guitar Amp Sim.	Insert	Mono	U.S. tube combo amp circa "black panel."
A54	GA:Vin.Tweed	Guitar Amp Sim.	Insert	Mono	'50s U.S. tube amp overdrive.
A55	GA:BluesDrv.	Guitar Amp Sim.	Insert	Mono	Old British amp crunchy overdrive.
A56	GA:MatchLead	Guitar Amp Sim.	Insert	Mono	Hot-rodded British combo amp.
A57	GA:StudioCmb	Guitar Amp Sim.	Insert	Mono	Favourite late '70s amp of studio musicians.
A58	GA:JMP-Stack	Guitar Amp Sim.	Insert	Mono	Late '60s British stacks.
A59	GA:SLDN Lead	Sim.Guitar Amp	Insert	Mono	An '80s amp known for versatile distortion.
A60	GA:5150 Lead	Sim.Guitar Amp	Insert	Mono	Big tube amp standard for American heavy metal.

* Sim. = Simulator

■ Bass (5 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
A61	BS:DI'edBass	Vocal Multi	Insert	Mono	Slight limiting and equalization optimized, ideal for line recording applications.
A62	BS:MikedBass	Guitar Amp Sim.	Insert	Mono	A miked speaker box with four 12"s.
A63	BS:CompBass	Stereo Multi	Insert	Stereo	Hard-compressed sound optimized for slaps.
A64	BS:Auto Wah	Guitar Multi 2	Insert	Mono	Synth bass like sound added with auto wah essential for '70s funk.
A65	BS:EFX Bass	Stereo Delay Chorus	Insert	Stereo	Solo-optimized sound with depth and spaciousness added through delay and chorus.

* Sim. = Simulator

■ Stereo Multi (5 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
A66	CL:Comp	Stereo Multi	Insert	Stereo	Stereo type compression optimized for broadcast mixing.
A67	CL:Limiter	Stereo Multi	Insert	Stereo	A convenient effect for analog mastering because it can limit peak signals.
A68	EQ:Loudness	Stereo Multi	Insert	Stereo	Applies EQ curve with slightly boosted lows and highs.
A69	EQ:Fat Dance	Stereo Multi	Insert	Stereo	Hard compression plus equalizing for dance music.
A70	EQ:ThinJingl	Stereo Multi	Insert	Stereo	Limiter and EQ processing for FM radio and TV broadcasting.

■ Chorus/Flanger/Phaser/Pitch Shifter (9 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
A71	CH:Lt Chorus	Stereo Delay Chorus	Insert	Stereo	Natural stereo chorus with shallow depth for spacious, crystal-clear sound.
A72	CH:Deep Cho	Stereo Delay Chorus	Insert	Stereo	Intense stereo chorus that adds depth and spaciousness to the sound.
A73	CH:DetuneCho	Stereo PSD	Insert	Stereo	Chorus with left and right channels separately pitch shift-detuned up and down.
A74	FL:LtFlanger	Stereo Flanger	Insert	Stereo	Stereo flanger with slight modulation.
A75	FL:Deep Fl	Stereo Flanger	Insert	Stereo	Deeper stereo flanger for metallic jet swooshing sound.
A76	PH:Lt Phaser	Stereo Phaser	Insert	Stereo	Lighter 4-stage stereo phaser suitable for synth strings.
A77	PH:DeepPhase	Stereo Phaser	Insert	Stereo	Deep phaser effective for electronic piano and clavinet sounds.
A78	PS:-4thVoice	Vocal Multi	Insert	Mono	Adds sound down a fourth to the direct sound.
A79	PS:ShimmerUD	Stereo PSD	Insert	Stereo	A special effect with left channel pitch rising and right channel pitch dropping over time.

* PSD = Pitch Shifter Delay

■ Same as Algorithm (20 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
A80	Reverb	Reverb	Snd/Rtn	Mono	(p. 162)
A81	Delay	Delay	Snd/Rtn	Mono	(p. 164)
A82	StDly-Chorus	Stereo Delay Chorus	Insert	Stereo	(p. 166)
A83	StPS-Delay	Pitch Shifter Delay	Insert	Stereo	(p. 168)
A84	Vocoder	Vocoder	Insert	Mono	(p. 170)
A85	2ch RSS	2ch RSS	Insert	2ch	(p. 171)
A86	Delay RSS	Delay RSS	Insert	Mono	(p. 173)
A87	Chorus RSS	Chorus RSS	Insert	Mono	(p. 174)
A88	GuitarMulti1	Guitar Multi 1	Insert	Mono	(p. 175)
A89	GuitarMulti2	Guitar Multi 2	Insert	Mono	(p. 175)
A90	GuitarMulti3	Guitar Multi 3	Insert	Mono	(p. 175)

No.	Patch Name	Algorithm	Type	Input	Comment
A91	Vocal Multi	Vocal Multi	Insert	Mono	(p. 178)
A92	Rotary	Rotary	Insert	Mono	(p. 180)
A93	GuitarAmpSim	Guitar Amp Sim.	Insert	Mono	(p. 180)
A94	St Phaser	Stereo Phaser	Insert	Stereo	(p. 183)
A95	St Flanger	Stereo Flanger	Insert	Stereo	(p. 185)
A96	DualComp/Lim	Dual Compressor/Limiter	Insert	2ch	(p. 186)
A97	Gate Reverb	Gate Reverb	Snd/Rtn	Mono	(p. 188)
A98	MultiTapDly	Multi Tap Delay	Insert	Mono	(p. 190)
A99	Stereo Multi	Stereo Multi	Insert	Stereo	(p. 192)

■ Reverv2 (20 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
B00	R2:LargeHall	Reverb2	Snd/Rtn	Mono	Large concert hall reverberation.
B01	R2:SmallHall	Reverb2	Snd/Rtn	Mono	Small hall reverberation.
B02	R2:Strings	Reverb2	Snd/Rtn	Mono	Reverberation optimized for delicate highs of strings.
B03	R2:PianoHall	Reverb2	Snd/Rtn	Mono	Rich and warm reverberation optimized for pianos.
B04	R2:Orch Room	Reverb2	Snd/Rtn	Mono	Reverberation of large-capacity rooms such as big banquet halls.
B05	R2:VocalRoom	Reverb2	Snd/Rtn	Mono	Room reverb suitable for vocals and chorus.
B06	R2:MediumRm	Reverb2	Snd/Rtn	Mono	Warm and naturally spacious room reverb.
B07	R2:LargeRoom	Reverb2	Snd/Rtn	Mono	Simulated acoustics of wide rooms with lots of reverberation.
B08	R2:CoolPlate	Reverb2	Snd/Rtn	Mono	Distinctive bright plate reverb.
B09	R2:Short Plt	Reverb2	Snd/Rtn	Mono	Shorter plate reverb.
B10	R2:Vocal Plt	Reverb2	Snd/Rtn	Mono	Crystal-clear reverb optimized for vocals.
B11	R2:Soft Amb.	Reverb2	Snd/Rtn	Mono	Simulated reverberation of a room with minimal wall reflections.
B12	R2:Room Amb.	Reverb2	Snd/Rtn	Mono	Natural reverberation of rooms with good acoustics, suitable for drums and guitars.
B13	R2:Cathedral	Reverb2	Snd/Rtn	Mono	Acoustics of a very large, high-ceilinged church.
B14	R2:Long Cave	Reverb2	Snd/Rtn	Mono	Simulated reverberation of deep caves.
B15	R2:GarageDr.	Reverb2	Snd/Rtn	Mono	Natural reverb that enhances unique drum sounds.
B16	R2:Rock Kick	Reverb2	Snd/Rtn	Mono	Reverb with many low-frequency components, suitable for rock kicks.
B17	R2:RockSnare	Reverb2	Snd/Rtn	Mono	Rich and thick sounding reverb suitable for rock snares.
B18	R2:BriteGte2	Reverb2	Snd/Rtn	Mono	A high-density and bright sounding gated reverb. Adjust Threshold.
B19	R2:Fat Gate2	Reverb2	Snd/Rtn	Mono	A high-density and warm sounding gated reverb. Adjust Threshold.

■ Mic Simulator (22 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
B20	MS:57'58	Mic Simulator	Insert	2ch	Converts a general-purpose D. mic to a vocal D. mic. Rich mid/low range.
B21	MS:57'421	Mic Simulator	Insert ·	2ch	Converts a general-purpose D. mic to a large D. mic. For drums and guitar amp.
B22	MS:57'451	Mic Simulator	Insert	2ch	Converts a general-purpose D. mic to a small C. mic. For acoustic guitar and cymbals.
B23	MS:57'87	Mic Simulator	Insert	2ch	Converts a general-purpose D. mic to a large C. mic. For vocals and acoustic inst.
B24	MS:57'47	Mic Simulator	Insert	2ch	Converts a general-purpose D. mic to a vintage C. mic. For vocals and acoustic inst.
B25	MS:57'Line	Mic Simulator	Insert	2ch	Cancels the characteristics of D.mic, giving the sound a flat frequency response.
B26	MS:DR20'421	Mic Simulator	Insert	2ch	Converts a Roland DR-20 to an instrumental D. mic. For drums and guitar amp.
B27	MS:DR20'451	Mic Simulator	Insert	2ch	Converts a Roland DR-20 to a small C. mic. For acoustic guitar and cymbals.
B28	MS:DR20'87	Mic Simulator	Insert	2ch	Converts a Roland DR-20 to a large C. mic. For vocals and acoustic inst.
B29	MS:10'58	Mic Simulator	Insert	2ch	Converts a headset mic to a vocal D. mic.
B30	MS:10'87	Mic Simulator	Insert	2ch	Converts a headset mic to a large C. mic.
B31	MS:Mini'57	Mic Simulator	Insert	2ch	Converts a miniature C. mic to a general-purpose D. mic.
B32	MS:Mini'87	Mic Simulator	Insert	2ch	Converts a miniature C. mic to a large C. mic.
B33	MS:Kick&Snr1	Mic Simulator	Insert	2ch	For the bass drum (L channel) and snare drum (R channel) of a drum set (1).
B34	MS:Kick&Snr2	Mic Simulator	Insert	2ch	For the bass drum (L channel) and snare drum (R channel) of a drum set (2).
B35	MS:H.Hat&Tom	Mic Simulator	Insert	2ch	For the hi-hat (L channel) and tom (R channel) of a drum set.
B36	MS:Dr.OvrTop	Mic Simulator	Insert	2ch	A patch for placing mics above the drums mainly to mic the cymbals.
B37	MS:Dr.OvrAll	Mic Simulator	Insert	2ch	A patch for placing mics above the front of the drums to mic the entire set.
B38	MS:Ac.Guitar	Mic Simulator	Insert	2ch	For acoustic guitar. InsertL: brighter, InsertR: warmer.
B39	MS:StudioVcl	Mic Simulator	Insert	2ch	For vocals. InsertL: natural, InsertR: Rock.
B40	MS:StereoMic	Mic Simulator	Insert	2ch	Gives time-lag to a sound miked in stereo, emphasizing spaciousness.
B41	MS:Ambience	Mic Simulator	Insert	2ch	Simulates ambience mics. Add reverb and mix with original source.

* D. mic = dynamic microphone, C. mic = condenser microphone

■ Parametric Equalizer (26 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
B42	PEQ:BassDrum	Parametric EQ	Insert	Stereo	For bass drum. Adjust LowQ and HiG.
B43	PEQ:RockBD	Parametric EQ	Insert	Stereo	For bass drum. A sound suitable for rock with mid-lows emphasized.
B44	PEQ:RockSD	Parametric EQ	Insert	Stereo	For snare drum. Drops the mid-lows and emphasizes the attack and snares.
B45	PEQ:RimShot	Parametric EQ	Insert	Stereo	For rim shot. Emphasizes the feeling of attack unique to a rim shot.
B46	PEQ:Toms	Parametric EQ	Insert	Stereo	For toms. Adjust LowF and LowMidF.
B47	PEQ:Hi Hat	Parametric EQ	Insert	Stereo	For the crisper hi-hat. Adjust bell sound with HiMidG.
B48	PEQ:Cymbals	Parametric EQ	Insert	Stereo	For cymbals. Emphasizes the difference in tone between cymbals and their clarity.
B49	PEQ:Overhead	Parametric EQ	Insert	Stereo	For drum kit. Use when miking the sound of the entire kit.
B50	PEQ:Bass 1	Parametric EQ	Insert	Stereo	For electric bass. Wide-range and tight bass sound.
B51	PEQ:Bass 2	Parametric EQ	Insert	Stereo	For electric bass. Fatter and with more punch than B50. For rock.
B52	PEQ:SlapBass	Parametric EQ	Insert	Stereo	For electric bass. Settings that emphasize the accent of pulled notes with slap technique.
B53	PEQ:Sax	Parametric EQ	Insert	Stereo	For alto/soprano sax. Lower HiG for mellow sound.
B54	PEQ:Bari.Sax	Parametric EQ	Insert	Stereo	For baritone sax. Adjust LoMidF.
B55	PEQ:ElecGtr	Parametric EQ	Insert	Stereo	Settings that keep the lead guitar from being buried in the mix.
B56	PEQ:NylonGtr	Parametric EQ	Insert	Stereo	Emphasize the tone of nylon strings. Adjust fret sound with HiG.
B57	PEQ:BluesGtr	Parametric EQ	Insert	Stereo	Adds a delicate nuance suitable when playing blues on an acoustic guitar.
B58	PEQ:SlideGtr	Parametric EQ	Insert	Stereo	Adds a rich feel to acoustic slide guitar. Adjust HiF.
B59	PEQ:LineGtr	Parametric EQ	Insert	Stereo	For piezo pickups. Adjust brightness with HiG.
B60	PEQ:Male	Parametric EQ	Insert	Stereo	Improves the tone quality of a male vocal. Adjust HiG.
B61	PEQ:RockMale	Parametric EQ	Insert	Stereo	Equalizer that adds energy to a male vocal. Best for rock. Try with Comp.
B62	PEQ:Female	Parametric EQ	Insert	Stereo	Improves the tone quality of a female vocal. Adjust LoMidG.
B63	PEQ:RockFeml	Parametric EQ	Insert	Stereo	Equalizer that adds energy to a female vocal. Best for rock. Try with Comp.
B64	PEQ:Narrator	Parametric EQ	Insert	Stereo	Standard equalizer for male narration. Brings out the character of the voice.
B65	PEQ:Organ	Parametric EQ	Insert	Stereo	Settings to bring out the character of a church organ.
B66	PEQ:St.Piano	Parametric EQ	Insert	Stereo	For miking piano in stereo. Left: low range, right: high range.
B67	PEQ:SmallCho	Parametric EQ	Insert	Stereo	Settings that bring out the chorus without letting it conflict with the main vocal.

■ Graphic Equalizer (3 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
B68	GEQ:TotalEQ1	Graphic EQ	Insert	Stereo	Boosts the low and high ranges.
B69	GEQ:TotalEQ2	Graphic EQ	Insert	Stereo	Attenuates the lows and highs to narrow the range, tightening up the sound.
B70	GEQ:Space EQ	Graphic EQ	Insert	Stereo	Special settings that turn a monaural source into stereo.

■ Space Chorus (3 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
B71	SPCHO:MODE 1	Space Chorus	Insert	Stereo	Simulates MODE1 of the classic SDD-320 ambience processor.
B72	SPCHO:MODE 2	Space Chorus	Insert	Stereo	Simulates MODE2 of the classic SDD-320 ambience processor.
B73	SPCHO:MODE 3	Space Chorus	Insert	Stereo	Simulates MODE3 of the classic SDD-320 ambience processor.

■ Special Effects(16 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
B74	LFP:BreakBts	Lo-Fi Processor	Insert	Stereo	Reproduces the tonal change produced by lowering the bit/rate of a sampled sound.
B75	LFP:1bitDist	Lo-Fi Processor	Insert	Stereo	Extreme distortion sound produced by lowering the number of bits.
B76	LFP:TeknoFlt	Lo-Fi Processor	Insert	Stereo	Emphasizes the out-of-band noise that occurs with low sampling rates.
B77	LFP:Reso Flt	Lo-Fi Processor	Insert	Stereo	Filter with resonance as found on synthesizers. Adjust CutOff.
B78	LFP:FatBotom	Lo-Fi Processor	Snd/Rtn	Stereo	Add heavy low-range for the groove. Mix with original source.
B79	VT:M to Fm	Voice Transformer	Insert	Mono	Converts a male voice into a female voice.
B80	VT:Fm to M	Voice Transformer	Insert	Mono	Converts a female voice into a male voice.
B81	VT:Male Duo	Voice Transformer	Insert	Mono	Turns a single male voice into a duet (by adding a female voice).
B82	VT:FemaleDuo	Voice Transformer	Insert	Mono	Turns a single female voice into a duet (by adding a male voice).
B83	VT:Robot	Voice Transformer	Insert	Mono	Special effect like a robot speaking.
B84	VOC2:M19Band	Vocoder2	Insert	Mono	Clear and crisp vocoder.
B85	VOC2:S19Band	Vocoder2	Insert	Mono	Special stereo vocoder with long decay.
B86	HC:Quiet60Hz	Hum Canceler	Insert	Stereo	Cancels 60 Hz hum noise.
B87	HC:Quiet50Hz	Hum Canceler	Insert	Stereo	Cancels 50 Hz hum noise.
B88	VC:Vocal Cnl	Vocal Canceler	Insert	Stereo	Cancels a vocal located in the center.
B89	VC:CenterCnl	Vocal Canceler	Insert	Stereo	Cancel all sound located in the center.

■ Same as Algorithm (14 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
B90	Reverb2	Reverb2	Snd/Rtn	Mono	(p. 194)
B91	Space Chorus	Space Chorus	Insert	Stereo	(p. 196)
B92	Lo-Fi Proces	Lo-Fi Processor	Insert	Stereo	(p. 197)

No.	Patch Name	Algorithm	Type	Input	Comment
B93	ParametricEQ	Parametric Equalizer	Insert	2ch	(p. 198)
B94	Graphic EQ	Graphic Equalizer	Insert	2ch	(p. 199)
B95	Hum Canceler	Hum Canceler	Insert	Stereo	(p. 200)
B96	Vocal Cancel	Vocal Canceler	Insert	Stereo	(p. 201)
B97	Voice Trans	Voice Transformer	Insert	Mono	(p. 203)
B98	Vocoder2 (19)	Vocoder2	Insert	Mono	(p. 204)
B99	MicSimulator	Mic Simulator	Insert	2ch	(p. 206)
C00	3BndIsolator	3BandIsolator	Insert	Stereo	(p. 208)
C01	TapeEcho201	Tape Echo 201	Snd/Rtn	Mono	(p. 209)
C02	AnalogFlnger	Analog Flanger	Insert	Stereo	(p. 210)
C03	AnalogPhaser	Analog Phaser	Insert	Stereo	(p. 211)

■ Tape Echo 201 (4 presets)

No.	Patch Name	Algorithm	Type	Input	Comment
C04	TE:ShortEcho	Tape Echo 201	Snd/Rtn	Mono	Simulates short type tape echo.
C05	TE:LongEcho	Tape Echo 201	Snd/Rtn	Mono	Simulates long type tape echo.
C06	TE:OldTape	Tape Echo 201	Snd/Rtn	Mono	Simulates tape echo using an old tape.
C07	TE:PanEcho	Tape Echo 201	Snd/Rtn	Mono	Simulates tape echo in stereo.

■ Analog Flanger (1 preset)

No.	Patch Name	Algorithm	Type	Input	Comment
C08	AF:SBF-325	Analog Flanger	Insert	Stereo	Simulates Roland SBF-325 analog flanger.

■ Analog Phaser (1 preset)

No.	Patch Name	Algorithm	Type	Input	Comment
C09	AP:FB-Phaser	Analog Phaser	Insert	Stereo	Simulates analog phaser with oscillation on purpose.

■ Mastering Tool Kit (19 presets)

No.	Patch Name	Type	Input	Comment
C10	MTK:Mixdown	Insert	Stereo	Mix down for CD
C11	MTK:PreMastr	Insert	Stereo	Pre-master for video editing
C12	MTK:LiveMix	Insert	Stereo	Final mix of live recording
C13	MTK:PopMix	Insert	Stereo	for Pop music
C14	MTK:DanceMix	Insert	Stereo	for Dance music
C15	MTK:JinglMix	Insert	Stereo	Jingle for FM radio
C16	MTK:HardComp	Insert	Stereo	Heavy compression
C17	MTK:SoftComp	Insert	Stereo	Light compression
C18	MTK:ClnComp	Insert	Stereo	Eliminating the background noise and clean up the sound
C19	MTK:DnceComp	Insert	Stereo	Compression for dance music
C20	MTK:OrchComp	Insert	Stereo	Compression for orchestra
C21	MTK:VocalCmp	Insert	Stereo	Compression for vocal
C22	MTK:Acoustic	Insert	Stereo	Acoustic guitar
C23	MTK:RockBand	Insert	Stereo	for Rock band
C24	MTK:Orchestr	Insert	Stereo	for Orchestra
C25	MTK:LoBoost	Insert	Stereo	Enhancing the low frequency range
C26	MTK:Brighten	Insert	Stereo	Enhancing the high frequency range
C27	MTK:DJsVoice	Insert	Stereo	DJ Microphone
C28	MTK:PhoneVox	Insert	Stereo	Telephone voice simulation

■ Speaker Modeling (11 presets)

No.	Patch Name	Type	Input	Comment
C29	SPM:SuperFlt	Insert	Stereo	Modeling is used to compensate the DS-90, to produce an even flatter sound with a wider range.
C30	SPM:P.GenBlk	Insert	Stereo	A widely used model of powered monitors (two-way type, with a woofer diameter of 170 mm (6-1/2 inches)).
C31	SPM:P.E-Bs	Insert	Stereo	Powered monitors characterized by a bright tone.
C32	SPM:P.Mack	Insert	Stereo	Powered monitors characterized by an extended low-frequency response.
C33	SPM:SmalCube	Insert	Stereo	Small full-range speakers widely used in recording studios.
C34	SPM:WhiteCon	Insert	Stereo	Sealed enclosure two-way speakers known for their white woofers and widely used in recording studios.
C35	SPM:W.C+tiss	Insert	Stereo	A more mild sound, with tissue paper affixed over the tweeters of the above "White Cone" speakers.
C36	SPM:S.Radio	Insert	Stereo	Small pocket-type radio.
C37	SPM:SmallTV	Insert	Stereo	Speakers built into a 14 inch size television.
C38	SPM:BoomBox	Insert	Stereo	Radio cassette recorder.
C39	SPM:BB.LowBs	Insert	Stereo	Radio cassette recorder with the Low Boost switched on.

Algorithm List

This section describes the effects associated with the respective algorithms and internal terminations. Read this section when you need to check the algorithms in the built-in library (pre-set library) or before creating a new library.

☐	Effect block
⌐ ‾ ‾ ‾ ‾ ¬	Parameters within the same effect (left/right channels linked)
───▶	Audio signal
───▷	Control signal

Reverb

This feature adds reverberation to the sound to simulate the size of space such as a hall and a room.
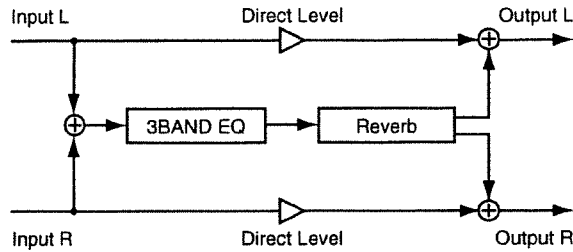
Sound types

Sounds around us can be analyzed and categorized into three types: direct sounds, early reflections and reverberation. A direct sound is the sound that reaches the listener directly from the source. An early reflection is the sound that has rebounded from the wall once, twice or several times. A reverberation is the sound we hear after sound reflections are repeated many times.
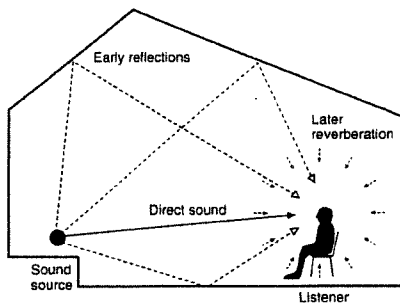
Relationship between sound and time

Reflected sound reach the listener in the following sequence. The pre-delay is the time from when the direct sound is heard until the reverb is heard. The reverb time is the time over which the reverb decays to silence.
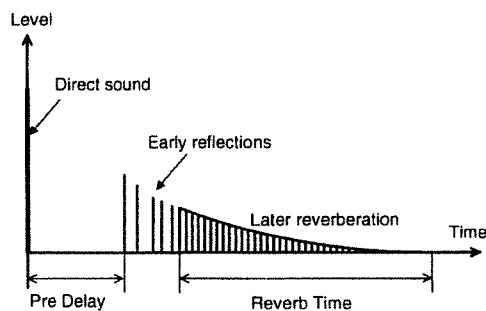
Reverb sound quality

The sound quality of a reverb is affected by materials of the walls and other members from which the sound is rebounded. This is because the degree of attenuation in the high and low frequency bands varies. HF-Damp Gain and LF-Damp Gain are provided so that you can adjust such attenuation degrees. The smaller the value becomes, the steeper the degree of attenuation of the reverberation becomes severer in the high and low frequency bands. In addition, in order to obtain softer reverberation, make the frequency lower by using HF-Damp Frequency (HiFreq-Damp Freq). In order to obtain harder reverberation, make the frequency higher by using LF-Damp Frequency (LoFreq-Damp Freq).

Parameter (full name)	Setting	Function

EQ (Equalizer)

Parameter (full name)	Setting	Function
EQ (Switch)	On, Off	Turns the equalizer on or off.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
Low.G (Low Gain)	-12– +12 dB	Sets the boost/cut amount in the low frequency band.
Low.F (Low Frequency)	20 - 2000 Hz	Sets the center frequency in the low frequency band.
Low.Q (Low Q)	0.3–10.0	Sets the width of the area around the low frequency that will be affected by the gain settings.1 *1
Mid.G (Middle Gain)	-12– +12 dB	Sets the boost/cut amount in the middle frequency band.
Mid.F (Middle Frequency)	200–8000 Hz	Sets the center frequency in the middle frequency band.
Mid.Q (Middle Q)	0.3–10.0	Sets the width of the area around the middle frequency that will be affected by the gain settings.
Hi Type (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving type or peaking type).
Hi.G (High Gain)	-12– +12 dB	Sets the boost/cut amount in the high frequency band.
Hi.F (High Frequency)	1.4–20.0 kHz	Sets the center frequency in the high frequency band.
Hi.Q (High Q)	0.3–10.0	Sets the width of the area around the high frequency that will be affected by the gain settings.1 *1
Out Level (Output Level)	0–100	Sets the volume after passing through the equalizer.

Reverb: Adds reverberation.

Parameter (full name)	Setting	Function
RoomSize (Room Size)	5–40 m	Sets the size of the room.
Time (Reverb Time)	0.1–32.0 sec.	Sets the time length of the reverb sound.
EFLevel (Effect Level)	-100–100	Sets the volume of the reverb sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.
PreDLY (Pre-Delay)	0–200 ms	Sets the time until the reverb sound appears.
Diffusio (Diffusion)	0–100	Sets the extent of diffusion of the early reflection sound.
Density (Density)	0–100	Sets the density of the reverb sound.
ER Level (Early Reflection Level)	0 to100	Sets the volume of the early reflection.
LD.G (LF-Damp Gain)	-36–0 dB	Sets the degree of attenuation of the reverb in the low frequency band.
LD.F (LF-Damp Frequency)	50–4000 Hz	Sets the frequency on which the reverb starts attenuating in the low frequency band.
HD.G (HF-Damp Gain)	-36–0 dB	Sets the degree of attenuation of the reverb in the high frequency band.
HD.F (HF-Damp Frequency)	1.0–20.0 kHz	Sets the frequency on which the reverb starts attenuating in the high frequency band.
HiCF (High Cut Frequency)	0.2–20.0 kHz	Sets the frequency for which the high frequency band elements of the reverb are cut.

*1: If Low Type (Lo Type) or High Type (Hi Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

Delay

Delay is a feature to add a delayed sound to the direct sound in order to add thickness to the sound or to yield a special effect.
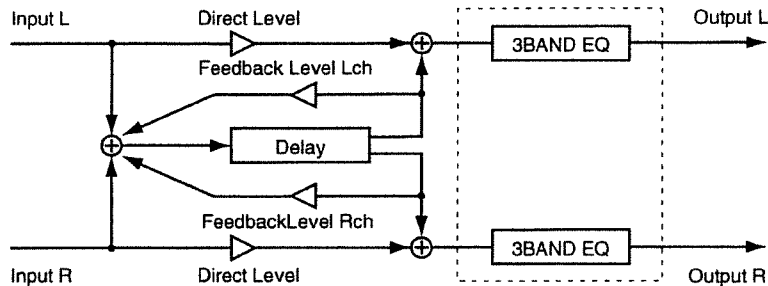
Delay sounds and the spread of sound

As a delay is output in the stereo mode, it sounds from the right and the left sides. These delay sounds can be adjusted by setting Delay Shift (Shift). Set it to the value on the L side to cause the left-side delay sound lag behind and to the value on the R side to cause the right-side delay sound lag behind. Set Shift to "0" to make the delay sounds on the both sides simultaneously. Setting the right and left delay times to different values yields more spreading effect.

* The sum of the Delay Time value and the Delay Shift value should not exceed the setting range of Delay Time. For example, if the setting range of Delay Time is 0 to 1200 ms and Delay Time is set to 1000 ms, the setting range of Delay Shift should be L200 to R200 ms.

Delay repetition

Delay feedback means to return the delay sound to the Delay input. The amount of feedback is set with FBLevel (Feedback Level). The greater this value becomes, the more times the delay sound is repeated. Setting this level to a negative value inverts the phase. Excessively large values may cause oscillation.

Parameter (full name)	Setting	Function

DLY(Delay):Adds a delayed sound to the direct sound, adding depth to the sound or creating special effects.

Parameter (full name)	Setting	Function
Delay (Switch)	On, Off	Turns the delay on or off.
Time (Delay Time)	0–1200 ms	Sets the time from direct sound until when the delay sound is heard. *1
Shft (Delay Shift)	L1200–0–R1200 ms	Sets the delay time difference between the right and left delay sounds.
L-FBLvl (Lch Feedback Level)	-100–100	Sets the amount of the left-side delay should be returned to the delay input.
R-FBLvl (Rch Feedback Level)	-100–100	Sets the amount of the right-side delay should be returned to the delay input.
L-Level (Lch Effect Level)	-100–100	Sets the volume for the left-side delay sound.
R-Level (Rch Effect Level)	-100–100	Sets the volume for the right-side delay sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.
LD.G (LF-Damp Gain)	-36–0 dB	Sets the degree of attenuation in the low frequency band for the delay sound fed back.
LD.F (LF-Damp Frequency)	50–4000 Hz	Sets the frequency at which attenuation in the low frequency band starts to the delay sound fed back.
HD.G (HF-Damp Gain)	-36–0 dB	Sets the degree of attenuation in the high frequency band for the delay sound fed back.
HD.F (HF-Damp Frequency)	1.0–20.0 kHz	Sets the frequency at which attenuation in the high frequency band starts to the delay sound fed back.

EQ (Equalizer)

EQ (Switch)	On, Off	Turns the equalizer on or off.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
Low.G (Low Gain)	-12– +12 dB	Sets the boost/cut amount in the low frequency band.
Low.F (Low Frequency)	20 - 2000 Hz	Sets the center frequency in the low frequency band.
Low.Q (Low Q)	0.3–10.0	Sets the width of the area around the low frequency that will be affected by the gain settings.1 *2
Mid.G (Middle Gain)	-12– +12 dB	Sets the boost/cut amount in the middle frequency band.
Mid.F (Middle Frequency)	200–8000 Hz	Sets the center frequency in the middle frequency band.
Mid.Q (Middle Q)	0.3–10.0	Sets the width of the area around the middle frequency that will be affected by the gain settings.
Hi Type (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving type or peaking type).
Hi.G (High Gain)	-12– +12 dB	Sets the boost/cut amount in the high frequency band.
Hi.F (High Frequency)	1.4–20.0 kHz	Sets the center frequency in the high frequency band.
Hi.Q (High Q)	0.3–10.0	Sets the width of the area around the high frequency that will be affected by the gain settings.1 *2
Out Level (Output Level)	0–100	Sets the volume after passing through the equalizer.

NOTE

*1: The sum of the Delay Time (Time) value and the Delay Shift (Shift) value should not exceed the setting range of Delay Time. For example, if Delay Time is set to 1000 ms, the setting range of Delay Shift is L200 to R200 ms.

*2: If Low Type (Lo Type) or Hi Type (High Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

StDly-Chorus (Stereo Delay Chorus)

Delay and Chorus can be combined to create spaciousness.
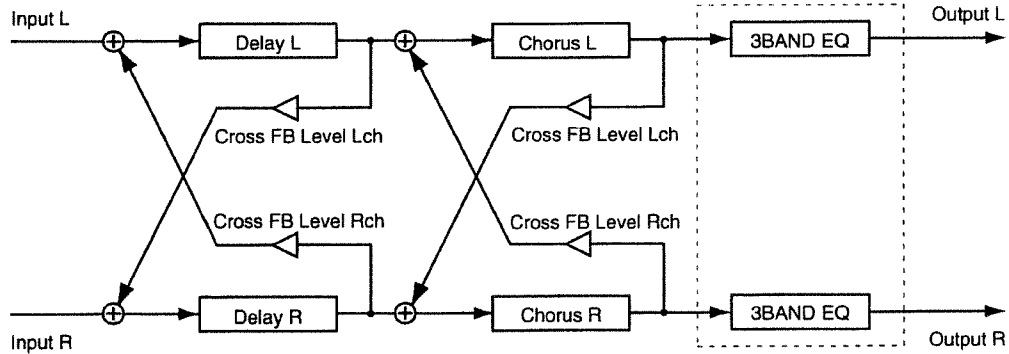
How feedback works for Delay and Chorus

Feedback is the feature to return the effect sound to its input. The amount of feedback is set with FBLevel (Feedback Level). Cross-Feedback is the feature to return the effect sound from the right input to the left input and the effect send from the left input to the right. The amount of cross-feedback is set with Cross-Feedback Level (CrossFB Level).

The greater this value becomes, the more times the delay sound is repeated. Setting this level to a negative value inverts the phase.

For feedback of chorus, the greater the value becomes, the more spaciousness and thickness is added to the sound. Setting this level to a negative value inverts the phase.

* *Excessively great values may cause oscillation, leading to abnormal noise.*

Parameter (full name)	Setting	Function

DLY(Delay):Adds a delayed sound to the direct sound, adding depth to the sound or creating special effects.

Parameter (full name)	Setting	Function
Delay (Switch)	On, Off	Turns the delay on or off.
Time (Delay Time)	0–500 ms	Sets the time from direct sound until when the delay sound is heard. *1
Shift (Delay Shift)	L500–0–R500 ms	Sets the delay time difference between the right and left delay sounds.
L-FBLvl (Lch Feedback Level)	-100–100	Sets the amount of the left-side delay should be returned to the left delay input.
R-FBLvl (Rch Feedback Level)	-100–100	Sets the amount of the right-side delay should be returned to the right delay input.
L-CFBLv (Lch Cross-Feedback Level)	-100–100	Sets the amount of the left-side delay should be returned to the right delay input.
R-CFBLv(Rch Cross-Feedback Level)	-100–100	Sets the amount of the right-side delay should be returned to the left delay input.
EFLevel (Effect Level)	-100–100	Sets the volume of the delay sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.

CHO (Chorus):   **Adds spaciousness and depth to the sound.**

Chorus (Switch)	On, Off	Turns the chorus on or off.
Rate (Rate)	0.1–10.0 kHz	Sets the rate of modulation.
Depth (Depth)	0–100	Sets the depth of modulation.
EFLevel (Effect Level)	-100–100	Sets the volume of the chorus sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.
PreDLY (Pre-Delay)	0–50 ms	Sets the time delay from when the direct sound begins until the processed sound is heard.
L-FBLvl (Lch Feedback Level)	-100–100	Sets the amount of the left-side chorus sound should be returned to the left chorus input.
R-FBLvl (Rch Feedback Level)	-100–100	Sets the amount of the right-side chorus sound should be returned to the right chorus input.
L-CFBLv (Lch Cross-Feedback Level)	-100–100	Sets the amount of the left-side chorus sound should be returned to the right chorus input.
R-CFBLv(Rch Cross-Feedback Level)	-100–100	Sets the amount of the right-side chorus sound should be returned to the left chorus input.

EQ (Equalizer)

EQ (Switch)	On, Off	Turns the equalizer on or off.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
Low.G (Low Gain)	-12–+12 dB	Sets the boost/cut amount in the low frequency band.
Low.F (Low Frequency)	20 - 2000 Hz	Sets the center frequency in the low frequency band.
Low.Q (Low Q)	0.3–10.0	Sets the width of the area around the low frequency that will be affected by the gain settings.1 *2
Mid.G (Middle Gain)	-12–+12 dB	Sets the boost/cut amount in the middle frequency band.
Mid.F (Middle Frequency)	200–8000 Hz	Sets the center frequency in the middle frequency band.
Mid.Q (Middle Q)	0.3–10.0	Sets the width of the area around the middle frequency that will be affected by the gain settings.
Hi Type (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving type or peaking type).
Hi.G (High Gain)	-12–+12 dB	Sets the boost/cut amount in the high frequency band.
Hi.F (High Frequency)	1.4–20.0 kHz	Sets the center frequency in the high frequency band.
Hi.Q (High Q)	0.3–10.0	Sets the width of the area around the high frequency that will be affected by the gain settings.1 *2
Out Level (Output Level)	0–100	Sets the volume after passing through the equalizer.

NOTE

*1: The sum of the Delay Time (Time) value and the Delay Shift (Shift) value should not exceed the setting range of Delay Time. For example, if the delay time is set to 300 ms, the setting range of Delay Shift is L200 to R200 ms.

*2: If Lo Type (Low Type) or Hi Type (High Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

StPS-Delay (Stereo Pitch Shifter Delay)

Changes the pitch of the direct sound. Corrects vocals out of tune or adds thickness to the sound by mixing the direct sound and a sound at a shifted pitch.
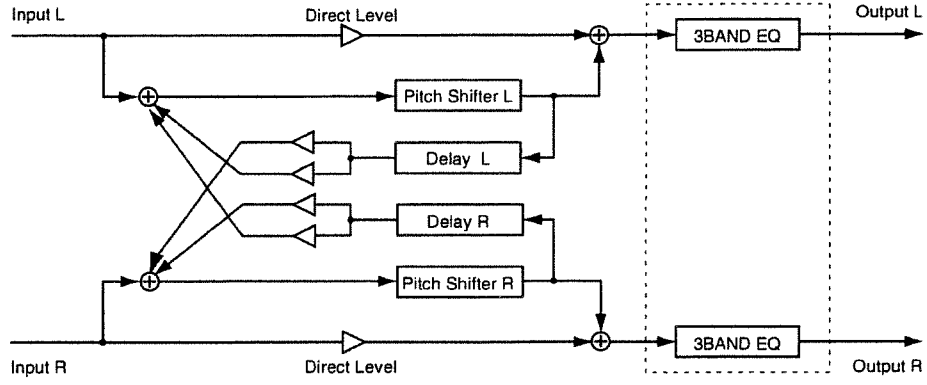
Setting up pitch

Chromatic Pitch (Cromatic) is used for major pitch variation while Fine Pitch (Fine) is used for fine adjustment. Setting up slightly different pitches for the right and left gives thickness to the sound.

Parameter (full name)	Setting	Function
Pitch Shifter Delay : **Shifts the pitch.**		
PS-Delay (Switch)	On, Off	Turns the pitch shifter on or off.
L-CP (Lch Chromatic Pitch)	-12–12	Sets the left-side pitch variation (by semitone).
R-CP (Rch Chromatic Pitch)	-12–12	Sets the right-side pitch variation (by semitone).
L-F.P (Lch Fine Pitch)	-100–100	Sets the left-side pitch variation (by cent).
R-F.P (Rch Fine Pitch)	-100–100	Sets the right-side pitch variation (by cent).
L-PDLY (Lch Pre-Delay)	0–50 ms	Sets the time from when the direct sound is output until when the left-side sound at a shifted pitch is output.
R-PDLY (Rch Pre-Delay)	0–50 ms	Sets the time from when the direct sound is output until when the right-side sound at a shifted pitch is output.
L-FBD (Lch Feedback Delay Time)	0–500 ms	Sets the feedback repetition cycle for the left-side delay sound.
R-FBD (Rch Feedback Delay Time)	0–500 ms	Sets the feedback repetition cycle for the right-side delay sound.
L-FBLvl (Lch Feedback Level)	-100–100	Sets the amount of the left-side sound at a shifted pitch should be returned to the left pitch shifter input.
R-FBLvl (Rch Feedback Level)	-100–100	Sets the amount of the right-side sound at a shifted pitch should be returned to the right-side pitch shifter input.
L-CFBLv (Lch Cross-Feedback Level)	-100–100	Sets the amount of the left-side sound at a shifter pitch should be returned to the right-side pitch shifter input.
R-CFBLv (Rch Cross-Feedback Level)	-100–100	Sets the amount of the right-side sound at a shifted pith should be returned to the left-side pitch shifter input.
EFLevel (Effect Level)	-100–100	Sets the volume of the sound at a shifter pitch.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.

EQ (Equalizer)

EQ (Switch)	On, Off	Turns the equalizer on or off.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
Low.G (Low Gain)	-12- +12 dB	Sets the boost/cut amount in the low frequency band.
Low.F (Low Frequency)	20 - 2000 Hz	Sets the center frequency in the low frequency band.
Low.Q (Low Q)	0.3–10.0	Sets the width of the area around the low frequency that will be affected by the gain settings.1 *1
Mid.G (Middle Gain)	-12- +12 dB	Sets the boost/cut amount in the middle frequency band.
Mid.F (Middle Frequency)	200–8000 Hz	Sets the center frequency in the middle frequency band.
Mid.Q (Middle Q)	0.3–10.0	Sets the width of the area around the middle frequency that will be affected by the gain settings.
Hi Type (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving type or peaking type).
Hi.G (High Gain)	-12- +12 dB	Sets the boost/cut amount in the high frequency band.
Hi.F (High Frequency)	1.4–20.0 kHz	Sets the center frequency in the high frequency band.
Hi.Q (High Q)	0.3–10.0	Sets the width of the area around the high frequency that will be affected by the gain settings.1 *1
Out Level (Output Level)	0–100	Sets the volume after passing through the equalizer.

NOTE

*1: If Low Type (Lo Type) or High Type (Hi Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

Vocoder

The vocoder creates "talking instrument" effects. To use Vocoder, input an instrumental sound into the left channel and a vocal sound into the right channel. The instrumental sound is split into ten frequency bands to be processed according to its frequency components.
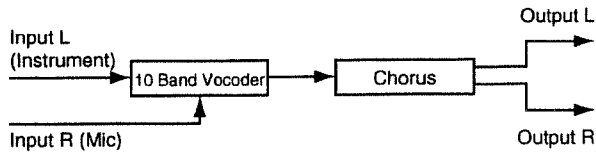
NOTE

Instrumental sounds are input into the L-channel side of the effect. Therefore, it is required to insert and connect "Lch" of the effect to the channel handling instrumental sounds. Similarly, vocal sounds are input into the R-channel side of the effect. Insert and connect "Rch" of the effect to the channel handling vocal sounds.

Tips for using Vocoder

It is a good idea to choose instrumental sounds containing a lot of overtones. Recommended sounds include those with saw-tooth waveforms such as strings and distorted guitar sounds.

Parameter (full name)	Setting	Function

VOC (Vocoder): The pitch is specified with the instrumental sound while the tone is output in vocals.

V.Char 1–10 (Voice Characters)	0–100	Sets the volume by frequency band. These are used to change the vocoder tone.

CHO (Chorus):   **Adds spaciousness and depth to the sound.**

Chorus (Switch)	On, Off	Turns the chorus on or off.
Rate (Rate)	0.1–10.0 Hz	Sets the rate of modulation.
Depth (Depth)	0–100	Sets the depth of modulation.
EFLevel (Effect Level)	-100–100	Sets the volume of the chorus sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.
PreDLY (Pre-Delay)	0–50 ms	Sets the time delay from when the direct sound begins until the processed sound is heard.
FBLevel (Feedback Level)	-100–100	Sets the amount of the chorus sound should be returned to the chorus input.

2ch RSS

Gives each of the sounds input into the respective channels three-dimensional locations.
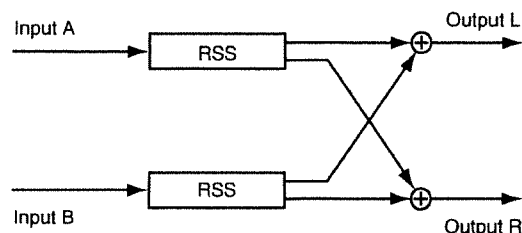
NOTE

- Input A is input into the L-channel side of the effect. Therefore, it is required to insert and connect "Lch" of the effect to the channel handling Input A. Similarly, Input B is input into the R-channel side of the effect. Insert and connect "Rch" of the effect to the channel handling Input B.

- Do not output the direct sound.

What is RSS?

It stands for Roland Sound Space. This is one of the Roland's proprietary effect technologies that enables three-dimensional location of the sound source on the ordinary stereo system. Not only control on effect for the front and the sides of the audience, this technology provides controls on directions (azimuth) such as up, down and rear as well as control on distance to localize the sound source.
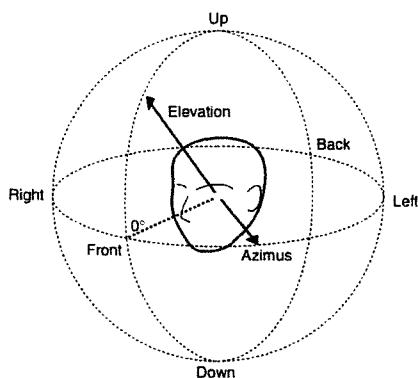
Parameter (full name)	Setting	Function
RSS:	**Gives sounds three-dimensional locations.**	
A-Azim (Ach Azimuth)	-180–180°	Sets output directions, front, back, right and left, for the Input A channel.
A-Elev (Ach Elevation)	-90–90°	Sets output directions, up and down, for the Input A channel.
B-Azim (Bch Azimuth)	-180–180°	Sets output directions, front, back, right and left, for the Input B channel.
B-Elev (Bch Elevation)	-90–90°	Sets output directions, up and down, for the Input B channel.

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Precautions for using RSS

In order to obtain the maximum effect from the RSS, observe the following points.

- Acoustically "dead" rooms are most suitable.
- A single-way speaker is suited. However, a multi-way type will do if it incorporates the coaxial or virtual coaxial system.
- Place the speakers as far as possible from the walls on the sides.
- Do not separate the right and left speakers too much.
- Recommended sweet spots for listening are as follows:
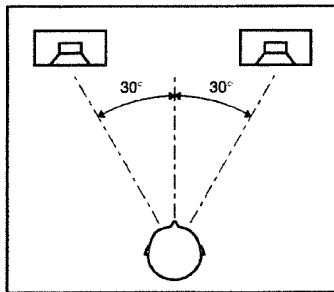
Labeling on RSS product package

In order to allow RSS to demonstrate its maximum performance, it is important to specify listening environment. For sale, we recommend that you should attach the following labeling on the packages of your products produced by using RSS patches.

 For Stereo Speakers

This sound is made to be played specifically through speakers.
The proper effect cannot be obtained if listened to through headphones.

Less reflections from the wall
or floor are better.

If a hard wall is close to it,
draw a curtain.

Speaker should be placed
as far away as possible from
the wall or floor.

24 to 30 deg.
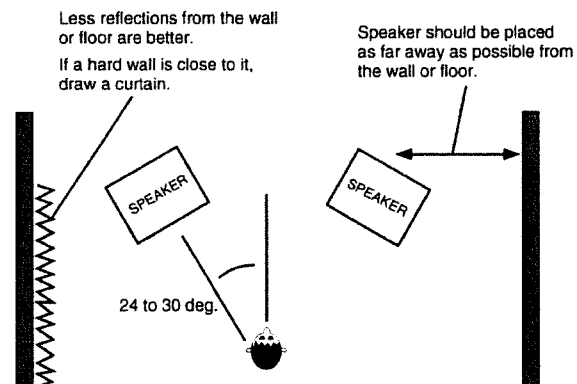
Delay RSS

The right-side, left-side and center Delay sounds can be set separately. As RSS is connected to both the right and left outputs, the sound image of the sound from the left-side channel is localized at 90° to the left and that of the sound from the right-side channel at 90° to the right. The center Delay output can receive the Feedback effect.

NOTE
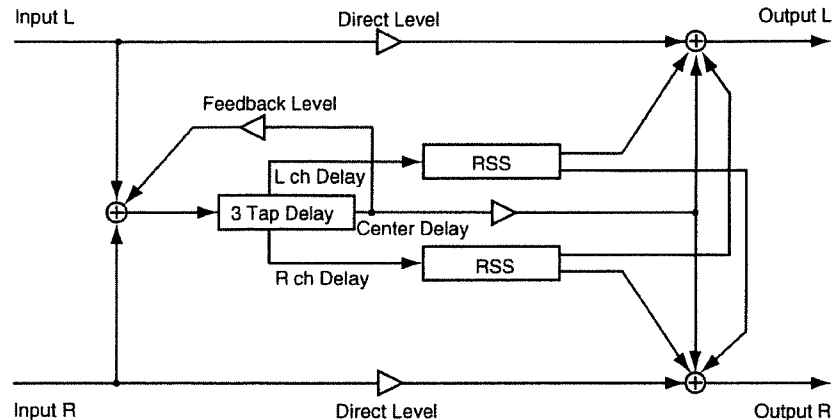
The location is fixed; no azimuth or elevation can be specified.

Parameter (full name)	Setting	Function
DRS (Delay RSS):	**Gives three-dimensional location to Delay sounds.**	
Time (Delay Time)	0–1200 ms	Sets the time from direct sound until when the left and right delay sound is heard.
Shft (Delay Shift)	L1200–0–R1200 ms	Sets the balance of the right and left delay times.
C-Tim (Center Delay Time)	0–1200 ms	Sets the time from direct sound until when the center delay sound is heard.
RSS Lvl (RSS Level)	0–100	Sets the volume of the RSS sound.
C-Lvl (Center Level)	0–100	Sets the volume for the center delay sound.
FBLevel (Feedback Level)	-100–100	Sets the amount of the center delay sound should be returned to the delay input.
EFLevel (Effect Level)	-100–100	Sets the volume of the delay RSS sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.
LD.G (LF-Damp Gain)	-36–0 dB	Sets the degree of attenuation in the low frequency band for the center delay sound returned to the input.
LD.F (LF-Damp Frequency)	50–4000 Hz	Sets the frequency at which attenuation in the low frequency band starts for the center delay sound returned to the input.
HD.G (HF-Damp Gain)	-36–0 dB	Sets the degree of attenuation in the high frequency band for the center delay sound returned to the input.
HD.F (HF-Damp Frequency)	1.0–20.0 kHz	Sets the frequency at which attenuation in the high frequency band starts for the center delay sound returned to the input.

Chorus RSS

RSS is connected to the Chorus output. The sound image is defined with the sound from the left-side channel located at left 90° and the sound from the right-side channel at right 90°.

```
Input L          Direct Level                              Output L
─────────┬──────────▷────────────────────────┐⊕─────────▶
         │                                    ▲ ▲
         │              ┌──────────┐          │ │
         │         ┌───▶│   RSS    │──────────┘ │
       ⊕─┼────▶│ Chorus │          │            │
         │         └───▶│   RSS    │──┐         │
         │              └──────────┘  │  ▼ ▼
─────────┴──────────▷────────────────▶⊕─────────▶
Input R          Direct Level                              Output R
```
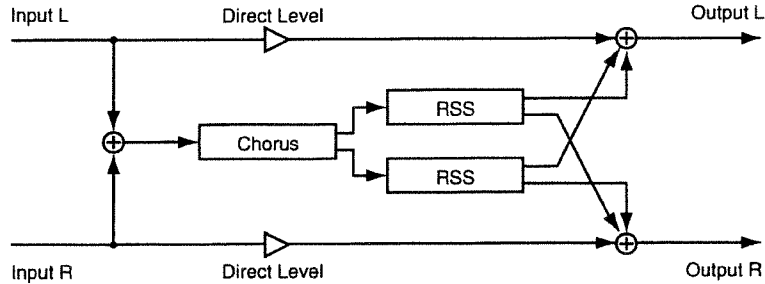
NOTE

Location is fixed; no azimuth or elevation can be specified.

Parameter (full name)	Setting	Function
CRS (Chorus RSS)	**: Locates chorus sounds three-dimensionally.**	
Rate (Chorus Rate)	0.1–10.0 Hz	Sets the rate of modulation.
Depth (Chorus Depth)	0–100	Sets the depth of modulation.
EFLevel (Effect Level)	-100–100	Sets the volume of the chorus RSS sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.

GuitarMulti 1-3

These provide multi-effects for guitar sounds suited for rock. Guitar Multi 1 through 3 differ in the degree of sound distortion. Guitar Multi 1 provides the highest degree of distortion and Guitar-Multi 3 the lowest.

Input L

Compressor → Heavy Metal → Noise Suppressor → Auto Wah → GAmp Sim → Flanger → Delay → Output L / Output R

Input R

Input L

Compressor → Distortion → Noise Suppressor → Auto Wah → GAmp Sim → Flanger → Delay → Output L / Output R

Input R

Input L

Compressor → OverDrive → Noise Suppressor → Auto Wah → GAmp Sim → Flanger → Delay → Output L / Output R

Input R
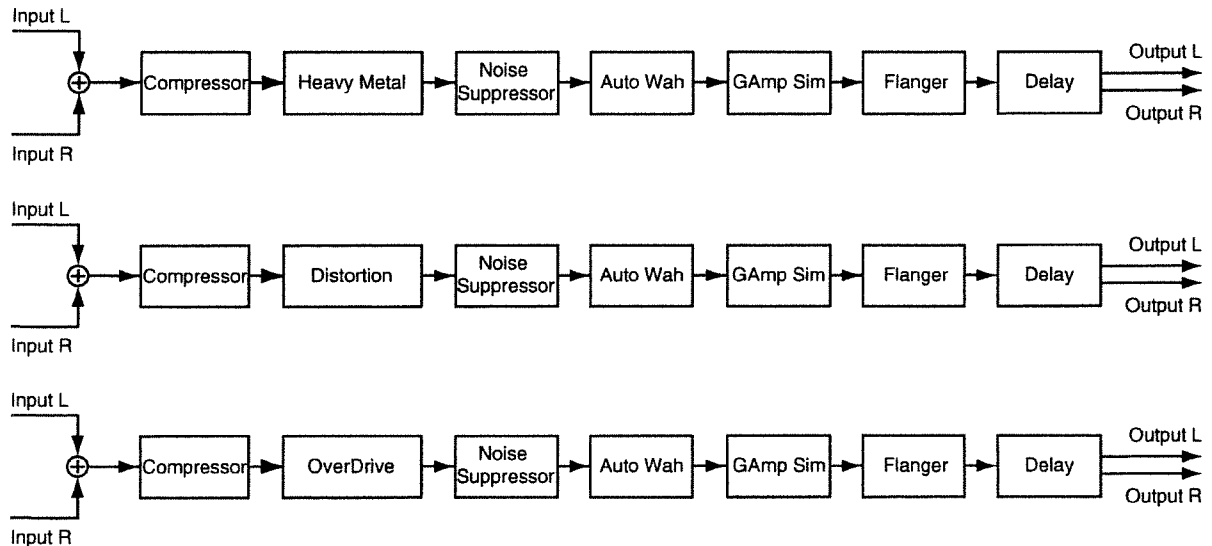
Usage of Guitar Multi 1 through 3

The basic configuration is almost identical for all of Guitar-Multi 1 through 3. The only difference is the type of the second effect (heavy metal, distortion, and overdrive). Select Guitar Multi 1 to add severe distortion to the sound, and select Guitar Multi 3 for soft distortion as that achieved with the vacuum tube amplifier.

Adding Wah effect by changing input volume

Typically, Auto-Wah provides an automatic wah effect at the cycle set with Rate (Rate).
Alternatively, you can give wah effect according to changes of input volume. For example, you can apply the wah effect so that it reflects changes in picking on the guitar. First, adjust sensitivity for changes in input volume by using Sense (Sens). Set it to a larger value for finer subtlety. After that, you simply decide the direction into which the filter should be moved by entering a setting for Polarity (Pol).

Selecting Guitar Amplifier

You can select which type of Guitar Amplifier to use with Mode (Mode) under Guitar Amplifier Simulator.

Small:	Small-sized amplifier
Built In:	Built-in type amplifier
2 Stack:	Large-sized two-deck stacked amplifiers
3 Stack:	Large-sized three-deck stacked amplifiers

Compressors used in Guitar Multi 1 through 3

Compressors used in Guitar Multi 1 through 3 are designed to accommodate playing of the guitar, providing a slightly different effect from ordinary compressors. Compressors for the guitar unifies volumes by suppressing signals at high levels and enhancing signals at low levels.
Unlike these, ordinary compressors simply suppress signals at high levels.

Parameter (full name)	Setting	Function

CMP (Compressor):Compresses the entire output signals when the input volume exceeds a specified value.

Comp (Switch)	On, Off	Turns the compressor on or off.
Attack (Attack)	0–100	Sets the strength of attack when a sound is input.
Level (Level)	0–100	Sets the volume of the compressor sound.
Sustain (Sustain)	0–100	Sets the time over which low level signals are boosted to a constant volume.
Tone (Tone)	-50–50	Sets the tone color.

MTL (Heavy Metal) / DST (Distortion) / ODV (Overdrive): Gives distortion to the sound.

(Switch)	On, Off	Turns the metal, distortion or overdrive on or off.
Gain (Gain)	0–100	Sets the degree of the distortion.
Level (Level)	0–100	Sets the volume of the metal, distortion or overdrive sound.
HiGain (High Gain)	-100–100	Sets the boost/cut amount in the high frequency band. (only for Metal)
MidGain (Middle Gain)	-100–100	Sets the boost/cut amount in the middle frequency band. (only for Metal)
LowGain (Low Gain)	-100–100	Sets the boost/cut amount in the low frequency band. (only for Metal)
Tone (Tone)	0–100	Sets the tone color. (for Distortion/Overdrive only)

NS (Noise Suppressor):   Mutes noise in the silent mode.

NoiseSup (Switch)	On, Off	Turns the noise suppressor on or off.
Thresh (Threshold)	0–100	Sets the level to start muting noise.
Release (Release)	0–100	Sets the time over which the volume will drop to 0 after the noise starts being muted.

WAH (Auto Wah):   Adds the wah effect.

Wah (Switch)	On, Off	Turns the auto wah on or off.
Mode (Mode)	LPF, BPF	Set to "BPF" for the wah effect in a narrow range of frequencies and to "LPF" for wah effect in a broad range of frequencies.
Pol (Polarity)	Up, Down	Activated only for adding the wah effect according to input volume changes. Set to "Up" for moving the filter to a higher frequency and "Down" for moving it to a lower frequency.
Freq (Frequency)	0–100	Sets the frequency at which the wah effect starts working.
Level (Level)	0–100	Sets the volume of the wah sound.
Peak (Peak)	0–100	Sets the degree of the wah effect applied at around the frequency.
Sens (Sense)	0–100	Normally "0." Sets sensitivity for input volume changes for adding the wah effect according to input volume changes.
Rate (Rate)	0.1–10.0 Hz	Sets the rate at which the wah effect will be cyclically modulated.
Depth (Depth)	0–100	Sets the depth at which the wah effect will be cyclically modulated.

AMP (Guitar Amplifier Simulator): Simulates Guitar Amplifier.

G.AmpSim (Switch)	On, Off	Turns the guitar amplifier simulator on or off.
Mode (Mode)	See the column on the previous page.	Type of the guitar amplifier.

FLG (Flanger):   Adds effects similar to ascending/descending sound of a jet.

Flanger (Switch)	On, Off	Turns the flanger on or off.
Rate (Rate)	0.1–10.0 Hz	Sets the rate of modulation for the flanger.
Depth (Depth)	0–100	Sets the depth of modulation for the flanger.
Manual (Manual)	0–100	Sets the center frequency subject to application of the flanger effect.
Reso (Resonance)	0–100	Enhances frequency components at around the center frequency set with Manual.

DLY(Delay):Adds a delayed sound to the direct sound, adding depth to the sound or creating special effects.

Delay (Switch)	On, Off	Turns the delay on or off.
Time (Delay Time)	0–1000 ms	Sets the time from direct sound until when the delay sound is heard.* *1
Shft (Shift)	L1000–0–R1000 ms	Sets the delay time difference between the right and left delay sounds.
FBTim (Feedback Delay Time)	0–1000 ms	Sets the feedback repetition cycle.
FBLevel (Feedback Level)	-100–100	Sets the amount of the delay sound should be returned to the delay input.
EFLevel (Effect Level)	-100–100	Sets the volume of the delay sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.

NOTE

*1: The sum of the Delay Time value and the Delay Shift value should not exceed the setting range of Delay Time. For example, if Delay Time is set to 800 ms, the setting range of Delay Shift is L200 to R200 ms.

Vocal Multi

This feature provides a multi-effect suited for vocals.

Input L

Input R

Noise Suppressor → Limiter/ De-esser → Enhancer → 3BAND EQ → Pitch Shifter → Delay → Chorus

Output L

Output R
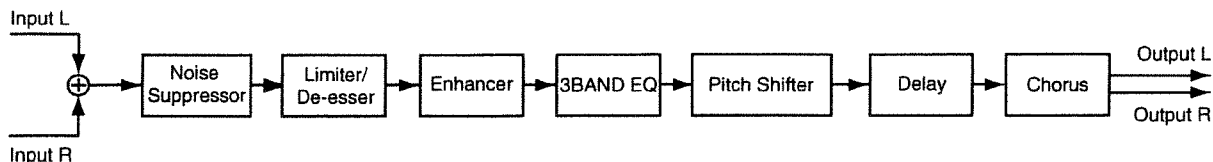
Cutting distortion in vocals

Limiter can be used to suppress signals at a high level to prevent sound distortion. To do this, follow the steps below:

Mode (Mode):	Limiter
Limiter Threshold (Thresh):	Sets the volume at which sound distortion starts being suppressed.
Limiter Release (Release):	Determines the time that elapses before the input level becomes off after it drops below the Limiter Threshold.
Limiter Level (Level):	Decides the volume after passing through Limiter.

Cutting the sibilant sounds of a voice.

De-esser can be used to cut off sibilant sounds contained in vocal sounds to achieve softer sound quality. To do this, follow the steps below:

Mode (Mode):	De-esser
De-esser Sense (Sens):	Sets the degree of the De-esser effect.
De-esser Frequency (Freq):	Sets the frequency at which De-esser effect starts working.

Parameter (full name)	Setting	Function
NS (Noise Suppressor):	**Mutes noise in the silent mode.**	
NoiseSup (Switch)	On, Off	Turns the noise suppressor on or off.
Thresh (Threshold)	0–100	Sets the level to start muting noise.
Release (Release)	0–100	Sets the time over which the volume will drop to 0 after the noise starts being muted.
LD (Limiter / De-esser):	**Suppresses signals at high levels to control distortion / Suppresses the annoying s-consonant.**	
LMT/DES (Switch)	On, Off	Turns the limiter/de-esser on or off.
Mode (Mode)	Limiter, De-esser	Selects limiter or de-esser.
Thresh (Limiter Threshold)	0–100	Sets the volume at which sound distortion starts being suppressed.
Release (Limiter Release)	0–100	Sets the time until when the limiter will turn off after the input level falls the limiter Threshold (Thresh).
Level (Limiter Level)	0–100	Sets the volume of the limiter sound.
ENH (Enhancer):	**Accentuates the sound and push the sound forward.**	
Enhancer (Switch)	On, Off	Turns the enhancer on or off.
Sens (Sense)	0–100	Sets the degree of the enhancer effect desired.
Freq (Frequency)	1.0–10.0 kHz	Sets the frequency at which the enhancer effect starts working.
Mix Lev (Mix Level)	0–100	Sets the amount of the enhancer sound should be mixed into the direct sound.
Level (Level)	0–100	Sets the volume of the enhancer sound.

EQ (Equalizer)

EQ (Switch)	On, Off	Turns the equalizer on or off.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
Low.G (Low Gain)	-12- +12 dB	Sets the boost/cut amount in the low frequency band.
Low.F (Low Frequency)	20 - 2000 Hz	Sets the center frequency in the low frequency band.
Low.Q (Low Q)	0.3–10.0	Sets the width of the area around the low frequency that will be affected by the gain settings.1 *1
Mid.G (Middle Gain)	-12- +12 dB	Sets the boost/cut amount in the middle frequency band.
Mid.F (Middle Frequency)	200–8000 Hz	Sets the center frequency in the middle frequency band.
Mid.Q (Middle Q)	0.3–10.0	Sets the width of the area around the middle frequency that will be affected by the gain settings.
Hi Type (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving type or peaking type).
Hi.G (High Gain)	-12- +12 dB	Sets the boost/cut amount in the high frequency band.
Hi.F (High Frequency)	1.4–20.0 kHz	Sets the center frequency in the high frequency band.
Hi.Q (High Q)	0.3–10.0	Sets the width of the area around the high frequency that will be affected by the gain settings.1 *1
Out Level (Output Level)	0–100	Sets the volume after passing through the equalizer.

PS (Pitch Shifter):   Shifts the pitch.

P.Shifter (Switch)	On, Off	Turns the pitch shifter on or off.
C.Pitch (Chromatic Pitch)	-12–12	Pitch variation (by semitone)
F.Pitch (Fine Pitch)	-100–100	Pitch variation (by cent)
EFLevel (Effect Level)	-100–100	Sets the volume of the pitch shift sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.

DLY(Delay):Adds a delayed sound to the direct sound, adding depth to the sound or creating special effects.

Delay (Switch)	On, Off	Turns the delay on or off.
Time (Delay Time)	0–1000 ms	Sets the time from direct sound until when the delay sound is heard.
FBLevel (Feedback Level)	-100–100	Sets the amount of the delay sound should be returned to the delay input.
EFLevel (Effect Level)	-100–100	Sets the volume of the delay sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.

CHO (Chorus):   Adds spaciousness and thickness to the sound.

Chorus (Switch)	On, Off	Turns the chorus on or off.
Rate (Rate)	0.1–10.0 Hz	Sets the rate of modulation.
Depth (Depth)	0–100	Sets the depth of modulation.
EFLevel (Effect Level)	-100–100	Sets the volume of the chorus sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.
PreDLY (Pre-Delay)	0–50 ms	Sets the time delay from when the direct sound begins until the processed sound is heard.

NOTE

*1: If Low Type (Lo Type) or High Type (Hi Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

Rotary

Simulates a rotary speaker. Behaviors of high and low frequency band Roters can be set up separately, allowing realistic modeling of unique surging sensation. This effect is suited for organ sounds.

```
Input L
               ┌──────────────────┐      ┌────────────┐      ┌────────────────┐   Output L
     ─┐        │                  │      │            │      │                │ ──────────►
   ───┼─►⊕──►  │ Noise Suppressor ├──►   │ Over Drive ├──►   │ Rotary Speaker │
     ─┘        │                  │      │            │      │                │ ──────────►
               └──────────────────┘      └────────────┘      └────────────────┘   Output R
Input R
```

Parameter (full name)	Setting	Function
NS (Noise Suppressor):	**Mutes noise in the silent mode.**	
NoiseSup (Switch)	On, Off	Turns the noise suppressor on or off.
Thresh (Threshold)	0–100	Sets the level to start muting noise.
Release (Release)	0–100	Sets the time over which the volume will drop to 0 after the noise starts being muted.
ODV (Overdrive):	**Adds distortion to the sound.**	
OvDrive (Switch)	On, Off	Turns overdrive on or off.
Gain (Gain)	0–100	Sets the degree of sound distortion.
Level (Level)	0–100	Sets the volume of the overdrive sound.
ROT (Rotary Speaker):	**Simulates a rotary speaker.**	
LRate (Low Rate)	0.1–10.0 Hz	Sets the rotary frequency of the low frequency band roter.
HRate (High Rate)	0.1–10.0 Hz	Sets the rotary frequency of the high frequency band roter.

GuitarAmpSim (Guitar Amplifier Simulator)

Simulates a guitar amplifier.

```
Input L
               ┌──────────────────┐      ┌────────┐      ┌──────────────────┐   Output L
     ─┐        │                  │      │        │      │                  │ ──────────►
   ───┼─►⊕──►  │ Noise Suppressor ├──►   │ G-Amp  ├──►   │ Speaker Simulator │
     ─┘        │                  │      │        │      │                  │ ──────────►
               └──────────────────┘      └────────┘      └──────────────────┘   Output R
Input R
```
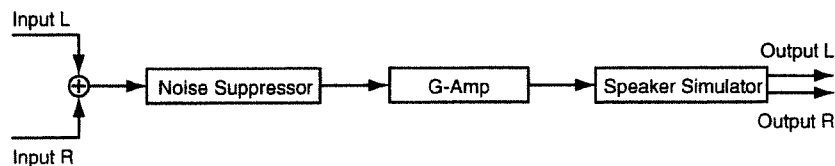
Pre-amplifier

Simulates the pre-amplifier section of a guitar amplifier. 14 types of pre-amplifiers that can be simulated are listed below: The type can be set with pre-amplifier Type.

JC-120:	The sound of a Roland.
Clean Twin:	The sound of standard built-in type vacuum tube amplifier.
Match Drive:	The sound of a recent vacuum tube amplifier widely used in blues, rock and fusion.
BG Lead:	The sound of a vacuum tube amplifier representative of the late 70's through 80's.
MS1959<I>:	The sound of the large vacuum tube amplifier stack that was indispensable to the British hard rock of the 70's, with input I connected.
MS1959<II>:	The same amplifier as MS1959 <I>, but with input II connected.
MS1959<I+II>:	The same amplifier as MS1959 <I>, but with input I and II connected in parallel.
SLDN Lead:	The sound of a vacuum tube amplifier usable in a wide variety of styles.
Metal 5150:	The sound of a large vacuum tube amplifier suitable for heavy metal.
Metal Lead:	A metal lead sound with a distinctive mid-range.
OD-1:	The sound of the BOSS OD-1 compact effector.
OD-2Turbo:	The sound of the BOSS OD-2 compact effector with the Turbo switch on.
Distortion:	Distortion sound
Fuzz:	Fuzz sound

* *With JC-120, Clean Twin or BG Lead is selected, turning Bright (Bright) on generates clear-cut bright sound.*

Speaker simulator

Simulates a speaker. The 12 types of speakers as listed below can be simulated: The type is set with Speaker Type. The type can be set with Speaker Type.

Type	Cabinet (size (in inch), number of units)	Speaker	Microphone
Small	Small open-back enclosure	10	Dynamic microphone
Middle	Open back enclosure	12 x 1	Dynamic microphone
JC-120	Open back enclosure	12 x 2	Dynamic microphone
Built In 1	Open back enclosure	12 x 2	Dynamic microphone
Built In 2	Open back enclosure	12 x 2	Condenser microphone
Built In 3	Open back enclosure	12 x 2	Condenser microphone
Built In 4	Open back enclosure	12 x 2	Condenser microphone
BG Stack 1	Sealed enclosure	12 x 2	Condenser microphone
BG Stack 2	Large sealed enclosure	12 x 2	Condenser microphone
MS Stack 1	Large sealed enclosure	12 x 4	Condenser microphone
MS Stack 2	Large sealed enclosure	12 x 4	Condenser microphone
Metal Stack	Large double stack	12 x 4	Condenser microphone

Recommended combinations of Pre-amplifier and Speaker

Pre-amplifier Type	Speaker Type
BG Lead	BG Stack 1, BG Stack 2, Middle
MS1959II	BG Stack 1, BG Stack 2, Metal Stack
MS1959I+II	BG Stack 1, BG Stack 2, Metal Stack
SLDN Lead	BG Stack 1, BG Stack 2, Metal Stack
Metal 5150	BG Stack 1, BG Stack 2, Metal Stack
Metal Lead	BG Stack 1, BG Stack 2, Metal Stack
OD-2 Turbo	Built In1 - 4
Distortion	Built In1 - 4
Fuzz	Built In 1 - 4

→ **Continued...**

Parameter (full name)	Setting	Function

NS (Noise Suppressor): Mutes noise in the silent mode.

NoiseSup (Switch)	On, Off	Turns the noise suppressor on or off.
Thresh (Threshold)	0–100	Sets the level to start muting noise.
Release (Release)	0–100	Sets the time over which the volume will drop to 0 after the noise starts being muted.

AMP (Pre-Amplifier): Simulates the pre-amplifier section of a guitar amplifier.

PreAmp (Switch)	On, Off	Turns the compressor on or off.
AMP (Pre-amplifier type)	See the column on the previous page.	Sets the type of the guitar amplifier.
Volume (Volume)	0–100	Sets the volume and degree of distortion of the amplifier.
Master (Master)	0–100	Sets the volume of the entire pre-amplifier
Gain (Gain)	Low, Middle, High	Sets the degree of sound distortion on the pre-amplifier.
Bass (Bass)	0–100	Sets the tone of the low range.
Middle (Middle)	0–100	Sets the tone of the middle range. *2
Treble (Treble)	0–100	Sets the tone of the high range.
Presence (Presence)	0–100 (-100–0)	Sets the tone of the ultra-high range. *3
Bright (Bright)	On, Off	You can set this on to generate clear-cut bright sounds. *1

SP (Speaker Simulator): Simulates a speaker.

Speaker (Switch)	On, Off	Turns the speaker simulator on or off.
SP (Speaker Type)	See the column on the previous page.	Sets the speaker type.
Mic Setting (Microphone Setting)	1, 2, 3	Sets the location of the microphone that is recording the sound of the speaker.This can be adjusted in three steps, with the microphone becoming more distant in the order of 1, 2, and 3.
Mic Level (Microphone Level)	0–100	Sets the microphone volume.
DiLevel (Direct Level)	0–100	Sets the volume of the direct sound.

NOTE

*1: Can be set only when JC-120, Clean Twin or BG Lead is selected for Pre-amplifier Type.

*2: Cannot be set when Match Drive is selected for the Pre-amplifier Type.

*3: The setting range is -100 to 0 when Match Drive is selected for the Pre-amplifier Type.

St Phaser (Stereo Phaser)

A phaser adds a phase-shifted sound to the direct sound, producing a twisting modulation that creates spaciousness and depth.
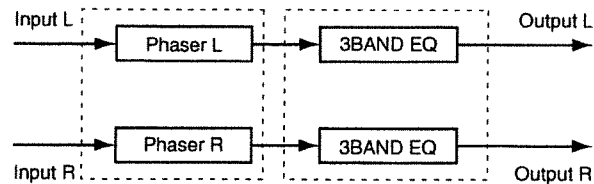
Phaser and Flanger

The effects obtained with Phaser and Flanger are very similar. Both add twisting modulation effects to the sound, creating spaciousness and depth. In other words, they create something like strongly accentuated chorus. Phaser provides a unique surge sounding like bubbles coming up. Flanger works mostly in the same mechanism as for Chorus. Besides that, it can create SE-type sounds like ascending/descending sounds of a jet.

Parameter (full name)	Setting	Function
PHS (Phaser):	**Adds a sound with a shifted phase to the direct sound to add spaciousness to the sound.**	
Phaser (Switch)	On, Off	Turns the phaser on or off.
Mode (Mode)	4, 8, 12, 16	Sets the number of stages in the phaser (p. 211).
Rate (Rate)	0.1–10.0 Hz	Sets the rate at which the phaser will modulate.
Depth (Depth)	0–100	Sets the depth of modulation.
Pol (Polarity)	Sync, Inv	Sets the right and left phases of modulation. *3
Manual (Manual)	0–100	Sets the reference frequency for adding the surging effect to the sound.
Reso (Resonance)	0–100	Enhances frequency components at around the center frequency set with Manual. *1
CrossFB (Cross-Feedback Level)	0–100	Sets the amount of the phaser sound to be returned to the channel opposite to the one used for input. *2
EFLevel (Effect Level).	-100–100	Sets the volume of the phaser sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.

EQ (Equalizer)

EQ (Switch)	On, Off	Turns the equalizer on or off.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
Low.G (Low Gain)	-12– +12 dB	Sets the boost/cut amount in the low frequency band.
Low.F (Low Frequency)	20 - 2000 Hz	Sets the center frequency in the low frequency band.
Low.Q (Low Q)	0.3–10.0	Sets the width of the area around the low frequency that will be affected by the gain settings.1 *4
Mid.G (Middle Gain)	-12– +12 dB	Sets the boost/cut amount in the middle frequency band.
Mid.F (Middle Frequency)	200–8000 Hz	Sets the center frequency in the middle frequency band.
Mid.Q (Middle Q)	0.3–10.0	Sets the width of the area around the middle frequency that will be affected by the gain settings.
Hi Type (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving type or peaking type).
Hi.G (High Gain)	-12– +12 dB	Sets the boost/cut amount in the high frequency band.
Hi.F (High Frequency)	1.4–20.0 kHz	Sets the center frequency in the high frequency band.
Hi.Q (High Q)	0.3–10.0	Sets the width of the area around the high frequency that will be affected by the gain settings.1 *4
Out Level (Output Level)	0–100	Sets the volume after passing through the equalizer.

NOTE

*1: An excessively great values for Resonance (Reso) may cause oscillation.

*2: An excessively large value for Cross-Feedback level may cause oscillation.

*3: When a mono source has been input, set "Inv" to provide spaciousness to the sound. Set "Sync" for inputting a stereo source.

*4: If Low Type (Lo Type) or High Type (Hi Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

St Flnger (Stereo Flanger)

```
Input L ┌─────────────┐ ┌─────────────┐   Output L
────────┤►│ Flanger L │├─►│ 3BAND EQ │├────────►
        │ └───────────┘ │ └───────────┘ │
        │               │               │
        │ ┌───────────┐ │ ┌───────────┐ │
────────┤►│ Flanger R │├─►│ 3BAND EQ │├────────►
Input R └─────────────┘ └─────────────┘   Output R
```
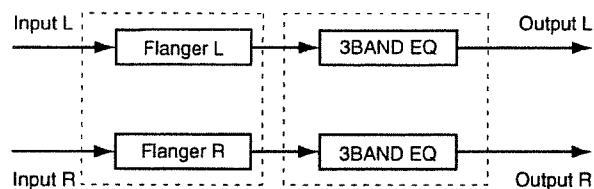
FLG (Flanger):   **Adds effect similar to ascending/descending sound of a jet.**

Flanger (Switch)	On, Off	Turns the flanger on or off.
Rate (Rate)	0.1–10.0 Hz	Sets the rate at which the flanger is modulated.
Depth (Depth)	0–100	Sets the depth of modulation.
Pol (Polarity)	Sync, Inv	Sets the right and left phases of modulation. *3
Manual (Manual)	0–100	Sets the center frequency subject to application of the Flanger effect.
Reso (Resonance)	0–100	Enhances frequency components at around the center frequency set with Manual. *1
CrossFB (Cross-Feedback Level)	0–100	Sets the amount of the flanger sound to be returned to the channel opposite to the one used for input. *2
EFLevel (Effect Level).	-100–100	Sets the volume of the flanger sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.

EQ (Equalizer)

EQ (Switch)	On, Off	Turns the equalizer on or off.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
Low.G (Low Gain)	-12–+12 dB	Sets the boost/cut amount in the low frequency band.
Low.F (Low Frequency)	20 - 2000 Hz	Sets the center frequency in the low frequency band.
Low.Q (Low Q)	0.3–10.0	Sets the width of the area around the low frequency that will be affected by the gain settings.1 *4
Mid.G (Middle Gain)	-12–+12 dB	Sets the boost/cut amount in the middle frequency band.
Mid.F (Middle Frequency)	200–8000 Hz	Sets the center frequency in the middle frequency band.
Mid.Q (Middle Q)	0.3–10.0	Sets the width of the area around the middle frequency that will be affected by the gain settings.
Hi Type (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving type or peaking type).
Hi.G (High Gain)	-12–+12 dB	Sets the boost/cut amount in the high frequency band.
Hi.F (High Frequency)	1.4–20.0 kHz	Sets the center frequency in the high frequency band.
Hi.Q (High Q)	0.3–10.0	Sets the width of the area around the high frequency that will be affected by the gain settings.1 *4
Out Level (Output Level)	0–100	Sets the volume after passing through the equalizer.

NOTE

*1: An excessively great values for Resonance (Reso) may cause oscillation.

*2: An excessively large value for Cross-Feedback level may cause oscillation.

*3: When a mono source has been input, set "Inv" to provide spaciousness to the sound. Set "Sync" for inputting a stereo source.

*4: If Low Type (Lo Type) or High Type (Hi Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

Dual Comp/Lim (Dual Compressor/Limitter)

Compressors suppress signals at high levels. Limiter is used to control excessive input. Each of the above is used to prevent sound distortion or to control dynamics.
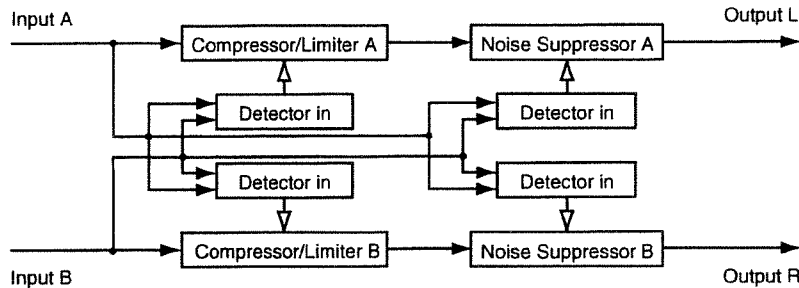
NOTE

Input A is input into the L-channel side of the effect. Therefore, it is required to insert and connect "Lch" of the effect to the channel handling Input A. Similarly, Input B is input into the R-channel side of the effect. Insert and connect "Rch" of the effect to the channel handling Input B.

Difference between Compressor and Limiter

Behaviors of Compressor and Limiter are very similar. Both of them compress the entire output signals if input signals exceed a certain level (threshold level), according to the input level.
Compressor automatically drops the amplitude to suppress all levels in the exceeding section. Limiter suppresses only the maximum level of input signals.

Using as Limiter

Threshold Level (Thresh):	Relatively high
Ratio (Ratio):	100:1
Attack Time (Attack):	Relatively short
Release Time (Release):	Relatively short

Using as Compressor

Threshold Level (Thresh):	A level that does not cause distortion of output sounds.
Ratio (Ratio):	1.5:1, 2:1, 4:1
Attack Time (Attack):	Adjusted according to the input sound type.
Release Time (Release):	Adjusted according to the input sound type.

Parameter (full name)	Setting	Function

CLA, CLB

(Compressor): Compresses the entire output signals when the input volume has exceeded a preset value.

(Limiter): Suppresses the volume of the section where the input volume has exceeded the preset value.

Parameter (full name)	Setting	Function
Comp/Lmt (Switch)	On, Off	Turns the compressor/limiter on or off.
Detect (Detect In)	A, B, Link	Selects Input A or B for controlling compressor/limiter. Set this to "Link" for controlling by the input at a greater level.
Level (Output Level)	-60–12 dB	Sets the volume of the compressor/limiter sound.
Thrsh (Threshold Level)	-60 - 0 dB	Sets the level at which the compressor/limiter starts taking effect.
Attack (Attack Time)	0–100	Sets the time from when the input level exceeds the threshold level to when the effect begins to apply.
Release (Release Time)	0–100	Sets the time from when the input level drops below the threshold level to when the effect ceases to apply.
Ratio (Ratio)	1.5:1, 2:1, 4:1, 100:1	Sets the compression ratio applied when threshold level (Thresh) is exceeded.

NS (Noise Suppressor): Mutes noise in the silent mode.

Parameter (full name)	Setting	Function
NoiseSup (Switch)	On, Off	Turns the noise suppressor on or off.
Detect (Detect In)	A, B, Link	Selects the input (Input A/Input B) for controlling Noise Suppressor. Set this to "Link" for controlling by the input at a greater level.
Thresh (Threshold)	0–100	Sets the level to start muting noise.
Release (Release)	0–100	Sets the time over which the volume will drop to 0 after the noise starts being muted.

Gate Reverb

This is a reverb in which the reverberation is muted during its decay. Its reverse mode can be used in conjunction with Accent sounds to obtain sounds like from reverse playback of a tape.
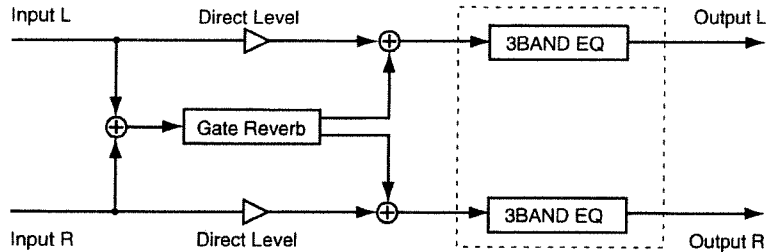
Gate Reverb
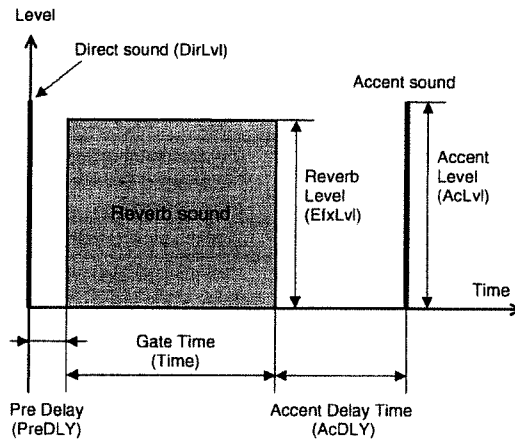
Reverb applications

You can select how reverb sounds can be applied by setting up Gate Mode (Mode).

Normal:	Ordinary Gate Reverb
L->R:	The Gate Reverb sound moves from the left to right side.
R->L:	The Gate Reverb sound moves from the right to left side.
Reverse1:	Reverse Gate (effect as if reverb are replayed backward.)
Reverse2:	Reverse Gate that causes the reverb sound to decay midway.

Parameter (full name)	Setting	Function
GRV (Gate Reverb):	**Mutes the revert sound midway.**	
GtReverb (Switch)	On, Off	Turns the gate reverb on or off.
Time (Gate Time)	10–400 s	Sets the time from when the reverb sound begins until it is muted.
PreDLY (Pre-Delay)	0–300 ms	Sets the time until the reverb sound appears.
Mode (Gate Mode)	See the column on the previous page.	Defines how the reverb sound is applied.
EFLevel (Effect Level).	-100–100	Sets the volume of the gate reverb sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.
Thick (Thickness)	0–100	Sets the thickness of the reverb sound.
Density (Density)	0–100	Sets the density of the reverb sound.
AcDLY (Accent Delay Time)	0–200 ms	Sets the time from when the reverb sound is muted until the accent sound appears.
AcLevel (Accent Level)	0–100	Sets the volume of the accent sound.
AcPan (Accent Pan)	L63–R63	Sets the pan of the accent sound.

EQ (Equalizer)

Parameter (full name)	Setting	Function
EQ (Switch)	On, Off	Turns the equalizer on or off.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
Low.G (Low Gain)	-12– +12 dB	Sets the boost/cut amount in the low frequency band.
Low.F (Low Frequency)	20 - 2000 Hz	Sets the center frequency in the low frequency band.
Low.Q (Low Q)	0.3–10.0	Sets the width of the area around the low frequency that will be affected by the gain settings.1 *1
Mid.G (Middle Gain)	-12– +12 dB	Sets the boost/cut amount in the middle frequency band.
Mid.F (Middle Frequency)	200–8000 Hz	Sets the center frequency in the middle frequency band.
Mid.Q (Middle Q)	0.3–10.0	Sets the width of the area around the middle frequency that will be affected by the gain settings.
Hi Type (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving type or peaking type).
Hi.G (High Gain)	-12– +12 dB	Sets the boost/cut amount in the high frequency band.
Hi.F (High Frequency)	1.4–20.0 kHz	Sets the center frequency in the high frequency band.
Hi.Q (High Q)	0.3–10.0	Sets the width of the area around the high frequency that will be affected by the gain settings.1 *1
Out Level (Output Level)	0–100	Sets the volume after passing through the equalizer.

NOTE

*1: If Low Type (Lo Type) or High Type (Hi Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

MultiTapDly (Multi-Tap Delay)

This is a Delay feature that can set 10 delay sounds separately.
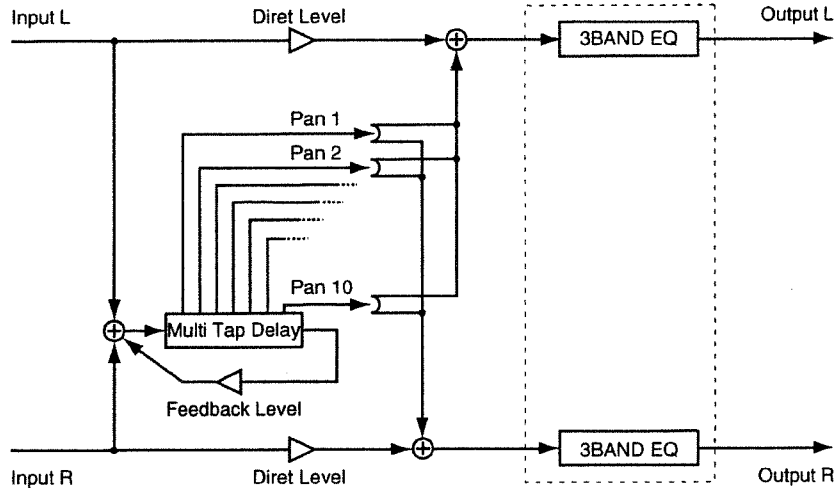
Parameter (full name)	Setting	Function

MTD (Multi-Tap Delay):   **Issues 10 delay sounds separately.**

Parameter (full name)	Setting	Function
Tim 1 - Tim 10 (Delay Time 1 - 10)	0–1200 ms	Sets the time from the direct sound until when the delay sound for channels 1–10 is heard.
Level 1 - Level 10 (Delay Level 1 - 10)	0–100	Sets the volumes of delay sounds for channels 1–10.
Pan 1 - Pan 10 (Pan 1 - 10)	L63–R63	Sets the pan of the delay sounds for channels 1–10.
FB Tim (Feedback Delay Time)	0–1200 ms	Sets the repetition frequency for feedback.
FB Level (Feedback Level)	-100–100	Sets the amount of the delay sound should be returned to the delay input.
EFLevel (Effect Level).	-100–100	Sets the volume of the delay sound.
DiLevel (Direct Level)	-100–100	Sets the volume of the direct sound.

EQ (Equalizer)

EQ (Switch)	On, Off	Turns the equalizer on or off.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
Low.G (Low Gain)	-12– +12 dB	Sets the boost/cut amount in the low frequency band.
Low.F (Low Frequency)	20 - 2000 Hz	Sets the center frequency in the low frequency band.
Low.Q (Low Q)	0.3–10.0	Sets the width of the area around the low frequency that will be affected by the gain settings.1 *1
Mid.G (Middle Gain)	-12– +12 dB	Sets the boost/cut amount in the middle frequency band.
Mid.F (Middle Frequency)	200–8000 Hz	Sets the center frequency in the middle frequency band.
Mid.Q (Middle Q)	0.3–10.0	Sets the width of the area around the middle frequency that will be affected by the gain settings.
Hi Type (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving type or peaking type).
Hi.G (High Gain)	-12– +12 dB	Sets the boost/cut amount in the high frequency band.
Hi.F (High Frequency)	1.4–20.0 kHz	Sets the center frequency in the high frequency band.
Hi.Q (High Q)	0.3–10.0	Sets the width of the area around the high frequency that will be affected by the gain settings.1 *1
Out Level (Output Level)	0–100	Sets the volume after passing through the equalizer.

NOTE

*1: If Low Type (Lo Type) or High Type (Hi Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

Stereo Multi

Parameter (full name)	Setting	Function
NS (Noise Suppressor):	**Mutes noise in the silent mode.**	
NoiseSup (Switch)	On, Off	Turns the noise suppressor on or off.
Thresh (Threshold)	0–100	Sets the level to start muting noise.
Release (Release)	0–100	Sets the time over which the volume will drop to 0 after the noise starts being muted.
CL (Compressor/Limiter):	**Compresses the entire output signals when the input volume exceeds a specified value.**	
Comp/Lim (Switch)	On, Off	Turns the compressor on or off.
Level (Output Level)	-60–12 dB	Sets the volume of the compressor sound.
Thrsh (Threshold Level)	-60–0 dB	Sets the level at which the compressor starts taking effect.
Attack (Attack Time)	0–100	Sets the time from when the input level exceeds the threshold level to when the effect begins to apply.
Release (Release Time)	0–100	Sets the time from when the input level drops below the threshold level to when the effect ceases to apply.
Ratio (Ratio)	1.5:1, 2:1, 4:1, 100:1	Sets the compression ratio applied when the threshold level is exceeded.
ENH (Enhancer):	**Accentuates the sound and push the sound forward.**	
Enhancer (Switch)	On, Off	Turns the enhancer on or off.
Sens (Sense)	0–100	Sets the degree of the enhancer effect desired.
Freq (Frequency)	1.0–10.0 kHz	Sets the frequency at which the enhancer effect starts working.
MixLvl (Mix Level)	0–100	Sets the amount of the enhancer sound should be mixed into the direct sound.
Level (Level)	0–100	Sets the volume of the enhancer sound.

EQ (Equalizer)

EQ (Switch)	On, Off	Turns the equalizer on or off.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
Low.G (Low Gain)	-12~ +12 dB	Sets the boost/cut amount in the low frequency band.
Low.F (Low Frequency)	20 - 2000 Hz	Sets the center frequency in the low frequency band.
Low.Q (Low Q)	0.3–10.0	Sets the width of the area around the low frequency that will be affected by the gain settings.1 *1
Mid.G (Middle Gain)	-12~ +12 dB	Sets the boost/cut amount in the middle frequency band.
Mid.F (Middle Frequency)	200–8000 Hz	Sets the center frequency in the middle frequency band.
Mid.Q (Middle Q)	0.3–10.0	Sets the width of the area around the middle frequency that will be affected by the gain settings.
Hi Type (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving type or peaking type).
Hi.G (High Gain)	-12~ +12 dB	Sets the boost/cut amount in the high frequency band.
Hi.F (High Frequency)	1.4–20.0 kHz	Sets the center frequency in the high frequency band.
Hi.Q (High Q)	0.3–10.0	Sets the width of the area around the high frequency that will be affected by the gain settings.1 *1
Out Level (Output Level)	0–100	Sets the volume after passing through the equalizer.

NOTE

*1: If Low Type (Lo Type) or High Type (Hi Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

Reverb 2

This gate reverb works in either of two modes of gate operation (Gate/Ducking). In the Gate mode, the gate opens when a certain volume (Threshold Level) is exceeded while in the Ducking mode, the gate opens when the volume becomes as low as or lower than Threshold Level. You can use two reverbs (FX1 and FX2) with different settings, or use it in combination with a previous reverb.
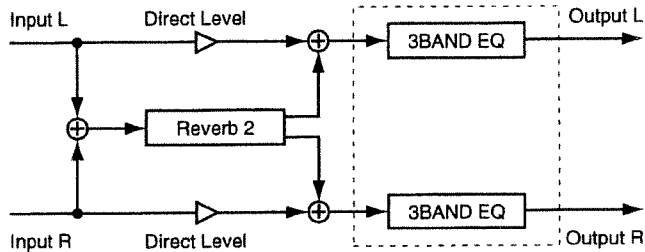
Reverb types

There are five reverb types: You can choose the type with Reverb Type.

Room1:	Ordinary room reverb
Room2:	Room reverb with a softer tone compared with Room1
Hall1:	Ordinary hall reverb
Hall2:	Hall reverb with a softer tone compared with Hall1
Plate:	Plate reverb

Selecting Gate type

Reverb sounds have different effects depending on the gate operation types. Use Gate Mode to select the type.

Gate:	The gate opens when the volume of the direct sound exceeds the value set with Threshold Level (Thres). The gate closes when the volume drops below the Threshold Level value.
Ducking:	Operates in the opposite manner as in the "Gate" mode. The gate closes when the volume of the direct sound exceeds the value set with Threshold Value. The gate opens when the volume becomes as low as or lower than the Threshold Level value.

Parameter (full name)	Setting	Function

REV 2 (Reverb 2):   **Gate reverb with two modes of gate operation**

Parameter (full name)	Setting	Function
Reverb (Switch)	On, Off	Turns the reverb on or off.
Type (Reverb Type)	See the column on the previous page.	Sets the reverb type.
Time (Reverb Time)	0.1–10.0 sec.	Sets the length (time) of the reverb sound.
PreDLY (Pre-Delay)	0–200 ms	Sets the time until the reverb sound is output.
Density (Density)	0–100	Sets the density of the reverb sound.
HPF (High Pass Filter)	Thru, 20 - 2000 Hz	Sets the frequency at which HPF starts taking effect. Set this to "Thru" if HPF is to be disabled.
LPF (Low Pass Filter)	1.0–20.0 kHz, Thru	Sets the frequency at which LPF starts taking effect. Set this to "Thru" if LPF is to be disabled.
EFLevel (Effect Level).	0–100	Sets the volume of the reverb sound.
DiLevel (Direct Level)	0–100	Sets the volume of the direct sound.
Gate (Gate)	On, Off	Opens or closes the gate.
Mode (Gate Mode)	Gate, Ducking	Sets the gate operation type.
Thresh (Threshold)	0–100	Sets the reference volume for controlling gate operations.
Attack (Attack)	1–100	Sets the time from when the direct sound level exceeds the threshold level until when the gate is completely open.
Release (Release)	1–100	Sets the time from when the hold time has elapsed until the sound is completely muted.
Gate Hold Time (Hold Time)	1–100	Sets the time from when the input falls below the threshold level until when the release begins.

EQ (Equalizer)

| Parameter (full name)	Setting	Function
EQ (Switch)	On, Off	Turns the equalizer on or off.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
Low.G (Low Gain)	-12– +12 dB	Sets the boost/cut amount in the low frequency band.
Low.F (Low Frequency)	20 - 2000 Hz	Sets the center frequency in the low frequency band.
Low.Q (Low Q)	0.3–10.0	Sets the width of the area around the low frequency that will be affected by the gain settings.1 *1
Mid.G (Middle Gain)	-12– +12 dB	Sets the boost/cut amount in the middle frequency band.
Mid.F (Middle Frequency)	200–8000 Hz	Sets the center frequency in the middle frequency band.
Mid.Q (Middle Q)	0.3–10.0	Sets the width of the area around the middle frequency that will be affected by the gain settings.
Hi Type (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving type or peaking type).
Hi.G (High Gain)	-12– +12 dB	Sets the boost/cut amount in the high frequency band.
Hi.F (High Frequency)	1.4–20.0 kHz	Sets the center frequency in the high frequency band.
Hi.Q (High Q)	0.3–10.0	Sets the width of the area around the high frequency that will be affected by the gain settings.1 *1
Out Level (Output Level)	0–100	Sets the volume after passing through the equalizer.

NOTE

*1: If Low Type (Lo Type) or High Type (Hi Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

Space Chorus

This is a chorus effect simulating Roland SDD-320. The effect to be changed can be reproduced by turning the four buttons 1 to 4 on or off.

```
Input L                  Output L
────────▶│Space Chorus│────────▶
────────▶                ────────▶
Input R                  Output R
```
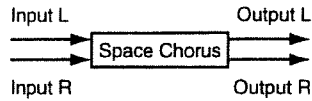
Parameter (full name)	Setting	Function
SCH (Space Chorus):	**Adds a chorus effect simulating SDD-320.**	
SpaceCho (Switch)	On, Off	Turns the space chorus on or off.
InMod (Input Mode)	Mono, Stereo	Specifies whether the input signal is stereo or mono.
Mode (Space Mode)	1, 2, 3, 4, 1+4, 2+4, 3+4	Sets the chorus variation style.
MixBal (Mix Balance)	0–100	Sets the volume balance between the chorus sound and the direct sound.

Lo-Fi Process (Lo-Fi Processor)

This allows you to create a "lo-fi" sound by lowering the sample rate and/or decreasing the number of bits.
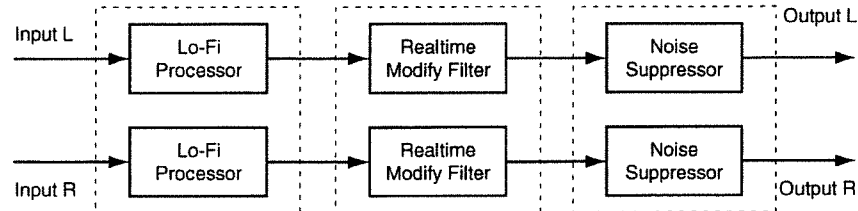
Creating lo-fi sounds

Follow the steps below to create lo-fi sounds essential to dance music including hip-hop and DJ music.

Lo-fi Processor

- Turn Pre Filter and Post Filter off. This provides powerful lo-fi sounds containing digital distortion.
- Set Rate and Bit to relatively low values. Note, however, an excessively low value for Bit may cause big noise even in the silent mode. In that case, increase Threshold (Thresh) of Noise Suppressor.

Realtime Modify Filter

- Increase resonance to add a twist to the sound. Note that excessive resonance may cause oscillation.

LFP (Lo-Fi Processor):   Creates lo-fi sounds.

LoFiPros (Switch)	On, Off	Turns the lo-fi processor on or off.
PreFilt (Pre Filter Switch)	On, Off	Turns the filter to reduce digital distortion on or off.
Rate (Rate)	Off, 1/2 - 1/32	Sets the sample rate. Set Rate to "Off" if no change is desired.
Bit (Bit)	Off, 15 bits - 1 bit	Sets the number of bits in data. Set Bit to "Off" if no change is desired.
PostFilt (Post Filter Switch)	On, Off	Turns the filter to reduce digital distortion due to modification to lo-fi sounds on or off.
EFLevel (Effect Level).	0–100	Sets the volume of the lo-fi sound.
DiLevel (Direct Level)	0–100	Sets the volume of the direct sound.

RMF (Realtime Modify Filter): Creates sounds with a twist.

RMF (Switch)	On, Off	Turns the realtime modify filter on or off.
Type (Type)	LPF, BPF, HPF	Sets the filter type.
CutOff (Cutoff Frequency)	0–100	Sets the cutoff frequency.
Reso (Resonance)	0–100	Enhances the frequency components around cutoff frequency.
Gain (Gain)	0–24 dB	Sets the volume of the realtime modify filter.

NS (Noise Suppressor):   Mutes noise in the silent mode.

Thresh (Threshold)	0–100	Sets the level to start muting noise.
Release (Release)	0–100	Sets the time over which the volume will drop to 0 after the noise starts being muted.

ParametricEQ (4-Band Parametric Equalizer)

This is an equalizer that can freely change the cutoff frequency or the band width (Q). With this equalizer, you can create sounds with subtlety.

```
Input A  :-------------------:  Output A
   ----------+--[ 4Band EQ A ]--+---->
         :          \  Link     :
         :           \          :
   ----------+--[ 4Band EQ B ]--+---->
Input B  :-------------------:  Output B
```
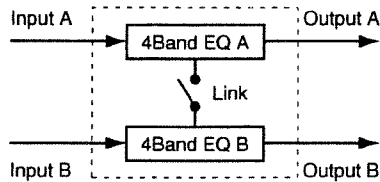
Cutting noise.

4-Band Parametric Equalizer can freely change the cutoff frequency or the band width (Q) at four points, that is, in the high, high middle, low middle and low frequency bands.
Capitalizing on this feature, you can precisely capture the point where any noise or howling is occurring. To find such point, the first step is to increase the gain for easier identification of sound variation and move the cutoff frequency little by little. Then, perform filtering by sharpening "Q."

Controlling Channels A and B separately

Setting Link On enables simultaneous control on the 4-Band Parametric Equalizer via Channel B according to the settings on the Channel A side. To control Channels A and B separately, turn Link off.

Parameter (full name)	Setting	Function
LNK (Link):	**Makes Channel B follow the settings for Channel A.**	
Link (Link Switch)	On, Off	Specifies if Channel B follows or does not follow the settings for Channel A.

EQ A / EQ B (4 Band Parametric Equalizer): Parametric equalizer with four bands.

| Parameter (full name)	Setting	Function
EQAch, EQBch (Switch)	On, Off	Turns the parametric equalizer on or off.
InputG (Input Gain)	-60– +12 dB	Sets the overall volume before passing through the equalizer.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
LowG (Low Gain)	-12– +12 dB	Sets the boost/cut amount in the low frequency band.
LowF (Low Frequency)	20 - 2000 Hz	Sets the center frequency in the low frequency band.
LowQ (Low Q)	0.3–10	Sets the width of the area around the low frequency that will be affected by the gain settings. *1
LowMidG (Low Middle Gain)	-12– +12 dB	Sets the boost/cut amount in the low middle frequency band.
LoMidF (Low Middle Frequency)	200–8000 Hz	Sets the center frequency in the low middle frequency band.
LoMidQ (Low Middle Q)	0.3–10	Sets the width of the area around the Low middle frequency that ill be affected by the gain settings.
HiMidG (High Middle Gain)	-12– +12 dB	Sets the boost/cut amount in the high middle frequency band.
HiMidF (High Middle Frequency)	200–8000 Hz	Sets the center frequency in the high middle frequency band.
HiMidQ (High Middle Q)	0.3–10	Sets the width of the area around the high middle frequency that will be affected by the gain settings.
HiType (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving type or peaking type).
HiG (High Gain)	-12– +12 dB	Sets the boost/cut amount in the high frequency band.
HiF (High Frequency)	1.4–20.0 kHz	Sets the center frequency in the high frequency band.
HiQ (High Q)	0.3–10	Sets the width of the area around the high frequency that will be affected by the gain settings. *1
Level (Output Level)	-60– +12 dB	Sets the overall volume after passing through the equalizer.

*1: If Low Type (Lo Type) or High Type (Hi Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

Graphic EQ (10-Band Graphic Equalizer)

This Equalizer sets the boost/cut amount by each segment of the frequency divided into ten bands. In performing PA at a live, this feature is useful to prevent howling by cutting the site-specific resonance frequency.
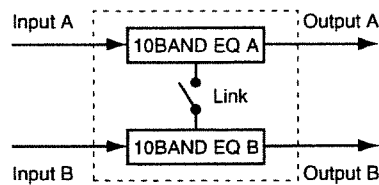
Preventing howling

While performing PA at a live, follow the steps below to prevent howling. First, identify the site-specific resonance frequency to cut its gain.

Controlling Channels A and B separately

Setting Link On enables simultaneous control on the 10-Band Parametric Equalizer via Channel B according to the settings on the Channel A side.
To control Channels A and B separately, turn Link Off.

Parameter (full name)	Setting	Function
LNK (Link):	**Makes Channel B follow the settings for Channel A.**	
Link (Link Switch)	On, Off	Specifies if Channel B follows or does not follow the settings for Channel A.
EQA / EQB (10-Band Graphic Equalizer): Simulates a 10-band graphic equalizer.		
EQA, EQB (Switch)	On, Off	Turns the parametric equalizer on or off.
InputG (Input Gain)	-60– +12 dB	Sets the overall volume before passing through the equalizer.
31.2 - 16 k (Gain)	-12– +12 dB	Sets the boost/cut amount at the respective frequencies.
Level (Output Level)	-60– +12 dB	Sets the overall volume after passing through the equalizer.

Hum Canceler

Eliminates annoying hum (or "surge" sounding "boon").
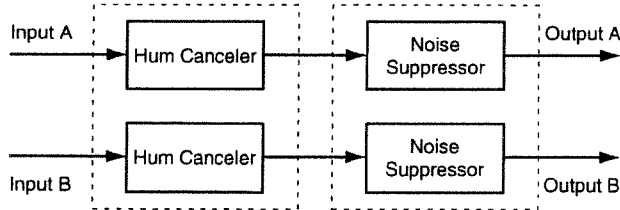
Removing hum

Hum is a noise with a certain low frequency. Hum is generated mostly due to ingression of part of alternating current into signals as alternating current is converted into direct current in the power circuit. Sets Frequency (Freq) to that according with the frequency of the power source (50 Hz/ 60 Hz), and hum with that frequency and frequencies of its multiples can be removed.
Range Lo and Rage Hi can be used to specify the frequency band of hum to be removed.

Parameter (full name)	Setting	Function
HC (Hum Canceler): **Removes hum.**		
HumCancel (Switch)	On, Off	Turns the hum canceler on or off.
Freq (Frequency)	20.0–800.0 Hz	Sets the frequency of hum to be removed.
Width (Width)	10–40%	Sets the width of the filter which will remove the hum.
Depth (Depth)	0–100	Sets the depth of the filter which will remove the hum.
Thresh (Threshold)	0–100	Sets the level at which the hum is to be removed.
RngL (Range Low)	Unlimit, 20 - 2000 Hz	Sets the lower limit of the frequency of hum to be removed. *1
RngH (Range High)	1.0 - 20.0 kHz, Unlimit	Sets the upper limit of the frequency of hum to be removed. *2
NS (Noise Suppressor): **Mutes noise in the silent mode.**		
NoiseSup (Switch)	On, Off	Turns the noise suppressor on or off.
Thresh (Threshold)	0–100	Sets the level to start muting noise.
Release (Release)	0–100	Sets the time over which the volume will drop to 0 after the noise starts being muted.

NOTE

*1: Setting to "Unlimit" means that the frequency that can be played back on this unit is the lower limit.

*2: Setting to "Unlimit" means that the frequency that can be played back on this unit is the upper limit.

Vocal Canceler

When a stereo source is being input from CD or DAT and so on, this cancels the sound which is located in the stereo center, such as the vocal or bass.

NOTE
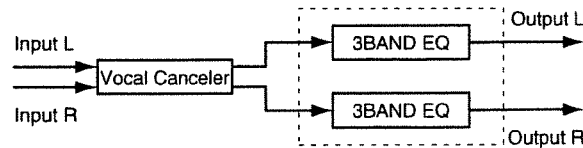
Depending on the music source, sounds that you do not wish to be canceled may be canceled as well. In particular if the musical source has heavy reverb or if the sound that you wish to delete is not located in the center, the vocal canceler may not produce the desired result.

Canceling the vocals alone

Vocal Canceler cancels the sound located in the center. That means it cancels sounds such as the bass and sounds of the lead instrument along with vocal sounds. To cancel vocals only to create music for karaoke, for example, set Range Lo to around 100 Hz and Range Hi to around 1 kHz.

Parameter (full name)	Setting	Function
VC (Vocal Canceler):	**Cancels sounds located in the center such as vocals and the bass.**	
VclCancel (Switch)	On, Off	Turns the vocal canceler on or off.
Balance (Balance)	0–100	If the sound that you wish to cancel is not located in the center, find the point at which it is most effectively cancelled.
RngL (Range Low)	Unlimit, 20 - 2000 Hz	Sets the lower limit of the frequency band to be canceled. *1
RngH (Range High)	1.0 - 20.0 kHz, Unlimit	Sets the upper limit of the frequency band to be canceled. *2

EQ (Equalizer)

Parameter	Setting	Function
EQ (Switch)	On, Off	Turns the equalizer on or off.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
Low.G (Low Gain)	-12– +12 dB	Sets the boost/cut amount in the low frequency band.
Low.F (Low Frequency)	20 - 2000 Hz	Sets the center frequency in the low frequency band.
Low.Q (Low Q)	0.3–10.0	Sets the width of the area around the low frequency that will be affected by the gain settings.1 *3
Mid.G (Middle Gain)	-12– +12 dB	Sets the boost/cut amount in the middle frequency band.
Mid.F (Middle Frequency)	200–8000 Hz	Sets the center frequency in the middle frequency band.
Mid.Q (Middle Q)	0.3–10.0	Sets the width of the area around the middle frequency that will be affected by the gain settings.
Hi Type (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving type or peaking type).
Hi.G (High Gain)	-12– +12 dB	Sets the boost/cut amount in the high frequency band.
Hi.F (High Frequency)	1.4–20.0 kHz	Sets the center frequency in the high frequency band.
Hi.Q (High Q)	0.3–10.0	Sets the width of the area around the high frequency that will be affected by the gain settings.1 *3
Out Level (Output Level)	0–100	Sets the volume after passing through the equalizer.

NOTE

*1: Setting to "Unlimit" means that the frequency that can be played back on this unit is the lower limit.

*2: Setting to "Unlimit" means that the frequency that can be played back on this unit is the upper limit.

*3: If Low Type (Lo Type) or High Type (Hi Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

Voice Transformer

You can convert male voice into female voice, female voice into male voice, and human voice into mechanical voice to create sounds of various qualities by controlling the base pitch and the formant separately.

Input L

Output L

Voice
Transformer

Reverb

Output R
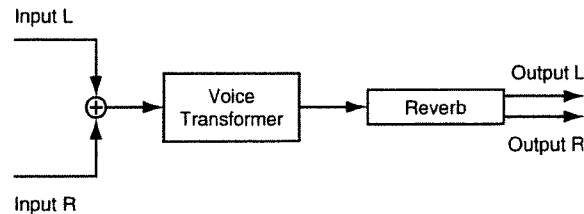
Input R

⚠ **NOTE**

* When inputting voice, use voice of one person only. Inputting voices of more than one person disables normal operation.

* Be sure that sound from a speaker does not enter the microphone you are using. This will have the same effect as if several voices were input to the unit.

* A undirectional microphone is recommended for use. It is also recommended that the person should speak standing as close to the microphone as possible.

Parameter (full name)	Setting	Function
VT (Voice Transformer):	**Creates various voice characters.**	
VoiceTrns (Switch)	On, Off	Turns Vocal the transformer on or off.
Robot (Robot)	On, Off	When this is on, the audio will be output at a fixed pitch regardless of the pitch that is input.
C.Pitch (Chromatic Pitch)	-12– +36	Sets the pitch variation of the voice to be output (by semitone).
F.Pitch (Fine Pitch)	-100–100	Sets the pitch variation of the voice to be output (by cent).
C.Formant (Chromatic Formant)	-12– +12	Sets the formant variation of the voice to be output (by semitone).
F.Formant (Fine Formant)	-100– +100	Sets the formant variation of the voice to be output (by cent).
MixBal (Mix Balance)	0–100	Sets the volume balance between the output voice and the input voice.
REV (Reverb):	**Adds reverberation.**	
Reverb (Switch)	On, Off	Turns the reverb on or off.
Time (Reverb Time)	0.1–32.0 sec	Sets the length (time) of the reverb sound.
PreDLY (Pre-Delay)	0–200 ms	Sets the time until the reverberation appears.
Density (Density)	0–100	Sets the density of the reverb sound.
RevLevel (Effect Level).	0–100	Sets the volume of the reverb sound.

Vocoder 2 (19)

This is a 19-band vocoder. Provides clear sounds that used to be impossible with the previous vocoders.

Input L
(Instrument)   Output L

→ VOCODER →⊕→ ⊕ → Chorus →→

Input R(Mic) ↑   ↑   Output R

Noise
Suppressor

⚠ **NOTE**
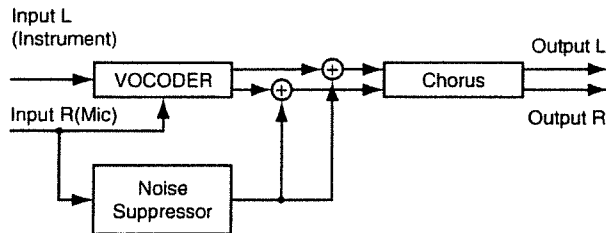
- Instrumental sounds are input into the L channel side of Effect. Therefore, it is required to insert-connect "Lch" of Effect to the channel handling instrumental sounds. Similarly, vocal sounds are input into the R channel side of Effect. Insert-connect "Rch" of Effect to the channel handling vocal sounds.

Difference between Vocoder and Vocoder 2

Compared to Vocoder, Vocoder 2 has a significant number of frequency bands as points. It also makes it possible to make fine adjustment including adjustment of the input sensitivity of the microphone and location of sounds as well as setting the input level for instrumental sounds and removing noise. All this yields clear human voices.

"Envelope" for defining sound characteristics

Each sound has its own envelope. An envelope gives characteristics to the sound and functions as a significant factor for the human ear to distinguish different sound types. On Vocoder 2, you can use Envelope to give the following characteristics.

Sharp: Enhances human voice.
Soft: Enhances instrumental sound.
Long: Vintage sound with long reverberation.

Sound location

Pan Mode (PanMode) can be used to specify how Vocoder sounds should be located.

Mono: Locating in the middle.
Stereo: Stereo (Odd-number frequencies are located to the left and even-number frequencies to the right.)

Sounding instrumental sounds with the formant fixed

While inputting voice through the microphone, instrumental sounds can be sounded at the same vocal formant. For example, when saying "a-i-u-e-o" into the microphone, set "Hold" On at the moment the speaker is on the "i" sound to issue an instrumental sound with the formant of the "i" sound.

Parameter (full name)	Setting	Function
VOC2 (Vocoder):	**The pitch is specified as in the instrumental sound while the tone is output in the human voice.**	
Env (Envelope)	Sharp, Soft, Long	Defines characteristics of the sound.
Pan (Pan Mode)	Mono, Stereo	Defines how the sound is located.
Hold (Hold)	Off, MIDI	Specifies that an instrumental sound is or is not issued with the formant fixed.
MicSens (Microphone Sensitivity)	0–100	Sets the input sensitivity of the microphone.
SynInLev (Synthesizer In Level)	0–100	Sets the input level of the instrumental sound.
V.Char 1 - 19 (Voice Character Channels 1 - 19)	0–100	Sets the tone of the vocoder.
MHPF (Microphone HPF)	Thru, 1.0–20.0 kHz	Sets the frequency at which HPF on the vocal sounds through the microphone starts taking effect. Sets this to "Thru" if HPF is not desired.
MHPFPan (Microphone Pan)	L63–R63	Sets the panning of vocal sounds through the microphone.
MicMix (Microphone Mix)	0–100	Sets the amount of the sound after passing through the microphone HPF should be mixed into the Vocoder output.
NSThresh (Noise Suppressor Threshold)	0–100	Sets the volume to start muting noise on the instrumental sound input.
CHO (Chorus):	**Adds spaciousness and depth to the sound.**	
Chorus (Switch)	On, Off	Turns the chorus on or off.
Rate (Rate)	0.1–10.0 Hz	Sets the rate of modulation.
Depth (Depth)	0–100	Sets the depth of modulation.
PreDLY (Pre-Delay)	0–50 ms	Sets the time delay from when the direct sound begins until the chorus sound is heard.
MixBal (Mix Balance)	0–100	Sets the volume balance between the chorus sound and the direct sound.

Algorithm List

MicSimulator (Microphone Simulator)

This modifies sound that was recorded by a conventional dynamic mic, lapel mic or direct line, causing it to sound as though it had been recorded by an expensive condenser mic or a special studio mic. The mic simulator can add effects of proximity or distance.

Input A → Mic Converter A → BassCut A → Distance A → Limiter A → Output A

Link

Input B → Mic Converter B → Bass Cut B → Distance B → Limiter B → Output B
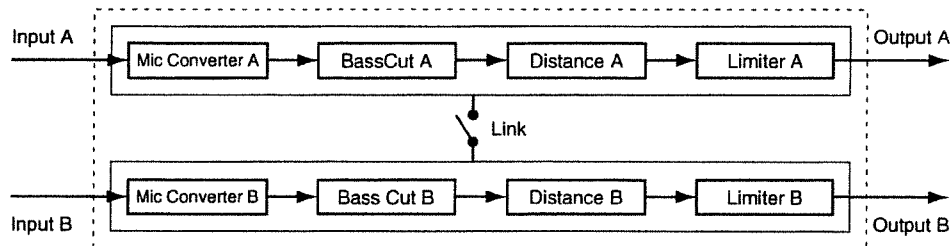
Selecting the microphone used for recording.

Input of Mic Converter selects the type of microphone to be used recording.

DR-20:	Roland DR-20 (dynamic microphone from Roland)
SmlDy:	Small Dynamic Microphone (dynamic microphone used for instruments and vocal)
HedDy:	Head-worn Dynamic Microphone (headset-type dynamic microphone)
MinCn:	Miniature Condenser Microphone (very small condenser microphone)
Flat:	Line input

Microphone types that can be simulated

The characteristics of the low-end general-purpose microphone are converted into the characteristics of the high-end microphone for studio application. You can add sound quality changes to already recorded sounds just as if a different type of microphone were used or if they were recorded at a different distance. In addition, it is possible to add microphone characteristics to line-recorded instrumental sounds. These characteristics can be set up by selecting the relevant value for Out of Mic Converter.

SmlDy:	Dynamic microphone for general musical instruments and vocal sounds. Ideal for a guitar amplifier and snare drums.
VocDy:	Dynamic microphone for standard vocal sounds. Characterized in middle frequency band sounds with tension. Suited for vocal.
LrgDy:	Dynamic microphone with a extended low frequency band. For bass and tom drums.
SmlCn:	Small condenser microphone for musical instruments. Characterized in bright high frequency band sounds. For metal percussion and acoustic guitars.
LrgCn:	Condenser microphone with flat characteristics. For vocal, narration and live musical instruments.
VntCn:	Vintage condenser microphone. For vocal and live musical instruments.
Flat:	Microphone with flat frequency response. For removing peculiarity of the microphone used for recording sounds.

* *When a condenser-type mic is selected in OUT, low-range noise transmitted through the mic stand may be accentuated due to the mic's low range characteristics. In such instances, either cut out any unnecessary low end with bass cut filter, or equip the mic stand with an isolation mount (a mic holder with rubber or other shock absorbing material).*

Proximity effect of microphone

In nature, a microphone tends to extend the low frequency band characteristics when placed close to the sound source. This is called proximity effect. This effect can be simulated in Proximity Effect (Prox-Efect). Set the parameter to a positive (+) value for a shorter distance to the sound source and a negative (-) value for a longer distance to the sound source. Time of Distance simulates the time difference due to distance from the sound source.

Controlling Channels A and B separately

Setting Link On enables simultaneous control on the 4-Band Parametric Equalizer via Channel B according to the settings on the Channel A side. To control Channels A and B separately, turn Link Off.

Parameter (full name)	Setting	Function

LNK (Link): **Channel B follows the settings for Channel A.**

Parameter (full name)	Setting	Function
Link (Link Switch)	On, Off	Specifies if Channel B follows or does not follow the settings for Channel A.

MCA, MCB(Mic Converter):Converts the characteristics of the low-end general-purpose microphone into the characteristics of the high-end microphone for studio application.

Parameter (full name)	Setting	Function
MicConv (Switch)	On, Off	Turns the microphone converter on or off.
Input (Input)	See the column on the previous page.	Sets the microphone type used for recording.
Out (Output)	See the column on the previous page.	Sets the microphone types to be simulated.
Phase (Phase)	Normal, Invers	Sets the microphone phase.

BCA, BCB (Bass Cut Filter): Cuts off undesired low frequency band sounds such as pop noise.

Parameter (full name)	Setting	Function
BassCut (Switch)	On, Off	Turns the bass cut filter on or off.
Freq (Frequency)	Thru, 20 - 2000 Hz	Sets the frequency for cutting off undesired low frequency band sounds such as pop noise.

DSA, DSB (Distance): **Simulates the frequency characteristics and time difference due to distance difference.**

Parameter (full name)	Setting	Function
Distance (Switch)	On, Off	Turns the distance on or off.
Prox.Fx (Proximity Effect)	-12– +12	Corrects the low frequency band characteristics due to the distance from the sound source.
Time (Time)	0–3000 cm	Simulates the time difference due to the distance from the sound source.

LMA, LMB (Limiter): **Prevents distortion by suppressing signals at high levels.**

Parameter (full name)	Setting	Function
Limiter (Switch)	On, Off	Turns the limiter on or off.
Thrsh (Threshold)	-60–0 dB	Sets the volume level to start suppressing excessive input.
Attack (Attack Time)	0–100	Sets the time from when the input level exceeds the threshold level to when the effect begins to apply.
Release (Release Time)	0–100	Sets the time from when the input level drops below the threshold level to when the effect ceases to apply.
Freq (Detect HPF Frequency)	Thru, 20 - 2000 Hz	Normally, sets "Thru". Sets the cutoff frequency of the level detection section.
Output Level (Output Level)	-60– +24 dB	Sets the volume of the compressor sound.

3BndIsolater (3-Band Isolator)

Sharply cuts off components by frequency band to eliminate undesired sounds. Useful to eliminate undesired sounds and take out only specific sounds from a CD. Isolator can make sounds completely perish, unlike ordinary equalizers that leave some sounds even with the gains of the respective frequency bands set to the minimum.

```
Input L          ┌──────────┐   Output L
     ─────────▶  │  3 Band  │  ─────────▶
                 │ Isolater L│
                 └──────────┘

                 ┌──────────┐
     ─────────▶  │  3 Band  │  ─────────▶
Input R          │ Isolater R│  Output R
                 └──────────┘
```
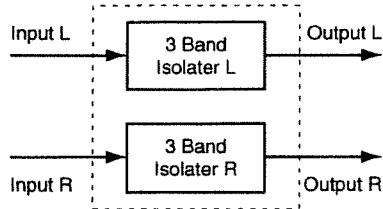
Muting the bass

Set up as follows to eliminate low frequency band sounds such as bass sounds.

Anti-phase Low Mix Switch (APLMixSw):	On
Anti-phase Low Level (APLLev):	Relatively high

Muting vocals

Set up as follows to eliminate middle frequency band sounds such as vocal sounds.

Anti-phase Middle Mix Switch (APMMixSw):	On
Anti-phase Middle Level (APMLev):	Relatively high

Muting noise

Identify the frequency band of the noise and set the relevant Level (Lo Level, Mid Level or Hi Level) to -60 dB.

Parameter (full name)	Setting	Function
ISO (3-band Isolator):	**Divides the input sound into three frequency bands to abstract or eliminate the sound.**	
Isolater (Switch)	On, Off	Turns the 3-band isolator on or off.
HiLvl (High Level)	-60– +4 dB	Increases or decreases frequency bands in the high frequency band.
MidLvl (Middle Level)	-60– +4 dB	Increases or decreases frequency bands in the middle frequency band.
LowLvl (Low Level)	-60– +4 dB	Increases or decreases frequency bands in the low frequency band.
APMMixSw (Anti-phase Middle Mix Switch)	On, Off	Mutes or leaves the middle frequency band sound.
APMLev (Anti-phase Middle Level)	0–100	Sets how much of the middle frequency band sound should be muted.
APLMixSw (Anti-phase Low Mix Switch)	On, Off	Mutes or leaves the low frequency band sound.
APLLev (Anti-phase Low Level)	0–100	Sets the amount of the low frequency band sound should be muted.

TapeEcho201

Simulates the tape echo section of the Roland RE-201 Space Echo. Capable of reproducing very subtle behavior at the measuring instrument level as well as adding subtle changes in pitch due to deterioration of the tape or inconsistency in tape rotation

```
Input L                    Output L
           TapeEcho201
Input R                    Output R
```

About replay head

RE-201 is equipped with three heads for creating sounds with different delay times (short, middle and long delay sounds). A desired combination of heads for use can be selected with Mode Selector (Mode).
In addition, separate panning features for the three replay heads not included in RE-201 are added.

Parameter (full name)	Setting	Function
Tape Echo 201:	**Simulates the tape echo section of the Roland RE-201 Space Echo.**	
SpaceEcho (Switch)	On, Off	Turns the tape echo on or off.
ModeSelect (Mode Selector)	1–7	Selects a combination of the three replay heads.
RepRate (Repeat Rate)	0–100	Sets the tape speed.
Intensity (Intensity)	0–100	Sets the number of repeated the delay sound.
EhoVol (Eho Volume).	0–100	Sets the volume of the tape echo sound.
DirectVol(Direct Volume)	0–100	Sets the volume of the direct sound.
Bass (Tone Bass)	-100– +100	Sets the low frequency band tone of the tape echo sound.
Treble (Tone Treble)	-100– +100	Sets the high frequency band tone of Tape Echo sound.
HeadS Pan (Pan Head S)	L63–R63	Sets the pan settings for the short delay playback head.
HeadM Pan (Pan Head M)	L63–R63	Sets the pan settings for the middle delay playback head.
HeadL Pan (Pan Head L)	L63–R63	Sets the pan settings for the long delay playback head.
TapeDist (Tape Distortion)	0–100	Adds tape-specific distortion.
WahRate (Wah-Flutter Rate)	0–100	Sets the fluttering rate of pitch due to deterioration of the tape or inconsistency in the rotation.
WahDepth (Wah-Flutter Depth)	0–100	Sets the fluttering depth of pitch due to deterioration of the tape or inconsistency in the rotation.

AnalogFlnger (Analog Flanger)

Simulates Roland SBF-325 Analog Flanger. Provides three types of flanger effects as well as chorus-like effect.

```
Input L        ┌──────────┐   Output L
─────────►     │  Analog  │   ──────►
               │ Flanger L│
               └──────────┘

               ┌──────────┐
───────────►   │  Analog  │   ──────►
               │ Flanger R│
Input R        └──────────┘   Output R
```
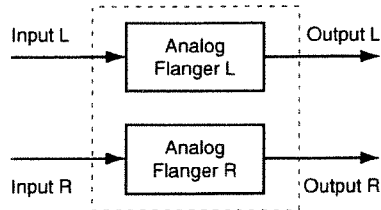
Types of Flanger Effect

Analog Flanger provides a variety of flanger effects or chorus effects. Selecting the desired flanger effect type in Mode.

FL1:	General monaural flanger
FL2:	Stereo flanger that allows stereo location of the direct sound to take effect.
FL3:	Cross mix flanger that provides more powerful effect
CHO:	Chorus effect

Parameter (full name)	Setting	Function
AFL (Analog Flanger):	**Simulates SBF-325 Analog Flanger.**	
Flanger (Switch)	On, Off	Turns the analog flanger on or off.
Mode (Mode)	FL1, FL2, FL3, CHO	Sets the type of flanger effects.
Feedback (Feedback Level)	0–100	Sets the amount of the delayed sound should be returned to the flanger input. *1, *2
Rate (Modulation Rate)	0–100	Sets the flanger's modulation rate.
Depth (Modulation Depth)	0–100	Sets the depth of the flanger modulation.
Freq (Modulation Frequency)	0–100	Sets the center frequency subject to application of the flanger effect.
ChB Mod (Channel B Inverse)	On, Off	"On" indicates that the Flanger effect on Channel B should be inverted. "Off" indicates that it should not be inverted.
ChA Phs (Mix A Inverse)	On, Off	"On" indicates that the phase should be inverted for mixing Channel A Flanger sound into the direct sound. "Off" indicates that the phase should not be inverted.
ChB Phs (Mix B Inverse)	On, Off	"On" indicates that the phase should be inverted for mixing Channel B Flanger sound into the direct sound. "Off" indicates that the phase should not be inverted.

NOTE

*1: This feature is disabled when Mode is set to "CHO."

*2: Excessively large values may cause oscillation.

AnalogPhaser

Two units of analog phasers are placed in parallel to accommodate stereo sounds. Surges unique to Phaser is created by adding sounds with the phase shifted periodically.
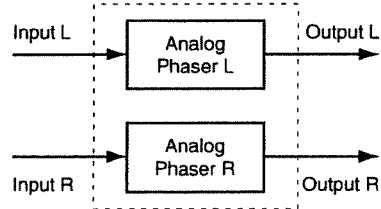
Number of stages of Phaser

As the number of sages of Phaser increases, the number of frequency points suppressed increases as well, generating sharper effect.
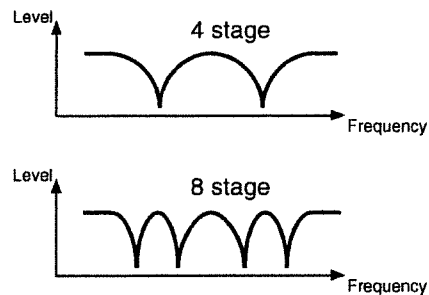
Parameter (full name)	Setting	Function
APH (Analog Phaser):	**Two units of analog phaser are placed in parallel to accommodate stereo sounds.**	
Phaser (Switch)	On, Off	Turns the analog phaser on or off.
Mode (Mode)	8STAGE, 4STAGE	Sets the number of stages of phaser.
Freq (Frequency)	0–100	Sets the center frequency to which the phase effect is applied.
Reso (Resonance)	0–100	Enhances frequency components at around the center frequency set with Frequency.
LFO1/2 Rate (LFO1/2 Rate)	0–100	Sets the phase effect cycle length.
LFO1/2 Dep (LFO1/2 Depth)	0–100	Sets the depth of the phase effect cycle.
LFO1/2 BMode (LFO1/2 Channel B Inverse)	On, Off	"On" indicates that the surge phase should be inverted and "Off" indicates that it should not be inverted.

Speaker Modeling

Models a variety of speaker characteristics ranging from those of high-end professional monitor speakers used as the standard at studios around the world to those of speakers of small-sized TV sets and portable radios.

Input L → SP Modeling → BassCut Freq → Lo Freq Trim → Hi Freq Trim → Limiter → Output L

Input R → SP Modeling → BassCut Freq → Lo Freq Trim → Hi Freq Tim → Limiter → Output R

NOTE
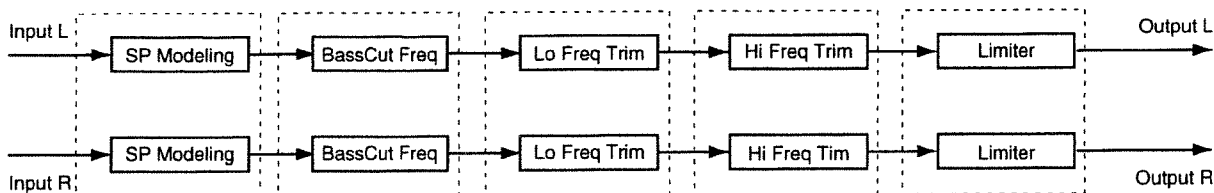
Speaker Modeling is adjusted so that its optimal effect is achieved when a Roland Powered Monitor DS-90 is used in digital connection. Its effect may not be fully achieved with other types of speakers.

Speaker types applicable for modeling

The characteristics of the following types of speakers can be modeled. Set the desired type for Model.

THRU:	No modeling is to be performed.
FLAT:	DS-90 is corrected by modeling to produce wider-range and untwisted sounds.
Pwd.BLK:	Typical model of powered monitor (two-way type, the woofer diameter = 170 mm (6-1/2 inches))
Pwd.E-B:	Powered monitor characterized in delightful sound quality
Pwd.MAC:	Powered monitor characterized in well-extended low frequency band sounds
SmlCUBE:	Small-sized full-range speaker widely used in recording studios
Wh.CONE:	Enclosed-type two-way speaker widely used in recording studios, characterized in white woofers.
WhTISUE:	Mild sounds from "White Cone" Tweeter covered with tissue paper
RADIO:	Pocket-type small-sized radio
SmlTV:	Speaker attached to the 14-inch TV set
BoomBox:	Radio cassette recorder
BoomLoB:	Radio cassette recorder with the low frequency band enhanced

* *Use "THRU" for clear comparison between sounds with and without modeling.*

Parameter (full name)	Setting	Function

SPM (Speaker Modeling): Selects the speaker subject to characteristics modeling.

Modeling (Modeling)	Off, On	Turns the Speaker Modeling on or off.
Mdl (Model)	See the column on the previous page.	Specifies the speaker actually generating sounds.
Phase (Phase)	Nor, Inv	Sets the phase of the speaker. "Nor" for the same phase, and "Inv" for the inverted phase.

BC (Bass Cut Filter): Cuts off undesired low sounds such as pop noise.

BassCut (Switch)	On, Off	Turns the bass cut filter on or off.
Freq (Frequency)	Thru, 20 - 2000 Hz	Sets the frequency for cutting off undesired low frequency band sounds such as pop noise.

LFT (Low Frequency Trimmer): Adjusts the low frequency band sounds.

L.F.Trim (Switch)	On, Off	Turns the low frequency trimmer on or off.
Gain (Gain)	-12– +12dB	Sets the boost/cut amount.
Freq (Frequency)	20–2000 Hz	Sets the center frequency of the trimmer.

HFT (High Frequency Trimmer): Adjusts the high frequency band sounds.

H.F.Trim (Switch)	On, Off	Turns the high frequency trimmer on or off.
Gain (Gain)	-12– +12dB	Sets the boost/cut amount.
Freq (Frequency)	1.0–20.0 kHz	Sets the center frequency.

LMT (Limiter):   Prevents distortion by suppressing signals at high levels.

Limiter (Switch)	On, Off	Turns the limiter on or off.
Thres (Threshold)	-60–0 dB	Sets the volume at which the limiter starts working.
Rel (Release)	0–100	Sets the time from when the input level drops below the threshold level to when the effect ceases to apply.
Level (Level)	-60– +24 dB	Sets the volume after passing through the limiter.

Mastering Tool Kit

This Kit is a compressor that splits sounds into different frequency band to unify their volumes. With this feature, you can perform mastering at the optimized level when mixing down into an MD or a CD or when producing your original audio CD using the CD-R disk.
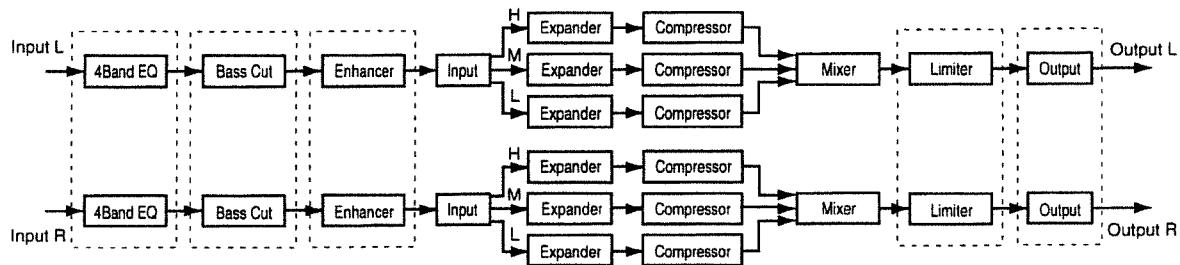
Effect of "Detect Time" under Input

With ordinary compressors, a moment of delay occurs to suppress a level over instance after it has been detected. With this algorithm, this problem is bypassed by using the input sound only for level detection and adding a specified length of delay to the sound for processing and output. "Detect Time" under Input is the setting of the delay time for this purpose. Note that supplying Detect Time causes time difference between input and output of audio signals, requiring due considerations if used for operations other than mastering (ex. channel insertion).

Splitting into frequency bands

To split into high, middle and low frequency bands, Low Split Point (LSP) and High Split Point (HSP) under Input are used to specify frequencies.
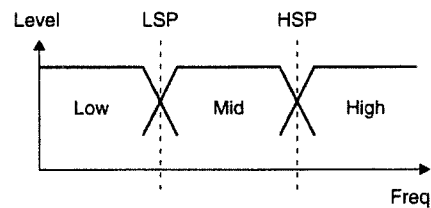
Parameter (full name)	Setting	Function
EQ (Equalizer)		
EQ (Switch)	On, Off	Turns the equalizer on or off.
InputG (Input Gain)	-24– +12 dB	Sets the overall volume before passing through the equalizer.
LowType (Low Type)	Shlv, Peak	Sets the type of the low frequency band equalizer (Shlving type or peaking type).
LowG (Low Gain)	-12– +12 dB	Sets the boost/cut amount in the low frequency band.
LowF (Low Frequency)	20–2000 Hz	Sets the center frequency in the low frequency band.
LowQ (Low Q)	0.3–16.0	Sets the width of the area around the low frequency that will be affected by the gain settings. *1
LoMidG (Low Middle Gain)	-12– +12 dB	Sets the boost/cut amount in the low middle frequency band.
LoMidF (Low Middle Frequency)	20–8000 Hz	Sets the center frequency in the low middle frequency band.
LoMidQ (Low Middle Q)	0.3–16.0	Sets the width of the area around the low middle frequency that will be affected by the gain settings.
HiMidG (High Middle Gain)	-12– +12 dB	Sets the boost/cut amount in the high frequency band.
HiMidF (High Middle Frequency)	20–8000 Hz	Sets the center frequency in the high middle frequency band.
HiMidQ (High Middle Q)	0.3–16.0	Sets the width of the area around the high middle frequency that will be affected by the gain settings.
HiType (High Type)	Shlv, Peak	Sets the type of the high frequency band equalizer (Shlving

type or peaking type).

HiG (High Gain)	-12- +12 dB	Sets the boost/cut amount in the high frequency band.
HiF (High Frequency)	1.40–20.0 kHz	Sets the center frequency in the high frequency band.
HiQ (High Q)	0.3–16.0	Sets the width of the area around the high frequency that will be affected by the gain settings. *1
Level (Level)	-24- +12 dB	Sets the overall volume after passing through the equalizer.

BC (Bass Cut Filter):   Cuts off undesired low frequency band sounds such as pop noise.

BassCut (Switch)	On, Off	Turns the bass cut filter on or off.
Freq (Frequency)	Thru, 20 - 2000 Hz	Sets the frequency for cutting off undesired low frequency band sounds such as pop noise.

ENH (Enhancer):   Accentuates the sound and push the sound forward.

Enhancer (Switch)	On, Off	Turns the enhancer on or off.
Sens (Sensitivity)	0–100	Sets the degree of the enhancer effect desired.
Freq (Frequency)	1.00–10.0 kHz	Sets the frequency at which the enhancer effect starts working.
MixLvl (Mix Level)	-24- +12dB	Set the amount of the enhancer sound to be added to the direct sound.

IN (Input):   Splits the direct sound into three frequency bands, that is, low, middle and high frequency bands.

Gain (Input Gain)	-24- +12dB	Sets the overall volume before entering expander/compressor.
D-Time (Detect Time)	0–10 ms	Sets the length of delay to add to the direct sound input.
LSP (Low Split Point)	20–800 Hz	Sets the frequency at which the direct sound is split into three bands (on the low frequency band side).
HSP (High Split Point)	1.60–16.0 kHz	Sets the frequency at which the direct sound is split into three bands (on the high frequency band side).

EXP (Expander):   Expands the dynamic range at a certain ratio.

Expander (Switch)	On, Off	Turns the expander on or off.
L.Thre (Low Threshold)	-80–0 dB	Sets the volume at which the expander for the low frequency band starts working.
LRatio (Low Raito)	1:1.0–1:16, 1:INF	Sets the ratio at which the output in the low frequency band is increased when the input level has dropped below the low threshold level.
L.Atck (Low Attack)	0–100 ms	Sets the time until when the low frequency band expander starts working after the input level dropps below the low threshold level.
L.Rel (Low Release)	50 ms–5.00 s	Sets the time until when the high frequency band expander stops working after the input level exceeds the low threshold level.
M.Thre (High Threshold)	-80–0 dB	Sets the volume at which the expander for the middle frequency band starts working.
MRatio (High Ratio)	1:1.0–1:16, 1:INF	Sets the ratio at which the output in the middle frequency band is increased when the input level has dropped below the middle threshold level.
M.Atck (High Attack)	0–100 ms	Sets the time until when the middle frequency band expander starts working after the input level dropps below the middle threshold level.
M.Rel (High Release)	50 ms–5.00 s	Sets the time until when the middle frequency band expander stops working after the input level exceeds the middle threshold level.
H.Thre (High Threshold)	-80–0 dB	Sets the volume at which the expander for the high frequency band starts working.
HRatio (High Ratio)	1:1.0–1:16, 1:INF	Sets the ratio at which the output in the high frequency band is increased when the input level has dropped below the high threshold level.
H.Atck (High Attack)	0–100 ms	Sets the time until when the high frequency band expander starts working after the input level dropps below the high threshold level.

→ **Continued...**

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H.Rel (High Release)	50 ms–5.00 s	Sets the time until when the high frequency band expander stops working after the input level exceeds the high threshold level.

CMP (Compressor):Compresses the entire output signals when the input volume exceeds a specified value.

Comp (Switch)	On, Off	Turns the compressor on or off.
L.Thre (Low Threshold)	-24–0 dB	Sets the volume at which the compressor for the low frequency band starts working.
LRatio (Low Raito)	1:1.0–1:16, 1:INF	Sets the ratio at which the output in the low frequency band is suppressed when the input level has exceeded the low threshold level.
L.Atck (Low Attack)	0–100 ms	Sets the time until when the low frequency band compressor starts working after the input level has exceeded the low threshold level.
L.Rel (Low Release)	50 ms–5.00 s	Sets the time until when the low frequency band compressor stops working after the input level has dropped below the low threshold level.
M.Thre (Middle Threshold)	-24–0 dB	Sets the volume at which the compressor in the middle frequency band starts working.
MRatio (Middle Ratio)	1:1.0–1:16, 1:INF	Sets the ratio at which the output in the middle frequency band is suppressed when the input level has exceeded the middle threshold level.
M.Atck (Middle Attack)	0–100 ms	Sets the time until when the middle frequency band compressor starts working after the input level has exceeded the middle threshold level.
M.Rel (Middle Release)	50 ms–5.00 s	Sets the time until when the middle frequency band compressor stops working after the input level has dropped below the middle threshold level.
H.Thre (High Threshold)	-24–0 dB	Sets the volume at which the compressor for the high frequency band starts working.
HRaito (High Ratio)	1:1.0–1:16, 1:INF	Sets the ratio at which the output in the high frequency band is suppressed when the input level has exceeded the high threshold level.
H.Atck (High Attack)	0–100 ms	Sets the time until when the high frequency band compressor starts working after the input level has exceeded the high threshold level.
H.Rel (High Release)	50 ms–5.00 s	Sets the time until when the high frequency band compressor stops working after the input level has dropped below the high threshold level.

MIX (Mixer): Adjusts the volume by frequency band.

LowLvl (Low Level)	-80– +6 dB	Sets the volume in the low frequency band after passing through the expander and compressor.
MidLvl (Middle Level)	-80– +6 dB	Sets the middle frequency band volume after passing through the expander and compressor.
HiLvl (High Level)	-80– +6 dB	Sets the volume in the high frequency band after passing through the expander and compressor.

LMT (Limiter): Prevents distortion by suppressing signals at high levels.

Limiter (Switch)	On, Off	Turns the limiter on or off.
Thre (Threshold)	-24–0 dB	Sets the volume at which the limiter starts working.
Atck (Attack)	0–100 ms	Sets the time until when the limiter starts working after the input level has exceeded threshold level.
Rel (Release)	50 ms–5.00 s	Sets the time until when the limiter stops working after the input level drops below the threshold level.

Output Level: Provides settings concerning overall output.

SoftClip (Soft Clip)	On, Off	Suppresses conspicuous distortion that may occur when the effect of compressor/limiter has been applied excessively.
Dither (Dither)	Off, 8–24 bit	Smoothes the transition where the sound disappears.
Level (Level)	-80– +6 dB	Sets the overall volume after passing through the limiter.

NOTE

With Compressor, the level is automatically adjusted to the optimal with the settings for Threshold (Thres) and Raito (Ratio). Setting Attack (Atck) to a relatively long time may cause distortion. For this reason, a margin of -6 dB is provided. Adjust the Mixer (Mix) level as required.

*1: If Low Type (Lo Type) or High Type (Hi Type) is set to "Shlv (Shlving Type)," the setting for Lo Q or High Q is invalid.

Mixer Section Block Diagram

Input Mixer and Track Mixer

Masterblock

Track Sheet

Roland® VSR-880

Track Sheet

Project _____ Artist _____ Client _____

Song Name _____

☐ Internal   ☐ Removable   Backing up to _____ Date _____

V-Track Bank (A -or- B)

V-Tracks	Tracks							
	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

LOCATOR   SCENE

NOTES
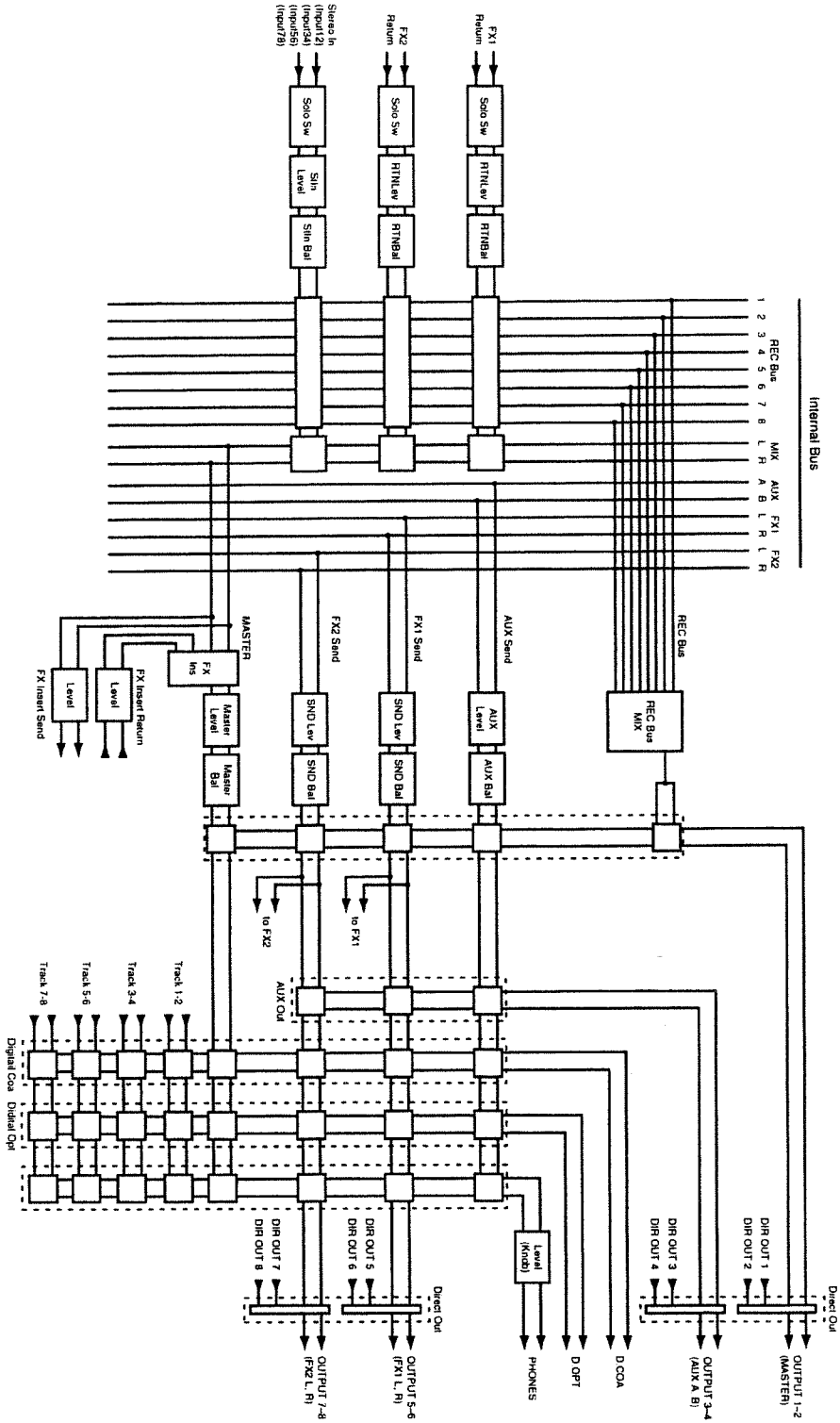
MIDI Implementation

Model VSR-880, Version 1.00, Nov. 24 1999

1. Transmitted Data and Recognized Receive Data

■Channel Voice Message

●Note On/Off

Transmit the message which specified MIDI channel as a Metronome when "Metronome Out Mode (*1)" in the SYSTEM parameter is "MIDI."
Receive the message when Voice Transformer effect (algorithm 27) is selected and MIDI Control SW is On.

Status	Second	Third
9nH	mmH	llH

n = MIDI Channel No.:   0H - FH (ch.1 - ch.16) (*2)
                          0H - 1H (ch.1 - ch.2) (*3)
mm = Note No.:   00H - 7FH (0 - 127)   (*3)
ll = Velocity: 01H - 7FH (1 - 127) / 00H = NOTE OFF

(*1) see "2. Address Map for Data Transfer" section.
(*2) Only when transmitting Metronome.
(*3) Only when receiving with MIDI Control SW of Voice Transformer is On.

   n = 0 (ch.1) : Voice Transformer : Chromatic Pitch
   mm = 24H - 54H (C2 - C6)
   ll = ignored

   n = 1 (ch.2) : Voice Transformer : Chromatic Formant
   mm = 24H - 3CH (C2 - C4)
   ll = ignored

●Polyphonic Key Pressure

Transmits the level meter value of VSR-880 according to the value of "Level Meter Tx. via MIDI" (see "2. Data Transfer Address Map"). (MIDI ch. is fixed to 16.)
Ignored when received.
When VSR-880 is booted up, "Level Meter Tx. via MIDI" is set to Off. Level meter value is not transmitted until is it set to On with Data Set (DT1).

Status	Second	Third
AFH	mmH	llH

mm = Note No.:   00H - 27H (0 - 39) (*1)
ll = Level Meter Value: 00H - 10H (0 - 16) (*2)

```
----------------------------------------------------------------
                 Level Meter and Note No.  (*1)
----------------------------------------------------------------
Level Meter Ch.   Note No.     Level Meter Ch.   Note No.
----------------------------------------------------------------
TRACK MIX CH. 1      0         INPUT MIX CH. 1      16
TRACK MIX CH. 2      1         INPUT MIX CH. 2      17
TRACK MIX CH. 3      2         INPUT MIX CH. 3      18
TRACK MIX CH. 4      3         INPUT MIX CH. 4      19
TRACK MIX CH. 5      4         INPUT MIX CH. 5      20
TRACK MIX CH. 6      5         INPUT MIX CH. 6      21
TRACK MIX CH. 7      6         INPUT MIX CH. 7      22
TRACK MIX CH. 8      7         INPUT MIX CH. 8      23

AUX BUS Lch         34
AUX BUS Rch         35

MASTER Lch          38
MASTER Rch          39
```

```
----------------------------------------------------------------
                 Level Meter Value and Level (*2)
----------------------------------------------------------------
Val   Level    Val   Level    Val   Level    Val   Level    Val   Level
----------------------------------------------------------------
 0    -∞dB      4   -28.0dB    8   -15.0dB   12   -6.0dB    16   -1.0dB
 1   -48.0dB    5   -24.0dB    9   -12.0dB   13   -4.0dB
 2   -36.0dB    6   -21.0dB   10   -10.0dB   14   -3.0dB
 3   -32.0dB    7   -18.0dB   11    -8.0dB   15   -2.0dB
```

●Control Change

Parameter on the Mixer section can be controlled and transmitted by the control change messages when 'MIDI Mixer Control Type (*1)' in the SYSTEM parameter is "C.C."
Transmitted data of the level meter parameters respond to the setting of the "Level Meter Tx. via MIDI (*1)."

Status	Second	Third
BnH	mmH	llH

n = MIDI Channel No.:   0H - FH (ch.1 - ch.16 : see the followings)
mm = Mixer parameter No.:   see the followings
ll = Mixer parameter value: 00H - 7FH (0 - 127) (*1)

```
------------------------------------------------------------------
       MIDI channels and Control Change No. for Mixer parameters
------------------------------------------------------------------

<Channel Strip>

TRACK MIX CH.     1  2  3  4  5  6  7  8
MIDI ch. ->       1  2  3  4  5  6  7  8
------------------------------------------------------------------
TRACK STATUS(*3)   3 -> -> -> -> -> -> ->
MIX Send Level     7 -> -> -> -> -> -> ->
MIX Send Pan      10 -> -> -> -> -> -> ->
EQ L Freq.        12 -> -> -> -> -> -> ->
EQ L Gain         13 -> -> -> -> -> -> ->
EQ M Freq.        14 -> -> -> -> -> -> ->
EQ M Gain         15 -> -> -> -> -> -> ->
EQ M Q            16 -> -> -> -> -> -> ->
EQ H Freq.        17 -> -> -> -> -> -> ->
EQ H Gain         18 -> -> -> -> -> -> ->
FX1 SND Level     19 -> -> -> -> -> -> ->
FX1 SND Pan/Bal   20 -> -> -> -> -> -> ->
FX2 SND Level     21 -> -> -> -> -> -> ->
FX2 SND Pan/Bal   22 -> -> -> -> -> -> ->
AUX Send Level    23 -> -> -> -> -> -> ->
AUX Send Pan/Bal  24 -> -> -> -> -> -> ->
MIX Offset Level  29 -- -> -- -> -- -> --
MIX Offset Bal    30 -- -> -- -> -- -> --


INPUT MIX  CH.    1  2  3  4  5  6  7  8
MIDI ch. ->       1  2  3  4  5  6  7  8
------------------------------------------------------------------
MIX Send Level    68 -> -> -> -> -> -> ->
MIX Send Pan/Bal  70 -> -> -> -> -> -> ->
EQ L Freq.        71 -> -> -> -> -> -> ->
EQ L Gain         72 -> -> -> -> -> -> ->
EQ M Freq.        73 -> -> -> -> -> -> ->
EQ M Gain         74 -> -> -> -> -> -> ->
EQ M Q            75 -> -> -> -> -> -> ->
EQ H Freq.        76 -> -> -> -> -> -> ->
EQ H Gain         77 -> -> -> -> -> -> ->
FX1 SND Level     78 -> -> -> -> -> -> ->
FX1 SND Pan/Bal   79 -> -> -> -> -> -> ->
FX2 SND Level     80 -> -> -> -> -> -> ->
FX2 SND Pan/Bal   81 -> -> -> -> -> -> ->
AUX Send Level    82 -> -> -> -> -> -> ->
AUX Send Pan/Bal  83 -> -> -> -> -> -> ->
MIX Offset Level  88 -- -> -- -> -- -> --
MIX Offset Bal    89 -- -> -- -> -- -> --


stereo in & effect return

                  ST IN    FX1     FX2
MIDI ch. ->        11      12      13
------------------------------------------------------------------
                           ->      ->
MIX Send Level     68      ->      ->
MIX Send Balance   70      ->      ->


<MASTER Block>  MIDI ch.=16

Master Level      68
Master Balance    70
FX1 SND Level     78
FX1 SND Balance   79
FX2 SND Level     80
FX2 SND Balance   81
AUX Level         82
AUX Balance       83
```

(*1) see "2. Address Map for Data Transfer" section.
(*2) Mixer parameters of the paired channels (Channel Link is "On") is only transmitted by odd number MIDI channel.
(*4) Track status switches corresponding to the value as follows.

(1) While VSR-880 stops

```
Value:   0-31        32-63        64-95        96-127
------------------------------------------------------------
Status:  MUTE  ->MUTE   MUTE  ->PLAY   MUTE  ->REC   MUTE  ->SOURCE
         PLAY  ->MUTE   PLAY  ->PLAY   PLAY  ->REC   PLAY  ->SOURCE
         REC   ->MUTE   REC   ->PLAY   REC   ->REC   REC   ->SOURCE
         SOURCE->MUTE   SOURCE->PLAY   SOURCE->REC   SOURCE->SOURCE
```

(2) While playing/recording

```
Value:   0-31        32-63        64-95        96-127
------------------------------------------------------------
Status:  MUTE  -> X     MUTE  ->PLAY   MUTE  -> X     MUTE  -> X
         PLAY  ->MUTE   PLAY  ->PLAY   PLAY  -> X     PLAY  -> X
         REC   -> X     REC   -> X     REC   ->REC    REC   ->SOURCE(*)
         SOURCE->MUTE   SOURCE-> X     SOURCE->REC(*)  SOURCE->SOURCE
```

(*) Impossible to switch while recording.
(*) X = ignored

○Bank select (MSB/LSB)

Switch the effect bank of Preset/User.
VSR-880 never transmits this message.

Status	Second	Third
BnH	00H	mmH
BnH	20H	llH

n = MIDI Channel Number: 0H - 1H (0 - 1) 0 = Effect1, 1 = Effect2
mm = upper byte of bank number: 00H
ll = lower byte of bank number: 00H - 03H (0 - 3)

Bank Select MSB	LSB	Program Change	Patch Number
00H	00H	00H - 63H (0 - 99)	Preset A #0 - #99
00H	01H	00H - 63H (0 - 99)	Preset B #0 - #99
00H	02H	00H - 63H (0 - 99)	User U #0 - #99
00H	03H	00H - 09H (0 - 09)	Preset C #0 - #09

○NRPN(MSB/LSB)

Select a parameter of the effect to be controlled.
VSR-880 never transmits this message.

Status	Second	Third
BnH	62H	llH
BnH	63H	mmH

n = MIDI Channel Number: 0H - 1H (0 - 1) 0 = Effect1 1 = Effect2
mm = upper byte of parameter number to be assigned with NRPN : 00H
ll = lower byte of parameter number to be assigned with NRPN : 00H - 2EH (0-46)

○Data Entry (MSB/LSB)

Control effect parameter assigned with NRPN.
VSR-880 never transmits this message.

Status	Second	Third
BnH	06H	mmH
BnH	26H	llH

n = MIDI channel number :   0H - 1H (0 - 1) 0 = Effect1 1 = Effect2
mm = upper byte corresponding to the parameter assigned with NRPN
ll = lower byte corresponding to the parameter assigned with NRPN

```
<Ex>    mmH llH = 40H 00H = -8192
                = 7FH 7FH = -1
                = 00H 00H = 0
                = 3FH 7FH = +8191
```

○Data Increment

Increment the effect parameter selected with NRPN.
VSR-880 never transmits this message.

Status	Second	Third
BnH	60H	00H

n = MIDI channel number: 0H - 1H (0 - 1) 0 = Effect1 1 = Effect2

Increment the effect parameter selected with NRPN.

○Data Decrement

Decrement the effect parameter selected with NRPN.
VSR-880 never transmits this message.

Status	Second	Third
BnH	61H	00H

n = MIDI channel number: 0H - 1H (0 - 1) 0 = Effect1 1 = Effect2

Decrement the effect parameter selected with NRPN.

```
------------------------------------------------------------
    Correspondence table between NRPN and effect parameters
------------------------------------------------------------
```

Algorithm 0 Reverb (FX1 Only)

NRPN	Data Entry	
00H 00H	mmH 11H	EQ SW 0,1 = Off,On
00H 01H	mmH 11H	EQ: Low EQ Type 0,1 = Shelving, Peaking
00H 02H	mmH 11H	EQ: Low EQ Gain -12,,,12dB
00H 03H	mmH 11H	EQ: Low EQ Frequency 2,,,200 = 20,,,2000Hz
00H 04H	mmH 11H	EQ: Low EQ Q 3,,,100 = 0.3,,,10.0
00H 05H	mmH 11H	EQ: Mid EQ Gain -12,,,12dB
00H 06H	mmH 11H	EQ: Mid EQ Frequency 20,,,800 = 200,,,8000Hz
00H 07H	mmH 11H	EQ: Mid EQ Q 3,,,100 = 0.3,,,10.0
00H 08H	mmH 11H	EQ: High EQ Type 0,1 = Shelving, Peaking
00H 09H	mmH 11H	EQ: High EQ Gain -12,,,12dB
00H 0AH	mmH 11H	EQ: High EQ Frequency 14,,,200 = 1.4,,,20.0kHz
00H 0BH	mmH 11H	EQ: High EQ Q 3,,,100 = 0.3,,,10.0
00H 0CH	mmH 11H	EQ: Out Level 0,,,100
00H 0DH	mmH 11H	Reverb: Room Size 5,,,40m
00H 0EH	mmH 11H	Reverb: Reverb Time 1,,,320 = 0.1,,,32.0s
00H 0FH	mmH 11H	Reverb: Pre Delay 0,,,200 = 0,,,200ms
00H 10H	mmH 11H	Reverb: Diffusion 0,,,100
00H 11H	mmH 11H	Reverb: Density 0,,,100
00H 12H	mmH 11H	Reverb: Early Reflection Level 0,,,100
00H 13H	mmH 11H	Reverb: LF Damp Frequency 5,,,400 = 50,,,4000Hz
00H 14H	mmH 11H	Reverb: LF Damp Gain -36,,,0dB
00H 15H	mmH 11H	Reverb: HF Damp Frequency 10,,,200 = 1.0,,,20.0kHz
00H 16H	mmH 11H	Reverb: HF Damp Gain -36,,,0dB
00H 17H	mmH 11H	Reverb: HI Cut Frequency 2,,,200 = 0.2,,,20.0kHz
00H 18H	mmH 11H	Reverb: Effect Level -100,,,100
00H 19H	mmH 11H	Reverb: Direct Level -100,,,100
00H 1AH	00H 00H	(Reserved)

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OOH 7FH	OOH OOH

Algorithm 1 Delay

NRPN	Data Entry	
OOH OOH	mmH 11H	Delay SW 0,1 = Off,On
OOH 01H	mmH 11H	EQ SW 0,1 = Off,On
OOH 02H	mmH 11H	Delay: Delay Time 0,,,1200ms
OOH 03H	mmH 11H	Delay: Shift -1200,,,1200 = L1200,,,R1200ms
OOH 04H	mmH 11H	Delay: Lch Feedback Level -100,,,100
OOH 05H	mmH 11H	Delay: Rch Feedback Level -100,,,100
OOH 06H	mmH 11H	Delay: Lch Level -100,,,100
OOH 07H	mmH 11H	Delay: Rch Level -100,,,100
OOH 08H	mmH 11H	Delay: LF Damp Frequency 5,,,400 = 50,,,4000Hz
OOH 09H	mmH 11H	Delay: LF Damp Gain -36,,,0dB
OOH 0AH	mmH 11H	Delay: HF Damp Frequency 10,,,200 = 1.0,,,20.0kHz
OOH 0BH	mmH 11H	Delay: HF Damp Gain -36,,,0dB
OOH 0CH	mmH 11H	Delay: Direct Level -100,,,100
OOH 0DH	mmH 11H	EQ: Low EQ Type 0,1 = Shelving, Peaking
OOH 0EH	mmH 11H	EQ: Low EQ Gain -12,,,12dB
OOH 0FH	mmH 11H	EQ: Low EQ Frequency 2,,,200 = 20,,,2000Hz
OOH 10H	mmH 11H	EQ: Low EQ Q 3,,,100 = 0.3,,,10.0
OOH 11H	mmH 11H	EQ: Mid EQ Gain -12,,,12dB
OOH 12H	mmH 11H	EQ: Mid EQ Frequency 20,,,800 = 200,,,8000Hz
OOH 13H	mmH 11H	EQ: Mid EQ Q 3,,,100 = 0.3,,,10.0
OOH 14H	mmH 11H	EQ: High EQ Type 0,1 = Shelving, Peaking
OOH 15H	mmH 11H	EQ: High EQ Gain -12,,,12dB
OOH 16H	mmH 11H	EQ: High EQ Frequency 14,,,200 = 1.4,,,20.0kHz
OOH 17H	mmH 11H	EQ: High EQ Q 3,,,100 = 0.3,,,10.0
OOH 18H	mmH 11H	EQ: Out Level 0,,,100
OOH 19H :	OOH OOH	(Reserved)
:	:	
OOH 7FH	OOH OOH	

* (Delay Time) + (Absolute value of Shift) should be 1200 or less.

Algorithm 2 Stereo Delay Chorus

NRPN	Data Entry	
OOH OOH	mmH 11H	Delay SW 0,1 = Off,On
OOH 01H	mmH 11H	Chorus SW 0,1 = Off,On
OOH 02H	mmH 11H	EQ SW 0,1 = Off,On
OOH 03H	mmH 11H	Delay: Delay Time 0,,,500ms

OOH 04H	mmH 11H	Delay: Shift -500,,,500 = L500,,R500ms
OOH 05H	mmH 11H	Delay: Lch Feedback Level -100,,,100
OOH 06H	mmH 11H	Delay: Rch Feedback Level -100,,,100
OOH 07H	mmH 11H	Delay: Lch Cross Feedback Level -100,,,100
OOH 08H	mmH 11H	Delay: Rch Cross Feedback Level -100,,,100
OOH 09H	mmH 11H	Delay: Effect Level -100,,,100
OOH 0AH	mmH 11H	Delay: Direct Level -100,,,100
OOH 0BH	mmH 11H	Chorus: Rate 1,,,100 = 0.1,,,10.0Hz
OOH 0CH	mmH 11H	Chorus: Depth 0,,,100
OOH 0DH	mmH 11H	Chorus: Pre Delay 0,,,50ms
OOH 0EH	mmH 11H	Chorus: Effect Level -100,,,100
OOH 0FH	mmH 11H	Chorus: Direct Level -100,,,100
OOH 10H	mmH 11H	Chorus: Lch Feedback Level -100,,,100
OOH 11H	mmH 11H	Chorus: Rch Feedback Level -100,,,100
OOH 12H	mmH 11H	Chorus: Lch Cross Feedback Level -100,,,100
OOH 13H	mmH 11H	Chorus: Rch Cross Feedback Level -100,,,100
OOH 14H	mmH 11H	EQ: Low EQ Type 0,1 = Shelving, Peaking
OOH 15H	mmH 11H	EQ: Low EQ Gain -12,,,12dB
OOH 16H	mmH 11H	EQ: Low EQ Frequency 2,,,200 = 20,,,2000Hz
OOH 17H	mmH 11H	EQ: Low EQ Q 3,,,100 = 0.3,,,10.0
OOH 18H	mmH 11H	EQ: Mid EQ Gain -12,,,12dB
OOH 19H	mmH 11H	EQ: Mid EQ Frequency 20,,,800 = 200,,,8000Hz
OOH 1AH	mmH 11H	EQ: Mid EQ Q 3,,,100 = 0.3,,,10.0
OOH 1BH	mmH 11H	EQ: High EQ Type 0,1 = Shelving, Peaking
OOH 1CH	mmH 11H	EQ: High EQ Gain -12,,,12dB
OOH 1DH	mmH 11H	EQ: High EQ Frequency 14,,,200 = 1.4,,,20.0kHz
OOH 1EH	mmH 11H	EQ: High EQ Q 3,,,100 = 0.3,,,10.0
OOH 1FH	mmH 11H	EQ: Out Level 0,,,100
OOH 20H :	OOH OOH	(Reserved)
:	:	
OOH 7FH	OOH OOH	

* (Delay Time) + (Absolute value of Shift) should be 500 or less.

Algorithm 3 Stereo Pitch Shifter Delay

NRPN	Data Entry	
OOH OOH	mmH 11H	P.ShifterDelay SW 0,1 = Off,On
OOH 01H	mmH 11H	EQ SW 0,1 = Off,On
OOH 02H	mmH 11H	P.ShifterDelay: Lch Chromatic Pitch -12,,,12
OOH 03H	mmH 11H	P.ShifterDelay: Lch Fine Pitch -100,,,100
OOH 04H	mmH 11H	P.ShifterDelay: Lch Pre Delay 0,,,50ms
OOH 05H	mmH 11H	P.ShifterDelay: Lch Feedback Delay Time

			0,,,500ms
00H 06H	mmH 11H	F.ShifterDelay: Lch Feedback Level	-100...100
00H 07H	mmH 11H	F.ShifterDelay: Lch Cross Feedback Level	-100,,,100
00H 08H	mmH 11H	F.ShifterDelay: Rch Chromatic Pitch	-12,,,12
00H 09H	mmH 11H	F.ShifterDelay: Rch Fine Pitch	-100,,,100
00H 0AH	mmH 11H	F.ShifterDelay: Rch Pre Delay	0,,,50ms
00H 0BH	mmH 11H	F.ShifterDelay: Rch Feedback Delay Time	0,,,500ms
00H 0CH	mmH 11H	F.ShifterDelay: Rch Feedback Level	-100,,,100
00H 0DH	mmH 11H	F.ShifterDelay: Rch Cross Feedback Level	-100,,,100
00H 0EH	mmH 11H	F.ShifterDelay: Effect Level	-100,,,100
00H 0FH	mmH 11H	F.ShifterDelay: Direct Level	-100,,,100
00H 10H	mmH 11H	EQ: Low EQ Type	0,1 = Shelving, Peaking
00H 11H	mmH 11H	EQ: Low EQ Gain	-12,,,12dB
00H 12H	mmH 11H	EQ: Low EQ Frequency	2,,,200 = 20,,,2000Hz
00H 13H	mmH 11H	EQ: Low EQ Q	3,,,100 = 0.3,,,10.0
00H 14H	mmH 11H	EQ: Mid EQ Gain	-12,,,12dB
00H 15H	mmH 11H	EQ: Mid EQ Frequency	20,,,800 = 200,,,8000Hz
00H 16H	mmH 11H	EQ: Mid EQ Q	3,,,100 = 0.3,,,10.0
00H 17H	mmH 11H	EQ: High EQ Type	0,1 = Shelving, Peaking
00H 18H	mmH 11H	EQ: High EQ Gain	-12,,,12dB
00H 19H	mmH 11H	EQ: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz
00H 1AH	mmH 11H	EQ: High EQ Q	3,,,100 = 0.3,,,10.0
00H 1BH	mmH 11H	EQ: Out Level	0,,,100
00H 1CH : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

Algorithm 4 Vocoder

NRPN	Data Entry		
00H 00H	mmH 11H	Chorus SW	0,1 = Off,On
00H 01H	mmH 11H	Vocoder: Voice Character 1	0,,,100
00H 02H	mmH 11H	Vocoder: Voice Character 2	0,,,100
00H 03H	mmH 11H	Vocoder: Voice Character 3	0,,,100
00H 04H	mmH 11H	Vocoder: Voice Character 4	0,,,100
00H 05H	mmH 11H	Vocoder: Voice Character 5	0,,,100
00H 06H	mmH 11H	Vocoder: Voice Character 6	0,,,100
00H 07H	mmH 11H	Vocoder: Voice Character 7	0,,,100
00H 08H	mmH 11H	Vocoder: Voice Character 8	0,,,100
00H 09H	mmH 11H	Vocoder: Voice Character 9	0,,,100
00H 0AH	mmH 11H	Vocoder: Voice Character 10	0,,,100
00H 0BH	mmH 11H	Chorus: Rate	1,,,100 = 0.1,,,10.0Hz

00H 0CH	mmH 11H	Chorus: Depth	0,,,100
00H 0DH	mmH 11H	Chorus: Pre Delay	0,,,50ms
00H 0EH	mmH 11H	Chorus: Feedback Level	-100,,,100
00H 0FH	mmH 11H	Chorus: Effect Level	-100,,,100
00H 10H	mmH 11H	Chorus: Direct Level	-100,,,100
00H 11H : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

Algorithm 5 2CH RSS

NRPN	Data Entry		
00H 00H	mmH 11H	2CH RSS: Ach Azimuth	-30,,,30 = -180,,,180
00H 01H	mmH 11H	2CH RSS: Ach Elevation	-15,,,15 = -90,,,90
00H 02H	mmH 11H	2CH RSS: Bch Azimuth	-30,,,30 = -180,,,180
00H 03H	mmH 11H	2CH RSS: Bch Elevation	-15,,,15 = -90,,,90
00H 04H : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

Algorithm 6 Delay RSS

NRPN	Data Entry		
00H 00H	mmH 11H	Delay RSS: Delay Time	0,,,1200ms
00H 01H	mmH 11H	Delay RSS: Shift	-1200,,,1200 = L1200,,,R1200ms
00H 02H	mmH 11H	Delay RSS: Center Delay Time	0,,,1200ms
00H 03H	mmH 11H	Delay RSS: RSS Level	0,,,100
00H 04H	mmH 11H	Delay RSS: Center Level	0,,,100
00H 05H	mmH 11H	Delay RSS: Feedback Level	-100,,,100
00H 06H	mmH 11H	Delay RSS: LF Damp Frequency	5,,,400 = 50,,,4000Hz
00H 07H	mmH 11H	Delay RSS: LF Damp Gain	-36,,,0dB
00H 08H	mmH 11H	Delay RSS: HF Damp Frequency	10,,,200 = 1.0,,,20.0kHz
00H 09H	mmH 11H	Delay RSS: HF Damp Gain	-36,,,0dB
00H 0AH	mmH 11H	Delay RSS: Effect Level	-100,,,100
00H 0BH	mmH 11H	Delay RSS: Direct Level	-100,,,100
00H 0CH : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

Algorithm 7 Chorus RSS

NRPN	Data Entry		
00H 00H	mmH 11H	Chorus RSS: Chorus Rate	1,,,100 = 0.1,,,10.0Hz
00H 01H	mmH 11H	Chorus RSS: Chorus Depth	0,,,100
00H 02H	mmH 11H	Chorus RSS: Effect Level	-100,,,100

		Chorus RSS: Direct Level	
00H 03H	mmH 11H		-100,,,100
00H 04H : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

Common for Algorithm 8,9,10 Guitar Multi 1, 2, 3

NRPN	Data Entry	
00H 00H	mmH 11H	Compressor SW 0,1 = Off,On
00H 01H	mmH 11H	Metal/Distortion/Over Drive SW 0,1 = Off,On
00H 02H	mmH 11H	Noise Suppressor SW 0,1 = Off,On
00H 03H	mmH 11H	Auto Wah SW 0,1 = Off,On
00H 04H	mmH 11H	Guitar Amp Simulator SW 0,1 = Off,On
00H 05H	mmH 11H	Flanger SW 0,1 = Off,On
00H 06H	mmH 11H	Delay SW 0,1 = Off,On
00H 07H	mmH 11H	Compressor: Attack 0,,,100
00H 08H	mmH 11H	Compressor: Level 0,,,100
00H 09H	mmH 11H	Compressor: Sustain 0,,,100
00H 0AH	mmH 11H	Compressor: Tone -50,,,-50
00H 0BH	mmH 11H	Noise Suppressor: Threshold 0,,,100
00H 0CH	mmH 11H	Noise Suppressor: Release 0,,,100
00H 0DH	mmH 11H	Auto Wah: Mode 0,1 = LPF,BPF
00H 0EH	mmH 11H	Auto Wah: Polarity 0,1 = Down,Up
00H 0FH	mmH 11H	Auto Wah: Frequency 0,,,100
00H 10H	mmH 11H	Auto Wah: Level 0,,,100
00H 11H	mmH 11H	Auto Wah: Peak 0,,,100
00H 12H	mmH 11H	Auto Wah: Sens 0,,,100
00H 13H	mmH 11H	Auto Wah: Rate 1,,,100 = 0.1,,,10.0Hz
00H 14H	mmH 11H	Auto Wah: Depth 0,,,100
00H 15H	mmH 11H	Guitar Amp Simulator: Mode 0,,,3 = Small,BultIn,2Stack,3Stack
00H 16H	mmH 11H	Flanger: Rate 1,,,100 = 0.1,,,10.0Hz
00H 17H	mmH 11H	Flanger: Depth 0,,,100
00H 18H	mmH 11H	Flanger: Manual 0,,,100
00H 19H	mmH 11H	Flanger: Resonance 0,,,100
00H 1AH	mmH 11H	Delay: Delay Time 0,,,1000ms
00H 1BH	mmH 11H	Delay: Shift -1000,,,1000 = L1000,,,R1000ms
00H 1CH	mmH 11H	Delay: Feedback Time 0,,,1000ms
00H 1DH	mmH 11H	Delay: Feedback Level -100,,,100
00H 1EH	mmH 11H	Delay: Effect Level -100,,,100
00H 1FH	mmH 11H	Delay: Direct Level -100,,,100

* (Delay Time) + (Absolute value of Shift) should be 1000 or less.

Individual : Algorithm 8 Guitar Multi 1

00H 20H	mmH 11H	Metal: Gain	0,,,100
00H 21H	mmH 11H	Metal: Level	0,,,100
00H 22H	mmH 11H	Metal: Hi Gain	-100,,,100
00H 23H	mmH 11H	Metal: Mid Gain	-100,,,100
00H 24H	mmH 11H	Metal: Low Gain	-100,,,100
00H 25H : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

Individual : Algorithm 9 Guitar Multi 2

00H 20H	mmH 11H	Distortion: Gain	0,,,100
00H 21H	mmH 11H	Distortion: Level	0,,,100
00H 22H	mmH 11H	Distortion: Tone	0,,,100
00H 23H : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

Individual : Algorithm 10 Guitar Multi 3

00H 20H	mmH 11H	Over Drive: Gain	0,,,100
00H 21H	mmH 11H	Over Drive: Level	0,,,100
00H 22H	mmH 11H	Over Drive: Tone	0,,,100
00H 23H : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

Algorithm 11 Vocal Multi

NRPN	Data Entry	
00H 00H	mmH 11H	Noise Suppressor SW 0,1 = Off,On
00H 01H	mmH 11H	Limiter/De-esser SW 0,1 = Off,On
00H 02H	mmH 11H	Enhancer SW 0,1 = Off,On
00H 03H	mmH 11H	EQ SW 0,1 = Off,On
00H 04H	mmH 11H	P.Shifter SW 0,1 = Off,On
00H 05H	mmH 11H	Delay SW 0,1 = Off,On
00H 06H	mmH 11H	Chorus SW 0,1 = Off,On
00H 07H	mmH 11H	Limiter/De-esser Mode 0,1 = Limiter,De-esser
00H 08H	mmH 11H	Noise Suppressor: Threshold 0,,,100
00H 09H	mmH 11H	Noise Suppressor: Release 0,,,100
00H 0AH	mmH 11H	Limiter: Threshold 0,,,100
00H 0BH	mmH 11H	Limiter: Release 0,,,100
00H 0CH	mmH 11H	Limiter: Level 0,,,100
00H 0DH	mmH 11H	De-esser: Sens

NRPN	Data Entry		
			0,,,100
00H 0EH	mmH 11H	De-esser: Frequency	10,,,100 = 1.0,,,10.0kHz
00H 0FH	mmH 11H	Enhancer: Sens	0,,,100
00H 10H	mmH 11H	Enhancer: Frequency	10,,,100 = 1.0,,,10.0kHz
00H 11H	mmH 11H	Enhancer: MIX Level	0,,,100
00H 12H	mmH 11H	Enhancer: Level	0,,,100
00H 13H	mmH 11H	EQ: Low EQ Type	0,1 = Shelving, Peaking
00H 14H	mmH 11H	EQ: Low EQ Gain	-12,,,12dB
00H 15H	mmH 11H	EQ: Low EQ Frequency	2...200 = 20...2000Hz
00H 16H	mmH 11H	EQ: Low EQ Q	3,,,100 = 0.3,,,10.0
00H 17H	mmH 11H	EQ: Mid EQ Gain	-12,,,12dB
00H 18H	mmH 11H	EQ: Mid EQ Frequency	20,,,800 = 200,,,8000Hz
00H 19H	mmH 11H	EQ: Mid EQ Q	3,,,100 = 0.3,,,10.0
00H 1AH	mmH 11H	EQ: High EQ Type	0,1 = Shelving, Peaking
00H 1BH	mmH 11H	EQ: High EQ Gain	-12,,,12dB
00H 1CH	mmH 11H	EQ: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz
00H 1DH	mmH 11H	EQ: High EQ Q	3,,,100 = 0.3,,,10.0
00H 1EH	mmH 11H	EQ: Out Level	0,,,100
00H 1FH	mmH 11H	P.Shifter: Chromatic Pitch	-12,,,12
00H 20H	mmH 11H	P.Shifter: Fine Pitch	-100,,,100
00H 21H	mmH 11H	P.Shifter: Effect Level	-100,,,100
00H 22H	mmH 11H	P.Shifter: Direct Level	-100,,,100
00H 23H	mmH 11H	Delay: Delay Time	0,,,1000
00H 24H	mmH 11H	Delay: Feedback Level	-100,,,100
00H 25H	mmH 11H	Delay: Effect Level	-100,,,100
00H 26H	mmH 11H	Delay: Direct Level	-100,,,100
00H 27H	mmH 11H	Chorus: Rate	1,,,100 = 0.1,,,10.0Hz
00H 28H	mmH 11H	Chorus: Depth	0,,,100
00H 29H	mmH 11H	Chorus: Pre Delay	0,,,50ms
00H 2AH	mmH 11H	Chorus: Effect Level	-100,,,100
00H 2BH	mmH 11H	Chorus: Direct Level	-100,,,100
00H 2CH : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

Algorithm 12 Rotary

NRPN	Data Entry		
00H 00H	mmH 11H	Noise Suppressor SW	0,1 = Off,On
00H 01H	mmH 11H	Over Drive SW	0,1 = Off,On
00H 02H	mmH 11H	Noise Suppressor: Threshold	0,,,100
00H 03H	mmH 11H	Noise Suppressor: Release	0,,,100

NRPN	Data Entry		
00H 04H	mmH 11H	Over Drive: Gain	0,,,100
00H 05H	mmH 11H	Over Drive: Level	0,,,100
00H 06H	mmH 11H	Rotary: Low Rate	1,,,100 = 0.1,,,10.0Hz
00H 07H	mmH 11H	Rotary: Hi Rate	1,,,100 = 0.1,,,10.0Hz
00H 08H : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

Algorithm 13 Guitar AMP Simulator

NRPN	Data Entry		
00H 00H	mmH 11H	Noise Suppressor SW	0,1 = Off,On
00H 01H	mmH 11H	Pre Amp SW	0,1 = Off,On
00H 02H	mmH 11H	Speaker SW	0,1 = Off,On
00H 03H	mmH 11H	Noise Suppressor: Threshold	0,,,100
00H 04H	mmH 11H	Noise Suppressor: Release	0,,,100
00H 05H	mmH 11H	Pre Amp: Mode	0,,,13 = JC-120,Clean Twin,Match Drive,BG Lead, MS1959(I), MS1959(II), MS1959(I+II), SLDN Lead, Metal 5150, Metal Lead, OD-1, OD-2Turbo, Distortion, Fuzz
00H 06H	mmH 11H	Pre Amp: Volume	0,,,100
00H 07H	mmH 11H	Pre Amp: Bass	0,,,100
00H 08H	mmH 11H	Pre Amp: Middle	0,,,100
00H 09H	mmH 11H	Pre Amp: Treble	0,,,100
00H 0AH	mmH 11H	Pre Amp: Presence	0,,,100
00H 0BH	mmH 11H	Pre Amp: Master	0,,,100
00H 0CH	mmH 11H	Pre Amp: Bright	0,1 = Off,On
00H 0DH	mmH 11H	Pre Amp: Gain	0,1,2 = Low,Middle,High
00H 0EH	mmH 11H	Speaker: Type	0,,,11 = Small, Middle, JC-120, Built In 1, Built In 2,Built In 3, Built In 4, BG Stack 1, BG Stack 2, MS Stack 1, MS Stack 2, Metal Stack
00H 0FH	mmH 11H	Speaker: MIC Setting	0,1,2 = 1,2,3
00H 10H	mmH 11H	Speaker: MIC Level	0,,,100
00H 11H	mmH 11H	Speaker: Direct Level	0,,,100
00H 12H : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

* Pre Amp Middle is invalid when the Mode = Match Drive.
* When the Mode = Match Drive, Pre Amp Presence works counter to the value (-100,,,0).
* Pre Amp Bright is available only when the Mode = JC-120, Clean Twin, or BG Lead.

Algorithm 14 Stereo Phaser

NRPN	Data Entry		
00H 00H	mmH 11H	Phaser SW	0,1 = Off,On
00H 01H	mmH 11H	EQ SW	0,1 = Off,On
00H 02H	mmH 11H	Phaser: Mode	0,,,3 = 4,8,12,16stage

NRPN	Data Entry		
00H 03H	mmH 11H	Phaser: Rate	1,,,100 = 0.1,,,10.0Hz
00H 04H	mmH 11H	Phaser: Depth	0,,,100
00H 05H	mmH 11H	Phaser: Polarity	0,1 = Inverse,Synchro
00H 06H	mmH 11H	Phaser: Manual	0,,,100
00H 07H	mmH 11H	Phaser: Resonance	0,,,100
00H 08H	mmH 11H	Phaser: Cross Feedback	0,,,100
00H 09H	mmH 11H	Phaser: Effect Level	-100,,,100
00H 0AH	mmH 11H	Phaser: Direct Level	-100,,,100
00H 0BH	mmH 11H	EQ: Low EQ Type	0,1 = Shelving, Peaking
00H 0CH	mmH 11H	EQ: Low EQ Gain	-12,,,12dB
00H 0DH	mmH 11H	EQ: Low EQ Frequency	2,,,200 = 20,,,2000Hz
00H 0EH	mmH 11H	EQ: Low EQ Q	3,,,100 = 0.3,,,10.0
00H 0FH	mmH 11H	EQ: Mid EQ Gain	-12,,,12dB
00H 10H	mmH 11H	EQ: Mid EQ Frequency	20,,,800 = 200,,,8000Hz
00H 11H	mmH 11H	EQ: Mid EQ Q	3,,,100 = 0.3,,,10.0
00H 12H	mmH 11H	EQ: High EQ Type	0,1 = Shelving, Peaking
00H 13H	mmH 11H	EQ: High EQ Gain	-12,,,12dB
00H 14H	mmH 11H	EQ: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz
00H 15H	mmH 11H	EQ: High EQ Q	3,,,100 = 0.3,,,10.0
00H 16H	mmH 11H	EQ: Out Level	0,,,100
00H 17H : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

Algorithm 15 Stereo Flanger

NRPN	Data Entry		
00H 00H	mmH 11H	Flanger SW	0,1 = Off,On
00H 01H	mmH 11H	EQ SW	0,1 = Off,On
00H 02H	mmH 11H	Flanger: Rate	1,,,100 = 0.1,,,10.0Hz
00H 03H	mmH 11H	Flanger: Depth	0,,,100
00H 04H	mmH 11H	Flanger: Polarity	0,1 = Inverse,Synchro
00H 05H	mmH 11H	Flanger: Manual	0,,,100
00H 06H	mmH 11H	Flanger: Resonance	0,,,100
00H 07H	mmH 11H	Flanger: Cross Feedback Level	0,,,100
00H 08H	mmH 11H	Flanger: Effect Level	-100,,,100
00H 09H	mmH 11H	Flanger: Direct Level	-100,,,100
00H 0AH	mmH 11H	EQ: Low EQ Type	0,1 = Shelving, Peaking
00H 0BH	mmH 11H	EQ: Low EQ Gain	-12,,,12dB
00H 0CH	mmH 11H	EQ: Low EQ Frequency	2,,,200 = 20,,,2000Hz
00H 0DH	mmH 11H	EQ: Low EQ Q	3,,,100 = 0.3,,,10.0
00H 0EH	mmH 11H	EQ: Mid EQ Gain	

Algorithm 16 Dual Compressor/Limiter

NRPN	Data Entry		
00H 00H	mmH 11H	Comp/Limit A SW	0,1 = Off,On
00H 01H	mmH 11H	Noise Suppressor A SW	0,1 = Off,On
00H 02H	mmH 11H	Comp/Limit B SW	0,1 = Off,On
00H 03H	mmH 11H	Noise Suppressor B SW	0,1 = Off,On
00H 04H	mmH 11H	Comp/Limit A: Detect	0,1,2 = A,B,Link
00H 05H	mmH 11H	Comp/Limit A: Level	-60,,,12dB
00H 06H	mmH 11H	Comp/Limit A: Thresh	-60,,,0dB
00H 07H	mmH 11H	Comp/Limit A: Attack	0,,,100
00H 08H	mmH 11H	Comp/Limit A: Release	0,,,100
00H 09H	mmH 11H	Comp/Limit A: Ratio	0,,,3 = 1.5:1,2:1,4:1,100:1
00H 0AH	mmH 11H	Noise Suppressor A: Detect	0,1,2 = A,B,Link
00H 0BH	mmH 11H	Noise Suppressor A: Threshold	0,,,100
00H 0CH	mmH 11H	Noise Suppressor A: Release	0,,,100
00H 0DH	mmH 11H	Comp/Limit B: Detect	0,1,2 = A,B,Link
00H 0EH	mmH 11H	Comp/Limit B: Level	-60,,,12dB
00H 0FH	mmH 11H	Comp/Limit B: Thresh	-60,,,0dB
00H 10H	mmH 11H	Comp/Limit B: Attack	0,,,100
00H 11H	mmH 11H	Comp/Limit B: Release	0,,,100
00H 12H	mmH 11H	Comp/Limit B: Ratio	0,,,3 = 1.5:1,2:1,4:1,100:1
00H 13H	mmH 11H	Noise Suppressor B: Detect	0,1,2 = A,B,Link
00H 14H	mmH 11H	Noise Suppressor B: Threshold	0,,,100
00H 15H	mmH 11H	Noise Suppressor B: Release	0,,,100
00H 16H : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

Algorithm 17 Gate Reverb (FX1 Only)

NRPN	Data Entry		
00H 00H	mmH 11H	G.Reverb SW	0,1 = Off,On
00H 01H	mmH 11H	EQ SW	0,1 = Off,On
00H 02H	mmH 11H	G.Reverb: Gate Time	10,,,400ms
00H 03H	mmH 11H	G.Reverb: Pre Delay	0,,,300ms
00H 04H	mmH 11H	G.Reverb: Effect Level	-100,,,100
00H 05H	mmH 11H	G.Reverb: Mode	0,,,4 = Normal,L->R,R->L,Reverse1,Reverse2
00H 06H	mmH 11H	G.Reverb: Thickness	0,,,100
00H 07H	mmH 11H	G.Reverb: Density	0,,,100
00H 08H	mmH 11H	G.Reverb: Accent Delay	0,,,200ms
00H 09H	mmH 11H	G.Reverb: Accent Level	0,,,100
00H 0AH	mmH 11H	G.Reverb: Accent Pan	1,,,127 = L63,,,R63
00H 0BH	mmH 11H	G.Reverb: Direct Level	-100,,,100
00H 0CH	mmH 11H	EQ: Low EQ Type	0,1 = Shelving, Peaking
00H 0DH	mmH 11H	EQ: Low EQ Gain	-12,,,12dB
00H 0EH	mmH 11H	EQ: Low EQ Frequency	2,,,200 = 20,,,2000Hz
00H 0FH	mmH 11H	EQ: Low EQ Q	3,,,100 = 0.3,,,10.0
00H 10H	mmH 11H	EQ: Mid EQ Gain	-12,,,12dB
00H 11H	mmH 11H	EQ: Mid EQ Frequency	20,,,800 = 200,,,8000Hz
00H 12H	mmH 11H	EQ: Mid EQ Q	3,,,100 = 0.3,,,10.0
00H 13H	mmH 11H	EQ: High EQ Type	0,1 = Shelving, Peaking
00H 14H	mmH 11H	EQ: High EQ Gain	-12,,,12dB
00H 15H	mmH 11H	EQ: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz
00H 16H	mmH 11H	EQ: High EQ Q	3,,,100 = 0.3,,,10.0
00H 17H	mmH 11H	EQ: Out Level	0,,,100
00H 18H :	00H 00H :	(Reserved)	
00H 7FH	00H 00H		

Algorithm 18 Multi Tap Delay

NRPN	Data Entry		
00H 00H	mmH 11H	EQ SW	0,1 = Off,On
00H 01H	mmH 11H	M.Tap Delay: Time 1	0,,,1200ms
00H 02H	mmH 11H	M.Tap Delay: Level 1	0,,,100
00H 03H	mmH 11H	M.Tap Delay: Pan 1	1,,,127 = L63,,,R63
00H 04H	mmH 11H	M.Tap Delay: Time 2	0,,,1200ms
00H 05H	mmH 11H	M.Tap Delay: Level 2	0,,,100
00H 06H	mmH 11H	M.Tap Delay: Pan 2	1,,,127 = L63,,,R63
00H 07H	mmH 11H	M.Tap Delay: Time 3	0,,,1200ms

NRPN	Data Entry		
00H 08H	mmH 11H	M.Tap Delay: Level 3	0,,,100
00H 09H	mmH 11H	M.Tap Delay: Pan 3	1,,,127 = L63,,,R63
00H 0AH	mmH 11H	M.Tap Delay: Time 4	0,,,1200ms
00H 0BH	mmH 11H	M.Tap Delay: Level 4	0,,,100
00H 0CH	mmH 11H	M.Tap Delay: Pan 4	1,,,127 = L63,,,R63
00H 0DH	mmH 11H	M.Tap Delay: Time 5	0,,,1200ms
00H 0EH	mmH 11H	M.Tap Delay: Level 5	0,,,100
00H 0FH	mmH 11H	M.Tap Delay: Pan 5	1,,,127 = L63,,,R63
00H 10H	mmH 11H	M.Tap Delay: Time 6	0,,,1200ms
00H 11H	mmH 11H	M.Tap Delay: Level 6	0,,,100
00H 12H	mmH 11H	M.Tap Delay: Pan 6	1,,,127 = L63,,,R63
00H 13H	mmH 11H	M.Tap Delay: Time 7	0,,,1200ms
00H 14H	mmH 11H	M.Tap Delay: Level 7	0,,,100
00H 15H	mmH 11H	M.Tap Delay: Pan 7	1,,,127 = L63,,,R63
00H 16H	mmH 11H	M.Tap Delay: Time 8	0,,,1200ms
00H 17H	mmH 11H	M.Tap Delay: Level 8	0,,,100
00H 18H	mmH 11H	M.Tap Delay: Pan 8	1,,,127 = L63,,,R63
00H 19H	mmH 11H	M.Tap Delay: Time 9	0,,,1200ms
00H 1AH	mmH 11H	M.Tap Delay: Level 9	0,,,100
00H 1BH	mmH 11H	M.Tap Delay: Pan 9	1,,,127 = L63,,,R63
00H 1CH	mmH 11H	M.Tap Delay: Time 10	0,,,1200ms
00H 1DH		M.Tap Delay: Level 10	0,,,100
00H 1EH	mmH 11H	M.Tap Delay: Pan 10	1,,,127 = L63,,,R63
00H 1FH	mmH 11H	M.Tap Delay: Feedback Delay Time	0,,,1200ms
00H 20H	mmH 11H	M.Tap Delay: Feedback Level	-100,,,100
00H 21H	mmH 11H	M.Tap Delay: Effect Level	-100,,,100
00H 22H	mmH 11H	M.Tap Delay: Direct Level	-100,,,100
00H 23H	mmH 11H	EQ: Low EQ Type	0,1 = Shelving, Peaking
00H 24H	mmH 11H	EQ: Low EQ Gain	-12,,,12dB
00H 25H	mmH 11H	EQ: Low EQ Frequency	2,,,200 = 20,,,2000Hz
00H 26H	mmH 11H	EQ: Low EQ Q	3,,,100 = 0.3,,,10.0
00H 27H	mmH 11H	EQ: Mid EQ Gain	-12,,,12dB
00H 28H	mmH 11H	EQ: Mid EQ Frequency	20,,,800 = 200,,,8000Hz
00H 29H	mmH 11H	EQ: Mid EQ Q	3,,,100 = 0.3,,,10.0
00H 2AH	mmH 11H	EQ: High EQ Type	0,1 = Shelving, Peaking
00H 2BH	mmH 11H	EQ: High EQ Gain	-12,,,12dB
00H 2CH	mmH 11H	EQ: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz
00H 2DH	mmH 11H	EQ: High EQ Q	3,,,100 = 0.3,,,10.0
00H 2EH	mmH 11H	EQ: Out Level	0,,,100

00H 2FH	00H 00H	(Reserved)
:	:	
00H 7FH	00H 00H	

Algorithm 19 Stereo Multi

NRPN	Data Entry	
00H 00H	mmH 11H	Noise Suppressor SW 0,1 = Off,On
00H 01H	mmH 11H	Comp/Limit SW 0,1 = Off,On
00H 02H	mmH 11H	Enhancer SW 0,1 = Off,On
00H 03H	mmH 11H	EQ SW 0,1 = Off,On
00H 04H	mmH 11H	Noise Suppressor: Threshold 0,,,100
00H 05H	mmH 11H	Noise Suppressor: Release 0,,,100
00H 06H	mmH 11H	Comp/Limit: Level -60,,,12dB
00H 07H	mmH 11H	Comp/Limit: Thresh -60,,,0dB
00H 08H	mmH 11H	Comp/Limit: Attack 0,,,100
00H 09H	mmH 11H	Comp/Limit: Release 0,,,100
00H 0AH	mmH 11H	Comp/Limit: Ratio 0,,,3 = 1.5:1,2:1,4:1,100:1
00H 0BH	mmH 11H	Enhancer: Sens 0,,,100
00H 0CH	mmH 11H	Enhancer: Frequency 10,,,100 = 1.0,,,10.0kHz
00H 0DH	mmH 11H	Enhancer: MIX Level 0,,,100
00H 0EH	mmH 11H	Enhancer: Level 0,,,100
00H 0FH	mmH 11H	EQ: Low EQ Type 0,1 = Shelving, Peaking
00H 10H	mmH 11H	EQ: Low EQ Gain -12,,,12dB
00H 11H	mmH 11H	EQ: Low EQ Frequency 2,,,200 = 20,,,2000Hz
00H 12H	mmH 11H	EQ: Low EQ Q 3,,,100 = 0.3,,,10.0
00H 13H	mmH 11H	EQ: Mid EQ Gain -12,,,12dB
00H 14H	mmH 11H	EQ: Mid EQ Frequency 20,,,800 = 200,,,8000Hz
00H 15H	mmH 11H	EQ: Mid EQ Q 3,,,100 = 0.3,,,10.0
00H 16H	mmH 11H	EQ: High EQ Type 0,1 = Shelving, Peaking
00H 17H	mmH 11H	EQ: High EQ Gain -12,,,12dB
00H 18H	mmH 11H	EQ: High EQ Frequency 14,,,200 = 1.4,,,20.0kHz
00H 19H	mmH 11H	EQ: High EQ Q 3,,,100 = 0.3,,,10.0
00H 1AH	mmH 11H	EQ: Out Level 0,,,100
00H 1BH	00H 00H	(Reserved)
:	:	
00H 7FH	00H 00H	

Algorithm 20 Reverb 2

NRPN	Data Entry	
00H 00H	mmH 11H	Reverb SW 0,1 = Off,On
00H 01H	mmH 11H	EQ SW 0,1 = Off,On
00H 02H	mmH 11H	Reverb 2: Reverb Type

		0,,,4 = Room1,Room2,Hall1,Hall2,Plate
00H 03H	mmH 11H	Reverb 2: Reverb Time 1,,,100 = 0.1,,,10.0sec
00H 04H	mmH 11H	Reverb 2: Pre Delay 0,,,200msec
00H 05H	mmH 11H	Reverb 2: Density 0,,,100
00H 06H	mmH 11H	Reverb 2: High Pass Filter 1,,,200 = Thru,20,,,2000Hz
00H 07H	mmH 11H	Reverb 2: Low Pass Filter 10,,,201 = 1.0,,,20.0kHz,Thru
00H 08H	mmH 11H	Reverb 2: Effect Level 0,,,100
00H 09H	mmH 11H	Reverb 2: Direct Level 0,,,100
00H 0AH	mmH 11H	Reverb 2: Gate SW 0,1 = Off,On
00H 0BH	mmH 11H	Reverb 2: Gate Mode 0,1 = Gate,Ducking
00H 0CH	mmH 11H	Reverb 2: Gate Threshold 0,,,100
00H 0DH	mmH 11H	Reverb 2: Gate Attack Time 1,,,100
00H 0EH	mmH 11H	Reverb 2: Gate Release Time 1,,,100
00H 0FH	mmH 11H	Reverb 2: Gate Hold Time 1,,,100
00H 10H	mmH 11H	EQ: Low EQ Type 0,1 = Shelving, Peaking
00H 11H	mmH 11H	EQ: Low EQ Gain -12,,,12dB
00H 12H	mmH 11H	EQ: Low EQ Frequency 2,,,200 = 20,,,2000Hz
00H 13H	mmH 11H	EQ: Low EQ Q 3,,,100 = 0.3,,,10.0
00H 14H	mmH 11H	EQ: Mid EQ Gain -12,,,12dB
00H 15H	mmH 11H	EQ: Mid EQ Frequency 20,,,800 = 200,,,8000Hz
00H 16H	mmH 11H	EQ: Mid EQ Q 3,,,100 = 0.3,,,10.0
00H 17H	mmH 11H	EQ: High EQ Type 0,1 = Shelving, Peaking
00H 18H	mmH 11H	EQ: High EQ Gain -12,,,12dB
00H 19H	mmH 11H	EQ: High EQ Frequency 14,,,200 = 1.4,,,20.0kHz
00H 1AH	mmH 11H	EQ: High EQ Q 3,,,100 = 0.3,,,10.0
00H 1BH	mmH 11H	EQ: Out Level 0,,,100
00H 1CH	00H 00H	(Reserved)
:	:	
00H 7FH	00H 00H	

Algorithm 21 Space Chorus

NRPN	Data Entry	
00H 00H	mmH 11H	Chorus SW 0,1 = Off,On
00H 01H	mmH 11H	Chorus: Input Mode 0,1 = Mono,Stereo
00H 02H	mmH 11H	Chorus: Mode 0,,,6 = 1,2,3,4,1+4,2+4,3+4
00H 03H	mmH 11H	Chorus: Mix Balance 0,,,100
00H 04H	00H 00H	(Reserved)
:	:	
00H 7FH	00H 00H	

Algorithm 22 Lo-Fi Processor

NRPN	Data Entry	
00H 00H	mmH 11H	Lo-Fi Processor SW 0,1 = Off,On
00H 01H	mmH 11H	Realtime Modify Filter SW 0,1 = Off,On
00H 02H	mmH 11H	Lo-Fi Processor: Pre Filter SW 0,1 = Off,On
00H 03H	mmH 11H	Lo-Fi Processor: Rate 0,,,31 = Off,1/2,,,1/32
00H 04H	mmH 11H	Lo-Fi Processor: Number of Bit 0,,,15 = Off,15,,,1bit
00H 05H	mmH 11H	Lo-Fi Processor: Post Filter SW 0,1 = Off,On
00H 06H	mmH 11H	Lo-Fi Processor: Effect Level 0,,,100
00H 07H	mmH 11H	Lo-Fi Processor: Direct Level 0,,,100
00H 08H	mmH 11H	Realtime Modify Filter: Filter Type 0,,,2 = LPF,BPF,HPF
00H 09H	mmH 11H	Realtime Modify Filter: Cut Off 0,,,100
00H 0AH	mmH 11H	Realtime Modify Filter: Resonance 0,,,100
00H 0BH	mmH 11H	Realtime Modify Filter: Gain 0,,,24dB
00H 0CH	mmH 11H	Noise Suppressor: Threshold 0,,,100
00H 0DH	mmH 11H	Noise Suppressor: Release 0,,,100
00H 0EH	00H 00H	(Reserved)
:	:	
00H 7FH	00H 00H	

Algorithm 23 4 Band Parametric EQ

NRPN	Data Entry	
00H 00H	mmH 11H	Parametric EQ Link SW 0,1 = Off,On
00H 01H	mmH 11H	Parametric EQ Ach SW 0,1 = Off,On
00H 02H	mmH 11H	Parametric EQ Bch SW 0,1 = Off,On
00H 03H	mmH 11H	EQ Ach: Input Gain -60,,,12dB
00H 04H	mmH 11H	EQ Ach: Low EQ Type 0,1 = Shelving, Peaking
00H 05H	mmH 11H	EQ Ach: Low EQ Gain -12,,,12dB
00H 06H	mmH 11H	EQ Ach: Low EQ Frequency 2,,,200 = 20,,,2000Hz
00H 07H	mmH 11H	EQ Ach: Low EQ Q 3,,,100 = 0.3,,,10.0
00H 08H	mmH 11H	EQ Ach: Low Mid EQ Gain -12,,,12dB
00H 09H	mmH 11H	EQ Ach: Low Mid EQ Frequency 20,,,800 = 200,,,8000Hz
00H 0AH	mmH 11H	EQ Ach: Low Mid EQ Q 3,,,100 = 0.3,,,10.0
00H 0BH	mmH 11H	EQ Ach: High Mid EQ Gain -12,,,12dB
00H 0CH	mmH 11H	EQ Ach: High Mid EQ Frequency 20,,,800 = 200,,,8000Hz
00H 0DH	mmH 11H	EQ Ach: High Mid EQ Q 3,,,100 = 0.3,,,10.0
00H 0EH	mmH 11H	EQ Ach: High EQ Type 0,1 = Shelving, Peaking
00H 0FH	mmH 11H	EQ Ach: High EQ Gain -12,,,12dB
00H 10H	mmH 11H	EQ Ach: High EQ Frequency 14,,,200 = 1.4,,,20.0kHz
00H 11H	mmH 11H	EQ Ach: High EQ Q 3,,,100 = 0.3,,,10.0
00H 12H	mmH 11H	EQ Ach: Output Level -60,,,12dB
00H 13H	mmH 11H	EQ Bch: Input Gain -60,,,12dB
00H 14H	mmH 11H	EQ Bch: Low EQ Type 0,1 = Shelving, Peaking
00H 15H	mmH 11H	EQ Bch: Low EQ Gain -12,,,12dB
00H 16H	mmH 11H	EQ Bch: Low EQ Frequency 2,,,200 = 20,,,2000Hz
00H 17H	mmH 11H	EQ Bch: Low EQ Q 3,,,100 = 0.3,,,10.0
00H 18H	mmH 11H	EQ Bch: Low Mid EQ Gain -12,,,12dB
00H 19H	mmH 11H	EQ Bch: Low Mid EQ Frequency 20,,,800 = 200,,,8000Hz
00H 1AH	mmH 11H	EQ Bch: Low Mid EQ Q 3,,,100 = 0.3,,,10.0
00H 1BH	mmH 11H	EQ Bch: High Mid EQ Gain -12,,,12dB
00H 1CH	mmH 11H	EQ Bch: High Mid EQ Frequency 20,,,800 = 200,,,8000Hz
00H 1DH	mmH 11H	EQ Bch: High Mid EQ Q 3,,,100 = 0.3,,,10.0
00H 1EH	mmH 11H	EQ Bch: High EQ Type 0,1 = Shelving, Peaking
00H 1FH	mmH 11H	EQ Bch: High EQ Gain -12,,,12dB
00H 20H	mmH 11H	EQ Bch: High EQ Frequency 14,,,200 = 1.4,,,20.0kHz
00H 21H	mmH 11H	EQ Bch: High EQ Q 3,,,100 = 0.3,,,10.0
00H 22H	mmH 11H	EQ Bch: Output Level -60,,,12dB
00H 23H	00H 00H	(Reserved)
:	:	
00H 7FH	00H 00H	

*   When Link SW = On, Bch corresponds to Ach.

Algorithm 24 10 Band Graphic EQ

NRPN	Data Entry	
00H 00H	mmH 11H	Graphic EQ Link SW 0,1 = Off,On
00H 01H	mmH 11H	Graphic EQ Ach SW 0,1 = Off,On
00H 02H	mmH 11H	Graphic EQ Bch SW 0,1 = Off,On
00H 03H	mmH 11H	EQ Ach: Input Gain -60,,,12dB
00H 04H	mmH 11H	EQ Ach: 31.25Hz Gain -12,,,12dB
00H 05H	mmH 11H	EQ Ach: 62.5Hz Gain -12,,,12dB
00H 06H	mmH 11H	EQ Ach: 125Hz Gain -12,,,12dB
00H 07H	mmH 11H	EQ Ach: 250Hz Gain -12,,,12dB
00H 08H	mmH 11H	EQ Ach: 500Hz Gain -12,,,12dB
00H 09H	mmH 11H	EQ Ach: 1.0kHz Gain -12,,,12dB
00H 0AH	mmH 11H	EQ Ach: 2.0kHz Gain -12,,,12dB
00H 0BH	mmH 11H	EQ Ach: 4.0kHz Gain -12,,,12dB
00H 0CH	mmH 11H	EQ Ach: 8.0kHz Gain -12,,,12dB
00H 0DH	mmH 11H	EQ Ach: 16.0kHz Gain -12,,,12dB
00H 0EH	mmH 11H	EQ Ach: Output Level -60,,,12dB
00H 0FH	mmH 11H	EQ Bch: Input Gain -60,,,12dB

00H 10H	mmH 11H	EQ Bch: 31.25Hz Gain
		-12...12dB
00H 11H	mmH 11H	EQ Bch: 62.5Hz Gain
		-12...12dB
00H 12H	mmH 11H	EQ Bch: 125Hz Gain
		-12...12dB
00H 13H	mmH 11H	EQ Bch: 250Hz Gain
		-12...12dB
00H 14H	mmH 11H	EQ Bch: 500Hz Gain
		-12...12dB
00H 15H	mmH 11H	EQ Bch: 1.0kHz Gain
		-12...12dB
00H 16H	mmH 11H	EQ Bch: 2.0kHz Gain
		-12...12dB
00H 17H	mmH 11H	EQ Bch: 4.0kHz Gain
		-12...12dB
00H 18H	mmH 11H	EQ Bch: 8.0kHz Gain
		-12...12dB
00H 19H	mmH 11H	EQ Bch: 16.0kHz Gain
		-12...12dB
00H 1AH	mmH 11H	EQ Bch: Output Level
		-60...12dB
00H 1BH	00H 00H	(Reserved)
:	:	
00H 7FH	00H 00H	

* When Link SW = On, Bch corresponds to Ach.

Algorithm 25 Hum Canceler

NRPN	Data Entry	
00H 00H	mmH 11H	Hum Canceler SW
		0,1 = Off,On
00H 01H	mmH 11H	Noise Suppressor SW
		0,1 = Off,On
00H 02H	mmH 11H	Hum Canceler: Freq
		200,,,8000 = 20.0...800.0Hz
00H 03H	mmH 11H	Hum Canceler: Width
		10,,,40%
00H 04H	mmH 11H	Hum Canceler: Depth
		0,,,100
00H 05H	mmH 11H	Hum Canceler: Threshold
		0,,,100
00H 06H	mmH 11H	Hum Canceler: Range Low
		1,,,200 = Unlimit,20,,,2000Hz
00H 07H	mmH 11H	Hum Canceler: Range High
		10,,,201 = 1.0,,,20.0kHz,Unlimit
00H 08H	mmH 11H	Noise Suppressor: Threshold
		0,,,100
00H 09H	mmH 11H	Noise Suppressor: Release
		0,,,100
00H 0AH	00H 00H	(Reserved)
:	:	
00H 7FH	00H 00H	

Algorithm 26 Vocal Canceler

NRPN	Data Entry	
00H 00H	mmH 11H	Vocal Canceler SW
		0,1 = Off,On
00H 01H	mmH 11H	EQ SW
		0,1 = Off,On
00H 02H	mmH 11H	Vocal Canceler: Balance
		0,,,100
00H 03H	mmH 11H	Vocal Canceler: Range Low
		1,,,200 = Unlimit,20,,,2000Hz
00H 04H	mmH 11H	Vocal Canceler: Range High
		10,,,201 = 1.0,,,20.0kHz,Unlimit
00H 05H	mmH 11H	EQ: Low EQ Type
		0,1 = Shelving, Peaking
00H 06H	mmH 11H	EQ: Low EQ Gain
		-12...12dB
00H 07H	mmH 11H	EQ: Low EQ Frequency

		2,,,200 = 20,,,2000Hz
00H 08H	mmH 11H	EQ: Low EQ Q
		3,,,100 = 0.3,,,10.0
00H 09H	mmH 11H	EQ: Mid EQ Gain
		-12...12dB
00H 0AH	mmH 11H	EQ: Mid EQ Frequency
		20,,,800 = 200,,,8000Hz
00H 0BH	mmH 11H	EQ: Mid EQ Q
		3,,,100 = 0.3,,,10.0
00H 0CH	mmH 11H	EQ: High EQ Type
		0,1 = Shelving, Peaking
00H 0DH	mmH 11H	EQ: High EQ Gain
		-12...12dB
00H 0EH	mmH 11H	EQ: High EQ Frequency
		14,,,200 = 1.4,,,20.0kHz
00H 0FH	mmH 11H	EQ: High EQ Q
		3,,,100 = 0.3,,,10.0
00H 10H	mmH 11H	EQ: Out Level
		0,,,100
00H 11H	00H 00H	(Reserved)
:	:	
00H 7FH	00H 00H	

Algorithm 27 Voice Transformer (FX1 Only)

NRPN	Data Entry	
00H 00H	mmH 11H	Voice Transformer SW
		0,1 = Off,On
00H 01H	mmH 11H	Reverb SW
		0,1 = Off,On
00H 02H	mmH 11H	Fader Edit SW
		0,1 = Off,On
00H 03H	mmH 11H	MIDI Control SW
		0,1 = Off,On
00H 04H	mmH 11H	Voice Transformer: Robot SW
		0,1 = Off,On
00H 05H	mmH 11H	Voice Transformer: Chromatic Pitch
		-12,,,36
00H 06H	mmH 11H	Voice Transformer: Fine Pitch
		-100,,,100
00H 07H	mmH 11H	Voice Transformer: Chromatic Formant
		-12,,,12
00H 08H	mmH 11H	Voice Transformer: Fine Formant
		-100,,,100
00H 09H	mmH 11H	Voice Transformer: Mix Balance
		0,,,100
00H 0AH	mmH 11H	Reverb: Reverb Time
		1,,100 = 0.1,,,10.0sec
00H 0BH	mmH 11H	Reverb: Pre Delay
		0,,,200msec
00H 0CH	mmH 11H	Reverb: Density
		0,,,100
00H 0DH	mmH 11H	Reverb: Effect Level
		0,,,100
00H 0EH	mmH 11H	MIDI Control: Bend Range
		0,,,12 = Off,1,,,12
00H 0FH	mmH 11H	MIDI Control: Portamento
		0...100 = Off,1,,,100
00H 10H	00H 00H	(Reserved)
:	:	
00H 7FH	00H 00H	

Algorithm 28 Vocoder 2 (FX1 Only)

NRPN	Data Entry	
00H 00H	mmH 11H	Chorus SW
		0,1 = Off,On
00H 01H	mmH 11H	Vocoder: Envelope Mode
		0,,,2 = Sharp,Soft,Long
00H 02H	mmH 11H	Vocoder: Pan Mode
		0,,,3 = Mono,Stereo,L->R,R->L
00H 03H	mmH 11H	Vocoder: Hold
		0,1 = Off,MIDI

NRPN	Data Entry		
00H 04H	mmH 11H	Vocoder: Mic Sens	0,,,100
00H 05H	mmH 11H	Vocoder: Synth Input Level	0,,,100
00H 06H	mmH 11H	Vocoder: Voice Char Level 1	0,,,100
00H 07H	mmH 11H	Vocoder: Voice Char Level 2	0,,,100
00H 08H	mmH 11H	Vocoder: Voice Char Level 3	0,,,100
00H 09H	mmH 11H	Vocoder: Voice Char Level 4	0,,,100
00H 0AH	mmH 11H	Vocoder: Voice Char Level 5	0,,,100
00H 0BH	mmH 11H	Vocoder: Voice Char Level 6	0,,,100
00H 0CH	mmH 11H	Vocoder: Voice Char Level 7	0,,,100
00H 0DH	mmH 11H	Vocoder: Voice Char Level 8	0,,,100
00H 0EH	mmH 11H	Vocoder: Voice Char Level 9	0,,,100
00H 0FH	mmH 11H	Vocoder: Voice Char Level 10	0,,,100
00H 10H	mmH 11H	Vocoder: Voice Char Level 11	0,,,100
00H 11H	mmH 11H	Vocoder: Voice Char Level 12	0,,,100
00H 12H	mmH 11H	Vocoder: Voice Char Level 13	0,,,100
00H 13H	mmH 11H	Vocoder: Voice Char Level 14	0,,,100
00H 14H	mmH 11H	Vocoder: Voice Char Level 15	0,,,100
00H 15H	mmH 11H	Vocoder: Voice Char Level 16	0,,,100
00H 16H	mmH 11H	Vocoder: Voice Char Level 17	0,,,100
00H 17H	mmH 11H	Vocoder: Voice Char Level 18	0,,,100
00H 18H	mmH 11H	Vocoder: Voice Char Level 19	0,,,100
00H 19H	mmH 11H	Vocoder: Mic High Pass Filter	9,,,200 = Thru,1.0,,,20.0kHz
00H 1AH	mmH 11H	Vocoder: Mic High Pass Filter Pan	1,,,127 = L63,,,R63
00H 1BH	mmH 11H	Vocoder: Mic Mix	0,,,100
00H 1CH	mmH 11H	Vocoder: Noise Suppressor Threshold	0,,,100
00H 1DH	mmH 11H	Chorus: Rate	1,,,100 = 0.1,,,10.0Hz
00H 1EH	mmH 11H	Chorus: Depth	0,,,100
00H 1FH	mmH 11H	Chorus: Pre Delay	0,,,50ms
00H 20H	mmH 11H	Chorus: Mix Balance	0,,,100
00H 21H : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

Algorithm 29 Mic Simulator

NRPN	Data Entry		
00H 00H	mmH 11H	Link SW	0,1 = Off,On
00H 01H	mmH 11H	Mic Converter Ach SW	0,1 = Off,On
00H 02H	mmH 11H	Bass Cut Ach SW	0,1 = Off,On
00H 03H	mmH 11H	Distance Ach SW	0,1 = Off,On
00H 04H	mmH 11H	Limiter Ach SW	0,1 = Off,On

NRPN	Data Entry		
00H 05H	mmH 11H	Mic Converter Bch SW	0,1 = Off,On
00H 06H	mmH 11H	Bass Cut Bch SW	0,1 = Off,On
00H 07H	mmH 11H	Distance Bch SW	0,1 = Off,On
00H 08H	mmH 11H	Limiter Bch SW	0,1 = Off,On
00H 09H	mmH 11H	Mic Converter Ach: Input	0,,,4 = DR-20,SmlDy,HedDy,MinCn,Flat
00H 0AH	mmH 11H	Mic Converter Ach: Output	0,,,6 = SmlDy,VocDy,LrgDy,SmlCn,LrgCn,VntCn,Flat
00H 0BH	mmH 11H*	Mic Converter Ach: Phase	0,1 = Normal,Inverse
00H 0CH	mmH 11H	Bass Cut Ach: Bass Cut Frequency	1,,,200 = Thru,20,,,2000Hz
00H 0DH	mmH 11H	Distance Ach: Proximity Effect	-12,,,+12
00H 0EH	mmH 11H	Distance Ach: Timelag	0,,,1000 = 0,,,3000cm
00H 0FH	mmH 11H	Limiter Ach: Detect HPF Frequency	1,,,200 = Thru,20,,,2000Hz
00H 10H	mmH 11H	Limiter Ach: Level	-60,,,24dB
00H 11H	mmH 11H	Limiter Ach: Threshold	-60,,,0dB
00H 12H	mmH 11H	Limiter Ach: Attack	0,,,100
00H 13H	mmH 11H	Limiter Ach: Release	0,,,100
00H 14H	mmH 11H	Mic Converter Bch: Input	0,,,4 = DR-20,SmlDy,HedDy,MinCn,Flat
00H 15H	mmH 11H	Mic Converter Bch: Output	0,,,6 = SmlDy,VocDy,LrgDy,SmlCn,LrgCn,VntCn,Flat
00H 16H	mmH 11H	Mic Converter Bch: Phase	0,1 = Normal,Inverse
00H 17H	mmH 11H	Bass Cut Bch: Bass Cut Frequency	1,,,200 = Thru,20,,,2000Hz
00H 18H	mmH 11H	Distance Bch: Proximity Effect	-12,,,+12
00H 19H	mmH 11H	Distance Bch: Timelag	0,,,1000 = 0,,,3000cm
00H 1AH	mmH 11H	Limiter Bch: Detect HPF Frequency	1,,,200 = Thru,20,,,2000Hz
00H 1BH	mmH 11H	Limiter Bch: Level	-60,,,24dB
00H 1CH	mmH 11H	Limiter Bch: Threshold	-60,,,0dB
00H 1DH	mmH 11H	Limiter Bch: Attack	0,,,100
00H 1EH	mmH 11H	Limiter Bch: Release	0,,,100
00H 1FH : 00H 7FH	00H 00H : 00H 00H	(Reserved)	

* When Mic Converter Input = MinCn, Output is fixed to SmlDy or LrgCn.
* When Link SW = On, Bch corresponds to Ach.

Algorithm 30 3 Band Isolator

NRPN	Data Entry		
00H 00H	mmH 11H	Isolator SW	0,1 = Off,On
00H 01H	mmH 11H	Isolator High Volume	-60,,,+4dB
00H 02H	mmH 11H	Isolator Middle Volume	-60,,,+4dB
00H 03H	mmH 11H	Isolator Low Volume	-60,,,+4dB
00H 04H	mmH 11H	Isolator Anti Phase Middle Switch	0,1 = Off,On
00H 05H	mmH 11H	Isolator Anti Phase Middle Level	0,,,100
00H 06H	mmH 11H	Isolator Anti Phase Low Switch	0,1 = Off,On

NRPN	Data Entry	
00H 07H	mmH 11H	Isolator Anti Phase Low Level 0,,,100
00H 08H : 00H 7FH	00H 00H : 00H 00H	(Reserved)

Algorithm 31 Tape Echo 201

NRPN	Data Entry	
00H 00H	mmH 11H	Tape Echo SW 0,1 = Off,On
00H 01H	mmH 11H	Tape Echo Mode Select 0,,,6 = 1,,,7
00H 02H	mmH 11H	Tape Echo Repeat Rate 0,,,100
00H 03H	mmH 11H	Tape Echo Intensity 0,,,100
00H 04H	mmH 11H	Tape Echo Effect Level 0,,,100
00H 05H	mmH 11H	Tape Echo Direct Level 0,,,100
00H 06H	mmH 11H	Tape Echo Tone Bass -100,,,100
00H 07H	mmH 11H	Tape Echo Tone Treble -100,,,100
00H 08H	mmH 11H	Tape Echo Tape Head S Pan 1,,,127 = L63,,,R63
00H 09H	mmH 11H	Tape Echo Tape Head M Pan 1,,,127 = L63,,,R63
00H 0AH	mmH 11H	Tape Echo Tape Head L Pan 1,,,127 = L63,,,R63
00H 0BH	mmH 11H	Tape Echo Tape Distortion 0,,,100
00H 0CH	mmH 11H	Tape Echo Wah Flutter Rate 0,,,100
00H 0DH	mmH 11H	Tape Echo Wah Flutter Depth 0,,,100
00H 0EH : 00H 7FH	00H 00H : 00H 00H	(Reserved)

Algorithm 32 Analog Flanger

NRPN	Data Entry	
00H 00H	mmH 11H	Analog Flanger SW 0,1 = Off,On
00H 01H	mmH 11H	Analog Flanger Mode 0,,,3 = FL1,FL2,FL3,CHO
00H 02H	mmH 11H	Analog Flanger Feedback 0,,,100
00H 03H	mmH 11H	Analog Flanger Modulation Rate 0,,,100
00H 04H	mmH 11H	Analog Flanger Modulation Depth 0,,,100
00H 05H	mmH 11H	Analog Flanger Modulation Frequency 0,,,100
00H 06H	mmH 11H	Analog Flanger Channel B Modulation 0,1 = Nor,Inv
00H 07H	mmH 11H	Analog Flanger Channel A Phase 0,1 = Nor,Inv
00H 08H	mmH 11H	Analog Flanger Channel B Phase 0,1 = Nor,Inv
00H 09H : 00H 7FH	00H 00H : 00H 00H	(Reserved)

Algorithm 33 Analog Phaser

NRPN	Data Entry	
00H 00H	mmH 11H	Analog Phaser SW 0,1 = Off,On
00H 01H	mmH 11H	Analog Phaser Mode 0,1 = 4STAGE,6STAGE
00H 02H	mmH 11H	Analog Phaser Frequency 0,,,100
00H 03H	mmH 11H	Analog Phaser Resonance 0,,,100
00H 04H	mmH 11H	Analog Phaser LFO 1 Rate 0,,,100
00H 05H	mmH 11H	Analog Phaser LFO 1 Depth 0,,,100
00H 06H	mmH 11H	Analog Phaser LFO 1 Channel B Mod 0,1 = Nor,Inv
00H 07H	mmH 11H	Analog Phaser LFO 2 Rate 0,,,100
00H 08H	mmH 11H	Analog Phaser LFO 2 Depth 0,,,100
00H 09H	mmH 11H	Analog Phaser LFO 2 Channel B Mod 0,1 = Nor,Inv
00H 0AH : 00H 7FH	00H 00H : 00H 00H	(Reserved)

◯Algorithm 34 Speaker Modeling

NRPN	Data Entry	
00H 00H	mmH 11H	Speaker Modeling SW 0,1 = Off,On
00H 01H	mmH 11H	Bass Cut SW 0,1 = Off,On
00H 02H	mmH 11H	Low Frequency Trimmer SW 0,1 = Off,On
00H 03H	mmH 11H	High Frequency Trimmer SW 0,1 = Off,On
00H 04H	mmH 11H	Limiter SW 0,1 = Off,On
00H 05H	mmH 11H	(Reserved)
00H 06H	mmH 11H	Speaker Modeling Model 0,,,11 = THRU,FLAT,Pwd.BLK,Pwd.E-B,Pwd.MAC, SmlCUBE,Wh.CONE,WhTISUE,RADIO,SmallTV, BoomBOX,BoomLoB
00H 07H	mmH 11H	Speaker Modeling Phase 0,1 = NRM,INV
00H 08H	mmH 11H	Bass Cut Frequency 1,,,200 = Thru,20,,,2000Hz
00H 09H	mmH 11H	Low Frequency Trimmer Gain -12,,,12dB
00H 0AH	mmH 11H	Low Frequency Trimmer Frequency 2,,,200 = 20,,,2000Hz
00H 0BH	mmH 11H	High Frequency Trimmer Gain -12,,,12dB
00H 0CH	mmH 11H	High Frequency Trimmer Frequency 10,,,200 = 1.0,,,20.0kHz
00H 0DH	mmH 11H	Limiter Threshold -60,,,0dB
00H 0EH	mmH 11H	Limiter Release 0,,,100
00H 0FH	mmH 11H	Limiter Level -60,,,24dB
00H 10H : 00H 7FH	00H 00H : 00H 00H	(Reserved)

Algorithm 35 Mastering Tool Kit

NRPN	Data Entry	
00H 00H	mmH 11H	EQ SW 0,1 = Off,On
00H 01H	mmH 11H	Bass Cut SW 0,1 = Off,On
00H 02H	mmH 11H	Enhancer SW 0,1 = Off,On
00H 03H	mmH 11H	Expander SW 0,1 = Off,On
00H 04H	mmH 11H	Compressor SW 0,1 = Off,On
00H 05H	mmH 11H	Limiter SW 0,1 = Off,On
00H 06H	mmH 11H	EQ: Input Gain -24,,,12dB
00H 07H	mmH 11H	EQ: Low EQ Type 0,1 = Shelving, Peaking
00H 08H	mmH 11H	EQ: Low EQ Gain -12,,,12dB
00H 09H	mmH 11H	EQ: Low EQ Frequency 2,,,42 = 20,,,2000Hz(*1 Frequency Table)
00H 0AH	mmH 11H	EQ: Low EQ Q 0,,,31 = 0.3,,,16.0(*2 Q Table)
00H 0BH	mmH 11H	EQ: Low Mid EQ Gain -12,,,12dB
00H 0CH	mmH 11H	EQ: Low Mid EQ Frequency 2,,,54 = 20,,,8000Hz(*1 Frequency Table)
00H 0DH	mmH 11H	EQ: Low Mid EQ Q 0,,,31 = 0.3,,,16.0(*2 Q Table)
00H 0EH	mmH 11H	EQ: High Mid EQ Gain -12,,,12dB
00H 0FH	mmH 11H	EQ: High Mid EQ Frequency 2,,,54 = 20,,,8000Hz(*1 Frequency Table)
00H 10H	mmH 11H	EQ: High Mid EQ Q 0,,,31 = 0.3,,,16.0(*2 Q Table)
00H 11H	mmH 11H	EQ: High EQ Type 0,1 = Shelving, Peaking
00H 12H	mmH 11H	EQ: High EQ Gain -12,,,12dB
00H 13H	mmH 11H	EQ: High EQ Frequency 39,,,62 = 1.4,,,20.0kHz(*1 Frequency Table)
00H 14H	mmH 11H	EQ: High EQ Q 0,,,31 = 0.3,,,16.0(*2 Q Table)
00H 15H	mmH 11H	EQ: Level -24,,,12dB
00H 16H	mmH 11H	Bass Cut Frequency 1,,,42 = Off,20,,,2000Hz(*1 Frequency Table)
00H 17H	mmH 11H	Enhancer Sens 0,,,100
00H 18H	mmH 11H	Enhancer Frequency 36,,,56 = 1.0,,,10.0kHz(*1 Frequency Table)
00H 19H	mmH 11H	Enhancer Mix Level -24,,,12dB
00H 1AH	mmH 11H	Input Gain -24,,,12dB
00H 1BH	mmH 11H	Input Detect Time 0,,,10ms
00H 1CH	mmH 11H	Input Low Split Point 2,,,34 = 20,,,800Hz(*1 Frequency Table)
00H 1DH	mmH 11H	Input High Split Point 40,,,60 = 1.6,,,16.0kHz(*1 Frequency Table)
00H 1EH	mmH 11H	Expander Low Threshold 0,,,80 = -80,,,0dB
00H 1FH	mmH 11H	Expander Mid Threshold 0,,,80 = -80,,,0dB
00H 20H	mmH 11H	Expander High Threshold 0,,,80 = -80,,,0dB
00H 21H	mmH 11H	Expander Low Ratio 0,,,13 = 1:1.0,,,1:INF(*3 Ratio Table)
00H 22H	mmH 11H	Expander Mid Ratio 0,,,13 = 1:1.0,,,1:INF(*3 Ratio Table)
00H 23H	mmH 11H	Expander High Ratio 0,,,13 = 1:1.0,,,1:INF(*3 Ratio Table)
00H 24H	mmH 11H	Expander Low Attack 0,,,100ms
00H 25H	mmH 11H	Expander Mid Attack 0,,,100ms
00H 26H	mmH 11H	Expander High Attack 0,,,100ms
00H 27H	mmH 11H	Expander Low Release 0,,,100 = 50,,,5000ms
00H 28H	mmH 11H	Expander Mid Release 0,,,100 = 50,,,5000ms
00H 29H	mmH 11H	Expander High Release 0,,,100 = 50,,,5000ms
00H 2AH	mmH 11H	Compressor Low Threshold -24,,,0dB
00H 2BH	mmH 11H	Compressor Mid Threshold -24,,,0dB
00H 2CH	mmH 11H	Compressor High Threshold -24,,,0dB
00H 2DH	mmH 11H	Compressor Low Ratio 0,,,13 = 1:1.0,,,1:INF(*3 Ratio Table)
00H 2EH	mmH 11H	Compressor Mid Ratio 0,,,13 = 1:1.0,,,1:INF(*3 Ratio Table)
00H 2FH	mmH 11H	Compressor High Ratio 0,,,13 = 1:1.0,,,1:INF(*3 Ratio Table)
00H 30H	mmH 11H	Compressor Low Attack 0,,,100ms
00H 31H	mmH 11H	Compressor Mid Attack 0,,,100ms
00H 32H	mmH 11H	Compressor High Attack 0,,,100ms
00H 33H	mmH 11H	Compressor Low Release 0,,,100 = 50,,,5000ms
00H 34H	mmH 11H	Compressor Mid Release 0,,,100 = 50,,,5000ms
00H 35H	mmH 11H	Compressor High Release 0,,,100 = 50,,,5000ms
00H 36H	mmH 11H	Mixer Low Level 0,,,86 = -80,,,6dB
00H 37H	mmH 11H	Mixer Mid Level 0,,,86 = -80,,,6dB
00H 38H	mmH 11H	Mixer High Level 0,,,86 = -80,,,6dB
00H 39H	mmH 11H	Limiter Threshold -24,,,0dB
00H 3AH	mmH 11H	Limiter Attack 0,,,100ms
00H 3BH	mmH 11H	Limiter Release 0,,,100 = 50,,,5000ms
00H 3CH	mmH 11H	Output Level 0,,,86 = -80,,,6dB
00H 3DH	mmH 11H	Output Soft Clip 0,1 = Off,On
00H 3EH	mmH 11H	Output Dither 0,,,17 = Off,24,,,8Bit
00H 3FH	00H 00H	(Reserved)
:	:	
00H 7FH	00H 00H	

*1 Frequency Table

Data	Freq(Hz)		Data	Freq(Hz)		Data	Freq(Hz)		Date	Freq(Hz)
0	THRU		16	100		32	630		48	4.00k
1	THRU		17	112		33	710		49	4.50k
2	20.0		18	125		34	800		50	5.00k
3	22.4		19	140		35	900		51	5.60k
4	25.0		20	160		36	1.00k		52	6.30k
5	28.0		21	180		37	1.12k		53	7.10k
6	31.5		22	200		38	1.25k		54	8.00k
7	35.5		23	224		39	1.40k		55	9.00k
8	40.0		24	250		40	1.60k		56	10.0k
9	45.0		25	280		41	1.80k		57	11.2k
10	50.0		26	315		42	2.00k		58	12.5k
11	56.0		27	355		43	2.24k		59	14.0k
12	63.0		28	400		44	2.50k		60	16.0k
13	71.0		29	450		45	2.80k		61	18.0k
14	80.0		30	500		46	3.15k		62	20.0k
15	90.0		31	560		47	3.55k		63	22.4k

*2 Q Table

Data	Q		Data	Q
0	0.3		16	2.8
1	0.4		17	3.1
2	0.5		18	3.5
3	0.6		19	4.0
4	0.7		20	4.5

5	0.8	21	5.0
6	0.9	22	5.6
7	1.0	23	6.3
8	1.1	24	7.1
9	1.2	25	8.0
10	1.4	26	9.0
11	1.6	27	10.0
12	1.8	28	11.2
13	2.0	29	12.5
14	2.2	30	14.0
15	2.5	31	16.0

*3 Ratio Table

Data	RATIO	
0	1:1.0	(OFF)
1	1:1.1	
2	1:1.2	
3	1:1.4	
4	1:1.6	
5	1:1.8	
6	1:2.0	
7	1:2.5	
8	1:3.1	
9	1:4.0	
10	1:5.6	
11	1:8.0	
12	1:16	
13	1:INF	

●Program Change

Work as program change for the effects when MIDI channel number is set to 0H or 1H.
Work as scene switch when channel number is set to EH.
VSR-880 never transmits this message.

Status	Second
CnH	ppH

n = MIDI channel number:	0H - 1H (0 - 1) 0 = Effect1 1 = Effect2
	FH (15) 15 = Scene Memory (*1)
pp = program number:	00H - 63H (0 - 99) n = 0H, 1H
pp = program number:	00H - 07H (0 - 7) n = FH

(*1) If received while VSR-880 is playing, playback stops, and then restarts after the scene switched. Never receives while recording.

●Pitch Bend Range

Receives when effect algorithm 27(Voice Transformer) is selected and MIDI Control SW is On.

Status	Second	Third
EnH	llH	mmH

n = MIDI channel number:	0H - 1H (ch.1-ch.2)
	n = 0 (ch.1) : Voice Transformer : Chromatic Pitch
	n = 1 (ch.2) : Voice Transformer : Chromatic Formant
mm,ll = value:	00H,00H - 40H,00H - 7FH,7FH (-8192 - 0 - +8191)

■System Common Messages
●MIDI Time Code Quarter Frame Messages

MIDI Time Code Quarter Frame Messages can be transmitted while the VSR-880 is running (Playing or Recording) if the SYSTEM parameter "Syn:Source" is "INT" and "Syn:Gen." is "MTC" in the SYSTEM parameter. The transmitted time counts are summed to "SMPTE(MTC) Offset Time" as the song top is "00:00:00:00."
The VSR-880 synchronizes with the time counts which are summed to "SMPTE (MTC) Offset Time" as the song top is "00:00:00:00" if the SYSTEM parameter "Syn:Source" is "EXT."

Status	Second
F1H	mmH (= 0nnndddd)

nnn = Message type	: 0 = Frame count LS nibble
	1 = Frame count MS nibble
	2 = Seconds count LS nibble
	3 = Seconds count MS nibble
	4 = Minutes count LS nibble
	5 = Minutes count MS nibble
	6 = Hours count LS nibble
	7 = Hours count MS nibble
dddd = 4 bit nibble data	: 0h - FH (0 - 15)

Bit Field is assigned as follows.

Frame Count	xxxyyyyy		
	xxx	Reserved (000)	
	yyyyy	Frame No. (0-29)	
Seconds Count	xxyyyyyy		
	xx	Reserved (00)	
	yyyyyy	Seconds (0-59)	
Minutes Count	xxyyyyyy		
	xx	Reserved (00)	
	yyyyyy	Minutes (0-59)	
Hours Count	xyyzzzzz		
	x	Reserved (0)	
	yy	Time Code type	
		0 = 24 Frames / Sec	
		1 = 25 Frames / Sec	
		2 = 30 Frames / Sec (Drop Frame)	
		3 = 30 Frames / Sec (Non Drop Frame	
	zzzzz	Hours (0-23)	

●Song Position Pointer

The current position is transmitted by the Song Position Pointer Message before the VSR-880 starts to run and after the locate operation when "Syn:Source" is "INT" and "Syn:Gen." is "MIDIclk" or "SyncTr."

Status	Second	Third
F2H	mmH	nnH

mm,nn = Song Position Point: 00H 00H - 7FH 7FH

■System Realtime Message

Transmitted when "Syn:Source" is "INT" and "Syn:Gen." is "MIDIclk" or "SyncTr."

●Timing Clock

Status
F8H

●Start

Status
FAH

●Continue

Status
FBH

●Stop

Status
FCH

■System Exclusive Message

Status	Data Bytes	Status
F0H	iiH,ddH, ..., eeH	F7H

Byte	Description
F0H	Status of Exclusive Message
iiH	Manufacture ID
	41H Roland's Manufacture ID
	7EH Universal Non Realtime Message
	7FH Universal Realtime Message
ddH	Data : 00H - 7FH (0-127)
:	:
eeH	Data
F7H	EOX (End of Exclusive Message)

The VSR-880 can transfer and receive the internal parameters information using exclusive messages, and also can be controlled by the external devices using exclusive messages.
The VSR-880 can transmit and receive Universal System Exclusive messages.

Data Request(RQ1) and Data set(DS1) as the System Exclusive message.

○About Model ID

The Model ID of the VSR-880 is 00H,29H as for Data Request (RQ1) and Data set(DT1).
The VSR-880 also can transfer and receive 00H,14H to be compatible with the VS-880EX.
The model ID of Data Request (RQ1) and Data set (DT1) transferred from the VSR-880 is according to the value of SYSTEM parameter "MID:ModelID."
The VSR-880 can receive both model ID's.

○About Device ID

Exclusive messages are not assigned to any particular MIDI channel.
Instead, they have their own special control parameter called device ID.
The Roland exclusive messages use device IDs to specify various devices.
The VSR-880 sends exclusive messages using the device ID 00H - 1FH, and receives the exclusive messages which device ID is same as its device ID or 7FH.
The value of the device ID is the value set on the SYSTEM parameter "MID:DeviceID" minus one.

●Universal System Exclusive Message

○INQUIRY MESSAGE

Identity Request

Status	Data Bytes	Status
F0H	7EH,Dev,06H,01H	F7H

Byte	Description
F0H	Status of Exclusive Message
7EH	Universal System Exclusive Message Non Realtime Header
Dev	Device ID (or 7FH)
06H	General Information (sub ID #1)
01H	Identify Request (sub ID #2)
F7H	EOX (End of Exclusive Message)

The message is used to request the particular information of the VSR-880.
The VSR-880 does not transmit the message.
If the VSR-880 received the message and the device ID of the message is same as its device ID or 7FH, the VSR-880 transmits the following Identity Reply message.

Identity Reply

Status	Data Bytes	Status
F0H	7EH,Dev,06H,02H,41H,mmH,mmH, 00H,00H,00H,00H,ssH,ssH	F7H

Byte	Description
F0H	Status of Exclusive Message
7EH	Universal System Exclusive Message Non Realtime Header
Dev	Device ID
06H	General Information (sub ID #1)
02H	Identify Request (sub ID #2)
41H	Manufacture ID (Roland)
mmH mmH	Device Family Code (VSR-880/VS-880EX)
00H 00H	Device Family No.
00H	
00H	
ssH ssH	Software Revision Level
F7H	EOX (End of Exclusive Message)

The value of the device family code is according to the value of SYSTEM parameter "MID:ModelID."
If "MID:ModelID" is "VSR", The value of the device family code is 29H,01H.
If "MID:ModelID" is "88EX", The value of the device family code is 14H,01H.

MIDI Machine Control Commands

Status	Data Bytes	Status
F0H	7FH,Dev,06H,aaH, ..., bbH	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
aaH	Command
:	:
bbH	Command
F7H	EOX (End of Exclusive Message)

(*) see "3. MIDI Machine Control" section

MIDI Machine Control Responses

Status	Data Bytes	Status
F0H	7FH,Dev,07H,aaH, ..., bbH	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID
07H	MMC Response Message
aaH	Response
:	:
bbH	Response
F7H	EOX (End of Exclusive Message)

(*) see "3. MIDI Machine Control" section

●Data Transfer (RQ1, DT1)

○Data Request (RQ1)

Status	Data Bytes	Status
F0H	41H,Dev,mmH,mmH,11H, aaH,bbH,ccH,ssH,ssH,ssH,Sum	F7H

Byte	Description
F0H	Status of Exclusive Message
41H	Manufacture ID (Roland)
Dev	Device ID
mmH,mmH	Model ID (VSR-880/ VS-880EX)
11H	Command ID (RQ1)
aaH	Address MSB
bbH	Address
ccH	Address LSB
ssH	Size MSB
ssH	Size
ssH	Size LSB
Sum	Check Sum
F7H	EOX (End of Exclusive Message)

The message is used to request data to the VSR-880.
The VSR-880 does not transmit the message.
The VSR-880 transmits the requested data using Data Set(DT1) under following condition when it received the message.
    1.   The requested address correspond to the specified parameter base address of the VSR-880.
    2.   The requested size is over 1 byte.

○Data Set (DT1)

Status	Data Bytes	Status
F0H	41H,Dev,mmH,mmH,12H,a aH,bbH,ccH,ddH, ..., eeH,Sum	F7H

Byte	Description
F0H	Status of Exclusive Message
41H	Manufacture ID (Roland)
Dev	Device ID
mmH,mmH	Model ID (VSR-880/ VS-880EX)
12H	Command ID (DT1)
aaH	Address MSB
bbH	Address
ccH	Address LSB
ddH	Data
:	:
eeH	Data
Sum	Check Sum
F7H	EOX (End of Exclusive Message)

MIDI Implementation

The message is received under the following condition.

If the device ID on the message is same as that of the receive device, and the address on the message correspond to the specified parameter base address, the received data are stored from the specified parameter base address.
If the interval of received messages is shorter than 25 msec, the VSR-880 can not work the receive message procedure correctly.

The message is transmitted under the following condition.

When the VSR-880 transmit the data on the requested parameter after receiving the Data Request message(RQ1).

see "2. Data Transfer Address Map"
for more details of the transfer parameters.

2. Data Transfer Address Map

Address are expressed in 7 - bit hexadecimal values.

Address	MSB		LSB
Binary	0aaa aaaa	0bbb bbbb	0ccc cccc
7 Bit Hex	AA	BB	CC

■Parameter Address Block

< Model ID = 00H,29H >

Start address	Contents and remarks
00 00 00	System Parameter
01 00 00	Song Parameter
02 00 00	Mixer Parameter
03 00 00	Locate Parameter
04 00 00	Effect Parameter
05 00 00	Remote Operation
06 00 00 / 07 00 00	(Reserved)
08 00 00 / 09 00 00 / 0A 00 00 / 0B 00 00 / 0C 00 00 / 0D 00 00 / 0E 00 00 / 0F 00 00	Sync Track Data
10 00 00 / 11 00 00 / 12 00 00 / 13 00 00 / 14 00 00	Disk Access
15 00 00 - 7F 7F 7F	Undefined (Reserved)

●System Parameter

Start address	Data	Contents and remarks
00 00 00 / 00 00 01# / 00 00 02# / 00 00 03#	0aaaaaaa / 0bbbbbbb / 0ccccccc / 0ddddddd	SMPTE(MTC) Offset Time aaaaaaabbbbbbbccccccddddddd = 0,,,268435455block (1block=16sample)
00 00 04 / 00 00 05# / 00 00 06# / 00 00 07#	0aaaaaaa / 0bbbbbbb / 0ccccccc / 0ddddddd	Vari Pitch
00 00 08 / 00 00 09#	0aaaaaaa / 0bbbbbbb	(Reserved)
00 00 0A	00 - 01	Vari Pitch Switch	Off,On
00 00 0B	00 - 01	Marker Stop Switch	Off,On
00 00 0C	00 - 05	Fade Length	2,10,20,30,40,50mS
00 00 0D	0A - 5B	Preview Length	1.0,,,10.0S
00 00 0E	00 - 05	Foot Switch Assign	Play/Stop,Record,

			TapMarker,Next,Previous,GPI
00 00 0F	00 - 02	Metronome Out Mode	Off,INT,MIDI
00 00 10	00 - 01	Metronome Out Type	REConly,AnyTime
00 00 11	00 - 03	Master Clock	DIN1,INT,DIN2,R-BUS
00 00 12	00 - 1F	MIDI System Exclusive Device ID (*1)	1,,,32
00 00 13	00 - 01	MIDI OUT/THRU Switch (*1)	Out,Thru
00 00 14	00 - 01	MIDI System Exclusive RX Switch (*1)	Off,On
00 00 15	00 - 01	MIDI System Exclusive TX Switch (*1)	Off,On
00 00 16	00 - 0F	MIDI Metronome Channel	1,,,16
00 00 17	00 - 7F	MIDI Metronome Accent Note	0,,,127
00 00 18	01 - 7F	MIDI Metronome Accent Velocity	1,,,127
00 00 19	00 - 7F	MIDI Metronome Normal Note	0,,,127
00 00 1A	01 - 7F	MIDI Metronome Normal Velocity	1,,,127
00 00 1B	00 - 01	MIDI Mixer Control Local Switch	Off,On
00 00 1C	00 - 02	MIDI Mixer Control Type	Off,C.C.,Excl
00 00 1D	00 - 0A	Sync. Error Level	0,,,10
00 00 1E	00 - 01	Sync. Source	INT,EXT
00 00 1F	00 - 04	Sync. Generate	Off,MTC,MIDIclk,SyncTr,R-BUS
00 00 20	00 - 03	Sync. MTC Format	24,25,29D,29N,30
00 00 21	00	(Reserved)	
00 00 22	00	(Reserved)	
00 00 23	00 - 01	Recording Monitor	Input,Auto
00 00 24	00 - 01	Time Display	ABS,REL
00 00 25	00 - 7f	Internal Metronome Level	0-127
00 00 26	00 - 01	Undo Message	Off,On
00 00 27	00	(Reserved)	
00 00 28 / 00 00 29# / 00 00 2A# / 00 00 2B#	0aaaaaaa / 0bbbbbbb / 0ccccccc / 0ddddddd	Tempo Map-1 Tempo Map Time
00 00 2C / 00 00 2D# / 00 00 2E# / 00 00 2F#	0aaaaaaa / 0bbbbbbb / 0ccccccc / 0ddddddd	Tempo Map-1 Sync Track Time
00 00 30 / 00 00 31#	0aaaaaaa / 0bbbbbbb	Tempo Map-1 Tempo 250 - 2500 = 25.0 - 250.0
00 00 32 / 00 00 33#	0aaaaaaa / 0bbbbbbb	Tempo Map-1 Meas 1 - 999
00 00 34 / 00 00 35#	00 / 00 - 1F	Tempo Map-1 Beat 0 - 31 = 1/1, 1/2, ..., 7/8, 8/8
00 00 36 / 00 00 37#	00 / 00	Tempo Map-1 (Reserved)
00 00 38 :		Tempo Map-2 (See Tempo Map-1, 16bytes each)
00 06 47#		Tempo Map-50
00 06 48	01 - 32	Total Tempo Map Number (*2)	1 - 50
00 06 49	00 - 4B	Scrub Loop Length	25 - 100 mS
00 06 4A	00 - 02	MMC Mode	Off, Master, Slave
00 06 4B	00 - 01	Level Meter Tx. via MIDI	Off,On
00 06 4C	00 - 01	Effector Board Available (*3)	Off,On
00 06 4D	00 - 01	Digital Output Copy Protect	Off,On
00 06 4E	00 - 01	Auto Mix Mode	Off,On
00 06 4F	00 - 01	Auto Mix Snap Shot Mode	ALL,MaskF
00 06 50	00 - 03	Display Type of Remaining	Time,CapaMB,Capa%,Event
00 06 51	00 - 01	(Reserved)	
00 06 52	00 - 01	Peak Hold	Off,On
00 06 53	00 - 01	Scene Change by PG#	Off,On
00 06 54	00 - 01	Effect Change by PG#	Off,On
00 06 55	00 - 01	Effect Ctrl by Control Change	Off,On
00 06 56	00 - 01	V.Track Bank	A, B
00 06 57	00 - 00	(Reserved)	
00 06 58	00 - 01	Mastering Room Sw	Off,On
00 06 59	00 - 01	Mastering Status	REC, PLAY
00 06 5A	00 - 07	Mastering V-Track	VTrk1,,,VTrk8
00 06 5B	00 - 04	Mastering Track After Rec	0,,,4 = to ZERO,

			to Last Phrs: 0s,to Last Phrs: 2s, to Last Phrs: 4s,stay HERE
00 06 5C	00 - 01	Mastering Track Marker Add	Off,On
00 06 5D	00 - 01	Mastering Track Type	Norm,CD-R
00 06 5E	00 - 01	MIDI Model ID Select	VSR-880,VS-880EX
00 06 5F	00 - 01	Sync In Select	MIDI,R-BUS
00 06 60 : 00 07 7F	00 -	(Reserved)	
00 07 7F	00 -	(Reserved)	

(*) The address marked by "#" are invalid. Transmit the Data Set(DT1) or Data Request(RQ1) message with the specified size to the address without "#" mark.

(*1) These parameters are read only. The setting is a panel operation only.

(*2) You must write to the parameter whenever you rewrite the Tempo Map Data. The calculation will be begun when to write the parameter.

(*3) The flag shows that the Effect Board exists or not. It is a read only.

●Song Parameter

Start address	Data	Contents and remarks
01 00 00	00	(Reserved)
01 00 05#	00	
01 00 06	20 - 7E	Current Song Name -1 (ASCII)
01 00 11	20 - 7E	Current Song Name -12
01 00 12	00 - 02	Current Song Sampling Frequency 48K,44.1K,32KHz
01 00 13	00 - 07	Current Song R-DAC Mode VSR(7),CD(4),MAS(3), MT1(0),MT2(1),LIV1(2)
01 00 14	00 - xx	Current Song Protect Off, On(=01 or 81)
01 00 15	00	(Reserved)
01 00 16 / 01 00 17#	0000000a / 0bbbbbbb	Song List Length abbbbbbb = 1,,,200
01 00 18 : 01 00 1D	00 -	Song-1 (Reserved)
01 00 1E	20 - 7E	Song-1 Name -1 (ASCII)
01 00 13	20 - 7E	Song-1 Name -12
01 00 2A	00 - 02	Song-1 Sampling Frequency 48K,44.1K,32KHz
01 00 2B	00 - 07	Song-1 R-DAC Mode VSR(7),CD(4),MAS(3), MT1(0),MT2(1),LIV1(2)
01 00 2C : 01 1F 37#		Song-2 (See Song-1, 20bytes each)
01 1F 37#		Song-200
01 1F 38 / 01 1F 39#	0000000a / 0bbbbbbb	VS-880 Song List Length abbbbbbb = 1,,,200
01 1F 3A : 01 1F 3F	00 -	VS-880 Song-1 (Reserved)
01 1F 40	20 - 7E	VS-880 Song-1 Name -1 (ASCII)
01 1F 4B	20 - 7E	VS-880 Song-1 Name -12
01 1F 4C	00 - 02	VS-880 Song-1 Sampling Frequency 48K,44.1K,32KHz
01 1F 4D	00 - 03	VS-880 Song-1 R-DAC Mode MAS(3),MT1(0),MT2(1),LIV1(2)
01 1F 4E : 01 3E 59#		VS-880 Song-2 (See Song-1, 20bytes each)
01 3E 59#		VS-880 Song-200
01 3E 5A / 01 3e 5B#	0000000a / 0bbbbbbb	VS-880EX Song List Length abbbbbbb = 1,,,200
01 3E 5C : 01 3F 01	00 -	VS-880EX Song-1 (Reserved)
01 3F 02	20 - 7E	VS-880EX Song-1 Name -1 (ASCII)
01 3F 0D	20 - 7E	VS-880EX Song-1 Name -12
01 3F 0E	00 - 02	VS-880EX Song-1 Sampling Frequency 48K,44.1K,32KHz
01 3F 0F	00 - 03	VS-880EX Song-1 R-DAC Mode

			MAS(3),MT1(0),MT2(1),LIV1(2)
01 3F 10 : 01 5D 7B#		VS-880EX Song-2 (See Song-1, 20bytes each)	
01 5D 7B#		VS-880EX Song-200	

(*) The address marked by "#" are invalid. Request to Data Request(RQ1) message with the specified size to the address without "#" mark.

(*) Only the Data Set(DT1) message to the song name is acceptable.

●Mixer Parameter

Start address	Data	Contents and remarks
02 00 00	00 -	Track Status -1 00=SOURCE,01=PLAY,02=REC 40=SOURCE_MUTE,41=PLAY_MUTE,22=REC_SOURCE
02 00 07	00 -	Track Status -8
02 00 08 : 02 00 0F	00 - 07	V.Track -1 1,,,8
02 00 0F	00 - 07	V.Track -8
02 00 10 : 02 00 1F	00 -	(Reserved) 0
02 00 1F	00 -	(Reserved)
02 00 20 : 02 00 27	00 - 7F	Track Channel ATT -1 -12,,,+12dB
02 00 27	00 - 7F	Track Channel ATT -8
02 00 28 : 02 00 2F	00 - 7F	Input Channel ATT -1 -12,,,+12dB
02 00 2F	00 - 7F	Input Channel ATT -8
02 00 30 : 02 00 37	00 - 01	Track Channel Phase -1 Nor,Inv
02 00 37	00 - 01	Track Channel Phase -8
02 00 38 : 02 00 3F	00 - 01	Input Channel Phase -1 Nor,Inv
02 00 3F	00 - 01	Input Channel Phase -8
02 00 40 : 02 00 4F	00 -	(Reserved) 0
02 00 4F	00 -	(Reserved)
02 00 50 : 02 00 57	00 - 01	Track Channel EQ Switch -1 Off,On
02 00 57	00 - 01	Track Channel EQ Switch -8
02 00 58 : 02 00 5F	00 - 01	Input Channel EQ Switch -1 Off,On
02 00 5F	00 - 01	Input Channel EQ Switch -8
02 00 60 : 02 00 67	00 - 7F	Track Channel EQ L Freq.-1 40,50,60, 70,80,90,100,120,140,160,180,200,300,400,500, 600,700,800,900,1K,1.1K,1.2K,1.3K,1.4K,1.5KHz
02 00 67	00 - 7F	Track Channel EQ L Freq.-8
02 00 68 : 02 00 6F	00 - 7F	Input Channel EQ L Freq.-1 40,50,60, 70,80,90,100,120,140,160,180,200,300,400,500, 600,700,800,900,1K,1.1K,1.2K,1.3K,1.4K,1.5KHz
02 00 6F	00 - 7F	Input Channel EQ L Freq.-8
02 00 70 : 02 00 77	00 - 7F	Track Channel EQ L Gain -1 -12,,,-12dB
02 00 77	00 - 7F	Track Channel EQ L Gain -8
02 00 78 : 02 00 7F	00 - 7F	Input Channel EQ L Gain -1 -12,,,+12dB
02 00 7F	00 - 7F	Input Channel EQ L Gain -8
02 01 00 : 02 01 07	00 - 7F	Track Channel EQ M Freq.-1 200,300, 400,500,600,700,800,900,1K,1.1K,1.2K,1.3K,1.4K, 1.5K,1.6K,1.7K,1.8K,1.9K,2K,3K,4K,5K,6K,7K,8KHz
02 01 07	00 - 7F	Track Channel EQ M Freq.-8
02 01 08 : 02 01 0F	00 - 7F	Input Channel EQ M Freq.-1 200,300, 400,500,600,700,800,900,1K,1.1K,1.2K,1.3K,1.4K, 1.5K,1.6K,1.7K,1.8K,1.9K,2K,3K,4K,5K,6K,7K,8KHz
02 01 0F	00 - 7F	Input Channel EQ M Freq.-8
02 01 10 : 02 01 17	00 - 7F	Track Channel EQ M Gain -1 -12,,,+12dB
02 01 17	00 - 7F	Track Channel EQ M Gain -8
02 01 18 : 02 01 1F	00 - 7F	Input Channel EQ M Gain -1 -12,,,+12dB
02 01 1F	00 - 7F	Input Channel EQ M Gain -8
02 01 20	00 - 7F	Track Channel EQ M Q -1 0.5,1,2,4,8,16

Address	Value	Description	Notes
02 01 27	00 - 7F	Track Channel EQ M Q -8	
02 01 28	00 - 7F	Input Channel EQ M Q -1	0.5,1,2,4,8,16
:	:	:	
02 01 2F	00 - 7F	Input Channel EQ M Q -8	
02 01 30	00 - 7F	Track Channel EQ H Freq.-1 600,700,800,900,1K,1.2K,1.4K,1.6K,1.8K,2K,3K, 4K,5K,6K,7K,8K,9K,10K,11K,12K,13K,14K,16K,18KHz	500,
:	:	:	
02 01 37	00 - 7F	Track Channel EQ H Freq.-8	
02 01 38	00 - 7F	Input Channel EQ H Freq.-1 600,700,800,900,1K,1.2K,1.4K,1.6K,1.8K,2K,3K, 4K,5K,6K,7K,8K,9K,10K,11K,12K,13K,14K,16K,18KHz	500,
:	:	:	
02 01 3F	00 - 7F	Input Channel EQ H Freq.-8	
02 01 40	00 - 7F	Track Channel EQ H Gain -1	-12,,,+12dB
:	:	:	
02 01 47	00 - 7F	Track Channel EQ H Gain -8	
02 01 48	00 - 7F	Input Channel EQ H Gain -1	-12,,,+12dB
:	:	:	
02 01 4F	00 - 7F	Input Channel EQ H Gain -8	
02 01 50	00 - 04	Track Channel FX1 Insert Switch -1	Off,Ins,InsL,InsR,InsS
:	:	:	
02 01 57	00 - 04	Track Channel FX1 Insert Switch -8	
02 01 58	00 - 04	Input Channel FX1 Insert Switch -1	Off,Ins,InsL,InsR,InsS
:	:	:	
02 01 5F	00 - 04	Input Channel FX1 Insert Switch -8	
02 01 60	00 - 7F	Track Channel FX1 Insert Send Level -1	0,,,127
:	:	:	
02 01 67	00 - 7F	Track Channel FX1 Insert Send Level -8	
02 01 68	00 - 7F	Input Channel FX1 Insert Send Level -1	0,,,127
:	:	:	
02 01 6F	00 - 7F	Input Channel FX1 Insert Send Level -8	
02 01 70	00 - 7F	Track Channel FX1 Insert Return Level -1	0,,,127
:	:	:	
02 01 77	00 - 7F	Track Channel FX1 Insert Return Level -8	
02 01 78	00 - 7F	Input Channel FX1 Insert Return Level -1	0,,,127
:	:	:	
02 01 7F	00 - 7F	Input Channel FX1 Insert Return Level -8	
02 02 00	00 - 04	Track Channel FX2 Insert Switch -1	Off,Ins,InsL,InsR,InsS
:	:	:	
02 02 07	00 - 04	Track Channel FX2 Insert Switch -8	
02 02 08	00 - 04	Input Channel FX2 Insert Switch -1	Off,Ins,InsL,InsR,InsS
:	:	:	
02 02 0F	00 - 04	Input Channel FX2 Insert Switch -8	
02 02 10	00 - 7F	Track Channel FX2 Insert Send Level -1	0,,,127
:	:	:	
02 02 17	00 - 7F	Track Channel FX2 Insert Send Level -8	
02 02 18	00 - 7F	Input Channel FX2 Insert Send Level -1	0,,,127
:	:	:	
02 02 1F	00 - 7F	Input Channel FX2 Insert Send Level -8	
02 02 20	00 - 7F	Track Channel FX2 Insert Return Level -1	0,,,127
:	:	:	
02 02 27	00 - 7F	Track Channel FX2 Insert Return Level -8	
02 02 28	00 - 7F	Input Channel FX2 Insert Return Level -1	0,,,127
:	:	:	
02 02 2F	00 - 7F	Input Channel FX2 Insert Return Level -8	
02 02 30	00 - 7F	Track Channel Level -1	0,,,127
:	:	:	
02 02 37	00 - 7F	Track Channel Level -8	
02 02 38	00 - 7F	Input Channel Level -1	0,,,127
:	:	:	
02 02 3F	00 - 7F	Input Channel Level -8	
02 02 40	01 - 7F	Track Channel MIX & BUS Pan -1	L63 ,,, R63
:	:	:	
02 02 47	01 - 7F	Track Channel MIX & BUS Pan -8	
02 02 48	01 - 7F	Input Channel MIX & BUS Pan -1	L63 ,,, R63
:	:	:	
02 02 4F	01 - 7F	Input Channel MIX & BUS Pan -8	
02 02 50	00 - 01	Track Channel MIX Switch -1	Off,On
:	:	:	
02 02 57	00 - 01	Track Channel MIX Switch -8	
02 02 58	00 - 01	Input Channel MIX Switch -1	Off,On
:	:	:	
02 02 5F	00 - 01	Input Channel MIX Switch -8	
02 02 60	00 - 01	Track Channel BUS Send Switch -1 -1	Off,On
:	:	:	
02 02 67	00 - 01	Track Channel BUS Send Switch -1 -8	
02 02 68	00 - 01	Track Channel BUS Send Switch -2 -1	Off,On
:	:	:	
02 02 6F	00 - 01	Track Channel BUS Send Switch -2 -8	
02 02 70	00 - 01	Track Channel BUS Send Switch -3 -1	Off,On
:	:	:	
02 02 77	00 - 01	Track Channel BUS Send Switch -3 -8	
02 02 78	00 - 01	Track Channel BUS Send Switch -4 -1	Off,On
:	:	:	
02 02 7F	00 - 01	Track Channel BUS Send Switch -4 -8	
02 03 00	00 - 01	Track Channel BUS Send Switch -5 -1	Off,On
:	:	:	
02 03 07	00 - 01	Track Channel BUS Send Switch -5 -8	
02 03 08	00 - 01	Track Channel BUS Send Switch -6 -1	Off,On
:	:	:	
02 03 0F	00 - 01	Track Channel BUS Send Switch -6 -8	
02 03 10	00 - 01	Track Channel BUS Send Switch -7 -1	Off,On
:	:	:	
02 03 17	00 - 01	Track Channel BUS Send Switch -7 -8	
02 03 18	00 - 01	Track Channel BUS Send Switch -8 -1	Off,On
:	:	:	
02 03 1F	00 - 01	Track Channel BUS Send Switch -8 -8	
02 03 20	00 - 01	Input Channel BUS Send Switch -1 -1	Off,On
:	:	:	
02 03 27	00 - 01	Input Channel BUS Send Switch -1 -8	
02 03 28	00 - 01	Input Channel BUS Send Switch -2 -1	Off,On
:	:	:	
02 03 2F	00 - 01	Input Channel BUS Send Switch -2 -8	
02 03 30	00 - 01	Input Channel BUS Send Switch -3 -1	Off,On
:	:	:	
02 03 37	00 - 01	Input Channel BUS Send Switch -3 -8	
02 03 38	00 - 01	Input Channel BUS Send Switch -4 -1	Off,On
:	:	:	
02 03 3F	00 - 01	Input Channel BUS Send Switch -4 -8	
02 03 40	00 - 01	Input Channel BUS Send Switch -5 -1	Off,On
:	:	:	
02 03 47	00 - 01	Input Channel BUS Send Switch -5 -8	
02 03 48	00 - 01	Input Channel BUS Send Switch -6 -1	Off,On
:	:	:	
02 03 4F	00 - 01	Input Channel BUS Send Switch -6 -8	
02 03 50	00 - 01	Input Channel BUS Send Switch -7 -1	Off,On
:	:	:	
02 03 57	00 - 01	Input Channel BUS Send Switch -7 -8	
02 03 58	00 - 01	Input Channel BUS Send Switch -8 -1	Off,On
:	:	:	
02 03 5F	00 - 01	Input Channel BUS Send Switch -8 -8	
02 03 60	00 - 02	Track Channel AUX Switch -1	Off,Pre,Post
:	:	:	
02 03 67	00 - 02	Track Channel AUX Switch -8	
02 03 68	00 - 02	Input Channel AUX Switch -1	Off,Pre,Post
:	:	:	
02 03 6F	00 - 02	Input Channel AUX Switch -8	
02 03 70	00 - 7F	Track Channel AUX Level -1	0,,,127
:	:	:	
02 03 77	00 - 7F	Track Channel AUX Level -8	
02 03 78	00 - 7F	Input Channel AUX Level -1	0,,,127
:	:	:	
02 03 7F	00 - 7F	Input Channel AUX Level -8	
02 04 00	01 - 7F	Track Channel AUX Pan -1	L63,,,R63
:	:	:	
02 04 07	01 - 7F	Track Channel AUX Pan -8	
02 04 08	01 - 7F	Input Channel AUX Pan -1	L63,,,R63
:	:	:	
02 04 0F	01 - 7F	Input Channel AUX Pan -8	
02 04 10	00 - 02	Track Channel FX1 Switch -1	Off,Pre,Post
:	:	:	
02 04 17	00 - 02	Track Channel FX1 Switch -8	
02 04 18	00 - 02	Input Channel FX1 Switch -1	Off,Pre,Post
:	:	:	
02 04 1F	00 - 02	Input Channel FX1 Switch -8	
02 04 20	00 - 7F	Track Channel FX1 Level -1	0,,,127
:	:	:	
02 04 27	00 - 7F	Track Channel FX1 Level -8	
02 04 28	00 - 7F	Input Channel FX1 Level -1	0,,,127
:	:	:	
02 04 2F	00 - 7F	Input Channel FX1 Level -8	
02 04 30	01 - 7F	Track Channel FX1 Pan -1	L63,,,R63
:	:	:	
02 04 37	01 - 7F	Track Channel FX1 Pan -8	
02 04 38	01 - 7F	Input Channel FX1 Pan -1	L63,,,R63

```
:    :    :
02 04 3F | 01 - 7F | Input Channel FX1 Pan -8
02 04 40 | 00 - 02 | Track Channel FX2 Switch -1        Off,Pre,Post
:    :    :
02 04 47 | 00 - 02 | Track Channel FX2 Switch -8
02 04 48 | 00 - 02 | Input Channel FX2 Switch -1        Off,Pre,Post
:    :    :
02 04 4F | 00 - 02 | Input Channel FX2 Switch -8
02 04 50 | 00 - 7F | Track Channel FX2 Level -1              0,,,127
:    :    :
02 04 57 | 00 - 7F | Track Channel FX2 Level -8
02 04 58 | 00 - 7F | Input Channel FX2 Level -1              0,,,127
:    :    :
02 04 5F | 00 - 7F | Input Channel FX2 Level -8
02 04 60 | 01 - 7F | Track Channel FX2 Pan -1           L63,,,R63
:    :    :
02 04 67 | 01 - 7F | Track Channel FX2 Pan -8
02 04 68 | 01 - 7F | Input Channel FX2 Pan -1           L63,,,R63
:    :    :
02 04 6F | 01 - 7F | Input Channel FX2 Pan -8
02 04 70 | 00 - | (Reserved)                                    0
:    :    :
02 04 7F | 00 - | (Reserved)
02 05 00 | 00 - 01 | Track Channel Solo Switch -1           Off,On
:    :    :
02 05 07 | 00 - 01 | Track Channel Solo Switch -8
02 05 08 | 00 - 01 | Input Channel Solo Switch -1           Off,On
:    :    :
02 05 0F | 00 - 01 | Input Channel Solo Switch -8
02 05 10 | 00 - 01 | Track Channel Mute Switch -1           Off,On
:    :    :
02 05 17 | 00 - 01 | Track Channel Mute Switch -8
02 05 18 | 00 - 01 | Input Channel Mute Switch -1           Off,On
:    :    :
02 05 1F | 00 - 01 | Input Channel Mute Switch -8
02 05 20 | 00 - 01 | Track Channel Link Switch -1           Off,On
:    :    :
02 05 27 | 00 - 01 | Track Channel Link Switch -8
02 05 28 | 00 - 01 | Input Channel Link Switch -1           Off,On
:    :    :
02 05 2F | 00 - 01 | Input Channel Link Switch -8
02 05 30 | 00 - 01 | Track Channel Level Link Switch -1     Off,On
:    :    :
02 05 37 | 00 - 01 | Track Channel Level Link Switch -8
02 05 38 | 00 - 01 | Input Channel Level Link Switch -1     Off,On
:    :    :
02 05 3F | 00 - 01 | Input Channel Level Link Switch -8
02 05 40 | 00 - 7F | Track Channel Offset Level -a          0,,,127
:    :    :
02 05 43 | 00 - 7F | Track Channel Offset Level -d
02 05 44 | 00 - 7F | Input Channel Offset Level -a          0,,,127
:    :    :
02 05 47 | 00 - 7F | Input Channel Offset Level -d
02 05 48 | 00 - 7F | Track Channel Offset Pan -a        L63,,,R63
:    :    :
02 05 4B | 00 - 7F | Track Channel Offset Pan -d
02 05 4C | 00 - 7F | Input Channel Offset Pan -a        L63,,,R63
:    :    :
02 05 4F | 00 - 7F | Input Channel Offset Pan -d
02 05 50 | 00 - | (Reserved)                                    0
:    :    :
02 05 53 | 00 - | (Reserved)
02 05 54 | 00 - 03 | Input Select -1/2       Rear,Front,Digital,R-BUS
:    :    :
02 05 57 | 00 - 03 | Input Select -7/8
02 05 58 | 00 - 04 | Stereo In Select       Off,Input12,Input34,
                                             Input56,Input78
02 05 59 | 00 - 7F | Stereo In Level                        0,,,127
02 05 5A | 01 - 7F | Stereo In Balance                  L63,,,R63
02 05 5B | 00 - 01 | Stereo In Bus Send Switch -1           Off,On
:    :    :
02 05 62 | 00 - 01 | Stereo In Bus Send Switch -8
02 05 63 | 00 - 01 | Stereo In Solo Switch                  Off,On
02 05 64 | 00 - 01 | Stereo In Mute Switch                  Off,On
02 05 65 | 00 - 01 | (Reserved)
02 05 66 | 00 - 7F | FX1 Return Level                       0,,,127
```

```
02 05 67 | 01 - 7F | FX1 Return Balance                 L63,,,R63
02 05 68 | 00 - 01 | FX1 Return Bus Send Switch -1          Off,On
:    :    :
02 05 6F | 00 - 01 | FX1 Return Bus Send Switch -8
02 05 70 | 00 - 01 | FX1 Return Solo Switch                 Off,On
02 05 71 | 00 - 01 | FX1 Return Mute Switch                 Off,On
02 05 72 | 00 | (Reserved)
02 05 73 | 00 - 7F | FX2 Return Level                       0,,,127
02 05 74 | 01 - 7F | FX2 Return Balance                 L63,,,R63
02 05 75 | 00 - 01 | FX2 Return Bus Send Switch -1          Off,On
:    :    :
02 05 7C | 00 - 01 | FX2 Return Bus Send Switch -8
02 05 7D | 00 - 01 | FX2 Return Solo Switch                 Off,On
02 05 7E | 00 - 01 | FX2 Return Mute Switch                 Off,On
02 05 7F | 00 - 02 | (Reserved)
02 06 00 | 00 - 01 | FX1 Master Insert Sw                  Off,Ins
02 06 01 | 00 - 7F | FX1 Master Send Level                  0,,,127
02 06 02 | 00 - 7F | FX1 Master Return Level                0,,,127
02 06 03 | 00 - 01 | FX2 Master Insert Sw                  Off,Ins
02 06 04 | 00 - 7F | FX2 Master Send Level                  0,,,127
02 06 05 | 00 - 7F | FX2 Master Return Level                0,,,127
02 06 06 | 00 - 7F | Master Out Level                       0,,,127
02 06 07 | 01 - 7F | Master Out Balance                 L63,,,R63
02 06 08 | 00 - 7F | Master AUX Send Level                  0,,,127
02 06 09 | 01 - 7F | Master AUX Send Balance            L63,,,R63
02 06 0A | 00 - 7F | Master FX1 Send Level                  0,,,127
02 06 0B | 01 - 7F | Master FX1 Send Balance            L63,,,R63
02 06 0C | 00 - 7F | Master FX2 Send Level                  0,,,127
02 06 0D | 01 - 7F | Master FX2 Send Balance            L63,,,R63
02 06 0E | 00 - | (Reserved)
02 06 0F | 00 - 04 | Master Select       MIX, AUX, FX1, FX2, REC
02 06 10 | 00 - | (Reserved)
02 06 11 | 00 - 03 | Digital 1 Output Select   Master, AUX, FX1, FX2
                                               or 1-2, 3-4, 5-6, 7-8
02 06 12 | 00 - 03 | Digital 2 Output Select   Master, AUX, FX1, FX2
                                               or 1-2, 3-4, 5-6, 7-8
02 06 13 | 00 - 01 | Direct Out Switch                     Off,On
02 06 14 | 00 - 01 | EQ Mode                          2Band,3Band
02 06 15 | 00 - | (Reserved)
02 06 16 | 00 - | (Reserved)
02 06 17 | 00 - 03 | Phones Select             Master, AUX, FX1, FX2
                                               or 1-2, 3-4, 5-6, 7-8
```

●Locate parameter

Start address	Data	Contents and remarks
03 00 00	0aaaaaaa	LOCATE-1 (*1)
03 00 01#	0bbbbbbb	aaaaaaabbbbbbbcccccccddddddd =
03 00 02#	0ccccccc	0,,,268435455block (1block=16sample)
03 00 03#	0ddddddd	
03 00 04	0aaaaaaa	LOCATE-2 (*1)
03 00 05#	0bbbbbbb	aaaaaaabbbbbbbcccccccddddddd =
03 00 06#	0ccccccc	0,,,268435455block (1block=16sample)
03 00 07#	0ddddddd	
03 00 08	0aaaaaaa	LOCATE-3 (*1)
03 00 09#	0bbbbbbb	aaaaaaabbbbbbbcccccccddddddd =
03 00 0A#	0ccccccc	0,,,268435455block (1block=16sample)
03 00 0B#	0ddddddd	
03 00 0C	0aaaaaaa	LOCATE-4 (*1)
03 00 0D#	0bbbbbbb	aaaaaaabbbbbbbcccccccddddddd =
03 00 0E#	0ccccccc	0,,,268435455block (1block=16sample)
03 00 0F#	0ddddddd	
03 00 10	0aaaaaaa	LOCATE-5 (*1)
03 00 11#	0bbbbbbb	aaaaaaabbbbbbbcccccccddddddd =
03 00 12#	0ccccccc	0,,,268435455block (1block=16sample)
03 00 13#	0ddddddd	
03 00 14	0aaaaaaa	LOCATE-6 (*1)
03 00 15#	0bbbbbbb	aaaaaaabbbbbbbcccccccddddddd =
03 00 16#	0ccccccc	0,,,268435455block (1block=16sample)
03 00 17#	0ddddddd	

03 00 16	0aaaaaaa	LOCATE-7	(*1)
03 00 19#	0bbbbbbb	aaaaaaabbbbbbbccccccccddddddd =	
03 00 1A#	0ccccccc	0,,,268435455block (1block=16sample)	
03 00 1B#	0ddddddd		
03 00 1C	0aaaaaaa	LOCATE-8	(*1)
03 00 1D#	0bbbbbbb	aaaaaaabbbbbbbccccccccddddddd =	
03 00 1E#	0ccccccc	0,,,268435455block (1block=16sample)	
03 00 1F#	0ddddddd		
03 00 20	0aaaaaaa	Loop Start Point	(*1,2)
03 00 21#	0bbbbbbb	aaaaaaabbbbbbbccccccccddddddd =	
03 00 22#	0ccccccc	0,,,268435455block (1block=16sample)	
03 00 23#	0ddddddd		
03 00 24	0aaaaaaa	Loop End Point	(*1,2)
03 00 25#	0bbbbbbb	aaaaaaabbbbbbbccccccccddddddd =	
03 00 26#	0ccccccc	0,,,268435455block (1block=16sample)	
03 00 27#	0ddddddd		
03 00 28	0aaaaaaa	Punch In Point	(*1,2)
03 00 29#	0bbbbbbb	aaaaaaabbbbbbbccccccccddddddd =	
03 00 2A#	0ccccccc	0,,,268435455block (1block=16sample)	
03 00 2B#	0ddddddd		
03 00 2C	0aaaaaaa	Punch Out Point	(*1,2)
03 00 2D#	0bbbbbbb	aaaaaaabbbbbbbccccccccddddddd =	
03 00 2E#	0ccccccc	0,,,268435455block (1block=16sample)	
03 00 2F#	0ddddddd		
03 01 00	0aaaaaaa	Marker Time or Marker Number	(*1,3)
03 01 01#	0bbbbbbb	aaaaaaabbbbbbbccccccccddddddd =	
03 01 02#	0ccccccc	0,,,268435455block (1block=16sample)	
03 01 03#	0ddddddd	or 0,,,999 Marker Number, >=1000 All	
03 01 04	00 - 04	Marker/Locator Command	
		00=Marker Read (*3)	
		01=Marker Write (*3)	
		02=Marker Clear (*3)	
		03 = Get Locate Bank (*4)	
		04 = Set Locate Bank (*4)	
03 01 05	00 - 01	Marker Category	
		00=Normal	
		01=Automix Snapshot	
		02=Automix Realtime	
		03=CD-R Index	

(*) The address marked by "#" are invalid. Transmit the Data Set(DT1) or Data Request(RQ1) message with the specified size to the address without "#" mark.

(*) Time parameters are set to the relocated time(REL) that the time of song top is "00:00:00:00"

(*1) The VSR-880 treats the 16 samples as 1 block for managing internal time. Pay attention to the expression of the internal time changes respond to the sampling frequency of each song. And time parameter can not be set to over 24 hours.

Example 1) Set the time 00:01:00:00 (30 Non-Drop)
Sampling Frequency is 48 kHz :
2880000 sample = 180000 block = 00 0A 7E 20 (7bit Hex)

Sampling Frequency is 44.1 kHz :
2646000 sample = 165375 block = 00 0A 0B 7F (7bit Hex)

Sampling Frequency is 32 kHz :
1920000 sample = 120000 block = 00 07 29 40 (7bit Hex)

Example 2) Set the time 23:59:59:29 (30 Non-Drop)
Sampling Frequency is 48 kHz :
4147198400 sample = 259199900 block = 7B 4C 27 1C (7bit Hex)

Sampling Frequency is 44.1 kHz :
3810238530 sample = 238139908 block = 71 46 74 04 (7bit Hex)

Sampling Frequency is 32 kHz :
2764798933 sample = 172799933 block = 52 32 6F 3D (7bit Hex)

(*2) The Loop Start point must be before the Loop Stop point. The Auto Punch In point must be before the Auto Punch Out point. If the interval of each point is shorter than 1 sec, the VSR-880 does not work correctly.

(*3) Read/Write/Erase of the Mark points are done by writing operation mode to the Marker command. Set the value of the Marker Time and Marker Number, before setting the value of the Marker command.

Example 1) Delete all mark points (DeviceID = 10)
```
(HOST)  =>  F0 41 10 00 14 12 03 01 00 7F 7F 7F 7F 7F 7A F7  =>  (VSR-880)
(HOST)  =>  F0 41 10 00 14 12 03 01 04 02 74 F7              =>  (VSR-880)
(HOST)  <=  F0 41 10 00 14 12 03 01 00 00 00 00 00 00 ss F7  <=  (VSR-880)
```
The return value "00000000" is a sum of mark points.

Example 2) Write the mark point (DeviceID = 10)
```
(HOST)  =>  F0 41 10 00 14 12 03 01 00 aa aa aa aa ss F7  =>  (VSR-880)
            aaaaaaaa = time of Marker
(HOST)  =>  F0 41 10 00 14 12 03 01 04 01 75 F7           =>  (VSR-880)
(HOST)  <=  F0 41 10 00 14 12 03 01 00 nn nn nn nn ss F7  <=  (VSR-880)
            nnnn = total marker number, ss = check sum
```

If the total of mark point is over 1000, the VSR-880 ignores the writing and returns the total numbers of the mark points.
If the mark point already exists 0.1 msec near the new mark point, the VSR-880 ignores the writing and returns the total numbers of the mark points.

Example 3) Read the mark point #3 (DeviceID = 10)
```
(HOST)  =>  F0 41 10 00 14 12 03 01 00 00 00 00 03 75 F7  =>  (VSR-880)
(HOST)  =>  F0 41 10 00 14 12 03 01 04 00 76 F7           =>  (VSR-880)
(HOST)  <=  F0 41 10 00 14 12 03 01 00 nn nn nn nn ss F7  <=  (VSR-880)
            nnnnnnnn = total marker number, ss = check sum
(HOST)  <=  F0 41 10 00 14 12 03 01 00 aa aa aa aa ss F7  <=  (VSR-880)
            aaaaaaaa = time of Marker #3
```

If the mark point is less than 3, the VSR-880 does not return the block of "aaaaaaaa."

Example 4) Read all mark points (DeviceID = 10)
```
(HOST)  =>  F0 41 10 00 14 12 03 01 00 7F 7F 7F 7F 7A F7  =>  (VSR-880)
            7F7F7F7F(>= 1000) means All marker
(HOST)  =>  F0 41 10 00 14 12 03 01 04 00 76 F7           =>  (VSR-880)
(HOST)  <=  F0 41 10 00 14 12 03 01 00 nn nn nn nn ss F7  <=  (VSR-880)
            nnnnnnnn = total marker number, ss = check sum
(HOST)  <=  F0 41 10 00 14 12 03 01 00 aa aa aa aa ss F7  <=  (VSR-880)
            aaaaaaaa = time of Marker #1
(HOST)  <=  F0 41 10 00 14 12 03 01 00 bb bb bb bb ss F7  <=  (VSR-880)
            bbbbbbbb = time of Marker #2
                     :
(HOST)  <=  F0 41 10 00 14 12 03 01 00 xx xx xx xx ss F7  <=  (VSR-880)
            xxxxxxxx = time of the last Marker#
```

If the mark point does not exist, the VSR-880 does not return blocks under "aaaaaaaa."

Example 5) Delete the mark point (DeviceID = 10)
```
(HOST)  =>  F0 41 10 00 14 12 03 01 00 aa aa aa aa ss F7  =>  (VSR-880)
            aaaaaaaa = time of Marker
(HOST)  =>  F0 41 10 00 14 12 03 01 04 02 74 F7           =>  (VSR-880)
(HOST)  <=  F0 41 10 00 14 12 03 01 00 nn nn nn nn ss F7  <=  (VSR-880)
            nnnn = total marker number, ss = check sum
```

The VSR-880 deletes the mark point which includes specified time, and returns the total numbers of the mark points.

(*4) Write Locate data into a bank memory (Set Locate Bank), and read from a bank memory (Get Locate Bank), according to the Locate Bank number (0-3) set in Marker Number.

●Effect parameters

Basic Address

Start address		Contents and remarks
04 00 00	0aaaaaaa	Effector - 1 Algorithm aaaaaaabbbbbbbb =
04 00 01#	0bbbbbbb	(0:Reverb *1)
		1:Delay
		2:Stereo Delay Chorus
		3:Stereo Pitch Shifter Delay
		4:Vocoder
		5:2ch RSS
		6:Delay RSS
		7:Chorus RSS
		8:Guitar Multi 1
		9:Guitar Multi 2
		10:Guitar Multi 3
		11:Vocal Multi
		12:Rotary
		13:Guitar Amp Simulator
		14:Stereo Phaser
		15:Stereo Flanger
		16:Dual Comp/Limiter
		(17:Gate Reverb *1)
		18:Multi Tap Delay
		19:Stereo Multi
		20:Reverb 2
		21:Space Chorus
		22:Lo-Fi Processor
		23:4Band Parametric Equalizer
		24:10Band Graphic Equalizer
		25:Hum Canceler
		26:Vocal Canceler
		(27:Voice Transformer *1,*2)
		(28:Vocoder 2 *1,*2)
		29:Mic Simulator
		30:3Band Isolator
		31:Tape Echo 201
		32:Analog Flanger
		33:Analog Phaser
		34:Speaker Modeling
		(35:Mastering Tool Kit *1,*2)

04 00 02	20 - 7E	Effector - 1 Name -1	(ASCII)
: :	:		
04 00 0D	20 - 7E	Effector - 1 Name -12	
04 00 0E	00 - 7F	Effector - 1 Parameter Area (See Below)	
: :	:		
04 00 7F	00 - 7F		

04 01 00	0aaaaaaa	Effector - 2 Algorithm aaaaaaabbbbbb =
04 01 01#	0bbbbbbb	(0:Reverb *1)
		1:Delay
		2:Stereo Delay Chorus
		3:Stereo Pitch Shifter Delay
		4:Vocoder
		5:2ch RSS
		6:Delay RSS
		7:Chorus RSS
		8:Guitar Multi 1
		9:Guitar Multi 2
		10:Guitar Multi 3
		11:Vocal Multi
		12:Rotary
		13:Guitar Amp Simulator
		14:Stereo Phaser
		15:Stereo Flanger
		16:Dual Comp/Limiter
		(17:Gate Reverb *1)
		18:Multi Tap Delay
		19:Stereo Multi
		20:Reverb 2
		21:Space Chorus
		22:Lo-Fi Processor
		23:4Band Parametric Equalizer
		24:10Band Graphic Equalizer
		25:Hum Canceler
		26:Vocal Canceler
		(27:Voice Transformer *1,*2)
		(28:Vocoder 2 *1,*2)
		29:Mic Simulator
		30:3Band Isolator
		31:Tape Echo 201
		32:Analog Flanger
		33:Analog Phaser
		34:Speaker Modeling
		(35:Mastering Tool Kit *1,*2)

04 01 02	20 - 7E	Effector - 2 Name -1	(ASCII)
: :	:		
04 01 0D	20 - 7E	Effector - 2 Name -12	
04 01 0E	20 - 7E	Effector - 2 Parameter Area (See Below)	
: :	:		
04 01 7F	20 - 7E		

(*1) can not select "0:Reverb," "17:Gate Reverb," "27:Voice Transformer," "28:Vocoder2" or "35:Mastering Tool Kit" on Effect-2

(*2) If "27:Voice Transformer," "28:Vocoder2" or "35:Mastering Tool Kit" is selected at Effect-1, Effect-2 is invalid.

(*) Two same parameters exist with two system Effects.

(*) A meaning of the parameter area changes correspond with the top of parameter of Effect Algorithm. See the following tables. The address shows at Effect-1.

(*) If select the different Algorithm type from current one, all parameters will be copied from the preset patch data which selected Algorithm.

Algorithm 0 Reverb (FX1 Only)

04 00 0E	0aaaaaaa	EQ SW	
04 00 0F#	0bbbbbbb		0,1 = Off,On
04 00 10	0aaaaaaa	EQ: Low EQ Type	
04 00 11#	0bbbbbbb		0,1 = Shelving, Peaking
04 00 12	0aaaaaaa	EQ: Low EQ Gain	
04 00 13#	0bbbbbbb		-12,,,12dB
04 00 14	0aaaaaaa	EQ: Low EQ Frequency	
04 00 15#	0bbbbbbb		2,,,200 = 20,,,2000Hz
04 00 16	0aaaaaaa	EQ: Low EQ Q	
04 00 17#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 18	0aaaaaaa	EQ: Mid EQ Gain	
04 00 19#	0bbbbbbb		-12,,,12dB
04 00 1A	0aaaaaaa	EQ: Mid EQ Frequency	
04 00 1B#	0bbbbbbb		20,,,800 = 200,,,8000Hz
04 00 1C	0aaaaaaa	EQ: Mid EQ Q	
04 00 1D#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 1E	0aaaaaaa	EQ: High EQ Type	
04 00 1F#	0bbbbbbb		0,1 = Shelving, Peaking
04 00 20	0aaaaaaa	EQ: High EQ Gain	
04 00 21#	0bbbbbbb		-12,,,12dB
04 00 22	0aaaaaaa	EQ: High EQ Frequency	
04 00 23#	0bbbbbbb		14,,,200 = 1.4,,,20.0kHz

04 00 24	0aaaaaaa	EQ: High EQ Q	
04 00 25#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 26	0aaaaaaa	EQ: Out Level	
04 00 27#	0bbbbbbb		0,,,100
04 00 28	0aaaaaaa	Reverb: Room Size	
04 00 29#	0bbbbbbb		5,,,40m
04 00 2A	0aaaaaaa	Reverb: Reverb Time	
04 00 2B#	0bbbbbbb		1,,,320 = 0.1,,,32.0s
04 00 2C	0aaaaaaa	Reverb: Pre Delay	
04 00 2D#	0bbbbbbb		0,,,200 = 0,,,200ms
04 00 2E	0aaaaaaa	Reverb: Diffusion	
04 00 2F#	0bbbbbbb		0,,,100
04 00 30	0aaaaaaa	Reverb: Density	
04 00 31#	0bbbbbbb		0,,,100
04 00 32	0aaaaaaa	Reverb: Early Reflection Level	
04 00 33#	0bbbbbbb		0,,,100
04 00 34	0aaaaaaa	Reverb: LF Damp Frequency	
04 00 35#	0bbbbbbb		5,,,400 = 50,,,4000Hz
04 00 36	0aaaaaaa	Reverb: LF Damp Gain	
04 00 37#	0bbbbbbb		-36,,,0dB
04 00 38	0aaaaaaa	Reverb: HF Damp Frequency	
04 00 39#	0bbbbbbb		10,,,200 = 1.0,,,20.0kHz
04 00 3A	0aaaaaaa	Reverb: HF Damp Gain	
04 00 3B#	0bbbbbbb		-36,,,0dB
04 00 3C	0aaaaaaa	Reverb: HI Cut Frequency	
04 00 3D#	0bbbbbbb		2,,,200 = 0.2,,,20.0kHz
04 00 3E	0aaaaaaa	Reverb: Effect Level	
04 00 3F#	0bbbbbbb		-100,,,100
04 00 40	0aaaaaaa	Reverb: Direct Level	
04 00 41#	0bbbbbbb		-100,,,100
04 00 42	00	(Reserved)	
:	:		
04 00 7F	00		

Algorithm 1 Delay

04 00 0E	0aaaaaaa	Delay SW	
04 00 0F#	0bbbbbbb		0,1 = Off,On
04 00 10	0aaaaaaa	EQ SW	
04 00 11#	0bbbbbbb		0,1 = Off,On
04 00 12	0aaaaaaa	Delay: Delay Time	
04 00 13#	0bbbbbbb		0,,,1200ms
04 00 14	0aaaaaaa	Delay: Shift	
04 00 15#	0bbbbbbb		-1200,,,1200 = L1200,,,R1200ms
04 00 16	0aaaaaaa	Delay: Lch Feedback Level	
04 00 17#	0bbbbbbb		-100,,,100
04 00 18	0aaaaaaa	Delay: Rch Feedback Level	
04 00 19#	0bbbbbbb		-100,,,100
04 00 1A	0aaaaaaa	Delay: Lch Level	
04 00 1B#	0bbbbbbb		-100,,,100
04 00 1C	0aaaaaaa	Delay: Rch Level	
04 00 1D#	0bbbbbbb		-100,,,100
04 00 1E	0aaaaaaa	Delay: LF Damp Frequency	
04 00 1F#	0bbbbbbb		5,,,400 = 50,,,4000Hz
04 00 20	0aaaaaaa	Delay: LF Damp Gain	
04 00 21#	0bbbbbbb		-36,,,0dB
04 00 22	0aaaaaaa	Delay: HF Damp Frequency	
04 00 23#	0bbbbbbb		10,,,200 = 1.0,,,20.0kHz
04 00 24	0aaaaaaa	Delay: HF Damp Gain	
04 00 25#	0bbbbbbb		-36,,,0dB
04 00 26	0aaaaaaa	Delay: Direct Level	
04 00 27#	0bbbbbbb		-100,,,100
04 00 28	0aaaaaaa	EQ: Low EQ Type	
04 00 29#	0bbbbbbb		0,1 = Shelving, Peaking
04 00 2A	0aaaaaaa	EQ: Low EQ Gain	
04 00 2B#	0bbbbbbb		-12,,,12dB
04 00 2C	0aaaaaaa	EQ: Low EQ Frequency	
04 00 2D#	0bbbbbbb		2,,,200 = 20,,,2000Hz
04 00 2E	0aaaaaaa	EQ: Low EQ Q	
04 00 2F#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 30	0aaaaaaa	EQ: Mid EQ Gain	
04 00 31#	0bbbbbbb		-12,,,12dB
04 00 32	0aaaaaaa	EQ: Mid EQ Frequency	
04 00 33#	0bbbbbbb		20,,,800 = 200,,,8000Hz
04 00 34	0aaaaaaa	EQ: Mid EQ Q	
04 00 35#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 36	0aaaaaaa	EQ: High EQ Type	

04 00 37#	0bbbbbbb		0,1 = Shelving, Peaking
04 00 38 04 00 39#	0aaaaaaa 0bbbbbbb	EQ: High EQ Gain	-12,,,12dB
04 00 3A 04 00 3B#	0aaaaaaa 0bbbbbbb	EQ: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz
04 00 3C 04 00 3D#	0aaaaaaa 0bbbbbbb	EQ: High EQ Q	3,,,100 = 0.3,,,10.0
04 00 3E 04 00 3F#	0aaaaaaa 0bbbbbbb	EQ: Out Level	0,,,100
04 00 40 : 04 00 7F	00 : 00	(Reserved)	

(*) (Delay Time) + (Absolute Shift) is less than 1200

Algorithm 2 Stereo Delay Chorus

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Delay SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Chorus SW	0,1 = Off,On
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	EQ SW	0,1 = Off,On
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Delay: Delay Time	0,,,500ms
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Delay: Shift	-500,,,500 = L500,,,R500ms
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	Delay: Lch Feedback Level	-100,,,100
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	Delay: Rch Feedback Level	-100,,,100
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	Delay: Lch Cross Feedback Level	-100,,,100
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	Delay: Rch Cross Feedback Level	-100,,,100
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	Delay: Effect Level	-100,,,100
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	Delay: Direct Level	-100,,,100
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	Chorus: Rate	1,,,100 = 0.1,,,10.0Hz
04 00 26 04 00 27#	0aaaaaaa 0bbbbbbb	Chorus: Depth	0,,,100
04 00 28 04 00 29#	0aaaaaaa 0bbbbbbb	Chorus: Pre Delay	0,,,50ms
04 00 2A 04 00 2B#	0aaaaaaa 0bbbbbbb	Chorus: Effect Level	-100,,,100
04 00 2C 04 00 2D#	0aaaaaaa 0bbbbbbb	Chorus: Direct Level	-100,,,100
04 00 2E 04 00 2F#	0aaaaaaa 0bbbbbbb	Chorus: Lch Feedback Level	-100,,,100
04 00 30 04 00 31#	0aaaaaaa 0bbbbbbb	Chorus: Rch Feedback Level	-100,,,100
04 00 32 04 00 33#	0aaaaaaa 0bbbbbbb	Chorus: Lch Cross Feedback Level	-100,,,100
04 00 34 04 00 35#	0aaaaaaa 0bbbbbbb	Chorus: Rch Cross Feedback Level	-100,,,100
04 00 36 04 00 37#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Type	0,1 = Shelving, Peaking
04 00 38 04 00 39#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Gain	-12,,,12dB
04 00 3A 04 00 3B#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Frequency	2,,,200 = 20,,,2000Hz
04 00 3C 04 00 3D#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Q	3,,,100 = 0.3,,,10.0
04 00 3E 04 00 3F#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Gain	-12,,,12dB
04 00 40 04 00 41#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Frequency	20,,,800 = 200,,,8000Hz
04 00 42 04 00 43#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Q	3,,,100 = 0.3,,,10.0
04 00 44 04 00 45#	0aaaaaaa 0bbbbbbb	EQ: High EQ Type	0,1 = Shelving, Peaking
04 00 46 04 00 47#	0aaaaaaa 0bbbbbbb	EQ: High EQ Gain	-12,,,12dB
04 00 48 04 00 49#	0aaaaaaa 0bbbbbbb	EQ: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz

04 00 4A 04 00 4B#	0aaaaaaa 0bbbbbbb	EQ: High EQ Q	3,,,100 = 0.3,,,10.0
04 00 4C 04 00 4D#	0aaaaaaa 0bbbbbbb	EQ: Out Level	0,,,100
04 00 4E : 04 00 7F	00 : 00	(Reserved)	

(*) (Delay Time) + (Absolute Shift) is less than 500

Algorithm 3 Stereo Pitch Shifter Delay

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	P.ShifterDelay SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	EQ SW	0,1 = Off,On
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Lch Chromatic Pitch	-12,,,12
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Lch Fine Pitch	-100,,,100
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Lch Pre Delay	0,,,50ms
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Lch Feedback Delay Time	0,,,500ms
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Lch Feedback Level	-100,,,100
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Lch Cross Feedback Level	-100,,,100
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Rch Chromatic Pitch	-12,,,12
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Rch Fine Pitch	-100,,,100
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Rch Pre Delay	0,,,50ms
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Rch Feedback Delay Time	0,,,500ms
04 00 26 04 00 27#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Rch Feedback Level	-100,,,100
04 00 28 04 00 29#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Rch Cross Feedback Level	-100,,,100
04 00 2A 04 00 2B#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Effect Level	-100,,,100
04 00 2C 04 00 2D#	0aaaaaaa 0bbbbbbb	P.ShifterDelay: Direct Level	-100,,,100
04 00 2E 04 00 2F#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Type	0,1 = Shelving, Peaking
04 00 30 04 00 31#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Gain	-12,,,12dB
04 00 32 04 00 33#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Frequency	2,,,200 = 20,,,2000Hz
04 00 34 04 00 35#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Q	3,,,100 = 0.3,,,10.0
04 00 36 04 00 37#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Gain	-12,,,12dB
04 00 38 04 00 39#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Frequency	20,,,800 = 200,,,8000Hz
04 00 3A 04 00 3B#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Q	3,,,100 = 0.3,,,10.0
04 00 3C 04 00 3D#	0aaaaaaa 0bbbbbbb	EQ: High EQ Type	0,1 = Shelving, Peaking
04 00 3E 04 00 3F#	0aaaaaaa 0bbbbbbb	EQ: High EQ Gain	-12,,,12dB
04 00 40 04 00 41#	0aaaaaaa 0bbbbbbb	EQ: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz
04 00 42 04 00 43#	0aaaaaaa 0bbbbbbb	EQ: High EQ Q	3,,,100 = 0.3,,,10.0
04 00 44 04 00 45#	0aaaaaaa 0bbbbbbb	EQ: Out Level	0,,,100
04 00 46 : 04 00 7F	00 : 00	(Reserved)	

Algorithm 4 Vocoder

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Chorus SW	0.1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Vocoder: Voice Character 1	0,,,100
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Vocoder: Voice Character 2	0,,,100
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Vocoder: Voice Character 3	0,,,100
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Vocoder: Voice Character 4	0,,,100
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	Vocoder: Voice Character 5	0,,,100
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	Vocoder: Voice Character 6	0,,,100
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	Vocoder: Voice Character 7	0,,,100
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	Vocoder: Voice Character 8	0,,,100
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	Vocoder: Voice Character 9	0,,,100
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	Vocoder: Voice Character 10	0,,,100
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	Chorus: Rate	1,,,100 = 0.1,,,10.0Hz
04 00 26 04 00 27#	0aaaaaaa 0bbbbbbb	Chorus: Depth	0,,,100
04 00 28 04 00 29#	0aaaaaaa 0bbbbbbb	Chorus: Pre Delay	0,,,50ms
04 00 2A 04 00 2B#	0aaaaaaa 0bbbbbbb	Chorus: Feedback Level	-100,,,100
04 00 2C 04 00 2D#	0aaaaaaa 0bbbbbbb	Chorus: Effect Level	-100,,,100
04 00 2E 04 00 2F#	0aaaaaaa 0bbbbbbb	Chorus: Direct Level	-100,,,100
04 00 30 : 04 00 7F	00 : 00	(Reserved)	

Algorithm 5 2CH RSS

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	2CH RSS: Ach Azimuth	-30,,,30 = -180,,,180
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	2CH RSS: Ach Elevation	-15,,,15 = -90,,,90
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	2CH RSS: Bch Azimuth	-30,,,30 = -180,,,180
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	2CH RSS: Bch Elevation	-15,,,15 = -90,,,90
04 00 16 : 04 00 7F	00 : 00	(Reserved)	

Algorithm 6 Delay RSS

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Delay RSS: Delay Time	0,,,1200ms
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Delay RSS: Shift	-1200,,,1200 = L1200,,,R1200ms
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Delay RSS: Center Delay Time	0,,,1200ms
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Delay RSS: RSS Level	0,,,100
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Delay RSS: Center Level	0,,,100
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	Delay RSS: Feedback Level	-100,,,100
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	Delay RSS: LF Damp Frequency	5,,,400 = 50,,,4000Hz
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	Delay RSS: LF Damp Gain	-36,,,0dB
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	Delay RSS: HF Damp Frequency	10,,,200 = 1.0,,,20.0kHz

04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	Delay RSS: HF Damp Gain	-36,,,0dB
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	Delay RSS: Effect Level	-100,,,100
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	Delay RSS: Direct Level	-100,,,100
04 00 26 : 04 00 7F	00 : 00	(Reserved)	

Algorithm 7 Chorus RSS

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Chorus RSS: Chorus Rate	1,,,100 = 0.1,,,10.0Hz
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Chorus RSS: Chorus Depth	0,,,100
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Chorus RSS: Effect Level	-100,,,100
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Chorus RSS: Direct Level	-100,,,100
04 00 16 : 04 00 7F	00 : 00	(Reserved)	

Algorithm 8,9,10 Common part of Guitar Multi 1, 2, 3

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Compressor SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Metal/Distortion/Over Drive SW	0,1 = Off,On
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Noise Suppressor SW	0,1 = Off,On
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Auto Wah SW	0,1 = Off,On
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Guitar Amp Simulator SW	0,1 = Off,On
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	Flanger SW	0,1 = Off,On
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	Delay SW	0,1 = Off,On
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	Compressor: Attack	0,,,100
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	Compressor: Level	0,,,100
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	Compressor: Sustain	0,,,100
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	Compressor: Tone	-50,,,-50
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	Noise Suppressor: Threshold	0,,,100
04 00 26 04 00 27#	0aaaaaaa 0bbbbbbb	Noise Suppressor: Release	0,,,100
04 00 28 04 00 29#	0aaaaaaa 0bbbbbbb	Auto Wah: Mode	0,1 = LPF,BPF
04 00 2A 04 00 2B#	0aaaaaaa 0bbbbbbb	Auto Wah: Polarity	0,1 = Down,Up
04 00 2C 04 00 2D#	0aaaaaaa 0bbbbbbb	Auto Wah: Frequency	0,,,100
04 00 2E 04 00 2F#	0aaaaaaa 0bbbbbbb	Auto Wah: Level	0,,,100
04 00 30 04 00 31#	0aaaaaaa 0bbbbbbb	Auto Wah: Peak	0,,,100
04 00 32 04 00 33#	0aaaaaaa 0bbbbbbb	Auto Wah: Sens	0,,,100
04 00 34 04 00 35#	0aaaaaaa 0bbbbbbb	Auto Wah: Rate	1,,,100 = 0.1,,,10.0Hz
04 00 36 04 00 37#	0aaaaaaa 0bbbbbbb	Auto Wah: Depth	0,,,100
04 00 38 04 00 39#	0aaaaaaa 0bbbbbbb	Guitar Amp Simulator: Mode	0,,,3 = Small,BuiltIn,2Stack,3Stack
04 00 3A 04 00 3B#	0aaaaaaa 0bbbbbbb	Flanger: Rate	1,,,100 = 0.1,,,10.0Hz
04 00 3C 04 00 3D#	0aaaaaaa 0bbbbbbb	Flanger: Depth	0,,,100

04 00 3E	0aaaaaaa	Flanger: Manual	
04 00 3F#	0bbbbbbb		0,,,100
04 00 40	0aaaaaaa	Flanger: Resonance	
04 00 41#	0bbbbbbb		0,,,100
04 00 42	0aaaaaaa	Delay: Delay Time	
04 00 43#	0bbbbbbb		0,,,1000ms
04 00 44	0aaaaaaa	Delay: Shift	
04 00 45#	0bbbbbbb		-1000,,,1000 = L1000,,,R1000ms
04 00 46	0aaaaaaa	Delay: Feedback Time	
04 00 47#	0bbbbbbb		0,,,1000ms
04 00 48	0aaaaaaa	Delay: Feedback Level	
04 00 49#	0bbbbbbb		-100,,,100
04 00 4A	0aaaaaaa	Delay: Effect Level	
04 00 4B#	0bbbbbbb		-100,,,100
04 00 4C	0aaaaaaa	Delay: Direct Level	
04 00 4D#	0bbbbbbb		-100,,,100

(*) (Delay Time) + (Absolute Shift) is less than 1000

Algorithm 8 Individual part of Guitar Multi 1

04 00 4E	0aaaaaaa	Metal: Gain	
04 00 4F#	0bbbbbbb		0,,,100
04 00 50	0aaaaaaa	Metal: Level	
04 00 51#	0bbbbbbb		0,,,100
04 00 52	0aaaaaaa	Metal: Hi Gain	
04 00 53#	0bbbbbbb		-100,,,100
04 00 54	0aaaaaaa	Metal: Mid Gain	
04 00 55#	0bbbbbbb		-100,,,100
04 00 56	0aaaaaaa	Metal: Low Gain	
04 00 57#	0bbbbbbb		-100,,,100
04 00 58	00	(Reserved)	
:	:		
04 00 7F	00		

Algorithm 9 Individual part of Guitar Multi 2

04 00 4E	0aaaaaaa	Distortion: Gain	
04 00 4F#	0bbbbbbb		0,,,100
04 00 50	0aaaaaaa	Distortion: Level	
04 00 51#	0bbbbbbb		0,,,100
04 00 52	0aaaaaaa	Distortion: Tone	
04 00 53#	0bbbbbbb		0,,,100
04 00 54	00	(Reserved)	
:	:		
04 00 7F	00		

Algorithm 10 Individual part of Guitar Multi 3

04 00 4E	0aaaaaaa	Over Drive: Gain	
04 00 4F#	0bbbbbbb		0,,,100
04 00 50	0aaaaaaa	Over Drive: Level	
04 00 51#	0bbbbbbb		0,,,100
04 00 52	0aaaaaaa	Over Drive: Tone	
04 00 53#	0bbbbbbb		0,,,100
04 00 54	00	(Reserved)	
:	:		
04 00 7F	00		

Algorithm 11 Vocal Multi

04 00 0E	0aaaaaaa	Noise Suppressor SW	
04 00 0F#	0bbbbbbb		0,1 = Off,On
04 00 10	0aaaaaaa	Limiter/De-esser SW	
04 00 11#	0bbbbbbb		0,1 = Off,On
04 00 12	0aaaaaaa	Enhancer SW	
04 00 13#	0bbbbbbb		0,1 = Off,On
04 00 14	0aaaaaaa	EQ SW	
04 00 15#	0bbbbbbb		0,1 = Off,On
04 00 16	0aaaaaaa	P.Shifter SW	
04 00 17#	0bbbbbbb		0,1 = Off,On

04 00 18	0aaaaaaa	Delay SW	
04 00 19#	0bbbbbbb		0,1 = Off,On
04 00 1A	0aaaaaaa	Chorus SW	
04 00 1B#	0bbbbbbb		0,1 = Off,On
04 00 1C	0aaaaaaa	Limiter/De-esser Mode	
04 00 1D#	0bbbbbbb		0,1 = Limiter,De-esser
04 00 1E	0aaaaaaa	Noise Suppressor: Threshold	
04 00 1F#	0bbbbbbb		0,,,100
04 00 20	0aaaaaaa	Noise Suppressor: Release	
04 00 21#	0bbbbbbb		0,,,100
04 00 22	0aaaaaaa	Limiter: Threshold	
04 00 23#	0bbbbbbb		0,,,100
04 00 24	0aaaaaaa	Limiter: Release	
04 00 25#	0bbbbbbb		0,,,100
04 00 26	0aaaaaaa	Limiter: Level	
04 00 27#	0bbbbbbb		0,,,100
04 00 28	0aaaaaaa	De-esser: Sens	
04 00 29#	0bbbbbbb		0,,,100
04 00 2A	0aaaaaaa	De-esser: Frequency	
04 00 2B#	0bbbbbbb		10,,,100 = 1.0,,,10.0kHz
04 00 2C	0aaaaaaa	Enhancer: Sens	
04 00 2D#	0bbbbbbb		0,,,100
04 00 2E	0aaaaaaa	Enhancer: Frequency	
04 00 2F#	0bbbbbbb		10,,,100 = 1.0,,,10.0kHz
04 00 30	0aaaaaaa	Enhancer: MIX Level	
04 00 31#	0bbbbbbb		0,,,100
04 00 32	0aaaaaaa	Enhancer: Level	
04 00 33#	0bbbbbbb		0,,,100
04 00 34	0aaaaaaa	EQ: Low EQ Type	
04 00 35#	0bbbbbbb		0,1 = Shelving, Peaking
04 00 36	0aaaaaaa	EQ: Low EQ Gain	
04 00 37#	0bbbbbbb		-12,,,12dB
04 00 38	0aaaaaaa	EQ: Low EQ Frequency	
04 00 39#	0bbbbbbb		2,,,200 = 20,,,2000Hz
04 00 3A	0aaaaaaa	EQ: Low EQ Q	
04 00 3B#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 3C	0aaaaaaa	EQ: Mid EQ Gain	
04 00 3D#	0bbbbbbb		-12,,,12dB
04 00 3E	0aaaaaaa	EQ: Mid EQ Frequency	
04 00 3F#	0bbbbbbb		20,,,800 = 200,,,8000Hz
04 00 40	0aaaaaaa	EQ: Mid EQ Q	
04 00 41#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 42	0aaaaaaa	EQ: High EQ Type	
04 00 43#	0bbbbbbb		0,1 = Shelving, Peaking
04 00 44	0aaaaaaa	EQ: High EQ Gain	
04 00 45#	0bbbbbbb		-12,,,12dB
04 00 46	0aaaaaaa	EQ: High EQ Frequency	
04 00 47#	0bbbbbbb		14,,,200 = 1.4,,,20.0kHz
04 00 48	0aaaaaaa	EQ: High EQ Q	
04 00 49#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 4A	0aaaaaaa	EQ: Out Level	
04 00 4B#	0bbbbbbb		0,,,100
04 00 4C	0aaaaaaa	P.Shifter: Chromatic Pitch	
04 00 4D#	0bbbbbbb		-12,,,12
04 00 4E	0aaaaaaa	P.Shifter: Fine Pitch	
04 00 4F#	0bbbbbbb		-100,,,100
04 00 50	0aaaaaaa	P.Shifter: Effect Level	
04 00 51#	0bbbbbbb		-100,,,100
04 00 52	0aaaaaaa	P.Shifter: Direct Level	
04 00 53#	0bbbbbbb		-100,,,100
04 00 54	0aaaaaaa	Delay: Delay Time	
04 00 55#	0bbbbbbb		0,,,1000
04 00 56	0aaaaaaa	Delay: Feedback Level	
04 00 57#	0bbbbbbb		-100,,,100
04 00 58	0aaaaaaa	Delay: Effect Level	
04 00 59#	0bbbbbbb		-100,,,100
04 00 5A	0aaaaaaa	Delay: Direct Level	
04 00 5B#	0bbbbbbb		-100,,,100
04 00 5C	0aaaaaaa	Chorus: Rate	
04 00 5D#	0bbbbbbb		1,,,100 = 0.1,,,10.0Hz
04 00 5E	0aaaaaaa	Chorus: Depth	
04 00 5F#	0bbbbbbb		0,,,100
04 00 60	0aaaaaaa	Chorus: Pre Delay	
04 00 61#	0bbbbbbb		0,,,50ms
04 00 62	0aaaaaaa	Chorus: Effect Level	
04 00 63#	0bbbbbbb		-100,,,100
04 00 64	0aaaaaaa	Chorus: Direct Level	
04 00 65#	0bbbbbbb		-100,,,100

04 00 66	00	(Reserved)
:	:	
04 00 7F	00	

"Match Drive."

(*) The "Pre Amp Bright" is valid when "Mode" is "JC-120", "Clean Twin" or "BG Lead."

Algorithm 12 Rotary

04 00 0E	0aaaaaaa	Noise Suppressor SW
04 00 0F#	0bbbbbbb	0,1 = Off,On
04 00 10	0aaaaaaa	Over Drive SW
04 00 11#	0bbbbbbb	0,1 = Off,On
04 00 12	0aaaaaaa	Noise Suppressor: Threshold
04 00 13#	0bbbbbbb	0,,,100
04 00 14	0aaaaaaa	Noise Suppressor: Release
04 00 15#	0bbbbbbb	0,,,100
04 00 16	0aaaaaaa	Over Drive: Gain
04 00 17#	0bbbbbbb	0,,,100
04 00 18	0aaaaaaa	Over Drive: Level
04 00 19#	0bbbbbbb	0,,,100
04 00 1A	0aaaaaaa	Rotary: Low Rate
04 00 1B#	0bbbbbbb	1,,,100 = 0.1,,,10.0Hz
04 00 1C	0aaaaaaa	Rotary: Hi Rate
04 00 1D#	0bbbbbbb	1,,,100 = 0.1,,,10.0Hz
04 00 1E	00	(Reserved)
:	:	
04 00 7F	00	

Algorithm13 Guitar AMP Simulator

04 00 0E	0aaaaaaa	Noise Suppressor SW
04 00 0F#	0bbbbbbb	0,1 = Off,On
04 00 10	0aaaaaaa	Pre Amp SW
04 00 11#	0bbbbbbb	0,1 = Off,On
04 00 12	0aaaaaaa	Speaker SW
04 00 13#	0bbbbbbb	0,1 = Off,On
04 00 14	0aaaaaaa	Noise Suppressor: Threshold
04 00 15#	0bbbbbbb	0,,,100
04 00 16	0aaaaaaa	Noise Suppressor: Release
04 00 17#	0bbbbbbb	0,,,100
04 00 18	0aaaaaaa	Pre Amp: Mode
04 00 19#	0bbbbbbb	0,,,13 = JC-120,Clean Twin,Match Drive,BG Lead, MS1959(I), MS1959(II), MS1959(I+II), SLDN Lead, Metal 5150, Metal Lead, OD-1, OD-2Turbo, Distortion, Fuzz
04 00 1A	0aaaaaaa	Pre Amp: Volume
04 00 1B#	0bbbbbbb	0,,,100
04 00 1C	0aaaaaaa	Pre Amp: Bass
04 00 1D#	0bbbbbbb	0,,,100
04 00 1E	0aaaaaaa	Pre Amp: Middle
04 00 1F#	0bbbbbbb	0,,,100
04 00 20	0aaaaaaa	Pre Amp: Treble
04 00 21#	0bbbbbbb	0,,,100
04 00 22	0aaaaaaa	Pre Amp: Presence
04 00 23#	0bbbbbbb	0,,,100
04 00 24	0aaaaaaa	Pre Amp: Master
04 00 25#	0bbbbbbb	0,,,100
04 00 26	0aaaaaaa	Pre Amp: Bright
04 00 27#	0bbbbbbb	0,1 = Off,On
04 00 28	0aaaaaaa	Pre Amp: Gain
04 00 29#	0bbbbbbb	0,1,2 = Low,Middle,High
04 00 2A	0aaaaaaa	Speaker: Type
04 00 2B#	0bbbbbbb	0,,,11 = Small. Middle, JC-120, Built In 1, Built In 2,Built In 3, Built In 4, BG Stack 1, BG Stack 2, MS Stack 1, MS Stack 2, Metal Stack
04 00 2C	0aaaaaaa	Speaker: MIC Setting
04 00 2D#	0bbbbbbb	0,1,2 = 1,2,3
04 00 2E	0aaaaaaa	Speaker: MIC Level
04 00 2F#	0bbbbbbb	0,,,100
04 00 30	0aaaaaaa	Speaker: Direct Level
04 00 31#	0bbbbbbb	0,,,100
04 00 32	00	(Reserved)
:	:	
04 00 7F	00	

(*) The "Pre Amp Middle" is invalid when "Mode" is "Match Drive."

(*) The "Pre Amp Presence" makes opposite effect of Value(-100,,,0) when "Mode" is

Algorithm14 Stereo Phaser

04 00 0E	0aaaaaaa	Phaser SW
04 00 0F#	0bbbbbbb	0,1 = Off,On
04 00 10	0aaaaaaa	EQ SW
04 00 11#	0bbbbbbb	0,1 = Off,On
04 00 12	0aaaaaaa	Phaser: Mode
04 00 13#	0bbbbbbb	0,,,3 = 4.8.12.16stage
04 00 14	0aaaaaaa	Phaser: Rate
04 00 15#	0bbbbbbb	1,,,100 = 0.1,,,10.0Hz
04 00 16	0aaaaaaa	Phaser: Depth
04 00 17#	0bbbbbbb	0,,,100
04 00 18	0aaaaaaa	Phaser: Polarity
04 00 19#	0bbbbbbb	0,1 = Inverse,Synchro
04 00 1A	0aaaaaaa	Phaser: Manual
04 00 1B#	0bbbbbbb	0,,,100
04 00 1C	0aaaaaaa	Phaser: Resonance
04 00 1D#	0bbbbbbb	0,,,100
04 00 1E	0aaaaaaa	Phaser: Cross Feedback
04 00 1F#	0bbbbbbb	0,,,100
04 00 20	0aaaaaaa	Phaser: Effect Level
04 00 21#	0bbbbbbb	-100,,,100
04 00 22	0aaaaaaa	Phaser: Direct Level
04 00 23#	0bbbbbbb	-100,,,100
04 00 24	0aaaaaaa	EQ: Low EQ Type
04 00 25#	0bbbbbbb	0,1 = Shelving, Peaking
04 00 26	0aaaaaaa	EQ: Low EQ Gain
04 00 27#	0bbbbbbb	-12,,,12dB
04 00 28	0aaaaaaa	EQ: Low EQ Frequency
04 00 29#	0bbbbbbb	2,,,200 = 20,,,2000Hz
04 00 2A	0aaaaaaa	EQ: Low EQ Q
04 00 2B#	0bbbbbbb	3,,,100 = 0.3,,,10.0
04 00 2C	0aaaaaaa	EQ: Mid EQ Gain
04 00 2D#	0bbbbbbb	-12,,,12dB
04 00 2E	0aaaaaaa	EQ: Mid EQ Frequency
04 00 2F#	0bbbbbbb	20,,,800 = 200,,,8000Hz
04 00 30	0aaaaaaa	EQ: Mid EQ Q
04 00 31#	0bbbbbbb	3,,,100 = 0.3,,,10.0
04 00 32	0aaaaaaa	EQ: High EQ Type
04 00 33#	0bbbbbbb	0,1 = Shelving, Peaking
04 00 34	0aaaaaaa	EQ: High EQ Gain
04 00 35#	0bbbbbbb	-12,,,12dB
04 00 36	0aaaaaaa	EQ: High EQ Frequency
04 00 37#	0bbbbbbb	14,,,200 = 1.4,,,20.0kHz
04 00 38	0aaaaaaa	EQ: High EQ Q
04 00 39#	0bbbbbbb	3,,,100 = 0.3,,,10.0
04 00 3A	0aaaaaaa	EQ: Out Level
04 00 3B#	0bbbbbbb	0,,,100
04 00 3C	00	(Reserved)
:	:	
04 00 7F	00	

Algorithm15 Stereo Flanger

04 00 0E	0aaaaaaa	Flanger SW
04 00 0F#	0bbbbbbb	0,1 = Off,On
04 00 10	0aaaaaaa	EQ SW
04 00 11#	0bbbbbbb	0,1 = Off,On
04 00 12	0aaaaaaa	Flanger: Rate
04 00 13#	0bbbbbbb	1,,,100 = 0.1,,,10.0Hz
04 00 14	0aaaaaaa	Flanger: Depth
04 00 15#	0bbbbbbb	0,,,100
04 00 16	0aaaaaaa	Flanger: Polarity
04 00 17#	0bbbbbbb	0,1 = Inverse,Synchro
04 00 18	0aaaaaaa	Flanger: Manual
04 00 19#	0bbbbbbb	0,,,100
04 00 1A	0aaaaaaa	Flanger: Resonance
04 00 1B#	0bbbbbbb	0,,,100
04 00 1C	0aaaaaaa	Flanger: Cross Feedback Level
04 00 1D#	0bbbbbbb	0,,,100
04 00 1E	0aaaaaaa	Flanger: Effect Level

04 00 1F#	0bbbbbbb		-100...100
04 00 20	0aaaaaaa	Flanger: Direct Level	
04 00 21#	0bbbbbbb		-100,,,100
04 00 22	0aaaaaaa	EQ: Low EQ Type	
04 00 23#	0bbbbbbb		0,1 = Shelving, Peaking
04 00 24	0aaaaaaa	EQ: Low EQ Gain	
04 00 25#	0bbbbbbb		-12,,,12dB
04 00 26	0aaaaaaa	EQ: Low EQ Frequency	
04 00 27#	0bbbbbbb		2,,,200 = 20,,,2000Hz
04 00 28	0aaaaaaa	EQ: Low EQ Q	
04 00 29#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 2A	0aaaaaaa	EQ: Mid EQ Gain	
04 00 2B#	0bbbbbbb		-12,,,12dB
04 00 2C	0aaaaaaa	EQ: Mid EQ Frequency	
04 00 2D#	0bbbbbbb		20,,,800 = 200,,,8000Hz
04 00 2E	0aaaaaaa	EQ: Mid EQ Q	
04 00 2F#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 30	0aaaaaaa	EQ: High EQ Type	
04 00 31#	0bbbbbbb		0,1 = Shelving, Peaking
04 00 32	0aaaaaaa	EQ: High EQ Gain	
04 00 33#	0bbbbbbb		-12,,,12dB
04 00 34	0aaaaaaa	EQ: High EQ Frequency	
04 00 35#	0bbbbbbb		14,,,200 = 1.4,,,20.0kHz
04 00 36	0aaaaaaa	EQ: High EQ Q	
04 00 37#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 38	0aaaaaaa	EQ: Out Level	
04 00 39#	0bbbbbbb		0,,,100
04 00 3A	00	(Reserved)	
:	:		
04 00 7F	00		

Algorithm 16 Dual Compressor/Limiter

04 00 0E	0aaaaaaa	Comp/Limit A SW	
04 00 0F#	0bbbbbbb		0,1 = Off,On
04 00 10	0aaaaaaa	Noise Suppressor A SW	
04 00 11#	0bbbbbbb		0,1 = Off,On
04 00 12	0aaaaaaa	Comp/Limit B SW	
04 00 13#	0bbbbbbb		0,1 = Off,On
04 00 14	0aaaaaaa	Noise Suppressor B SW	
04 00 15#	0bbbbbbb		0,1 = Off,On
04 00 16	0aaaaaaa	Comp/Limit A: Detect	
04 00 17#	0bbbbbbb		0,1,2 = A,B,Link
04 00 18	0aaaaaaa	Comp/Limit A: Level	
04 00 19#	0bbbbbbb		-60,,,12dB
04 00 1A	0aaaaaaa	Comp/Limit A: Thresh	
04 00 1B#	0bbbbbbb		-60,,,0dB
04 00 1C	0aaaaaaa	Comp/Limit A: Attack	
04 00 1D#	0bbbbbbb		0,,,100
04 00 1E	0aaaaaaa	Comp/Limit A: Release	
04 00 1F#	0bbbbbbb		0,,,100
04 00 20	0aaaaaaa	Comp/Limit A: Ratio	
04 00 21#	0bbbbbbb		0,,,3 = 1.5:1,2:1,4:1,100:1
04 00 22	0aaaaaaa	Noise Suppressor A: Detect	
04 00 23#	0bbbbbbb		0,1,2 = A,B,Link
04 00 24	0aaaaaaa	Noise Suppressor A: Threshold	
04 00 25#	0bbbbbbb		0,,,100
04 00 26	0aaaaaaa	Noise Suppressor A: Release	
04 00 27#	0bbbbbbb		0,,,100
04 00 28	0aaaaaaa	Comp/Limit B: Detect	
04 00 29#	0bbbbbbb		0,1,2 = A,B,Link
04 00 2A	0aaaaaaa	Comp/Limit B: Level	
04 00 2B#	0bbbbbbb		-60,,,12dB
04 00 2C	0aaaaaaa	Comp/Limit B: Thresh	
04 00 2D#	0bbbbbbb		-60,,,0dB
04 00 2E	0aaaaaaa	Comp/Limit B: Attack	
04 00 2F#	0bbbbbbb		0,,,100
04 00 30	0aaaaaaa	Comp/Limit B: Release	
04 00 31#	0bbbbbbb		0,,,100
04 00 32	0aaaaaaa	Comp/Limit B: Ratio	
04 00 33#	0bbbbbbb		0,,,3 = 1.5:1,2:1,4:1,100:1
04 00 34	0aaaaaaa	Noise Suppressor B: Detect	
04 00 35#	0bbbbbbb		0,1,2 = A,B,Link
04 00 36	0aaaaaaa	Noise Suppressor B: Threshold	
04 00 37#	0bbbbbbb		0,,,100
04 00 38	0aaaaaaa	Noise Suppressor B: Release	
04 00 39#	0bbbbbbb		0,,,100

04 00 3A	00	(Reserved)	
:	:		
04 00 7F	00		

Algorithm 17 Gate Reverb (FX1 Only)

04 00 0E	0aaaaaaa	G.Reverb SW	
04 00 0F#	0bbbbbbb		0,1 = Off,On
04 00 10	0aaaaaaa	EQ SW	
04 00 11#	0bbbbbbb		0,1 = Off,On
04 00 12	0aaaaaaa	G.Reverb: Gate Time	
04 00 13#	0bbbbbbb		10,,,400ms
04 00 14	0aaaaaaa	G.Reverb: Pre Delay	
04 00 15#	0bbbbbbb		0,,,300ms
04 00 16	0aaaaaaa	G.Reverb: Effect Level	
04 00 17#	0bbbbbbb		-100,,,100
04 00 18	0aaaaaaa	G.Reverb: Mode	
04 00 19#	0bbbbbbb		0,,,4 = Normal,L->R,R->L,Reverse1,Reverse2
04 00 1A	0aaaaaaa	G.Reverb: Thickness	
04 00 1B#	0bbbbbbb		0,,,100
04 00 1C	0aaaaaaa	G.Reverb: Density	
04 00 1D#	0bbbbbbb		0,,,100
04 00 1E	0aaaaaaa	G.Reverb: Accent Delay	
04 00 1F#	0bbbbbbb		0,,,200ms
04 00 20	0aaaaaaa	G.Reverb: Accent Level	
04 00 21#	0bbbbbbb		0,,,100
04 00 22	0aaaaaaa	G.Reverb: Accent Pan	
04 00 23#	0bbbbbbb		1,,,127 = L63,,,R63
04 00 24	0aaaaaaa	G.Reverb: Direct Level	
04 00 25#	0bbbbbbb		-100,,,100
04 00 26	0aaaaaaa	EQ: Low EQ Type	
04 00 27#	0bbbbbbb		0,1 = Shelving, Peaking
04 00 28	0aaaaaaa	EQ: Low EQ Gain	
04 00 29#	0bbbbbbb		-12,,,12dB
04 00 2A	0aaaaaaa	EQ: Low EQ Frequency	
04 00 2B#	0bbbbbbb		2,,,200 = 20,,,2000Hz
04 00 2C	0aaaaaaa	EQ: Low EQ Q	
04 00 2D#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 2E	0aaaaaaa	EQ: Mid EQ Gain	
04 00 2F#	0bbbbbbb		-12,,,12dB
04 00 30	0aaaaaaa	EQ: Mid EQ Frequency	
04 00 31#	0bbbbbbb		20,,,800 = 200,,,8000Hz
04 00 32	0aaaaaaa	EQ: Mid EQ Q	
04 00 33#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 34	0aaaaaaa	EQ: High EQ Type	
04 00 35#	0bbbbbbb		0,1 = Shelving, Peaking
04 00 36	0aaaaaaa	EQ: High EQ Gain	
04 00 37#	0bbbbbbb		-12,,,12dB
04 00 38	0aaaaaaa	EQ: High EQ Frequency	
04 00 39#	0bbbbbbb		14,,,200 = 1.4,,,20.0kHz
04 00 3A	0aaaaaaa	EQ: High EQ Q	
04 00 3B#	0bbbbbbb		3,,,100 = 0.3,,,10.0
04 00 3C	0aaaaaaa	EQ: Out Level	
04 00 3D#	0bbbbbbb		0,,,100
04 00 3E	00	(Reserved)	
:	:		
04 00 7F	00		

Algorithm 18 Multi Tap Delay

04 00 0E	0aaaaaaa	EQ SW	
04 00 0F#	0bbbbbbb		0,1 = Off,On
04 00 10	0aaaaaaa	M.Tap Delay: Time 1	
04 00 11#	0bbbbbbb		0,,,1200ms
04 00 12	0aaaaaaa	M.Tap Delay: Level 1	
04 00 13#	0bbbbbbb		0,,,100
04 00 14	0aaaaaaa	M.Tap Delay: Pan 1	
04 00 15#	0bbbbbbb		1,,,127 = L63,,,R63
04 00 16	0aaaaaaa	M.Tap Delay: Time 2	
04 00 17#	0bbbbbbb		0,,,1200ms
04 00 18	0aaaaaaa	M.Tap Delay: Level 2	
04 00 19#	0bbbbbbb		0,,,100
04 00 1A	0aaaaaaa	M.Tap Delay: Pan 2	
04 00 1B#	0bbbbbbb		1,,,127 = L63,,,R63

Address	Data	Parameter	Value
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Time 3	0,,,1200ms
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Level 3	0,,,100
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Pan 3	1,,,127 = L63,,,R63
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Time 4	0,,,1200ms
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Level 4	0,,,100
04 00 26 04 00 27#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Pan 4	1,,,127 = L63,,,R63
04 00 28 04 00 29#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Time 5	0,,,1200ms
04 00 2A 04 00 2B#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Level 5	0,,,100
04 00 2C 04 00 2D#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Pan 5	1,,,127 = L63,,,R63
04 00 2E 04 00 2F#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Time 6	0,,,1200ms
04 00 30 04 00 31#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Level 6	0,,,100
04 00 32 04 00 33#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Pan 6	1,,,127 = L63,,,R63
04 00 34 04 00 35#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Time 7	0,,,1200ms
04 00 36 04 00 37#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Level 7	0,,,100
04 00 38 04 00 39#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Pan 7	1,,,127 = L63,,,R63
04 00 3A 04 00 3B#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Time 8	0,,,1200ms
04 00 3C 04 00 3D#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Level 8	0,,,100
04 00 3E 04 00 3F#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Pan 8	1,,,127 = L63,,,R63
04 00 40 04 00 41#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Time 9	0,,,1200ms
04 00 42 04 00 43#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Level 9	0,,,100
04 00 44 04 00 45#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Pan 9	1,,,127 = L63,,,R63
04 00 46 04 00 47#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Time 10	0,,,1200ms
04 00 48 04 00 49#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Level 10	0,,,100
04 00 4A 04 00 4B#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Pan 10	1,,,127 = L63,,,R63
04 00 4C 04 00 4D#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Feedback Delay Time	0,,,1200ms
04 00 4E 04 00 4F#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Feedback Level	-100,,,100
04 00 50 04 00 51#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Effect Level	-100,,,100
04 00 52 04 00 53#	0aaaaaaa 0bbbbbbb	M.Tap Delay: Direct Level	-100,,,100
04 00 54 04 00 55#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Type	0,1 = Shelving, Peaking
04 00 56 04 00 57#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Gain	-12,,,12dB
04 00 58 04 00 59#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Frequency	2,,,200 = 20,,,2000Hz
04 00 5A 04 00 5B#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Q	3,,,100 = 0.3,,,10.0
04 00 5C 04 00 5D#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Gain	-12,,,12dB
04 00 5E 04 00 5F#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Frequency	20,,,800 = 200,,,8000Hz
04 00 60 04 00 61#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Q	3,,,100 = 0.3,,,10.0
04 00 62 04 00 63#	0aaaaaaa 0bbbbbbb	EQ: High EQ Type	0,1 = Shelving, Peaking
04 00 64 04 00 65#	0aaaaaaa 0bbbbbbb	EQ: High EQ Gain	-12,,,12dB
04 00 66 04 00 67#	0aaaaaaa 0bbbbbbb	EQ: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz
04 00 68 04 00 69#	0aaaaaaa 0bbbbbbb	EQ: High EQ Q	3,,,100 = 0.3,,,10.0
04 00 6A	0aaaaaaa	EQ: Out Level	

Address	Data	Parameter	Value
04 00 6B#	0bbbbbbb		0,,,100
04 00 6C : 04 00 7F	00 : 00	(Reserved)	

Algorithm 19 Stereo Multi

Address	Data	Parameter	Value
04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Noise Suppressor SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Comp/Limit SW	0,1 = Off,On
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Enhancer SW	0,1 = Off,On
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	EQ SW	0,1 = Off,On
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Noise Suppressor: Threshold	0,,,100
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	Noise Suppressor: Release	0,,,100
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	Comp/Limit: Level	-60,,,12dB
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	Comp/Limit: Thresh	-60,,,0dB
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	Comp/Limit: Attack	0,,,100
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	Comp/Limit: Release	0,,,100
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	Comp/Limit: Ratio	0,,,3 = 1.5:1,2:1,4:1,100:1
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	Enhancer: Sens	0,,,100
04 00 26 04 00 27#	0aaaaaaa 0bbbbbbb	Enhancer: Frequency	10,,,100 = 1.0,,,10.0kHz
04 00 28 04 00 29#	0aaaaaaa 0bbbbbbb	Enhancer: MIX Level	0,,,100
04 00 2A 04 00 2B#	0aaaaaaa 0bbbbbbb	Enhancer: Level	0,,,100
04 00 2C 04 00 2D#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Type	0,1 = Shelving, Peaking
04 00 2E 04 00 2F#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Gain	-12,,,12dB
04 00 30 04 00 31#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Frequency	2,,,200 = 20,,,2000Hz
04 00 32 04 00 33#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Q	3,,,100 = 0.3,,,10.0
04 00 34 04 00 35#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Gain	-12,,,12dB
04 00 36 04 00 37#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Frequency	20,,,800 = 200,,,8000Hz
04 00 38 04 00 39#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Q	3,,,100 = 0.3,,,10.0
04 00 3A 04 00 3B#	0aaaaaaa 0bbbbbbb	EQ: High EQ Type	0,1 = Shelving, Peaking
04 00 3C 04 00 3D#	0aaaaaaa 0bbbbbbb	EQ: High EQ Gain	-12,,,12dB
04 00 3E 04 00 3F#	0aaaaaaa 0bbbbbbb	EQ: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz
04 00 40 04 00 41#	0aaaaaaa 0bbbbbbb	EQ: High EQ Q	3,,,100 = 0.3,,,10.0
04 00 42 04 00 43#	0aaaaaaa 0bbbbbbb	EQ: Out Level	0,,,100
04 00 44 : 04 00 7F	00 : 00	(Reserved)	

Algorithm 20 Reverb 2

Address	Data	Parameter	Value
04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Reverb SW	0,1 = Off,On
04 00 1C 04 00 11#	0aaaaaaa 0bbbbbbb	EQ SW	0,1 = Off,On
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Reverb 2: Reverb Type	0,,,4 = Room1,Room2,Hall1,Hall2,Plate
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Reverb 2: Reverb Time	1,,,100 = 0.1,,,10.0sec

04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Reverb 2: Pre Delay	0...200msec
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	Reverb 2: Density	0...100
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	Reverb 2: High Pass Filter	1...200 = Thru,20...2000Hz
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	Reverb 2: Low Pass Filter	10...201 = 1.0...20.0kHz,Thru
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	Reverb 2: Effect Level	0...100
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	Reverb 2: Direct Level	0...100
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	Reverb 2: Gate SW	0,1 = Off,On
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	Reverb 2: Gate Mode	0,1 = Gate,Ducking
04 00 26 04 00 27#	0aaaaaaa 0bbbbbbb	Reverb 2: Gate Threshold	0...100
04 00 28 04 00 29#	0aaaaaaa 0bbbbbbb	Reverb 2: Gate Attack Time	1...100
04 00 2A 04 00 2B#	0aaaaaaa 0bbbbbbb	Reverb 2: Gate Release Time	1...100
04 00 2C 04 00 2D#	0aaaaaaa 0bbbbbbb	Reverb 2: Gate Hold Time	1...100
04 00 2E 04 00 2F#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Type	0,1 = Shelving, Peaking
04 00 30 04 00 31#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Gain	-12,,,12dB
04 00 32 04 00 33#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Frequency	2,,,200 = 20,,,2000Hz
04 00 34 04 00 35#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Q	3,,,100 = 0.3,,,10.0
04 00 36 04 00 37#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Gain	-12,,,12dB
04 00 38 04 00 39#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Frequency	20,,,800 = 200,,,8000Hz
04 00 3A 04 00 3B#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Q	3,,,100 = 0.3,,,10.0
04 00 3C 04 00 3D#	0aaaaaaa 0bbbbbbb	EQ: High EQ Type	0,1 = Shelving, Peaking
04 00 3E 04 00 3F#	0aaaaaaa 0bbbbbbb	EQ: High EQ Gain	-12,,,12dB
04 00 40 04 00 41#	0aaaaaaa 0bbbbbbb	EQ: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz
04 00 42 04 00 43#	0aaaaaaa 0bbbbbbb	EQ: High EQ Q	3,,,100 = 0.3,,,10.0
04 00 44 04 00 45#	0aaaaaaa 0bbbbbbb	EQ: Out Level	0,,,100
04 00 46 : 04 00 7F	00 : 00	(Reserved)	

Algorithm 21 Space Chorus

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Chorus SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Chorus: Input Mode	0,1 = Mono,Stereo
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Chorus: Mode	0,,,6 = 1,2,3,4,1+4,2+4,3+4
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Chorus: Mix Balance	0,,,100
04 00 16 : 04 00 7F	00 : 00	(Reserved)	

Algorithm 22 Lo-Fi Processor

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Lo-Fi Processor SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Realtime Modify Filter SW	0,1 = Off,On
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Lo-Fi Processor: Pre Filter SW	0,1 = Off,On

04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Lo-Fi Processor: Rate	0...31 = Off,1/2,,,1/32
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Lo-Fi Processor: Number of Bit	0,,,15 = Off,15,,,1bit
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	Lo-Fi Processor: Post Filter SW	0,1 = Off,On
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	Lo-Fi Processor: Effect Level	0,,,100
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	Lo-Fi Processor: Direct Level	0,,,100
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	Realtime Modify Filter: Filter Type	0,,,2 = LPF,BPF,HPF
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	Realtime Modify Filter: Cut Off	0,,,100
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	Realtime Modify Filter: Resonance	0,,,100
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	Realtime Modify Filter: Gain	0,,,24dB
04 00 26 04 00 27#	0aaaaaaa 0bbbbbbb	Noise Suppressor: Threshold	0,,,100
04 00 28 04 00 29#	0aaaaaaa 0bbbbbbb	Noise Suppressor: Release	0,,,100
04 00 2A : 04 00 7F	00 : 00	(Reserved)	

Algorithm 23 4 Band Parametric EQ

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Parametric EQ Link SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Parametric EQ Ach SW	0,1 = Off,On
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Parametric EQ Bch SW	0,1 = Off,On
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	EQ Ach: Input Level	-60,,,12dB
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	EQ Ach: Low EQ Type	0,1 = Shelving, Peaking
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	EQ Ach: Low EQ Gain	-12,,,12dB
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	EQ Ach: Low EQ Frequency	2,,,200 = 20,,,2000Hz
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	EQ Ach: Low EQ Q	3,,,100 = 0.3,,,10.0
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	EQ Ach: Low Mid EQ Gain	-12,,,12dB
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	EQ Ach: Low Mid EQ Frequency	20,,,800 = 200,,,8000Hz
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	EQ Ach: Low Mid EQ Q	3,,,100 = 0.3,,,10.0
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	EQ Ach: High Mid EQ Gain	-12,,,12dB
04 00 26 04 00 27#	0aaaaaaa 0bbbbbbb	EQ Ach: High Mid EQ Frequency	20,,,800 = 200,,,8000Hz
04 00 28 04 00 29#	0aaaaaaa 0bbbbbbb	EQ Ach: High Mid EQ Q	3,,,100 = 0.3,,,10.0
04 00 2A 04 00 2B#	0aaaaaaa 0bbbbbbb	EQ Ach: High EQ Type	0,1 = Shelving, Peaking
04 00 2C 04 00 2D#	0aaaaaaa 0bbbbbbb	EQ Ach: High EQ Gain	-12,,,12dB
04 00 2E 04 00 2F#	0aaaaaaa 0bbbbbbb	EQ Ach: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz
04 00 30 04 00 31#	0aaaaaaa 0bbbbbbb	EQ Ach: High EQ Q	3,,,100 = 0.3,,,10.0
04 00 32 04 00 33#	0aaaaaaa 0bbbbbbb	EQ Ach: Output Level	-60,,,12dB
04 00 34 04 00 35#	0aaaaaaa 0bbbbbbb	EQ Bch: Input Level	-60,,,12dB
04 00 36 04 00 37#	0aaaaaaa 0bbbbbbb	EQ Bch: Low EQ Type	0,1 = Shelving, Peaking
04 00 38 04 00 39#	0aaaaaaa 0bbbbbbb	EQ Bch: Low EQ Gain	-12,,,12dB
04 00 3A 04 00 3B#	0aaaaaaa 0bbbbbbb	EQ Bch: Low EQ Frequency	2,,,200 = 20,,,2000Hz
04 00 3C 04 00 3D#	0aaaaaaa 0bbbbbbb	EQ Bch: Low EQ Q	3,,,100 = 0.3,,,10.0
04 00 3E	0aaaaaaa	EQ Bch: Low Mid EQ Gain	

04 00 3F#	0bbbbbbb		-12,,,12dB
04 00 40 04 00 41#	0aaaaaaa 0bbbbbbb	EQ Bch: Low Mid EQ Frequency	20,,,800 = 200,,,8000Hz
04 00 42 04 00 43#	0aaaaaaa 0bbbbbbb	EQ Bch: Low Mid EQ Q	3,,,100 = 0.3,,,10.0
04 00 44 04 00 45#	0aaaaaaa 0bbbbbbb	EQ Bch: High Mid EQ Gain	-12,,,12dB
04 00 46 04 00 47#	0aaaaaaa 0bbbbbbb	EQ Bch: High Mid EQ Frequency	20,,,800 = 200,,,8000Hz
04 00 48 04 00 49#	0aaaaaaa 0bbbbbbb	EQ Bch: High Mid EQ Q	3,,,100 = 0.3,,,10.0
04 00 4A 04 00 4B#	0aaaaaaa 0bbbbbbb	EQ Bch: High EQ Type	0,1 = Shelving, Peaking
04 00 4C 04 00 4D#	0aaaaaaa 0bbbbbbb	EQ Bch: High EQ Gain	-12,,,12dB
04 00 4E 04 00 4F#	0aaaaaaa 0bbbbbbb	EQ Bch: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz
04 00 50 04 00 51#	0aaaaaaa 0bbbbbbb	EQ Bch: High EQ Q	3,,,100 = 0.3,,,10.0
04 00 52 04 00 53#	0aaaaaaa 0bbbbbbb	EQ Bch: Output Level	-60,,,12dB
04 00 54 : 04 00 7F	00 : 00	(Reserved)	

* When Link SW = On, Bch corresponds to Ach.

Algorithm 24 10 Band Graphic EQ

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Graphic EQ Link SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Graphic EQ Ach SW	0,1 = Off,On
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Graphic EQ Bch SW	0,1 = Off,On
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	EQ Ach: Input Gain	-60,,,12dB
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	EQ Ach: 31.25Hz Gain	-12,,,12dB
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	EQ Ach: 62.5Hz Gain	-12,,,12dB
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	EQ Ach: 125Hz Gain	-12,,,12dB
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	EQ Ach: 250Hz Gain	-12,,,12dB
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	EQ Ach: 500Hz Gain	-12,,,12dB
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	EQ Ach: 1.0kHz Gain	-12,,,12dB
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	EQ Ach: 2.0kHz Gain	-12,,,12dB
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	EQ Ach: 4.0kHz Gain	-12,,,12dB
04 00 26 04 00 27#	0aaaaaaa 0bbbbbbb	EQ Ach: 8.0kHz Gain	-12,,,12dB
04 00 28 04 00 29#	0aaaaaaa 0bbbbbbb	EQ Ach: 16.0kHz Gain	-12,,,12dB
04 00 2A 04 00 2B#	0aaaaaaa 0bbbbbbb	EQ Ach: Output Level	-60,,,12dB
04 00 2C 04 00 2D#	0aaaaaaa 0bbbbbbb	EQ Bch: Input Gain	-60,,,12dB
04 00 2E 04 00 2F#	0aaaaaaa 0bbbbbbb	EQ Bch: 31.25Hz Gain	-12,,,12dB
04 00 30 04 00 31#	0aaaaaaa 0bbbbbbb	EQ Bch: 62.5Hz Gain	-12,,,12dB
04 00 32 04 00 33#	0aaaaaaa 0bbbbbbb	EQ Bch: 125Hz Gain	-12,,,12dB
04 00 34 04 00 35#	0aaaaaaa 0bbbbbbb	EQ Bch: 250Hz Gain	-12,,,12dB
04 00 36 04 00 37#	0aaaaaaa 0bbbbbbb	EQ Bch: 500Hz Gain	-12,,,12dB
04 00 38 04 00 39#	0aaaaaaa 0bbbbbbb	EQ Bch: 1.0kHz Gain	-12,,,12dB
04 00 3A 04 00 3B#	0aaaaaaa 0bbbbbbb	EQ Bch: 2.0kHz Gain	-12,,,12dB
04 00 3C 04 00 3D#	0aaaaaaa 0bbbbbbb	EQ Bch: 4.0kHz Gain	-12,,,12dB

04 00 3E 04 00 3F#	0aaaaaaa 0bbbbbbb	EQ Bch: 8.0kHz Gain	-12,,,12dB
04 00 40 04 00 41#	0aaaaaaa 0bbbbbbb	EQ Bch: 16.0kHz Gain	-12,,,12dB
04 00 42 04 00 43#	0aaaaaaa 0bbbbbbb	EQ Bch: Output Level	-60,,,12dB
04 00 44 : 04 00 7F	00 : 00	(Reserved)	

* When Link SW = On, Bch corresponds to Ach.

Algorithm 25 Hum Canceler

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Hum Canceler SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Noise Suppressor SW	0,1 = Off,On
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Hum Canceler: Freq	200,,,8000 = 20.0,,,800.0Hz
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Hum Canceler: Width	10,,,40%
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Hum Canceler: Depth	0,,,100
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	Hum Canceler: Threshold	0,,,100
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	Hum Canceler: Range Low	1,,,200 = Unlimit,20,,,2000Hz
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	Hum Canceler: Range High	10,,,201 = 1.0,,,20.0kHz,Unlimit
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	Noise Suppressor: Threshold	0,,,100
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	Noise Suppressor: Release	0,,,100
04 00 22 : 04 00 7F	00 : 00	(Reserved)	

Algorithm 26 Vocal Canceler

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Vocal Canceler SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	EQ SW	0,1 = Off,On
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Vocal Canceler: Balance	0,,,100
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Vocal Canceler: Range Low	1,,,200 = Unlimit,20,,,2000Hz
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Vocal Canceler: Range High	10,,,201 = 1.0,,,20.0kHz,Unlimit
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Type	0,1 = Shelving, Peaking
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Gain	-12,,,12dB
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Frequency	2,,,200 = 20,,,2000Hz
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	EQ: Low EQ Q	3,,,100 = 0.3,,,10.0
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Gain	-12,,,12dB
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Frequency	20,,,800 = 200,,,8000Hz
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	EQ: Mid EQ Q	3,,,100 = 0.3,,,10.0
04 00 26 04 00 27#	0aaaaaaa 0bbbbbbb	EQ: High EQ Type	0,1 = Shelving, Peaking
04 00 28 04 00 29#	0aaaaaaa 0bbbbbbb	EQ: High EQ Gain	-12,,,12dB
04 00 2A 04 00 2B#	0aaaaaaa 0bbbbbbb	EQ: High EQ Frequency	14,,,200 = 1.4,,,20.0kHz
04 00 2C 04 00 2D#	0aaaaaaa 0bbbbbbb	EQ: High EQ Q	3,,,100 = 0.3,,,10.0
04 00 2E	0aaaaaaa	EQ: Out Level	

04 00 2F#	0bbbbbbb		0,,,100
04 00 30	00	(Reserved)	
:	:		
04 00 7F	00		

Algorithm 27 Voice Transformer (FX1 Only)

04 00 0E / 04 00 0F#	0aaaaaaa / 0bbbbbbb	Voice Transformer SW	0,1 = Off,On
04 00 10 / 04 00 11#	0aaaaaaa / 0bbbbbbb	Reverb SW	0,1 = Off,On
04 00 12 / 04 00 13#	0aaaaaaa / 0bbbbbbb	Fader Edit SW	0,1 = Off,On
04 00 14 / 04 00 15#	0aaaaaaa / 0bbbbbbb	MIDI Control SW	0,1 = Off,On
04 00 16 / 04 00 17#	0aaaaaaa / 0bbbbbbb	Voice Transformer: Robot SW	0,1 = Off,On
04 00 18 / 04 00 19#	0aaaaaaa / 0bbbbbbb	Voice Transformer: Chromatic Pitch	-12,,,36
04 00 1A / 04 00 1B#	0aaaaaaa / 0bbbbbbb	Voice Transformer: Fine Pitch	-100,,,100
04 00 1C / 04 00 1D#	0aaaaaaa / 0bbbbbbb	Voice Transformer: Chromatic Formant	-12,,,12
04 00 1E / 04 00 1F#	0aaaaaaa / 0bbbbbbb	Voice Transformer: Fine Formant	-100,,,100
04 00 20 / 04 00 21#	0aaaaaaa / 0bbbbbbb	Voice Transformer: Mix Balance	0,,,100
04 00 22 / 04 00 23#	0aaaaaaa / 0bbbbbbb	Reverb: Reverb Time	1,,,100 = 0.1,,,10.0sec
04 00 24 / 04 00 25#	0aaaaaaa / 0bbbbbbb	Reverb: Pre Delay	0,,,200msec
04 00 26 / 04 00 27#	0aaaaaaa / 0bbbbbbb	Reverb: Density	0,,,100
04 00 28 / 04 00 29#	0aaaaaaa / 0bbbbbbb	Reverb: Effect Level	0,,,100
04 00 2A / 04 00 2B#	0aaaaaaa / 0bbbbbbb	MIDI Control: Bend Range	0,,,12 = Off,1,,,12
04 00 2C / 04 00 2D#	0aaaaaaa / 0bbbbbbb	MIDI Control: Portamento	0,,,100 = Off,1,,,100
04 00 2E	00	(Reserved)	
:	:		
04 00 7F	00		

Algorithm 28 Vocoder 2 (FX1 Only)

04 00 0E / 04 00 0F#	0aaaaaaa / 0bbbbbbb	Chorus SW	0,1 = Off,On
04 00 10 / 04 00 11#	0aaaaaaa / 0bbbbbbb	Vocoder: Envelope Mode	0,,,2 = Sharp,Soft,Long
04 00 12 / 04 00 13#	0aaaaaaa / 0bbbbbbb	Vocoder: Pan Mode	0,,,3 = Mono,Stereo,L->R,R->L
04 00 14 / 04 00 15#	0aaaaaaa / 0bbbbbbb	Vocoder: Hold	0,1 = Off,MIDI
04 00 16 / 04 00 17#	0aaaaaaa / 0bbbbbbb	Vocoder: Mic Sens	0,,,100
04 00 18 / 04 00 19#	0aaaaaaa / 0bbbbbbb	Vocoder: Synth Input Level	0,,,100
04 00 1A / 04 00 1B#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 1	0,,,100
04 00 1C / 04 00 1D#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 2	0,,,100
04 00 1E / 04 00 1F#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 3	0,,,100
04 00 20 / 04 00 21#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 4	0,,,100
04 00 22 / 04 00 23#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 5	0,,,100
04 00 24 / 04 00 25#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 6	0,,,100
04 00 26 / 04 00 27#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 7	0,,,100
04 00 28 / 04 00 29#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 8	0,,,100
04 00 2A / 04 00 2B#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 9	0,,,100
04 00 2C / 04 00 2D#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 10	0,,,100
04 00 2E / 04 00 2F#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 11	0,,,100
04 00 30 / 04 00 31#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 12	0,,,100
04 00 32 / 04 00 33#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 13	0,,,100
04 00 34 / 04 00 35#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 14	0,,,100
04 00 36 / 04 00 37#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 15	0,,,100
04 00 38 / 04 00 39#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 16	0,,,100
04 00 3A / 04 00 3B#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 17	0,,,100
04 00 3C / 04 00 3D#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 18	0,,,100
04 00 3E / 04 00 3F#	0aaaaaaa / 0bbbbbbb	Vocoder: Voice Char Level 19	0,,,100
04 00 40 / 04 00 41#	0aaaaaaa / 0bbbbbbb	Vocoder: Mic High Pass Filter	9,,,200 = Thru,1.0,,,20.0kHz
04 00 42 / 04 00 43#	0aaaaaaa / 0bbbbbbb	Vocoder: Mic High Pass Filter Pan	1,,,127 = L63,,,R63
04 00 44 / 04 00 45#	0aaaaaaa / 0bbbbbbb	Vocoder: Mic Mix	0,,,100
04 00 46 / 04 00 47#	0aaaaaaa / 0bbbbbbb	Vocoder: Noise Suppressor Threshold	0,,,100
04 00 48 / 04 00 49#	0aaaaaaa / 0bbbbbbb	Chorus: Rate	1,,,100 = 0.1,,,10.0Hz
04 00 4A / 04 00 4B#	0aaaaaaa / 0bbbbbbb	Chorus: Depth	0,,,100
04 00 4C / 04 00 4D#	0aaaaaaa / 0bbbbbbb	Chorus: Pre Delay	0,,,50ms
04 00 4E / 04 00 4F#	0aaaaaaa / 0bbbbbbb	Chorus: Mix Balance	0,,,100
04 00 50	00	(Reserved)	
:	:		
04 00 7F	00		

Algorithm 29 Mic Simulator

04 00 0E / 04 00 0F#	0aaaaaaa / 0bbbbbbb	Link SW	0,1 = Off,On
04 00 10 / 04 00 11#	0aaaaaaa / 0bbbbbbb	Mic Converter Ach SW	0,1 = Off,On
04 00 12 / 04 00 13#	0aaaaaaa / 0bbbbbbb	Bass Cut Ach SW	0,1 = Off,On
04 00 14 / 04 00 15#	0aaaaaaa / 0bbbbbbb	Distance Ach SW	0,1 = Off,On
04 00 16 / 04 00 17#	0aaaaaaa / 0bbbbbbb	Limiter Ach SW	0,1 = Off,On
04 00 18 / 04 00 19#	0aaaaaaa / 0bbbbbbb	Mic Converter Bch SW	0,1 = Off,On
04 00 1A / 04 00 1B#	0aaaaaaa / 0bbbbbbb	Bass Cut Bch SW	0,1 = Off,On
04 00 1C / 04 00 1D#	0aaaaaaa / 0bbbbbbb	Distance Bch SW	0,1 = Off,On
04 00 1E / 04 00 1F#	0aaaaaaa / 0bbbbbbb	Limiter Bch SW	0,1 = Off,On
04 00 20 / 04 00 21#	0aaaaaaa / 0bbbbbbb	Mic Converter Ach: Input	0,,,4 = DR-20,SmlDy,HedDy,MinCn,Flat
04 00 22 / 04 00 23#	0aaaaaaa / 0bbbbbbb	Mic Converter Ach: Output	0,,,6 = SmlDy,VocDy,LrgDy,SmlCn,LrgCn,VntCn,Flat
04 00 24 / 04 00 25#	0aaaaaaa / 0bbbbbbb	Mic Converter Ach: Phase	0,1 = Normal,Inverse
04 00 26 / 04 00 27#	0aaaaaaa / 0bbbbbbb	Bass Cut Ach: Bass Cut Frequency	1,,,200 = Thru,20,,,2000Hz
04 00 28 / 04 00 29#	0aaaaaaa / 0bbbbbbb	Distance Ach: Proximity Effect	-12,,,+12
04 00 2A / 04 00 2B#	0aaaaaaa / 0bbbbbbb	Distance Ach: Timelag	0,,,1000 = 0,,,3000cm
04 00 2C / 04 00 2D#	0aaaaaaa / 0bbbbbbb	Limiter Ach: Detect HPF Frequency	1,,,200 = Thru,20,,,2000Hz
04 00 2E / 04 00 2F#	0aaaaaaa / 0bbbbbbb	Limiter Ach: Level	-60,,,24dB

04 00 30 04 00 31#	0aaaaaaa 0bbbbbbb	Limiter Ach: Threshold	-60,,,0dB
04 00 32 04 00 33#	0aaaaaaa 0bbbbbbb	Limiter Ach: Attack	0,,,100
04 00 34 04 00 35#	0aaaaaaa 0bbbbbbb	Limiter Ach: Release	0,,,100
04 00 36 04 00 37#	0aaaaaaa 0bbbbbbb	Mic Converter Bch: Input 0,,,4 = DR-20,SmlDy,HedDy,MinCn,Flat	
04 00 38 04 00 39#	0aaaaaaa 0bbbbbbb	Mic Converter Bch: Output 0,,,6 = SmlDy,VocDy,LrgDy,SmlCn,LrgCn,VntCn,Flat	
04 00 3A 04 00 3B#	0aaaaaaa 0bbbbbbb	Mic Converter Bch: Phase	0,1 = Normal,Inverse
04 00 3C 04 00 3D#	0aaaaaaa 0bbbbbbb	Bass Cut Bch: Bass Cut Frequency 1,,,200 = Thru,20,,,2000Hz	
04 00 3E 04 00 3F#	0aaaaaaa 0bbbbbbb	Distance Bch: Proximity Effect	-12,,,+12
04 00 40 04 00 41#	0aaaaaaa 0bbbbbbb	Distance Bch: Timelag 0,,,1000 = 0,,,3000cm	
04 00 42 04 00 43#	0aaaaaaa 0bbbbbbb	Limiter Bch: Detect HPF Frequency 1,,,200 = Thru,20,,,2000Hz	
04 00 44 04 00 45#	0aaaaaaa 0bbbbbbb	Limiter Bch: Level	-60,,,24dB
04 00 46 04 00 47#	0aaaaaaa 0bbbbbbb	Limiter Bch: Threshold	-60,,,0dB
04 00 48 04 00 49#	0aaaaaaa 0bbbbbbb	Limiter Bch: Attack	0,,,100
04 00 4A 04 00 4B#	0aaaaaaa 0bbbbbbb	Limiter Bch: Release	0,,,100
04 00 4C : 04 00 7F	00 : 00	(Reserved)	

* When Mic Converter Input = MinCn, Output is fixed to SmlDy or LrgCn.
* When Link SW = On, Bch corresponds to Ach.

Algorithm 30 3 Band Isolator

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Isolator SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Isolator High Volume	-60,,,+4dB
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Isolator Middle Volume	-60,,,+4dB
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Isolator Low Volume	-60,,,+4dB
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Isolator Anti Phase Middle Switch	0,1 = Off,On
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	Isolator Anti Phase Middle Level	0,,,100
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	Isolator Anti Phase Low Switch	0,1 = Off,On
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	Isolator Anti Phase Low Level	0,,,100
04 00 1E : 04 00 7F	00 : 00	(Reserved)	

Algorithm 31 Tape Echo 201

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Tape Echo SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Tape Echo Mode Select	0,,,6 = 1,,,7
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Tape Echo Repeat Rate	0,,,100
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Tape Echo Intensity	0,,,100
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Tape Echo Effect Level	0,,,100
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	Tape Echo Direct Level	0,,,100
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	Tape Echo Tone Bass	-100,,,100
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	Tape Echo Tone Treble	-100,,,100
04 00 1E	0aaaaaaa	Tape Echo Tape Head S Pan	

04 00 1F#	0bbbbbbb		1,,,127 = L63,,,R63
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	Tape Echo Tape Head M Pan	1,,,127 = L63,,,R63
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	Tape Echo Tape Head L Pan	1,,,127 = L63,,,R63
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	Tape Echo Tape Distortion	0,,,100
04 00 26 04 00 27#	0aaaaaaa 0bbbbbbb	Tape Echo Wah Flutter Rate	0,,,100
04 00 28 04 00 29#	0aaaaaaa 0bbbbbbb	Tape Echo Wah Flutter Depth	0,,,100
04 00 2A : 04 00 7F	00 : 00	(Reserved)	

Algorithm 32 Analog Flanger

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Analog Flanger SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Analog Flanger Mode	0,,,3 = FL1,FL2,FL3,CHO
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Analog Flanger Feedback	0,,,100
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Analog Flanger Modulation Rate	0,,,100
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Analog Flanger Modulation Depth	0,,,100
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	Analog Flanger Modulation Frequency	0,,,100
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	Analog Flanger Channel B Modulation	0,1 = Nor,Inv
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	Analog Flanger Channel A Phase	0,1 = Nor,Inv
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	Analog Flanger Channel B Phase	0,1 = Nor,Inv
04 00 20 : 04 00 7F	00 : 00	(Reserved)	

Algorithm 33 Analog Phaser

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Analog Phaser SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Analog Phaser Mode	0,1 = 4STAGE,8STAGE
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Analog Phaser Frequency	0,,,100
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Analog Phaser Resonance	0,,,100
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Analog Phaser LFO 1 Rate	0,,,100
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	Analog Phaser LFO 1 Depth	0,,,100
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	Analog Phaser LFO 1 Channel B Mod	0,1 = Nor,Inv
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	Analog Phaser LFO 2 Rate	0,,,100
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	Analog Phaser LFO 2 Depth	0,,,100
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	Analog Phaser LFO 2 Channel B Mod	0,1 = Nor,Inv
04 00 22 : 04 00 7F	00 : 00	(Reserved)	

Algorithm 34 Speaker Modeling

04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	Speaker Modeling SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Bass Cut SW	0,1 = Off,On
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Low Frequency Trimmer SW	0,1 = Off,On

Address	Data	Contents and remarks	
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	High Frequency Trimmer SW	0,1 = Off,On
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Limiter SW	0,1 = Off,On
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	(Reserved)	
04 00 1A 04 00 1B#	0aaaaaaa 0bbbbbbb	Speaker Modeling Model 0,,,11 = THRU,FLAT,Pwd.BLK,Pwd.E-B,Pwd.MAC, SmlCUBE,Wh.CONE,WhTISUE,RADIO,SmallTV, BoomBOX,BoomLoB	
04 00 1C 04 00 1D#	0aaaaaaa 0bbbbbbb	Speaker Modeling Phase	0,1 = Nor,Inv
04 00 1E 04 00 1F#	0aaaaaaa 0bbbbbbb	Bass Cut Frequency	1,,,200 = Thru,20,,,2000Hz
04 00 20 04 00 21#	0aaaaaaa 0bbbbbbb	Low Frequency Trimmer Gain	-12,,,12dB
04 00 22 04 00 23#	0aaaaaaa 0bbbbbbb	Low Frequency Trimmer Frequency	2,,,200 = 20,,,2000Hz
04 00 24 04 00 25#	0aaaaaaa 0bbbbbbb	High Frequency Trimmer Gain	-12,,,12dB
04 00 26 04 00 27#	0aaaaaaa 0bbbbbbb	High Frequency Trimmer Frequency	10,,,200 = 1.0,,,20.0kHz
04 00 28 04 00 29#	0aaaaaaa 0bbbbbbb	Limiter Threshold	-60,,,0dB
04 00 2A 04 00 2B#	0aaaaaaa 0bbbbbbb	Limiter Release	0,,,100
04 00 2C 04 00 2D#	0aaaaaaa 0bbbbbbb	Limiter Level	-60,,,24dB
04 00 2E : 04 00 7F	00 : 00	(Reserved)	

Algorithm 35 Mastering Tool Kit

Address	Data	Contents and remarks	
04 00 0E 04 00 0F#	0aaaaaaa 0bbbbbbb	EQ SW	0,1 = Off,On
04 00 10 04 00 11#	0aaaaaaa 0bbbbbbb	Bass Cut SW	0,1 = Off,On
04 00 12 04 00 13#	0aaaaaaa 0bbbbbbb	Enhancer SW	0,1 = Off,On
04 00 14 04 00 15#	0aaaaaaa 0bbbbbbb	Expander SW	0,1 = Off,On
04 00 16 04 00 17#	0aaaaaaa 0bbbbbbb	Compressor SW	0,1 = Off,On
04 00 18 04 00 19#	0aaaaaaa 0bbbbbbb	Limiter SW	0,1 = Off,On
04 00 1A	0aaaaaaa	EQ: Input Gain	-24,,,12dB
04 00 1B#	0aaaaaaa	EQ: Low EQ Type	0,1 = Shelving, Peaking
04 00 1C	0aaaaaaa	EQ: Low EQ Gain	-12,,,12dB
04 00 1D#	0aaaaaaa	EQ: Low EQ Frequency	2,,,42 = 20,,,2000Hz(*1)
04 00 1E	0aaaaaaa	EQ: Low EQ Q	0,,,31 = 0.3,,,16.0(*2)
04 00 1F#	0aaaaaaa	EQ: Low Mid EQ Gain	-12,,,12dB
04 00 20	0aaaaaaa	EQ: Low Mid EQ Frequency	2,,,54 = 20,,,8000Hz(*1)
04 00 21#	0aaaaaaa	EQ: Low Mid EQ Q	0,,,31 = 0.3,,,16.0(*2)
04 00 22	0aaaaaaa	EQ: High Mid EQ Gain	-12,,,12dB
04 00 23#	0aaaaaaa	EQ: High Mid EQ Frequency	2,,,54 = 20,,,8000Hz(*1)
04 00 24	0aaaaaaa	EQ: High Mid EQ Q	0,,,31 = 0.3,,,16.0(*2)
04 00 25#	0aaaaaaa	EQ: High EQ Type	0,1 = Shelving, Peaking
04 00 26	0aaaaaaa	EQ: High EQ Gain	-12,,,12dB
04 00 27#	0aaaaaaa	EQ: High EQ Frequency	39,,,62 = 1.4,,,20.0kHz(*1)
04 00 28	0aaaaaaa	EQ: High EQ Q	0,,,31 = 0.3,,,16.0(*2)
04 00 29#	0aaaaaaa	EQ: Level	-24,,,12dB
04 00 2A	0aaaaaaa	Bass Cut Frequency	1,,,42 = Off,20,,,2000Hz(*1)
04 00 2B#	0aaaaaaa	Enhancer Sens	0,,,100
04 00 2C	0aaaaaaa	Enhancer Frequency	36,,,56 = 1.0,,,10.0kHz(*1)
04 00 2D#	0aaaaaaa	Enhancer Mix Level	-24,,,12dB
04 00 2E	0aaaaaaa	Input Gain	-24,,,12dB
04 00 2F#	0aaaaaaa	Input Detect Time	0,,,10ms
04 00 30	0aaaaaaa	Input Low Split Point	2,,,34 = 20,,,800Hz(*1)
04 00 31#	0aaaaaaa	Input High Split Point	40,,,60 = 1.6,,,16.0kHz(*1)

Address	Data	Contents and remarks	
04 00 32	0aaaaaaa	Expander Low Threshold	0,,,80 = -80,,,0dB
04 00 33#	0aaaaaaa	Expander Mid Threshold	0,,,80 = -80,,,0dB
04 00 34	0aaaaaaa	Expander High Threshold	0,,,80 = -80,,,0dB
04 00 35#	0aaaaaaa	Expander Low Ratio	0,,,13 = 1:1.0,,,1:INF(*3)
04 00 36	0aaaaaaa	Expander Mid Ratio	0,,,13 = 1:1.0,,,1:INF(*3)
04 00 37#	0aaaaaaa	Expander High Ratio	0,,,13 = 1:1.0,,,1:INF(*3)
04 00 38	0aaaaaaa	Expander Low Attack	0,,,100ms
04 00 39#	0aaaaaaa	Expander Mid Attack	0,,,100ms
04 00 3A	0aaaaaaa	Expander High Attack	0,,,100ms
04 00 3B#	0aaaaaaa	Expander Low Release	0,,,100 = 50,,,5000ms
04 00 3C	0aaaaaaa	Expander Mid Release	0,,,100 = 50,,,5000ms
04 00 3D#	0aaaaaaa	Expander High Release	0,,,100 = 50,,,5000ms
04 00 3E	0aaaaaaa	Compressor Low Threshold	-24,,,0dB
04 00 3F#	0aaaaaaa	Compressor Mid Threshold	-24,,,0dB
04 00 40	0aaaaaaa	Compressor High Threshold	-24,,,0dB
04 00 41#	0aaaaaaa	Compressor Low Ratio	0,,,13 = 1:1.0,,,1:INF(*3)
04 00 42	0aaaaaaa	Compressor Mid Ratio	0,,,13 = 1:1.0,,,1:INF(*3)
04 00 43#	0aaaaaaa	Compressor High Ratio	0,,,13 = 1:1.0,,,1:INF(*3)
04 00 44	0aaaaaaa	Compressor Low Attack	0,,,100ms
04 00 45#	0aaaaaaa	Compressor Mid Attack	0,,,100ms
04 00 46	0aaaaaaa	Compressor High Attack	0,,,100ms
04 00 47#	0aaaaaaa	Compressor Low Release	0,,,100 = 50,,,5000ms
04 00 48	0aaaaaaa	Compressor Mid Release	0,,,100 = 50,,,5000ms
04 00 49#	0aaaaaaa	Compressor High Release	0,,,100 = 50,,,5000ms
04 00 4A	0aaaaaaa	Mixer Low Level	0,,,86 = -80,,,6dB
04 00 4B#	0aaaaaaa	Mixer Mid Level	0,,,86 = -80,,,6dB
04 00 4C	0aaaaaaa	Mixer High Level	0,,,86 = -80,,,6dB
04 00 4D#	0aaaaaaa	Limiter Threshold	-24,,,0dB
04 00 4E	0aaaaaaa	Limiter Attack	0,,,100ms
04 00 4F#	0aaaaaaa	Limiter Release	0,,,100 = 50,,,5000ms
04 00 50	0aaaaaaa	Output Level	0,,,86 = -80,,,6dB
04 00 51#	0aaaaaaa	Output Soft Clip	0,1 = Off,On
04 00 52	0aaaaaaa	Output Dither	0,,,17 = Off,24,,,8Bit
04 00 53#	00	(Reserved)	
04 00 54 : 04 00 7F	00 : 00	(Reserved)	

●Remote Operations

Start address	Data	Contents and remarks
05 00 00	00 -	Remote Command / Response
05 00 01#	00 -	Parameter
: 05 nn mm#	: 00 -	Parameter

(*) The address marked by "#" are invalid. Transmit the Data Set(DT1) message with the specified size to the address without "#" mark. Data Request(RQ1) message is ignored.

(*) The commands require to set simultaneously the parameter which specified size.

Remote Edit Command List

Command	Remarks
00	NOP (No Operation)
01	Abort Command
02	Track Copy
03	Track Move
04	Track Exchange
05	Track Insert
06	Track Cut
07	Track Erase

08	Track Time Comp/Exp.
09	Preview From
0A	Preview To
0B	Preview Scrub On
0C	Preview Scrub Off
0D	Request Amplitude Profile
0E	Request Wave Data
0F	Request Full Event List
10	Request Simple Event List
11	Request Number of Event List
12	Request Full Event Parameter
13	Request Simple Event Parameter
14	Name Event
15	Undo
16	Redo
17	Create Event
18	Song Select
19	Song Store
1A	Drive Select
1B	Request Drive List
1C	Shut Down

Remote Edit Response List

Response	Remarks
40	Complete (No Error)
41	Error
42	Amplitude Profile
43	Wave Data
44	Full Event List
45	Simple Event List
46	Number of Event List
47	Full Event Parameter
48	Simple Event Parameter
49	Drive List

Command 00   NOP (No operation)

```
+----------+----------+---------------------------------------------------+
| Start    |          |                                                   |
| address  | Data     |                 Contents and remarks              |
|==========+==========+===================================================|
| 05 00 00 | 00       | NOP (No Operation)                                |
+----------+----------+---------------------------------------------------+
```

The VSR-880 does not operate anything.
If the VSR-880 was available to operate commands, it returns the response 40 when it receives the message. And if the VSR-880 was busy (operating commands or recording), it returns the response 41.

Command 01   Abort Command

```
+----------+----------+---------------------------------------------------+
| Start    |          |                                                   |
| address  | Data     |                 Contents and remarks              |
|==========+==========+===================================================|
| 05 00 00 | 01       | Abort Command                                     |
+----------+----------+---------------------------------------------------+
```

The VSR-880 aborts the current command.
If no executing command, it returns the response 40. And if the VSR-880 aborted the current command, it returns the response 41.

Command 02   Track Copy

```
+----------+----------+---------------------------------------------------+
| Start    |          |                                                   |
| address  | Data     |                 Contents and remarks              |
|==========+==========+===================================================|
| 05 00 00 | 02       | Track Copy                                        |
+----------+----------+---------------------------------------------------+
| 05 00 01#| 0aaaaaaa | Track Copy Start Time                             |
| 05 00 02#| 0bbbbbbb |             aaaaaaabbbbbbbccccccccdddddddd =       |
| 05 00 03#| 0ccccccc |             0,,,268435455block (1block=16sample)  |
| 05 00 04#| 0ddddddd |                                                   |
+----------+----------+---------------------------------------------------+
| 05 00 05#| 0aaaaaaa | Track Copy End Time                               |
| 05 00 06#| 0bbbbbbb |             aaaaaaabbbbbbbccccccccdddddddd =       |
| 05 00 07#| 0ccccccc |             0,,,268435455block (1block=16sample)  |
| 05 00 08#| 0ddddddd |                                                   |
+----------+----------+---------------------------------------------------+
| 05 00 09#| 0aaaaaaa | Track Copy From Time                              |
| 05 00 0A#| 0bbbbbbb |             aaaaaaabbbbbbbccccccccdddddddd =       |
```

```
+----------+----------+---------------------------------------------------+
| 05 00 0B#| 0ccccccc |             0,,,268435455block (1block=16sample)  |
| 05 00 0C#| 0ddddddd |                                                   |
+----------+----------+---------------------------------------------------+
| 05 00 0D#| 0aaaaaaa | Track Copy To Time                                |
| 05 00 0E#| 0bbbbbbb |             aaaaaaabbbbbbbccccccccdddddddd =       |
| 05 00 0F#| 0ccccccc |             0,,,268435455block (1block=16sample)  |
| 05 00 10#| 0ddddddd |                                                   |
+----------+----------+---------------------------------------------------+
| 05 00 11#| 01 - 63  | Track Copy Time                       1,,,99      |
+----------+----------+---------------------------------------------------+
| 05 00 12#| 0aaaaaaa | The Number Of Target      aaaaaaabbbbbbb = 1,,,128|
| 05 00 13#| 0bbbbbbb |                                                   |
+----------+----------+---------------------------------------------------+
| 05 00 14#| 00 - 7F  | Source V.Tr.           V.Tr.1-A:1,,,V.Tr.8-B:8    |
| 05 00 15#| 00 - 7F  | Destination V.Tr.      V.Tr.1-A:1,,,V.Tr.8-B:8    |
| :   :    | :        |                                                   |
|          | 00 - 7F  | Source V.Tr.           V.Tr.1-A:1,,,V.Tr.8-B:8    |
| 05 nn mm#| 00 - 7F  | Destination V.Tr.      V.Tr.1-A:1,,,V.Tr.8-B:8    |
|          |          |   (nn mm = 00 13 + The Number Of Target * 2)      |
+----------+----------+---------------------------------------------------+
```

The VSR-880 executes the Track Copy command.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Command 03   Track Move

```
+----------+----------+---------------------------------------------------+
| Start    |          |                                                   |
| address  | Data     |                 Contents and remarks              |
|==========+==========+===================================================|
| 05 00 00 | 03       | Track Move                                        |
+----------+----------+---------------------------------------------------+
| 05 00 01#| 0aaaaaaa | Track Move Start Time                             |
| 05 00 02#| 0bbbbbbb |             aaaaaaabbbbbbbccccccccdddddddd =       |
| 05 00 03#| 0ccccccc |             0,,,268435455block (1block=16sample)  |
| 05 00 04#| 0ddddddd |                                                   |
+----------+----------+---------------------------------------------------+
| 05 00 05#| 0aaaaaaa | Track Move End Time                               |
| 05 00 06#| 0bbbbbbb |             aaaaaaabbbbbbbccccccccdddddddd =       |
| 05 00 07#| 0ccccccc |             0,,,268435455block (1block=16sample)  |
| 05 00 08#| 0ddddddd |                                                   |
+----------+----------+---------------------------------------------------+
| 05 00 09#| 0aaaaaaa | Track Move From Time                              |
| 05 00 0A#| 0bbbbbbb |             aaaaaaabbbbbbbccccccccdddddddd =       |
| 05 00 0B#| 0ccccccc |             0,,,268435455block (1block=16sample)  |
| 05 00 0C#| 0ddddddd |                                                   |
+----------+----------+---------------------------------------------------+
| 05 00 0D#| 0aaaaaaa | Track Move To Time                                |
| 05 00 0E#| 0bbbbbbb |             aaaaaaabbbbbbbccccccccdddddddd =       |
| 05 00 0F#| 0ccccccc |             0,,,268435455block (1block=16sample)  |
| 05 00 10#| 0ddddddd |                                                   |
+----------+----------+---------------------------------------------------+
| 05 00 11#| 0aaaaaaa | The Number Of Target      aaaaaaabbbbbbb = 1,,,128|
| 05 00 12#| 0bbbbbbb |                                                   |
+----------+----------+---------------------------------------------------+
| 05 00 13#| 00 - 7F  | Source V.Tr.           V.Tr.1-A:1,,,V.Tr.8-B:8    |
| 05 00 14#| 00 - 7F  | Destination V.Tr.      V.Tr.1-A:1,,,V.Tr.8-B:8    |
| :   :    | :        |                                                   |
|          | 00 - 7F  | Source V.Tr.           V.Tr.1-A:1,,,V.Tr.8-B:8    |
| 05 nn mm#| 00 - 7F  | Destination V.Tr.      V.Tr.1-A:1,,,V.Tr.8-B:8    |
|          |          |   (nn mm = 00 12 + The Number Of Target * 2)      |
+----------+----------+---------------------------------------------------+
```

The VSR-880 executes the Track Move command.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Command 04   Track Exchange

```
+----------+----------+---------------------------------------------------+
| Start    |          |                                                   |
| address  | Data     |                 Contents and remarks              |
|==========+==========+===================================================|
| 05 00 00 | 04       | Track Exchange                                    |
+----------+----------+---------------------------------------------------+
| 05 00 01#| 0aaaaaaa | The Number Of Target      aaaaaaabbbbbbb = 1,,,128|
| 05 00 02#| 0bbbbbbb |                                                   |
+----------+----------+---------------------------------------------------+
| 05 00 03#| 00 - 7F  | Source V.Tr.           V.Tr.1-A:1,,,V.Tr.8-B:8    |
| 05 00 04#| 00 - 7F  | Destination V.Tr.      V.Tr.1-A:1,,,V.Tr.8-B:8    |
| :   :    | :        |                                                   |
|          | 00 - 7F  | Source V.Tr.           V.Tr.1-A:1,,,V.Tr.8-B:8    |
| 05 nn mm#| 00 - 7F  | Destination V.Tr.      V.Tr.1-A:1,,,V.Tr.8-B:8    |
|          |          |   (nn mm = 00 02 + The Number Of Target * 2)      |
+----------+----------+---------------------------------------------------+
```

The VSR-880 executes the Track Exchange command.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Command 05   Track Insert

```
+----------+----------+---------------------------------------------------+
| Start    |          |                                                   |
| address  | Data     |                 Contents and remarks              |
|==========+==========+===================================================|
| 05 00 00 | 05       | Track Insert                                      |
+----------+----------+---------------------------------------------------+
| 05 00 01#| 0aaaaaaa | Track Insert From Time                            |
```

```
| 05 00 02#| 0bbbbbbb|          aaaaaaabbbbbbbcccccccddddddd =
| 05 00 03#| 0ccccccc|              0,,,268435455block (1block=16sample)
| 05 00 04#| 0ddddddd|

| 05 00 05#| 0aaaaaaa| Track Insert Length Time
| 05 00 06#| 0bbbbbbb|          aaaaaaabbbbbbbcccccccddddddd =
| 05 00 07#| 0ccccccc|              0,,,268435455block (1block=16sample)
| 05 00 08#| 0ddddddd|

| 05 00 09#| 0aaaaaaa| The Number Of Target      aaaaaaabbbbbbb = 1,,,128
| 05 00 0A#| 0bbbbbbb|

| 05 00 0B#| 00 - 7F | Insert V.Tr.            V.Tr.1-A:1,,,V.Tr.8-B:8
| :    :   |         | :
| 05 nn mm#| 00 - 7F | Insert V.Tr.            V.Tr.1-A:1,,,V.Tr.8-B:8
|          |         |          (nn mm = 00 0A + The Number Of Target)
```

The VSR-880 executes the Track Insert command.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

Command 06   Track Cut

```
+-----------+---------+---------------------------------------------------+
| Start     |         |                                                   |
| address   | Data    |               Contents and remarks                |
|===========+=========+===================================================|
| 05 00 00  | 06      | Track Cut                                         |
+-----------+---------+---------------------------------------------------+
| 05 00 01#| 0aaaaaaa| Track Cut Start Time                               |
| 05 00 02#| 0bbbbbbb|          aaaaaaabbbbbbbcccccccddddddd =             |
| 05 00 03#| 0ccccccc|              0,,,268435455block (1block=16sample)   |
| 05 00 04#| 0ddddddd|                                                    |
+-----------+---------+---------------------------------------------------+
| 05 00 05#| 0aaaaaaa| Track Cut End Time                                 |
| 05 00 06#| 0bbbbbbb|          aaaaaaabbbbbbbcccccccddddddd =             |
| 05 00 07#| 0ccccccc|              0,,,268435455block (1block=16sample)   |
| 05 00 08#| 0ddddddd|                                                    |
+-----------+---------+---------------------------------------------------+
| 05 00 09#| 0aaaaaaa| The Number Of Target      aaaaaaabbbbbbb = 1,,,128 |
| 05 00 0A#| 0bbbbbbb|                                                    |
+-----------+---------+---------------------------------------------------+
| 05 00 0B#| 00 - 7F | Cut V.Tr.               V.Tr.1-A:1,,,V.Tr.8-B:8   |
| :    :   |         | :                                                  |
| 05 nn mm#| 00 - 7F | Cut V.Tr.               V.Tr.1-A:1,,,V.Tr.8-B:8   |
|          |         |          (nn mm = 00 0A - The Number Of Target)    |
+-----------+---------+---------------------------------------------------+
```

The VSR-880 executes the Track Cut command.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

Command 07   Track Erase

```
+-----------+---------+---------------------------------------------------+
| Start     |         |                                                   |
| address   | Data    |               Contents and remarks                |
|===========+=========+===================================================|
| 05 00 00  | 07      | Track Erase                                       |
+-----------+---------+---------------------------------------------------+
| 05 00 01#| 0aaaaaaa| Track Erase Start Time                             |
| 05 00 02#| 0bbbbbbb|          aaaaaaabbbbbbbcccccccddddddd =             |
| 05 00 03#| 0ccccccc|              0,,,268435455block (1block=16sample)   |
| 05 00 04#| 0ddddddd|                                                    |
+-----------+---------+---------------------------------------------------+
| 05 00 05#| 0aaaaaaa| Track Erase End Time                               |
| 05 00 06#| 0bbbbbbb|          aaaaaaabbbbbbbcccccccddddddd =             |
| 05 00 07#| 0ccccccc|              0,,,268435455block (1block=16sample)   |
| 05 00 08#| 0ddddddd|                                                    |
+-----------+---------+---------------------------------------------------+
| 05 00 09#| 0aaaaaaa| The Number Of Target      aaaaaaabbbbbbb = 1,,,128 |
| 05 00 0A#| 0bbbbbbb|                                                    |
+-----------+---------+---------------------------------------------------+
| 05 00 0B#| 00 - 7F | Erase V.Tr.             V.Tr.1-A:1,,,V.Tr.8-B:8   |
| :    :   |         | :                                                  |
| 05 nn mm#| 00 - 7F | Erase V.Tr.             V.Tr.1-A:1,,,V.Tr.8-B:8   |
|          |         |          (nn mm = 00 0A - The Number Of Target)    |
+-----------+---------+---------------------------------------------------+
```

The VSR-880 executes the Track Erase command.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

Command 08   Track Time Comp/Exp.

```
+-----------+---------+---------------------------------------------------+
| Start     |         |                                                   |
| address   | Data    |               Contents and remarks                |
|===========+=========+===================================================|
| 05 00 00  | 08      | Track Time Comp/Exp.                              |
+-----------+---------+---------------------------------------------------+
| 05 00 01#| 0aaaaaaa| Track Time Comp/Exp. Start Time                    |
| 05 00 02#| 0bbbbbbb|          aaaaaaabbbbbbbcccccccddddddd =             |
| 05 00 03#| 0ccccccc|              0,,,268435455block (1block=16sample)   |
| 05 00 04#| 0ddddddd|                                                    |
+-----------+---------+---------------------------------------------------+
| 05 00 05#| 0aaaaaaa| Track Time Comp/Exp. End Time                      |
| 05 00 06#| 0bbbbbbb|          aaaaaaabbbbbbbcccccccddddddd =             |
| 05 00 07#| 0ccccccc|              0,,,268435455block (1block=16sample)   |
```

```
| 05 00 08#| 0ddddddd|

| 05 00 09#| 0aaaaaaa| Track Time Comp/Exp. To Time
| 05 00 0A#| 0bbbbbbb|          aaaaaaabbbbbbbcccccccddddddd =
| 05 00 0B#| 0ccccccc|              0,,,268435455block (1block=16sample)
| 05 00 0C#| 0ddddddd|

| 05 00 0D#| 00 - 01 | Track Time Comp/Exp. Pitch Mode          Fix,Vari

| 05 00 0E#| 00 - 02 | Track Time Comp/Exp. Type                  A,B,C

| 05 00 0F#| 01 - 64 | Track Time Comp/Exp. Amplitude            1,,,100%

| 05 00 10#| 0aaaaaaa| The Number Of Target      aaaaaaabbbbbbb = 1,,,128
| 05 00 11#| 0bbbbbbb|

| 05 00 12#| 00 - 7F | Comp/Exp V.Tr.          V.Tr.1-A:1,,,V.Tr.8-B:8
| :    :   |         | :
| 05 nn mm#| 00 - 7F | Comp/Exp V.Tr.          V.Tr.1-A:1,,,V.Tr.8-B:8
|          |         |          (nn mm = 00 11 - The Number Of Target)
```

The VSR-880 executes the Time Stretch (Track Time Comp/Exp.) command.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

Command 09   Preview From

```
+-----------+---------+---------------------------------------------------+
| Start     |         |                                                   |
| address   | Data    |               Contents and remarks                |
|===========+=========+===================================================|
| 05 00 00  | 09      | Preview From                                      |
+-----------+---------+---------------------------------------------------+
```

The VSR-880 executes the Preview From command.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

Command 0A   Preview To

```
+-----------+---------+---------------------------------------------------+
| Start     |         |                                                   |
| address   | Data    |               Contents and remarks                |
|===========+=========+===================================================|
| 05 00 00  | 0A      | Preview To                                        |
+-----------+---------+---------------------------------------------------+
```

The VSR-880 executes the Preview To command.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

Command 0B   Preview Scrub On

```
+-----------+---------+---------------------------------------------------+
| Start     |         |                                                   |
| address   | Data    |               Contents and remarks                |
|===========+=========+===================================================|
| 05 00 00  | 0B      | Preview Scrub On                                  |
+-----------+---------+---------------------------------------------------+
| 05 00 01#| 00 - 07 | Target Track                                1,,,8 |
+-----------+---------+---------------------------------------------------+
```

The VSR-880 executes the Preview Scrub On command.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

Command 0C   Preview Scrub Off

```
+-----------+---------+---------------------------------------------------+
| Start     |         |                                                   |
| address   | Data    |               Contents and remarks                |
|===========+=========+===================================================|
| 05 00 00  | 0C      | Preview Scrub Off                                 |
+-----------+---------+---------------------------------------------------+
```

The VSR-880 executes the Preview Scrub Off command.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

Command 0D   Request Amplitude Profile

```
+-----------+---------+---------------------------------------------------+
| Start     |         |                                                   |
| address   | Data    |               Contents and remarks                |
|===========+=========+===================================================|
| 05 00 00  | 0D      | Request Amplitude Profile                         |
+-----------+---------+---------------------------------------------------+
| 05 00 01#| 00 - 7F | Target V.Tr.                        1-A:1,,,8-B:8 |
+-----------+---------+---------------------------------------------------+
```

```
05 00 02#  0aaaaaaa  From Time
05 00 03#  0bbbbbbb          aaaaaaabbbbbbbcccccccddddddd =
05 00 04#  0ccccccc          0,,,268435455block (1block=16sample)
05 00 05#  0ddddddd
```

```
05 00 06#  0aaaaaaa  Length Time
05 00 07#  0bbbbbbb          aaaaaaabbbbbbbcccccccddddddd =
05 00 08#  0ccccccc          0,,,268435455block (1block=16sample)
05 00 09#  0ddddddd
```

```
05 00 0A#  0aaaaaaa  Resolution
05 00 0B#  0bbbbbbb          aaaaaaabbbbbbb = sample(0),blocks
```

```
05 00 0C#  0aaaaaaa  Packet Byte Length
05 00 0D#  0bbbbbbb          aaaaaaabbbbbbb = 5,,,16384(=00)
```

The VSR-880 returns the Amplitude Profile Data (the response 42).
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

(*) The data size of the Data Set(DT1) (Bytes as a unit) is set to the Packet Byte Length. It is
efficient to set the maximum size that is available for hosts to the Packet Byte Length.

Command 0E   Request Wave Data

```
Start
address | Data   | Contents and remarks
========+========+=================================================
05 00 00 | 0E    | Request Wave Data

05 00 01#| 00 - 7F | Target V.Tr.                        1-A:1,,,8-B:8

05 00 02#  0aaaaaaa  From Time
05 00 03#  0bbbbbbb          aaaaaaabbbbbbbcccccccddddddd =
05 00 04#  0ccccccc          0,,,268435455block (1block=16sample)
05 00 05#  0ddddddd

05 00 06#  0aaaaaaa  Length Time
05 00 07#  0bbbbbbb          aaaaaaabbbbbbbcccccccddddddd =
05 00 08#  0ccccccc          0,,,268435455block (1block=16sample)
05 00 09#  0ddddddd

05 00 0A#  0aaaaaaa  Packet Byte Length
05 00 0B#  0bbbbbbb          aaaaaaabbbbbbb = 5,,,16384(=00)
```

The VSR-880 returns the Wave Data (the response 43).
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

(*) The data size of the Data Set(DT1) (Bytes as a unit) is set to the Packet Byte Length. It is
efficient to set the maximum size that is available for hosts to the Packet Byte Length.

Command 0F   Full Event List

```
Start
address | Data   | Contents and remarks
========+========+=================================================
05 00 00 | 0F    | Full Event List

05 00 01#  0aaaaaaa  Target V.Tr.
05 00 02#  0bbbbbbb          aaaaaaabbbbbbb = 1-A:1,,,8-B:8,Take

05 00 03#  0aaaaaaa  Packet Byte Length
05 00 04#  0bbbbbbb          aaaaaaabbbbbbb = 5,,,16384(=00)
```

The VSR-880 returns the Full Event List which specified track (the response 44).
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

(*) The data size of the Data Set(DT1) (Bytes as a unit) is set to the Packet Byte Length. It is
efficient to set the maximum size that is available for hosts to the Packet Byte Length.

Command 10   Simple Event List

```
Start
address | Data   | Contents and remarks
========+========+=================================================
05 00 00 | 10    | Simple Event List

05 00 01#  0aaaaaaa  Target V.Tr.
05 00 02#  0bbbbbbb          aaaaaaabbbbbbb = 1-A:1,,,8-B:8,Take

05 00 03#  0aaaaaaa  Packet Byte Length
05 00 04#  0bbbbbbb          aaaaaaabbbbbbb = 5,,,16384(=00)
```

The VSR-880 returns the Simple Event List which specified track (the response 45).
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

(*) The data size of the Data Set(DT1) (Bytes as a unit) is set to the Packet Byte Length. It is
efficient to set the maximum size that is available for hosts to the Packet Byte Length.

Command 11   Number of Event List

```
Start
address | Data   | Contents and remarks
========+========+=================================================
05 00 00 | 11    | Number of Event List

05 00 01#  0aaaaaaa  Target V.Tr.
05 00 02#  0bbbbbbb          aaaaaaabbbbbbb = 1-A:1,,,8-B:8,Take

05 00 03#  0aaaaaaa  Packet Byte Length
05 00 04#  0bbbbbbb          aaaaaaabbbbbbb = 5,,,16384(=00)
```

The VSR-880 returns the Number of Event List which specified track (the response 46).
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

(*) The data size of the Data Set(DT1) (Bytes as a unit) is set to the Packet Byte Length. It is
efficient to set the maximum size that is available for hosts to the Packet Byte Length.

Command 12   Full Event Parameter

```
Start
address | Data   | Contents and remarks
========+========+=================================================
05 00 00 | 12    | Full Event Parameter

05 00 01#  0aaaaaaa  Target V.Tr.
05 00 02#  0bbbbbbb          aaaaaaabbbbbbb = 1-A:1,,,8-B:8,Take

05 00 03#  000000aa  Event Number
05 00 04#  0bbbbbbb          aabbbbbbbcccccccc
05 00 05#  0bbbbbbb

05 00 06#  0aaaaaaa  Packet Byte Length
05 00 07#  0bbbbbbb          aaaaaaabbbbbbb = 5,,,16384(=00)
```

The VSR-880 returns the Full Event Parameter which specified track (the response 47).
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

(*) The data size of the Data Set(DT1) (Bytes as a unit) is set to the Packet Byte Length. It is
efficient to set the maximum size that is available for hosts to the Packet Byte Length.

Command 13   Simple Event Parameter

```
Start
address | Data   | Contents and remarks
========+========+=================================================
05 00 00 | 13    | Simple Event Parameter

05 00 01#  0aaaaaaa  Target V.Tr.
05 00 02#  0bbbbbbb          aaaaaaabbbbbbb = 1-A:1,,,8-B:8,Take

05 00 03#  000000aa  Event Number
05 00 04#  0bbbbbbb          aabbbbbbbcccccccc
05 00 05#  0bbbbbbb

05 00 06#  0aaaaaaa  Packet Byte Length
05 00 07#  0bbbbbbb          aaaaaaabbbbbbb = 5,,,16384(=00)
```

The VSR-880 returns the Simple Event Parameter which specified track (the response 48).
If the command succeeded, it returns the response 40. And if any errors occurred, it returns
the response 41.

(*) The data size of the Data Set(DT1) (Bytes as a unit) is set to the Packet Byte Length. It is
efficient to set the maximum size that is available for hosts to the Packet Byte Length.

Command 14   Name Event

```
Start
address | Data   | Contents and remarks
========+========+=================================================
05 00 00 | 13    | Simple Event Parameter

05 00 01#  0aaaaaaa  Target V.Tr.
05 00 02#  0bbbbbbb          aaaaaaabbbbbbb = 1-A:1,,,8-B:8,Take

05 00 03#  000000aa  Event Number
05 00 04#  0bbbbbbb          aabbbbbbbcccccccc
05 00 05#  0bbbbbbb
```

```
| 05 00 06#| 20 - 7E | Name - 1                                    (ASCII) |
| 05 00 07#| 20 - 7E | Name - 2                                            |
|   :      :                                                                |
| 05 00 11#| 20 - 7E | Name - 12                                           |
```

The VSR-880 writes the Name of Event which specified track.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

(*) The data size of the Data Set(DT1) (Bytes as a unit) is set to the Packet Byte Length. It is efficient to set the maximum size that is available for hosts to the Packet Byte Length.

Command 15   Undo

```
+-----------------------------------------------------------------------+
| Start                                                                 |
|   address |  Data  |               Contents and remarks               |
|===========+========+==================================================|
| 05 00 00  |  15    | Undo                                             |
+-----------+--------+--------------------------------------------------+
| 05 00 01#| 000000aa| Undo Level                                       |
| 05 00 02#| 0bbbbbbb|                    aabbbbbbbbcccccccc = 1,,,999   |
| 05 00 03#| 0bbbbbbb|                                                  |
+-----------------------------------------------------------------------+
```

The VSR-880 cancels the last command such as the Edit.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Command 16   Redo

```
+-----------------------------------------------------------------------+
| Start                                                                 |
|   address |  Data  |               Contents and remarks               |
|===========+========+==================================================|
| 05 00 00  |  16    | Redo                                             |
+-----------------------------------------------------------------------+
```

The VSR-880 cancels the last Undo command.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Command 17   Create Event

```
+-----------------------------------------------------------------------+
| Start                                                                 |
|   address |  Data  |               Contents and remarks               |
|===========+========+==================================================|
| 05 00 00  |  17    | Create Event                                     |
+-----------+--------+--------------------------------------------------+
| 05 00 01#| 00 - 7F | Target V.Tr.                       1-A:1...8-B:8  |
+-----------+--------+--------------------------------------------------+
| 05 00 02#| 000000aa| Original Take Event Number                       |
| 05 00 03#| 0bbbbbbb|                    aabbbbbbbbcccccccc             |
| 05 00 04#| 0bbbbbbb|                                                  |
+-----------+--------+--------------------------------------------------+
| 00 00 05#| 0aaaaaaa| Start Time                                       |
| 00 00 06#| 0bbbbbbb|   aaaaaaabbbbbbbccccccccddddddd                  |
| 00 00 07#| 0ccccccc|                                                  |
| 00 00 08#| 0ddddddd|                                                  |
+-----------+--------+--------------------------------------------------+
| 00 00 09#| 0aaaaaaa| End Time                                         |
| 00 00 0A#| 0bbbbbbb|   aaaaaaabbbbbbbccccccccddddddd                  |
| 00 00 0B#| 0ccccccc|                                                  |
| 00 00 0C#| 0ddddddd|                                                  |
+-----------+--------+--------------------------------------------------+
| 00 00 0D#| 0aaaaaaa| Offset Time                                      |
| 00 00 0E#| 0bbbbbbb|   aaaaaaabbbbbbbccccccccddddddd                  |
| 00 00 0F#| 0ccccccc|                                                  |
| 00 00 10#| 0ddddddd|                                                  |
+-----------------------------------------------------------------------+
```

The VSR-880 create the track Event with the specified original take event.
The time(Start, Stop, Offset) of the create Event are set the specified value.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Command 18   Song Select

```
+-----------------------------------------------------------------------+
| Start                                                                 |
|   address |  Data  |               Contents and remarks               |
|===========+========+==================================================|
| 05 00 00  |  18    | Song Select                                      |
+-----------+--------+--------------------------------------------------+
| 05 00 01#| 00 - 01 | Store Current Song                       No,Yes  |
+-----------+--------+--------------------------------------------------+
| 05 00 02#| 0000000a| Song Number                  abbbbbbb =0,,,199   |
| 05 00 03#| 0bbbbbbb|                                                  |
+-----------------------------------------------------------------------+
```

Select the VSR-880 song.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Command 19   Song Store

```
+-----------------------------------------------------------------------+
| Start                                                                 |
|   address |  Data  |               Contents and remarks               |
|===========+========+==================================================|
| 05 00 00  |  19    | Song Store                                       |
+-----------------------------------------------------------------------+
```

Store the current VSR-880 song.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Command 1A   Drive Select

```
+-----------------------------------------------------------------------+
| Start                                                                 |
|   address |  Data  |               Contents and remarks               |
|===========+========+==================================================|
| 05 00 00  |  1A    | Drive Select                                     |
+-----------+--------+--------------------------------------------------+
| 05 00 01#| 00 - 01 | Store Current Song                       No,Yes  |
+-----------+--------+--------------------------------------------------+
| 05 00 02#| 00 - 3F | Select Drive                                     |
+-----------------------------------------------------------------------+
```

Change the current VSR-880 drive.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Command 1B   Request Drive List

```
+-----------------------------------------------------------------------+
| Start                                                                 |
|   address |  Data  |               Contents and remarks               |
|===========+========+==================================================|
| 05 00 00  |  1B    | Request Drive List                               |
+-----------------------------------------------------------------------+
```

The VSR-880 returns the Drive List (the response 49).
If any errors occurred, it returns the response 41.

Command 1C   Shut Down

```
+-----------------------------------------------------------------------+
| Start                                                                 |
|   address |  Data  |               Contents and remarks               |
|===========+========+==================================================|
| 05 00 00  |  1C    | Shut Down                                        |
+-----------+--------+--------------------------------------------------+
| 05 00 01#| 00 - 01 | Store Current Song                       No,Yes  |
+-----------------------------------------------------------------------+
```

The VSR-880 executes shut down.

Response 40   Complete (No Error)

```
+-----------------------------------------------------------------------+
| Start                                                                 |
|   address |  Data  |               Contents and remarks               |
|===========+========+==================================================|
| 05 00 00  |  40    | Complete (No Error)                              |
+-----------------------------------------------------------------------+
```

It shows the command was complete.

Response 41   Error

```
+-----------------------------------------------------------------------+
| Start                                                                 |
|   address |  Data  |     .         Contents and remarks               |
|===========+========+==================================================|
| 05 00 00  |  41    | Error                                            |
+-----------+--------+--------------------------------------------------+
| 05 00 01#| 00 - 7F | Error Code   (00=No Error(complete, end of data))|
|           |         |               01=Busy                           |
|           |         |               02=Command Aborted                |
|           |         |               03=Illegal Command                |
|           |         |               04=Command Error                  |
+-----------------------------------------------------------------------+
```

It shows the command was not complete by any error.

Response 42   Amplitude Profile

```
+----------+----------+------------------------------------------------+
| Start    |          |                                                |
| address  | Data     |             Contents and remarks               |
+==========+==========+================================================+
| 05 00 00 | 42       | Amplitude Profile                              |
+----------+----------+------------------------------------------------+
| 05 00 01#| 00 - 7F  | V. Track                          1-A:1,,,8-B:8 |
+----------+----------+------------------------------------------------+
| 05 00 02#| 0aaaaaaa | Packet Number                                  |
| 05 00 03#| 0bbbbbbb |               aaaaaaabbbbbbb = 0 - 16383       |
+----------+----------+------------------------------------------------+
| 05 00 04#| 00 - 7F  | Packet Data Buffer                             |
|  :    :  |          |                                                |
| 05 nn mm#|          |          (nn mm = Packet Byte Length - 1)      |
+----------+----------+------------------------------------------------+
```

```
+------------------------------------------------------------------+
| Data Sequence                                                    |
+----------+----------+------------------------------------------------+
| 00 00 00 | 00 - 7F  | Amplitude Data                                 |
|          |          |     0=-127dB, 1=-126dB....,126=-1dB,127=0dB     |
+----------+----------+------------------------------------------------+
```

The VSR-880 frequently writes the Amplitude Profile data to the Data Buffer until specified length.

Last packet size may be shorter than specified one.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Response 43   Wave Data

```
+----------+----------+------------------------------------------------+
| Start    |          |                                                |
| address  | Data     |             Contents and remarks               |
+==========+==========+================================================+
| 05 00 00 | 43       | Wave Data                                      |
+----------+----------+------------------------------------------------+
| 05 00 01#| 00 - 7F  | V. Track                          1-A:1,,,8-B:8 |
+----------+----------+------------------------------------------------+
| 05 00 02#| 0aaaaaaa | Packet Number                                  |
| 05 00 03#| 0bbbbbbb |               aaaaaaabbbbbbb = 0 - 16383       |
+----------+----------+------------------------------------------------+
| 05 00 04#| 00 - 7F  | Packet Data Buffer                             |
|  :    :  |          |                                                |
| 05 nn mm#|          |          (nn mm = Packet Byte Length - 1)      |
+----------+----------+------------------------------------------------+
```

```
+------------------------------------------------------------------+
| Data Sequence                                                    |
+----------+----------+------------------------------------------------+
| 00 00 00 | 000000aa | Wave Data                                      |
| 00 00 01 | 0bbbbbbb |    aabbbbbbbccccccc = 16bit 2's Complement data |
| 00 00 02 | 0ccccccc |                                                |
+----------+----------+------------------------------------------------+
```

The VSR-880 frequently writes the Wave Data to the Data Buffer until specified length.

Last packet size may be shorter than specified one.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Response 44   Full Event List

```
+----------+----------+------------------------------------------------+
| Start    |          |                                                |
| address  | Data     |             Contents and remarks               |
+==========+==========+================================================+
| 05 00 00 | 44       | Full Event List                                |
+----------+----------+------------------------------------------------+
| 05 00 01#| 0aaaaaaa | V. Track                                       |
| 05 00 02#| 0bbbbbbb |   aaaaaaabbbbbbb = 1-A:1,,,8-B:8,Take           |
+----------+----------+------------------------------------------------+
| 05 00 03#| 0aaaaaaa | Packet Number                                  |
| 05 00 04#| 0bbbbbbb |               aaaaaaabbbbbbb = 0 - 16383       |
+----------+----------+------------------------------------------------+
| 05 00 05#| 00 - 7F  | Packet Data Buffer                             |
|  :    :  |          |                                                |
| 05 nn mm#|          |          (nn mm = Packet Byte Length - 1)      |
+----------+----------+------------------------------------------------+
```

```
+------------------------------------------------------------------+
| Data Sequence                                                    |
+----------+----------+------------------------------------------------+
| 00 00 00 | 000000aa | Event Number                                   |
| 00 00 01 | 0bbbbbbb |            aabbbbbbbccccccc = 0 - 16383         |
| 00 00 02 | 0ccccccc |                                                |
+----------+----------+------------------------------------------------+
| 00 00 03 | 0aaaaaaa | Start Time                                     |
| 00 00 04 | 0bbbbbbb |    aaaaaaabbbbbbbcccccccddddddd                 |
| 00 00 05 | 0ccccccc |                                                |
| 00 00 06 | 0ddddddd |                                                |
+----------+----------+------------------------------------------------+
| 00 00 07 | 0aaaaaaa | End Time                                       |
| 00 00 08 | 0bbbbbbb |    aaaaaaabbbbbbbcccccccddddddd                 |
| 00 00 09 | 0ccccccc |                                                |
```

```
+----------+----------+------------------------------------------------+
| 00 00 0A | 0ddddddd |                                                |
+----------+----------+------------------------------------------------+
| 00 00 0B | 0aaaaaaa | Offset Time                                    |
| 00 00 0C | 0bbbbbbb |    aaaaaaabbbbbbbcccccccddddddd                 |
| 00 00 0D | 0ccccccc |                                                |
| 00 00 0E | 0ddddddd |                                                |
+----------+----------+------------------------------------------------+
| 00 00 0F | 0000aaaa | Start Offset in Start Cluster                  |
| 00 00 10 | 0bbbbbbb |    aaaabbbbbbb                                  |
+----------+----------+------------------------------------------------+
| 00 00 11 | 0000aaaa | End Offset in End Cluster                      |
| 00 00 12 | 0bbbbbbb |                                                |
+----------+----------+------------------------------------------------+
| 00 00 13 | 000000aa | Previous Event                                 |
| 00 00 14 | 0bbbbbbb |    aabbbbbbbccccccc                             |
| 00 00 15 | 0ccccccc |                                                |
+----------+----------+------------------------------------------------+
| 00 00 16 | 000000aa | Next Event                                     |
| 00 00 17 | 0bbbbbbb |    aabbbbbbbccccccc                             |
| 00 00 18 | 0ccccccc |                                                |
+----------+----------+------------------------------------------------+
| 00 00 19 | 000000aa | Top Cluster                                    |
| 00 00 1A | 0bbbbbbb |    aabbbbbbbccccccc                             |
| 00 00 1B | 0ccccccc |                                                |
+----------+----------+------------------------------------------------+
| 00 00 1C | 000000aa | Bottom Cluster                                 |
| 00 00 1D | 0bbbbbbb |    aabbbbbbbccccccc                             |
| 00 00 1E | 0ccccccc |                                                |
+----------+----------+------------------------------------------------+
| 00 00 1F | 000000aa | Cluster Number                                 |
| 00 00 20 | 0bbbbbbb |    aabbbbbbbccccccc                             |
| 00 00 21 | 0ccccccc |                                                |
+----------+----------+------------------------------------------------+
| 00 00 22 | 000000aa | Start Cluster                                  |
| 00 00 23 | 0bbbbbbb |    aabbbbbbbccccccc                             |
| 00 00 24 | 0ccccccc |                                                |
+----------+----------+------------------------------------------------+
| 00 00 25 | 000000aa | End Cluster                                    |
| 00 00 26 | 0bbbbbbb |    aabbbbbbbccccccc                             |
| 00 00 27 | 0ccccccc |                                                |
+----------+----------+------------------------------------------------+
| 00 00 28 | 000000aa | Archive Flag                                   |
| 00 00 29 | 0bbbbbbb |    aabbbbbbbccccccc                             |
| 00 00 2A | 0ccccccc |                                                |
+----------+----------+------------------------------------------------+
| 05 00 2B | 00 - 7F  | Target V.Tr.                      1-A:1,,,8-B:8 |
+----------+----------+------------------------------------------------+
| 00 00 2C | 00 - 01  | Sub Take                              ORG, SUB  |
+----------+----------+------------------------------------------------+
| 00 00 2D | 20 - 7e  | Name - 1                                 ASCII  |
| 00 00 2E | 20 - 7e  | Name - 2                                        |
|  :       |   :      |                                                 |
| 00 00 38 | 20 - 7e  | Name - 12                                       |
+----------+----------+------------------------------------------------+
```

The VSR-880 frequently writes the all parameters of Full Event which specified track to the Data Buffer by continuous.

Last packet size may be shorter than specified one.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Response 45   Simple Event List

```
+----------+----------+------------------------------------------------+
| Start    |          |                                                |
| address  | Data     |             Contents and remarks               |
+==========+==========+================================================+
| 05 00 00 | 45       | Simple Event List                              |
+----------+----------+------------------------------------------------+
| 05 00 01#| 0aaaaaaa | V. Track                                       |
| 05 00 02#| 0bbbbbbb |         aaaaaaabbbbbbb = 1-A:1,,,8-B:8,Take     |
+----------+----------+------------------------------------------------+
| 05 00 03#| 0aaaaaaa | Packet Number                                  |
| 05 00 04#| 0bbbbbbb |               aaaaaaabbbbbbb = 0 - 16383       |
+----------+----------+------------------------------------------------+
| 05 00 05#| 00 - 7F  | Packet Data Buffer                             |
|  :    :  |          |                                                |
| 05 nn mm#|          |          (nn mm = Packet Byte Length - 1)      |
+----------+----------+------------------------------------------------+
```

```
+------------------------------------------------------------------+
| Data Sequence                                                    |
+----------+----------+------------------------------------------------+
| 00 00 00 | 000000aa | Event Number                                   |
| 00 00 01 | 0bbbbbbb |            aabbbbbbbccccccc = 0 - 16383         |
| 00 00 02 | 0ccccccc |                                                |
+----------+----------+------------------------------------------------+
| 00 00 03 | 0aaaaaaa | Start Time                                     |
| 00 00 04 | 0bbbbbbb |    aaaaaaabbbbbbbcccccccddddddd                 |
| 00 00 05 | 0ccccccc |                                                |
| 00 00 06 | 0ddddddd |                                                |
+----------+----------+------------------------------------------------+
| 00 00 07 | 0aaaaaaa | End Time                                       |
| 00 00 08 | 0bbbbbbb |    aaaaaaabbbbbbbcccccccddddddd                 |
| 00 00 09 | 0ccccccc |                                                |
| 00 00 0A | 0ddddddd |                                                |
+----------+----------+------------------------------------------------+
| 00 00 0B | 000000aa | Top Cluster                                    |
| 00 00 0C | 0bbbbbbb |    aabbbbbbbccccccc                             |
| 00 00 0D | 0ccccccc |                                                |
+----------+----------+------------------------------------------------+
| 05 00 0E | 00 - 7F  | Target V.Tr.                      1-A:1,,,8-B:8 |
+----------+----------+------------------------------------------------+
| 00 00 0F | 00 - 01  | Sub Take                              ORG, SUB  |
+----------+----------+------------------------------------------------+
| 00 00 10 | 20 - 7e  | Name - 1                                 ASCII  |
| 00 00 11 | 20 - 7e  | Name - 2                                        |
|  :       |   :      |                                                 |
+----------+----------+------------------------------------------------+
```

| 00 00 1b | 20 - 7e | Name - 12 |

The VSR-880 frequently writes the principal parameters of Event which specified track to the Data Buffer by continuous.

Last packet size may be shorter than specified one.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Response 46   Number of Event List

Start address	Data	Contents and remarks
=========	=======	==
05 00 00	46	Number of Event List
05 00 01# 05 00 02#	0aaaaaaa 0bbbbbbb	V. Track aaaaaaabbbbbbb = 1-A:1,.,8-B:8,Take
05 00 03# 05 00 04#	0aaaaaaa 0bbbbbbb	Packet Number aaaaaaabbbbbbb = 0 - 16383
05 00 05#	00 - 7F	Packet Data Buffer
: :	:	
05 nn mm#		(nn mm = Packet Byte Length - 1)

Data Sequence		
00 00 00 00 00 01 00 00 02	000000aa 0bbbbbbb 0cccccccc	Event Number aabbbbbbbccccccc = 0 - 16383

The VSR-880 frequently writes the all Event Number which specified track to the Data Buffer by continuous.

Last packet size may be shorter than specified one.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Response 47   Full Event Parameter

Start address	Data	Contents and remarks
=========	=======	==
05 00 00	47	Full Event Parameter
05 00 01# 05 00 02#	0aaaaaaa 0bbbbbbb	V. Track aaaaaaabbbbbbb = 1-A:1,.,8-B:8,Take
05 00 03# 05 00 04#	0aaaaaaa 0bbbbbbb	Packet Number aaaaaaabbbbbbb = 0 - 16383
05 00 05#	00 - 7F	Packet Data Buffer
: :	:	
05 nn mm#		(nn mm = Packet Byte Length - 1)

The VSR-880 frequently writes the Event Parameter which specified track to the Data Buffer by continuous (same as response 44 Full Event List).

Last packet size may be shorter than specified one.
If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Response 48   Simple Event Parameter

Start address	Data	Contents and remarks
=========	=======	==
05 00 00	48	Simple Event Parameter
05 00 01# 05 00 02#	0aaaaaaa 0bbbbbbb	V. Track aaaaaaabbbbbbb = 1-A:1,.,8-B:8,Take
05 00 03# 05 00 04#	0aaaaaaa 0bbbbbbb	Packet Number aaaaaaabbbbbbb = 0 - 16383
05 00 05#	00 - 7F	Packet Data Buffer
: :	:	
05 nn mm#		(nn mm = Packet Byte Length - 1)

The VSR-880 frequently writes the principal parameters of Event which specified track to the Data Buffer by continuous (same as response 45 Simple Event List).

Last packet size may be shorter than specified one.

If the command succeeded, it returns the response 40. And if any errors occurred, it returns the response 41.

Response 49   Drive List

Start address	Data	Contents and remarks
=========	=======	==
05 00 00	49	Drive List
05 00 01#	00 - 01	IDE Partition1
: :	:	
05 00 0a#	00 - 01	IDE Partition10
05 00 0b#	00 - 01	SCSI ID:0 Partition1
: :	:	
05 00 14#	00 - 01	SCSI ID:0 Partition10
05 00 15#	00 - 01	SCSI ID:1 Partition1
: :	:	
05 00 1e#	00 - 01	SCSI ID:1 Partition10
05 00 1f#	00 - 01	SCSI ID:2 Partition1
: :	:	
05 00 28#	00 - 01	SCSI ID:2 Partition10
05 00 29#	00 - 01	SCSI ID:3 Partition1
: :	:	
05 00 32#	00 - 01	SCSI ID:3 Partition10
05 00 33#	00 - 01	SCSI ID:4 Partition1
: :	:	
05 00 3c#	00 - 01	SCSI ID:4 Partition10
05 00 3d#	00 - 01	SCSI ID:5 Partition1
: :	:	
05 00 46#	00 - 01	SCSI ID:5 Partition10
05 00 47#	00 - 01	SCSI ID:6 Partition1
: :	:	
05 00 50#	00 - 01	SCSI ID:6 Partition10
05 00 51#	00 - 01	SCSI ID:7 Partition1
: :	:	
05 00 5a#	00 - 01	SCSI ID:7 Partition10

It shows the drive lists.

●Sync Track Data

Start address	Data	Contents and remarks
=========	=======	==
08 00 00 08 00 01 08 00 02 08 00 03	0000aaaa 0000bbbb 0000cccc 0000dddd	Sync Track Data 1 aaaabbbbccccdddd
08 00 04 08 00 05 08 00 06 08 00 07	0000aaaa 0000bbbb 0000cccc 0000dddd	Sync Track Data 2 aaaabbbbccccdddd
08 00 08	0000aaaa	Sync Track Data 3
: :	:	
0F 7f 7B	0000dddd	Sync Track Data 32767
0F 7F 7C 0F 7F 7D 0F 7F 7E 0F 7F 7F	0000aaaa 0000bbbb 0000cccc 0000dddd	Sync Track Data 32768 aaaabbbbccccdddd

●Disk Access

Start address	Data	Contents and remarks
=========	=======	==
10 00 00 10 00 01	0000aaaa 0000bbbb	Data Buffer Byte-1 aaaabbbb = Data Byte-1
10 00 02 10 00 03	0000aaaa 0000bbbb	Data Buffer Byte-2 aaaabbbb = Data Byte-2
: :	:	
11 7F 7C 11 7F 7D	0000aaaa 0000bbbb	Data Buffer Byte-16382 aaaabbbb = Data Byte-16382
11 7F 7E 11 7F 7F	0000aaaa 0000bbbb	Data Buffer Byte-16383 aaaabbbb = Data Byte-16383
12 00 00 12 00 01	0aaaaaaa 0bbbbbbb	Data Size aaaaaaabbbbbbb = Data Size 1 - 16384(= 0) byte
12 00 02	00 - 7F	Command / Result or Status

You can access the disk file using the parameter. There are 16K Bytes Data Buffer area, the Data Size of the effective bytes in the Buffer and the Command / Result or Status area.
Use the DT1 for writing the Buffer, the Data Size and the Command. Use the RQ1 for reading the Buffer which is stored the Result of the Command, the Data Size and the Result.

Command List for Disk Access

Command	Remarks
00	Reset
01	Read Open
02	Write Open
03	Read
04	Write
05	Read Close
06	Write Close
07	Check File
08	Delete File

Response (result of the Command) List for Disk Access

Response	Remarks
00	Complete (No Error)
01	Busy
02	Error : No disk
03	Error : File Not Exist
04	Error : Can Not Delete File
05	Error : Can Not Create File
06	Error : End of File
07	Error : Read Error
08	Error : Write Error
09	Error : Can Not Close File

Description of Commands (the following section)

00 Reset

```
+-----------+----------+--------------------------------------------------+
| Start     |          |                                                  |
| address   | Data     |               Contents and remarks               |
|===========+==========+==================================================|
| 12 00 02  | 00       | Reset Command                                    |
+-----------+----------+--------------------------------------------------+
```

It resets the Disk Access, closes all files and clears the Buffer.
You should execute the command before any file access.

01 Read Open

```
+-----------+----------+--------------------------------------------------+
| Start     |          |                                                  |
| address   | Data     |               Contents and remarks               |
|===========+==========+==================================================|
| 10 00 00  | 20 - 7E  | File Name - 1                          (ASCII)    |
| 10 00 01  | 20 - 7E  | File Name - 2                          (ASCII)    |
| 10 00 02  | 20 - 7E  | File Name - 3                          (ASCII)    |
| 10 00 03  | 20 - 7E  | File Name - 4                          (ASCII)    |
| 10 00 04  | 20 - 7E  | File Name - 5                          (ASCII)    |
| 10 00 05  | 20 - 7E  | File Name - 6                          (ASCII)    |
| 10 00 06  | 20 - 7E  | File Name - 7                          (ASCII)    |
| 10 00 07  | 20 - 7E  | File Name - 8                          (ASCII)    |
| 10 00 08  | 20 - 7E  | File Extension - 1                     (ASCII)    |
| 10 00 09  | 20 - 7E  | File Extension - 2                     (ASCII)    |
| 10 00 0A  | 20 - 7E  | File Extension - 3                     (ASCII)    |
+-----------+----------+--------------------------------------------------+
|   :       |    :     |                                                  |
+-----------+----------+--------------------------------------------------+
| 12 00 02  | 01       | Read Open Command                                |
+-----------+----------+--------------------------------------------------+
```

It opens the specified file for reading, sets the reading pointer to the top of file and sets the result to the Result(same as Read Open Command) Area.
You can open only one file at the same time. (cannot open the Reading File and the Writing File simultaneously) The File Name is based on MS-DOS format.

02 Write Open

```
+-----------+----------+--------------------------------------------------+
| Start     |          |                                                  |
| address   | Data     |               Contents and remarks               |
|===========+==========+==================================================|
| 10 00 00  | 20 - 7E  | File Name - 1                          (ASCII)    |
```

It opens the specified file for writing, sets the writing pointer to the top of file and sets the result to the Result(same as Write Open Command) Area.
If the same name's file already existed, it is deleted.
You can open only one file at the same time. (cannot open the Reading File and the Writing File simultaneously) The File Name is based on MS-DOS format.

03 Read

```
+-----------+----------+--------------------------------------------------+
| Start     |          |                                                  |
| address   | Data     |               Contents and remarks               |
|===========+==========+==================================================|
| 12 00 00  | 0aaaaaaa | Data Size                                        |
| 12 00 01  | 0bbbbbbb |       aaaaaaabbbbbbb = Data Size 1 - 16384 byte  |
+-----------+----------+--------------------------------------------------+
| 12 00 02  | 03       | Read Command                                     |
+-----------+----------+--------------------------------------------------+
```

It reads the Data which has specified size of Bytes to the Buffer area from current read pointer of the File, after that puts forward the pointer and sets the result to the Result(same as Read Command) Area.
If the remainder of the file data was less than specified size of Bytes, it reads all data to the buffer and writes the actual size to the Data Size area. If you read the data from over the end of file, the error occurs.

04 Write

```
+-----------+----------+--------------------------------------------------+
| Start     |          |                                                  |
| address   | Data     |               Contents and remarks               |
|===========+==========+==================================================|
| 12 00 00  | 0aaaaaaa | Data Size                                        |
| 12 00 01  | 0bbbbbbb |       aaaaaaabbbbbbb = Data Size 1 - 16384 byte  |
+-----------+----------+--------------------------------------------------+
| 12 00 02  | 04       | Write Command                                    |
+-----------+----------+--------------------------------------------------+
```

It writes the Data which has specified size of Bytes to current write pointer area from the Buffer area, after that puts forward the pointer and sets the result to the Result(same as Write Command) Area.

05 Read Close

```
+-----------+----------+--------------------------------------------------+
| Start     |          |                                                  |
| address   | Data     |               Contents and remarks               |
|===========+==========+==================================================|
| 12 00 02  | 05       | Read Close Command                               |
+-----------+----------+--------------------------------------------------+
```

It closes the File which is opened for reading, and sets the result to the Result(same as Read Close Command) area.

06 Write Close

```
+-----------+----------+--------------------------------------------------+
| Start     |          |                                                  |
| address   | Data     |               Contents and remarks               |
|===========+==========+==================================================|
| 12 00 02  | 06       | Write Close Command                              |
+-----------+----------+--------------------------------------------------+
```

It closes the File which is opened for writing, and sets the result to the Result(same as Write Close Command) Area.

07 Check File

```
+-----------+----------+--------------------------------------------------+
| Start     |          |                                                  |
| address   | Data     |               Contents and remarks               |
|===========+==========+==================================================|
| 10 00 00  | 20 - 7E  | File Name - 1                          (ASCII)    |
```

```
| 10 00 01 | 20 - 7E | File Name - 2          (ASCII) |
| 10 00 02 | 20 - 7E | File Name - 3          (ASCII) |
| 10 00 03 | 20 - 7E | File Name - 4          (ASCII) |
| 10 00 04 | 20 - 7E | File Name - 5          (ASCII) |
| 10 00 05 | 20 - 7E | File Name - 6          (ASCII) |
| 10 00 06 | 20 - 7E | File Name - 7          (ASCII) |
| 10 00 07 | 20 - 7E | File Name - 8          (ASCII) |
| 10 00 08 | 20 - 7E | File Extension - 1     (ASCII) |
| 10 00 09 | 20 - 7E | File Extension - 2     (ASCII) |
| 10 00 0A | 20 - 7E | File Extension - 3     (ASCII) |
|    :     |    :    |                               |
| 12 00 02 | 07      | Check File Command            |
```

It sets the File information which has specified name to the Buffer area.

```
| Start    |         |                                       |
| address  | Data    |        Contents and remarks           |
|==========+=========+=======================================|
| 10 00 00 | 20 - 7E | File Name - 1          (ASCII)         |
| 10 00 01 | 20 - 7E | File Name - 2          (ASCII)         |
| 10 00 02 | 20 - 7E | File Name - 3          (ASCII)         |
| 10 00 03 | 20 - 7E | File Name - 4          (ASCII)         |
| 10 00 04 | 20 - 7E | File Name - 5          (ASCII)         |
| 10 00 05 | 20 - 7E | File Name - 6          (ASCII)         |
| 10 00 06 | 20 - 7E | File Name - 7          (ASCII)         |
| 10 00 07 | 20 - 7E | File Name - 8          (ASCII)         |
| 10 00 08 | 20 - 7E | File Extension - 1     (ASCII)         |
| 10 00 09 | 20 - 7E | File Extension - 2     (ASCII)         |
| 10 00 0A | 20 - 7E | File Extension - 3     (ASCII)         |
|          |         |                                       |
| 10 00 0B | 0000aaaa| File Size                             |
| 10 00 0C | 0bbbbbbb|      aaaabbbbbbbccccccccddddddddeeeeeee |
| 10 00 0D | 0ccccccc|                                       |
| 10 00 0E | 0ddddddd|                         0 - 4.2Gbyte  |
| 10 00 0F | 0eeeeeee|                                       |
```

It sets the error code if no file existed, and sets the result to the Result (same as Check File
Command) Area.

08 Delete File

```
| Start    |         |                                       |
| address  | Data    |        Contents and remarks           |
|==========+=========+=======================================|
| 10 00 00 | 20 - 7E | File Name - 1          (ASCII)         |
| 10 00 01 | 20 - 7E | File Name - 2          (ASCII)         |
| 10 00 02 | 20 - 7E | File Name - 3          (ASCII)         |
| 10 00 03 | 20 - 7E | File Name - 4          (ASCII)         |
| 10 00 04 | 20 - 7E | File Name - 5          (ASCII)         |
| 10 00 05 | 20 - 7E | File Name - 6          (ASCII)         |
| 10 00 06 | 20 - 7E | File Name - 7          (ASCII)         |
| 10 00 07 | 20 - 7E | File Name - 8          (ASCII)         |
| 10 00 08 | 20 - 7E | File Extension - 1     (ASCII)         |
| 10 00 09 | 20 - 7E | File Extension - 2     (ASCII)         |
| 10 00 0A | 20 - 7E | File Extension - 3     (ASCII)         |
|    :     |    :    |                                       |
| 12 00 02 | 08      | Delete File Command                   |
```

It deletes the File which has specified name, and sets the result to the Result (Delete File
Command) Area.

Description of Result Area (the following section)

00 Complete (No error) / Ready

```
| Start    |         |                                       |
| address  | Data    |        Contents and remarks           |
|==========+=========+=======================================|
| 12 00 02 | 00      | Complete                              |
```

It is complete the last command, and ready to the next command.

01 Busy

```
| Start    |         |                                       |
| address  | Data    |        Contents and remarks           |
|==========+=========+=======================================|
| 12 00 02 | 01      | Busy                                  |
```

It is busy and does not accept the any command. (on Recording or Playing)

02 Error : No disk

```
| Start    |         |                                       |
| address  | Data    |        Contents and remarks           |
|==========+=========+=======================================|
| 12 00 02 | 02      | Error : No disk                       |
```

The valid Disk Drive is not connected.

03 Error : File not exist

```
| Start    |         |                                       |
| address  | Data    |        Contents and remarks           |
|==========+=========+=======================================|
| 12 00 02 | 03      | Error : File not exist                |
```

The File does not exist.

04 Error : Can not delete file

```
| Start    |         |                                       |
| address  | Data    |        Contents and remarks           |
|==========+=========+=======================================|
| 12 00 02 | 04      | Error : Can not delete file           |
```

It can not delete the file.

05 Error : Can not create file

```
| Start    |         |                                       |
| address  | Data    |        Contents and remarks           |
|==========+=========+=======================================|
| 12 00 02 | 05      | Error : Can not create file           |
```

It can not create the new file.

06 Error : End of file

```
| Start    |         |                                       |
| address  | Data    |        Contents and remarks           |
|==========+=========+=======================================|
| 12 00 02 | 06      | Error : End of file                   |
```

It reads the data from over the end of file.

07 Error : Read error

```
| Start    |         |                                       |
| address  | Data    |        Contents and remarks           |
|==========+=========+=======================================|
| 12 00 02 | 07      | Error : Read error                    |
```

The error occurs on the reading file.

08 Error : Write error

```
| Start    |         |                                       |
| address  | Data    |        Contents and remarks           |
|==========+=========+=======================================|
| 12 00 02 | 08      | Error : Write error                   |
```

The error occurs on the writing file. It may not be disk space for writing.

09 Error : Can not close file

```
| Start    |         |                                       |
| address  | Data    |        Contents and remarks           |
|==========+=========+=======================================|
| 12 00 02 | 09      | Error : Can not close file            |
```

The error occurs on the closing file. It may not be disk space.

3. MIDI Machine Control

■MIDI Machine Control Command Reference

●STOP (MCS)

Status	Data Bytes	Status
F0H	7FH,Dev,06H,01H	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
01H	STOP (MCS)
F7H	EOX (End of Exclusive Message)

If the device ID on the message was as same as that of the receiving device or 7FH, the VSR-880 stops immediately.
If the transport switch [STOP] was pressed, the VSR-880 transmits as the device ID 7FH.

●PLAY (MCS)

Status	Data Bytes	Status
F0H	7FH,Dev,06H,02H	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
02H	PLAY (MCS)
F7H	EOX (End of Exclusive Message)

If the device ID on the message was as same as that of the receiving device or 7FH, the VSR-880 goes into the playback condition.
The VSR-880 does not transmit the message.

●DEFERRED PLAY (MCS)

Status	Data Bytes	Status
F0H	7FH,Dev,06H,03H	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
03H	DEFERRED PLAY (MCS)
F7H	EOX (End of Exclusive Message)

If the device ID on the message was as same as that of the receiving device or 7FH, the VSR-880 goes into the playback condition after the locate operation.
If the transport switch [PLAY] was pressed, the VSR-880 transmits as the device ID 7FH.

●FAST FORWARD (MCS)

Status	Data Bytes	Status
F0H	7FH,Dev,06H,04H	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
04H	FAST FORWARD (MCS)
F7H	EOX (End of Exclusive Message)

If the device ID on the message was as same as that of the receiving device or 7FH, the VSR-880 goes into the Fast Forward condition.
The VSR-880 does not transmit the message.

●REWIND (MCS)

Status	Data Bytes	Status
F0H	7FH,Dev,06H,05H	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
05H	REWIND (MCS)
F7H	EOX (End of Exclusive Message)

If the device ID on the message was as same as that of the receiving device or 7FH, the VSR-880 goes into the rewind condition.
The VSR-880 does not transmit the message.

●RECORD STROBE

Status	Data Bytes	Status
F0H	7FH,Dev,06H,06H	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
06H	RECORD STROBE
F7H	EOX (End of Exclusive Message)

If the device ID on the message was as same as that of the receiving device or 7FH, the VSR-880 goes into the following condition.

1. The VSR-880 is in the playback condition. Start Recording the tracks that status are the record standby mode.

2. The VSR-880 is in the stop condition. Start Playing back, and Start Recording the track that status are the record standby mode.

If the transport switch [REC] was pressed out of the recording condition, the VSR-880 transmits as the device ID 7FH.

●RECORD EXIT

Status	Data Bytes	Status
F0H	7FH,Dev,06H,07H	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
07H	RECORD EXIT
F7H	EOX (End of Exclusive Message)

If the device ID on the message was as same as that of the receiving device or 7FH, the VSR-880 exits from the record condition.
If the transport switch [REC] was pressed while recording, the VSR-880 transmits as the device ID 7FH.

●MMC RESET

Status	Data Bytes	Status
F0H	7FH,Dev,06H,0DH	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
0DH	MMC RESET
F7H	EOX (End of Exclusive Message)

If the device ID on the message was as same as that of the receiving device or 7FH, the VSR-

880 resets all communication channels related with MMC.
When powered on the VSR-880 transmits as the device ID 7FH.

●WRITE

Status	Data Bytes	Status
F0H	7FH,Dev,06H,40H,ccH,ddH,eeH,,,ffH,,,	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
40H	WRITE
ccH	Information Bytes follows the command
ddH	The name of the writable Information Field
eeH	Information Field Format
:	:
ffH	Field names and data
:	:
F7H	EOX (End of Exclusive Message)

If the device ID on the message was as same as that of the receiving device or 7FH, the VSR-880 writes the data to the specified information field.
The VSR-880 does not transmit the message.

●MASKED WRITE

Status	Data Bytes	Status
F0H	7FH,Dev,06H,41H,04H, ddH,eeH,ffH,ggH	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
41H	MASKED WRITE
04H	Number of Bytes follows the command
ddH	The name of the masked type writable Information Field
eeH	Byte number to write in the Bit Map
ffH	Bit location of the bit map byte to change
ggH	New data to write to the specified bit map byte
F7H	EOX (End of Exclusive Message)

If the device ID on the message was as same as that of the receiving device or 7FH, the VSR-880 writes the data to the specified bit map byte.
The VSR-880 does not transmit the message.

●LOCATE (MCP)

○Format 1 - LOCATE [I/F]

Status	Data Bytes	Status
F0H	7FH,Dev,06H,44H,02H,00H,nnH	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
44H	LOCATE(MCP)
02H	Number of Bytes
00H	"I/F" sub command
nnH	Information Field (08H, 09H, 0AH, 0BH, 0CH, 0DH, 0EH, 0FH)
F7H	EOX (End of Exclusive Message)

If the device ID on the message was as same as that of the receiving device or 7FH, the VSR-880 locates the selected time location stored to the specified information field.
The VSR-880 does not transmit the message.

○Format 2 - LOCATE [TARGET]

Status	Data Bytes	Status
F0H	7FH,Dev,06H,44H,06H,01H, hrH,mnH,scH,frH,ffH	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
44H	LOCATE(MCP)
06H	Number of Bytes
01H	"TARGET" sub command
hrH, mnH, scH, frH, ffH	Standard Time with Sub Frame
F7H	EOX (End of Exclusive Message)

If the device ID on the message was as same as that of the receiving device or 7FH, the VSR-880 locates the specified time location received from the command.
If the efficient locate switch [LOC?] or Marker switch [TAP]+[REW] or [TAP]+[FF] is pressed, the VSR-880 transmits as the device ID 7FH.

●MOVE

Status	Data Bytes	Status
F0H	7FH,Dev,06H,4CH,02H,ddH,ssH	F7H

Byte	Description
F0H	Status of Exclusive Message
7FH	Universal System Exclusive Message Realtime Header
Dev	Device ID (or 7FH)
06H	MMC Command Message
4CH	MOVE
02H	Number of Bytes
ddH	Name of the Efficient Destination Information Field (08H,09H,0AH,0BH,0CH,0DH,0EH,0FH)
ssH	Name of the Efficient Source Information Field (01H)
F7H	EOX (End of Exclusive Message)

If the device ID on the message was as same as that of the receiving device or 7FH, the VSR-880 transfers the data on the selected source information field to the destination Information Field, if the name of both information fields is efficient.
The VSR-880 does not transmit the message.

●The efficient Information Field

The followings are the efficient Information Field on the VSR-880.

The name of the efficient destination Information Field :

01H	SELECTED TIME CODE
08H	GP0 / LOCATE POINT
09H	GP1
0AH	GP2
0BH	GP3
0CH	GP4
0DH	GP5
0EH	GP6
0FH	GP7
4FH	TRACK RECORD READY

4. Appendices

● Decimal and Hexadecimal table

(Hexadecimal number is shown with H.)
In MIDI documentation, data values and addresses/sizes of system exclusive messages etc.
are expressed as hexadecimal values for each 7 bits.
The following table shows how these correspond to decimal numbers.

dec	hex	dec	hex	dec	hex	dec	hex
0	00H	32	20H	64	40H	96	60H
1	01H	33	21H	65	41H	97	61H
2	02H	34	22H	66	42H	98	62H
3	03H	35	23H	67	43H	99	63H
4	04H	36	24H	68	44H	100	64H
5	05H	37	25H	69	45H	101	65H
6	06H	38	26H	70	46H	102	66H
7	07H	39	27H	71	47H	103	67H
8	08H	40	28H	72	48H	104	68H
9	09H	41	29H	73	49H	105	69H
10	0AH	42	2AH	74	4AH	106	6AH
11	0BH	43	2BH	75	4BH	107	6BH
12	0CH	44	2CH	76	4CH	108	6CH
13	0DH	45	2DH	77	4DH	109	6DH
14	0EH	46	2EH	78	4EH	110	6EH
15	0FH	47	2FH	79	4FH	111	6FH
16	10H	48	30H	80	50H	112	70H
17	11H	49	31H	81	51H	113	71H
18	12H	50	32H	82	52H	114	72H
19	13H	51	33H	83	53H	115	73H
20	14H	52	34H	84	54H	116	74H
21	15H	53	35H	85	55H	117	75H
22	16H	54	36H	86	56H	118	76H
23	17H	55	37H	87	57H	119	77H
24	18H	56	38H	88	58H	120	78H
25	19H	57	39H	89	59H	121	79H
26	1AH	58	3AH	90	5AH	122	7AH
27	1BH	59	3BH	91	5BH	123	7BH
28	1CH	60	3CH	92	5CH	124	7CH
29	1DH	61	3DH	93	5DH	125	7DH
30	1EH	62	3EH	94	5EH	126	7EH
31	1FH	63	3FH	95	5FH	127	7FH

* Decimal values such as MIDI channel, bank select, and program change are listed as one
(1) greater than the values given in the above table.

* A 7-bit byte can express data in the range of 128 steps. For data where greater precision
is required, we must use two or more bytes. For example, two hexadecimal numbers aa
bbH expressing two 7-bit bytes would indicate a value of aa x 128 + bb.

* In the case of values which have a ± sign, 00H = -64, 40H = +/-0, and 7FH = +63, so that
the decimal expression would be 64 less than the value given in the above chart. In the
case of two types, 00 00H = -8192, 40 00H = +/-0, and 7F 7FH = +8191.

* Data marked "nibbled" is expressed in hexadecimal in 4-bit units. A value expressed as a
2-byte nibble 0a 0bH has the value of a x 16 + b.

<Ex.1> What is 5AH in decimal system?
    5AH = 90 according to the above table.

<Ex.2>What in decimal system is 12034H in hexadecimal of every 7 bit?
12H = 18, 34H = 52 according to the above table. So 18 x 128 + 52 = 2356.

<Ex.3> What in decimal system is 0A 03 09 0D in nibble system?
0AH = 10, 03H = 3, 09H = 9, 0DH = 13 according to the table.
So ((10 x 16 + 3) x 16 + 9) x 16 + 13 = 41885.

<Ex. 4> What in nibble system is 1258 in decimal system?

```
16)1258
16)  78 ... 10
16)   4 ... 14
      0 ...  4
```

0 = 00H, 4 = 04H, 14 = 0EH, 10 = 0AH According to the table.
So it is 00 04 0E 0AH.

●Example of system exclusive message and Checksum calculation

On Roland system exclusive message (DT1), checksum is added at the end of transmitted
data (in front of F7) to check the message is received correctly. Value of checksum is defined
by address and data (or size) of the system exclusive message to be transmitted.

How to calculate checksum (Hexadecimal number is shown with H.)

Checksum is a value which lower 7 bit of the sum of address, size and checksum itself turns
to be 0.
If the address of the system exclusive message to be transmitted is aa bb ccH and data or
size is dd ee ffH,

aa + bb + cc + dd + ee + ff = sum
sum / 128 = quotient and odd
When odd is 0, 0 = checksum
When odd is other than 0, 128 - odd = checksum

■MIDI Machine Control (MMC) Command, Information Field / Response Reference

* Commands Recognized

Command	Action
01H STOP	STOP
02H PLAY	PLAY
03H DEFERRED PLAY	PLAY
04H FAST FORWADRD	FF
05H REWIND	REW
06H RECORD STROBE	REC / PUNCH IN
07H RECORD EXIT	PUNCH OUT
0DH MMC RESET	RESET
40H WRITE	Write to Information Fields
41H MASKED WRITE	Set Track Status Information Fields
44H 00H LOCATE I/F	LOCATE (Read Locator)
44H 01H LOCATE TARGET	LOCATE (Designated Time)
4CH MOVE	Move between Information fields

* Commands Transmitted

Command	Action
01H STOP	STOP
03H DEFERRED PLAY	PLAY
06H RECORD STROBE	REC / PUNCH IN
07H RECORD EXIT	PUNCH OUT
0DH MMC RESET	RESET
44H 01H LOCATE TARGET	LOCATE

* Valid Information Fields / Response

Information Field	Interpret	Valid Commands
01H SELECTED TIME CODE	Current Time	MOVE(FROM)
08H GP0 / LOCATE POINT	Locator 1	MOVE(FROM), MOVE(TO), WRITE
09H GP1	Locator 2	MOVE(FROM), MOVE(TO), WRITE
0AH GP2	Locator 3	MOVE(FROM), MOVE(TO), WRITE
0BH GP3	Locator 4	MOVE(FROM), MOVE(TO), WRITE
0CH GP4	Locator 5	MOVE(FROM), MOVE(TO), WRITE
0DH GP5	Locator 6	MOVE(FROM), MOVE(TO), WRITE
0EH GP6	Locator 7	MOVE(FROM), MOVE(TO), WRITE
0FH GP7	Locator 8	MOVE(FROM), MOVE(TO), WRITE
4FH TRACK RECORD READY	Track Status	MASKED WRITE, WRITE

24-bit Digital Studio Recorder　　　　　　　　　　　　　　　　Date : Nov. 25 1999
Model VSR-880　　　　　　　　　　　　　　　　　　　　　　　　Version : 1.00

MIDI Implementation Chart

Function ...		Transmitted		Recognized		Remarks	
Basic Channel	Default Changed	1 - 16 1 - 16	*1	1 - 16 ••••••••••••••			
Mode	Default Messages Altered	Mode 3 x •••••••••••••••		Mode 3 x x			
Note Number :	True Voice	0 - 127 •••••••••••••••	*1	o 36 - 84, 36 - 60	*10		
Velocity	Note On Note Off	1 - 127 x 9n, v = 0	*1	x x			
After Touch	Key's Channel's	o x	*12	x x			
Pitch Bender		x		o	*10		
Control Change	0, 32 3 6, 38 7, 68 10, 70 12, 71 13, 72 14, 73 15, 74 16, 75 17, 76 18, 77 19, 78 20, 79 21, 80 22, 81 23, 82 24, 83 29, 88 30, 89 64 96, 97 98, 99	x o x o o o o o o o o o o o o o o o o o x x x		o o o o o o o o o o o o o o o o o o o o o o o		Bank Select Track Status *2 Data Entry LSB, MSB *2 Mix Send/Master Level *2 Mix Send/Master Pan *2 EQ L Freq. *2 EQ L Gain *2 EQ M Freq. *2 EQ M Gain *2 EQ M Q *2 EQ H Freq. *2 EQ H Gain *2 FX1 Send Level *2 FX1 Send Pan *2 FX2 Send Level *2 FX2 Send Pan *2 AUX Send Level *2 AUX Send Pan *2 Mix Offset Level *2 Mix Offset Bal *2 Hold *2 *11 Data Inc, Dec *2 NRPN LSB, MSB *2	
Program Change :	True Number	x ••••••••••••••• •••••••••••••••		o 0 - 99 0 - 7	*3	 Effect #0 - #99 Scene #1- #8	
System Exclusive		o	*4	o	*5	*6	
Common	:Quarter Frame :Song Position :Song Select :Tune	o o x x	*7 *8	o x x x	*7		
Real Time	: Clock : Commands	o o	*8	o o	*9		
Aux	: All Sound Off : Reset All Controllers : Local on/off : All Notes Off : Active Sensing : System Reset	x x x x x x		x x x x x x			
Notes		*1 MIDI Metronome Only *2 MID:CtrType=C.C. Only *3 Effect when MIDI CH=1, 2, Scene when MIDI CH=16. *4 MID:SysEx.Tx=On Only *5 MID:SysEx.Rx=On Only *6 When MID:CtrlType=Excl, MIXER Set and MMC. *7 Syn:Gen.=MTC Only *8 Syn:Gen.=MIDIclk or SyncTr Only *9 When Recording Sync Track Only *10 When Algorithm27 (Voice Transfomer) is selected, and MIDI Control Sw=ON *11 When Algorithm28 (Vocoder2) is selected, and HOLD=MIDI *12 Transmits Level Meter Value according to the value of Level Meter Tx. via MIDI. MIDI CH=16 (fixed)					

Mode 1 : OMNI ON, POLY　　　　Mode 2 : OMNI ON, MONO　　　　　　　　o : Yes
Mode 3 : OMNI OFF, POLY　　　　Mode 4 : OMNI OFF, MONO　　　　　　　x : No

The mixer operation is transmitted and received through the MIDI Control Change. Therefore, general MIDI Sequencers can
record or play the mixer operation simply. The VS-880EX uses some Control Change Number in order to original parameter
controls which is different from the MIDI standard.

Specifications

VSR-880
24-bit Digital Studio Recorder

Tracks

Tracks: 8

V-Tracks: 128 (8 Tracks x 8 V-Tracks x 2 Banks)

* *Up to 8 tracks can be recorded simultaneously, and up to 8 tracks can be played back simultaneously. However, depending on the organization of the song data or the disk drive performance etc., the number of tracks which can be simultaneously recorded or played back may be limited.*
* *When the Sample Rate is selected to "48 kHz," up to 6 tracks can be recorded simultaneously. (Up to 8 tracks can be played back simultaneously.)*
* *When the Vari-Pitch function is "On," up to 4 tracks can be recorded simultaneously. (Up to 8 tracks can be played back simultaneously.)*

Maximum Useful Capacity

32 G bytes: 1 G bytes (Capacity) x 32 (Partition)

* *Up to 10 partitions can be created in each disk drive.*

Internal Memory

Songs: 200 songs for each device (VS-880, VS-1680, VS-880EX or VSR-880: each partition)

* *The total songs is limited to 500.*

Equalizer

HI, MID, LOW (8 channels)

HI, LOW (16 channels)

* *If the "VSR" is selected for the Recording Mode, the equalizer cannot be used.*

Recording Mode

VSR

CDR (CD Writing)

MAS (Mastering)

MT1 (Multitrack1)

MT2 (Multitrack2)

LIV (Live)

Signal Processing

AD Conversion: 24 bits, 64 times oversampling

DA Conversion: 24 bits, 128 times oversampling

Sample Rate

48.0 kHz, 44.1 kHz, 32.0 kHz

* *Sample rate can be adjusted around 21.96–50.48 kHz (maximum) by using vari-pitch function.*

Frequency Response

Sample Rate

48.0 kHz: 20 Hz–22 kHz (+0.2 dB/ -0.2 dB)

44.1 kHz: 20 Hz–20 kHz (+0.2 dB/ -0.2 dB)

32.0 kHz: 20 Hz–14 kHz (+0.2 dB/ -0.2 dB)

Total Harmonic Distortion (INPUT SENS: 0 dBu, 1 kHz at nominal output level)

0.006 % or less

NOTE

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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Recording Time (at 3.2 G bytes, 1 GB + 1 GB + 1 GB partition, conversion in 1 track, unit:minutes)

Recording Mode	Sample Rate 48.0 kHz	44.1 kHz	32.0 kHz
VSR	371 + 371 + 371	404 + 404 + 404	557 + 557 + 557
CDR	185 + 185 + 185	202 + 202 + 202	278 + 278 + 278
MAS	185 + 185 + 185	202 + 202 + 202	278 + 278 + 278
MT1	371 + 371 + 371	404 + 404 + 404	557 + 557 + 557
MT2	495 + 495 + 495	539 + 539 + 539	742 + 742 + 742
LIV	594 + 594 + 594	646 + 646 + 646	891 + 891 + 891

    * *The above-listed recording times are approximate. Times may be slightly depending on the specifications of the disk drive and on the number of songs that were created.*

Nominal Input Level

Input A, B (Front Panel):	-56 – +4 dBu (Balanced)
Input 1–8 (Rear Panel):	0 dBu

Input Impedance

Input A, B (Front Panel):	44 k ohm
Input 1–8 (Rear Panel):	16 k ohm

Nominal Output Level

OUTPUT 1, 2(MASTER):	0 dBu
OUTPUT 3, 4(AUX):	0 dBu
OUTPUT 5, 6(FX1):	0 dBu
OUTPUT 7, 8(FX2):	0 dBu

Output Impedance

OUTPUT 1, 2 (MASTER):	1 k ohm
OUTPUT 3, 4 (AUX):	1 k ohm
OUTPUT 5, 6 (FX1):	1 k ohm
OUTPUT 7, 8 (FX2):	1 k ohm

Recommended Load Impedance

OUTPUT 1, 2 (MASTER):	10 k ohm or greater
OUTPUT 3, 4 (AUX):	10 k ohm or greater
OUTPUT 5, 6 (FX1):	10 k ohm or greater
OUTPUT 7, 8 (FX2):	10 k ohm or greater

Residual Noise Level (IHF-A Typ.)

OUTPUT 1, 2 (MASTER):	-88 dBu or less
OUTPUT 3, 4 (AUX):	-88 dBu or less
OUTPUT 5, 6 (FX1):	-88 dBu or less
OUTPUT 7, 8 (FX2):	-88 dBu or less

Display

    #70.6 x 24.5 mm, LCD (with backlit)

Connectors and Jacks

SCSI Connector (DB-25 type)
R-BUS Connector (DB-25 type)
MIDI Connectors (IN, OUT/THRU)
Input Jack A, B (1/4 inch phone type, TRS balanced)
Input Jack 1–8 (RCA phono type, Unbalanced)
Digital In Connectors (Coaxial type, Optical type)
Digital Out Connectors (Coaxial type, Optical type)
Headphones Jack (Stereo 1/4 inch phone type)
Foot Switch Jack (1/4 inch phone type)
Master Out Jacks (L, R) (RCA phono type)
AUX Jacks (A, B) (RCA phono type)
FX1 Jacks (L, R) (RCA phono type)
FX2 Jacks (L, R) (RCA phono type)

Power Supply

AC 117 V, AC 230 V or AC 240 V

Power Consumption

24 W (Including internal hard disk and effects expansion board)

Dimensions

482.0 (W) x 308.0 (D) x 88.9 (H) mm
19 (W) x 12-1/8 (D) x 3-1/2 (H) inches

Weight

4.75 kg
10 lbs 8 oz
(Excluding internal hard disk and effects expansion board)

Accessories

AC Cord
User Guide
Owner's Manual

Options

Internal Hard Disk Drive Unit: HDP88 series
Effects Expansion Board: VS8F-2

(0 dBu = 0.775 V rms)

Index

Information

When you need repair service, call your nearest Roland Service Center or authorized Roland distributor in your country as shown below.

AFRICA

EGYPT
Al Fanny Trading Office
P.O. Box 2904,
El Horrieh Heliopolos, Cairo,
EGYPT
TEL: (02) 4185531

REUNION
Maison FO - YAM Marcel
25 Rue Jules MermanZL
Chaudron - BP79 97491
Ste Clotilde REUNION
TEL: 28 29 16

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(PTY) Ltd.**
11 Melle Street (Cnr Melle and
Juta Street)
Braamfontein 2001
Republic of SOUTH AFRICA
TEL: (011) 403 4105

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17 Werdmuller Centre Claremont
7700
Republic of SOUTH AFRICA

P.O. Box 23032
Claremont, Cape Town
SOUTH AFRICA, 7735
TEL: (021) 64 4030

ASIA

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**Beijing Xinghai Musical
Instruments Co., Ltd.**
6 Huangmuchang Chao Yang
District, Beijing, CHINA
TEL: (010) 6774 7491

HONG KONG
**Tom Lee Music Co., Ltd.
Service Division**
22-32 Pun Shan Street, Tsuen
Wan, New Territories,
HONG KONG
TEL: 2415 0911

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INDIA
TEL: (022) 498 3079

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J1. Cideng Timur No. 15J-150
Jakarta Pusat
INDONESIA
TEL: (021) 6324170

KOREA
**Cosmos Corporation
Service Station**
261 2nd Floor Nak-Won Arcade
Jong-Ro ku, Seoul, KOREA
TEL: (02) 742 8844

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Bentley Music SDN BHD
140 & 142, Jalan Bukit Bintang
55100 Kuala Lumpur, MALAYSIA
TEL: (03) 2443333

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339 Gil J. Puyat Avenue
Makati, Metro Manila 1200,
PHILIPPINES
TEL: (02) 899 9801

SINGAPORE
Swee Lee Company
150 Sims Drive,
SINGAPORE 387381
TEL: 748-1669

**CRISTOFORI MUSIC PTE
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Bangkok 10100, THAILAND
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138 Tran Quang Khai St.,
District 1
Ho Chi Minh City
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**Roland Corporation
Australia Pty., Ltd.**
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TEL: (02) 9982 8266

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Roland Corporation (NZ) Ltd.
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Auckland 3, NEW ZEALAND
TEL: (09) 3098 715

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DK-2100 Copenhagen
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Filial Finland**
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Fin-00201 Helsinki, FINLAND
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TEL: (040) 52 60090

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Music Sound Light**
155, New National Road
26422 Patras, GREECE
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Donnybrook, Dublin 4.
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Moon Stores
Bab Al Bahrain Road,
P.O. Box 20077
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TEL: 211 005

CYPRUS
Radex Sound Equipment Ltd.
17 Diagorou St., P.O. Box 2046,
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TEL: (02) 453 426

ISRAEL
**Halilit P. Greenspoon &
Sons Ltd.**
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TEL: (03) 6823666

JORDAN
AMMAN Trading Agency
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825 Amman 11118 JORDAN
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OMAN
**OHI Electronics & Trading
Co. LLC**
P.O. Box 889 Muscat
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TEL: 959085

QATAR
Badie Studio & Stores
P.O. Box 62,
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TEL: 423554

SAUDI ARABIA
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SYRIA
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