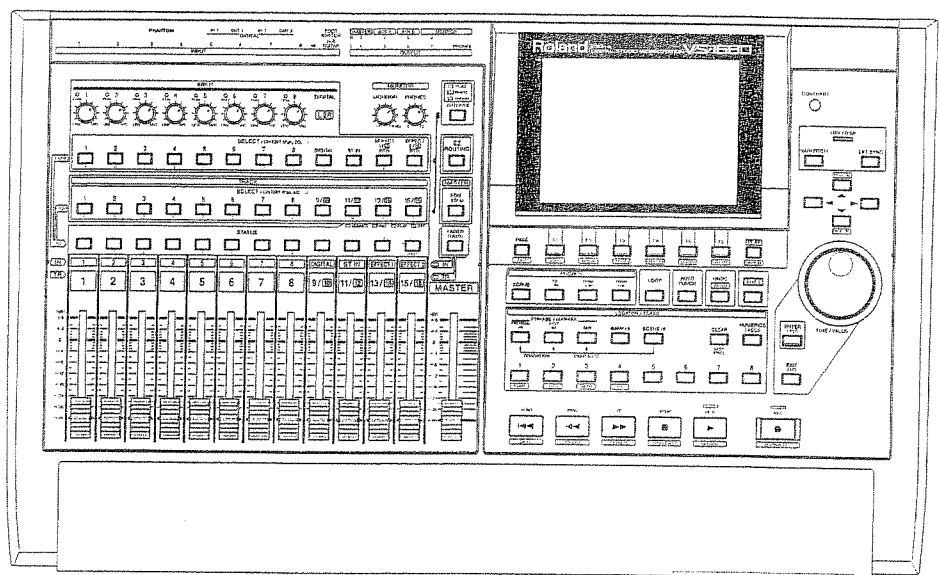


VS-1680

APPENDICES



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

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About MIDI

This section explains the basic concepts of MIDI, and how the VS-1680 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 VS-1680, MIDI OUT and MIDI THRU are handled by a single connector, which can be switched to act as the desired connector. (Owner's Manual p. 129)

MIDI IN: This receives MIDI messages from external MIDI devices.

MIDI OUT: This transmits MIDI messages from the VS-1680.

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 VS-1680 uses the following types of MIDI message.

Note messages:

These messages are used to play notes. On a keyboard, these messages transmit the key (note number) that was pressed, and how strongly it was pressed (velocity). On the VS-1680, 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 VS-1680 uses these messages to select scenes and effects. (Owner's Manual p. 138, 139)

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 VS-1680, 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 VS-1680, 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.

About SCSI

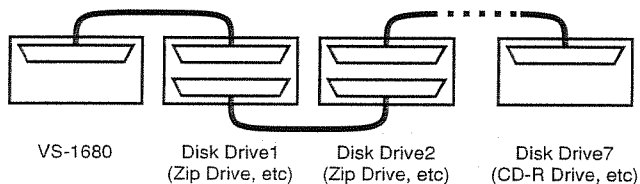
SCSI stands for **Small Computer System Interface**. It is a data transfer standard that allows large amounts of data to be sent and received. The VS-1680 comes prepared with a SCSI connectors allowing you to connect external SCSI devices such as hard disks and Zip drives. This section describes the procedures and precautions taken when using these devices.

Disk drives are precision devices. If they are connected or used incorrectly, not only may they fail to operate correctly, but the data on the disk can be lost or, in the worst case, the disk drive itself may be damaged. Please be sure to read the manual for your disk drive.

* *A disk drive being used for the first time with the VS-1680 must be initialized by the VS-1680 (Owner's Manual p. 111). When a disk drive is initialized, all data on that disk drive is lost. Before using a disk drive that has been used by another device, make sure that it is all right to erase the data.*

About Connections

Up to 7 disk drives can be connected to the SCSI connector of the VS-1680. Use SCSI cable to connect the disk drives, connecting as shown below. SCSI connectors are not distinguished by input and output ends, so you may attach either end of the cable to the devices. Devices connected in this fashion are referred to as a **SCSI chain** or **daisy chain**.



- The VS-1680 features a DB-25 type connector (female). After checking your disk drive to see what kind of SCSI connector it uses, connect it with the appropriate cable.
- Keep SCSI cables as short as possible, and use only cables which have an impedance that is compatible with the SCSI standard ($110\Omega \pm 10\%$), and that are completely shield.
- Do not allow the total length of all SCSI cables connecting the chain of disk drives to exceed 6.5 meters.
- Do not connect or disconnect SCSI cables when the power of any device is turned on.

About Terminators

To protect against return noise, the device at each end of a SCSI chain must have a terminating resistance. This is referred to as a **terminator**. Since the VS-1680 is one end of the SCSI chain, its internal terminator is normally in effect. Connect a terminator only to the last external drive in the chain. There are two types of terminators, those that can be switched on and off (internal) and those that are attached using SCSI connections (externally attached). Select the method appropriate for the disk drive you are using.

- Your disk drive may feature a terminator switch that is normally left in the "On" position (i.e., the terminator is usually in effect). Use this type of device as the last piece in a daisy chain.
- Do not use double terminators. For example, don't attach an external terminator to a disk drive that already has an internal terminator.

Active Terminators

If you are using an external terminator, we recommend that you make it an **active terminator**. In this case, if you are using a disk drive that allows you to turn the power to the terminator on and off, be sure to turn this power on. For details on attaching an active terminator, refer to the owner's manual for your disk drive.

- ? **Active Terminator** (p. 63)
- ? **Terminator Power** (p. 65)

About SCSI ID Numbers

Each disk drive is distinguished by its SCSI ID number (0-7). This means that when two or more disk drives are connected, you must make settings so that the SCSI ID numbers of the disk drives do not conflict (coincide). If the SCSI ID numbers conflict, the VS-1680 will not be able to correctly recognize the disk drives. With the factory settings, the VS-1680 is set to SCSI ID number 7. Set the disk drives you are connected to ID numbers other than 7.

Troubleshooting

When the VS-1680 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 VS-1680 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.
- The master fader of the VS-1680 is turned down.
 - Channel faders
 - Master fader
 - MONITOR knob
 - PHONES knob
- The output jacks which are connected are different than the output jacks selected in the master section of the mixer (Owner's Manual p. 175).
- Short phrases less than 0.5 seconds cannot be played back.

A specific channels does not sound

- The volume level of the channel is turned down.
 - When switching between the input mixer and track mixer, recalling Scenes, using Auto Mix, or in other such situation, the actual volume levels may not match the position of the faders. In such cases, bring the faders up or down to match the settings.
- The track is off (the STATUS indicator is off).
- The Master Send switch (Owner's Manual p. 62) is set to "Off."
- The Solo or Mute function (Owner's Manual p. 162) is being used.
- "Cntrl Local" is set to "Off."
 - In this case, fader movements have no effect.

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.

Cannot record digitally

- The CD player's digital connection is not accepted.
- The master clock is set to "INT" (Owner's Manual p. 75).
- The DIGITAL IN connector (optical or coaxial) was not properly selected.
- 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 VS-1680 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 INPUT knobs 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" (Attenuation) setting is incorrect. (Owner's Manual p. 174)
 - If noise or distortion occurred as a result of track bouncing, the track output levels were too high.

The playback pitch is strange

- The Vari-Pitch function is turned on (the VARI PITCH indicator is lit).
- The time compression/expansion function is being used (Owner's Manual p. 90).

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" (Owner's Manual p. 189).
 - The "Partition" settings are not right.
- When a high-capacity hard disk is installed in the VS-1680, we recommend setting the partition size to "2000MB."

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 drives, etc.).
 - The Zip drive has not been initialized (Owner's Manual p. 111).
 - 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

Effects cannot be used

- The VS8F-2 has not been installed correctly.
- Only one VS8F-2 has been installed (when EFFECT B cannot be used).
- You are attempting to select the algorithm for Reverb, Gated Reverb, Vocoder 2, or Voice Transformer with EFX2 or EFX4.
- You are attempting to select the algorithm for Vocoder 2 or Voice Transformer with EFX1 or EFX3 (p. 105, 106).

CD-R Drive Problems

The CD-R drive is not being recognized

- The CD-R drive is not connected correctly.
- The same device ID number is assigned to two or more SCSI devices (Zip drives, CD-R drives, etc.).
- No CD-R disc is inserted in the drive.
- A CD-R drive that is not designated by Roland.

Cannot write to CD-R discs

- The song's sample rate is set to something other than 44.1 kHz (Owner's Manual p. 58).
- No IDE hard disk is installed.
- The internal IDE hard disk does not have sufficient free disk space (Owner's Manual p. 169).
- The CD-R 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.

MIDI Devices

With the VS-1680 as master, the sequencer does not respond to commands

- The MIDI cable is not connected correctly.
- The MIDI cable is broken.
- The MIDI Thru switch is not set to "Out" (Owner's Manual p. 129).
- "Sync Gen." (the sync generator) is not set to the appropriate synchronization method (MTC, MIDI Clock, Sync Track) (Owner's Manual p. 133).
- The EXT indicator is blinking ("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.

When synchronizing using a MIDI sequencer as the master, the VS-1680 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 VS-1680 cannot be run in slave mode using a method other than MTC.
- The EXT indicator is off ("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 MIDI sequencer is not in playback standby mode (with the PLAY indicator blinking).
- MTC reception is in poor condition.
→ Setting the Sync Error Level to "5" or higher may improve conditions.

With a video device as the master, the VS-1680 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 indicator is off ("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-805 (Roland Video MIDI Sync Interface), or the video and the VS-1680 are not set to the same type of MTC.

- MTC reception is in poor condition.
→ Setting the Sync Error Level to "5" or higher may improve conditions.

Other problems

Data on the disk drive was not saved properly

The VS-1680'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) (Owner's Manual p. 111). Also, we recommend that you execute Surface Scan as well (Owner's Manual p. 113).

Basic Information

I just got the VS-1680. Can I use it right away?

The VS-1680 is an audio recording device. Please first prepared the following items.

- Internal hard disk (HDP-88 series)
- Audio device to take the Master output, or stereo headphones
- Instruments and mics, as well as a CD player and other devices for recording

Furthermore, by setting up the following pieces of equipment, you can get even greater performance from the VS-1680.

- Effect expansion board (VS8F-2)
 - Zip drive
 - CD-R Drive (which is designated by Roland)
 - DAT Recorder
- Etc.

Can I use my computer's internal Zip drive to play VS-1680 song data saved on a Zip disk?

The VS-1680 song data format is particular to the VS-1680. Other than VS-880 data ported (Song Export) to the VS-1680, the data cannot be handled by other devices.

How long can I record for?

This size (capacity) of the hard disk, sample rate, and recording mode all have an effect. For example, using a 2.1 GB hard disk (HDP88-2100), the following guideline shows the approximate recording time (in track minutes, calculated for one track).

| Recording Mode | Sample Rate | | |
|-----------------|-------------|------------|------------|
| | 48.0 kHz | 44.1 kHz | 32.0 kHz |
| Multi-Track Pro | 742 mins. | 808 mins. | 1114 mins. |
| Mastering | 370 mins. | 404 mins. | 556 mins. |
| Multi-Track 1 | 742 mins. | 808 mins. | 1114 mins. |
| Multi-Track 2 | 990 mins. | 1078 mins. | 1484 mins. |
| Live 1 | 1188 mins. | 1292 mins. | 1782 mins. |
| Live 2 | 1484 mins. | 1616 mins. | 2228 mins. |

(All times approximate)

How many tracks can I record at the same time?

You can record up to 8 tracks simultaneously, regardless of recording mode and sample rate.

How many tracks can I play back at the same time?

You can play back up to 16 tracks simultaneously. One of the 16 V-tracks on each track is selected for playback. However, when "MAS" is designated as the recording mode, the VS-1680 functions as an 8-track recorder (on Tracks 1-8).

What's the difference between regular scrub and the VS-1680's scrub function?

Scrub in traditional tape format multi-track recording scrub and the VS-1680's scrub function are not the same thing. Traditionally, scrub emulates rotating the tape reels by hand. Therefore, it is necessary to slow the tape down to the appropriate speed to allow accuracy in finding the beginning of a sound. This slows the playback speed, resulting in a big pitch drop, making it difficult to determine the actually spot on the tape. Thus, the VS-1680 features "Scrub Preview," allowing looped playback of very short segments.

I tried to record a commercial audio CD by connecting the player to the DIGITAL IN connector, but "Can't REC CD" appeared in the display, and I couldn't continue with the procedure.

When new, the VS-1680 cannot make digital connections with CD players.

Please refer to "Recording Digital Signals" (Owner's Manual p. 74).

When I tried to execute Track Copy on a very short segment of a song, nothing sounded, neither the source data nor the sound of the copy.

Phrases shorter than 0.5 seconds cannot be played on the VS-1680. If you happen to create extremely short Phrases using Track Edit or Phrase Edit, it may seem that the audible sound up to that point sound has been deleted. When you cut and paste this kind of short phrase, it is treated like sampled percussion sounds or a sound effect. As a rule of thumb, make phrases at least one second long.

After track bouncing I erased the source track using Track Erase, but the free capacity on the hard disk didn't increase.

When you carry out Track Cut, Track Erase, or Phrase Delete, the apparent performance data disappears. However, due to the Undo function, the erased performance data is not deleted from the hard disk. When you want to increase hard disk free space, use Song Optimize. (Owner's Manual p. 169)

How long does time compression take?

For each track, it takes about nine times the playback time. For example, if you have a five-minute song that uses eight tracks, then compression takes $8 \text{ (tracks)} \times 5 \text{ (minutes)} \times 9 = 360 \text{ minutes}$.

I tried to start making a new song, but "Song Protected" appeared in the display, and I couldn't continue with the procedure.

This is because the demo song that is saved on the internal hard disk has Song Protect on it. When "STORE Current?" appears in the display, press [NO]. Alternatively, remove Song Protect (Owner's Manual p. 82). However, doing this may result in changes to the content of the demo song.

The PLAY indicator just blinks green. I can't record or play back, even when I press the [PLAY] button.

When the EXT SYNC indicator is on, the VS-1680 is receiving MTC receive standby messages from the external MIDI device. Operate the external MIDI device or press [STOP]. When "PowerOFF/RESTART" appears in the display it means that the shutdown procedure is being performed. Hold down [SHIFT] and press [PLAY (RESTART)]. This restarts the VS-1680.

All of the tracks have something recorded on them. How can I bounce these tracks?

With the VS-1680, 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 16 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 15/16 goes off, indicating the Track 16 is now not being played back.

Effects

I'd like to change the order of an effect algorithm.

The connection orders cannot be altered. They can only be turned on or off. For more detailed information on what goes on with the algorithm orders, please refer to the "Algorithm List" (p. 81).

To use the mic simulator effectively, what kind of mic do you recommend?

We recommend using the Roland DR-20 mic. As input for the mic simulator, with the DR-20, you can select small dynamic mic input, headset type dynamic mic input, ultra-compact condenser mic input, or line input. In addition, as an effect preset Patch, an effective mic emulator is set up assuming that the DR-20 will be used as input.

Can a different mic simulator Patch be assigned to each of the sounds being input to INPUT 1-4?

Yes. For example, assign the main vocal to INPUT 1, electric guitar to INPUT 2, bass to INPUT 3 and so on, and if you want to create the atmosphere available when recording with a studio mic setup, set "LINK" to "Off" (p. 121).

Zip Drives

Can I connect and disconnect SCSI cables while the power is turned on?

Never do this. Terminator power is supplied to SCSI connectors. Connecting and disconnecting SCSI cables while the power is turned on may result in malfunctioning, so when connecting SCSI cables, always be sure to turn off the power to all connected devices.

How long does it take to copy to Zip disks?

Below is a chart that roughly shows the time it takes (in track minutes) to make a playable or archive copy to one Zip disk (100 MB), calculated for one track. However, with archive copies, you can also back up songs that contain more than 100 MB of memory, dividing the song onto multiple Zip disks.

| Recording Mode | Sample Rate | | |
|-----------------|-------------|----------|-----------|
| | 48.0 kHz | 44.1 kHz | 32.0 kHz |
| Multi-Track Pro | 34 mins. | 37 mins. | 52 mins. |
| Mastering | 17 mins. | 18 mins. | 26 mins. |
| Multi-Track 1 | 34 mins. | 37 mins. | 52 mins. |
| Multi-Track 2 | 46 mins. | 50 mins. | 69 mins. |
| Live 1 | 55 mins. | 60 mins. | 83 mins. |
| Live 2 | 68 mins. | 75 mins. | 103 mins. |

(All times approximate)

I can't initialize the Zip disk.

If initialization is cancelled, with error messages such as "Medium Error," "Not 512 bytes/sector," "Function Failed!" or other messages appearing in the display, the cause is likely one of the following.

- The Zip disk may be scratched or be otherwise damaged. Try another (new) disk to check whether or not the same condition reappears.
- The Zip drive may be broken. Connect the Zip drive to a device other than the VS-1680 (e.g., your computer) to see if the drive can initialize disks, read files, and perform other operations normally.
- When there is nothing wrong with either the Zip disk or the Zip drive, contact your Roland Service Center or your dealer.

I initialized an archive copy Zip disk. Is there any way I can restore the data?

Unfortunately, there is no way to restore this data. Playable copies and archive copies have different disk formats. Take precautions such as sticking labels on disks saved as archive type data disks to distinguish them from other disks.

When I tried to initialize a Zip disk, "WRITE PROTECTED" appeared in the display, and I was unable to continue with the procedure.

That Zip disk may have been write-protected on another device (such as your computer). Insert a different disk.

With "Physical Format" set to "On," you can then initialize the disk on the VS-1680. However, in this case, all data on the disk is lost. Check the disk on another device to be absolutely sure there is no necessary data already deleted.

The **Tools DISK** that is included with the Zip drive is also write protected. This Tools DISK is necessary when you want to use Zip disks on computers and other devices, so we recommend that this disk be left as is. Furthermore, the VS-1680 cannot add or delete the protect on the Tools DISK.

MIDI

When I synchronized the VS-1680 with a MIDI sequencer, the VS-1680 mixer level and pan settings changed by themselves.

The VS-1680 receives Control Change messages as well as System Exclusive messages. When set to receive Control Change messages transmitted by a MIDI sequencer, the VS-1680's mixer can be controlled by external devices. When this feature is not needed, set the "Control Type" to "Off" (Owner's Manual p. 195).

DAT

When I connected a DAT recorder to the VS-1680's DIGITAL IN and DIGITAL OUT, the sound was noisy.

The digital signals are travelling in a loop. When you connect a DAT recorder's DIGITAL OUT connector to the DIGITAL IN connector on the VS-1680, the VS-1680 is synchronized to the DAT recorder's digital clock. Then, if while in this condition you connect a the VS-1680's DIGITAL OUT connector to the DIGITAL IN connector on the DAT recorder, the DAT recorder then becomes synchronized to the VS-1680's digital clock. In other words, having no single reference clock to synchronize everything causes instability and loss of synchronization. When you want to record using the VS-1680, set the DAT recorder's input to analog. Conversely, if you want to use the DAT recorder to record, set the VS-1680's Master Clock to "Internal."

Instead of using DAT, can I back up songs on MDs?

You cannot back up data on MDs. As data on MDs is compressed before being recorded, the VS-1680's song data would also be compressed before recording, making it unrecoverable. DCC also cannot be used in backing up data for the same reason.

CD-R Drives

Can't I use a CD-R drive other than the CD-R drive that is designated by Roland?

The VS-1680 can use the CD-R drive that is designated by Roland only. Other CD-R drives cannot be used.

What kind of disks does it use?

Any CD-R disc can be used, regardless of recording length. However, CD-RW discs cannot be used.

Can song data be written to the discs in Macintosh AIFF File format?

No. Only audio CDs and CD-Rs for backup are supported by the VS-1680.

I made an audio CD on the CD-R drive, but it doesn't play on my consumer CD player.

The finalized process was not carried out. When making audio CDs, set "Finalize" to "On" or "OnlyFin." (Owner's Manual p. 122).

Error Messages

Aborted Command!

Illegal Request!

This disk drive cannot be used by the VS-1680.

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 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" (Owner's Manual p. 74).

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.

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 [YES] switches the VS-1680 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 [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 VS-1680, 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 VS-1680, 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 VS-1680 has used up all the events that can be handled by one song. Delete unneeded auto mix data. Alternatively, perform the Song Optimize operation.

Error Messages

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.

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 disc.

Lack of EVENT!!

You have tried to record AutoMix data in realtime, when the remaining number of EVENT is less than 1000. Or, 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 VS-1680 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 VS-1680. In some case's recovery can be achieved by executing Drive Check (Owner's Manual p. 178).

No CD-R Drive!

Either no CD-R 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 disc contains no song data.

No Disc

There is no disc in the CD-R 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 Effect Board A

No Effect Board B

A VS8F-2 effect expansion board (sold separately) is not installed. This operation can be performed only if a VS8F-2 is installed.

No IDE Drive!

The unit has no IDE-type disk drive. Install an internal hard disk.

No Target Selected!

The tracks or the phrases are not selected for edit.

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 disc.

Not 512byte/sector

The disk that you are using is not 512 bytes/sector. This disk cannot be used by the VS-1680.

Not Ready!

The disk drive is not ready. Wait a short time.

Obey Condition?

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 CD-R drive loading tray is still open, there is no CD-R disc loaded, or the CD-R drive is otherwise not ready. Insert CD-R 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 VS-1680 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 disc. There is a problem with the CD-R drive or the CD-R disc.

Too Many Markers!

You have tried to set track number mark points in excess of the maximum (98) you can set for one disc.

Unformatted!

The disk drive has not been initialized by the VS-1680. Initialize the disk drive.

If this appears for a disk drive that has been initialized by the VS-1680, 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 [YES] or [NO].

Write Protected!

The disk drive is protected.

Special 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.

SELECT/CH EDIT buttons

| | |
|---|---|
| [SHIFT] + Input Channel [SELECT 1]: | To the Pan setting page (Input Mixer, PRM.V) |
| [SHIFT] + Input Channel [SELECT 2]: | To the Attenuation setting page (Input Mixer, PRM.V) |
| [SHIFT] + Input Channel [SELECT 3]: | To the equalizer low setting page (Input Mixer, PRM.V) |
| [SHIFT] + Input Channel [SELECT 4]: | To the equalizer mid setting page (Input Mixer, PRM.V, 3bandEQ) |
| [SHIFT] + Input Channel [SELECT 5]: | To the equalizer high setting page (Input Mixer, PRM.V) |
| [SHIFT] + Input Channel [SELECT 6]: | To the EFX1 setting page (Input Mixer, PRM.V) |
| [SHIFT] + Input Channel [SELECT 7]: | To the link setting page (Input Mixer, PRM.V) |
| | |
| [SHIFT] + Track Channel [SELECT 1]: | To the Pan setting page (Track Mixer, PRM.V) |
| [SHIFT] + Track Channel [SELECT 2]: | To the Attenuation setting page (Track Mixer, PRM.V) |
| [SHIFT] + Track Channel [SELECT 3]: | To the equalizer low setting page (Track Mixer, PRM.V) |
| [SHIFT] + Track Channel [SELECT 4]: | To the equalizer mid setting page (Track Mixer, PRM.V, 3bandEQ) |
| [SHIFT] + Track Channel [SELECT 5]: | To the equalizer high setting page (Track Mixer, PRM.V) |
| [SHIFT] + Track Channel [SELECT 6]: | To the EFX1 setting page (Track Mixer, PRM.V) |
| [SHIFT] + Track Channel [SELECT 7]: | To the link setting page (Track Mixer, PRM.V) |
| [SHIFT] + Track Channel [SELECT 8]: | To the v-track setting page (Track Mixer, PRM.V) |
| | |
| [STATUS] + SELECT buttons : (1-8, DIGITAL, 1-15/16) | Select source to be recorded on the track |
| [ST IN] + Input Channel SELECT buttons: (1-8, DIGITAL) | Select source to Stereo In function |
| [EFFECT 1/3 RTN] + SELECT buttons: (1-8, DIGITAL, 1-15/16) | Select the Send switch setting to EFX1 bus (off/pre/post) |
| [EFFECT 2/4 RTN] + SELECT buttons: (1-8, DIGITAL, 1-15/16) | Select the Send switch setting to EFX2 bus (off/pre/post) |
| [SHIFT] + [EFFECT 1/3 RTN] + SELECT buttons: (1-8, DIGITAL, 1-15/16) | Select the Send switch setting to EFX3 bus (off/pre/post) |
| [SHIFT] + [EFFECT 2/4 RTN] + SELECT buttons: (1-8, DIGITAL, 1-15/16) | Select the Send switch setting to EFX4 bus (off/pre/post) |
| [SHIFT] + [SOLO(EDIT)]: | Solo mode on/off |
| [SOLO(EDIT)] + SELECT buttons: (1-8, DIGITAL, 1-15/16) | Solo function on/off (each channel) |
| [CLEAR] + [SOLO(EDIT)]: | Solo function off (all channel) |
| [MUTE(FADER)] + SELECT buttons: (1-8, DIGITAL, 1-15/16) | Mute function on/off (each channel) |
| [CLEAR] + [MUTE(FADER)]: | Mute function off (all channel) |
| [AUTOMIX] + SELECT buttons: (1-8, DIGITAL, 1-15/16) | Automix setting of each channel (when Automix is "on") |

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] + STATUS buttons: | Switch the status to REC (indicator blinks red) |
| [STOP] + STATUS buttons: | Switch the status to PLAY(indicator lights green) |

LOCATOR/SCENE buttons

| | |
|----------------------------------|---|
| [CLEAR] + LOCATOR buttons(1-8): | Clear the setting of locators |
| [CLEAR] + [TAP]: | Erase a marker |
| [SHIFT] + [CLEAR] + [TAP]'[YES]: | Erase all markers |
| [BANK] + LOCATOR buttons(1-8): | Switch the locator bank |
| [SCENE] + [TAP]: | Execute snapshot (When Automix is "on") |
| [SCENE] + [PREVIOUS]: | Gradation to mixer setting of previous marker (when Automix is "on") |
| [SCENE] + [NEXT]: | Gradation to mixer setting of next marker (when Automix is "on") |
| [SCENE] + [REC]: | Automix Realtime recording (when Automix is "on.") |
| [SHIFT] + [SCENE]: | Transmit the condition of the digital mixer as MIDI data from MIDI OUT connector |
| [SHIFT] + [START(1)]: | Enter the current time as track edit start point. If it has been already set, move to that time (except track condition). |
| [SHIFT] + [END(2)]: | Enter the current time as track edit end point. If it has been already set, move to that time (except track condition). |
| [SHIFT] + [FROM(3)]: | Enter the current time as track edit from point. If it has been already set, move to that time (except track condition). |
| [SHIFT] + [TO(4)]: | Enter the current time as track edit to point. If it has been already set, move to that time (except track condition). |
| [SHIFT] + [CLEAR] + [START(1)]: | Clear the track edit start point (except track condition) |
| [SHIFT] + [CLEAR] + [END(2)]: | Clear the track edit end point (except track condition) |
| [SHIFT] + [CLEAR] + [FROM(3)]: | Clear the track edit from point (except track condition) |
| [SHIFT] + [CLEAR] + [TO(4)]: | Clear the track edit to point (except track condition) |
| [SHIFT] + [PREVIOUS]: | If there is a phrase on current time, move to the beginning of that phrase. If not, move to the end of the previous phrase (when PREVIOUS/NEXT Sw is "MARKER"). Move to the previous marker (when PREVIOUS/NEXT Sw is "PHRASE") |

Special Key Operations

- [SHIFT] + [NEXT]: If there is a phrase on current time, move to the end of that phrase. If not, move to the beginning of the next phrase (when PREVIOUS/NEXT Sw is "MARKER"). Move to the next marker (when PREVIOUS/NEXT Sw is "PHRASE")
- [PLAY (DISPLAY)] + [TAP]: Register a marker for audio CD track number

FUNCTION buttons

- [SHIFT] + [F1]: To Song condition
- [SHIFT] + [F2]: To Track condition
- [SHIFT] + [F3]: To Effect condition (EFFECT A)
- [SHIFT] + [F4]: To Effect condition (EFFECT B)
- [SHIFT] + [F5]: To System condition
- [SHIFT] + [F6]: To Utility condition

Other

- [SHIFT] + [PAGE]: Popup the Jump setting page
- [SHIFT] + [PLAY]: Switch the Graphic display
- [SHIFT] + [SCRUB]: Popup the Scrub length setting page
- [SHIFT] + [TO]: Popup the Preview to length setting page
- [SHIFT] + [FROM]: Popup the Preview from length setting page
- [SHIFT] + [VARI PITCH]: Popup the Vari pitch setting page
- [SHIFT] + [UNDO]: Popup the Redo setting page (when the UNDO indicator is lit)
- [SHIFT] + [TAP]: To the Tempo map setting page
- [SHIFT] + [EXT SYNC]: To the Sync source setting page
- [SHIFT] + [LOOP]: To the loop start/end point setting page
- [SHIFT] + [AUTO PUNCH]: To the punch in/out point setting page
- [SHIFT] + [▲] [▼]: Move the range of display to edit (Pane)
- [SHIFT] + TIME/VALUE dial: Modify the value at 10 times the usual speed. In Play condition when the cursor is displayed at the sub frame of the time code display, move the current time in units of approximately 1/100 frame.
- STATUS button + [CLEAR]: Cancel the all routing of mixer section.

Parameter List

Input Mixer

* If Stereo Link is On, the "Pan" parameter will change to the balance parameter.

* If two VS8F-2 (s) are installed in your VS-1680, the "AUX1" will change to the "EFX1," the "AUX2" will change to the "EFX2," the "AUX3" will change to the "AUX."

| Parameter name | Display | Value | Initial value |
|----------------------------------|--------------|----------------------------|---------------|
| Master Send Pan/Balance | Pan | L63-0-R63 | 0 |
| Equalizer Switch | EQ Sw | Off, On | Off |
| Equalizer Select | - | 2 Band EQ, 3 Band EQ | 2 Band EQ |
| Equalizer Low Gain | Low G | -12-12 dB | 0 dB |
| Equalizer Low Frequency | Low F | 40 Hz-1.5 kHz | 300 Hz |
| Equalizer Mid Gain | Mid G | -12-12 dB | 0 dB (*1) |
| Equalizer Mid Frequency | Mid F | 200 Hz-8 kHz | 1.4 kHz (*1) |
| Equalizer Mid Q | Mid Q | 0.5-16 | 0.5 (*1) |
| Equalizer High Gain | High G | -12-12 dB | 0 dB |
| Equalizer High Frequency | High F | 500 Hz-18 kHz | 4 kHz |
| Effect Switch (1-2) | EFX* (1-2) | Off, Pre, Pst | Off |
| Effect Send Level | - | 0-127 | 100 (*2) |
| Effect Pan/Balance | - | L63-0-R63 | 0 (*2) |
| AUX Switch | AUX* (1-3) | Off, Pre, Pst | Off |
| AUX Level | - | 0-127 | 100 (*3) |
| AUX Pan/Balance | - | L63-0-R63 | 0 (*3) |
| Effect Insert Switch (1-4) | EFXIns (1-4) | Off, Ins, InsL, InsR, InsS | Off |
| Effect Insert Send Level (1-4) | Snd | -42-6 dB | 0 dB (*4) |
| Effect Insert Return Level (1-4) | Rtn | -42-6 dB | 0 dB (*4) |
| Stereo Link | Link | Off, On | Off |
| Attenuation | ATT | -42-6 dB | 0 dB |
| Phase | Phase | NRM, INV | NRM |
| Level Meter | Meter | Pre, Pst | Pre |
| Solo | Solo | Off, On | Off |
| Mute | Mute | Off, On | Off |
| Fader | Fader | 0-127 | 100 |

*1 Valid when Equalizer Select is "3 Band EQ."

*2 Valid when Effect Switch is except "Off."

*3 Valid when AUX Switch is except "Off."

*4 Valid when Effect Insert Switch is except "Off."

Parameter List

Stereo In/Effect Return

| Parameter name | Display | Value | Initial value |
|-----------------------|-----------------|--|---------------|
| Stereo In Select | StereoIn Select | Off, Input 1/2, Input 3/4, Input 5/6, Input 7/8, Digital | Off |
| Stereo In Level | - | 0-127 | 100 (*1) |
| Stereo In Balance | - | L63-0-R63 | 0 (*1) |
| Effect Return Level | - | 0-127 | 100 |
| Effect Return Balance | - | L63-0-R63 | 0 |
| Solo | Solo | Off, On | Off |
| Mute | Mute | Off, On | Off |

*1 Valid when Stereo In Select is except "Off."

Track Mixer

* If Stereo Link is On, the "Pan" parameter will change to the balance parameter.

* If two VS8F-2 (s) are installed in your VS-1680, the "AUX1" will change to the "EFX1," the "AUX2" will change to the "EFX2," the "AUX3" will change to the "AUX."

| Parameter name | Display | Value | Initial value |
|----------------------------------|--------------|----------------------------|---------------|
| Master Send Pan/Balance | Pan | L63-0-R63 | 0 |
| Equalizer Switch | EQ Sw | Off, On | Off |
| Equalizer Select | - | 2 Band EQ, 3 Band EQ | 2 Band EQ |
| Equalizer Low Gain | Low G | -12-12 dB | 0 dB |
| Equalizer Low Frequency | Low F | 40 Hz-1.5 kHz | 300 Hz |
| Equalizer Mid Gain | Mid G | -12-12 dB | 0 dB (*1) |
| Equalizer Mid Frequency | Mid F | 200 Hz-8 kHz | 1.4 kHz (*1) |
| Equalizer Mid Q | Mid Q | 0.5-16 | 0.5 (*1) |
| Equalizer High Gain | High G | -12-12 dB | 0 dB |
| Equalizer High Frequency | High F | 500 Hz-18 kHz | 4 kHz |
| V-track | V.Trk | 1-16 | 1 |
| Effect Switch (1-2) | EFX* (1-2) | Off, Pre, Pst | Off |
| Effect Send Level | - | 0-127 | 100 (*2) |
| Effect Pan/Balance | - | L63-0-R63 | 0 (*2) |
| AUX Switch | AUX* (1-3) | Off, Pre, Pst | Off |
| AUX Level | - | 0-127 | 100 (*3) |
| AUX Pan/Balance | - | L63-0-R63 | 0 (*3) |
| Effect Insert Switch(1-4) | EFXIns (1-4) | Off, Ins, InsL, InsR, InsS | Off |
| Effect Insert Send Level (1-4) | Snd | -42-6 dB | 0 dB (*4) |
| Effect Insert Return Level (1-4) | Rtn | -42-6 dB | 0 dB (*4) |
| Stereo Link | Link | Off, On | Off |
| Attenuation | ATT | -42-6 dB | 0 dB |
| Phase | Phase | NRM, INV | NRM |
| Level Meter | Meter | Pre, Pst | Pre |
| Solo | Solo | Off, On | Off |
| Mute | Mute | Off, On | Off |
| Fader | Fader | 0-127 | 100 |

- *1 Valid when Equalizer Select is "3 Band EQ."
- *2 Valid when Effect Switch is except "Off."
- *3 Valid when AUX Switch is except "Off."
- *4 Valid when Effect Insert Switch is except "Off."

Masterblock

* If two VS8F-2 (s) are installed in your VS-1680, the "AUX1" will change to the "EFX1," the "AUX2" will change to the "EFX2," the "AUX3" will change to the "AUX."

| Parameter name | Display | Value | Initial value |
|----------------------------------|--------------|---|------------------------------|
| Master Level | MASTER | 0-127 | current Master Fader setting |
| Master Balance | MASTER | L63-0-R63 | 0 |
| Monitor Level | MONITOR | 0-127 | current MONITOR knob setting |
| Monitor Balance | MONITOR | L63-0-R63 | 0 |
| AUX A | AUX.A | EFX1, EFX2, AUX1, AUX2, AUX3 | AUX1 (*1), AUX (*2) |
| AUX B | AUX.B | EFX1, EFX2, AUX1, AUX2, AUX3 | EFX1 |
| Monitor | MON | MST, EFX1, EFX2, AUX1, AUX2, AUX3, REC, ST IN | MST |
| Digital Out 1 | DOUT1 | MST, MON, EFX1, EFX2, AUX1, AUX2, AUX3 | MST |
| Digital Out 2 | DOUT2 | MST, MON, EFX1, EFX2, AUX1, AUX2, AUX3 | MST |
| Effect Insert Switch(1-4) | EFXIns (1-4) | Off, Ins | Off |
| Effect Insert Send Level (1-4) | Snd | -42-6 dB | 0 dB (*3) |
| Effect Insert Return Level (1-4) | Rtn | -42-6 dB | 0 dB (*3) |
| Direct Out | DIR OUT | Off, 1-8, 9-16 | Off |
| Effect Send Level | - | 0-127 | 100 |
| Effect Send Balance | - | L63-0-R63 | 0 |
| AUX Send Level | - | 0-127 | 100 |
| AUX Send Balance | - | L63-0-R63 | 0 |

- *1 Valid when any VS8F-2 is not installed, or only one VS8F-2 is installed.
- *2 Valid when two VS8F-2 effect expansion boards are installed.
- *3 Valid when Effect Insert Switch is "Ins."

Parameter List

System Parameter

| Parameter name | Display | Value | Initial value |
|-----------------------------|----------------------|--|-----------------|
| Master clock | Master Clock | DIGIN1, INT, DIGIN2 | INT |
| Time Display Format | Time Display Format | ABS, REL | ABS |
| Offset | Offset | 00h00m00s00–23h59m59s29 | 00h00m00s00 (*) |
| Fader Match | Fader Match | Null, Jump | Jump |
| Undo Message | UNDO Message | Off, On | On |
| Peak Hold Switch | Peak Hold Sw | Off, On | Off |
| Scene Mode | Scene Mode | All, KeepF | All |
| Remaining Display | Remain Display | Time, CapaMB, Capa %, Event | Time |
| Foot Switch Assign | Foot Sw | Play/Stop, Record, TapMarker, Next, Previous, GPI | Play/Stop |
| Digital Copy Protect Switch | Digital Copy Protect | Off, On | Off |

* The settable value for Offset will change slightly depending on the MTC type.

Global Parameter

| Parameter name | Display | Value | Initial value |
|-----------------------------|------------------|---------------------|---------------|
| IDE Drive | IDE Drive | Off, On | On |
| SCSI Self ID | SCSI Self ID | 0–7 | 7 |
| Shift Lock | Shift Lock | Off, On | Off |
| Measure Display | Measure Display | Always, Auto | Always |
| Numerics Type | NUMERICS Type | Up, Down | Up |
| Previous/Next Switch | PREVIOUS/NEXT Sw | PHRASE, MARKER | PHRASE |
| Input Peak Level | Input Peak Level | CLIP, -3 dB, -6 dB | -6 dB |
| Switching Time | Switching Time | 0.3–2.0 s | 0.5 s |
| CD Digital Recording Switch | CD Digital REC | Off, On | Off |
| Fan Control | Fan Control | Off, Play, Rec&Play | Off |

Play/Rec Parameter

| Parameter name | Display | Value | Initial value |
|---------------------|---------------------|--|-------------------------------------|
| Record Monitor | Record Monitor | AUTO, SOURCE | AUTO |
| Marker Stop | Marker Stop | Off, On | Off |
| Vari Pitch | Vari Pitch | 22.05–50.43 kHz (44.1 kHz) 22.05–50.41 kHz (32 kHz) 22.00–50.48 kHz (48 kHz) | 44.10 kHz 32.00 kHz 48.00 kHz |
| Fade Length | Fade Length | 2, 10, 20, 30, 40, 50 ms | 10 ms |
| Scrub Length | Scrub Length | 25–100 ms | 70 ms |
| Preview To Length | PREVIEW TO Length | 1.0–10.0 s | 1.0 s |
| Preview From Length | PREVIEW FROM Length | 1.0–10.0 s | 1.0 s |

MIDI Parameter

| Parameter name | Display | Value | Initial value |
|----------------------------------|-------------|--------------------|---------------|
| Device ID | Device ID | 1-32 | 17 |
| MIDI through Switch | MIDI Thru | Out, Thru | Out |
| System Exclusive Receive Switch | SysEx.Rx | Off, On | Off |
| System Exclusive Transmit Switch | SysEx.Tx | Off, On | Off |
| Control Local Switch | Cntrl Local | Off, On | On |
| MMC Mode | MMC | Off, MASTER, SLAVE | MASTER |
| Control Type | Cntrl Type | Off, C.C., Excl | Off |
| Program Change Scene | P.C.Scene | Off, On | Off |
| Program Change Effect | P.C.Eff | Off, On | Off |
| Control Change Effect | C.C.Eff | Off, On | Off |

Metronome Parameter

| Parameter name | Display | Value | Initial value |
|-------------------|----------------|--------------------|---------------|
| Metronome Out | Metronome Out | Off, INT, MIDI | Off |
| Metronome Mode | Metronome Mode | Rec Only, Rec&Play | Rec Only |
| Metronome Level | Metro Level | 0-127 | 100 |
| Metronome Channel | MID:MetroCh | 1-16 | 10 (*) |
| Accent Note | MID:Acc.Note | C_0-G_9 | C#2 (*) |
| Accent Velocity | MID:Acc.Velo | 1-127 | 100 (*) |
| Normal Note | MID:Nrm.Note | C_0-G_9 | C#2 (*) |
| Normal Velocity | MID:Nrm.Velo | 1-127 | 60 (*) |

* Valid when Metronome Out is "MIDI."

Sync/tempo Parameter

| Parameter name | Display | Value | Initial value |
|----------------|------------------|---------------------------|---------------|
| Sync Source | Sync Source | INT, EXT | INT |
| Sync Generator | Sync Gen. | Off, MTC, MIDIclk, SyncTr | Off |
| Error Level | Sync Error Level | 0-10 | 5 |
| Offset | Sync Offset | 00h00m00s00-23h59m59s29 | 00h00m00s00 |
| MTC Type | Sync MTC Type | 30, 29N, 29D, 25, 24 | 30 |

Sync Track Convert

| Parameter name | Display | Value | Initial value |
|-----------------|---------------|------------------------------------|---------------|
| Beat | Beat | 1/1-8/1, 1/2-8/2, 1/4-8/4, 1/8-8/8 | 4/4 |
| Tap Beat | Tap Beat | 1-8 | 4 |
| Sync Track Beat | Sync Trk Beat | 1/1-8/1, 1/2-8/2, 1/4-8/4, 1/8-8/8 | 4/4 |
| Start Time | Start Time | 00h00m00s00-23h59m59s29 | 00h00m00s00 |
| End Time | End Time | 00h00m00s00-23h59m59s29 | 00h00m00s00 |
| Measure | Measure | 1-999 | 1 |

Parameter List

Tempo Map

| Parameter name | Display | Value | Initial value |
|------------------|---------|------------------------------------|---------------|
| Tempo Map Number | MAP# | 1-50 | 1 |
| Tempo | ♩= | 25.0-250.0 | 120.0 |
| Measure | MEAS | 1-999 | 1 |
| Beat | BEAT | 1/1-8/1, 1/2-8/2, 1/4-8/4, 1/8-8/8 | 4/4 |

Drive Initialize

| Parameter name | Display | Value | Initial value |
|------------------|-----------------|--------------------|---------------|
| Initialize Drive | Init. Drive | IDE, SCSI0-SCSI7 | - |
| Partition | Partition | 500, 1000, 2000 MB | 2000 MB |
| Physical Format | Physical Format | Off (Quick), On | Off (Quick) |
| Surface Scan | Surface Scan | Off, On | Off |

Automix

| Parameter name | Display | Value | Initial value |
|----------------|------------|----------------|---------------|
| Snap Mode | Snap Mode | ALL, MaskFader | ALL |
| Erase Mode | Erase Mode | Event, Marker | Event |
| Erase From | Erase From | 0-999 | - |
| Erase To | Erase To | 0-999 | - |

MIDI Implementation

(*1) See '2. Address Map for Data Transfer' section.

(*2) Control Change of the odd number of channel is transmitted and received when Channel Link is On.

(*3) Value and switching Track status corresponds as follows.

(1) While VS-1680 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 playback/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)

Switches the effect bank of Preset/User.

VS-1680 never transmits this message.

| Status | Second | Third |
|--------|--------|-------|
| BnH | 00H | mmH |
| BnH | 20H | llH |

n = MIDI Channel No. : 0H - 3H (ch.1 = Effect1 ch.2 = Effect2 ch.3 = Effect3 ch.4 = Effect4)

mm = upper byte of bank number : 00H

ll = lower byte of bank number : 00H - 04H (0 - 4)

| Bank Select | | Program Change | Patch Number |
|-------------|-----|--------------------|--------------------|
| MSB | LSB | | |
| 00H | 00H | 00H - 63H (0 - 99) | Preset #000 - #099 |
| 00H | 01H | 00H - 63H (0 - 99) | Preset #100 - #199 |
| 00H | 02H | 00H - 09H (0 - 9) | Preset #200 - #209 |
| 00H | 03H | 00H - 63H (0 - 99) | User #000 - #099 |
| 00H | 04H | 00H - 63H (0 - 99) | User #100 - #199 |

○ NRPN(MSB/LSB)

Selects a parameter of the effect to be controlled.

VS-1680 never transmits this message.

| Status | Second | Third |
|--------|--------|-------|
| BnH | 62H | llH |
| BnH | 63H | mmH |

n = MIDI Channel No. : 0H - 3H

(ch.1 = Effect1 ch.2 = Effect2 ch.3 = Effect3 ch.4 = Effect4)

mm = upper byte of the parameter number to be assigned with NRPN : 00H

ll = lower byte of the parameter number to be assigned with NRPN : 00H - 2EH (0 - 46)

○ Data Entry (MSB/LSB)

Controls effect parameter assigned with NRPN.

VS-1680 never transmits this message.

| Status | Second | Third |
|--------|--------|-------|
| BnH | 06H | mmH |
| BnH | 26H | llH |

n = MIDI Channel No. : 0H - 3H

(ch.1 = Effect1 ch.2 = Effect2 ch.3 = Effect3 ch.4 = Effect4)

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

Increments the effect parameter selected with NRPN.

VS-1680 never transmits this message.

| Status | Second | Third |
|--------|--------|-------|
| BnH | 60H | 00H |

n = MIDI Channel No. : 0H - 3H

(ch.1 = Effect1 ch.2 = Effect2 ch.3 = Effect3 ch.4 = Effect4)

Increment the effect parameter selected with NRPN.

○ Data Decrement

Decrement the effect parameter selected with NRPN.

VS-1680 never transmits this message.

| Status | Second | Third |
|--------|--------|-------|
| BnH | 61H | 00H |

n = MIDI Channel No. : 0H - 3H

(ch.1 = Effect1 ch.2 = Effect2 ch.3 = Effect3 ch.4 = Effect4)

Decrement the effect parameter selected with NRPN.

NRPN and Effect parameters

⇨ Algorithm 0 Reverb (EFX1 or EFX3)

| NRPN | Data Entry | |
|---------|------------|--|
| 00H 00H | mmH llH | EQ SW 0,1 = Off, On |
| 00H 01H | mmH llH | EQ: Low EQ Type 0,1 = Shelving, Peaking |
| 00H 02H | mmH llH | EQ: Low EQ Gain -12,,,12dB |
| 00H 03H | mmH llH | EQ: Low EQ Frequency 2,,,200 = 20,,,2000Hz |
| 00H 04H | mmH llH | EQ: Low EQ Q 3,,,100 = 0.3,,,10.0 |
| 00H 05H | mmH llH | EQ: Mid EQ Gain -12,,,12dB |
| 00H 06H | mmH llH | EQ: Mid EQ Frequency 20,,,800 = 200,,,8000Hz |
| 00H 07H | mmH llH | EQ: Mid EQ Q 3,,,100 = 0.3,,,10.0 |
| 00H 08H | mmH llH | EQ: High EQ Type 0,1 = Shelving, Peaking |
| 00H 09H | mmH llH | EQ: High EQ Gain -12,,,12dB |
| 00H 0AH | mmH llH | EQ: High EQ Frequency 14,,,200 = 1.4,,,20.0kHz |
| 00H 0BH | mmH llH | EQ: High EQ Q 3,,,100 = 0.3,,,10.0 |
| 00H 0CH | mmH llH | EQ: Out Level 0,,,100 |
| 00H 0DH | mmH llH | Reverb: Room Size 5,,,40m |
| 00H 0EH | mmH llH | Reverb: Reverb Time 1,,,320 = 0.1,,,32.0s |
| 00H 0FH | mmH llH | Reverb: Pre Delay 0,,,200 = 0,,,200ms |
| 00H 10H | mmH llH | Reverb: Diffusion 0,,,100 |
| 00H 11H | mmH llH | Reverb: Density 0,,,100 |
| 00H 12H | mmH llH | Reverb: Early Reflection Level 0,,,100 |
| 00H 13H | mmH llH | Reverb: LF Damp Frequency 5,,,400 = 50,,,4000Hz |
| 00H 14H | mmH llH | Reverb: LF Damp Gain -36,,,0dB |
| 00H 15H | mmH llH | Reverb: HF Damp Frequency 10,,,200 = 1.0,,,20.0kHz |
| 00H 16H | mmH llH | Reverb: HF Damp Gain -36,,,0dB |
| 00H 17H | mmH llH | Reverb: HI Cut Frequency 2,,,200 = 0.2,,,20.0kHz |
| 00H 18H | mmH llH | Reverb: Effect Level -100,,,100 |
| 00H 19H | mmH llH | Reverb: Direct Level -100,,,100 |
| 00H 1AH | 00H 00H | (Reserved) |
| 00H 7FH | 00H 00H | |

⇨ Algorithm 1 Delay

| NRPN | Data Entry | |
|---------|------------|------------------------|
| 00H 00H | mmH llH | Delay SW 0,1 = Off, On |
| 00H 01H | mmH llH | EQ SW 0,1 = Off, On |

| | | | |
|---------|---------|---------------------------|------------------------------|
| 00H 02H | mmH 11H | Delay: Delay Time | 0,,1200ms |
| 00H 03H | mmH 11H | Delay: Shift | -1200,,1200 = L1200,,R1200ms |
| 00H 04H | mmH 11H | Delay: Lch Feedback Level | -100,,100 |
| 00H 05H | mmH 11H | Delay: Rch Feedback Level | -100,,100 |
| 00H 06H | mmH 11H | Delay: Lch Level | -100,,100 |
| 00H 07H | mmH 11H | Delay: Rch Level | -100,,100 |
| 00H 08H | mmH 11H | Delay: LF Damp Frequency | 5,,400 = 50,,4000Hz |
| 00H 09H | mmH 11H | Delay: LF Damp Gain | -36,,0dB |
| 00H 0AH | mmH 11H | Delay: HF Damp Frequency | 10,,200 = 1.0,,20.0kHz |
| 00H 0BH | mmH 11H | Delay: HF Damp Gain | -36,,0dB |
| 00H 0CH | mmH 11H | Delay: Direct Level | -100,,100 |
| 00H 0DH | mmH 11H | EQ: Low EQ Type | 0,1 = Shelving, Peaking |
| 00H 0EH | mmH 11H | EQ: Low EQ Gain | -12,,12dB |
| 00H 0FH | mmH 11H | EQ: Low EQ Frequency | 2,,200 = 20,,2000Hz |
| 00H 10H | mmH 11H | EQ: Low EQ Q | 3,,100 = 0.3,,10.0 |
| 00H 11H | mmH 11H | EQ: Mid EQ Gain | -12,,12dB |
| 00H 12H | mmH 11H | EQ: Mid EQ Frequency | 20,,800 = 200,,8000Hz |
| 00H 13H | mmH 11H | EQ: Mid EQ Q | 3,,100 = 0.3,,10.0 |
| 00H 14H | mmH 11H | EQ: High EQ Type | 0,1 = Shelving, Peaking |
| 00H 15H | mmH 11H | EQ: High EQ Gain | -12,,12dB |
| 00H 16H | mmH 11H | EQ: High EQ Frequency | 14,,200 = 1.4,,20.0kHz |
| 00H 17H | mmH 11H | EQ: High EQ Q | 3,,100 = 0.3,,10.0 |
| 00H 18H | mmH 11H | EQ: Out Level | 0,,100 |
| 00H 19H | 00H 00H | (Reserved) | : |
| 00H 7FH | 00H 00H | : | : |

* (Delay Time) + (Absolute value of Shift) should be 1200 or less.

Algorithm 2 Stereo Delay Chorus

| NRPN | Data Entry | |
|---------|------------|--|
| 00H 00H | mmH 11H | Delay SW 0,1 = Off,On |
| 00H 01H | mmH 11H | Chorus SW 0,1 = Off,On |
| 00H 02H | mmH 11H | EQ SW 0,1 = Off,On |
| 00H 03H | mmH 11H | Delay: Delay Time 0,,500ms |
| 00H 04H | mmH 11H | Delay: Shift -500,,500 = L500,,R500ms |
| 00H 05H | mmH 11H | Delay: Lch Feedback Level -100,,100 |
| 00H 06H | mmH 11H | Delay: Rch Feedback Level -100,,100 |
| 00H 07H | mmH 11H | Delay: Lch Cross Feedback Level -100,,100 |
| 00H 08H | mmH 11H | Delay: Rch Cross Feedback Level -100,,100 |
| 00H 09H | mmH 11H | Delay: Effect Level -100,,100 |
| 00H 0AH | mmH 11H | Delay: Direct Level -100,,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: Effect Level -100,,100 |
| 00H 0FH | mmH 11H | Chorus: Direct Level -100,,100 |
| 00H 10H | mmH 11H | Chorus: Lch Feedback Level -100,,100 |
| 00H 11H | mmH 11H | Chorus: Rch Feedback Level -100,,100 |
| 00H 12H | mmH 11H | Chorus: Lch Cross Feedback Level -100,,100 |
| 00H 13H | mmH 11H | Chorus: Rch Cross Feedback Level -100,,100 |
| 00H 14H | mmH 11H | EQ: Low EQ Type 0,1 = Shelving, Peaking |
| 00H 15H | mmH 11H | EQ: Low EQ Gain -12,,12dB |
| 00H 16H | mmH 11H | EQ: Low EQ Frequency 2,,200 = 20,,2000Hz |
| 00H 17H | mmH 11H | EQ: Low EQ Q 3,,100 = 0.3,,10.0 |
| 00H 18H | mmH 11H | EQ: Mid EQ Gain -12,,12dB |
| 00H 19H | mmH 11H | EQ: Mid EQ Frequency 20,,800 = 200,,8000Hz |
| 00H 1AH | mmH 11H | EQ: Mid EQ Q 3,,100 = 0.3,,10.0 |
| 00H 1BH | mmH 11H | EQ: High EQ Type 0,1 = Shelving, Peaking |
| 00H 1CH | mmH 11H | EQ: High EQ Gain -12,,12dB |
| 00H 1DH | mmH 11H | EQ: High EQ Frequency 14,,200 = 1.4,,20.0kHz |
| 00H 1EH | mmH 11H | EQ: High EQ Q 3,,100 = 0.3,,10.0 |
| 00H 1FH | mmH 11H | EQ: Out Level 0,,100 |
| 00H 1CH | 00H 00H | (Reserved) |
| 00H 7FH | 00H 00H | : |

| | | | |
|---------|---------|-----------------------|-------------------------|
| 00H 19H | mmH 11H | EQ: Mid EQ Frequency | 20,,800 = 200,,8000Hz |
| 00H 1AH | mmH 11H | EQ: Mid EQ Q | 3,,100 = 0.3,,10.0 |
| 00H 1BH | mmH 11H | EQ: High EQ Type | 0,1 = Shelving, Peaking |
| 00H 1CH | mmH 11H | EQ: High EQ Gain | -12,,12dB |
| 00H 1DH | mmH 11H | EQ: High EQ Frequency | 14,,200 = 1.4,,20.0kHz |
| 00H 1EH | mmH 11H | EQ: High EQ Q | 3,,100 = 0.3,,10.0 |
| 00H 1FH | mmH 11H | EQ: Out Level | 0,,100 |
| 00H 20H | 00H 00H | (Reserved) | : |
| 00H 7FH | 00H 00H | : | : |

* (Delay Time) + (Absolute value of Shift) should be 500 or less.

Algorithm 3 Stereo Pitch Shifter Delay

| NRPN | Data Entry | |
|---------|------------|--|
| 00H 00H | mmH 11H | P.ShifterDelay SW 0,1 = Off,On |
| 00H 01H | mmH 11H | EQ SW 0,1 = Off,On |
| 00H 02H | mmH 11H | P.ShifterDelay: Lch Chromatic Pitch -12,,12 |
| 00H 03H | mmH 11H | P.ShifterDelay: Lch Fine Pitch -100,,100 |
| 00H 04H | mmH 11H | P.ShifterDelay: Lch Pre Delay 0,,50ms |
| 00H 05H | mmH 11H | P.ShifterDelay: Lch Feedback Delay Time 0,,500ms |
| 00H 06H | mmH 11H | P.ShifterDelay: Lch Feedback Level 100,,100 |
| 00H 07H | mmH 11H | P.ShifterDelay: Lch Cross Feedback Level -100,,100 |
| 00H 08H | mmH 11H | P.ShifterDelay: Rch Chromatic Pitch -12,,12 |
| 00H 09H | mmH 11H | P.ShifterDelay: Rch Fine Pitch -100,,100 |
| 00H 0AH | mmH 11H | P.ShifterDelay: Rch Pre Delay 0,,50ms |
| 00H 0BH | mmH 11H | P.ShifterDelay: Rch Feedback Delay Time 0,,500ms |
| 00H 0CH | mmH 11H | P.ShifterDelay: Rch Feedback Level -100,,100 |
| 00H 0DH | mmH 11H | P.ShifterDelay: Rch Cross Feedback Level -100,,100 |
| 00H 0EH | mmH 11H | P.ShifterDelay: Effect Level -100,,100 |
| 00H 0FH | mmH 11H | P.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 00H | (Reserved) |
| 00H 7FH | 00H 00H | : |

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 |

MIDI Implementation

| | | | |
|---------|---------|-----------------------------|----------------------|
| 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 00H | (Reserved) | |
| : | : | | |
| 00H 7FH | 00H 00H | | |

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 00H | (Reserved) |
| : | : | |
| 00H 7FH | 00H 00H | |

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 00H | (Reserved) |
| : | : | |
| 00H 7FH | 00H 00H | |

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 |
| 00H 03H | mmH 11H | Chorus RSS: Direct Level -100,,100 |
| 00H 04H | 00H 00H | (Reserved) |
| : | : | |
| 00H 7FH | 00H 00H | |

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 for Algorithm 8 Guitar Multi1

| | | |
|---------|---------|---------------------------|
| 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 00H | (Reserved) |
| : | : | |
| 00H 7FH | 00H 00H | |

Individual for 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 00H | (Reserved) |
| : | : | |
| 00H 7FH | 00H 00H | |

◆ Individual for 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 00H | (Reserved) | |
| : | : | | |
| 00H 7FH | 00H 00H | | |

◆ 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 | 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 00H | (Reserved) | |
| : | : | | |
| 00H 7FH | 00H 00H | | |

◆ 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 |
| 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 00H | (Reserved) | |
| : | : | | |
| 00H 7FH | 00H 00H | | |

◆ 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 00H | (Reserved) | |
| : | : | | |
| 00H 7FH | 00H 00H | | |

- * 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 |
| 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 |

MIDI Implementation

| | | | |
|---------|---------|------------------------|--------------------------|
| 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 00H | (Reserved) | |
| 00H 7FH | 00H 00H | | |

| | | | |
|---------|---------|-------------------------------|-----------------------------|
| 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 00H | (Reserved) | |
| 00H 7FH | 00H 00H | | |

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 | -12,,,12dB |
| 00H 0FH | mmH 11H | EQ: Mid EQ Frequency | 20,,,800 = 200,,,8000Hz |
| 00H 10H | mmH 11H | EQ: Mid EQ Q | 3,,,100 = 0.3,,,10.0 |
| 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 | 14,,,200 = 1.4,,,20.0kHz |
| 00H 14H | mmH 11H | EQ: High EQ Q | 3,,,100 = 0.3,,,10.0 |
| 00H 15H | mmH 11H | EQ: Out Level | 0,,,100 |
| 00H 16H | 00H 00H | (Reserved) | |
| 00H 7FH | 00H 00H | | |

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 |

Algorithm 17 Gate Reverb (EFX1 or EFX3)

| 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, Reversel,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 |
| 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 | mmH 11H | 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 |

MIDI Implementation

| | | | |
|---------|---------|---------------|----------------------|
| 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 | 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 Level | -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 Level | -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 (EFX1 or EFX3)

| NRPN | Data Entry | | |
|---------|------------|-----------------------------|--------------|
| 00H 00H | mmH 11H | Voice Transformer SW | 0,1 = Off,On |
| 00H 01H | mmH 11H | Reverb SW | 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 (EFX1 or EFX3)

| 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 |
| 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 00H | (Reserved) | |
| 00H 7FH | 00H 00H | | |

MIDI Implementation

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 |
| 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 00H | (Reserved) |
| 00H 7FH | 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 |
| 00H 07H | mmH 11H | Isolator Anti Phase Low Level 0,,,100 |

| | | |
|---------|---------|------------|
| 00H 08H | 00H 00H | (Reserved) |
| 00H 7FH | 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 00H | (Reserved) |
| 00H 7FH | 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 00H | (Reserved) |
| 00H 7FH | 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, 8STAGE |
| 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 00H | (Reserved) |
| 00H 7FH | 00H 00H | (Reserved) |

● Program Change

Works as program change for the effects when MIDI channel number is set to 0H, 1H, 2H or 3H.

Works as scene switch when channel number is set to FH.
VS-1680 never transmits this message.

| Status | Second |
|--------|--------|
| CnH | ppH |

n = MIDI Channel No. : 0H - 3H, FH
(ch.1 = Effect1 ch.2 = Effect2ch.3 = Effect3 ch.4 = Effect4)
(ch.16 = Scene Memory (*1))
pp = Program No. : 00H - 63H (0 - 99) n = 0H, 1H
pp = Program No. : 00H - 07H (0 - 7) n = EH

(*1) If received while VS-1680 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 No. : 0H - 3H (ch.1-ch.4)
n = 0, 2 (ch.1, ch.3) : Voice Transformer : Chromatic Pitch
n = 1, 3 (ch.2, ch.4) : 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 VS-1680 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 VS-1680 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)

If the upper and lower 4 bits of the count are combined, these bit fields are assigned as follows.

Frame Count xxxxyyyyyy

| | |
|-------|------------------|
| xxx | Reserved (000) |
| yyyyy | Frame No. (0-29) |

Seconds Count xxxxyyyyyy

| | |
|-------|----------------------|
| xx | Reserved (00) |
| yyyyy | Seconds Count (0-59) |

Minutes Count xxxxyyyyyy

| | |
|-------|----------------------|
| xx | Reserved (00) |
| yyyyy | Minutes Count (0-59) |

Hours Count xyzzzzzz

| | |
|----|--------------------------------|
| 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

● Song Position Pointer

The current position is transmitted with the Song Position Pointer Message before the VS-1680 starts to run or 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 |
|--------|
| F6H |

● 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 System Exclusive Message |
| iiH | Manufacturer ID |
| | 41H: Roland's Manufacturer ID |
| | 7EH: Universal Non Realtime Message |
| | 7FH: Universal Realtime Message |
| ddH | Data : 00H - 7FH (0-127) |
| : | : |
| eeH | Data |
| F7H | EOX (End of System Exclusive Message) |

The VS-1680 can transfer and receive the internal parameters information using system exclusive messages, and also can be controlled by the external devices using system exclusive messages.

The VS-1680 can transmit and receive Universal System Exclusive messages, Data Request(RQ1) and Data set(DS1) as the System Exclusive message.

○ About Model ID

For Data Request (RQ1) and Data Set (DT1), VS-1680 uses 00H 0EH as a Model ID.

○ About Device ID

System Exclusive messages are not assigned to any particular MIDI channel. Instead, they have their own special control parameter called device ID.

The Roland system exclusive messages use device IDs to specify multiple VS-1680 units.

The VS-1680 sends system exclusive messages using 00H - 1FH, and receives the system exclusive messages whose device ID is same as its device ID and 7FH.

The value of the device ID is the value set on the SYSTEM parameter "MID:DeviceID" minus one.

MIDI Implementation

● Universal System Exclusive Message

○ INQUIRY MESSAGE

◇ Identify Request

| Status | Data Byte | Status |
|--------|-----------------|--------|
| F0H | 7EH,Dev,06H,01H | F7H |

| Byte | Description |
|------|--|
| F0H | Status of System 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 System Exclusive Message) |

The message is used to request the particular information of the VS-1680.

The VS-1680 does not transmit the message.

If the VS-1680 received the message and the device ID of the message is same as its device ID or 7FH, the VS-1680 transmits the following Identity Reply message.

◇ Identity Reply

| Status | Data Bytes | Status |
|--------|---|--------|
| F0H | 7EH,Dev,06H,02H,41H,7CH,00H,00H,00H,00H,00H,ssH,ssH | F7H |

| Byte | Description |
|---------|--|
| F0H | Status of System 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 | Manufacturer ID (Roland) |
| 0EH 01H | Device Family Code (VS-1680) |
| 00H 00H | Device Family No. |
| 00H | |
| 00H | |
| ssH ssH | Software Revision Level |
| F7H | EOX (End of System Exclusive Message) |

◇ MIDI Machine Control Commands

| Status | Data Bytes | Status |
|--------|---------------------------|--------|
| F0H | 7FH,Dev,06H,aaH, ..., bbH | F7H |

| Byte | Description |
|------|--|
| F0H | Status of System 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 System 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 System Exclusive Message |
| 7FH | Universal System Exclusive Message Realtime Header |
| Dev | Device ID |
| 07H | MMC Response Message |
| aaH | Response |
| : | : |
| bbH | Response |
| F7H | EOX (End of System Exclusive Message) |

(*) see '3. MIDI Machine Control' section

● Data Transfer (RQ1, DT1)

○ Data Request (RQ1)

| Status | Data Bytes | Status |
|--------|---|--------|
| F0H | 41H,Dev,00H,0EH,11H,aaH,bbH,ccH,ssH,ssH,ssH,Sum | F7H |

| Byte | Description |
|---------|---------------------------------------|
| F0H | Status of System Exclusive Message |
| 41H | Manufacturer ID (Roland) |
| Dev | Device ID |
| 00H 0EH | ModelID (VS-1680) |
| 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 System Exclusive Message) |

The message is used to request data to the VS-1680.

The VS-1680 does not transmit this message.

The VS-1680 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 VS-1680.
2. The requested size is over 1 byte.

○ Data Set (DT1)

| Status | Data Bytes | Status |
|--------|---|--------|
| F0H | 41H,Dev,00H,0EH,12H,aaH,bbH,ccH,ddH, ..., eeH,Sum | F7H |

| Byte | Description |
|---------|---------------------------------------|
| F0H | Status of System Exclusive Message |
| 41H | Manufacturer ID (Roland) |
| Dev | Device ID |
| 00H 0EH | Model ID (VS-1680) |
| 12H | Command ID (DT1) |
| aaH | Address MSB |
| bbH | Address |
| ccH | Address LSB |
| ddH | Data |
| : | : |
| eeH | Data |
| Sum | Check Sum |
| F7H | EOX (End of System Exclusive Message) |

◇ 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 VS-1680 can not work the receive message procedure correctly.

◇ The message is transmitted under the following condition.

When the VS-1680 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.

◇ The message is transmitted under the following condition.

When the VS-1680 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 | MSB | | LSB |
|-----------|----------|-----------|-----------|
| Binary | 0aaa aaa | 0bbb bbbb | 0ccc cccc |
| 7 Bit Hex | AA | BB | CC |

Parameter Address Block

<Model ID = 00H 0EH>

| 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 | (Reserved) |
| 06 00 00 | |
| 07 00 00 | |
| 08 00 00 | Sync Track Data |
| 09 00 00 | |
| 0A 00 00 | |
| 0B 00 00 | |
| 0C 00 00 | |
| 0D 00 00 | |
| 0E 00 00 | |
| 0F 00 00 | |
| 10 00 00 | (Reserved) |
| : | |
| 7F 7F 7F | |

System Parameter

| Start address | Data | Contents and remarks |
|---------------|-----------|---|
| 00 00 00 | 0aaaaaaaa | SMPTE(MTC) Offset Time aaaaaaaaabbbbbccccccddddd = 0,,,268435455block (1block=16sample) |
| 00 00 01# | 0bbbbbbb | |
| 00 00 02# | 0ccccccc | |
| 00 00 03# | 0ddddd | |
| 00 00 04 | 0aaaaaaaa | Vari Pitch |
| 00 00 05# | 0bbbbbbb | |
| 00 00 06# | 0ccccccc | |
| 00 00 07# | 0ddddd | |
| 00 00 08 | 0aaaaaaaa | (Reserved) |
| 00 00 09# | 0bbbbbbb | |
| 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 - 64 | Preview From Length 1.0,,,10.0S |
| 00 00 0E | 0A - 64 | Preview To Length 1.0,,,10.0S |
| 00 00 0F | 00 - 05 | Foot Switch Assign Play/Stop,Record, TapMarker, Next, Previous |
| 00 00 10 | 00 - 02 | Metronome Out Mode Off, INT, MIDI |
| 00 00 11 | 00 - 01 | Metronome Out Type REConly, AnyTime |
| 00 00 12 | 00 - 01 | Master Clock DIGITAL1, INT, DIGITAL2 |
| 00 00 13 | 00 - 1F | MIDI System Exclusive Device ID (*1) 1,,,32 |
| 00 00 14 | 00 - 01 | MIDI OUT/THRU Switch (*1) Out, Thru |
| 00 00 15 | 00 - 01 | MIDI System Exclusive RX Switch (*1) Off, On |
| 00 00 16 | 00 - 01 | MIDI System Exclusive TX Switch (*1) Off, On |
| 00 00 17 | 00 - 0F | MIDI Metronome Channel 1,,,16 |
| 00 00 18 | 0C - 7F | MIDI Metronome Accent Note 12,,,127 |
| 00 00 19 | 01 - 7F | MIDI Metronome Accent Velocity 1,,,127 |
| 00 00 1A | 0C - 7F | MIDI Metronome Normal Note 12,,,127 |
| 00 00 1B | 01 - 7F | MIDI Metronome Normal Velocity 1,,,127 |
| 00 00 1C | 00 - 01 | MIDI Mixer Control Local Switch Off, On |
| 00 00 1D | 00 - 02 | MIDI Mixer Control Type Off, C.C., Excl |
| 00 00 1E | 00 - 0A | Sync. Error Level 0,,,10 |
| 00 00 1F | 00 - 01 | Sync. Source INT, EXT |

| | | |
|-----------|-----------|--|
| 00 00 20 | 00 - 03 | Sync. Generate Off, MTC, MIDIclk, SyncTr |
| 00 00 21 | 00 - 03 | Sync. SMPTE Format 24, 25, 29D, 29N, 30 |
| 00 00 22 | 01 - 1F | (Reserved) |
| 00 00 23 | 01 - 1F | (Reserved) |
| 00 00 24 | 00 - 01 | Recording Monitor Auto, Source |
| 00 00 25 | 00 - 01 | Time Disply ABS, REL |
| 00 00 26 | 00 - 7f | Internal Metronome Level 0-127 |
| 00 00 27 | 00 - 01 | Undo Message Off, On |
| 00 00 28 | 0aaaaaaaa | Tempo Map-1 Tempo Map Time |
| 00 00 29# | 0bbbbbbb | |
| 00 00 2A# | 0ccccccc | |
| 00 00 2B# | 0ddddd | |
| 00 00 2C | 0aaaaaaaa | Tempo Map-1 Sync Track Time |
| 00 00 2D# | 0bbbbbbb | |
| 00 00 2E# | 0ccccccc | |
| 00 00 2F# | 0ddddd | |
| 00 00 30 | 0aaaaaaaa | Tempo Map-1 Tempo |
| 00 00 31# | 0bbbbbbb | |
| 00 00 32 | 0aaaaaaaa | Tempo Map-1 Meas 1 - 999 |
| 00 00 33# | 0bbbbbbb | |
| 00 00 34 | 00 | Tempo Map-1 Beat 0 - 31 = 1/1, 1/2, ..., 7/8, 8/8 |
| 00 00 35# | 00 - 1F | |
| 00 00 36 | 00 | Tempo Map-1 (Reserved) |
| 00 00 37# | 00 | |
| 00 00 38 | : | Tempo Map-2 (See Tempo Map-1, 16bytes each) |
| 00 06 47# | : | |
| 00 06 48 | 01 - 32 | Total Tempo Map Num (*2) 1 - 50 |
| 00 06 49 | 00 - 4E | Scrub Loop Length 25 - 100 mS |
| 00 06 4A | 00 - 02 | MMC Mode Off, Master, Slave |
| 00 06 4B | 00 - 01 | (Reserved) |
| 00 06 4C | 00 - 01 | Digital Output Copy Protect Off, On |
| 00 06 4D | 00 - 01 | Auto Mix Mode Off, On |
| 00 06 4E | 00 - 01 | Auto Mix Snap Shot Mode ALL, MaskF |
| 00 06 4F | 00 - 03 | Display Type of Remaining Time, CapaME, Capa#, Event |
| 00 06 50 | 00 - 01 | Fader Match Mode Null, Jump |
| 00 06 51 | 00 - 01 | Peak Hold Off, On |
| 00 06 52 | 00 - 01 | Scene Change by PG# Off, On |
| 00 06 53 | 00 - 01 | Effect Change by PG# Off, On |
| 00 06 54 | 00 - 01 | Effect Ctrl by Control Change Off, On |
| 00 06 55 | 00 - 01 | Level Meter Tx. via MIDI Off, On, Interval |
| 00 06 56 | 00 - 01 | Effector Board Available (*3) Off, On (=01 or 03) |

(*) 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 | 20 - 7E | Current Song Name -1 (ASCII) | |
| : | : | : | |
| 01 00 0B | 20 - 7E | Current Song Name -12 | |
| 01 00 0C | 00 - 02 | Current Song Sampling Frequency 48K, 44.1K, 32KHz | |
| 01 00 0D | 00 - 03 | Current Song R-DAC Mode | |
| 05 - 06 | 05 - 06 | | |
| 01 00 0E | 00 - 3B | Current Song Created (second) (minute) (hour) (a day of week) (day) (month) (year) | |
| 01 00 0F | 00 - 3B | | |
| 01 00 10 | 00 - 17 | | |
| 01 00 11 | 00 - 07 | | |
| 01 00 12 | 00 - 1F | | |
| 01 00 13 | 00 - 0C | | |
| 01 00 14 | 0aaaaaaaa | | |
| 01 00 15# | 0bbbbbbb | | |
| 01 00 16 | 00 - 3B | | Current Song Saved (second) |

MIDI Implementation

| | | |
|-----------|----------|---|
| 01 00 17 | 00 - 3E | (minute) |
| 01 00 18 | 00 - 17 | (hour) |
| 01 00 19 | 00 - 07 | (a day of week) |
| 01 00 1A | 00 - 1F | (day) |
| 01 00 1B | 00 - 0C | (month) |
| 01 00 1C | 0aaaaaaa | (year) |
| 01 00 1D# | 0bbbbbbb | (year) |
| 01 00 1E | 00 | (Reserved) |
| 01 00 1F | 00 | (Reserved) |
| 01 00 20 | 00 - xx | Current Song Protect Off, On(=01 or 81) |
| 01 00 21 | 00 | (Reserved) |
| 01 00 22 | 0000000a | Song List Length abbbbbbb = 1,,200 |
| 01 00 23# | 0bbbbbbb | |
| 01 00 24 | 00 | (Reserved) |
| 01 00 7F | 00 | (Reserved) |
| 01 01 00 | 20 - 7E | Current Song Comment - 1 (ASCII) |
| 01 01 63 | 20 - 7E | Current Song Comment -100 (ASCII) |
| 01 01 64 | 00 | (Reserved) |
| 01 01 7D | 00 | (Reserved) |
| 01 02 00 | 00 - | Song- 1 (similar to 01 00 00 - 01 00 1F) |
| 01 02 1F | 00 - | |
| 01 33 60 | 00 - | Song-200 (similar to 01 00 00 - 01 00 1F) |
| 01 33 7F | 00 - | |

| | | | |
|----------|---------|--|--|
| 02 01 4F | 00 - 7F | Track Channel EQ L Freq.-16 | 1.2K,1.3K,1.4K,1.5KHz |
| 02 01 50 | 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 01 59 | 00 - 7F | Input Channel EQ L Freq.-10 | |
| 02 01 5A | 00 - | (dummy) | |
| 02 01 5F | 00 - | | |
| 02 01 60 | 00 - 7F | Track Channel EQ L Gain -1 | 12,,,+12dB |
| 02 01 6F | 00 - 7F | Track Channel EQ L Gain -16 | |
| 02 01 70 | 00 - 7F | Input Channel EQ L Gain -1 | 12,,,+12dB |
| 02 01 79 | 00 - 7F | Input Channel EQ L Gain -10 | |
| 02 01 7A | 00 - | (dummy) | |
| 02 01 7F | 00 - | | |
| 02 02 00 | 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 02 0F | 00 - 7F | Track Channel EQ M Freq.-16 | |
| 02 02 10 | 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 02 19 | 00 - 7F | Input Channel EQ M Freq.-16 | |
| 02 02 1A | 00 - | (dummy) | |
| 02 02 1F | 00 - | | |
| 02 02 20 | 00 - 7F | Track Channel EQ M Gain -1 | 12,,,+12dB |
| 02 02 2F | 00 - 7F | Track Channel EQ M Gain -16 | |
| 02 02 30 | 00 - 7F | Input Channel EQ M Gain -1 | 12,,,+12dB |
| 02 02 39 | 00 - 7F | Input Channel EQ M Gain -10 | |
| 02 02 3A | 00 - | (dummy) | |
| 02 02 3F | 00 - | | |
| 02 02 40 | 00 - 7F | Track Channel EQ M Q -1 | 0.5,1,2,4,8,16 |
| 02 02 4F | 00 - 7F | Track Channel EQ M Q -16 | |
| 02 02 50 | 00 - 7F | Input Channel EQ M Q -1 | 0.5,1,2,4,8,16 |
| 02 02 59 | 00 - 7F | Input Channel EQ M Q -10 | |
| 02 02 5A | 00 - | (dummy) | |
| 02 02 5F | 00 - | | |
| 02 02 60 | 00 - 7F | Track Channel EQ H Freq.-1 | 500,600,700,800,900,1K,1.2K, 1.4K,1.6K,1.8K,2K,3K,4K,5K, 6K,7K,8K,9K,10K,11K,12K, 13K,14K,16K,18KHz |
| 02 02 6F | 00 - 7F | Track Channel EQ H Freq.-16 | |
| 02 02 70 | 00 - 7F | Input Channel EQ H Freq.-1 | 500,600,700,800,900,1K,1.2K, 1.4K,1.6K,1.8K,2K,3K,4K,5K, 6K,7K,8K,9K,10K,11K,12K, 13K,14K,16K,18KHz |
| 02 02 79 | 00 - 7F | Input Channel EQ H Freq.-10 | |
| 02 02 7A | 00 - | (dummy) | |
| 02 02 7F | 00 - | | |
| 02 03 00 | 00 - 7F | Track Channel EQ H Gain -1 | 12,,,+12dB |
| 02 03 0F | 00 - 7F | Track Channel EQ H Gain -16 | |
| 02 03 10 | 00 - 7F | Input Channel EQ H Gain -1 | 12,,,+12dB |
| 02 03 19 | 00 - 7F | Input Channel EQ H Gain -10 | |
| 02 03 1A | 00 - | (dummy) | |
| 02 03 1F | 00 - | | |
| 02 03 20 | 00 - 04 | Track Channel Effect 1 Insert Switch -1 | Off, Ins, InSL, InSR, InSS |
| 02 03 2F | 00 - 04 | Track Channel Effect 1 Insert Switch -16 | |
| 02 03 30 | 00 - 04 | Input Channel Effect 1 Insert Switch -1 | Off, Ins, InSL, InSR, InSS |
| 02 03 39 | 00 - 04 | Input Channel Effect 1 Insert Switch -10 | |
| 02 03 3A | 00 - | (dummy) | |
| 02 03 3F | 00 - | | |

(*) 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 and song comment 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 0F | 00 - | Track Status -16 |
| 02 00 10 | 00 - 0f | V.Track -1 1,,,16 |
| 02 00 1F | 00 - 0f | V.Track -16 |
| 02 00 20 | 00 - | (Reserved) 0 |
| 02 00 3F | 00 - | |
| 02 00 40 | 00 - 08 | Track Channel ATT -1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 00 4F | 00 - 08 | Track Channel ATT -16 |
| 02 00 50 | 00 - 08 | Input Channel ATT -1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 00 59 | 00 - 08 | Input Channel ATT -10 |
| 02 00 5A | 00 - | (dummy) |
| 02 00 5F | 00 - | |
| 02 00 60 | 00 - 01 | Track Channel Phase -1 Nor, Inv |
| 02 00 6F | 00 - 01 | Track Channel Phase -16 |
| 02 00 70 | 00 - 01 | Input Channel Phase -1 Nor, Inv |
| 02 00 79 | 00 - 01 | Input Channel Phase -10 |
| 02 00 7A | 00 - | (dummy) |
| 02 00 7F | 00 - | |
| 02 01 00 | 00 - | (Reserved) 0 |
| 02 01 1F | 00 - | |
| 02 01 20 | 00 - 01 | Track Channel EQ Switch -1 Off, On |
| 02 01 2F | 00 - 01 | Track Channel EQ Switch -16 |
| 02 01 30 | 00 - 01 | Input Channel EQ Switch -1 Off, On |
| 02 01 39 | 00 - 01 | Input Channel EQ Switch -10 |
| 02 01 3A | 00 - | (dummy) |
| 02 01 3F | 00 - | |
| 02 01 40 | 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, |

MIDI Implementation

| | | |
|----------|---------|--|
| 02 03 40 | 00 - 08 | Track Channel Effect 1 Insert Send Level -1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 03 4F | 00 - 08 | Track Channel Effect 1 Insert Send Level -1 |
| 02 03 50 | 00 - 08 | Input Channel Effect 1 Insert Send Level -1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 03 59 | 00 - 08 | Input Channel Effect 1 Insert Send Level -10 |
| 02 03 5A | 00 - | (dummy) |
| 02 03 5F | 00 - | |
| 02 03 60 | 00 - 08 | Track Channel Effect 1 Insert ReturnLevel-1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 03 6F | 00 - 08 | Track Channel Effect 1 Insert ReturnLevel-16 |
| 02 03 70 | 00 - 08 | Input Channel Effect 1 Insert ReturnLevel-1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 03 79 | 00 - 08 | Input Channel Effect 1 Insert ReturnLevel-10 |
| 02 03 7A | 00 - | (dummy) |
| 02 03 7F | 00 - | |
| 02 04 00 | 00 - 04 | Track Channel Effect 2 Insert Switch -1 Off,Ins,Insl,Insr,Inss |
| 02 04 0F | 00 - 04 | Track Channel Effect 2 Insert Switch -16 |
| 02 04 10 | 00 - 04 | Input Channel Effect 2 Insert Switch -1 Off,Ins,Insl,Insr,Inss |
| 02 04 19 | 00 - 04 | Input Channel Effect 2 Insert Switch -10 |
| 02 04 1A | 00 - | (dummy) |
| 02 04 1F | 00 - | |
| 02 04 20 | 00 - 08 | Track Channel Effect 2 Insert Send Level-1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 04 2F | 00 - 08 | Track Channel Effect 2 Insert Send Level-16 |
| 02 04 30 | 00 - 08 | Input Channel Effect 2 Insert Send Level-1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 04 39 | 00 - 08 | Input Channel Effect 2 Insert Send Level-10 |
| 02 04 3A | 00 - | (dummy) |
| 02 04 3F | 00 - | |
| 02 04 40 | 00 - 08 | Track Channel Effect 2 Insert ReturnLevel-1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 04 4F | 00 - 08 | Track Channel Effect 2 Insert ReturnLevel-16 |
| 02 04 50 | 00 - 08 | Input Channel Effect 2 Insert ReturnLevel-1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 04 59 | 00 - 08 | Input Channel Effect 2 Insert ReturnLevel-10 |
| 02 04 5A | 00 - | (dummy) |
| 02 04 5F | 00 - | |
| 02 04 60 | 00 - 04 | Track Channel Effect 3 Insert Switch -1 Off,Ins,Insl,Insr,Inss |
| 02 04 6F | 00 - 04 | Track Channel Effect 3 Insert Switch -16 |
| 02 04 70 | 00 - 04 | Input Channel Effect 3 Insert Switch -1 Off,Ins,Insl,Insr,Inss |
| 02 04 79 | 00 - 04 | Input Channel Effect 3 Insert Switch -10 |
| 02 04 7A | 00 - | (dummy) |
| 02 04 7F | 00 - | |
| 02 05 00 | 00 - 08 | Track Channel Effect 3 Insert Send Level -1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 05 0F | 00 - 08 | Track Channel Effect 3 Insert Send Level-16 |
| 02 05 10 | 00 - 08 | Input Channel Effect 3 Insert Send Level -1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 05 19 | 00 - 08 | Input Channel Effect 3 Insert Send Level-10 |
| 02 05 1A | 00 - | (dummy) |
| 02 05 1F | 00 - | |
| 02 05 20 | 00 - 08 | Track Channel Effect3 Insert ReturnLevel-1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 05 2F | 00 - 08 | Track Channel Effect3 Insert ReturnLevel-16 |
| 02 05 30 | 00 - 08 | Input Channel Effect3 Insert ReturnLevel-1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 05 39 | 00 - 08 | Input Channel Effect3 Insert ReturnLevel-10 |
| 02 05 3A | 00 - | (dummy) |
| 02 05 3F | 00 - | |
| 02 05 40 | 00 - 04 | Track Channel Effect 4 Insert Switch -1 Off,Ins,Insl,Insr,Inss |
| 02 05 4F | 00 - 04 | Track Channel Effect 4 Insert Switch -16 |

| | | |
|----------|---------|--|
| 02 05 50 | 00 - 04 | Input Channel Effect 4 Insert Switch -1 Off,Ins,Insl,Insr,Inss |
| 02 05 59 | 00 - 04 | Input Channel Effect 4 Insert Switch -10 |
| 02 05 5A | 00 - | (dummy) |
| 02 05 5F | 00 - | |
| 02 05 60 | 00 - 08 | Track Channel Effect 4 Insert Send Level -1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 05 6F | 00 - 08 | Track Channel Effect 4 Insert Send Level-16 |
| 02 05 70 | 00 - 08 | Input Channel Effect 4 Insert Send Level -1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 05 79 | 00 - 08 | Input Channel Effect 4 Insert Send Level-10 |
| 02 05 7A | 00 - | (dummy) |
| 02 05 7F | 00 - | |
| 02 06 00 | 00 - 08 | Track Channel Effect4 Insert Return Level-1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 06 0F | 00 - 08 | Track Channel Effect4 Insert Return Level-1 |
| 02 06 10 | 00 - 08 | Input Channel Effect4 Insert Return Level-1 -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 06 19 | 00 - 08 | Input Channel Effect4 Insert Return Level-10 |
| 02 06 1A | 00 - | (dummy) |
| 02 06 1F | 00 - | |
| 02 06 20 | 00 - 7F | Track Channel Level -1 0,,,127 |
| 02 06 2F | 00 - 7F | Track Channel Level -16 |
| 02 06 30 | 00 - 7F | Input Channel Level -1 0,,,127 |
| 02 06 39 | 00 - 7F | Input Channel Level -10 |
| 02 06 3A | 00 - | (dummy) |
| 02 06 3F | 00 - | |
| 02 06 40 | 00 - | (Reserved) 2 |
| 02 06 5F | 00 - | (Reserved) |
| 02 06 60 | 01 - 7F | Track Channel MST Send Pan -1 L63,,,R63 |
| 02 06 6F | 01 - 7F | Track Channel MST Send Pan -16 |
| 02 06 70 | 01 - 7F | Input Channel MST Send Pan -1 L63,,,R63 |
| 02 06 79 | 01 - 7F | Input Channel MST Send Pan -10 |
| 02 06 7A | 00 - | (dummy) |
| 02 06 7F | 00 - | |
| 02 07 00 | 00 - 02 | Track Channel MST Send Switch -1 Off,On |
| 02 07 0F | 00 - 02 | Track Channel MST Send Switch -16 |
| 02 07 10 | 00 - 02 | Input Channel MST Send Switch -1 Off,On |
| 02 07 19 | 00 - 02 | Input Channel MST Send Switch -10 |
| 02 07 1A | 00 - | (dummy) |
| 02 07 1F | 00 - | |
| 02 07 20 | 00 - 01 | Track Channel BUS Send Switch -1 -1 Off,On |
| 02 07 2F | 00 - 01 | Track Channel BUS Send Switch -1 -16 |
| 02 07 30 | 00 - 01 | Track Channel BUS Send Switch -2 -1 Off,On |
| 02 07 3F | 00 - 01 | Track Channel BUS Send Switch -2 -16 |
| 02 07 40 | 00 - 01 | Track Channel BUS Send Switch -3 -1 Off,On |
| 02 07 4F | 00 - 01 | Track Channel BUS Send Switch -3 -16 |
| 02 07 50 | 00 - 01 | Track Channel BUS Send Switch -4 -1 Off,On |
| 02 07 5F | 00 - 01 | Track Channel BUS Send Switch -4 -16 |
| 02 07 60 | 00 - 01 | Track Channel BUS Send Switch -5 -1 Off,On |
| 02 07 6F | 00 - 01 | Track Channel BUS Send Switch -5 -16 |
| 02 07 70 | 00 - 01 | Track Channel BUS Send Switch -6 -1 Off,On |
| 02 07 7F | 00 - 01 | Track Channel BUS Send Switch -6 -16 |
| 02 08 00 | 00 - 01 | Track Channel BUS Send Switch -7 -1 Off,On |
| 02 08 0F | 00 - 01 | Track Channel BUS Send Switch -7 -16 |
| 02 08 10 | 00 - 01 | Track Channel BUS Send Switch -8 -1 Off,On |

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|----------|---------|---|
| 02 08 1F | 00 - 01 | Track Channel BUS Send Switch -8 -16 |
| 02 08 20 | 00 - 01 | Track Channel BUS Send Switch -9 -1 Off,On |
| 02 08 2F | 00 - 01 | Track Channel BUS Send Switch -9 -16 |
| 02 08 30 | 00 - 01 | Track Channel BUS Send Switch -10 -1 Off,On |
| 02 08 3F | 00 - 01 | Track Channel BUS Send Switch -10 -16 |
| 02 08 40 | 00 - 01 | Track Channel BUS Send Switch -11 -1 Off,On |
| 02 08 4F | 00 - 01 | Track Channel BUS Send Switch -11 -16 |
| 02 08 50 | 00 - 01 | Track Channel BUS Send Switch -12 -1 Off,On |
| 02 08 5F | 00 - 01 | Track Channel BUS Send Switch -12 -16 |
| 02 08 60 | 00 - 01 | Track Channel BUS Send Switch -13 -1 Off,On |
| 02 08 6F | 00 - 01 | Track Channel BUS Send Switch -13 -16 |
| 02 08 70 | 00 - 01 | Track Channel BUS Send Switch -14 -1 Off,On |
| 02 08 7F | 00 - 01 | Track Channel BUS Send Switch -14 -16 |
| 02 09 00 | 00 - 01 | Track Channel BUS Send Switch -15 -1 Off,On |
| 02 09 0F | 00 - 01 | Track Channel BUS Send Switch -15 -16 |
| 02 09 10 | 00 - 01 | Track Channel BUS Send Switch -16 -1 Off,On |
| 02 09 1F | 00 - 01 | Track Channel BUS Send Switch -16 -16 |
| 02 09 20 | 00 - 01 | Input Channel BUS Send Switch -1 -1 Off,On |
| 02 09 2F | 00 - 01 | Input Channel BUS Send Switch -1 -16 |
| 02 09 30 | 00 - 01 | Input Channel BUS Send Switch -2 -1 Off,On |
| 02 09 3F | 00 - 01 | Input Channel BUS Send Switch -2 -16 |
| 02 09 40 | 00 - 01 | Input Channel BUS Send Switch -3 -1 Off,On |
| 02 09 4F | 00 - 01 | Input Channel BUS Send Switch -3 -16 |
| 02 09 50 | 00 - 01 | Input Channel BUS Send Switch -4 -1 Off,On |
| 02 09 5F | 00 - 01 | Input Channel BUS Send Switch -4 -16 |
| 02 09 60 | 00 - 01 | Input Channel BUS Send Switch -5 -1 Off,On |
| 02 09 6F | 00 - 01 | Input Channel BUS Send Switch -5 -16 |
| 02 09 70 | 00 - 01 | Input Channel BUS Send Switch -6 -1 Off,On |
| 02 09 7F | 00 - 01 | Input Channel BUS Send Switch -6 -16 |
| 02 0A 00 | 00 - 01 | Input Channel BUS Send Switch -7 -1 Off,On |
| 02 0A 0F | 00 - 01 | Input Channel BUS Send Switch -7 -16 |
| 02 0A 10 | 00 - 01 | Input Channel BUS Send Switch -8 -1 Off,On |
| 02 0A 1F | 00 - 01 | Input Channel BUS Send Switch -8 -16 |
| 02 0A 20 | 00 - 01 | Input Channel BUS Send Switch -9 -1 Off,On |
| 02 0A 2F | 00 - 01 | Input Channel BUS Send Switch -9 -16 |
| 02 0A 30 | 00 - 01 | Input Channel BUS Send Switch -10 -1 Off,On |
| 02 0A 3F | 00 - 01 | Input Channel BUS Send Switch -10 -16 |
| 02 0A 40 | 00 - | (dummy) |
| 02 0B 1F | 00 - | (dummy) |
| 02 0B 20 | 00 - 02 | Track Channel Effect 1 Switch -1 Off,Pre,Post |
| 02 0B 2F | 00 - 02 | Track Channel Effect 1 Switch -16 |
| 02 0B 30 | 00 - 02 | Input Channel Effect 1 Switch -1 Off,Pre,Post |
| 02 0B 39 | 00 - 02 | Input Channel Effect 1 Switch -10 |
| 02 0B 3A | 00 - | (dummy) |
| 02 0B 3F | 00 - | (dummy) |
| 02 0B 40 | 00 - 7F | Track Channel Effect 1 Level -1 0,,,127 |
| 02 0B 4F | 00 - 7F | Track Channel Effect 1 Level -16 |
| 02 0B 50 | 00 - 7F | Input Channel Effect 1 Level -1 0,,,127 |

| | | |
|----------|---------|---|
| 02 0B 59 | 00 - 7F | Input Channel Effect 1 Level -10 |
| 02 0B 5A | 00 - | (dummy) |
| 02 0B 5F | 00 - | (dummy) |
| 02 0B 60 | 01 - 7F | Track Channel Effect 1 Pan -1 L63,,,R63 |
| 02 0B 6F | 01 - 7F | Track Channel Effect 1 Pan -16 |
| 02 0B 70 | 01 - 7F | Input Channel Effect 1 Pan -1 L63,,,R63 |
| 02 0B 79 | 01 - 7F | Input Channel Effect 1 Pan -10 |
| 02 0B 7A | 00 - | (dummy) |
| 02 0B 7F | 00 - | (dummy) |
| 02 0C 00 | 00 - 02 | Track Channel Effect 2 Switch -1 Off,Pre,Post |
| 02 0C 0F | 00 - 02 | Track Channel Effect 2 Switch -16 |
| 02 0C 10 | 00 - 02 | Input Channel Effect 2 Switch -1 Off,Pre,Post |
| 02 0C 19 | 00 - 02 | Input Channel Effect 2 Switch -10 |
| 02 0C 1A | 00 - | (dummy) |
| 02 0C 1F | 00 - | (dummy) |
| 02 0C 20 | 00 - 7F | Track Channel Effect 2 Level -1 0,,,127 |
| 02 0C 2F | 00 - 7F | Track Channel Effect 2 Level -16 |
| 02 0C 30 | 00 - 7F | Input Channel Effect 2 Level -1 0,,,127 |
| 02 0C 39 | 00 - 7F | Input Channel Effect 2 Level -10 |
| 02 0C 3A | 00 - | (dummy) |
| 02 0C 3F | 00 - | (dummy) |
| 02 0C 40 | 01 - 7F | Track Channel Effect 2 Pan -1 L63,,,R63 |
| 02 0C 4F | 01 - 7F | Track Channel Effect 2 Pan -16 |
| 02 0C 50 | 01 - 7F | Input Channel Effect 2 Pan -1 L63,,,R63 |
| 02 0C 59 | 01 - 7F | Input Channel Effect 2 Pan -10 |
| 02 0C 5A | 00 - | (dummy) |
| 02 0C 5F | 00 - | (dummy) |
| 02 0C 60 | 00 - 02 | Track Channel AUX 1 Switch -1 Off,Pre,Post |
| 02 0C 6F | 00 - 02 | Track Channel AUX 1 Switch -16 |
| 02 0C 70 | 00 - 02 | Input Channel AUX 1 Switch -1 Off,Pre,Post |
| 02 0C 79 | 00 - 02 | Input Channel AUX 1 Switch -10 |
| 02 0C 7A | 00 - | (dummy) |
| 02 0C 7F | 00 - | (dummy) |
| 02 0D 00 | 00 - 7F | Track Channel AUX 1 Level -1 0,,,127 |
| 02 0D 0F | 00 - 7F | Track Channel AUX 1 Level -16 |
| 02 0D 10 | 00 - 7F | Input Channel AUX 1 Level -1 0,,,127 |
| 02 0D 19 | 00 - 7F | Input Channel AUX 1 Level -10 |
| 02 0D 1A | 00 - | (dummy) |
| 02 0D 1F | 00 - | (dummy) |
| 02 0D 20 | 01 - 7F | Track Channel AUX 1 Pan -1 L63,,,R63 |
| 02 0D 2F | 01 - 7F | Track Channel AUX 1 Pan -16 |
| 02 0D 30 | 01 - 7F | Input Channel AUX 1 Pan -1 L63,,,R63 |
| 02 0D 39 | 01 - 7F | Input Channel AUX 1 Pan -10 |
| 02 0D 3A | 00 - | (dummy) |
| 02 0D 3F | 00 - | (dummy) |
| 02 0D 40 | 00 - 02 | Track Channel AUX 2 Switch -1 Off,Pre,Post |
| 02 0D 4F | 00 - 02 | Track Channel AUX 2 Switch -16 |
| 02 0D 50 | 00 - 02 | Input Channel AUX 2 Switch -1 Off,Pre,Post |
| 02 0D 59 | 00 - 02 | Input Channel AUX 2 Switch -10 |
| 02 0D 5A | 00 - | (dummy) |
| 02 0D 5F | 00 - | (dummy) |
| 02 0D 60 | 00 - 7F | Track Channel AUX 2 Level -1 0,,,127 |
| 02 0D 6F | 00 - 7F | Track Channel AUX 2 Level -16 |
| 02 0D 70 | 00 - 7F | Input Channel AUX 2 Level -1 0,,,127 |
| 02 0D 79 | 00 - 7F | Input Channel AUX 2 Level -10 |
| 02 0D 7A | 00 - | (dummy) |

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| | | | |
|----------|---------|--------------------------------|----------------|
| 02 0D 7F | 00 - | | |
| 02 0E 00 | 01 - 7F | Track Channel AUX 2 Pan -1 | L63,,,R63 |
| 02 0E 0F | 01 - 7F | Track Channel AUX 2 Pan -16 | |
| 02 0E 10 | 01 - 7F | Input Channel AUX 2 Pan -1 | L63,,,R63 |
| 02 0E 19 | 01 - 7F | Input Channel AUX 2 Pan -10 | |
| 02 0E 1A | 00 - | (dummy) | |
| 02 0E 1F | 00 - | | |
| 02 0E 20 | 00 - 02 | Track Channel AUX 3 Switch -1 | Off, Pre, Post |
| 02 0E 2F | 00 - 02 | Track Channel AUX 3 Switch -16 | |
| 02 0E 30 | 00 - 02 | Input Channel AUX 3 Switch -1 | Off, Pre, Post |
| 02 0E 39 | 00 - 02 | Input Channel AUX 3 Switch -10 | |
| 02 0E 3A | 00 - | (dummy) | |
| 02 0E 3F | 00 - | | |
| 02 0E 40 | 00 - 7F | Track Channel AUX 3 Level -1 | 0,,,127 |
| 02 0E 4F | 00 - 7F | Track Channel AUX 3 Level -16 | |
| 02 0E 50 | 00 - 7F | Input Channel AUX 3 Level -1 | 0,,,127 |
| 02 0E 59 | 00 - 7F | Input Channel AUX 3 Level -10 | |
| 02 0E 5A | 00 - | (dummy) | |
| 02 0E 5F | 00 - | | |
| 02 0E 60 | 01 - 7F | Track Channel AUX 3 Pan -1 | L63,,,R63 |
| 02 0E 6F | 01 - 7F | Track Channel AUX 3 Pan -16 | |
| 02 0E 70 | 01 - 7F | Input Channel AUX 3 Pan -1 | L63,,,R63 |
| 02 0E 79 | 01 - 7F | Input Channel AUX 3 Pan -10 | |
| 02 0E 7A | 00 - | (dummy) | |
| 02 0E 7F | 00 - | | |
| 02 0F 00 | 00 - | (Reserved) | 0 |
| 02 0F 1F | 00 - | | |
| 02 0F 20 | 00 - 01 | Track Channel Solo Switch -1 | Off,On |
| 02 0F 2F | 00 - 01 | Track Channel Solo Switch -16 | |
| 02 0F 30 | 00 - 01 | Input Channel Solo Switch -1 | Off,On |
| 02 0F 39 | 00 - 01 | Input Channel Solo Switch -10 | |
| 02 0F 3A | 00 - | (dummy) | |
| 02 0F 3F | 00 - | | |
| 02 0F 40 | 00 - 01 | Track Channel Mute Switch -1 | Off,On |
| 02 0F 4F | 00 - 01 | Track Channel Mute Switch -16 | |
| 02 0F 50 | 00 - 01 | Input Channel Mute Switch -1 | Off,On |
| 02 0F 59 | 00 - 01 | Input Channel Mute Switch -10 | |
| 02 0F 5A | 00 - | (dummy) | |
| 02 0F 5F | 00 - | | |
| 02 0F 60 | 00 - 01 | Track Channel Link Switch -1 | Off,On |
| 02 0F 6F | 00 - 01 | Track Channel Link Switch -16 | |
| 02 0F 70 | 00 - 01 | Input Channel Link Switch -1 | Off,On |
| 02 0F 79 | 00 - 01 | Input Channel Link Switch -10 | |
| 02 0F 7A | 00 - | (dummy) | |
| 02 0F 7F | 00 - | | |
| 02 10 00 | 00 - 7F | Track Channel Offset Level -a | 0,,,127 |
| 02 10 07 | 00 - 7F | Track Channel Offset Level -h | |
| 02 10 08 | 00 - 7F | Input Channel Offset Level -a | 0,,,127 |
| 02 10 0C | 00 - 7F | Input Channel Offset Level -e | |
| 02 10 0D | 00 - | (dummy) | |
| 02 10 0F | 00 - | | |
| 02 10 10 | 00 - 7F | Track Channel Offset Pan -a | L63,,,R63 |
| 02 10 17 | 00 - 7F | Track Channel Offset Pan -h | |
| 02 10 18 | 00 - 7F | Input Channel Offset Pan -a | L63,,,R63 |
| 02 10 1C | 00 - 7F | Input Channel Offset Pan -e | |
| 02 10 1D | 00 - | (dummy) | |
| 02 10 1F | 00 - | | |

| | | | |
|----------|---------|-------------------------------------|--|
| 02 10 20 | 00 - | (Reserved) | |
| 02 10 27 | 00 - | | |
| 02 10 28 | 00 - 05 | Stereo In Select | Off, Input12, Input34, Input56, Input78, DigitalIn |
| 02 10 29 | 00 - 7F | Stereo In Level | 0,,,127 |
| 02 10 2A | 01 - 7F | Stereo In Balance | L63,,,R63 |
| 02 10 2E | 00 - | (Reserved) | |
| 02 10 2C | 00 - 01 | Stereo In Bus Send Switch -1 | Off,On |
| 02 10 3B | 00 - 01 | Stereo In Bus Send Switch -16 | |
| 02 10 3C | 00 - 01 | Stereo In Solo Switch | Off,On |
| 02 10 3D | 00 - 01 | Stereo In Mute Switch | Off,On |
| 02 10 3E | 00 - 02 | Effect 1 Return Switch | Off,On |
| 02 10 3F | 00 - 7F | Effect 1 Return Level | 0,,,127 |
| 02 10 40 | 01 - 7F | Effect 1 Return Balance | L63,,,R63 |
| 02 10 41 | 00 - | (Reserved) | |
| 02 10 42 | 00 - 01 | Effect 1 Return Bus Send Switch -1 | Off,On |
| 02 10 51 | 00 - 01 | Effect 1 Return Bus Send Switch -16 | |
| 02 10 52 | 00 - 01 | Effect 1 Return Solo Switch | Off,On |
| 02 10 53 | 00 - 01 | Effect 1 Return Mute Switch | Off,On |
| 02 10 54 | 00 - 02 | Effect 2 Return Switch | Off,On |
| 02 10 55 | 00 - 7F | Effect 2 Return Level | 0,,,127 |
| 02 10 56 | 01 - 7F | Effect 2 Return Balance | L63,,,R63 |
| 02 10 57 | 00 - | (Reserved) | |
| 02 10 58 | 00 - 01 | Effect 2 Return Bus Send Switch -1 | Off,On |
| 02 10 67 | 00 - 01 | Effect 2 Return Bus Send Switch -16 | |
| 02 10 68 | 00 - 01 | Effect 2 Return Solo Switch | Off,On |
| 02 10 69 | 00 - 01 | Effect 2 Return Mute Switch | Off,On |
| 02 10 6A | 00 - 02 | Effect 3 Return Switch | Off,On |
| 02 10 6B | 00 - 7F | Effect 3 Return Level | 0,,,127 |
| 02 10 6C | 01 - 7F | Effect 3 Return Balance | L63,,,R63 |
| 02 10 6D | 00 - | (Reserved) | |
| 02 10 6E | 00 - 01 | Effect 3 Return Bus Send Switch -1 | Off,On |
| 02 10 7D | 00 - 01 | Effect 3 Return Bus Send Switch -16 | |
| 02 10 7E | 00 - 01 | Effect 3 Return Solo Switch | Off,On |
| 02 10 7F | 00 - 01 | Effect 3 Return Mute Switch | Off,On |
| 02 11 00 | 00 - 02 | Effect 4 Return Switch | Off,On |
| 02 11 01 | 00 - 7F | Effect 4 Return Level | 0,,,127 |
| 02 11 02 | 01 - 7F | Effect 4 Return Balance | L63,,,R63 |
| 02 11 03 | 00 - | (Reserved) | |
| 02 11 04 | 00 - 01 | Effect 4 Return Bus Send Switch -1 | Off,On |
| 02 11 13 | 00 - 01 | Effect 4 Return Bus Send Switch -16 | |
| 02 11 14 | 00 - 01 | Effect 4 Return Solo Switch | Off,On |
| 02 11 15 | 00 - 01 | Effect 4 Return Mute Switch | Off,On |
| 02 11 16 | 00 - 01 | Effect 1 Master Insert Sw | Off,Ins |
| 02 11 17 | 00 - 08 | Effect 1 Master Send Level | -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 11 18 | 00 - 08 | Effect 1 Master Return Level | -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 11 19 | 00 - 01 | Effect 2 Master Insert Sw | Off,Ins |
| 02 11 1A | 00 - 08 | Effect 2 Master Send Level | -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 11 1B | 00 - 08 | Effect 2 Master Return Level | -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 11 1C | 00 - 01 | Effect 3 Master Insert Sw | Off,Ins |
| 02 11 1D | 00 - 08 | Effect 3 Master Send Level | -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 11 1E | 00 - 08 | Effect 3 Master Return Level | -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 11 1F | 00 - 01 | Effect 4 Master Insert Sw | Off,Ins |
| 02 11 20 | 00 - 08 | Effect 4 Master Send Level | -42,-36,-30,-24,-18,-12,-6,0,+6dB |

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|----------|---------|--|
| 02 11 21 | 00 - 08 | Effect 4 Master Return Level -42,-36,-30,-24,-18,-12,-6,0,+6dB |
| 02 11 22 | 00 - 7F | Master Out Level 0,,,127 |
| 02 11 23 | 01 - 7F | Master Out Balance L63,,,R63 |
| 02 11 24 | 00 - 7F | Master Effect 1 Send Level 0,,,127 |
| 02 11 25 | 01 - 7F | Master Effect 1 Send Balance L63,,,R63 |
| 02 11 26 | 00 - 7F | Master Effect 2 Send Level 0,,,127 |
| 02 11 27 | 01 - 7F | Master Effect 2 Send Balance L63,,,R63 |
| 02 11 28 | 00 - 7F | Master AUX 1 Send Level 0,,,127 |
| 02 11 29 | 01 - 7F | Master AUX 1 Send Balance L63,,,R63 |
| 02 11 2A | 00 - 7F | Master AUX 2 Send Level 0,,,127 |
| 02 11 2B | 01 - 7F | Master AUX 2 Send Balance L63,,,R63 |
| 02 11 2C | 00 - 7F | Master AUX 3 Send Level 0,,,127 |
| 02 11 2D | 01 - 7F | Master AUX 3 Send Balance L63,,,R63 |
| 02 11 2E | 00 - 07 | Monitor Mode Master,RecBus,Effect1, Effect2,Aux1,Aux2,Aux3,StereoIn |
| 02 11 2F | 00 - 7F | Monitor Out Level 0,,,127 |
| 02 11 30 | 01 - 7F | Monitor Out Balance L63,,,R63 |
| 02 11 31 | 00 - | (Reserved) |
| 02 11 32 | 00 - 04 | AUX A Output Select Effect1,Effect2, Aux1,Aux2,Aux3 |
| 02 11 33 | 00 - 04 | AUX B Output Select Effect1,Effect2, Aux1,Aux2,Aux3 |
| 02 11 34 | 00 - 06 | Digital 1 Output Select Master,Effect1,Effect2, Aux1,Aux2,Aux3,Monitor |
| 02 11 35 | 00 - 06 | Digital 2 Output Select Master,Effect1,Effect2, Aux1,Aux2,Aux3,Monitor |
| 02 11 36 | 00 - 01 | EQ Mode 2Band,3Band |
| 02 11 37 | 00 - | (Reserved) |
| 02 11 38 | 00 - | (Reserved) |
| 02 11 39 | 00 - 01 | Digital Input Select 0,1 |
| 02 11 3A | 00 - 01 | Direct Output Switch Off,On |

| | | |
|-----------|----------|--------------------------------------|
| 03 00 26# | 0cccccc | 0,,,268435455block (1block=16sample) |
| 03 00 27# | 0dffffff | |
| 03 00 28 | 0aaaaaaa | Punch In Point (*1,2) |
| 03 00 29# | 0bbbbbbb | aaaaaaaaabbbbbccccccccdddddd = |
| 03 00 2A# | 0ccccccc | 0,,,268435455block (1block=16sample) |
| 03 00 2B# | 0dffffff | |
| 03 00 2C | 0aaaaaaa | Punch Out Point (*1,2) |
| 03 00 2D# | 0bbbbbbb | aaaaaaaaabbbbbccccccccdddddd = |
| 03 00 2E# | 0ccccccc | 0,,,268435455block (1block=16sample) |
| 03 00 2F# | 0dffffff | |
| 03 01 00 | 0aaaaaaa | Marker Time or Marker Number (*1,3) |
| 03 01 01# | 0bbbbbbb | aaaaaaaaabbbbbccccccccdddddd = |
| 03 01 02# | 0ccccccc | 0,,,268435455block (1block=16sample) |
| 03 01 03# | 0dffffff | 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) |

(* 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 VS-1680 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 VS-1680 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 0E 12 03 01 00 7F 7F 7A F7 => (VS-1680)
(HOST) => F0 41 10 00 0E 12 03 01 04 02 74 F7 => (VS-1680)
(HOST) <= F0 41 10 00 0E 12 03 01 00 00 00 00 ss F7 <= (VS-1680)

The return value "00000000" is a sum of mark points.

Example 2) Write the mark point (DeviceID = 10)

(HOST) => F0 41 10 00 0E 12 03 01 00 aa aa aa ss F7 => (VS-1680)
aaaaaaa = time of Marker
(HOST) => F0 41 10 00 0E 12 03 01 04 01 75 F7 => (VS-1680)
(HOST) <= F0 41 10 00 0E 12 03 01 00 nn nn nn nn ss F7 <= (VS-1680)
nnnn = total marker number, ss = check sum

If the total of mark point is over 1000, the VS-1680 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 VS-1680 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 0E 12 03 01 00 00 00 03 75 F7 => (VS-1680)
(HOST) => F0 41 10 00 0E 12 03 01 04 00 76 F7 => (VS-1680)
(HOST) <= F0 41 10 00 0E 12 03 01 00 nn nn nn ss F7 <= (VS-1680)
nnnnnnn = total marker number, ss = check sum

● Locate Parameter

| Start address | Data | Contents and remarks |
|---------------|----------|--------------------------------------|
| 03 00 00 | 0aaaaaaa | LOCATE-1 (*1) |
| 03 00 01# | 0bbbbbbb | aaaaaaaaabbbbbccccccccdddddd = |
| 03 00 02# | 0ccccccc | 0,,,268435455block (1block=16sample) |
| 03 00 03# | 0dffffff | |
| 03 00 04 | 0aaaaaaa | LOCATE-2 (*1) |
| 03 00 05# | 0bbbbbbb | aaaaaaaaabbbbbccccccccdddddd = |
| 03 00 06# | 0ccccccc | 0,,,268435455block (1block=16sample) |
| 03 00 07# | 0dffffff | |
| 03 00 08 | 0aaaaaaa | LOCATE-3 (*1) |
| 03 00 09# | 0bbbbbbb | aaaaaaaaabbbbbccccccccdddddd = |
| 03 00 0A# | 0ccccccc | 0,,,268435455block (1block=16sample) |
| 03 00 0B# | 0dffffff | |
| 03 00 0C | 0aaaaaaa | LOCATE-4 (*1) |
| 03 00 0D# | 0bbbbbbb | aaaaaaaaabbbbbccccccccdddddd = |
| 03 00 0E# | 0ccccccc | 0,,,268435455block (1block=16sample) |
| 03 00 0F# | 0dffffff | |
| 03 00 10 | 0aaaaaaa | LOCATE-5 (*1) |
| 03 00 11# | 0bbbbbbb | aaaaaaaaabbbbbccccccccdddddd = |
| 03 00 12# | 0ccccccc | 0,,,268435455block (1block=16sample) |
| 03 00 13# | 0dffffff | |
| 03 00 14 | 0aaaaaaa | LOCATE-6 (*1) |
| 03 00 15# | 0bbbbbbb | aaaaaaaaabbbbbccccccccdddddd = |
| 03 00 16# | 0ccccccc | 0,,,268435455block (1block=16sample) |
| 03 00 17# | 0dffffff | |
| 03 00 18 | 0aaaaaaa | LOCATE-7 (*1) |
| 03 00 19# | 0bbbbbbb | aaaaaaaaabbbbbccccccccdddddd = |
| 03 00 1A# | 0ccccccc | 0,,,268435455block (1block=16sample) |
| 03 00 1B# | 0dffffff | |
| 03 00 1C | 0aaaaaaa | LOCATE-8 (*1) |
| 03 00 1D# | 0bbbbbbb | aaaaaaaaabbbbbccccccccdddddd = |
| 03 00 1E# | 0ccccccc | 0,,,268435455block (1block=16sample) |
| 03 00 1F# | 0dffffff | |
| 03 00 20 | 0aaaaaaa | Loop Start Point (*1,2) |
| 03 00 21# | 0bbbbbbb | aaaaaaaaabbbbbccccccccdddddd = |
| 03 00 22# | 0ccccccc | 0,,,268435455block (1block=16sample) |
| 03 00 23# | 0dffffff | |
| 03 00 24 | 0aaaaaaa | Loop End Point (*1,2) |
| 03 00 25# | 0bbbbbbb | aaaaaaaaabbbbbccccccccdddddd = |

(HOST) <= F0 41 10 00 0E 12 03 01 00 aa aa aa ss F7 <= (VS-1680)
 aaaaaaaaa = time of Marker #3

If the mark point is less than 3, the VS-1680 does not return the block of "aaaaaaaa".

Example 4) Read all mark points (DeviceID = 10)

(HOST) => F0 41 10 00 0E 12 03 01 00 7F 7F 7F 7A F7 => (VS-1680)
 7F7F7F7F(>= 1000) means All marker

(HOST) => F0 41 10 00 0E 12 03 01 04 00 76 F7 => (VS-1680)

(HOST) <= F0 41 10 00 0E 12 03 01 00 nn nn nn nn ss F7 <= (VS-1680)
 nnnnnnnn = total marker number, ss = check sum

(HOST) <= F0 41 10 00 0E 12 03 01 00 aa aa aa ss F7 <= (VS-1680)
 aaaaaaaaa = time of Marker #1

(HOST) <= F0 41 10 00 0E 12 03 01 00 bb bb bb ss F7 <= (VS-1680)
 bbbbbbbb = time of Marker #2

(HOST) <= F0 41 10 00 0E 12 03 01 00 xx xx xx ss F7 <= (VS-1680)
 xxxxxxxx = time of the last Marker#

If the mark point does not exist, the VS-1680 does not return blocks under "aaaaaaaa".

Example 5) Delete the mark point (DeviceID = 10)

(HOST) => F0 41 10 00 0E 12 03 01 00 aa aa aa ss F7 => (VS-1680)
 aaaaaaaaa = time of Marker

(HOST) => F0 41 10 00 0E 12 03 01 04 02 74 F7 => (VS-1680)

(HOST) <= F0 41 10 00 0E 12 03 01 00 nn nn nn nn ss F7 <= (VS-1680)
 nnnn = total marker number, ss = check sum

The VS-1680 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 | 0aaaaaaaa Effector - 1 Algorithm aaaaaaaaaabbbbbbb = |
| 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 |
| 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 | 0aaaaaaaa Effector - 2 Algorithm aaaaaaaaaabbbbbbb = |
| 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 |
| 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 | |
| 04 02 00 | 0aaaaaaaa | Effector - 3 Algorithm aaaaaaaaaabbbbbbb = |
| 04 02 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 |
| 04 02 02 | 20 - 7E | Effector - 3 Name -1 (ASCII) |
| 04 02 0D | 20 - 7E | Effector - 3 Name -12 |
| 04 02 0E | 20 - 7E | Effector - 3 Parameter Area (See Below) |
| 04 02 7F | 20 - 7E | |
| 04 03 00 | 0aaaaaaaa | Effector - 4 Algorithm aaaaaaaaaabbbbbbb = |
| 04 03 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 |
| 04 03 02 | 20 - 7E | Effector - 4 Name -1 (ASCII) |
| 04 03 0D | 20 - 7E | Effector - 4 Name -12 |

MIDI Implementation

| | | | |
|-----------|-----------|----------------------------------|-------------------------|
| 04 00 20 | 0aaaaaaaa | Delay: Effect Level | |
| 04 00 21# | 0bbbbbbb | | -100,,100 |
| 04 00 22 | 0aaaaaaaa | Delay: Direct Level | |
| 04 00 23# | 0bbbbbbb | | -100,,100 |
| 04 00 24 | 0aaaaaaaa | Chorus: Rate | |
| 04 00 25# | 0bbbbbbb | | 1,,100 = 0.1,,10.0Hz |
| 04 00 26 | 0aaaaaaaa | Chorus: Depth | |
| 04 00 27# | 0bbbbbbb | | 0,,100 |
| 04 00 28 | 0aaaaaaaa | Chorus: Pre Delay | |
| 04 00 29# | 0bbbbbbb | | 0,,50ms |
| 04 00 2A | 0aaaaaaaa | Chorus: Effect Level | |
| 04 00 2B# | 0bbbbbbb | | -100,,100 |
| 04 00 2C | 0aaaaaaaa | Chorus: Direct Level | |
| 04 00 2D# | 0bbbbbbb | | -100,,100 |
| 04 00 2E | 0aaaaaaaa | Chorus: Lch Feedback Level | |
| 04 00 2F# | 0bbbbbbb | | -100,,100 |
| 04 00 30 | 0aaaaaaaa | Chorus: Rch Feedback Level | |
| 04 00 31# | 0bbbbbbb | | -100,,100 |
| 04 00 32 | 0aaaaaaaa | Chorus: Lch Cross Feedback Level | |
| 04 00 33# | 0bbbbbbb | | -100,,100 |
| 04 00 34 | 0aaaaaaaa | Chorus: Rch Cross Feedback Level | |
| 04 00 35# | 0bbbbbbb | | -100,,100 |
| 04 00 36 | 0aaaaaaaa | EQ: Low EQ Type | |
| 04 00 37# | 0bbbbbbb | | 0,1 = Shelving, Peaking |
| 04 00 38 | 0aaaaaaaa | EQ: Low EQ Gain | |
| 04 00 39# | 0bbbbbbb | | -12,,12dB |
| 04 00 3A | 0aaaaaaaa | EQ: Low EQ Frequency | |
| 04 00 3B# | 0bbbbbbb | | 2,,200 = 20,,2000Hz |
| 04 00 3C | 0aaaaaaaa | EQ: Low EQ Q | |
| 04 00 3D# | 0bbbbbbb | | 3,,100 = 0.3,,10.0 |
| 04 00 3E | 0aaaaaaaa | EQ: Mid EQ Gain | |
| 04 00 3F# | 0bbbbbbb | | -12,,12dB |
| 04 00 40 | 0aaaaaaaa | EQ: Mid EQ Frequency | |
| 04 00 41# | 0bbbbbbb | | 20,,800 = 200,,8000Hz |
| 04 00 42 | 0aaaaaaaa | EQ: Mid EQ Q | |
| 04 00 43# | 0bbbbbbb | | 3,,100 = 0.3,,10.0 |
| 04 00 44 | 0aaaaaaaa | EQ: High EQ Type | |
| 04 00 45# | 0bbbbbbb | | 0,1 = Shelving, Peaking |
| 04 00 46 | 0aaaaaaaa | EQ: High EQ Gain | |
| 04 00 47# | 0bbbbbbb | | -12,,12dB |
| 04 00 48 | 0aaaaaaaa | EQ: High EQ Frequency | |
| 04 00 49# | 0bbbbbbb | | 14,,200 = 1.4,,20.0kHz |
| 04 00 4A | 0aaaaaaaa | EQ: High EQ Q | |
| 04 00 4B# | 0bbbbbbb | | 3,,100 = 0.3,,10.0 |
| 04 00 4C | 0aaaaaaaa | EQ: Out Level | |
| 04 00 4D# | 0bbbbbbb | | 0,,100 |
| 04 00 4E | 00 | (Reserved) | |
| 04 00 4F | 00 | : | : |
| 04 00 7F | 00 | : | : |

* (Delay Time) + (Absolute Shift) should be 500 or less.

Algorithm 3 Stereo Pitch Shifter Delay

| | | | |
|-----------|-----------|--|--------------|
| 04 00 0E | 0aaaaaaaa | P.ShifterDelay SW | |
| 04 00 0F# | 0bbbbbbb | | 0,1 = Off,On |
| 04 00 10 | 0aaaaaaaa | EQ SW | |
| 04 00 11# | 0bbbbbbb | | 0,1 = Off,On |
| 04 00 12 | 0aaaaaaaa | P.ShifterDelay: Lch Chromatic Pitch | |
| 04 00 13# | 0bbbbbbb | | -12,,12 |
| 04 00 14 | 0aaaaaaaa | P.ShifterDelay: Lch Fine Pitch | |
| 04 00 15# | 0bbbbbbb | | -100,,100 |
| 04 00 16 | 0aaaaaaaa | P.ShifterDelay: Lch Pre Delay | |
| 04 00 17# | 0bbbbbbb | | 0,,50ms |
| 04 00 18 | 0aaaaaaaa | P.ShifterDelay: Lch Feedback Delay Time | |
| 04 00 19# | 0bbbbbbb | | 0,,500ms |
| 04 00 1A | 0aaaaaaaa | P.ShifterDelay: Lch Feedback Level | |
| 04 00 1B# | 0bbbbbbb | | -100,,100 |
| 04 00 1C | 0aaaaaaaa | P.ShifterDelay: Lch Cross Feedback Level | |
| 04 00 1D# | 0bbbbbbb | | -100,,100 |
| 04 00 1E | 0aaaaaaaa | P.ShifterDelay: Rch Chromatic Pitch | |
| 04 00 1F# | 0bbbbbbb | | 12,,12 |
| 04 00 20 | 0aaaaaaaa | P.ShifterDelay: Rch Fine Pitch | |
| 04 00 21# | 0bbbbbbb | | -100,,100 |
| 04 00 22 | 0aaaaaaaa | P.ShifterDelay: Rch Pre Delay | |
| 04 00 23# | 0bbbbbbb | | 0,,50ms |
| 04 00 24 | 0aaaaaaaa | P.ShifterDelay: Rch Feedback Delay Time | |
| 04 00 25# | 0bbbbbbb | | 0,,500ms |

| | | | |
|-----------|-----------|--|-------------------------|
| 04 00 26 | 0aaaaaaaa | P.ShifterDelay: Rch Feedback Level | |
| 04 00 27# | 0bbbbbbb | | -100,,100 |
| 04 00 28 | 0aaaaaaaa | P.ShifterDelay: Rch Cross Feedback Level | |
| 04 00 29# | 0bbbbbbb | | -100,,100 |
| 04 00 2A | 0aaaaaaaa | P.ShifterDelay: Effect Level | |
| 04 00 2B# | 0bbbbbbb | | -100,,100 |
| 04 00 2C | 0aaaaaaaa | P.ShifterDelay: Direct Level | |
| 04 00 2D# | 0bbbbbbb | | -100,,100 |
| 04 00 2E | 0aaaaaaaa | EQ: Low EQ Type | |
| 04 00 2F# | 0bbbbbbb | | 0,1 = Shelving, Peaking |
| 04 00 30 | 0aaaaaaaa | EQ: Low EQ Gain | |
| 04 00 31# | 0bbbbbbb | | -12,,12dB |
| 04 00 32 | 0aaaaaaaa | EQ: Low EQ Frequency | |
| 04 00 33# | 0bbbbbbb | | 2,,200 = 20,,2000Hz |
| 04 00 34 | 0aaaaaaaa | EQ: Low EQ Q | |
| 04 00 35# | 0bbbbbbb | | 3,,100 = 0.3,,10.0 |
| 04 00 36 | 0aaaaaaaa | EQ: Mid EQ Gain | |
| 04 00 37# | 0bbbbbbb | | -12,,12dB |
| 04 00 38 | 0aaaaaaaa | EQ: Mid EQ Frequency | |
| 04 00 39# | 0bbbbbbb | | 20,,800 = 200,,8000Hz |
| 04 00 3A | 0aaaaaaaa | EQ: Mid EQ Q | |
| 04 00 3B# | 0bbbbbbb | | 3,,100 = 0.3,,10.0 |
| 04 00 3C | 0aaaaaaaa | EQ: High EQ Type | |
| 04 00 3D# | 0bbbbbbb | | 0,1 = Shelving, Peaking |
| 04 00 3E | 0aaaaaaaa | EQ: High EQ Gain | |
| 04 00 3F# | 0bbbbbbb | | -12,,12dB |
| 04 00 40 | 0aaaaaaaa | EQ: High EQ Frequency | |
| 04 00 41# | 0bbbbbbb | | 14,,200 = 1.4,,20.0kHz |
| 04 00 42 | 0aaaaaaaa | EQ: High EQ Q | |
| 04 00 43# | 0bbbbbbb | | 3,,100 = 0.3,,10.0 |
| 04 00 44 | 0aaaaaaaa | EQ: Out Level | |
| 04 00 45# | 0bbbbbbb | | 0,,100 |
| 04 00 46 | 00 | (Reserved) | |
| 04 00 47 | 00 | : | : |
| 04 00 7F | 00 | : | : |

Algorithm 4 Vocoder

| | | | |
|-----------|-----------|-----------------------------|----------------------|
| 04 00 0E | 0aaaaaaaa | Chorus SW | |
| 04 00 0F# | 0bbbbbbb | | 0,1 = Off,On |
| 04 00 10 | 0aaaaaaaa | Vocoder: Voice Character 1 | |
| 04 00 11# | 0bbbbbbb | | 0,,100 |
| 04 00 12 | 0aaaaaaaa | Vocoder: Voice Character 2 | |
| 04 00 13# | 0bbbbbbb | | 0,,100 |
| 04 00 14 | 0aaaaaaaa | Vocoder: Voice Character 3 | |
| 04 00 15# | 0bbbbbbb | | 0,,100 |
| 04 00 16 | 0aaaaaaaa | Vocoder: Voice Character 4 | |
| 04 00 17# | 0bbbbbbb | | 0,,100 |
| 04 00 18 | 0aaaaaaaa | Vocoder: Voice Character 5 | |
| 04 00 19# | 0bbbbbbb | | 0,,100 |
| 04 00 1A | 0aaaaaaaa | Vocoder: Voice Character 6 | |
| 04 00 1B# | 0bbbbbbb | | 0,,100 |
| 04 00 1C | 0aaaaaaaa | Vocoder: Voice Character 7 | |
| 04 00 1D# | 0bbbbbbb | | 0,,100 |
| 04 00 1E | 0aaaaaaaa | Vocoder: Voice Character 8 | |
| 04 00 1F# | 0bbbbbbb | | 0,,100 |
| 04 00 20 | 0aaaaaaaa | Vocoder: Voice Character 9 | |
| 04 00 21# | 0bbbbbbb | | 0,,100 |
| 04 00 22 | 0aaaaaaaa | Vocoder: Voice Character 10 | |
| 04 00 23# | 0bbbbbbb | | 0,,100 |
| 04 00 24 | 0aaaaaaaa | Chorus: Rate | |
| 04 00 25# | 0bbbbbbb | | 1,,100 = 0.1,,10.0Hz |
| 04 00 26 | 0aaaaaaaa | Chorus: Depth | |
| 04 00 27# | 0bbbbbbb | | 0,,100 |
| 04 00 28 | 0aaaaaaaa | Chorus: Pre Delay | |
| 04 00 29# | 0bbbbbbb | | 0,,50ms |
| 04 00 2A | 0aaaaaaaa | Chorus: Feedback Level | |
| 04 00 2B# | 0bbbbbbb | | -100,,100 |
| 04 00 2C | 0aaaaaaaa | Chorus: Effect Level | |
| 04 00 2D# | 0bbbbbbb | | -100,,100 |
| 04 00 2E | 0aaaaaaaa | Chorus: Direct Level | |
| 04 00 2F# | 0bbbbbbb | | -100,,100 |
| 04 00 30 | 00 | (Reserved) | |
| 04 00 31 | 00 | : | : |
| 04 00 7F | 00 | : | : |

MIDI Implementation

| | | |
|---------------------------|----------------------|--|
| 04 00 24 04 00 25# | 0aaaaaaa 0bbbbbbb | Pre Amp: Master 0,,,100 |
| 04 00 26 04 00 27# | 0aaaaaaa 0bbbbbbb | Pre Amp: Bright 0,1 = Off,On |
| 04 00 28 04 00 29# | 0aaaaaaa 0bbbbbbb | Pre Amp: Gain 0,1,2 = Low,Middle,High |
| 04 00 2A 04 00 2B# | 0aaaaaaa 0bbbbbbb | 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 |
| 04 00 2C 04 00 2D# | 0aaaaaaa 0bbbbbbb | Speaker: MIC Setting 0,1,2 = 1,2,3 |
| 04 00 2E 04 00 2F# | 0aaaaaaa 0bbbbbbb | Speaker: MIC Level 0,,,100 |
| 04 00 30 04 00 31# | 0aaaaaaa 0bbbbbbb | Speaker: Direct Level 0,,,100 |
| 04 00 32 : 04 00 7F | 00 : 00 | (Reserved) |

(*) The "Pre Amp Middle" is invalid when "Mode" is "Match Drive".

(*) The "Pre Amp Presence" works counter to the Value(-100,,0) when "Mode" is "Match Drive".

(*) The "Pre Amp Bright" is valid when "Mode" is "JC-120", "Clean Twin" or "BG Lead".

Algorithm 14 Stereo Phaser

| | | |
|---------------------------|----------------------|---|
| 04 00 0E 04 00 0F# | 0aaaaaaa 0bbbbbbb | Phaser 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 | Phaser: Mode 0,,,3 = 4.8.12.16stage |
| 04 00 14 04 00 15# | 0aaaaaaa 0bbbbbbb | Phaser: Rate 1,,,100 = 0.1,,,10.0Hz |
| 04 00 16 04 00 17# | 0aaaaaaa 0bbbbbbb | Phaser: Depth 0,,,100 |
| 04 00 18 04 00 19# | 0aaaaaaa 0bbbbbbb | Phaser: Polarity 0,1 = Inverse,Synchro |
| 04 00 1A 04 00 1B# | 0aaaaaaa 0bbbbbbb | Phaser: Manual 0,,,100 |
| 04 00 1C 04 00 1D# | 0aaaaaaa 0bbbbbbb | Phaser: Resonance 0,,,100 |
| 04 00 1E 04 00 1F# | 0aaaaaaa 0bbbbbbb | Phaser: Cross Feedback 0,,,100 |
| 04 00 20 04 00 21# | 0aaaaaaa 0bbbbbbb | Phaser: Effect Level -100,,,100 |
| 04 00 22 04 00 23# | 0aaaaaaa 0bbbbbbb | Phaser: Direct Level -100,,,100 |
| 04 00 24 04 00 25# | 0aaaaaaa 0bbbbbbb | EQ: Low EQ Type 0,1 = Shelving, Peaking |
| 04 00 26 04 00 27# | 0aaaaaaa 0bbbbbbb | EQ: Low EQ Gain -12,,,12dB |
| 04 00 28 04 00 29# | 0aaaaaaa 0bbbbbbb | EQ: Low EQ Frequency 2,,,200 = 20,,,2000Hz |
| 04 00 2A 04 00 2B# | 0aaaaaaa 0bbbbbbb | EQ: Low EQ Q 3,,,100 = 0.3,,,10.0 |
| 04 00 2C 04 00 2D# | 0aaaaaaa 0bbbbbbb | EQ: Mid EQ Gain -12,,,12dB |
| 04 00 2E 04 00 2F# | 0aaaaaaa 0bbbbbbb | EQ: Mid EQ Frequency 20,,,800 = 200,,,8000Hz |
| 04 00 30 04 00 31# | 0aaaaaaa 0bbbbbbb | EQ: Mid EQ Q 3,,,100 = 0.3,,,10.0 |
| 04 00 32 04 00 33# | 0aaaaaaa 0bbbbbbb | EQ: High EQ Type 0,1 = Shelving, Peaking |
| 04 00 34 04 00 35# | 0aaaaaaa 0bbbbbbb | EQ: High EQ Gain -12,,,12dB |
| 04 00 36 04 00 37# | 0aaaaaaa 0bbbbbbb | EQ: High EQ Frequency 14,,,200 = 1.4,,,20.0kHz |
| 04 00 38 04 00 39# | 0aaaaaaa 0bbbbbbb | EQ: High EQ Q 3,,,100 = 0.3,,,10.0 |
| 04 00 3A 04 00 3B# | 0aaaaaaa 0bbbbbbb | EQ: Out Level 0,,,100 |
| 04 00 3C : 04 00 7F | 00 : 00 | (Reserved) |

Algorithm 15 Stereo Flanger

| | | |
|---------------------------|----------------------|---|
| 04 00 0E 04 00 0F# | 0aaaaaaa 0bbbbbbb | Flanger 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 | Flanger: Rate 1,,,100 = 0.1,,,10.0Hz |
| 04 00 14 04 00 15# | 0aaaaaaa 0bbbbbbb | Flanger: Depth 0,,,100 |
| 04 00 16 04 00 17# | 0aaaaaaa 0bbbbbbb | Flanger: Polarity 0,1 = Inverse,Synchro |
| 04 00 18 04 00 19# | 0aaaaaaa 0bbbbbbb | Flanger: Manual 0,,,100 |
| 04 00 1A 04 00 1B# | 0aaaaaaa 0bbbbbbb | Flanger: Resonance 0,,,100 |
| 04 00 1C 04 00 1D# | 0aaaaaaa 0bbbbbbb | Flanger: Cross Feedback Level 0,,,100 |
| 04 00 1E 04 00 1F# | 0aaaaaaa 0bbbbbbb | Flanger: Effect Level -100,,,100 |
| 04 00 20 04 00 21# | 0aaaaaaa 0bbbbbbb | Flanger: Direct Level -100,,,100 |
| 04 00 22 04 00 23# | 0aaaaaaa 0bbbbbbb | EQ: Low EQ Type 0,1 = Shelving, Peaking |
| 04 00 24 04 00 25# | 0aaaaaaa 0bbbbbbb | EQ: Low EQ Gain -12,,,12dB |
| 04 00 26 04 00 27# | 0aaaaaaa 0bbbbbbb | EQ: Low EQ Frequency 2,,,200 = 20,,,2000Hz |
| 04 00 28 04 00 29# | 0aaaaaaa 0bbbbbbb | EQ: Low EQ Q 3,,,100 = 0.3,,,10.0 |
| 04 00 2A 04 00 2B# | 0aaaaaaa 0bbbbbbb | EQ: Mid EQ Gain -12,,,12dB |
| 04 00 2C 04 00 2D# | 0aaaaaaa 0bbbbbbb | EQ: Mid EQ Frequency 20,,,800 = 200,,,8000Hz |
| 04 00 2E 04 00 2F# | 0aaaaaaa 0bbbbbbb | EQ: Mid EQ Q 3,,,100 = 0.3,,,10.0 |
| 04 00 30 04 00 31# | 0aaaaaaa 0bbbbbbb | EQ: High EQ Type 0,1 = Shelving, Peaking |
| 04 00 32 04 00 33# | 0aaaaaaa 0bbbbbbb | EQ: High EQ Gain -12,,,12dB |
| 04 00 34 04 00 35# | 0aaaaaaa 0bbbbbbb | EQ: High EQ Frequency 14,,,200 = 1.4,,,20.0kHz |
| 04 00 36 04 00 37# | 0aaaaaaa 0bbbbbbb | EQ: High EQ Q 3,,,100 = 0.3,,,10.0 |
| 04 00 38 04 00 39# | 0aaaaaaa 0bbbbbbb | EQ: Out Level 0,,,100 |
| 04 00 3A : 04 00 7F | 00 : 00 | (Reserved) |

Algorithm 16 Dual Compressor/Limiter

| | | |
|-----------------------|----------------------|--|
| 04 00 0E 04 00 0F# | 0aaaaaaa 0bbbbbbb | Comp/Limit A SW 0,1 = Off,On |
| 04 00 10 04 00 11# | 0aaaaaaa 0bbbbbbb | Noise Suppressor A SW 0,1 = Off,On |
| 04 00 12 04 00 13# | 0aaaaaaa 0bbbbbbb | Comp/Limit B SW 0,1 = Off,On |
| 04 00 14 04 00 15# | 0aaaaaaa 0bbbbbbb | Noise Suppressor B SW 0,1 = Off,On |
| 04 00 16 04 00 17# | 0aaaaaaa 0bbbbbbb | Comp/Limit A: Detect 0,1,2 = A,B,Link |
| 04 00 18 04 00 19# | 0aaaaaaa 0bbbbbbb | Comp/Limit A: Level -60,,,12dB |
| 04 00 1A 04 00 1B# | 0aaaaaaa 0bbbbbbb | Comp/Limit A: Thresh -60,,,0dB |
| 04 00 1C 04 00 1D# | 0aaaaaaa 0bbbbbbb | Comp/Limit A: Attack 0,,,100 |
| 04 00 1E 04 00 1F# | 0aaaaaaa 0bbbbbbb | Comp/Limit A: Release 0,,,100 |
| 04 00 20 04 00 21# | 0aaaaaaa 0bbbbbbb | Comp/Limit A: Ratio 0,,,3 = 1.5:1,2:1,4:1,100:1 |
| 04 00 22 04 00 23# | 0aaaaaaa 0bbbbbbb | Noise Suppressor A: Detect 0,1,2 = A,B,Link |
| 04 00 24 04 00 25# | 0aaaaaaa 0bbbbbbb | Noise Suppressor A: Threshold 0,,,100 |
| 04 00 26 04 00 27# | 0aaaaaaa 0bbbbbbb | Noise Suppressor A: Release 0,,,100 |

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) | |

| | | | |
|-------------------------------------|-------------------------|-------------------------------|--------------------------|
| 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 04 00 3F# | 0aaaaaaa 0bbbbbbb | EQ Bch: Low Mid EQ Gain | -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 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 Gain | -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 Gain | -60,,,12dB |
| 04 00 36 04 00 37# | 0aaaaaaa 0bbbbbbb | EQ Bch: Low EQ Type | 0,1 = Shelving, Peaking |

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 Level | -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 Level | -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 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 : : 04 00 7F 00 | 00 : 00 | (Reserved) | |

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 : 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 : 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 04 00 1F# | 0aaaaaaa 0bbbbbbb | Tape Echo Tape Head S Pan 1,,127 = L63,,R63 | |
| 04 00 20 04 00 21# | 0aaaaaaa 0bbbbbbb | Tape Echo Tape Head M Pan 1,,127 = L63,,R63 | |

MIDI Implementation

| | | |
|----------|----------------------|--|
| 04 00 22 | 0aaaaaaa 0bbbbbbb | Tape Echo Tape Head L Pan 1,,,127 = L63,,,R63 |
| 04 00 24 | 0aaaaaaa 0bbbbbbb | Tape Echo Tape Distortion 0,,,100 |
| 04 00 26 | 0aaaaaaa 0bbbbbbb | Tape Echo Wah Flutter Rate 0,,,100 |
| 04 00 28 | 0aaaaaaa 0bbbbbbb | Tape Echo Wah Flutter Depth 0,,,100 |
| 04 00 2A | 00 | (Reserved) |
| 04 00 7F | 00 | |

| | | |
|----------|----------|-----------------------|
| 0F 7F 7C | 0000aaaa | Sync Track Data 32768 |
| 0F 7F 7D | 0000bbbb | aaaabbbbccccdddd |
| 0F 7F 7E | 0000cccc | |
| 0F 7F 7F | 0000dddd | |

3. MIDI Machine Control

■ MIDI Machine Control Details

● STOP(MCS)

| Status | Data Byte | Status |
|--------|-----------------|--------|
| F0H | 7FH,Dev,06H,01H | F7H |

| Byte | Description |
|------|--|
| F0H | Status of System 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 System Exclusive Message) |

If the device ID on the message was as same as that of the receiving device or 7FH, the VS-1680 stops immediately. If the transport switch [STOP] was pressed, the VS-1680 transmits as the device ID 7FH.

● PLAY(MCS)

| Status | Data Byte | Status |
|--------|-----------------|--------|
| F0H | 7FH,Dev,06H,02H | F7H |

| Byte | Description |
|------|--|
| F0H | Status of System 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 System Exclusive Message) |

If the device ID on the message was as same as that of the receiving device or 7FH, the VS-1680 goes into the playback condition. The VS-1680 does not transmit this message.

● DEFERRED PLAY(MCS)

| Status | Data Bytes | Status |
|--------|-----------------|--------|
| F0H | 7FH,Dev,06H,03H | F7H |

| Byte | Description |
|------|--|
| F0H | Status of System 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 System Exclusive Message) |

If the device ID on the message was as same as that of the receiving device or 7FH, the VS-1680 goes into the playback condition after the locate operation. If the transport switch [PLAY] was pressed, the VS-1680 transmits as the device ID 7FH.

● FAST FORWARD(MCS)

| Status | Data Bytes | Status |
|--------|-----------------|--------|
| F0H | 7FH,Dev,06H,03H | F7H |

| Byte | Description |
|------|--|
| F0H | Status of System 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 System Exclusive Message) |

If the device ID on the message was as same as that of the receiving device or 7FH, the VS-1680 goes into the fast forward condition. The VS-1680 does not transmit the message.

◇ Algorithm 32 Analog Flanger

| | | |
|----------|----------------------|--|
| 04 00 0E | 0aaaaaaa 0bbbbbbb | Analog Flanger SW 0,1 = Off,On |
| 04 00 10 | 0aaaaaaa 0bbbbbbb | Analog Flanger Mode 0,,,3 = FL1,FL2,FL3,CHO |
| 04 00 12 | 0aaaaaaa 0bbbbbbb | Analog Flanger Feedback 0,,,100 |
| 04 00 14 | 0aaaaaaa 0bbbbbbb | Analog Flanger Modulation Rate 0,,,100 |
| 04 00 16 | 0aaaaaaa 0bbbbbbb | Analog Flanger Modulation Depth 0,,,100 |
| 04 00 18 | 0aaaaaaa 0bbbbbbb | Analog Flanger Modulation Frequency 0,,,100 |
| 04 00 1A | 0aaaaaaa 0bbbbbbb | Analog Flanger Channel B Modulation 0,1 = Nor,Inv |
| 04 00 1C | 0aaaaaaa 0bbbbbbb | Analog Flanger Channel A Phase 0,1 = Nor,Inv |
| 04 00 1E | 0aaaaaaa 0bbbbbbb | Analog Flanger Channel B Phase 0,1 = Nor,Inv |
| 04 00 20 | 00 | (Reserved) |
| 04 00 7F | 00 | |

◇ Algorithm 33 Analog Phaser

| | | |
|----------|----------------------|--|
| 04 00 0E | 0aaaaaaa 0bbbbbbb | Analog Phaser SW 0,1 = Off,On |
| 04 00 10 | 0aaaaaaa 0bbbbbbb | Analog Phaser Mode 0,1 = 4STAGE,8STAGE |
| 04 00 12 | 0aaaaaaa 0bbbbbbb | Analog Phaser Frequency 0,,,100 |
| 04 00 14 | 0aaaaaaa 0bbbbbbb | Analog Phaser Resonance 0,,,100 |
| 04 00 16 | 0aaaaaaa 0bbbbbbb | Analog Phaser LFO 1 Rate 0,,,100 |
| 04 00 18 | 0aaaaaaa 0bbbbbbb | Analog Phaser LFO 1 Depth 0,,,100 |
| 04 00 1A | 0aaaaaaa 0bbbbbbb | Analog Phaser LFO 1 Channel B Mod 0,1 = Nor,Inv |
| 04 00 1C | 0aaaaaaa 0bbbbbbb | Analog Phaser LFO 2 Rate 0,,,100 |
| 04 00 1E | 0aaaaaaa 0bbbbbbb | Analog Phaser LFO 2 Depth 0,,,100 |
| 04 00 20 | 0aaaaaaa 0bbbbbbb | Analog Phaser LFO 2 Channel B Mod 0,1 = Nor,Inv |
| 04 00 22 | 00 | (Reserved) |
| 04 00 7F | 00 | |

● Sync Track Data

| Start address | Data | Contents and remarks |
|---------------|----------|-----------------------|
| 08 00 00 | 0000aaaa | Sync Track Data 1 |
| 08 00 01 | 0000bbbb | aaaabbbbccccdddd |
| 08 00 02 | 0000cccc | |
| 08 00 03 | 0000dddd | |
| 08 00 04 | 0000aaaa | Sync Track Data 2 |
| 08 00 05 | 0000bbbb | aaaabbbbccccdddd |
| 08 00 06 | 0000cccc | |
| 08 00 07 | 0000dddd | |
| 08 00 08 | 0000aaaa | Sync Track Data 3 |
| 0F 7F 7E | 0000dddd | Sync Track Data 32767 |

● REWIND (MCS)

| Status | Data Bytes | Status |
|--------|-----------------|--------|
| F0H | 7FH,Dev,06H,05H | F7H |

| Byte | Description |
|------|--|
| F0H | Status of System 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 System Exclusive Message) |

If the device ID on the message was as same as that of the receiving device or 7FH, the VS-1680 goes into the rewind condition. The VS-1680 does not transmit the message.

● RECORD STROBE

| Status | Data Bytes | Status |
|--------|-----------------|--------|
| F0H | 7FH,Dev,06H,06H | F7H |

| Byte | Description |
|------|--|
| F0H | Status of System 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 System Exclusive Message) |

If the device ID on the message was as same as that of the receiving device or 7FH, the VS-1680 goes into the following condition.

1. The VS-1680 is in the playback condition.
Start Recording the tracks that status are the record standby mode.
2. The VS-1680 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 VS-1680 transmits as the device ID 7FH.

● RECORD EXIT

| Status | Data Bytes | Status |
|--------|-----------------|--------|
| F0H | 7FH,Dev,06H,07H | F7H |

| Byte | Description |
|------|--|
| F0H | Status of System 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 System Exclusive Message) |

If the device ID on the message was as same as that of the receiving device or 7FH, the VS-1680 exits from the record condition. If the transport switch [REC] was pressed while recording, the VS-1680 transmits as the device ID 7FH.

● MMC RESET

| Status | Data Bytes | Status |
|--------|-----------------|--------|
| F0H | 7FH,Dev,06H,0DH | F7H |

| Byte | Description |
|------|--|
| F0H | Status of System 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 System Exclusive Message) |

If the device ID on the message was as same as that of the receiving device or 7FH, the VS-1680 resets all communication channels related with MMC. When powered on the VS-1680 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 System 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 System Exclusive Message) |

If the device ID on the message was as same as that of the receiving device or 7FH, the VS-1680 writes the data to the specified information field. The VS-1680 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 System 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 System Exclusive Message) |

If the device ID on the message was as same as that of the receiving device or 7FH, the VS-1680 writes the data to the specified bit map byte. The VS-1680 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 System 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 System Exclusive Message) |

If the device ID on the message was as same as that of the receiving device or 7FH, the VS-1680 locates the selected time location stored to the specified information field. The VS-1680 does not transmit the message.

MIDI Implementation

○ 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 System 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 System Exclusive Message) |

If the device ID on the message was as same as that of the receiving device or 7FH, the VS-1680 locates the specified time location received from the command.
If the efficient locate switch [LOC?] or Marker switch [PREVIOUS][NEXT] is pressed, the VS-1680 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 System 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 System Exclusive Message) |

If the device ID on the message was as same as that of the receiving device or 7FH, the VS-1680 transfers the data on the selected source information field to the destination information field, if the name of both information fields is efficient. The VS-1680 does not transmit the message.

● The efficient information Field

The followings are the efficient information field on the VS-1680.

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
   78 ... 10
   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,

$$aa + bb + cc + dd + ee + ff = \text{sum}$$

$$\text{sum} / 128 = \text{quotient and odd}$$

$$\text{When odd is 0, 0} = \text{checksum}$$

$$\text{When odd is other than 0, } 128 - \text{odd} = \text{checksum}$$

MIDI Machine Control (MMC) Command, Information Field / Response Reference

● Commands Recognized

| <u>Command</u> | <u>Action</u> |
|-----------------------|-------------------------------------|
| 01H STOP | STOP |
| 02H PLAY | PLAY |
| 03H DEFERRED PLAY | PLAY |
| 04H FAST FORWARD | 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

| <u>Command</u> | <u>Action</u> |
|-----------------------|----------------|
| 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

| <u>Information Field</u> | <u>Interpret</u> | <u>Valid Commands</u> |
|--------------------------|------------------|-----------------------------|
| 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 |

Digital Studio Workstation
 Model VS-1680

Date : Jan. 27 1998
 Version : 1.00

MIDI Implementation Chart

| Function ... | Transmitted | Recognized | Remarks |
|--------------------------|--|--|---------|
| Basic Channel | 1 - 16 1 - 16 *1 | 1 - 16 ***** | |
| Mode | Mode 3 X ***** | Mode 3 X X | |
| Note Number : True Voice | 0 - 127 *1 ***** | 0 36 - 84, 36 - 60 *10 | |
| Velocity | 1 - 127 *1 x 9n, v = 0 | X X | |
| After Touch | 0 X *12 | X X | |
| Pitch Bender | X | 0 *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 | 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 EFX1 Send Level *2 EFX1 Send Pan *2 EFX2 Send Level *2 EFX2 Send Pan *2 EFX3 Send Level *2 EFX3 Send Pan *2 | |

MIDI Implementation Chart

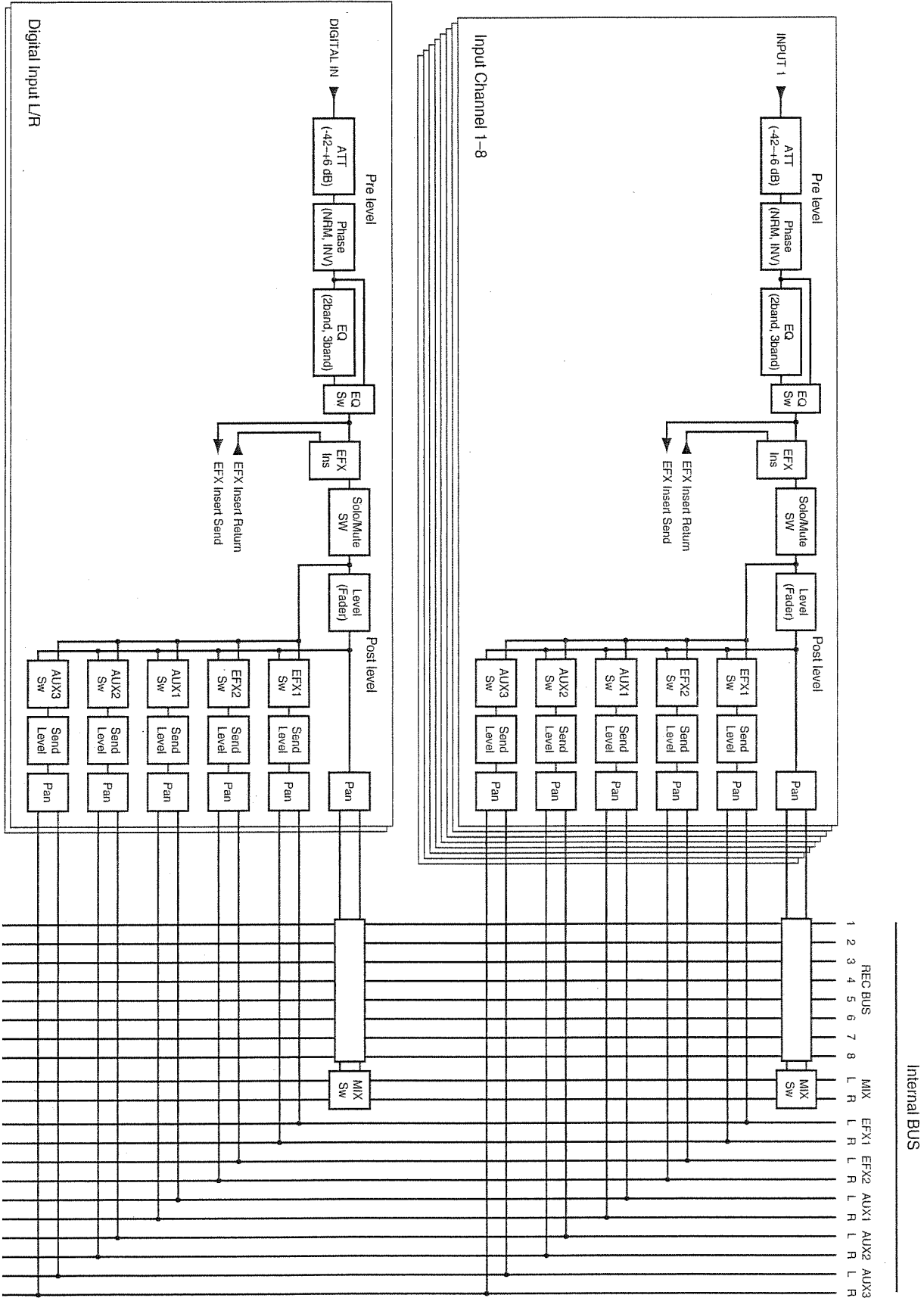
| | | | | | |
|-------------------------|--|--------|----|------------------|--------|
| 25, 84 | 0 | 0 | 0 | EFX4 Send Level | *2 |
| 26, 85 | 0 | 0 | 0 | EFX4 Send Pan | *2 |
| 27, 86 | 0 | 0 | 0 | AUX Send Level | *2 |
| 28, 87 | 0 | 0 | 0 | AUX Send Pan | *2 |
| 29, 88 | 0 | 0 | 0 | Mix Offset Level | *2 |
| 30, 89 | 0 | 0 | 0 | Mix Offset Bal | *2 |
| 30, 89 | X | 0 | 0 | Hold | *2 *11 |
| 96, 97 | X | 0 | 0 | Data Inc, Dec | *2 |
| 98, 99 | X | 0 | 0 | NRPN LSB, MSB | *2 |
| 102 | 0 | 0 | 0 | Monitor Level | *2 |
| 103 | 0 | 0 | 0 | Monitor Bal | *2 |
| Program Change : True # | X | 0 | *3 | Effect #0 - #99 | |
| | ***** | 0 - 99 | | Scene #1 - #8 | |
| | ***** | 0 - 7 | | | |
| System Exclusive | 0 | *4 | *5 | | |
| :Quarter Frame | 0 | *7 | *7 | | |
| :Song Position | 0 | *8 | | | |
| :Song Select | X | | | | |
| :Tune | X | | | | |
| Real Time : Clock | 0 | *8 | *9 | | |
| : Commands | 0 | | | | |
| : All Sound Off | X | | | | |
| : Reset All Controllers | X | | | | |
| : Local ON/OFF | X | | | | |
| : All Note Off | X | | | | |
| : Active Sense | X | | | | |
| : System Reset | X | | | | |
| Notes | <p>*1 MIDI Metronome Only *2 MID:CtrlType=C.C. Only *3 Effect when MIDI CH=1, 2, 3, 4, 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.=MIDClk or SyncTr Only *9 When Recording Sync Track Only *10 When Algorithm27 (Voice Transformer) 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)</p> | | | | |

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO 0 : Yes
 Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO x : No

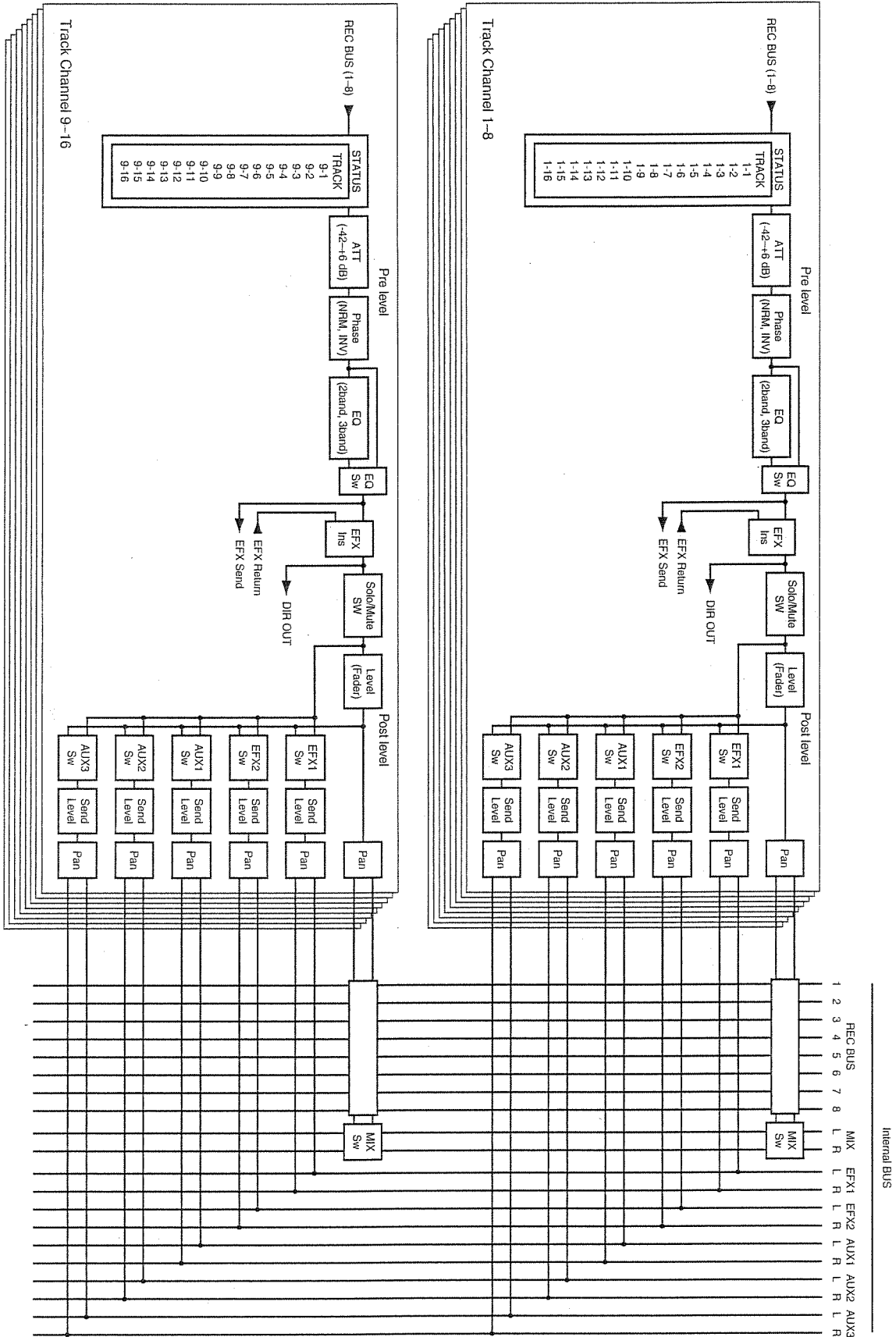
The mixer operation is transmitted and received through the MIDI Control Change. Therefore, general MIDI Sequencers can record or play the mixer operation simply. The VS-1680 uses some Control Change Number in order to original parameter controls which is different from the MIDI standard.

Mixer Section Block Diagram

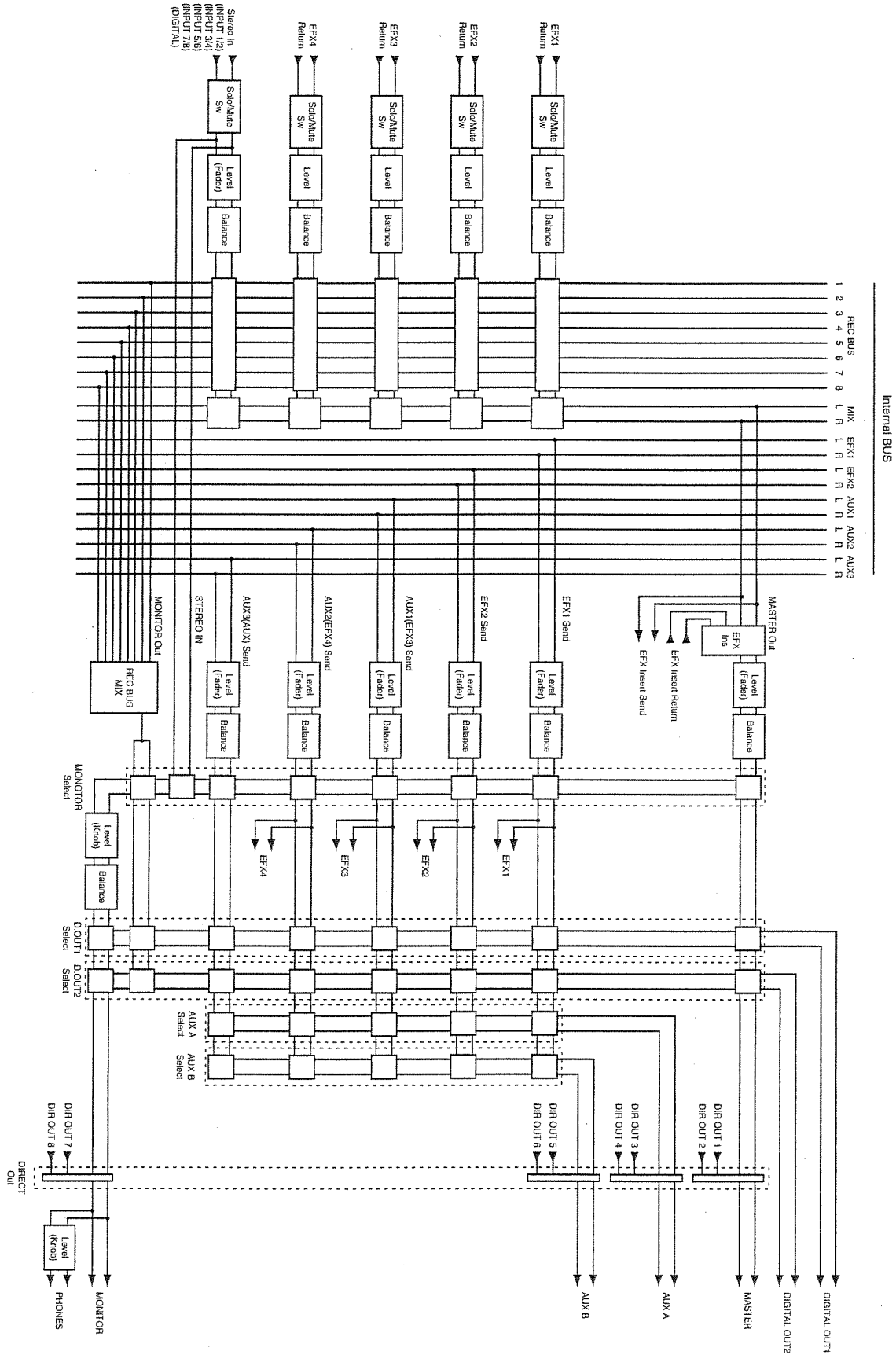
Input Mixer



Track Mixer



Master Block



Active Terminator

A type of terminator (a terminating resistance) placed 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. However, CD-RW discs cannot be used with the CDR-88.

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 determines 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 superimposers. By connecting this control jack to the foot switch jack of the VS-1680 and setting the Foot Switch Assign to "GPI," the connected device will be able to playback/stop the VS-1680.

GUITAR (Hi-Z)

A high-impedance input jack for directly connecting electric guitars.

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 VS-1680 are IDE compatible.

MMC

MMC is an acronym for **MIDI Machine Control**. This is a rule that defines how MIDI system exclusive messages can be used to control multiple recording devices from a single device. The VS-1680 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.

Phantom Power

This is a method of providing electric power to condenser mics via the mic cables. Generally, a mixer's internal phantom power source supplies 6–48 volts (DC). Supplying phantom power to dynamic mics, audio playback devices, or other such equipment may result in damage to the equipment. Turn the phantom power switch on only when connecting condenser mics which need phantom power; otherwise, leave it switched off.

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 specification for transmitting and receiving stereo digital audio signals between digital audio devices. The VS-1680 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 VS-1680 has a SCSI connector, external SCSI devices such as hard disks or removable disk drive etc. can be connected.

SECAM/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 called Zip disks. Similar to 3.5-inch floppy disks in size and usage, one Zip disk can store 100 MB of data.

Specifications

VS-1680
24 bit Digital Studio Workstation

Tracks

Tracks: 16
V-Tracks: 256 (16 V-Tracks per each Track)

* Up to 8 tracks can be recorded simultaneously, and up to 16 tracks can be played back simultaneously.

Maximum Useful Capacity

128 G bytes:
2 G bytes (capacity) x 8 (Partition) x 8 (Disk Drive)

Internal Memory

Songs: 200 (each partition)

Equalizer

HI, MID, LOW (16 channels)
HI, LOW (26 channels)

Recording Mode

Multitrack Pro (MTP)
Mastering (MAS)
Multitrack 1 (MT1)
Multitrack 2 (MT2)
Live 1 (LIV1)
Live 2 (LIV2)

Signal Processing

AD Conversion: 20 bits, 64 times oversampling
DA Conversion: 20 bits, 128 times oversampling
Internal Processing: 24 bits (mixer section)

Sample Rate

48.0 kHz, 44.1 kHz, 32.0 kHz

* Sample rate can be adjusted around 22.00–50.48 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)

0.005 % or less (recording mode: MTP)

Recording Time (at 2 G bytes, 1 track)

| Recording Mode | Sample Rate | | |
|----------------|-------------|-----------|-----------|
| | 48.0 kHz | 44.1 kHz | 32.0 kHz |
| MTP | 742 min. | 808 min. | 1114 min. |
| MAS | 370 min. | 404 min. | 556 min. |
| MT1 | 742 min. | 808 min. | 1114 min. |
| MT2 | 990 min. | 1078 min. | 1484 min. |
| LIV1 | 1188 min. | 1292 min. | 1782 min. |
| LIV2 | 1484 min. | 1616 min. | 2228 min. |

* 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 (variable)

Input1–2: -50– +4 dBu
maximum +26 dBu:Balanced,
maximum +20 dBu:Unbalanced
Input3–8: -50– +4 dBu
maximum +26 dBu:Balanced,
maximum +20 dBu:Unbalanced
Guitar (Hi-Z): -50– +4 dBu
maximum +26 dBu:Balanced,
maximum +20 dBu:Unbalanced

Input Impedance

Input1–2: 30 k ohms
Input3–8: 30 k ohms
Guitar (Hi-Z): 500 k ohms

Nominal Output Level

Master Out: 0 dBu
AUX A (L, R): 0 dBu
AUX B (L, R): 0 dBu
Monitor Out: 0 dBu

Output Impedance

Master Out: 1 k ohm
AUX A (L, R): 1 k ohm
AUX B (L, R): 1 k ohm
Monitor Out: 1 k ohm
Headphones: 22 ohms

Recommended load Impedance

Master Out: 10 k ohms or greater
AUX A (L, R): 10 k ohms or greater
AUX B (L, R): 10 k ohms or greater
Monitor Out: 10 k ohms or greater
Headphones: 8–50 ohms

Residual Noise Level (input terminated with 1 k ohm, INPUT SENS = LINE, IHF-A, typ.)

Master Out: -82 dBu or less
AUX A (L, R): -82 dBu or less
AUX B (L, R): -82 dBu or less
Monitor Out: -82 dBu or less

Interface Connectors

SCSI: DB-25 type
Digital I/O: Coaxial, Optical (conforms to S/P DIF)

Display

320 x 240 dots, Graphic LCD (with backlit)

Connectors

SCSI Connector (DB-25 type)
MIDI Connectors (IN, OUT/THRU)
Input Jack 1–2 (XLR type, balanced, phantom power)
Input Jack 3–8 (1/4 inch phone type, TRS balanced)
Guitar (Hi-Z) Jack (1/4 inch phone type)
Digital In Connectors (Coaxial type, Optical type)
Digital Out Connectors (Coaxial type, Optical type)
Foot Switch Jack (1/4 inch phone type)
Headphones Jack (Stereo 1/4 inch phone type)
AUX A Send Jack L/R (RCA phono type)
AUX B Send Jack L/R (RCA phono type)
Master Out Jack L/R (RCA phono type)
Monitor Out Jack L/R (RCA phono type)

Power Supply

AC 117 V, AC 230 V or AC 240 V

Power Consumption

33 W (Including internal hard disk)

Dimension

554 (W) x 336 (D) x 109 (H) mm
21-13/16 (W) x 13-1/4 (D) x 4-5/16 (H) inches

Weight

6.3 kg (Excluding internal hard disk)
13 lbs 15 oz

Accessories

AC Cord
Quick Start
Owner's Manual
Appendices

Options

Internal Hard Disk Drive Unit: HDP88 Series
Effect Expansion Board: VS8F-2

(0 dBu = 0.775 V rms)

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

MEMO...

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Track Sheets

Roland® VS-1680

Track Sheet (1)

Project _____ Artist _____ Client _____

Song Name _____ Date _____

Internal Removable Backing up to _____

| | Tracks | | | | | | | |
|----------|--------|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| V-Tracks | | | | | | | | |
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
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| 11 | | | | | | | | |
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| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |

| LOCATOR | | | | SCENE | | | |
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Roland® VS-1680

Track Sheet (2)

| | Tracks | | | | | | | |
|----|--------|----|----|----|----|----|----|----|
| | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |

V-Tracks

NOTES

VS8F-2 Preset Patch List

By installing VS8F-2(s) on the VS-1680, you can access the range of effects listed below.

* TYPE

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 P000 through P021, P080 and P097 for EFX2 and EFX4. These Patches must be used for EFX1 or EFX3.

Reverb (18 presets)

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|-----------|---------|-------|---|
| P000 | RV:LargeHall | Reverb | Snd/Rtn | Mono | Large concert hall reverberation. |
| P001 | RV:SmallHall | Reverb | Snd/Rtn | Mono | Small hall reverberation. |
| P002 | RV:Strings | Reverb | Snd/Rtn | Mono | Reverberation optimized for delicate highs of strings. |
| P003 | RV:PianoHall | Reverb | Snd/Rtn | Mono | Rich and warm reverberation optimized for pianos. |
| P004 | RV:Orch Room | Reverb | Snd/Rtn | Mono | Reverberation of large-capacity rooms such as big banquet halls. |
| P005 | RV:VocalRoom | Reverb | Snd/Rtn | Mono | Room reverb suitable for vocals and chorus. |
| P006 | RV:MediumRm | Reverb | Snd/Rtn | Mono | Warm and naturally spacious room reverb. |
| P007 | RV:LargeRoom | Reverb | Snd/Rtn | Mono | Simulated acoustics of wide rooms with lots of reverberation. |
| P008 | RV:CoolPlate | Reverb | Snd/Rtn | Mono | Distinctive bright plate reverb. |
| P009 | RV:Short Plt | Reverb | Snd/Rtn | Mono | Shorter plate reverb. |
| P010 | RV:Vocal Plt | Reverb | Snd/Rtn | Mono | Crystal-clear reverb optimized for vocals. |
| P011 | RV:Soft Amb. | Reverb | Snd/Rtn | Mono | Simulated reverberation of a room with minimal wall reflections. |
| P012 | RV:Room Amb. | Reverb | Snd/Rtn | Mono | Natural reverberation of rooms with good acoustics, suitable for drums and guitars. |
| P013 | RV:Cathedral | Reverb | Snd/Rtn | Mono | Acoustics of a very large, high-ceilinged church. |
| P014 | RV:Long Cave | Reverb | Snd/Rtn | Mono | Simulated reverberation of deep caves. |
| P015 | RV:GarageDr. | Reverb | Snd/Rtn | Mono | Natural reverb that enhances unique drum sounds. |
| P016 | RV:Rock Kick | Reverb | Snd/Rtn | Mono | Reverb with many low-frequency components, suitable for rock kicks. |
| P017 | 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 |
|------|--------------|-------------|---------|-------|--|
| P018 | RV:BriteGate | Gate Reverb | Snd/Rtn | Mono | Slightly brighter gate reverb. |
| P019 | RV:Fat Gate | Gate Reverb | Snd/Rtn | Mono | Dynamic reverb sound with powerful mids and lows. |
| P020 | RV:ReverseGt | Gate Reverb | Snd/Rtn | Mono | A reverse gate commonly used as a special effect. |
| P021 | 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 |
|------|--------------|---------------------|---------|--------|--|
| P022 | DL:Short Dly | Delay | Snd/Rtn | Mono | An ambience effect that adds depth to the sound by doubling. |
| P023 | DL:MediumDly | Delay | Snd/Rtn | Mono | Natural echo optimized for vocals. |
| P024 | DL:LongDelay | Delay | Snd/Rtn | Mono | Long delay suited for brass and analog synth solos. |
| P025 | DL:AnalogDly | Delay | Snd/Rtn | Mono | Analog sound with gradually diminishing feedbacking highs. |
| P026 | DL:Tape Echo | Stereo Delay Chorus | Snd/Rtn | Stereo | Simulated tape echo with distinctive wow flutter. |
| P027 | DL:Karaoke | Stereo Delay Chorus | Snd/Rtn | Stereo | Intense reverberation that effectively enhances karaoke vocals. |
| P028 | DL:Multi-Tap | Stereo Delay Chorus | Snd/Rtn | Stereo | Spacious reflections using positioning delay at any point along the stereo soundfield. |
| P029 | DL:MitTapAmb | Multi Tap Delay | Snd/Rtn | Mono | An ambience effect using 10 short delay units. |
| P030 | 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 |
|------|--------------|----------------------------|--------|--------|--|
| P031 | VO:Vocal Efx | Vocal Multi | Insert | Mono | Basic setup for recording/mixdown of vocals. |
| P032 | VO:JazzVocal | Vocal Multi | Insert | Mono | A natural sounding jazz club-like ambience for warm reverb well-suited for vocals. |
| P033 | VO:RockVocal | Vocal Multi | Insert | Mono | Sound featuring limiter/enhancer processing as well as a unison effect. |
| P034 | VO:Narration | Vocal Multi | Insert | Mono | An effect with heavy compression, used for narration. |
| P035 | VO:BigChorus | Vocal Multi | Insert | Mono | A spacious-sounding stereo effect similar to increasing the number of vocalists. |
| P036 | VO:Club DJ | Vocal Multi | Insert | Mono | A club DJ-tailored effect that uses a pitch shifter to make voices lower. |
| P037 | VO:AM-Radio | Vocal Multi | Insert | Mono | Sound featuring hard compression and narrower frequency range. |
| P038 | VO:PlusTwo | Stereo Pitch Shifter Delay | Insert | Stereo | A special effect that adds two more voices using a pitch shifter. |
| P039 | VO:Robot Efx | Stereo Pitch Shifter Delay | Insert | Stereo | SF movie-like effect using a pitch shifter. |
| P040 | VO:Bull Horn | Guitar Multi 3 | Insert | Mono | Simulated effect of sound produced from a Bull Horn or old radio. |

Guitar (11 presets)

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|----------------|--------|-------|---|
| P041 | GT:Rock Lead | Guitar Multi 2 | Insert | Mono | Straight distortion sound with delay. |
| P042 | GT:LA Lead | Guitar Multi 2 | Insert | Mono | Lead guitar sound with tasty compression and chorus applied. |
| P043 | GT:MetalLead | Guitar Multi 1 | Insert | Mono | Metal sound with dynamic, ultrahigh gain distortion. |
| P044 | GT:Metal Jet | Guitar Multi 1 | Insert | Mono | Distortion together with a metallic effect achieved by flanging. |
| P045 | GT:CleanRthm | Guitar Multi 1 | Insert | Mono | Clean sound with compression and chorus applied. |
| P046 | GT:DiedClean | Vocal Multi | Insert | Mono | Superclean sound like line recording directly into the console. |
| P047 | GT:Delay Rif | Guitar Multi 2 | Insert | Mono | Delay sounds at dotted eighth note intervals when a 120 BPM riff is played. |
| P048 | GT:Acoustic | Vocal Multi | Insert | Mono | Optimized for electroacoustic guitars. |
| P049 | GT:BluesDrv. | Guitar Multi 3 | Insert | Mono | Crunchy overdrive sound suited to blues and R&R. |
| P050 | GT:Liverpool | Guitar Multi 3 | Insert | Mono | Crunchy sound often heard on '60s British rock. |
| P051 | 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 |
|------|--------------|----------------------|--------|-------|---|
| P052 | GA:JazChorus | Guitar Amp Simulator | Insert | Mono | Roland JC-120 amp. Sounds more authentic when used with chorus for mixdown. |
| P053 | GA:CleanTwin | Guitar Amp Simulator | Insert | Mono | U.S. tube combo amp circa "black panel." |
| P054 | GA:Vin.Tweed | Guitar Amp Simulator | Insert | Mono | '50s U.S. tube amp overdrive. |
| P055 | GA:BluesDrv. | Guitar Amp Simulator | Insert | Mono | Old British amp crunchy overdrive. |
| P056 | GA:MatchLead | Guitar Amp Simulator | Insert | Mono | Hot-rodged British combo amp. |
| P057 | GA:StudioCmb | Guitar Amp Simulator | Insert | Mono | Favourite late '70s amp of studio musicians. |
| P058 | GA:JMP-Stack | Guitar Amp Simulator | Insert | Mono | Late '60s British stacks. |

VS8F-2 Preset Patch List

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|----------------------|--------|-------|---|
| P059 | GA:SLDN Lead | Guitar Amp Simulator | Insert | Mono | An '80s amp known for versatile distortion. |
| P060 | GA:5150 Lead | Guitar Amp Simulator | Insert | Mono | Big tube amp standard for American heavy metal. |

Bass (5 presets)

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|----------------------|--------|--------|--|
| P061 | BS:DI'edBass | Vocal Multi | Insert | Mono | Slight limiting and equalization optimized, ideal for line recording applications. |
| P062 | BS:MikedBass | Guitar Amp Simulator | Insert | Mono | A miked speaker box with four 12"s. |
| P063 | BS:CompBass | Stereo Multi | Insert | Stereo | Hard-compressed sound optimized for slaps. |
| P064 | BS:Auto Wah | Guitar Multi 2 | Insert | Mono | Synth bass like sound added with auto wah essential for '70s funk. |
| P065 | BS:EFX Bass | Stereo Delay Chorus | Insert | Stereo | Solo-optimized sound with depth and spaciousness added through delay and chorus. |

Stereo Multfi (5 presets)

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|--------------|--------|--------|---|
| P066 | CL:Comp | Stereo Multi | Insert | Stereo | Stereo type compression optimized for broadcast mixing. |
| P067 | CL:Limiter | Stereo Multi | Insert | Stereo | A convenient effect for analog mastering because it can limit peak signals. |
| P068 | EQ:Loudness | Stereo Multi | Insert | Stereo | Applies EQ curve with slightly boosted lows and highs. |
| P069 | EQ:Fat Dance | Stereo Multi | Insert | Stereo | Hard compression plus equalizing for dance music. |
| P070 | EQ:ThinJngl | 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 |
|------|--------------|----------------------------|--------|--------|---|
| P071 | CH:Lt Chorus | Stereo Delay Chorus | Insert | Stereo | Natural stereo chorus with shallow depth for spacious, crystal-clear sound. |
| P072 | CH:Deep Cho | Stereo Delay Chorus | Insert | Stereo | Intense stereo chorus that adds depth and spaciousness to the sound. |
| P073 | CH:DetuneCho | Stereo Pitch Shifter Delay | Insert | Stereo | Chorus with left and right channels separately pitch shift-detuned up and down. |
| P074 | FL:LtFlanger | Stereo Flanger | Insert | Stereo | Stereo flanger with slight modulation. |
| P075 | FL:Deep Fl | Stereo Flanger | Insert | Stereo | Deeper stereo flanger for metallic jet swooshing sound. |
| P076 | PH:Lt Phaser | Stereo Phaser | Insert | Stereo | Lighter 4-stage stereo phaser suitable for synth strings. |
| P077 | PH:DeepPhase | Stereo Phaser | Insert | Stereo | Deep phaser effective for electronic piano and clavinet sounds. |
| P078 | PS:-4thVoice | Vocal Multi | Insert | Mono | Adds sound down a fourth to the direct sound. |
| P079 | PS:ShimmerUD | Stereo Pitch Shifter Delay | Insert | Stereo | A special effect with left channel pitch rising and right channel pitch dropping over time. |

Same as Algorithm (20 presets)

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|---------------------|--------|---------|--------------|
| P080 | Reverb | Reverb | | Snd/Rtn | Mono (p. 81) |
| P081 | Delay | Delay | | Snd/Rtn | Mono (p. 82) |
| P082 | StDly-Chorus | Stereo Delay Chorus | Insert | Stereo | (p. 83) |
| P083 | StPS-Delay | Pitch Shifter Delay | Insert | Stereo | (p. 84) |
| P084 | Vocoder | Vocoder | Insert | Mono | (p. 85) |
| P085 | 2ch RSS | 2ch RSS | Insert | 2ch | (p. 85) |
| P086 | Delay RSS | Delay RSS | Insert | Mono | (p. 86) |
| P087 | Chorus RSS | Chorus RSS | Insert | Mono | (p. 86) |

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|-------------------------|---------|--------|---------|
| P088 | GuitarMulti1 | Guitar Multi 1 | Insert | Mono | (p. 87) |
| P089 | GuitarMulti2 | Guitar Multi 2 | Insert | Mono | (p. 88) |
| P090 | GuitarMulti3 | Guitar Multi 3 | Insert | Mono | (p. 89) |
| P091 | Vocal Multi | Vocal Multi | Insert | Mono | (p. 90) |
| P092 | Rotary | Rotary | Insert | Mono | (p. 91) |
| P093 | GuitarAmpSim | Guitar Amp Simulator | Insert | Mono | (p. 92) |
| P094 | St Phaser | Stereo Phaser | Insert | Stereo | (p. 93) |
| P095 | St Flanger | Stereo Flanger | Insert | Stereo | (p. 94) |
| P096 | DualComp/Lim | Dual Compressor/Limiter | Insert | 2ch | (p. 95) |
| P097 | Gate Reverb | Gate Reverb | Snd/Rtn | Mono | (p. 96) |
| P098 | MultiTapDly | Multi Tap Delay | Insert | Mono | (p. 97) |
| P099 | Stereo Multi | Stereo Multi | Insert | Stereo | (p. 98) |

Reverb2 (20 presets)

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|-----------|---------|-------|---|
| P100 | R2:LargeHall | Reverb2 | Snd/Rtn | Mono | Large concert hall reverberation. |
| P101 | R2:SmallHall | Reverb2 | Snd/Rtn | Mono | Small hall reverberation. |
| P102 | R2:Strings | Reverb2 | Snd/Rtn | Mono | Reverberation optimized for delicate highs of strings. |
| P103 | R2:PianoHall | Reverb2 | Snd/Rtn | Mono | Rich and warm reverberation optimized for pianos. |
| P104 | R2:Orch Room | Reverb2 | Snd/Rtn | Mono | Reverberation of large-capacity rooms such as big banquet halls. |
| P105 | R2:VocalRoom | Reverb2 | Snd/Rtn | Mono | Room reverb suitable for vocals and chorus. |
| P106 | R2:MediumRm | Reverb2 | Snd/Rtn | Mono | Warm and naturally spacious room reverb. |
| P107 | R2:LargeRoom | Reverb2 | Snd/Rtn | Mono | Simulated acoustics of wide rooms with lots of reverberation. |
| P108 | R2:CoolPlate | Reverb2 | Snd/Rtn | Mono | Distinctive bright plate reverb. |
| P109 | R2:Short Plt | Reverb2 | Snd/Rtn | Mono | Shorter plate reverb. |
| P110 | R2:Vocal Plt | Reverb2 | Snd/Rtn | Mono | Crystal-clear reverb optimized for vocals. |
| P111 | R2:Soft Amb. | Reverb2 | Snd/Rtn | Mono | Simulated reverberation of a room with minimal wall reflections. |
| P112 | R2:Room Amb. | Reverb2 | Snd/Rtn | Mono | Natural reverberation of rooms with good acoustics, suitable for drums and guitars. |
| P113 | R2:Cathedral | Reverb2 | Snd/Rtn | Mono | Acoustics of a very large, high-ceilinged church. |
| P114 | R2:Long Cave | Reverb2 | Snd/Rtn | Mono | Simulated reverberation of deep caves. |
| P115 | R2:GarageDr. | Reverb2 | Snd/Rtn | Mono | Natural reverb that enhances unique drum sounds. |
| P116 | R2:Rock Kick | Reverb2 | Snd/Rtn | Mono | Reverb with many low-frequency components, suitable for rock kicks. |
| P117 | R2:RockSnare | Reverb2 | Snd/Rtn | Mono | Rich and thick sounding reverb suitable for rock snares. |
| P118 | R2:BriteGte2 | Reverb2 | Snd/Rtn | Mono | A high-density and bright sounding gated reverb. Adjust Threshold. |
| P119 | 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 |
|------|------------|---------------|--------|-------|---|
| P120 | MS:57→58 | Mic Simulator | Insert | 2ch | Converts a general-purpose D. mic to a vocal D. mic. Rich mid/low range. |
| P121 | MS:57→421 | Mic Simulator | Insert | 2ch | Converts a general-purpose D. mic to a large D. mic. For drums and guitar amp. |
| P122 | MS:57→451 | Mic Simulator | Insert | 2ch | Converts a general-purpose D. mic to a small C. mic. For acoustic guitar and cymbals. |
| P123 | MS:57→87 | Mic Simulator | Insert | 2ch | Converts a general-purpose D. mic to a large C. mic. For vocals and acoustic inst. |
| P124 | MS:57→47 | Mic Simulator | Insert | 2ch | Converts a general-purpose D. mic to a vintage C. mic. For vocals and acoustic inst. |

VS8F-2 Preset Patch List

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|-----------------------------|--------|-------|---|
| P125 | MS:57→Line | Mic Simulator | Insert | 2ch | Cancels the characteristics of D.mic, giving the sound a flat frequency response. |
| P126 | MS:DR20→421 | Mic Simulator | Insert | 2ch | Converts a Roland DR-20 to an instrumental D. mic. For drums and guitar amp. |
| P127 | MS:DR20→451 | Mic Simulator | Insert | 2ch | Converts a Roland DR-20 to a small C. mic. For acoustic guitar and cymbals. |
| P128 | MS:DR20→87 | Mic Simulator | Insert | 2ch | Converts a Roland DR-20 to a large C. mic. For vocals and acoustic inst. |
| P129 | MS:10→58 | Mic Simulator | Insert | 2ch | Converts a headset mic to a vocal D. mic. |
| P130 | MS:10→87 | Mic Simulator | Insert | 2ch | Converts a headset mic to a large C. mic. |
| P131 | MS:Mini→57 | Mic Simulator | Insert | 2ch | Converts a miniature C. mic to a general-purpose D. mic. |
| P132 | MS:Mini→87 | Mic Simulator | Insert | 2ch | Converts a miniature C. mic to a large C. mic. |
| P133 | MS:Kick&Snr1 | Mic Simulator | Insert | 2ch | For the bass drum (L channel) and snare drum (R channel) of a drum set (1). |
| P134 | MS:Kick&Snr2 | Mic Simulator | Insert | 2ch | For the bass drum (L channel) and snare drum (R channel) of a drum set (2). |
| P135 | MS:H.Hat&Tom | Mic Simulator | Insert | 2ch | For the hi-hat (L channel) and tom (R channel) of a drum set. |
| P136 | MS:Dr.OvrTop | Mic Simulator | Insert | 2ch | A patch for placing mics above the drums mainly to mic the cymbals. |
| P137 | MS:Dr.OvrAll | Mic Simulator | Insert | 2ch | A patch for placing mics above the front of the drums to mic the entire set. |
| P138 | MS:Ac.Guitar | Mic Simulator | Insert | 2ch | For acoustic guitar. InsertL: brighter, InsertR: warmer. |
| P139 | MS:StudioVcl | Mic Simulator | Insert | 2ch | For vocals. InsertL: natural, InsertR: Rock. |
| P140 | MS:StereoMic | Mic Simulator | Insert | 2ch | Gives time-lag to a sound miked in stereo, emphasizing spaciousness. |
| P141 | MS:Ambience | Mic Simulator | Insert | 2ch | Simulates ambience mics. Add reverb and mix with original source. |
| | * D. mic: | <i>dynamic microphone</i> | | | |
| | * C. mic: | <i>condenser microphone</i> | | | |

Parametric Equalizer (26 presets)

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|----------------------|--------|--------|--|
| P142 | PEQ:BassDrum | Parametric Equalizer | Insert | Stereo | For bass drum. Adjust LowQ and HiG. |
| P143 | PEQ:RockBD | Parametric Equalizer | Insert | Stereo | For bass drum. A sound suitable for rock with mid-lows emphasized. |
| P144 | PEQ:RockSD | Parametric Equalizer | Insert | Stereo | For snare drum. Drops the mid-lows and emphasizes the attack and snares. |
| P145 | PEQ:RimShot | Parametric Equalizer | Insert | Stereo | For rim shot. Emphasizes the feeling of attack unique to a rim shot. |
| P146 | PEQ:Toms | Parametric Equalizer | Insert | Stereo | For toms. Adjust LowF and LowMidF. |
| P147 | PEQ:Hi Hat | Parametric Equalizer | Insert | Stereo | For the crisper hi-hat. Adjust bell sound with HiMidG. |
| P148 | PEQ:Cymbals | Parametric Equalizer | Insert | Stereo | For cymbals. Emphasizes the difference in tone between cymbals and their clarity. |
| P149 | PEQ:Overhead | Parametric Equalizer | Insert | Stereo | For drum kit. Use when miking the sound of the entire kit. |
| P150 | PEQ:Bass 1 | Parametric Equalizer | Insert | Stereo | For electric bass. Wide-range and tight bass sound. |
| P151 | PEQ:Bass 2 | Parametric Equalizer | Insert | Stereo | For electric bass. Fatter and with more punch than B50. For rock. |
| P152 | PEQ:SlapBass | Parametric Equalizer | Insert | Stereo | For electric bass. Settings that emphasize the accent of pulled notes with slap technique. |

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|----------------------|--------|--------|---|
| P153 | PEQ:Sax | Parametric Equalizer | Insert | Stereo | For alto/soprano sax. Lower HiG for mellow sound. |
| P154 | PEQ:Bari.Sax | Parametric Equalizer | Insert | Stereo | For baritone sax. Adjust LoMidF. |
| P155 | PEQ:ElecGtr | Parametric Equalizer | Insert | Stereo | Settings that keep the lead guitar from being buried in the mix. |
| P156 | PEQ:NylonGtr | Parametric Equalizer | Insert | Stereo | Emphasize the tone of nylon strings. Adjust fret sound with HiG. |
| P157 | PEQ:BluesGtr | Parametric Equalizer | Insert | Stereo | Adds a delicate nuance suitable when playing blues on an acoustic guitar. |
| P158 | PEQ:SlideGtr | Parametric Equalizer | Insert | Stereo | Adds a rich feel to acoustic slide guitar. Adjust HiF. |
| P159 | PEQ:LineGtr | Parametric Equalizer | Insert | Stereo | For piezo pickups. Adjust brightness with HiG. |
| P160 | PEQ:Male | Parametric Equalizer | Insert | Stereo | Improves the tone quality of a male vocal. Adjust HiG. |
| P161 | PEQ:RockMale | Parametric Equalizer | Insert | Stereo | Equalizer that adds energy to a male vocal. Best for rock. Try with Comp. |
| P162 | PEQ:Female | Parametric Equalizer | Insert | Stereo | Improves the tone quality of a female vocal. Adjust LoMidG. |
| P163 | PEQ:RockFeml | Parametric Equalizer | Insert | Stereo | Equalizer that adds energy to a female vocal. Best for rock. Try with Comp. |
| P164 | PEQ:Narrator | Parametric Equalizer | Insert | Stereo | Standard equalizer for male narration. Brings out the character of the voice. |
| P165 | PEQ:Organ | Parametric Equalizer | Insert | Stereo | Settings to bring out the character of a church organ. |
| P166 | PEQ:St.Piano | Parametric Equalizer | Insert | Stereo | For miking piano in stereo. Left: low range, right: high range. |
| P167 | PEQ:SmallCho | Parametric Equalizer | 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 |
|------|--------------|-------------------|--------|--------|---|
| P168 | GEQ:TotalEQ1 | Graphic Equalizer | Insert | Stereo | Boosts the low and high ranges. |
| P169 | GEQ:TotalEQ2 | Graphic Equalizer | Insert | Stereo | Attenuates the lows and highs to narrow the range, tightening up the sound. |
| P170 | GEQ:Space EQ | Graphic Equalizer | Insert | Stereo | Special settings that turn a monaural source into stereo. |

Space Chorus (3 presets)

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|--------------|--------|--------|--|
| P171 | SPCHO:MODE 1 | Space Chorus | Insert | Stereo | Simulates MODE1 of the classic SDD-320 ambience processor. |
| P172 | SPCHO:MODE 2 | Space Chorus | Insert | Stereo | Simulates MODE2 of the classic SDD-320 ambience processor. |
| P173 | 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 |
|------|--------------|-----------------|--------|--------|---|
| P174 | LFP:BreakBts | Lo-Fi Processor | Insert | Stereo | Reproduces the tonal change produced by lowering the bit/rate of a sampled sound. |
| P175 | LFP:1bitDist | Lo-Fi Processor | Insert | Stereo | Extreme distortion sound produced by lowering the number of bits. |
| P176 | LFP:TeknoFlt | Lo-Fi Processor | Insert | Stereo | Emphasizes the out-of-band noise that occurs with low sampling rates. |

VS8F-2 Preset Patch List

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|-------------------|---------|--------|---|
| P177 | LFP:Reso Flt | Lo-Fi Processor | Insert | Stereo | Filter with resonance as found on synthesizers. Adjust CutOff. |
| P178 | LFP:FatBotom | Lo-Fi Processor | Snd/Rtn | Stereo | Add heavy low-range for the groove. Mix with original source. |
| P179 | VT:M to Fm | Voice Transformer | Insert | Mono | Converts a male voice into a female voice. |
| P180 | VT:Fm to M | Voice Transformer | Insert | Mono | Converts a female voice into a male voice. |
| P181 | VT:Male Duo | Voice Transformer | Insert | Mono | Turns a single male voice into a duet (by adding a female voice). |
| P182 | VT:FemaleDuo | Voice Transformer | Insert | Mono | Turns a single female voice into a duet (by adding a male voice). |
| P183 | VT:Robot | Voice Transformer | Insert | Mono | Special effect like a robot speaking. |
| P184 | VOC2:M19Band | Vocoder2 | Insert | Mono | Clear and crisp vocoder. |
| P185 | VOC2:S19Band | Vocoder2 | Insert | Mono | Special stereo vocoder with long decay. |
| P186 | HC:Quiet60Hz | Hum Canceler | Insert | Stereo | Cancels 60 Hz hum noise. |
| P187 | HC:Quiet50Hz | Hum Canceler | Insert | Stereo | Cancels 50 Hz hum noise. |
| P188 | VC:Vocal Cnl | Vocal Canceler | Insert | Stereo | Cancels a vocal located in the center. |
| P189 | 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 |
|------|---------------|----------------------|---------|--------|----------|
| P190 | Reverb2 | Reverb2 | Snd/Rtn | Mono | (p. 99) |
| P191 | Space Chorus | Space Chorus | Insert | Stereo | (p. 100) |
| P192 | Lo-Fi Proces | Lo-Fi Processor | Insert | Stereo | (p. 100) |
| P193 | ParametricEQ | Parametric Equalizer | Insert | 2ch | (p. 101) |
| P194 | Graphic EQ | Graphic Equalizer | Insert | 2ch | (p. 102) |
| P195 | Hum Canceler | Hum Canceler | Insert | Stereo | (p. 103) |
| P196 | Vocal Cancel | Vocal Canceler | Insert | Stereo | (p. 104) |
| P197 | Voice Trans | Voice Transformer | Insert | Mono | (p. 105) |
| P198 | Vocoder2 (19) | Vocoder2 | Insert | Mono | (p. 106) |
| P199 | MicSimulator | Mic Simulator | Insert | 2ch | (p. 107) |
| P200 | 3BndIsolator | 3BandIsolator | Insert | Stereo | (p. 108) |
| P201 | TapeEcho201 | Tape Echo 201 | Snd/Rtn | Mono | (p. 108) |
| P202 | AnalogFlnger | Analog Flanger | Insert | Stereo | (p. 109) |
| P203 | AnalogPhaser | Analog Phaser | Insert | Stereo | (p. 109) |

Tape Echo 201 (4 presets)

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|---------------|---------|-------|--|
| P204 | TE:ShortEcho | Tape Echo 201 | Snd/Rtn | Mono | Simulates short type tape echo. |
| P205 | TE:LongEcho | Tape Echo 201 | Snd/Rtn | Mono | Simulates long type tape echo. |
| P206 | TE:OldTape | Tape Echo 201 | Snd/Rtn | Mono | Simulates tape echo using an old tape. |
| P207 | TE:PanEcho | Tape Echo 201 | Snd/Rtn | Mono | Simulates tape echo in stereo. |

Analog Flanger (1 preset)

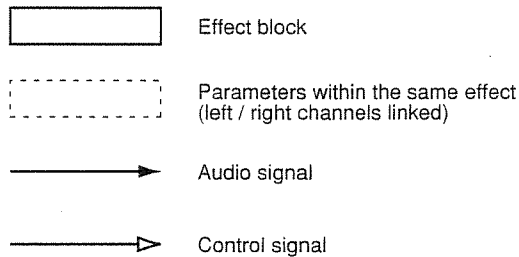
| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|------------|----------------|--------|--------|--|
| P208 | AF:SBF-325 | Analog Flanger | Insert | Stereo | Simulates Roland SBF-325 analog flanger. |

Analog Phaser (1 preset)

| No. | Patch Name | Algorithm | Type | Input | Comment |
|------|--------------|---------------|--------|--------|--|
| P209 | AP:FB-Phaser | Analog Phaser | Insert | Stereo | Simulates analog phaser with oscillation on purpose. |

VS8F-2 Algorithm List

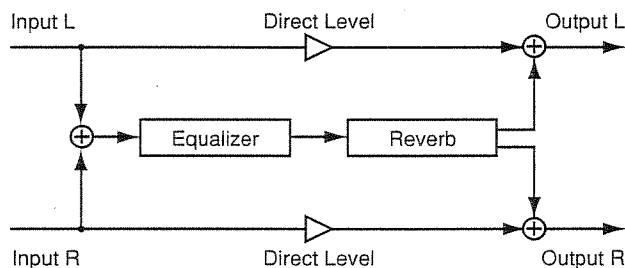
This section contains explanations of each algorithm. In the "Preset Patch list sheet," check the algorithm used by the Patch that you are starting with, and refer to this section for an explanation of the algorithm. For details on the function of each parameter, refer to the section "Function of Each Effect Parameter" (p. 110).



Reverb



This algorithm adds reverberation to simulate an acoustic space such as a hall or room. A three-band equalizer is provided on the input.



EQ (Equalizer) (p. 110)

| | |
|-----------|--------------|
| Sw | Off, On |
| Low Gain | -12-12 dB |
| Low Freq | 20-2000 Hz |
| Low Q | 0.3-10.0 |
| Low Type | Shlv, Peak |
| Mid Gain | -12-12 dB |
| Mid Freq | 200-8000 Hz |
| Mid Q | 0.3-10.0 |
| High Gain | -12-12 dB |
| High Freq | 1.4-20.0 kHz |
| High Q | 0.3-10.0 |
| Hi Type | Shlv, Peak |
| Level | 0-100 |

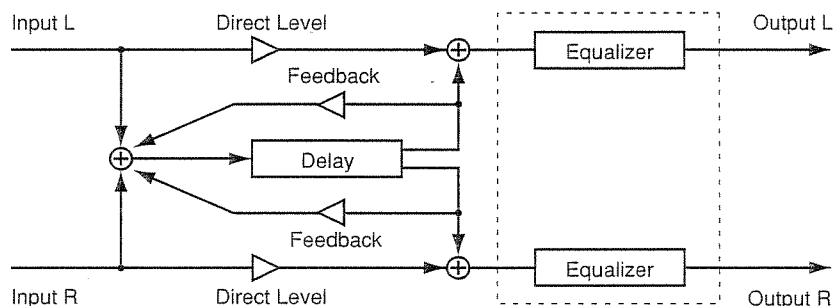
Reverb (p. 110)

| | |
|--------------|--------------|
| Room Size | 5-40 m |
| Time | 0.1-32.0 sec |
| PreDLY | 0-200 ms |
| Difusi | 0-100 |
| Densty | 0-100 |
| ERLvl | 0-100 |
| LF Damp Gain | -36-0 dB |
| LF Damp Freq | 50-4000 Hz |
| HF Damp Gain | -36-0 dB |
| HF Damp Freq | 1.0-20.0 kHz |
| HiCF | 0.2-20.0 kHz |
| EfxLvl | -100-100 |
| DirLvl | -100-100 |

Delay



This algorithm is a mono-input stereo-output delay. A three-band equalizer is provided on the output.



Delay (p. 111)

| | |
|-----------------|------------------|
| Sw | Off, On |
| Time | 0-1200 ms |
| Shift | L1200-0-R1200 ms |
| Lch FeedbackLvl | -100-100 |
| Rch FeedbackLvl | -100-100 |
| LF Damp Gain | -36-0 dB |
| LF Damp Freq | 50-4000 Hz |
| HF Damp Gain | -36-0 dB |
| HF Damp Freq | 1.0-20.0 kHz |
| Lch EfxLvl | -100-100 |
| Rch EfxLvl | -100-100 |
| DirLvl | -100-100 |

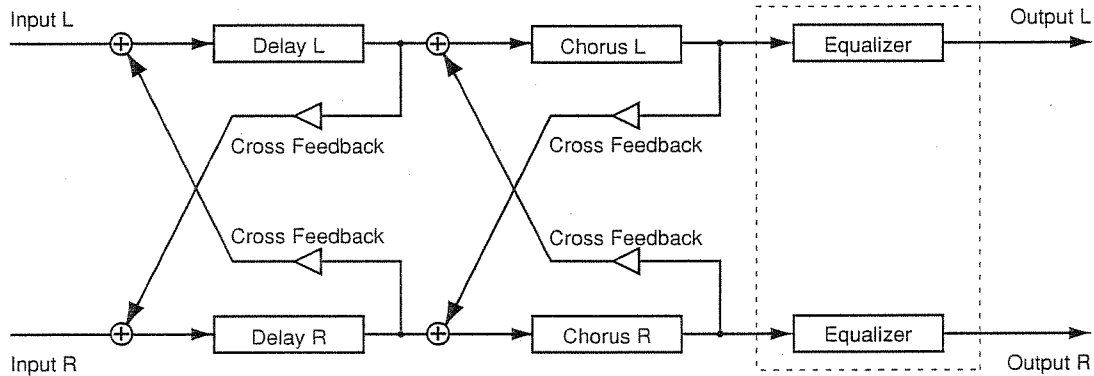
EQ (Equalizer) (p. 110)

| | |
|-----------|--------------|
| Sw | Off, On |
| Low Gain | -12-12 dB |
| Low Freq | 20-2000 Hz |
| Low Q | 0.3-10.0 |
| Low Type | Shlv, Peak |
| Mid Gain | -12-12 dB |
| Mid Freq | 200-8000 Hz |
| Mid Q | 0.3-10.0 |
| High Gain | -12-12 dB |
| High Freq | 1.4-20.0 kHz |
| High Q | 0.3-10.0 |
| Hi Type | Shlv, Peak |
| Level | 0-100 |

StDly-Chorus (Stereo Delay Chorus)



This algorithm connects a stereo delay and a stereo chorus in series. A three-band equalizer is provided on the output.



Delay (p. 111)

| | |
|-----------------------|----------------|
| Sw | Off, On |
| Time | 0–500 ms |
| Shift | L500–0–R500 ms |
| Lch FeedBackLvl | -100–100 |
| Rch FeedBackLvl | -100–100 |
| Lch CrossFeedbackLvl | -100–100 |
| Rch CrossFeedback Lvl | -100–100 |
| EfxLvl | -100–100 |
| DirLvl | -100–100 |

Chorus (p. 112)

| | |
|----------------------|-------------|
| Sw | Off, On |
| Rate | 0.1–10.0 Hz |
| Depth | 0–100 |
| PreDLY | 0–50 ms |
| Lch FeedbackLvl | -100–100 |
| Rch FeedbackLvl | -100–100 |
| Lch CrossFeedbackLvl | -100–100 |
| Rch CrossFeedbackLvl | -100–100 |
| EfxLvl | -100–100 |
| DirLvl | -100–100 |

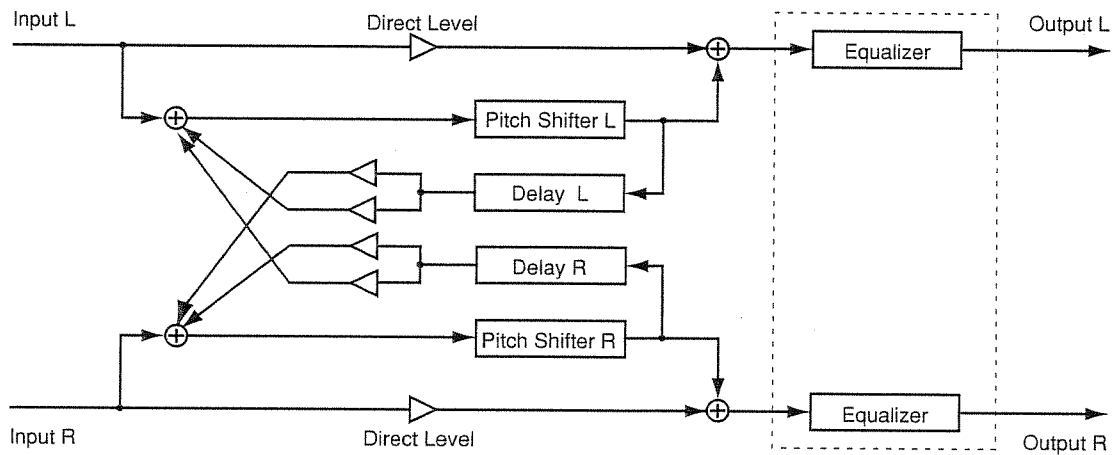
EQ (Equalizer) (p. 110)

| | |
|-----------|--------------|
| Sw | Off, On |
| Low Gain | -12–12 dB |
| Low Freq | 20–2000 Hz |
| Low Q | 0.3–10.0 |
| Low Type | Shlv, Peak |
| Mid Gain | -12–12 dB |
| Mid Freq | 200–8000 Hz |
| Mid Q | 0.3–10.0 |
| High Gain | -12–12 dB |
| High Freq | 1.4–20.0 kHz |
| High Q | 0.3–10.0 |
| Hi Type | Shlv, Peak |
| Level | 0–100 |

StPS-Delay (Stereo Pitch Shifter Delay)



This algorithm is a stereo pitch shifter with feedback delay. A three-band equalizer is provided on the output.



PShift (Pitch Shifter Delay) (p. 113)

| | |
|----------------------|----------|
| Sw | Off, On |
| Lch Croma Pitch | -12-12 |
| Lch Fine Pitch | -100-100 |
| Rch Croma Pitch | -12-12 |
| Rch Fine Pitch | -100-100 |
| Lch PreDly | 0-50 ms |
| Rch PreDly | 0-50 ms |
| Lch FBDly | 0-500 ms |
| Rch FBDly | 0-500 ms |
| Lch FeedBackLvl | -100-100 |
| Rch FeedBackLvl | -100-100 |
| Lch CrossFeedBackLvl | -100-100 |
| Rch CrossFeedBackLvl | -100-100 |
| EfxLvl | -100-100 |
| DirLvl | -100-100 |

EQ (Equalizer) (p. 110)

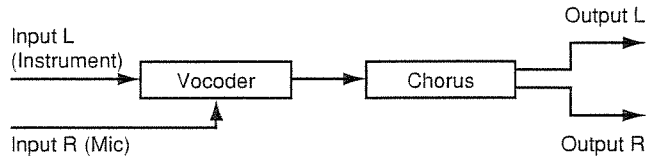
| | |
|-----------|--------------|
| Sw | Off, On |
| Low Gain | -12-12 dB |
| Low Freq | 20-2000 Hz |
| Low Q | 0.3-10.0 |
| Low Type | Shlv, Peak |
| Mid Gain | -12-12 dB |
| Mid Freq | 200-8000 Hz |
| Mid Q | 0.3-10.0 |
| High Gain | -12-12 dB |
| High Freq | 1.4-20.0 kHz |
| High Q | 0.3-10.0 |
| Hi Type | Shlv, Peak |
| Level | 0-100 |

Vocoder



This algorithm is a ten-band vocoder. The instrumental sound will be split into ten frequency bands, and processed according to the frequency characteristics of the audio signal.

To use the vocoder, Effect Pan for the instrument channel should be set to "L63" (send/return) or select "insL" (insert) so that input an instrumental sound into the left channel. Similarly, Effect Pan for the vocal channel should be set to "R63" (send/return) or select "insR" (insert) so that input a vocal sound into the right channel.



Voc (Vocoder) (p. 113)

| | |
|---------|-------|
| Char 1 | 0-100 |
| Char 2 | 0-100 |
| Char 3 | 0-100 |
| Char 4 | 0-100 |
| Char 5 | 0-100 |
| Char 6 | 0-100 |
| Char 7 | 0-100 |
| Char 8 | 0-100 |
| Char 9 | 0-100 |
| Char 10 | 0-100 |

Cho (Chorus) (p. 112)

| | |
|--------|-------------|
| Sw | Off, On |
| Rate | 0.1-10.0 Hz |
| Depth | 0-100 |
| PreDLY | 0-50 ms |
| FBLvl | -100-100 |
| EfxLvl | -100-100 |
| DirLvl | -100-100 |

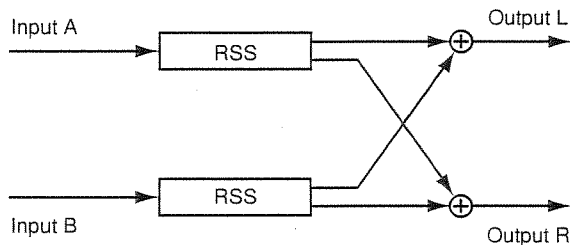
2ch RSS (2-channel RSS)



This algorithm lets you specify the spatial placement of each of the input channels. When using this algorithm, do not allow the direct sound to be output.

To use INPUT A for the input, Effect Pan for the channel should be set to "L63" (send/return) or select "InsL" (insert). To use INPUT B for the input, Effect Pan for the channel should be set to "R63" (send/return) or select "InsR" (insert).

? RSS (p. 64)



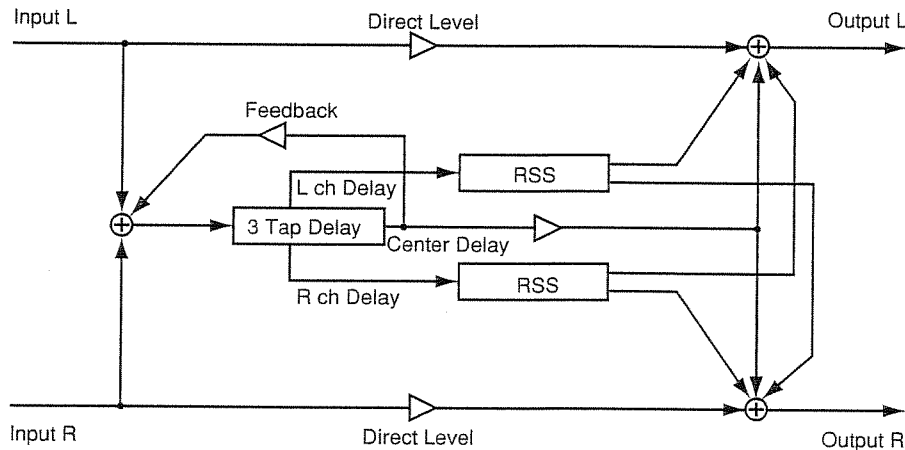
RSS A/RSS B (p. 113)

| | |
|-----------|-----------|
| Azimuth | -180-180° |
| Elevation | -90-90° |

Delay RSS



This algorithm is a delay with three independent delay sounds. RSS is connected to each output, left and right, and the sound of the left channel is placed 90 degrees left, and the sound of the right channel is placed 90 degrees right. Feedback can be applied to the output of the center delay.



DlyRSS (Delay RSS) (p. 113)

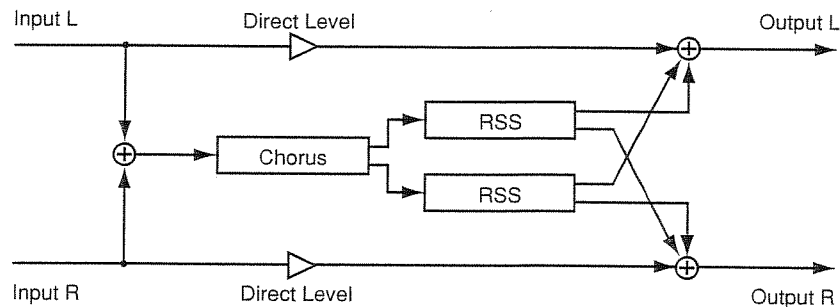
| | |
|--------|------------------|
| Time | 0-1200 ms |
| Shift | L1200-0-R1200 ms |
| C.Time | 0-1200 ms |
| RSSLvl | 0-100 |
| C-Lvl | 0-100 |

| | |
|--------------|--------------|
| LF Damp Gain | -36-0 dB |
| LF Damp Freq | 50-4000 Hz |
| HF Damp Gain | -36-0 dB |
| HF Damp Freq | 1.0-20.0 kHz |
| FBLvl | -100-100 |
| EfxLvl | -100-100 |
| DirLvl | -100-100 |

Chorus RSS



This algorithm is a chorus with RSS connected to the output. The sound of the left channel is placed 90 degrees left, and the sound of the right channel is placed 90 degrees right.



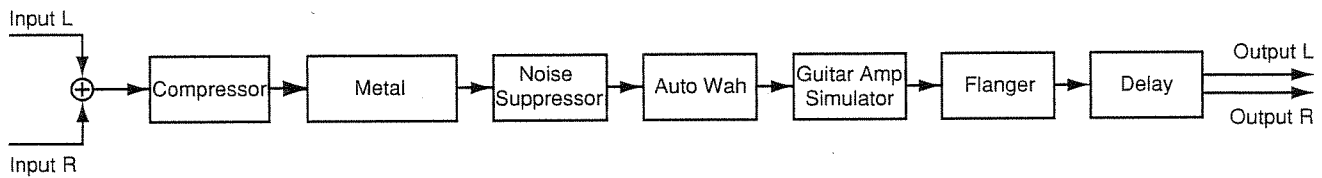
ChORSS (Chorus RSS) (p. 113)

| | |
|--------|-------------|
| Rate | 0.1-10.0 Hz |
| Depth | 0-100 |
| EfxLvl | -100-100 |
| DirLvl | -100-100 |

GuitarMulti1 (Guitar Multi 1)



This algorithm is a multi-effect for guitar.



Comp (Compressor) (p. 114)

| | |
|---------|---------|
| Sw | Off, On |
| Sustain | 0–100 |
| Attack | 0–100 |
| Tone | -50–50 |
| Level | 0–100 |

Metal (p. 114)

| | |
|----------|----------|
| Sw | Off, On |
| Low Gain | -100–100 |
| Mid Gain | -100–100 |
| Hi Gain | -100–100 |
| Level | 0–100 |

NS (Noise Suppressor) (p. 115)

| | |
|---------|---------|
| Sw | Off, On |
| Thresh | 0–100 |
| Release | 0–100 |

Wah (Auto Wah) (p. 115)

| | |
|-------|-------------|
| Sw | Off, On |
| Mode | LPF, BPF |
| Pol | Down, Up |
| Sens | 0–100 |
| Freq | 0–100 |
| Peak | 0–100 |
| Rate | 0.1–10.0 Hz |
| Depth | 0–100 |
| Level | 0–100 |

Sim (Guitar Amp Simulator) (p. 115)

| | |
|------|--------------------------------|
| Sw | Off, On |
| Mode | Small, BuiltIn, 2Stack, 3Stack |

Flg (Flanger) (p. 115)

| | |
|--------|-------------|
| Sw | Off, On |
| Rate | 0.1–10.0 Hz |
| Depth | 0–100 |
| Manual | 0–100 |
| Reso | 0–100 |

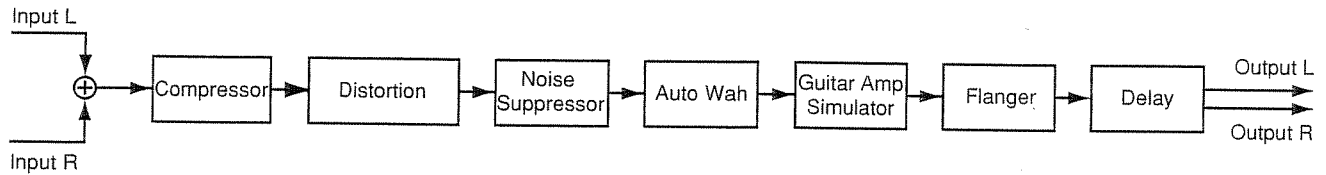
Dly (Delay) (p. 111)

| | |
|--------|------------------|
| Sw | Off, On |
| Time | 0–1000 ms |
| Shift | L1000–0–R1000 ms |
| FBTime | 0–1000 ms |
| FBLvl | -100–100 |
| EfxLvl | -100–100 |
| DirLvl | -100–100 |

GuitarMulti2 (Guitar Multi 2)



This algorithm is a multi-effect for guitar.



Comp (Compressor) (p. 114)

Sw Off, On
 Sustain 0–100
 Attack 0–100
 Tone -50–50
 Level 0–100

Dstr (Distortion) (p. 114)

Sw Off, On
 Gain 0–100
 Tone 0–100
 Level 0–100

NS (Noise Suppressor) (p. 115)

Sw Off, On
 Thresh 0–100
 Release 0–100

Wah (Auto Wah) (p. 115)

Sw Off, On
 Mode LPF, BPF
 Pol Down, Up
 Sens 0–100
 Freq 0–100
 Peak 0–100
 Rate 0.1–10.0 Hz
 Depth 0–100
 Level 0–100

Sim (Guitar Amp Simulator) (p. 115)

Sw Off, On
 Mode Small, BuiltIn, 2Stack, 3Stack

Flg (Flanger) (p. 115)

Sw Off, On
 Rate 0.1–10.0 Hz
 Depth 0–100
 Manual 0–100
 Reso 0–100

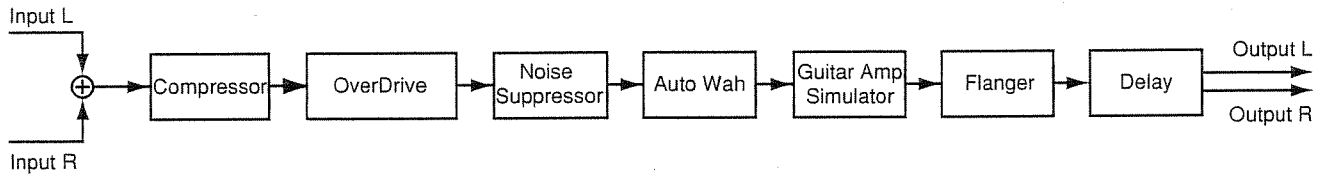
Dly (Delay) (p. 111)

Sw Off, On
 Time 0–1000 ms
 Shift L1000–0–R1000 ms
 FBTime 0–1000 ms
 FBLvl -100–100
 EfxLvl -100–100
 DirLvl -100–100

GuitarMulti3 (Guitar Multi 3)



This algorithm is a multi-effect for guitar.



Comp (Compressor) (p. 114)

| | |
|---------|---------|
| Sw | Off, On |
| Sustain | 0–100 |
| Attack | 0–100 |
| Tone | -50–50 |
| Level | 0–100 |

Ovd (OverDrive) (p. 114)

| | |
|-------|---------|
| Sw | Off, On |
| Gain | 0–100 |
| Tone | 0–100 |
| Level | 0–100 |

NS (Noise Suppressor) (p. 115)

| | |
|---------|---------|
| Sw | Off, On |
| Thresh | 0–100 |
| Release | 0–100 |

Wah (Auto Wah) (p. 115)

| | |
|-------|-------------|
| Sw | Off, On |
| Mode | LPF, BPF |
| Pol | Down, Up |
| Sens | 0–100 |
| Freq | 0–100 |
| Peak | 0–100 |
| Rate | 0.1–10.0 Hz |
| Depth | 0–100 |
| Level | 0–100 |

Sim (Guitar Amp Simulator) (p. 115)

| | |
|------|--------------------------------|
| Sw | Off, On |
| Mode | Small, BuiltIn, 2Stack, 3Stack |

Flg (Flanger) (p. 115)

| | |
|--------|-------------|
| Sw | Off, On |
| Rate | 0.1–10.0 Hz |
| Depth | 0–100 |
| Manual | 0–100 |
| Reso | 0–100 |

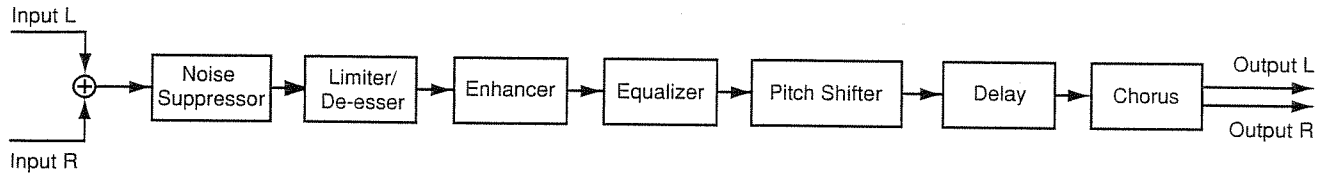
Dly (Delay) (p. 111)

| | |
|--------|------------------|
| Sw | Off, On |
| Time | 0–1000 ms |
| Shift | L1000–0–R1000 ms |
| FBTime | 0–1000 ms |
| FBLvl | -100–100 |
| EfxLvl | -100–100 |
| DirLvl | -100–100 |

Vocal Multi



This algorithm is a multi-effect for vocals.



NS (Noise Suppressor) (p. 115)

Sw Off, On
Thresh 0–100
Release 0–100

Lmt (Limiter/De-esser) (p. 116)

Sw Off, On
Mode Limiter, De-esser
Thresh 0–100
Release 0–100
Sens 0–100
Freq 1.0–10.0 kHz
Level 0–100

Enh (Enhancer) (p. 117)

Sw Off, On
Sens 0–100
Freq 1.0–10.0 kHz
MixLvl 0–100
Level 0–100

EQ (Equalizer) (p. 110)

Sw Off, On
Low Gain -12–12 dB
Low Freq 20–2000 Hz
Low Q 0.3–10.0
Low Type Shlv, Peak
Mid Gain -12–12 dB
Mid Freq 200–8000 Hz
Mid Q 0.3–10.0
High Gain -12–12 dB
High Freq 1.4–20.0 kHz
High Q 0.3–10.0
Hi Type Shlv, Peak
Level 0–100

PShift (Pitch Shifter) (p. 113)

Sw Off, On
Cromatic Pitch -12–12
Fine Pitch -100–100
EfxLvl -100–100
DirLvl -100–100

Dly (Delay) (p. 111)

Sw Off, On
Time 0–1000 ms
FBLvl -100–100
EfxLvl -100–100
DirLvl -100–100

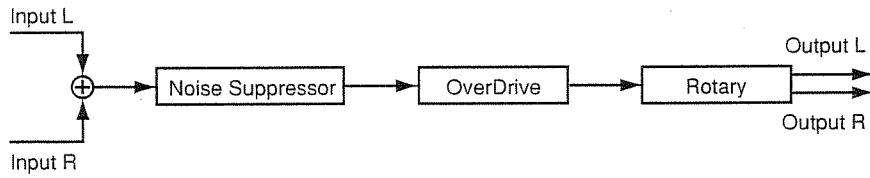
Cho (Chorus) (p. 112)

Sw Off, On
Rate 0.1–10.0 Hz
Depth 0–100
PreDLY 0–50 ms
EfxLvl -100–100
DirLvl -100–100

Rotary



This algorithm simulates a rotary speaker.



NS (Noise Suppressor) (p. 115)

| | |
|---------|---------|
| Sw | Off, On |
| Thresh | 0-100 |
| Release | 0-100 |

Rot (Rotary) (p. 117)

| | |
|-------|-------------|
| LRate | 0.1-10.0 Hz |
| HRate | 0.1-10.0 Hz |

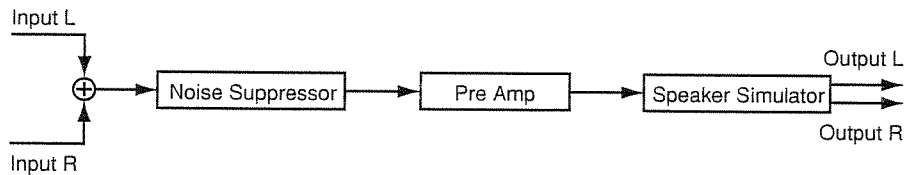
Ovd (OverDrive) (p. 114)

| | |
|-------|---------|
| Sw | Off, On |
| Gain | 0-100 |
| Level | 0-100 |

GuitarAmpSim (Guitar Amp Simulator)



This algorithm simulates a guitar amp.



NS (Noise Suppressor) (p. 115)

Sw Off, On
 Thresh 0–100
 Release 0–100

Amp (Pre Amp) (p. 118)

Sw Off, On
 Amp Type JC-120, Clean Twin, Match Drive, BG Lead, MS1959 I, MS1959 II, MS1959 I+II, SLDN Lead, Metal 5150, Metal Lead, OD-1, OD-2 Turbo, Distortion, Fuzz
 Gain Low, Middle, High
 Bright Off, On
 Volume 0–100
 Bass 0–100
 Middle 0–100
 Treble 0–100
 Presence 0–100(-100–0)
 Master 0–100

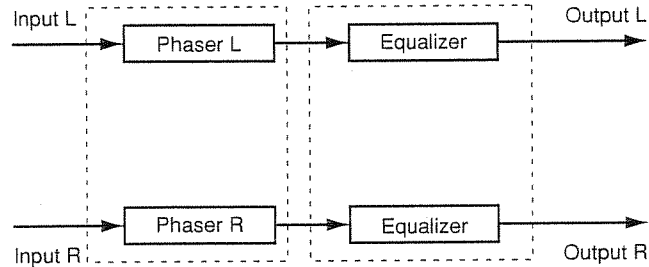
Sp (Speaker Simulator) (p. 118)

Sw Off, On
 Sp Type 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
 MicSetting 1, 2, 3
 MicLevel 0–100
 DirLvl 0–100

St Phaser (Stereo Phaser)



This algorithm is a stereo phaser. A three-band equalizer is provided on the output.



Phs (Phaser) (p. 116)

| | |
|------------|--------------|
| Sw | Off, On |
| Mode | 4, 8, 12, 16 |
| Pol | Inv, Sync |
| Rate | 0.1–10.0 Hz |
| Depth | 0–100 |
| Manual | 0–100 |
| Reso | 0–100 |
| CrossFBLvl | 0–100 |
| EfxLvl | -100–100 |
| DirLvl | -100–100 |

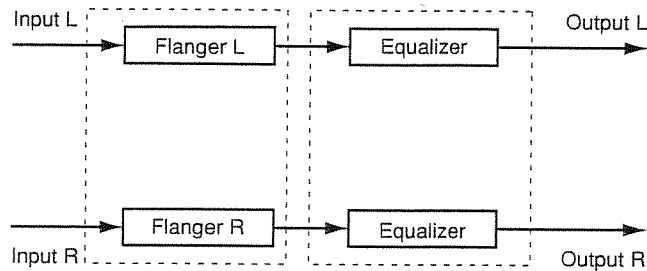
EQ (Equalizer) (p. 110)

| | |
|-----------|--------------|
| Sw | Off, On |
| Low Gain | -12–12 dB |
| Low Freq | 20–2000 Hz |
| Low Q | 0.3–10.0 |
| Low Type | Shlv, Peak |
| Mid Gain | -12–12 dB |
| Mid Freq | 200–8000 Hz |
| Mid Q | 0.3–10.0 |
| High Gain | -12–12 dB |
| High Freq | 1.4–20.0 kHz |
| High Q | 0.3–10.0 |
| Hi Type | Shlv, Peak |
| Level | 0–100 |

St Flanger (Stereo Flanger)



This algorithm is a stereo flanger. A three-band equalizer is provided on the output.



Flg (Flanger) (p. 115)

| | |
|------------|-------------|
| Sw | Off, On |
| Pol | Inv, Sync |
| Rate | 0.1–10.0 Hz |
| Depth | 0–100 |
| Manual | 0–100 |
| Reso | 0–100 |
| CrossFBLvl | 0–100 |
| EfxLvl | -100–100 |
| DirLvl | -100–100 |

EQ (Equalizer) (p. 110)

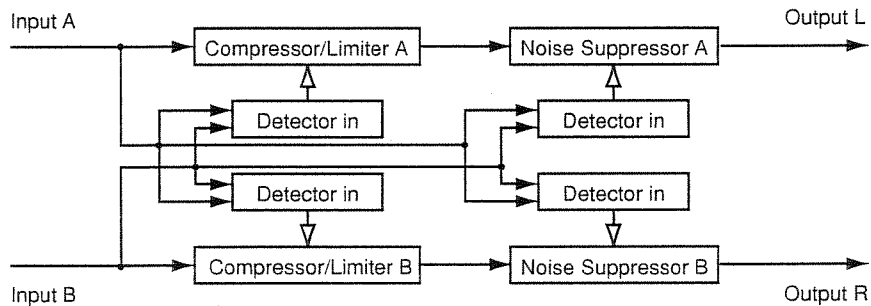
| | |
|-----------|--------------|
| Sw | Off, On |
| Low Gain | -12–12 dB |
| Low Freq | 20–2000 Hz |
| Low Q | 0.3–10.0 |
| Low Type | Shlv, Peak |
| Mid Gain | -12–12 dB |
| Mid Freq | 200–8000 Hz |
| Mid Q | 0.3–10.0 |
| High Gain | -12–12 dB |
| High Freq | 1.4–20.0 kHz |
| High Q | 0.3–10.0 |
| Hi Type | Shlv, Peak |
| Level | 0–100 |

DualCom/Lim (Dual Compressor/Limiter)



Two independent processors (A, B) for compressor/limiter and noise suppressor are connected in series in this algorithm.

To use INPUT A for the input, Effect Pan for the channel should be set to "L63" (send/return) or select "InsL" (insert). To use INPUT B for the input, Effect Pan for the channel should be set to "R63" (send/return) or select "InsR" (insert).



CmpA/CmpB (Compressor/Limiter) (p. 117)

| | |
|---------|------------------------|
| Sw | Off, On |
| Thresh | -60-0 dB |
| Ratio | 1.5:1, 2:1, 4:1, 100:1 |
| Attack | 0-100 |
| Release | 0-100 |
| Level | -60-12 dB |
| Detect | A, B, Link |

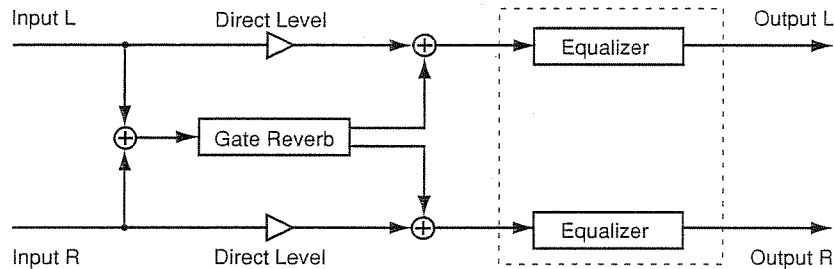
NS (Noise Suppressor) (p. 115)

| | |
|---------|------------|
| Sw | Off, On |
| Thresh | 0-100 |
| Release | 0-100 |
| Detect | A, B, Link |

Gate Reverb



This algorithm is a gated reverb. A three-band equalizer is provided on the output.



GRev (Gate Reverb) (p. 119)

| | |
|---------|------------------------------------|
| Sw | Off, On |
| Mode | Normal, L→R, R→L, Revers1, Revers2 |
| Time | 10–400 ms |
| PreDLY | 0–300 ms |
| Thick | 0–100 |
| Density | 0–100 |
| AcDLY | 0–200 ms |
| AcLvl | 0–100 |
| AcPan | L63–R63 |
| EfxLvl | -100–100 |
| DirLvl | -100–100 |

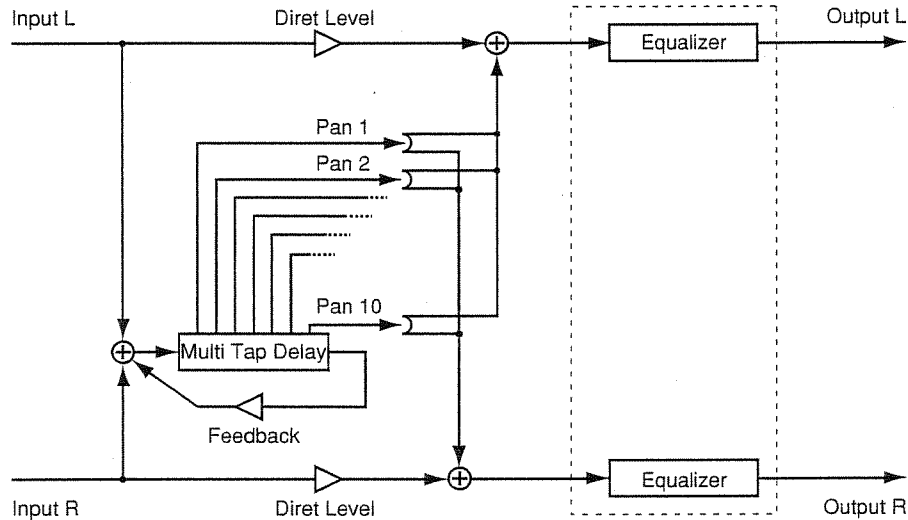
EQ (Equalizer) (p. 110)

| | |
|-----------|--------------|
| Sw | Off, On |
| Low Gain | -12–12 dB |
| Low Freq | 20–2000 Hz |
| Low Q | 0.3–10.0 |
| Low Type | Shlv, Peak |
| Mid Gain | -12–12 dB |
| Mid Freq | 200–8000 Hz |
| Mid Q | 0.3–10.0 |
| High Gain | -12–12 dB |
| High Freq | 1.4–20.0 kHz |
| High Q | 0.3–10.0 |
| Hi Type | Shlv, Peak |
| Level | 0–100 |

MultiTapDly (Multi Tap Delay)



This algorithm is a delay in which ten delays can be set independently. A three-band equalizer is provided on the output.



MTD (Multi Tap Delay) (p. 111)

| | |
|----------------|-----------|
| Time Ch1–Ch10 | 0–1200 ms |
| Level Ch1–Ch10 | 0–100 |
| Pan Ch1–Ch10 | L63–R63 |
| FBTim | 0–1200 ms |
| FBLvl | -100–100 |
| EfxLvl | -100–100 |
| DirLvl | -100–100 |

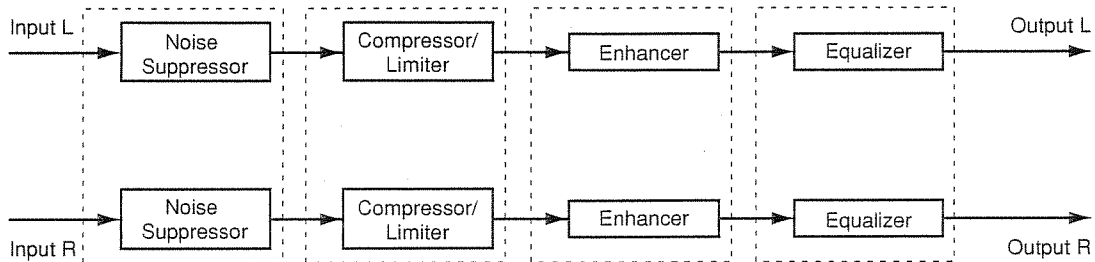
EQ (Equalizer) (p. 110)

| | |
|-----------|--------------|
| Sw | Off, On |
| Low Gain | -12–12 dB |
| Low Freq | 20–2000 Hz |
| Low Q | 0.3–10.0 |
| Low Type | Shlv, Peak |
| Mid Gain | -12–12 dB |
| Mid Freq | 200–8000 Hz |
| Mid Q | 0.3–10.0 |
| High Gain | -12–12 dB |
| High Freq | 1.4–20.0 kHz |
| High Q | 0.3–10.0 |
| Hi Type | Shlv, Peak |
| Level | 0–100 |

Stereo Multi



This algorithm connects a stereo noise suppressor, stereo compressor/limiter, stereo enhancer, and a stereo equalizer in series.



NS (Noise Suppressor) (p. 115)

Sw Off, On
 Thresh 0–100
 Release 0–100

Cmp (Compressor/Limiter) (p. 114)

Sw Off, On
 Thresh -60–0 dB
 Ratio 1.5:1, 2:1, 4:1, 100:1,
 Attack 0–100
 Release 0–100
 Level -60–12 dB

Enh (Enhancer) (p. 117)

Sw Off, On
 Sens 0–100
 Freq 1.0–10.0 kHz
 MixLvl 0–100
 Level 0–100

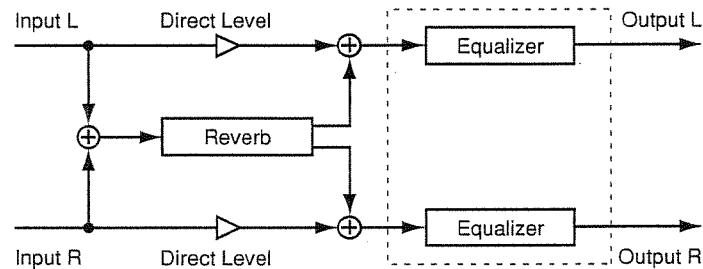
EQ (Equalizer) (p. 110)

Sw Off, On
 Low Gain -12–12 dB
 Low Freq 20–2000 Hz
 Low Q 0.3–10.0
 Low Type Shlv, Peak
 Mid Gain -12–12 dB
 Mid Freq 200–8000 Hz
 Mid Q 0.3–10.0
 High Gain -12–12 dB
 High Freq 1.4–20.0 kHz
 High Q 0.3–10.0
 Hi Type Shlv, Peak
 Level 0–100

Reverb 2



This is a reverb that provides a gating function and a ducking function. It can be used in whichever EFX1 to EFX4. You can use two reverbs with different settings, or use it in combination with a previous reverb.



Rev (Reverb) (p. 120)

| | |
|---------|-----------------------------------|
| Sw | On, Off |
| Type | Room1, Room2, Hall1, Hall2, Plate |
| Gate | Off, On |
| Mode | Gate, Ducking |
| Time | 0.1–10.0 sec |
| PreDLY | 0–200 msec |
| Density | 0–100 |
| HPF | Thru, 20–2000 Hz |
| LPF | 1.0–20.0 kHz, Thru |
| Thresh | 0–100 |
| Attack | 1–100 |
| Releas | 1–100 |
| HoldT | 1–100 |
| EfxLvl | 0–100 |
| DirLvl | 0–100 |

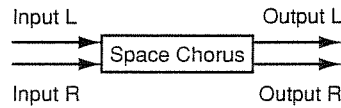
EQ (Equalizer) (p. 110)

| | |
|-----------|--------------|
| Sw | Off, On |
| Low Gain | -12–12 dB |
| Low Freq | 20–2000 Hz |
| Low Q | 0.3–10.0 |
| Low Type | Shlv, Peak |
| Mid Gain | -12–12 dB |
| Mid Freq | 200–8000 Hz |
| Mid Q | 0.3–10.0 |
| High Gain | -12–12 dB |
| High Freq | 1.4–20.0 kHz |
| High Q | 0.3–10.0 |
| Hi Type | Shlv, Peak |
| Level | 0–100 |

Space Chorus



This is a chorus which simulates the Roland SDD-320.



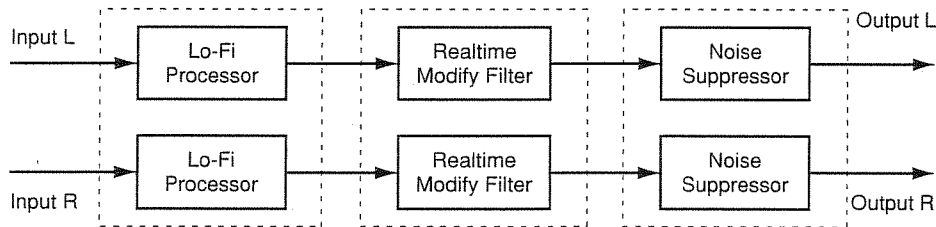
Spcho (Space Chorus) (p. 120)

Sw Off, On
 InMode Mono, Stereo
 Mode 1, 2, 3, 4, 1+4, 2+4, 3+4
 MixBal 0-100

Lo-Fi Proces (Lo-Fi Processor)



This allows you to create a “lo-fi” sound by lowering the sample rate and/or decreasing the number of bits. Realtime modify filters connected in series allow you to reshape the sound freely.



Lo-Fi (Lo-fi Processor) (p. 121)

Sw Off, On
 Pre Filter Off, On
 Rate Off, 1/2-1/32
 Bit Off, 15-1 bit
 Post Filter Off, On
 EfxLvl 0-100
 DirLvl 0-100

RMF (Realtime Modify Filter) (p. 121)

Sw Off, On
 Type LPF, BPF, HPF
 CutOff 0-100
 Reso 0-100
 Gain 0-24 dB

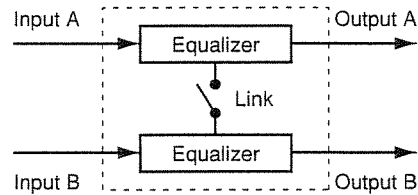
NS (Noise Suppressor) (p. 115)

Thresh 0-100
 Release 0-100

ParametricEQ (4-Band Parametric Equalizer)



This is a 4-band parametric equalizer. It can be used either as two monaural units or as one stereo unit.



Lnk (Link) (p. 121)

Link Off, On

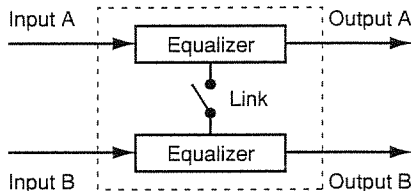
PEQA/PEQB (Parametric Equalizer) (p. 122)

| | |
|------------|--------------|
| Sw | Off, On |
| Low Gain | -12–12 dB |
| Low Freq | 20–2000 Hz |
| Low Q | 0.3–10 |
| Low Type | Shlv, Peak |
| LoMid Gain | -12–12 dB |
| LoMid Freq | 200–8000 Hz |
| LoMid Q | 0.3–10 |
| HiMid Gain | -12–12 dB |
| HiMid Freq | 200–8000 Hz |
| HiMid Q | 0.3–10 |
| High Gain | -12–12 dB |
| High Freq | 1.4–20.0 kHz |
| High Q | 0.3–10 |
| High Type | Shlv, Peak |
| InputG | -60–12dB |
| Level | -60–12 dB |

GraphicEQ (10-Band Graphic Equalizer)



This simulates a 10-band graphic equalizer. It can be used either as two monaural units or as one stereo unit.



Lnk (Link) (p. 121)

Link Off, On

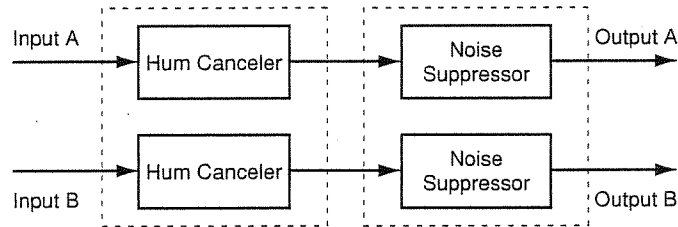
GEQA/GEQB (Graphic Equalizer) (p. 122)

| | |
|--------|-----------|
| Sw | Off, On |
| 31.2 | -12-12 dB |
| 62.5 | -12-12 dB |
| 125 | -12-12 dB |
| 250 | -12-12 dB |
| 500 | -12-12 dB |
| 1k | -12-12 dB |
| 2k | -12-12 dB |
| 4k | -12-12 dB |
| 8k | -12-12 dB |
| 16k | -12-12 dB |
| InputG | -60-12 dB |
| Level | -60-12 dB |

Hum Canceler



This removes unwanted hum (electrical “buzz” or “drone”).



HC (Hum Canceller) (p. 123)

| | |
|---------|-----------------------|
| Sw | Off, On |
| Freq | 20.0–800.0 Hz |
| Width | 10–40 % |
| Depth | 0–100 |
| Thresh | 0–100 |
| RangeLo | Unlimit, 20–2000 Hz |
| RangeHi | 1.0–20.0 kHz, Unlimit |

NS (Noise Suppressor) (p. 115)

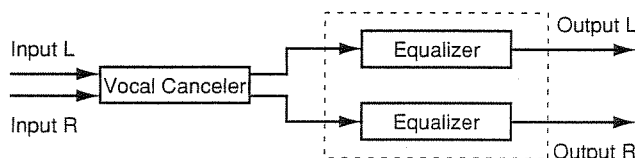
| | |
|---------|---------|
| Sw | Off, On |
| Thresh | 0–100 |
| Release | 0–100 |

Vocal Cancel



When a stereo source is being input from CD or DAT etc., this cancels the sound which is located in the stereo center, such as the vocal or bass.

* Depending on the musical 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 canceller may not produce the desired result.



VC (Vocal Canceller) (p. 123)

| | |
|---------|-----------------------|
| Sw | Off, On |
| Balance | 0-100 |
| RangeLo | Unlimit, 20-2000 Hz |
| RangeHi | 1.0-20.0 kHz, Unlimit |

EQ (Equalizer) (p. 110)

| | |
|-----------|--------------|
| Sw | Off, On |
| Low Gain | -12-12 dB |
| Low Freq | 20-2000 Hz |
| Low Q | 0.3-10.0 |
| Low Type | Shlv, Peak |
| Mid Gain | -12-12 dB |
| Mid Freq | 200-8000 Hz |
| Mid Q | 0.3-10.0 |
| High Gain | -12-12 dB |
| High Freq | 1.4-20.0 kHz |
| High Q | 0.3-10.0 |
| Hi Type | Shlv, Peak |
| Level | 0-100 |

Voice Trans (Voice Transformer)



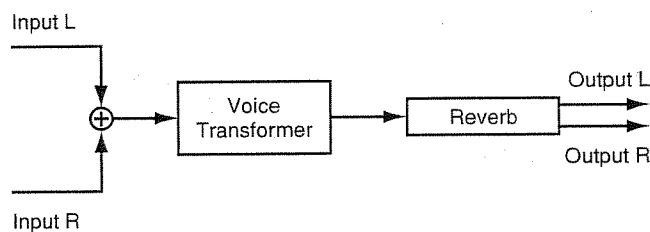
This independently controls the basic pitch and the formants, allowing a variety of voice characters to be created.

? Formants (p. 63)

* Voice Transformer can be used in EFX1 or EFX3. Also, EFX2 or EFX4 will not be available for use.

Hints for voice input

- Input only a single voice. If several voices are input, the VS-1680 will not operate properly.
- 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 (i.e. the VS-1680 will not function properly).
- We recommend that you to use a unidirectional microphone; speak or sing as close to the microphone as possible.



VT (Voice Transformer) (p. 123)

| | |
|------------------|----------|
| Sw | Off, On |
| Robot | Off, On |
| Cromatic Pitch | -12-36 |
| Fine Pitch | -100-100 |
| Cromatic Formant | -12-12 |
| Fine Formant | -100-100 |
| MixBal | 0-100 |

FE (Fader Edit) (p. 124)

| | |
|----|---------|
| Sw | Off, On |
|----|---------|

MIDI (MIDI Control) (p. 124)

| | |
|-----------|------------|
| Sw | Off, On |
| PitchBend | Off, 1-12 |
| Portament | Off, 1-100 |

Rev (Reverb) (p. 110)

| | |
|---------|--------------|
| Sw | Off, On |
| Time | 0.1-10.0 sec |
| PreDLY | 0-200 msec |
| Density | 0-100 |
| EfxLvl | 0-100 |

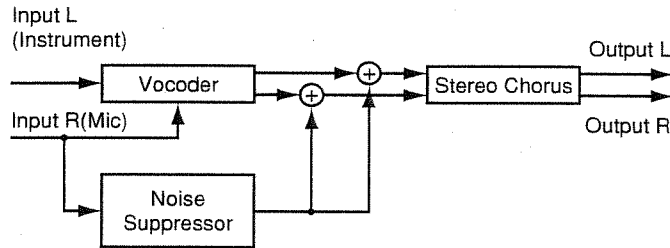
Vocoder 2 (19)



This is a 19 band vocoder. A clear sound that was not possible with conventional vocoders can be obtained.

To use the vocoder, Effect Pan for the instrument channel should be set to "L63" (send/return) or select "insL" (insert) so that input an instrumental sound into the left channel. Similarly, Effect Pan for the vocal channel should be set to "R63" (send/return) or select "insR" (insert) so that input a vocal sound into the right channel.

* Vocoder 2 (19) can be used in EFX1 or EFX3. Also, EFX2 or EFX4 will not be available for use.



Voc (Vocoder2) (p. 124)

| | |
|------------------|------------------------|
| Envelope | Sharp, Soft, Long |
| PanMode | Mono, Stereo, L→R, R→L |
| Hold | Off, MIDI |
| MicSens | 0-100 |
| SynInLev | 0-100 |
| Character Ch1-19 | 0-100 |
| Mic | 0-100 |
| MicHPF | Thru, 1.0-20.0 kHz |
| MicPan | L63-R63 |
| NSThresh | 0-100 |

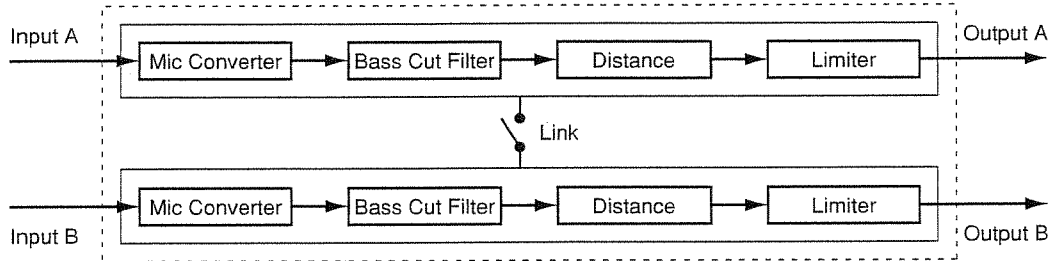
Cho (Chorus) (p. 112)

| | |
|--------|-------------|
| Sw | Off, On |
| Rate | 0.1-10.0 Hz |
| Depth | 0-100 |
| PreDLY | 0-50.0 msec |
| MixBal | 0-100 |

MicSimulator (Mic 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.



Lnk (Link) (p. 121)

Link Off, On

CnvA/CnvB (Mic Converter) (p. 125)

Sw Off, On
 Input DR-20, Sml.Dy, Hed.Dy, Min.Cn, Flat
 Out Sml.Dy, Voc.Dy, Lrg.Dy, Sml.Cn, Lrg.Cn,
 Vnt.Cn, Flat
 Phase Nor, Inv

BCutA/BCutB (Bass Cut Filter) (p. 126)

Sw Off, On
 Freq Thru, 20–2000 Hz

DstnA/DstnB (Distance) (p. 126)

Sw Off, On
 Prox.Fx -12--+12
 Time 0–3000 cm

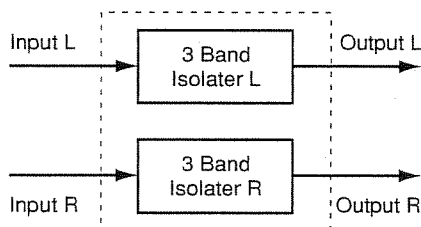
LmtA/LmtB (Limiter) (p. 117)

Sw Off, On
 Thresh -60–0 dB
 Attack 0–100
 Release 0–100
 Detect HPF Freq Thru, 20–2000 Hz
 Level -60–24 dB

3BndIsolater (3-band Isolator)



The input sound is separated into three frequency ranges — high, mid, and low — each of which can be boost or cut.



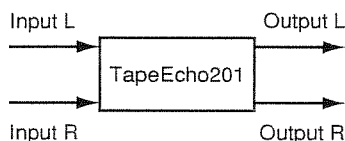
Iso (3-band Isolator) (p. 126)

| | |
|------------------|-----------|
| Sw | Off, On |
| AntiPhase LoLev | 0–100 |
| AntiPhase MidLev | 0–100 |
| LoMixSw | Off, On |
| MidMixSw | Off, On |
| LowLvl | -60–+4 dB |
| MidLvl | -60–+4 dB |
| HiLvl | -60–+4 dB |

TapeEcho201 (Tape Echo 201)



This is a tape echo which simulates the Roland RE-201.



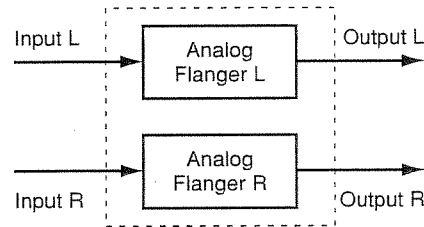
Echo (Tape Echo 201) (p. 126)

| | |
|------------------|----------|
| Sw | Off, On |
| Mode | 1–7 |
| Repeat Rate | 0–100 |
| Intnsty | 0–100 |
| Tone Bass | -100–100 |
| Tone Treble | -100–100 |
| Pan HeadS | L63–R63 |
| Pan HeadM | L63–R63 |
| Pan HeadL | L63–R63 |
| Tape Dist | 0–100 |
| WahFlutter Rate | 0–100 |
| WahFlutter Depth | 0–100 |
| EfxLvl | 0–100 |
| DirLvl | 0–100 |

AnalogFinger (Analog Flanger)



This is analog flanger which simulates the Roland SBF-325.



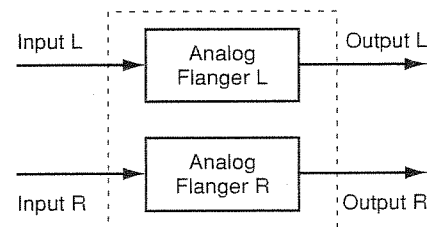
AnFl (Analog Flanger) (p. 127)

| | |
|------------------|--------------------|
| Sw | Off, On |
| Feedback | 0-100 |
| Modulation Freq | 0-100 |
| Modulation Rate | 0-100 |
| Modulation Depth | 0-100 |
| Mode | FL1, FL2, FL3, CHO |
| ChB | Nor, Inv |
| Phase ChA | Nor, Inv |
| Phase ChB | Nor, Inv |

AnalogPhaser (Analog Phaser)



The VS-1680 features two analog phasers arranged in parallel, so they can be used in stereo.



AnPh (Analog Phaser) (p. 127)

| | |
|------------|----------------|
| Sw | Off, On |
| Mode | 4STAGE, 8STAGE |
| Freq | 0-100 |
| Reso | 0-100 |
| LFO1 Rate | 0-100 |
| LFO1 Depth | 0-100 |
| LFO1 ChB | Nor, Inv |
| LFO2 Rate | 0-100 |
| LFO2 Depth | 0-100 |
| LFO2 ChB | Nor, Inv |

Function of Each Effect Parameter

This section explains the function of each effect parameter included in the algorithm.

EQ (Equalizer)

This is a three-band equalizer with low range (shelving /peaking type), mid range (peaking type), and high range (shelving/peaking type) bands.

Sw (Switch)

Turn the equalizer on/off.

Low Gain

Adjust the gain of the low range equalizer.

Low Freq (Low Frequency)

Adjust the frequency of the low range equalizer.

Low Q

Specify the width of the band centered on the low range equalizer center frequency in which the gain adjustment will occur. As this setting is raised, the width of the band affected will become narrower.

Low Type

Select the type of the low range equalizer.

Shlv: Shelving type

Peak: Peaking type

Mid Gain (Middle gain)

Specify the gain (amount of boost/cut) for the mid-range equalizer.

Mid Freq (Middle frequency)

Specify the center frequency of the mid-range equalizer.

Mid Q (Middle Q)

Specify the width of the band around the center frequency specified for the middle range equalizer in which the gain adjustment will occur. As this setting is raised, the width of the band affected will become narrower.

High Gain

Specify the gain (amount of boost/cut) for the high range equalizer.

High Freq (High frequency)

Specify the center frequency of the high range equalizer.

High Q (High Q)

Specify the width of the band around the center frequency specified for the high range equalizer in which the gain adjustment will occur. As this setting is raised, the width of the band affected will become narrower.

High Type

Select the type of high range equalizer.

Shlv: Shelving type

Peak: Peaking type

Level (Output level)

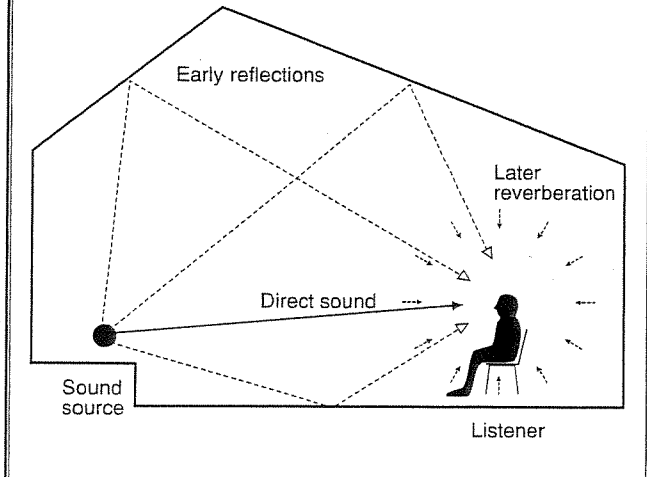
Adjust the volume level after the sound has passed through the equalizer.

Rev (Reverb)

Reverb refers to the reverberation that consists of many overlapping reflections. For example, if you clap your hands in a large room or auditorium, a lingering sound will follow the handclap itself. This lingering sound is called reverberation.

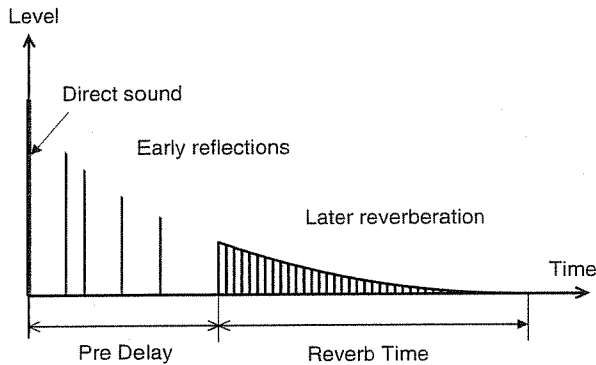
Types of reflection

The sound that normally enters our ear can be analyzed into three types of sound; direct sound, early reflections, and later reverberation. The direct sound is what reaches the listener directly from the sound source. Early reflections are what reach the listener after reflecting once or a few times off the walls or ceiling. Later reverberation is the "wash" of sound that is heard as a result of many reflections.



How reflections and time are related

Reflected sound reaches 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.



Other elements

The tonal characteristics of the reverb are affected by the materials of the surfaces (walls, etc.) off which the sound is reflected. The HF Damp and LF Damp parameters let you adjust the tonal quality as affected by such conditions.

HF Damp: The materials of the reflective surface will affect the way in which the high frequencies of the sound are attenuated. HF Damp adjusts the way in which the high frequencies are attenuated. Lower values will cause the high frequencies of the later reverberation to be attenuated more sharply.

LF Damp: The materials of the reflective surface will also affect the way in which the low frequencies of the sound are attenuated. LF Damp adjusts the way in which the low frequencies are attenuated. Lower values will cause the low frequencies of the later reverberation to be attenuated more sharply.

PreDLY (Pre Delay)

Adjust the time until the later reverberation appears.

Difusi (Diffusion)

Adjust the spread of the reverb sound.

Density (Density)

Adjust the diffusive spaciousness of the early reflections.

ERLvl (Early Reflection Level)

Adjust the level of the early reflections.

LF Damp Gain

Adjust the degree of LF damping. With a setting of 0, there will be no damping. As the value is decreased, damping will become more pronounced.

LF Damp Freq (LF Damp Frequency)

Adjust the frequency at which LF damping will begin to take effect.

HF Damp Gain

Adjust the degree of HF damping. With a setting of 0, there will be no damping. As the value is decreased, damping will become more pronounced.

HF Damp Freq (HF Damp Frequency)

Adjust the frequency at which HF damping will begin to take effect.

HiCF (High Cut Frequency)

Adjust the frequency at which the high frequencies of the reverb sound will be cut.

EfxLvl (Effect Level)

Adjust the volume of the reverb.

DirLvl (Direct Level)

Adjust the volume of the direct sound.

Delay

Delay is an effect that adds delayed sound (s) to the direct sound, adding depth to the sound or creating special effects.

Sw (Switch)

Turn the delay on/off.

Time (Delay Time)

Adjust the delay time.

Room Size

Adjust the size of the room.

Time (Reverb Time)

Adjust the time over which the later reverberation will decay.

Function of Each Effect Parameter

Shift (Delay shift)

Adjust the time difference between the delay times of the left and right channels. To delay the left channel delay, set this to a "L" value. To delay the right channel delay, set this to an "R" value. If you want the left and right channels to have the same delay time, set this to "0."

By shifting the delay times of the left and right channels, you can create a feeling of greater spaciousness.

** It is not possible for the sum of the Delay Time and the Delay Shift values to exceed the possible range of Delay Time settings. For example if the Delay Time has a range of 0–1200 ms and the Delay Time is set to 1000 ms, the Delay Shift setting range will be L200–R200 ms.*

FeedbackLvl (Feedback Level)

Feedback is when the delayed sound is returned to the input of the delay. This setting adjusts the amount that is returned. Higher settings will result in a greater number of repeats. For negative (-) settings, the phase of the sound will be inverted. Excessively high settings may cause oscillation to occur.

CrossFeedback Lvl (Cross Feedback Level)

This adjusts the amount of the delayed sound that is returned (fed back) to the other channel. For negative (-) settings, the phase of the sound will be inverted. Excessively high settings may cause oscillation to occur.

FBTim (Feedback Delay Time)

This adjusts the time of repeats when feedback is used with Multi Tap Delay.

LF Damp Gain

Adjust the degree of LF Damping. With a setting of 0, there will be no damping. As the value is decreased, damping will become more pronounced.

LF Damp Freq (LF Damp Frequency)

Adjust the frequency at which LF Damping will begin to take effect.

HF Damp Gain

Adjust the degree of HF Damping. With a setting of 0, there will be no damping. As the value is decreased, damping will become more pronounced.

HF Damp Freq (HF Damp Frequency)

Adjust the frequency at which HF Damping will begin to take effect.

EfxLvl (Effect Level)

Adjust the volume of the delay.

DirLvl (Direct Level)

Adjust the volume of the direct sound.

Cho (Chorus)

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

Sw (Switch)

Turn the chorus on/off.

Rate

Adjust the rate at which the chorus is modulated.

Depth

Adjust the depth at which the chorus is modulated.

PreDLY (Pre Delay)

Adjust the time from the direct sound until when the chorus sound is output.

FeedbackLvl (Feedback Level)

Feedback returns the chorused sound back to the input of the chorus. This setting adjusts the amount of chorused sound that is returned. For negative (-) settings, the phase will be inverted. Excessively high settings may cause oscillation to occur.

CrossFeedbackLvl (Cross Feedback Level)

Adjust the amount of the chorused sound that is fed back to the other channel. For negative (-) settings, the phase will be inverted. Excessively high settings may cause oscillation to occur.

EfxLvl (Effect Level)

Adjust the volume of the chorus.

DirLvl (Direct Level)

Adjust the volume of the direct sound.

MixBal (Mix Balance)

Adjust the balance between the chorus volume and the direct sound volume.

Shift (Pitch Shifter)

This effect changes the pitch of the original sound.

Sw (Switch)

Turn the Pitch Shifter on/off.

Croma Pitch (Chromatic Pitch)

Adjust the amount of pitch change in semitone steps.

Fine Pitch

Make fine adjustments to the amount of pitch change.

PreDly (Pre Delay)

Adjust the time from when the direct sound is output until when the pitch shifted sound is output.

FBDly (Feedback Delay Time)

This adjusts the time of repeats when feedback is used.

FeedBackLvl (Feedback Level)

Feedback returns the pitch-shifted sound back to the input of the pitch shifter. This setting adjusts the amount of pitch-shifted sound that is returned. For negative (-) settings, the phase will be inverted. Excessively high settings may cause oscillation to occur.

CrossFeedBackLvl (Cross Feedback Level)

Adjust the amount of the pitch-shifted sound that is fed back to the other channel. For negative (-) settings, the phase will be inverted. Excessively high settings may cause oscillation to occur.

EfxLvl(Effect Level)

Adjust the volume of the Pitch Shifter.

DirLvl (Direct Level)

Adjust the volume of the direct sound.

Voc (Vocoder)

The vocoder creates “talking instrument” effects. When using the vocoder, input an instrumental sound into the left channel, and a vocal sound into the right channel. The instrumental sound is divided into ten frequency bands, and processed according to the frequency characteristics of the vocal sound.

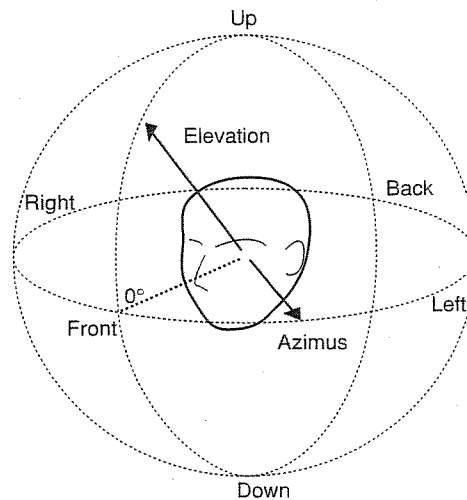
Char 1-10 (Voice Character 1-10)

Adjust the volume of each frequency band. These settings will affect the tone of the vocoder.

RSS

RSS (Roland Sound Space) is an effect that controls three-dimensional placement of the sound.

** In the Delay RSS and Chorus RSS algorithms, the spatial placement is fixed, and it is not possible to adjust Azimuth and Elevation.*



Azimuth

Set the front/back left/right position of the sound. A value of “0” is directly in front of the listener. Negative (-) values move to the left, and positive (+) values move to the right.

Elevation

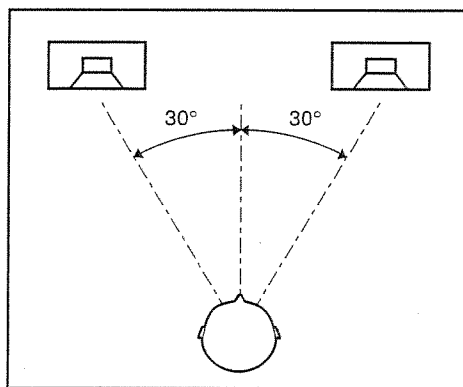
Set the up/down position of the sound. A value of “0” is directly in front of the listener. Negative (-) values move downward, and positive (+) values move upward.

Function of Each Effect Parameter

Cautions when using RSS

In order for RSS to be as effective as possible, note the following points.

- Acoustically "dead" rooms are most suitable.
- Single-way speakers are most suitable. However, coaxial or virtual coaxial multi-way speakers are also OK.
- The speakers should be distanced from the side walls as far as possible.
- Do not excessively separate the speakers to left and right.
- Monitor in the sweet spot shown below.



Product package notice for when RSS is used

RSS is an effect that places a sound source in a three-dimensional space when played back on a conventional stereo system. In order for the full RSS effect to be obtained, it is important to specify details of the listening environment. If a song using an RSS Patch is commercially released, we suggest placing the following notice on the package.

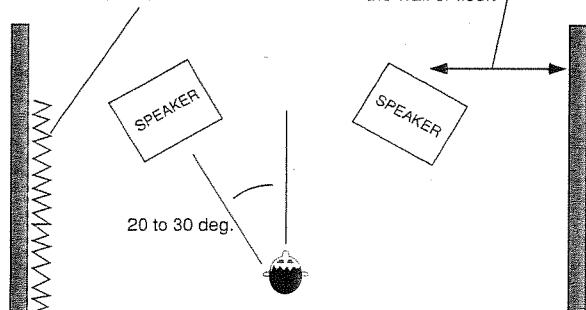


For Stereo Speakers

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.



Comp (Compressor)

A compressor holds down high levels and boosts low levels to even out the volume.

Sw (Switch)

Turn the compressor on/off.

Sustain

Adjust the time over which low level signals are boosted to a constant volume.

Attack

Adjust the strength of the attack when a sound is input.

Tone

Adjust the tone color.

Level

Adjust the volume.

Dstr/Ovd/Metal (Distortion/OverDrive/Metal)

These effects distort the sound to create sustain.

Gain

Adjust the degree of distortion.

Low Gain

Adjust the gain of the low frequency range.

Mid Gain

Adjust the gain of the mid frequency range.

High Gain

Adjust the gain of the high frequency range.

Tone

Adjust the tone color.

Level

Adjust the volume of the effect sound.

NS (Noise Suppressor)

The noise suppressor leaves the original sound unmodified, but mutes only the noise during the silent intervals.

Sw (Switch)

Turn the Noise Suppressor on/off.

Thresh (Threshold)

Adjust the level at which the noise suppressor will begin to take effect. When the signal drops below the specified level, it will be muted.

Release

Adjust the time over which the volume will drop to 0 after the noise suppressor begins to take effect.

Wah (Auto Wah)

Wah is an effect that modifies the frequency characteristics of a filter over time, producing a unique tone. The wah effect can change in relation to the volume of the input signal, and/or cyclically.

Sw (Switch)

Turn the Auto Wah on/off.

Mode

Select either BPF (band pass filter) or LPF (low pass filter). When BPF is selected, the wah effect will be produced in a narrow frequency range. When LPF is selected, the wah effect will be produced in a wide frequency range.

Pol (Polarity)

When using the volume of the input signal to control the wah effect, this setting determines whether the frequency of the filter will be moved upward (Up) or downward (Down).

Sens (Sensitivity)

When using the volume of the input signal to control the wah effect, this adjusts the sensitivity. As this value is increased, the response to the input level will become stronger. If you do not want the volume of the input sound to affect the wah effect, set this to 0.

Freq (Frequency)

Adjust the frequency at which the wah effect will apply.

Peak

Adjust the degree to which the wah effect will apply to the region around the center frequency. With lower values, the wah effect will affect a broad area around the center frequency. With higher values, the wah effect will affect a narrow area around the center frequency.

Rate

Adjust the rate at which the wah effect will be cyclically modulated.

Depth

Adjust the depth at which the wah effect will be cyclically modulated. If you do not want the wah effect to be cyclically modulated, set this to 0.

Level

Adjust the volume.

Sim (Guitar Amp Simulator)

This effect simulates a guitar amp.

Sw (Switch)

Turn the Guitar Amp Simulator on/off.

Mode

Select the Guitar Amp

Small: small amp

Built In: a built-in type amp

2 Stack: a large two-level amp stack

3 Stack: a large three-level amp stack

Flg (Flanger)

A flanger produces a "sweeping" effect somewhat like the sound of a jet airplane taking off and landing.

Sw (Switch)

Turn the Flanger on/off.

Pol (Polarity)

Select whether the left and right phase of the modulation will be the same or the opposite.

Inv: The left and right phase will be opposite. When inputting a mono source, this spreads the sound.

Sync: The left and right phase will be the same. Select this when inputting a stereo source.

Function of Each Effect Parameter

Rate

Adjust the rate at which flanger is modulated.

Depth

Adjust the depth of modulation for the flanger.

Manual

Adjust the center frequency at which the flanging effect will be applied.

Reso (Resonance)

Adjust the amount of resonance. Raising this value will produce a more characteristic effect. Excessive settings of this value may produce oscillation.

CrossFBLvL (Cross Feedback Level)

Adjust the amount of flanging sound which will be returned to the other channel. Excessively high settings may produce oscillation.

EfxLvl (Effect Level)

Adjust the volume of the Flanger.

DirLvl (Direct Level)

Adjust the volume of the direct sound.

Phs (Phaser)

Phaser is an effect that adds a phase-shifted sound to the direct sound, making the sound more spacious.

Sw (Switch)

Turn the Phaser on/off.

Mode

Select the number of stages in the phaser (4, 8, 12, 16).

Pol (Polarity)

Select whether the left and right phase of the modulation will be the same or the opposite.

Inv: The left and right phase will be opposite. When inputting a mono source, this spreads the sound.

Sync: The left and right phase will be the same. Select this when inputting a stereo source.

Rate

Adjust the rate at which the phaser will modulate.

Depth

Adjust the depth of the phaser effect.

Manual

Adjust the center frequency at which the phaser effect will apply.

Reso (Resonance)

Adjust the amount of resonance. Raising this value will produce a more distinctive tone. Excessively high settings may cause the sound to distort. When using a phaser with many stages, excessively high settings may produce oscillation.

CrossFBLvL (Cross Feedback Level)

Adjust the amount of phased sound which will be returned to the other channel. Excessively high settings may produce oscillation.

EfxLvl (Effect Level)

Adjust the volume of the Phaser.

DirLvl (Direct Level)

Adjust the volume of the direct sound.

Lmt (Limiter/De-esser)

This can be used either as a limiter or as a de-esser. A limiter holds down high signal levels to prevent distortion. A de-esser cuts the sibilant sounds of a voice, producing a gentler tone.

Sw (Switch)

Turn the Limiter/De-esser on/off.

Mode

Select whether the effect will function as a limiter or as a de-esser.

Thresh (Limiter Threshold)

Adjust the level (Threshold Level) at which the limiter will begin to operate.

Release (Limiter Release)

Adjust the time until when the limiter will turn off after the input level falls below the threshold level.

Level (Limiter Level)

Adjust the volume of the sound that passes through the limiter.

Sens (De-esser Sensitivity)

Adjust the degree to which the de-esser effect will affect the input signal.

Freq (De-esser Frequency)

Adjust the frequency at which the de-esser effect will apply. The effect will apply to frequencies above the specified value.

Lmt (Compressor/Limiter)

Depending on the setting of the parameters, this effect can be used as a compressor or as a limiter. A compressor holds down high-level signals and boosts low-level signals, evening out the volume. A limiter is used when you wish to hold down excessive input levels.

Sw (Switch)

Turn the Compressor/Limiter on/off.

Thrsh (Threshold)

Adjust the level at which the effect will begin to apply. To use this effect as a limiter, set a high Threshold Level.

Ratio

Select the compression ratio that will apply when the Threshold Level is exceeded. When using the effect as a limiter, you will normally set this to "100:1."

Attack (Attack Time)

Adjust the time from when the input level exceeds the threshold level to when the effect begins to apply. When using the effect as a limiter, set a short Attack Time.

Release

Adjust the time from when the input level drops below the threshold level to when the effect ceases to apply. When using the effect as a limiter, set a short Release Time.

Level

Adjust the output level.

Detect HPF Freq (Frequency)

Adjust the cutoff frequency of the level detection section. With a setting of Thru, this will operate as a conventional limiter.

Detect (Detector in)

This is used to select the input source which INPUT A or INPUT B that is to be used for controlling the effect. Set it to "Link" if you want the unit to detect which input source is of a higher level and automatically use that source for control.

Enh (Enhancer)

The enhancer is an effect that adds phase-shifted sound to the direct sound, sharpening the focus of the sound and bringing it to the front of the mix.

Sw (Switch)

Turn the Enhancer on/off.

Sens (Sensitivity)

Adjust the degree of the enhancer effect relative to the input volume.

Freq (Frequency)

Adjust the frequency at which the effect will begin to apply. The effect will apply to frequencies above the specified value.

MixLvl (Mix Level)

Adjust the amount of the phase-shifted sound that is mixed into the input.

Level

Adjust the level of the effect sound.

Rot (Rotary)

Rotary is an effect that simulates a rotary speaker. This produces the characteristic sound of two rotating speakers (a high rotor and a low rotor).

LRate (Low Rate)

Adjust the rotating rate of the low-range rotor.

HRate (High Rate)

Adjust the rotating rate of the high-range rotor.

Function of Each Effect Parameter

Amp (Pre Amp)

This effect simulates the pre-amp section of a guitar amplifier.

Sw (Switch)

Turn the Pre Amp on/off.

Amp Type

Select the type of guitar amp.

- JC-120:** The sound of a Roland JC-120.
- Clean Twin:** The sound of a standard built-in type vacuum tube amp.
- Match Drive:** The sound of a recent vacuum tube amp widely used in blues, rock, and fusion.
- BG Lead:** The sound of a vacuum tube amp representative of the late 70's and the 80's.
- MS1959 I:** The sound of the large vacuum tube amp stack that was indispensable to the British hard rock of the 70's, with input I connected.
- MS1959 II:** The same amp as MS1959 (I), but with input II connected.
- MS1959 I+II:** The same amp as MS1959 (I), but with inputs I and II connected in parallel.
- SLDN Lead:** The sound of a vacuum tube amp usable in a wide variety of styles.
- Metal 5150:** The sound of a large vacuum tube amp 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-2 Turbo:** The sound of the BOSS OD-2 compact effector with the Turbo switch on.
- Distortion:** Distortion sound.
- Fuzz:** Fuzz sound.

Gain

Switch the degree of pre-amp distortion between three levels (Low/Middle/High).

Bright

Turning this "On" will produce a sharper and brighter sound. This parameter can be set if the Type is set to "JC-120," "Clean Twin," or "BG Lead."

Volume

Adjust the volume and the degree of distortion of the amp.

Bass

Adjust the tone of the low range.

Middle

Adjust the tone of the mid range. If "Match Drive" is selected for the Type parameter, this parameter cannot be set.

Treble

Adjust the tone of the high range.

Presenc (Presence)

Adjust the tone of the ultra-high range. Normally the range will be 0-100, but when "Match Drive" is selected, the range will be -100-0.

Master

Adjust the volume of the entire pre-amp.

Sp (Speaker Simulator)

This effect simulates a speaker system.

Sw (Switch)

Turn the Speaker Simulator on/off.

Sp Type (Speaker Type)

Select the type of speaker. The specifications of each type are as follows. The speaker column indicates the diameter of each speaker unit (in inches) and the number of units.

| Type | Cabinet | Speaker | Mic |
|-------------|---------|---------|-----|
| Small | a | 10 | D |
| Middle | b | 12 x 1 | D |
| JC-120 | b | 12 x 2 | D |
| Built In 1 | b | 12 x 2 | D |
| Built In 2 | b | 12 x 2 | C |
| Built In 3 | b | 12 x 2 | C |
| Built In 4 | b | 12 x 2 | C |
| BG Stack 1 | c | 12 x 2 | C |
| BG Stack 2 | d | 12 x 2 | C |
| MS Stack 1 | d | 12 x 4 | C |
| MS Stack 2 | d | 12 x 4 | C |
| Metal Stack | e | 12 x 4 | C |

a: Small open-back enclosure

b: open back enclosure

c: sealed enclosure

d: large sealed enclosure

e: large double stack

C: condenser mic

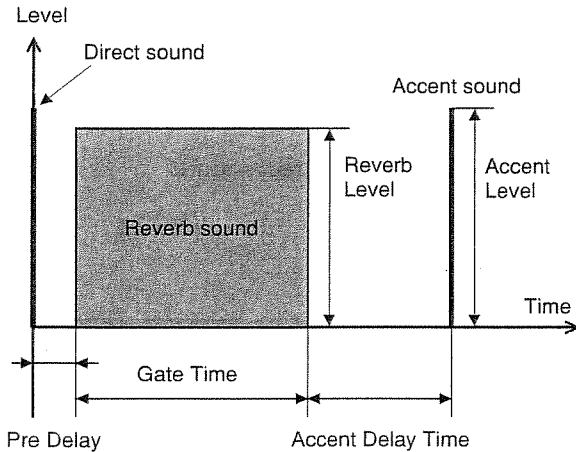
D: dynamic mic

Recommended combinations of pre-amp and speaker

| Pre-amp type | Speaker type |
|---------------|-------------------------------------|
| BG Lead | BG Stack 1, BG Stack 2, Middle |
| MS1959 (II) | BG Stack 1, BG Stack 2, Metal Stack |
| MS1959 (I+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 In 1-4 |
| Distortion | Built In 1-4 |
| Fuzz | Built In 1-4 |

GRev (Gate Reverb)

This is a reverb in which the reverberance is muted (gated) during its decay. Using the accent sound produces an interesting effect.



MicSetting (Mic Setting)

Specify the location of the mic that is recording the sound of the speaker. This can be adjusted in three steps, with the mic becoming more distant in the order of 1, 2, and 3.

MicLevel (Mic Level)

Adjust the volume of the mic sound.

DirLvl (Direct Level)

Adjust the volume of the direct sound.

Sw (Switch)

Turn the Gate Reverb on/off.

Time (Gate Time)

Adjust the time from when the reverb sound begins until it is muted.

PreDLY (Pre Delay)

Adjust the time until the reverb sound appears.

Mode (Gate Mode)

Select how the gated reverb will apply.

- Normal:** A conventional gated reverb.
- L→R:** The gated reverb sound will move from left to right.
- R→L:** The gated reverb sound will move from right to left.
- Revers1:** This is a reverse gated reverb. (As if the reverb was played backward.)
- Revers2:** This is a reverse gated reverb in which the reverb decays mid-way.

Thick (Thickness)

Adjust the thickness of the reverb sound.

Density

Adjust the density of reverb sound.

AcDLY (Accent Delay Time)

Adjust the time from when the reverb sound is muted until the accent sound appears.

Function of Each Effect Parameter

AcLvl (Accent Level)

Adjust the level of the accent sound.

AcPan (Accent Pan)

Adjust the pan of the accent sound.

EfxLvl (Effect Level)

Adjust the volume of the Gate Reverb.

DirLvl (Direct Level)

Adjust the volume of the direct sound.

Reverb2

This is a reverb that provides a gating function and a ducking function.

Sw (Switch)

Turn reverb on/off.

Type (Reverb Type)

Select the type of reverb.

Room1: Normal room reverb.

Room2: Room reverb with a softer tone than Room1.

Hall1: Normal hall reverb.

Hall2: Hall reverb with a softer tone than Hall1.

Plate: Plate reverb.

Gate

Turn the gate function on/off.

Mode (Gate mode)

Select the way in which the gate function will operate.

Gate: The gate will begin to open when the direct signal level exceeds the threshold level, and will begin to close when it falls below the threshold level.

Ducking: The function will be the opposite of the Gate setting. The gate will begin to close when the direct signal level exceeds the threshold level, and will begin to open when it falls below the threshold level.

Time (Reverb Time)

Adjust the length (time) of the reverberation.

PreDLY (Pre delay)

Adjust the time until the reverb is output.

Density (density)

Adjust the density of the reverb.

HPF (High pass filter)

Adjust the frequency at which the high pass filter will begin to take effect. With a setting of Thru, the high pass filter will not function.

LPF (Low pass filter)

Adjust the frequency at which the low pass filter will begin to take effect. With a setting of Thru, the low pass filter will not function.

Thresh (Threshold)

Adjust the basic level at which opening and closing of the gate will be controlled.

Attack

Adjust the time from when the direct sound level exceeds the threshold level until when the gate is completely open.

Releas (Release)

Adjust the time from when the hold time has elapsed until the sound is completely muted.

HoldT (Hold Time)

Adjust the time from when the input falls below the threshold level until when the release begins.

EFLvl (Effect level)

Adjust the volume of the reverb.

DiLvl (Direct level)

Adjust the volume of the direct sound.

SpCho (Space Chorus)

This is a chorus which simulates the Roland SDD-320.

Sw (Switch)

Turn space chorus on/off.

InMod (Input mode)

Specify whether the input signal is stereo or mono.

Mode (Space mode)

Select the way in the chorus will change.

MixBal (Mix balance)

Adjust the balance between the chorus volume and the direct sound volume.

Lo-Fi (Lo-Fi Processor)

This allows you to create a “lo-fi” sound by lowering the sample rate and/or decreasing the number of bits.

Sw (Switch)

Turn the Lo-fi Processor on/off.

Pre Filter

This filter decreases digital distortion. By turning this off, you can create an extremely lo-fi sound that includes aliasing.

Rate

Modify the sample rate. If this is turned off, the sample rate will be the same as the sample rate of the currently selected song.

Bit

Modify the number of data bits. If this is turned off, the number of data bits will be unchanged. If an extremely low number of bits is selected, loud noise may appear even when there is no sound, depending on the input source. In such cases, raise the threshold of the noise suppressor.

Post Filter

This filter decreases the digital distortion produced by lo-fi. By turning this off, you can create an extremely lo-fi sound.

EfxLvl (Effect level)

Adjust the volume of the lo-fi sound.

DirLvl (Direct level)

Adjust the volume of the direct sound.

RMF (Realtime Modify filter)

Realtime modify filters connected in series allow you to reshape the sound freely.

Sw (Switch)

Turn the realtime modify filter on/off.

Type (Filter type)

Select the filter type.

LPF: Low pass filter

BPF: Band pass filter

HPF: High pass filter

CutOff

Adjust the cutoff frequency.

Reso (Resonance)

Adjust the resonance.

Gain

Adjust the volume level of the sound that has passed through the realtime modify filter.

Link

This is a link switch for channels A and B.

Link

If this is turned off, the channels will function independently as two monaural channels. If this is turned on, both channels will be controlled simultaneously by the settings of channel A.

PEQA/PEQB (Parametric Equalizer)

This is a 4-band parametric equalizer. It can be used either as two monaural units or as one stereo unit.

Sw (Switch)

Turn the equalizer on/off.

Low Gain

Specify the gain (amount of boost/cut) for the low range equalizer.

Low Freq (Low frequency)

Specify the center frequency of the low range equalizer.

Low Q

Specify the width of the band centered on the low range equalizer center frequency in which the gain adjustment will occur. As this setting is raised, the width of the band affected will become narrower.

Low Type

Select the type of low range equalizer.

Shlv: Shelving type

Peak: Peaking type

LoMid Gain (Low middle gain)

Specify the gain (amount of boost/cut) for the low middle range equalizer.

LoMid Freq (Low middle frequency)

Specify the center frequency of the low middle range equalizer.

LoMid Q (Low middle Q)

Specify the width of the band centered on the low middle range equalizer center frequency in which the gain adjustment will occur. As this setting is raised, the width of the band affected will become narrower.

HiMid Gain (High middle gain)

Specify the gain (amount of boost/cut) for the high middle range equalizer.

HiMid Freq (High middle frequency)

Specify the center frequency of the high middle range equalizer.

HiMid Q (High middle Q)

Specify the width of the band centered on the high middle range equalizer center frequency in which the gain adjustment will occur. As this setting is raised, the width of the band affected will become narrower.

High Gain

Specify the gain (amount of boost/cut) for the high range equalizer.

High Freq (High frequency)

Specify the center frequency of the high range equalizer.

High Q

Specify the width of the band centered on the high range equalizer center frequency in which the gain adjustment will occur. As this setting is raised, the width of the band affected will become narrower.

High Type

Select the type of high range equalizer.

Shlv: Shelving type

Peak: Peaking type

InputG (Input gain)

Adjust the overall volume level of the sound before it enters the equalizer.

Level (Output level)

Adjust the overall volume level of the sound that has passed through the equalizer.

GEQA/GEQB (Graphic Equalizer)

This simulates a 10-band graphic equalizer. It can be used either as two monaural units or as one stereo unit.

Sw (Switch)

Turn the equalizer on/off.

31.2-16k (Gain)

Adjust the gain (amount of boost/cut) of the equalizer for each frequency.

InputG (Input gain)

Adjust the overall volume level of the sound before it passes through the equalizer.

Level (Output level)

Adjust the volume level of the sound which has passed through the equalizer.

HC (Hum canceller)

This removes unwanted hum (electrical “buzz” or “drone”).

Sw (Switch)

Turn the hum canceller on/off.

Freq (Frequency)

Hum will be removed at the specified frequency and at multiples of that frequency. Set it to match the frequency of your power supply.

Width

Specify the width of the filter which will remove the hum.

Depth

Specify the depth of the filter which will remove the hum.

Thresh (Threshold)

Adjust the level at which the hum canceller will begin to take effect. If the signal falls below the specified level, only the hum will be removed from the signal. With the maximum setting, hum will always be removed regardless of the level of the signal.

RangeLo (Range low)

Specify the lower limit of the frequency range in which the hum canceler will operate. With a setting of Unlimit, the limit will be the lowest frequency that the VS-1680 is capable of playing back.

RangeHi (Range high)

Specify the upper limit of the frequency range in which the hum canceller will operate. With a setting of Unlimit, the limit will be the highest frequency that the VS-1680 is capable of Playing back.

VC (Vocal Canceller)

When a stereo source is being input from CD or DAT etc., this cancels the sound which is located in the stereo center, such as the vocal or bass.

Sw (Switch)

Turn the vocal canceller on/off.

Balance

If the sound that you wish to cancel is not located in the center, find the point at which it is most effectively canceled.

RangeLo (Range low)

Specify the lower limit of the frequency range from which you wish to cancel a sound. Use this setting when you wish to decrease the volume of the vocal without affecting a low-frequency instrument (such as bass) located in the center. With a setting of Unlimit, the lowest frequency which the VS-1680 is capable of Playing back will be the lower limit.

RangeHi (Range high)

Specify the upper limit of the frequency range from which you wish to cancel a sound. Use this setting when you wish to decrease the volume of the vocal without affecting a high-frequency instrument located in the center. With a setting of Unlimit, the highest frequency which the VS-1680 is capable of Playing back will be the upper limit.

VT (Voice Transformer)

This independently controls the basic pitch and the formants, allowing a variety of voice characters to be created.

Sw (Switch)

Turn the voice transformer on/off.

Robot

Turn the robot function on/off. When this is on, the audio will be output at a fixed pitch regardless of the pitch that is input, producing a voice character without inflection.

Cromatic Pitch

Adjust the pitch of the voice character in semitone steps. This can be adjusted over a range of 1 octave down to three octaves up.

Fine Pitch

Make fine adjustments to the pitch of the voice character.

Function of Each Effect Parameter

Cromatic Formant

Adjust the formant of the voice character in semitone steps.

Fine Formant

Make fine adjustments to the formant of the voice character.

MixBal (Mix balance)

Adjust the balance between the voice character volume and the normal voice volume.

FE (Fader Edit)

This switch allows you to use the channel faders of the top panel to modify the various settings of the Voice Transformer.

Sw (Switch)

Turn the Feder Edit on/off. If this is on, channel faders will control the following settings.

- Channel 1:** EFX1:Robot (Moving the fader above the middle will turn this on, and downroad will turn it off.)
- Channel 2:** EFX1:C.Pitch+F.Pitch (Cromatic Pitch and Fine Pitch will change simultaneously to smoothly change the pitch.)
- Channel 3:** EFX1:C.Formant+F.Formant (Cromatic Formant and Fine Formant will change simultaneously to smoothly change the pitch.)
- Channel 4:** EFX1:MixBal
- Channel 5:** EFX1:EfxLev
- Channel 8:** EFX3:Robot (Moving the fader above the middle will turn this on, and downroad will turn it off.)
- Channel 9/10:** EFX3:C.Pitch+F.Pitch (Cromatic Pitch and Fine Pitch will change simultaneously to smoothly change the pitch.)
- Channel 11/12:** EFX3:C.Formant+F.Formant (Cromatic Formant and Fine Formant will change simultaneously to smoothly change the pitch.)
- Channel 13/14:** EFX3:MixBal
- Channel 15/16:** EFX3:EfxLev

* *Fader Edit is valid only when you are in Effect Edit condition. In other conditions, the faders will control the volume level of each channel as usual. Also, it will fail to operate in Auto Mix (Owner's Manual p. 156).*

MIDI (MIDI control)

* *The MIDI channels on which the pitch and formant are adjusted are fixed respectively as below. They cannot be changed to other channels.*

Sw (Switch)

Turn MIDI control on/off. When this is on, MIDI note on messages and pitch bend messages will adjust the pitch and formant. This is effective when a MIDI keyboard etc. is connected.

- MIDI channel 1:** EFX1:C.Pitch+F.Pitch (C2–C6, original key is C3)
- MIDI channel 2:** EFX1:C.Formant+F.Formant (C2–C4, original key is C3)
- MIDI channel 3:** EFX3:C.Pitch+F.Pitch (C2–C6, original key is C3)
- MIDI channel 4:** EFX3:C.Formant+F.Formant (C2–C4, original key is C3)

PitchBend (Pitch bend)

Specify the maximum change produced by pitch bend (bend range), in semitone steps.

Portament (Portamento)

Specify the speed at which the portamento effect will change.

Vocoder 2

This is a 19 band vocoder. A clear sound that was not possible with conventional vocoders can be obtained. Input an instrumental sound into the left channel, and a voice into the right channel.

Envelope (Envelope)

Sharp: The human voice will be emphasized.

Soft: The instrumental sound will be emphasized.

Long: A vintage sound with long decay will be produced.

PanMode

Select Mono, Stereo, L→R or R→L. With a setting of Mono, the components of each frequency band will be located in the center. With a setting of Stereo, the odd-numbered frequency bands will be located at the left, and the even-numbered components at the right. With a setting of L→R, the low frequency bands will be located increasingly toward the left, and the high frequency bands will be located increasingly toward the right. With a setting of R→L, the low frequency bands

will be located increasingly toward the right, and the high frequency bands will be located increasingly toward the left.

Hold

This turns the Hold function on/off. When MIDI is selected, the MIDI control change message Hold will be received. The MIDI channel is fixed at 1. If you turn Hold on while a voice is being input into the mic, the instrument will sound with the vocal formats that are fixed at that time.

MicSens (Mic sensitivity)

Adjust the input sensitivity of the mic.

SynInLev (Synthesizer in level)

Adjust the input level of the instrument.

Character Ch1-19 (Voice character)

Adjust the volume of each frequency band. This setting adjusts the tone of the vocoder. As the value is increased, the frequency will rise.

Mic (Mic mix)

Adjust the amount of the mic audio (R channel input) which has passed through the mic HPF that will be added to the output of the vocoder.

MicHPF (Mic HPF)

When mic mix is used, this adjusts the frequency at which the high pass filter (HPF) will begin to affect the mic audio. Higher values for this setting will allow you to mix only the consonants. With a setting of Thru, the HPF will not be applied.

MicPan (Mic pan)

Adjust the panning of the mic audio.

NSThresh (Noise suppressor threshold)

Adjust the level at which the noise suppressor applied to the instrumental input (R channel input) will begin to function.

CnvA/CnvB (Mic Converter)

This converts the characteristics of an inexpensive general purpose mic into the characteristics of an expensive studio mic (Microphone → Microphone conversion). For an already-recorded sound, it can create the

same tonal change as if the type or distance of the mic had been changed.

This adds a feeling of "air" to an instrumental sound that was recorded by direct line input, causing it to sound as though it had been recorded with a microphone (Line → Microphone conversion).

Sw (Switch)

Turn the mic converter on/off.

Input

Select the type of mic that was actually used to record.

DR-20: Roland DR-20

Sml.Dy: Small Dynamic Microphone

Hed.Dy: Head-worn Dynamic Microphone

Min.Cn: Miniature Condenser Microphone

Flat: Line Input

Out

Specify the mic that will be simulated.

Sml.Dy: General purpose dynamic mic for instruments or vocals. Ideal for guitar amp or snare drum.

Voc.Dy: A popular dynamic mic for vocals. Characterized by a tight mid-range. Use for vocals.

Lrg.Dy: Dynamic mic with extended low end. Use for bass drum or tom, etc.

Sml.Cn: Small condenser mic for instruments. Characterized by a sparkling high range. Use for metallic percussion or acoustic guitar.

Lrg.Cn: Condenser mic with flat response. Use for vocals, narration, or acoustic instruments etc.

Vnt.Cn: Vintage condenser mic. Use for vocals or acoustic instruments etc.

Flat: Mic with flat frequency response. For cancelling the characteristics of the mic used for recording.

** When you select a condenser-type mic simulator, the low range response is strengthened. This may cause noise transmitted from the mic stand to be emphasized. In this case, either use a bass cut filter to cut the unwanted low range, or equip the mic stand that you use at the time of recording with an isolation mount (a mic holder that uses rubber etc. to absorb vibration).*

Phase

Normally you will set this to Normal.

In cases such as when mics are placed both in front of and behind the instrument for recording, setting one of them to Invert will produce a solid sound with a unified phase.

Nor: Same phase as the input

Inv: Opposite phase as the input

BCutA/BCutB (Bass cut filter)

This is a filter that cuts unwanted low range noise, such as pops. It simulates the bass cut switch that is found on some mics.

Sw (Switch)

Turn the bass cut on/off.

Freq (Frequency)

Normally you will select Thru, and you can adjust the frequency if the attack contains a section of low volume.

DstnA/DstnB (Distance)

Microphones have a characteristic which causes the low frequency range to be boosted when the sound source is nearby. This setting simulates this phenomenon.

Sw (Switch)

Turn Distance on/off.

Prox.Fx (Proximity effects)

Adjust the low frequency response that is affected by the mic distance from the sound source. Adjustment in the [+] direction will move the mic closer to the sound source, and in the [-] direction will move it away from the sound source.

Time

This simulates the time difference due to distance from the sound source.

Iso (3-Band Isolator)

The input sound is separated into three frequency ranges — high, mid, and low — each of which can be boost or cut. With ordinary equalizers, even when the gain control for any of the frequency ranges turned all the way down, some sound from that range remains, whereas the VS-1680's Isolator cuts it completely. You may find turning the Isolator on and off or adjusting the level in real time to be a very effective technique.

Sw (Switch)

This turns the 3-band Isolator on and off.

AntiPhase LoMixSw (Anti-Phase Low Mix Switch)

AntiPhase MidMixSw (Anti-Phase Middle Mix Switch)

These turn the low- and mid-range Anti-Phase function on and off. When turned on, the phases of opposite stereo channels are reversed and then added.

AntiPhase LoLev (Anti-Phase Low Level)

AntiPhase MidLev (Anti-Phase Middle Level)

These set the level of the Anti-Phase function. Adjusting these levels for certain frequencies allows you to lend emphasis to specific parts.

LowLvl (Low Level) MidLvl (Middle Level) HiLvl (High Level)

These boost and cut each of the Low, Mid, and High frequency ranges. Setting any of these to “-60 dB,” the sounds in that range become inaudible. When set to “0 dB,” the sound remains at the input level.

Echo (Tape Echo 201)

Sw (Switch)

This turns the Tape Echo on and off.

Mode (Mode Selector)

This is used to select the different delay times (short, middle, and long) combination of three playback heads. When set to “4,” you can select short and middle delays.

Repeat Rate

This adjusts the “tape’s” running speed. The higher the value, the shorter the interval of the repeated sound.

Intnsty (Intensity)

This sets the number of times the sound is repeated.

Tone Bass

This adjusts the volume of the low end of the Tape Echo sound.

Tone Treble

This adjusts the volume of the Tape Echo sound's high end.

Pan HeadS Pan HeadM Pan HeadL

These adjust the pan settings for each of the short, middle, and long delay playback heads individually. This function is not featured on Roland's RE-201.

WahFlutter Rate (Wah/Flutter Rate)

This adjusts the wavering of the pitch that occurs with deterioration or unevenness in the tape. The higher the value, the more intense the wavering effect.

EfxLvl (Effect Level)

This adjusts the volume level of the Tape Echo effect.

DirLvl (Direct Level)

This adjusts the volume level of the direct sound.

AnFl (Analog Flanger)

This is a stereo analog flanger effect that simulates Roland's SBF-325.

Sw (Switch)

This turns the analog flanger on and off.

Feedback

Feedback refers to returning the delayed signal (output) back to the delay. This control adjusts the amount of that signal that is returned. The flanger effect intensifies the higher the value is set. Setting the value too high can make lead to oscillation in the sound.

Modulation Freq (Modulation Frequency)

This adjusts the center frequency to which the flanger effect is applied. This changes the pitch of the flanger effect's metallic sound.

Modulation Rate

This adjusts the flanger's modulation rate.

Modulation Depth

This adjusts the depth of the flanger modulation.

ChB (Channel B Modulation)

You should usually set this to "Nor." Setting this to "Inv" inverts the Channel B flanger effect.

Mode

This is used to select the flanger effect type.

FL1: A general monaural flanger

FL2: A stereo flanger that moves the sound around in the stereo field

FL3: Cross mix flanger that gives a more intense effect

CHO: Chorus effect

Phase ChA (Phase Channel A) Phase ChB (Phase Channel B)

This is used in selecting phase when mixing the direct sound and flanger sound. Set to "Nor" for normal phase; select "Inv" to invert the phase. This changes the breadth of the sound, making sound "wider." Check the sound to assure you have the appropriate setting.

AnPh (Analog Phaser)

The VS-1680's features two analog phasers arranged in parallel, so they can be used in stereo.

Sw (Switch)

This turns the Analog Phaser on and off.

Mode

This selects the number of levels (4 or 8) for the phase effect.

Freq (Frequency)

This adjusts the center frequency to which the phase effect is applied. With larger values, the phase effect is applied to higher-frequency ranges.

Reso (Resonance)

This adjusts the amount of resonance. Raising the value makes the characteristic sound more prominent. Raising the value too much, though, may cause oscillation in the sound.

LFO1 Rate LFO2 Rate

This adjusts the phase effect cycle length.

Function of Each Effect Parameter

LFO1 Depth

LFO2 Depth

This adjusts the depth of the phase effect cycle.

LFO1 ChB

(LFO1 Channel B Modulation)

LFO2 ChB

(LFO2 Channel B Modulation)

You should usually set this to "Nor." Setting this to "Inv" inverts the Channel B phase effect.

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MEMO...

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