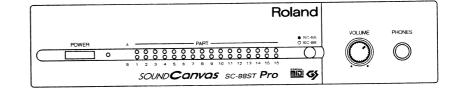




OWNER'S MANUAL





### USING THE UNIT SAFELY

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

#### About AWARNING and ACAUTION Notices

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

#### About the Symbols

The △ symbol alerts the user to important instructions or warnings. The specific meaning of the symbol is determined by the design contained within the triangle. In the case of the symbol at left, it is used for general cautions, warnings, or alerts to danger.

The \infty symbol alerts the user to items that must never be carried out (are forbidden). The specific thing that must not be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the unit must never be disassembled.

The symbol alerts the user to things that must be carried out. The specific thing that must be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the power-cord plug must be unplugged from the outlet.

#### ALWAYS OBSERVE THE FOLLOWING

#### **MARNING**

 Before using this unit, make sure to read the instructions below, and the Owner's Manual.



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



 Do not attempt to repair the unit, or replace parts within it (except when this manual provides specific instructions directing you to do so). Refer all servicing to your dealer, or qualified Roland service personnel.



• Never use or store the unit in places that are:



- Subject to temperature extremes (e.g., direct sunlight in an enclosed vehicle, near a heating duct, on top of heat-generating equipment); or are
- Damp (e.g., baths, washrooms, on wet floors); or are
- · Humid; or are
- · Dustv: or are
- Subject to high levels of vibration.



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

.....



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



 Avoid damaging the power cord. Do not bend it excessively, step on it, place heavy objects on it, etc. A damaged cord can easily become a shock or fire hazard. Never use a power cord after it has been damaged. This unit, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level, or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should immediately stop using the unit, and consult an audiologist.



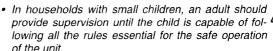
 Do not allow any objects (e.g., flammable material, coins, pins); or liquids of any kind (water, soft drinks, etc.) to penetrate the unit.



 Immediately turn the power off, remove the AC adaptor from the outlet, and request servicing by your dealer or qualified Roland service personnel when:



- The AC adaptor or the power-supply cord has been damaged; or
- Objects have fallen into, or liquid has been spilled onto the unit; or
- The unit has been exposed to rain (or otherwise has become wet); or
- The unit does not appear to operate normally or exhibits a marked change in performance.





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



• Do not force the unit's power-supply cord to share an outlet with an unreasonable number of other devices. Be especially careful when using extension cords—the total power used by all devices you have connected to the extension cord's outlet must never exceed the power rating (watts/amperes) for the extension cord. Excessive loads can cause the insulation on the cord to heat up and eventually melt through.  Before using the unit in a foreign country, consult with your dealer, or qualified Roland service personnel.



#### **A** CAUTION

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

.....



 Always grasp only the plug or the body of the AC ( adaptor when plugging into, or unplugging from, an outlet or the unit.



Whenever the unit is to remain unused for an extended period of time, disconnect the AC adaptor.



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

......



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



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



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



Before cleaning the unit, turn off the power and unplug the AC adaptor from the outlet (p. 9, 10).



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



Before using this unit, carefully read the sections entitled: "USING THE UNIT SAFELY" and "IMPORTANT NOTES" (Owner's manual 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, Owner's manual should be read in its entirety. The manual should be saved and kept on hand as a convenient reference.

#### General MIDI system

The General MIDI system is a set of recommendations which seeks to provide a way to go beyond the limitations of proprietary designs, and standardize the MIDI capabilities of sound generating devices. Sound generating devices and music files that meets the General MIDI standard bears the General MIDI logo ( ) Music files bearing the General MIDI logo can be played back using any General MIDI sound generating unit to produce essentially the same musical performance.

#### **GS** format

The GS Format (�) is Roland's set of specifications for standardizing the performance of sound generating devices. In addition to including support for everything defined by the General MIDI System, the highly-compatible GS Format additionally offers an expanded number of sounds, provides for the editing of sounds, and spells out many details for a wide range of extra features, including effects such as reverb and chorus.

Designed with the future in mind, the GS Format can readily include new sounds and support new hardware features when they arrive.

Since it is upwardly compatible with the General MIDI System, Roland's GS Format is capable of reliably playing back General MIDI Scores equally as well as it performs GS Music Files (music files that has been created with the GS Format in mind).

- \* GS ( ) is a registered trademark of Roland Corporation.
- \* Apple is a registered trademark of Apple Computer, Inc.
- \* Macintosh is a registered trademark of Apple Computer, Inc.
- \* All product names mentioned in this document are trademarks or registered trademarks of their respective owners.

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### **IMPORTANT NOTES**

In addition to the items listed under "USING THE UNIT SAFELY" on page 2, please read and observe the following:

#### **Power Supply**

- Do not use this unit on the same power circuit with any device that will generate line noise (such as an electric motor or variable lighting system).
- The AC adaptor will begin to generate heat after long hours of consecutive use. This is normal, and is not a cause for concern.
- Before connecting this unit to other devices, turn off the power to all units. This will help prevent malfunctions and/or damage to speakers or other devices.

#### **Placement**

- Using the unit near power amplifiers (or other equipment containing large power transformers) may induce hum. To alleviate the problem, change the orientation of this unit; or move it farther away from the source of interference.
- This device may interfere with radio and television reception. Do not use this device in the vicinity of such receivers.
- Do not expose the unit to direct sunlight, place it near devices that radiate heat, leave it inside an enclosed vehicle, or otherwise subject it to temperature extremes. Excessive heat can deform or discolor the unit.

#### **Maintenance**

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

#### **Additional Precautions**

- Use a reasonable amount of care when using the unit's buttons, sliders, or other controls; and when using its jacks and connectors. Rough handling can lead to malfunctions.
- When connecting / disconnecting all cables, grasp the connector itself—never pull on the cable. This way you will avoid causing shorts, or damage to the cable's internal elements.
- To avoid disturbing your neighbors, try to keep the unit's volume at reasonable levels. You may prefer to use headphones, so you do not need to be concerned about those around you (especially when it is late at night).
- When you need to transport the unit, package it in the box (including padding) that it came in, if possible. Otherwise, you will need to use equivalent packaging materials.

## Introduction

### Main features of the SC-88ST Pro Sound Canvas

#### Supports General MIDI System/GS Format

The SC-88ST Pro is a sound module compatible with the General MIDI System. It will faithfully reproduce any music file (GM Score) that bears the GM logo. Moreover, since the SC-88ST Pro is a GS Format (Roland's system of sound standardization) sound module, it is able to play all commercially available music files carrying the GS logo. (p. 14)

#### 64-voice sound module offering 32 parts

The SC-88ST Pro is a 32-part, 64-voice multitimbral sound module. On its own, the SC-88ST Pro can handle even some of the most extensive orchestrations. It is the perfect sound module for your desktop music system.

#### A rich array of high-quality sounds

The SC-88ST Pro contains an enormous selection of 1117 high quality sounds and 42 drum sets (including 3 SFX sets). These include sounds that are essentially the same as the sounds of the SC-55/55mkII and SC-88, allowing you to play music that was composed for a SC-55/55mkII or SC-88. (p. 20)

#### Create your own sounds

By editing sound parameters such as vibrato, filter and envelope, you can create your own unique sounds. (p. 28)

#### A complete selection of effects

The effects provided by the SC-88ST Pro include 64 different Insertion effects, which can be applied to specific parts; 8 types of reverb, 8 types of chorus, 10 types of delay, and 2-band equalization. In addition, you can adjust parameters for each of these effects to modify the sound to your taste.

(p. 30)

#### Ideal for use with desktop music

A computer connector is provided for direct connection to an Apple Macintosh computer or a PC. (p. 11)

#### Easily connected with other equipment

Audio input and output jacks allow the SC-88ST Pro to mix the output from other sources of sound with its own sound, and output this mix from its output jacks. Two sets of audio output jacks are provided. (p. 9)

You can take advantage of these features and use the SC-88ST Pro in the following ways:

***************************************	
Connect a personal computer and enjoy desktop mus	sic. →p. 11
Connect a MIDI keyboard and play.	→p. 12
Listen to the sounds.	→p. 20
Apply effects to the internal sounds.	→p. 30

#### You will need a few other things

The SC-88ST Pro has only the minimum buttons and controls required for operation. This means that in order to perform operations such as selecting sounds, you will need to connect a computer or keyboard that has a MIDI interface.

Also, you will need a set of headphones or a stereo system to listen to the sound.

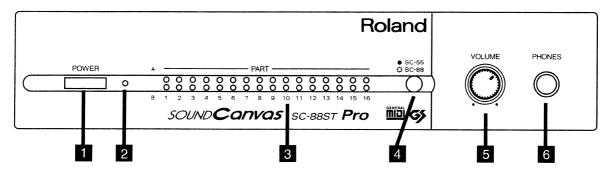
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### **Front and Rear Panel**

#### Front Panel



#### 1 Power Switch (POWER)

Pressed to switch the power on/off.

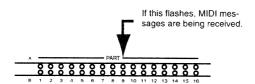
\* This instrument is equipped with a circuitry protection, so it requires a few moments after the power is turned on before it is ready for operation.

#### 2 Power Indicator

Lights while power is on.

#### 3 Part Monitoring Indicators (PART)

The indicators for parts that are sounding will light.



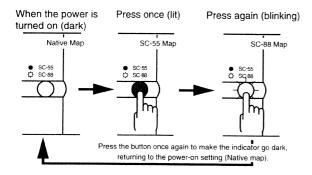
#### 4 MAP Button ( ● SC-55/ ☆ SC-88)

When the power is turned on, this will be dark (the Native Map).

Pressing the MAP button once to make the indicator light will cause the sound of all parts to be essentially identical to the sounds of the SC-55 (SC-55 map).

Pressing the MAP button once again to make the indicator blink will cause the sound of all parts to be essentially identical to the sounds of the SC-88 (SC-88 map).

Pressing the MAP button yet again will make the indicator go dark (Native Map), returning it to the power-on setting.



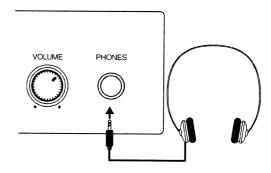
#### 5 Volume (VOLUME)

This knob adjusts the volume that is output from the headphones jack (PHONES) and from audio output 1 jacks (OUTPUT 1). Rotating the knob counterclockwise will decrease the volume, and rotating it clockwise will increase the volume.

- \* The volume of the input to the audio input jacks (INPUT) cannot be adjusted by the SC-88ST Pro itself.
- \* The sound that is output from the audio output 2 jacks (OUTPUT 2) is output at a constant volume, regardless of the volume knob.
- \* When the power is turned on, and with the factory settings, no sound will be output from the audio output 2 jacks (OUTPUT 2).

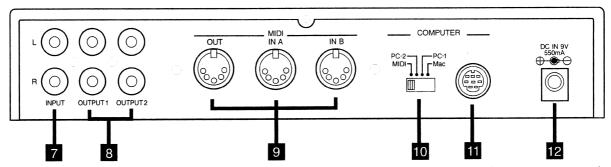
#### 6 Headphones Jack (PHONES)

A set of headphones can be connected here. Sound will be output from the audio output jacks even if headphones are connected.



- \* Use headphones that have an impedance of from 8 to 150 ohms.
- \* The headphones jack will output the sound of the audio output 1 jacks (OUTPUT 1). This means that parts that are assigned to the audio output 2 jacks (OUTPUT 2) will not be heard from the headphones jack.

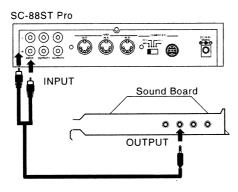
#### **Rear Panel**



#### 7 Audio Input Jacks (INPUT)

Other MIDI sound modules or the audio output jacks of your computer can be connected here. Whatever sound that is input to the audio input jacks (INPUT) will be mixed with the sound of the SC-88ST Pro itself, and output from audio output 1 jacks (OUTPUT 1).

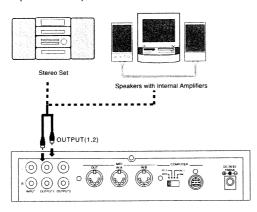
\* The volume of the input to the audio input jacks (INPUT) cannot be adjusted by the SC-88ST Pro itself.



### 8 Audio Output 1, 2 Jacks (OUTPUT 1, OUTPUT 2)

These jacks output the sound of the SC-88ST Pro. The sound is output in stereo from the two jacks (Left and Right)

\* When the power is turned on, and at the factory settings, no sound will be output from the audio output 2 jacks (OUTPUT 2).



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

#### 9 MIDI Connectors (MIDI)

The SC-88ST Pro has MIDI IN A, MIDI IN B, and MIDI OUT connectors.

These connectors are used to exchange MIDI messages with other MIDI devices. For a detailed explanation of MIDI, refer to "Chapter 3. About MIDI." (p. 13)

#### 10 COMPUTER Switch (Mac/PC-1/PC-2/MIDI)

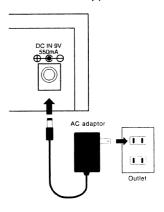
Set the COMPUTER Switch to the appropriate position for the type of computer that you wish to connect. Turn the power off before changing the setting of the COMPUTER Switch. If you are using only the MIDI connectors, set this switch to the MIDI position. (p. 11)

#### 11 COMPUTER Connector (COMPUTER)

A separately sold special computer cable can be connected here. The type of computer cable needed will depend on the computer that you are using. Use only the cable that is appropriate for your computer. The COMPUTER Connector is disabled when the COMPUTER Switch is in the MIDI position. (p. 11)

#### 12 AC Adaptor Connector (DC IN)

Accepts connection of the supplied AC adaptor. (p. 10)



#### Connecting the AC adaptor

- 1. Make sure that the power is turned off on the SC-88ST Pro, and on all connected equipment, such as your audio system.
- 2. Connect the AC adaptor to DC IN on the SC-88ST Pro
- 3. Plug the AC adaptor into an AC outlet.
- \* If you will not be using the SC-88ST Pro for an extended period of time, unplug the adaptor from the AC outlet.

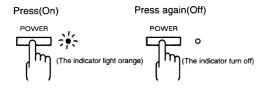
#### **MWARNING**

Use only the supplied AC adaptor. Use of any other AC adaptor may result in fire or electrical shock hazard.

### **Turning On the Power**

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

- 1. Before turning on the power, do the following.
- Make sure that the power cord or AC adaptor for each device is plugged firmly into the AC outlet.
- Turn down the volume controls of the SC-88ST Pro and of your audio system.
- 2. Turn on the power of the SC-88ST Pro and of other connected devices (MIDI equipment, your computer, etc.).



- \* This unit is equipped with a protection circuit. A brief interval (a few seconds) after power up is required before the unit will operate normally.
- 3. Turn on the power of the connected audio system. Adjust the volume of the SC-88ST Pro and of your audio system to an appropriate level.

\* Excessive volume will damage your speakers. In particular, please be aware that the speakers that are used in consumer audio systems are more susceptible to damage by high volume levels than are speakers designed for musical instruments.

### **Turning Off the Power**

- 1. Before turning off the power, do the following.
- Turn down the volume of the SC-88ST Pro and of your audio system.
- 2. Turn off the power of the connected audio system.
- Turn off the power of the SC-88ST Pro and of other connected devices (MIDI equipment, computer, etc.).
- \* When the SC-88ST Pro is turned off, all its settings will revert to their factory-set condition.

## Connecting to Your Computer /MIDI Keyboard

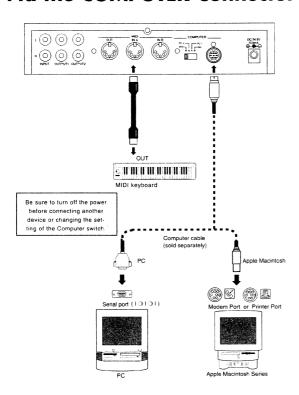
### **Connecting to a Computer**

There are two ways to connect the SC-88ST Pro to your computer; using the MIDI connectors or the COMPUTER Connector. If you use the MIDI connectors, you will need to obtain a computer interface board (adaptor) that has MIDI connectors (such as the Roland Super MPU, etc.). If you use the SC-88ST Pro COMPUTER Connector, you can use a special cable to connect it directly with the computer, but your software must be able to correspond to the serial port.

If you wish to connect your computer via the MIDI connectors, refer to p.12 (Connecting to a Computer Via the MIDI Connectors) for how to make connections. The following explanation will show how to make connections using the SC-88ST Pro COMPUTER Connector.

Refer to the "MIDI Data Flow Diagram" (p.74).

# Connecting to a Computer Via the COMPUTER Connector



 Turn off the power of the SC-88ST Pro, and set the COMPUTER Switch, which is located on the back of the SC-88ST Pro.



Select the Mac position if you are using an Apple Macintosh computer, or select the PC-2 position if you are using a PC.

The PC-1 baud rate is 31.25 Kbps, and the PC-2 baud rate is 38.4 Kbps.

- \* Turn off the power before changing the setting of the COMPUTER Switch. The setting of this switch takes effect when the power is turned on.
- \* Be aware that the appropriate setting of the COM-PUTER Switch may differ, depending on the type of computer.
- 2. Connect the computer cable to the serial port (PC) or the modem port or printer port (Apple Macintosh series computer) on the back of your computer.
- \* You will need to have a computer cable (sold separately) that is appropriate for the computer that you are using. Refer to the "COMPUTER Cable Wiring Diagram" (p. 76).
- Connect the other end of the computer cable to the COMPUTER Connector (COMPUTER) of the SC-88ST Pro.

#### Note when using a PC

Even if the COMPUTER Connector of the SC-88ST Pro is connected to your computer, it will not function correctly unless your software (MIDI application) supports it. Be sure to use software that supports the serial port of your computer.

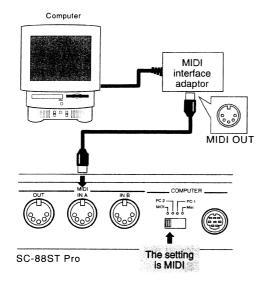
- \* In some cases, you will need to make settings on your computer, so carefully read the owner's manual for the software that you wish to use, and make the appropriate settings before use.
- \* If you wish to simultaneously connect and use both a computer and a MIDI keyboard, you will need to turn on the Thru function of the software that you are using. Refer to the "MIDI Data Flow Diagram" (p. 74).

Connecting to Your Computer / MIDI Keyboard

# Connecting to a Computer Via the MIDI Connectors

If you use the MIDI connectors, you will need to obtain a computer interface board (adaptor) that has MIDI connectors (such as the Roland Super MPU, etc.).

\* Turn off the power before changing the setting of the COMPUTER Switch. The setting of this switch takes effect when the power is turned on.

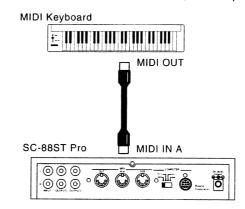


\* Set the COMPUTER Switch located on the back of the SC-88ST Pro to MIDI.

### Connecting to a MIDI Keyboard

You can connect a MIDI keyboard or other MIDI instrument to the MIDI IN of the SC-88ST Pro and play it. Refer to the "MIDI Data Flow Diagram" (p. 74).

\* For details on the MIDI connectors, refer to p. 13.



- \* By setting the COMPUTER Switch to the "MIDI" position, you can play the SC-88ST Pro directly from your MIDI keyboard, etc., without routing the MIDI messages through your computer.
- \* If you wish to use the COMPUTER Connector to connect your computer, and also use your MIDI instrument, set the COMPUTER Switch to the appropriate setting for your computer.

## **About MIDI**

#### What's MIDI?

MIDI stands for Musical Instrument Digital Interface. MIDI devices can transmit musically related data such as performance data or data to select sounds. Since MIDI is a world-wide standard, musical data can be sent and received between devices even if they are of different types and were made by different manufacturers. In the MIDI standard, data describing a musical performance such as "play a note" or "press the pedal" are transmitted as MIDI messages.

As long as you are using the SC-88ST Pro to simply play commercially available music files or to provide sound for game software, it is not necessary to know about MIDI. Simply follow the instructions in the manual for your music files playback device (MIDI player) or your software.

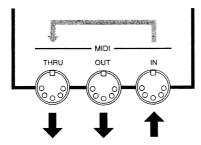
The explanation that follows will help you use MIDI to control the SC-88ST Pro in greater detail.

### How MIDI Messages Are Transmitted and Received

First we will briefly explain how MIDI messages are transmitted and received.

#### **MIDI** connectors

MIDI messages are transmitted and received using three types of connector. Connect MIDI cables to these connectors as appropriate for your setup.



to another MIDI device

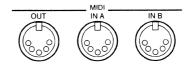
from another MIDI device

MIDI IN : This connector receives messages from another MIDI device.

MIDI OUT : This connector transmits messages from the SC-88ST Pro.

MIDITHRU: This connector retransmits the messages received at MIDI IN.

- \* It is possible to use MIDI THRU to connect two or more MIDI devices, but in practice the limit is 5 units. This is because as the signal path becomes longer, the signal deteriorates and the messages can no longer be received correctly.
- \* The SC-88ST Pro is not equipped with MIDI THRU connector.

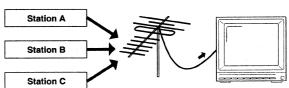


MIDI Connectors (the SC-88ST Pro)

## MIDI Channels and Multi-timbral Sound Modules

MIDI transmits a wide variety of performance data over a single MIDI cable. This is made possible by MIDI channels. MIDI channels allow specific data to be selected out of a large amount of data. The concept is similar to the idea of TV channels. By changing the channel of a TV receiver you can view the programs of different stations. By setting the channel of the receiver to match the channel of the transmitter, you can receive only the program you wish to watch. In the same way, MIDI allows you to receive data only when the channel of the receiver matches the channel of the transmitter.

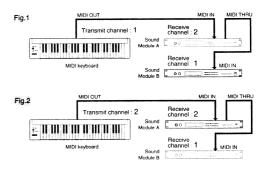
The cable from the antenna carries the TV signals from many broadcast stations



The TV is set to the channel of the station you wish to watch

MIDI uses sixteen channels, numbered 1-16. Music data is received when the transmit channel of the transmitting device matches the receive channel of the receiving device. If you make MIDI channel settings as follows, only sound source B will sound when you play the keyboard, and sound source A will not sound. This is because sound source B matches the transmit channel of the keyboard, but sound source A's channel does not match (Fig.1).

Conversely, if you set the transmit channel of the keyboard to match sound source A, sound source A will sound (Fig.2).



Since the SC-88ST Pro has two MIDI IN connectors, it can receive a total of 32 channels simultaneously. By using 32 channels you can play ensembles of 32 Parts (p.20). Sound sources such as the SC-88ST Pro which are able to simultaneously play many parts are called multi-timbral sound modules. Timbre is a word meaning sound.

The SC-88ST Pro has two types of Parts: Normal Parts and Drum Parts (p.20). Normal Parts are used to play melody or bass lines. On GS/General MIDI sound sources, the Drum Part uses channel 10.

### About the General MIDI System and GS Format

#### What Is the General MIDI System?

The General MIDI System ( is a universal set of specifications for sound generating devices. These specifications seek to allow for the creation of music files which is not limited to equipment by a particular manufacturer or to specific models.

The General MIDI System defines things such as the minimum number of voices that should be supported, the MIDI messages that should be recognized, which sounds correspond to which Program Change numbers, and the layout of rhythm sounds on the keyboard. Thanks to these specifications, any device that is equipped with sound sources supporting the General MIDI System will be able to accurately reproduce General MIDI Scores (music files created for the General MIDI System), regardless of the manufacturer or model.

#### What Is the GS Format?

The GS Format ( ) is Roland's set of specifications for standardizing the performance of sound generating devices. In addition to including support for everything defined by the General MIDI System, the highly-compatible GS Format additionally offers an expanded number of sounds, provides for the editing of sounds, and spells out many details for a wide range of extra features, including effects such as reverb and chorus.

Designed with the future in mind, the GS Format can readily include new sounds and support new hardware features when they arrive. Since it is upwardly compatible with the General MIDI System, Roland's GS Format is capable of reliably playing back GM Scores equally as well as it performs GS Music Files (music files that has been created with the GS Format in mind).

This product supports both General MIDI and GS. Music files which carries either of these logos can be accurately reproduced.

#### Initialize for General MIDI/GS

When you wish to playback song data carrying the GS /General MIDI logo, you need to initialize the SC-88ST Pro for GS /General MIDI settings (GS Reset, General MIDI System On p.18, 111). When this is done, the SC-88ST Pro will be set to the basic GS /General MIDI settings appropriate for playing back song data carrying the GS /General MIDI logo.

The beginning of song data carrying the GS /General MIDI logo contains data which requests the sound source to initialize itself (GS Reset, General MIDI System On p.18, 111). This means that if you are playing back the song data from the beginning, initialization will be done automatically.

## MIDI Messages That Can Be Received by the SC-88ST Pro

MIDI uses many different types of message to transmit musical performance data, and there are many types of MIDI message. For example, information indicating "which key was played how strongly" is transmitted as a Note message.

The way that a device responds when it receives each type of MIDI message (i.e., how it produces sound, etc.) will depend on the specifications of that device. This means that if the receiving device is not able to perform the function requested by the incoming message, the musical result will not be what you expected.

The main types of MIDI message received by the SC-88ST Pro are as follows.

\* MIDI messages for which reception capability is required by the General MIDI system (level 1) are marked by a ☆ sign.

#### Note messages \$\price \tag{\tag{7}}

These messages convey notes played on the keyboard. They include the following information.

Note number : a number indicating the note (key)

that was pressed or released

Note on : data indicating that the note (key)

was pressed

Note off : data indicating that the note (key)

was released

Velocity : a number indicating how strongly the

note (key) was pressed

Note numbers are a number from 0-127 which indicate the keyboard key position, with middle C (C4) as note number 60.

Correspondence between note numbers and note names (p.86).

#### Pitch Bend &

This is used to transmit message about the operation of the pitch bend wheel (or lever) usually found on synthesizers. Pitch benders can continuously change the pitch of a note over a wide range.

#### Program Change \$\price \text{ (a) }

These messages are used to select sounds. Sounds are selected by a Program numbers 1 – 128. On the SC-88ST Pro, these messages will select sounds (Instruments). By using Bank Select messages (which are a type of Control Change message), an even wider variety of sounds can be selected (p.22).

#### Control Change :

These messages control parameters such as modulation and pan. The function of the message is determined by its Control Change number.

#### Bank Select (control change number 0 / 32)

The tone is changed when used with a Program Change message. The tone is selected with a Program Change message after selecting the Bank Select message.

The tone will not change when only Bank Select message is received.

\* A Program Bank Select function (Tone switching by a combination of Control number 0 / 32 value and Program number ) was added to the MIDI standard in 1990. This function significantly increases the number of selectable Tones on the SC-88ST Pro.

### Modulation (control change number 1) ☆

This message controls vibrato.

#### Volume (control change number 7) ☆

This message controls the volume of a Part. When this message is received the volume of a Part will change.

#### Expression (control change number 11) 🕸

This message conveys volume changes. It can be used to add expression during a song.

\* The volume of a Part will be affected both by Volume messages (control change 7) and by Expression messages (control change 11). If a value of 0 is received for either of these messages, the Part volume will be 0 and will not rise even if the other message is sent with a higher value. Be aware of this.

#### **Using Volume and Expression**

It is convenient to use Volume and Expression indistinct ways, as follows.

Volume : Adjust the volume balance between

: Create volume changes during a Expression

song (crescendo, decrescendo,

etc.)

The reason for this differentiation is that if you use only Volume message to create volume changes during the song, you will have to modify all of the Volume data in the song if you later decide to adjust the volume balance between the Parts. However if you use only Volume at the beginning of the song, and use only Expression during the song, it will be easy to adjust the volume balance between Parts for the entire song simply by modifying the Volume data at the beginning of the song, and the data for changes in dynamics during the song can remain as it was. This is very convenient when, for example, you decide to make a slight change in the balance between the piano and bass when the song is nearly completed.

#### Pan (control change number 10) 🔯

This message controls the stereo position of a Part. (p.24)

#### Hold (1) (control change number 64) ☆

This message conveys the up/down movements of the damper pedal, causing the currently sounding notes to be sustained. When a message of Hold On is received, notes will be sustained. In the case of decaytype instruments such as a piano, the sound will decay gradually until a Hold Off message is received. In the case of sustain-type instruments such as an organ, the sound will continue sustaining until a Hold Off message is received.

#### Sostenuto (control change number 66)

The sostenuto pedal on a piano sustains only the notes which were already sounding at the moment the pedal was pressed. The Sostenuto message conveys the movement of this pedal. When Sostenuto On is received, only the notes which were already on at that moment will be sustained. In the case of decay-type instruments such as a piano, the sound will decay gradually until a Sostenuto Off message is received. In the case of sustain-type instruments such as an organ, the sound will continue sustaining until a Sostenuto Off message is received.

#### Soft (control change number 67)

The soft pedal on a piano softens the tone during the time the pedal is pressed. The Soft message conveys the movement of this pedal. When Soft On is received, the cutoff frequency will be lowered, causing a softer sound. When Soft Off is received, the previous sound will return.

#### Reverb Send Level (control change number 91)

This message adds a reverb effect to the Part.

#### Chorus Send Level (control change number 93)

This message adds a chorus effect to the Part.

**Delay Send Level (control change number 94)**This message adds a delay effect to the Part.

# Portamento (control change number 65) Portamento Time (control change number 5) Portamento Control (control change number 84)

Portamento is an effect that creates a smooth change in pitch between the previously played note and the newly played note. When a Portamento message is received, the portamento effect will be turned on or off. Portamento Time controls the speed of the pitch change. Portamento Control specifies the Source Note number (the previously played note).

## RPN LSB, MSB (control change number 100/101) ☆ Data Entry (control change number 6/38) ☆

Since the function of the RPN (Registered Parameter Number) is defined in the MIDI specification, this message can be used between devices of different types. The RPN MSB and LSB messages specify the parameter which is to be modified, and then Data Entry messages can be used to modify the value of that parameter. RPN can be used to adjust Pitch Bend Sensitivity, Master Coarse Tune, and Master Fine Tune.

\* The values modified using RPN messages will not be initialized even if Program Change messages etc. are received to select other sounds.

## NRPN LSB, MSB (control change number 98/99) Data Entry (control change number 6/38)

NRPN (Non-registered Parameter Number) messages can be used to modify the values of sound parameters unique to a particular device. The NRPN MSB and LSB messages specify the parameter which is to be modified, and then Data Entry messages can be used to modify the value of that parameter.

Since the GS format defines the function of several NRPN messages, GS compatible application programs can use NRPN messages to modify sound data parameters for Vibrato, Cutoff Frequency, Resonance, and Envelope values.

- \* The values modified using NRPN messages will not be initialized even if Program Change messages etc. are received to select other sounds.
- \* With the initial settings, the SC-88ST Pro will ignore NRPN messages. After a GS Reset message is received, NRPN messages will be received. You can also turn Rx.NRPN on (NRPN Receive Switch, p.25) by using exclusive messages, so that NRPN messages will be received.

#### **Using NRPNs with GS Sound Modules**

Included within the various types of Control Changes (often abbreviated as "CC") is an extended range known as NRPNs (non-registered parameter numbers). The NRPNs can be used with GS sound modules to alter various sound parameters, such as those for the vibrato, filters, and envelopes. There are distinct advantages to using Control Changes rather than Exclusive messages when wishing to modify sounds. They are not as complicated, they are easier to handle, and they do not require a large amount of data (p.15, 109). Such Control Change messages include a number (the Control Number) which specifies the type of function that is to be controlled.

The MIDI specifications do not define any specific functions which can be set using NRPNs. This is because the NRPNs are intended to serve as a flexible range of controls which can be assigned whatever parameters are required for a specific device in order to achieve the desired changes in its sounds, or enhance its expressive capabilities. In contrast, there is another type of extended form of control known as an RPN (registered parameter number). As their name suggests, RPN functions are all defined (registered) within the MIDI specifications (p.110).

When using an NRPN, the function (sound parameter) being dealt with needs to be specified by means of the numeric values that are supplied for the NRPN MSB (Controller No. 99) and NRPN LSB (Controller No. 98). By then sending the appropriate value for Data Entry (Controller No. 6), the change in the specified sound parameter is accomplished.

Note that instead of the hexadecimal notation that is used within the "MIDI Implementation" (p.109), the numbers for the combinations of values for NRPNs that appear in the chart below have all been converted to decimal. (Note also that these NRPNs are specific only to GS sound modules.)

NRPN MSB	NRPN LSB	Range	Function
1	8	0-64-127	Vibrato Rate *1 (p.28)
1	9	0-64-127	Vibrato Depth *1 (p.28)
1	10	0-64-127	Vibrato Delay *1 (p.28)
1	32	0-64-127	TVF Cutoff Frequency *1 (p.28)
1	33	0-64-127	TVF Resonance *1 (p.28)
1	99	0-64-127	TVF&TVA Envelope Attack Time *1 (p.29)
1	100	0-64-127	TVF&TVA Envelope Decay Time *1 (p.29)
1	102	0-64-127	TVF&TVA Envelope Release Time *1 (p.29)
24	rr	0-64-127	Drum Instrument Pitch Coarse *1 Alters the pitch of individual percussion instruments in the drum Part.
26	rr	0-127	Drum Instrument TVA Level Alters the volume of individual percussion instruments in the drum Part.
28	rr	0,1-64-127	Drum Instrument Pan Alters the panning for individual percussion instruments in the Drum Part. A setting of "0" provides random panning, while "1" selects the leftmost position, "64" the center, and "127" places it at the rightmost position.
29	rr	0-127	Drum Instrument Reverb Send Level Sets the reverb depth for individual percussion instruments in the Drum Part.
30	rr	0-127	Drum Instrument Chorus Send Level Sets the chorus depth for individual percussion instruments in the Drum Part.
31	rr	0-127	Drum Instrument Delay Send Level Determines the amount of delay for individual percussion instruments in the Drum Part (SC-88/SC-88 Pro only)

For example, let's say that you want to alter the TVF Cutoff Frequency. First, you need to assert that it is the TVF Cutoff Frequency that you wish to control by sending the appropriate NRPN MSB and NRPN LSB combination.

The value for Controller No. 99 is the NRPN MSB, and that for Controller No. 98 is the NRPN LSB.

So, you would transmit these values:

Controller No. 99: 1 Controller No. 98: 32

The SC-88ST Pro has thus been made aware that it is the TVF Cutoff Frequency that you are going to change. To go ahead and make the actual change, you would then use the Data Entry Control Change message to supply the new value (xx) for the TVF Cutoff Frequency.

Thus, you would send:

#### Controller No. 6: xx

As a result of transmitting the above three controller values, the TVF Cutoff Frequency will have been altered, and the timbre of the instrument selected for that Part should sound differently.

After altering sound parameters using an NRPN, we recommend that you make a habit of asserting a "null" by sending the RPN values shown below. This will tell the SC-88ST Pro that you are finished working with the parameter that has been specified, and that it should stop waiting for any further new values for that parameter. (It cancels the standing request for change in a particular NRPN or RPN.) This way you can avoid having unexpected changes made if any unintended Data Entry values get sent afterwards.

Controller No. 101: 127 Controller No. 100: 127

For the "NRPN LSB rr" value, you need to supply the value which corresponds to the note number of the particular percussion instrument that you want to address (these numbers can be found in the Drum Set List at the rear of the manual p.85).

For example, let's say that you want to set the High Bongo so that no reverb will be applied to it. This instrument is assigned note number 60 (middle C), and is contained in the Standard Set 1 Drum Set.

To accomplish this you would transmit these values:

Controller No. 99: 29 Controller No. 98: 60 Controller No. 6: 0

Note that these MIDI messages need to be sent in the order listed above.

Parameters marked with \*1 in the chart at left can be altered in a relative manner from the default value. Depending on the particular sound you are working with, the type of change available will be different (in some cases you may not even notice any change). Also, the range of change will vary.

You may need to consult the manual that came with your equipment or software for details on how to properly input and transmit Control Change messages. Note, though, that some devices may only allow you to work with a limited range of controller numbers.

Make sure that you always follow the order shown above when transmitting RPN, NRPN, and Data Entry data. Be careful, since if you insert a multiple number of MIDI messages at the same point in time (or in very close range of each other) when using some types of music software, the messages can sometimes be sent out in an order different than originally intended. To avoid problems, always allow sufficient space between adjacent messages (at least 1 tick at 96 TPON), and 5 ticks at 480 TPON).

- \* TPQN: Ticks Per Quarter Note
- Any value which has been imposed by means of an NRPN will not be initialized even when a different sound is changed to in compliance with a received Program Change. Settings which have been made using NRPNs can only be initialized by sending a GS Reset.
- \* At the initial settings, the SC-88ST Pro will not respond to NRPN messages. However, after a GS Reset has been received it will recognize NRPNs. Alternately, you can enable recognition of NRPNs by turning on "Rx.NRPN" (NRPN reception switch p.25) through Exclusive messages.

#### Aftertouch (Channel Pressure only 🕸)

Aftertouch is a message which conveys the pressure applied to the keyboard after playing a note, so that this information can be used to control various aspects of the sound. There are two types of aftertouch message; Polyphonic Key Pressure which is transmitted separately for each note, and Channel Key Pressure which is transmitted as one value that affects all notes on the specified MIDI channel.

\* With the initial settings, Aftertouch messages will have no effect when received by the SC-88ST Pro. In order for Aftertouch messages to do something, you need to set Aftertouch-related parameters. (p.27).

#### **All Sounds Off**

This message completely turns off the sound of all currently-sounding notes. The sound of the specified channel will be forcibly turned off.

#### All Notes Off ☆

This message causes a Note Off to be sent to each note of the specified channel that is currently on. However if Hold 1 or Sostenuto are on, the sound will continue until these are turned off.

#### Reset All Controllers 🕸

This message returns controller values to their initial settings. The following controller values for the specified channel will be reset to their initial values.

Controller	Initial value
Pitch Bend	0 (center)
Polyphonic Key Pressure	0 (minimum)
Channel Pressure	0 (minimum)
Modulation	0 (minimum)
Expression	127 (maximum)
Hold	0 (off)
Portamento	0 (off)
Soft	0 (off)
Sostenuto	0 (off)
RPN	number unset
NRPN	number unset

<sup>\*</sup> Parameter values that were modified using RPN or NRPN will not change even when a Reset All Controller message is received.

#### **Active Sensing**

This message is used to check for broken MIDI connections, such as MIDI connectors that have been pulled out or MIDI cables that have been broken. The SC-88ST Pro transmits Active Sensing messages from MIDI OUT at specific intervals. Once an Active Sensing message is received at MIDI IN, Active Sensing monitoring will begin, and if an Active Sensing message fails to arrive for more than 420 [msec], it is assumed that the cable has been disconnected. If this happens, all currently sounding notes will be turned off, the same procedure will be executed as if a Reset All Controllers message was received, and Active Sensing monitoring will stop.

#### System Exclusive messages

Exclusive messages are used to control functions which are unique to specific devices. Although Universal System Exclusive messages can be used even between devices of different manufacturers, most exclusive messages cannot be used between devices of different types or different manufacturers.

In order to recognize the device for which the data is intended, Roland exclusive messages contain a manufacturer ID, device ID and model ID.

The SC-88ST Pro manufacturer's ID is 42H. The device ID is 10H. The model ID is 42H.

### General MIDI System On (Universal System Exclusive)

When General MIDI System On is received, the SC-88ST Pro will be set to the basic General MIDI settings. Also, NRPN Bank Select messages will no longer be received after General MIDI System On is received. The beginning of song data bearing the General MIDI logo contains a General MIDI System On message. This means that if you playback the data from the beginning, the sound generator device will be automatically initialized to the basic settings.

#### **GS Reset (GS Format System Exclusive)**

When GS Reset is received, the SC-88ST Pro will be set to the basic GS settings. Also, NRPN messages specified in the GS format can be received after GS Reset is received. The beginning of song data bearing the GS logo contains a GS System Reset message. This means that if you playback the data from the beginning, the sound generator device will be automatically initialized to the basic settings.

#### Master Volume (Universal System Exclusive)

This is an exclusive message common to all MIDI devices that controls the master volume of all Parts.

#### Other exclusive messages

The SC-88ST Pro can receive GS format exclusive messages (model ID 42H) that are common to all GS sound generators. Exclusive messages can be used to store the SC-88ST Pro settings or to make fine adjustments to parameters.

For details of the exclusive message transmitted and received by the SC-88ST Pro, refer to the explanation on p.111 and following.

#### **About MIDI Implementation Charts**

MIDI has made it possible for a wide variety of devices to exchange information, but it is not always true that all types of MIDI messages can be exchanged between all types of devices. For example, if you use a synthesizer as a master device to control a digital piano, the pitch bender (the lever or wheel that modifies the pitch ) of the synthesizer will have no effect on the sound of the piano.

The important thing to keep in mind when using MIDI is that the slave device must be able to 'understand' what the master is 'saying'. In other words, the MIDI messages must be common to both master and slave.

To help you quickly determine what types of MIDI messages can be exchanged between master and slave, the Operation Manual of each MIDI device includes a MIDI Implementation chart (p.125). By looking at this chart, you can guickly see what messages the device is able to transmit and receive. The left side of the chart lists the names of a variety of MIDI messages, and the Transmitted and Recognized columns use " o " and " x " marks to indicate whether or not each of these messages can be transmitted or received. This means that a specific MIDI message can be exchanged only if there is an " o " in both the Transmitted column of the master and the Recognized column of the slave device. MIDI implementation charts are standardized, so you can fold the charts from two manuals together to see at a glance how the two devices will communicate.

A detailed explanation concerning the data format used for Exclusive messages, and the implementation of MIDI used on the SC-88ST Pro, can be found starting on p.108.

### The Structure and Operation of the SC-88ST Pro

#### **Parts and Sounds**

The SC-88ST Pro is able to produce 32 different types of sound at once. An instrument such as the SC-88ST Pro that can simultaneously produce many sounds from a single unit is called a multi-timbral sound generator. A Timbre is an instrumental sound. Being able to simultaneously play 32 sounds means that you can use 32 different instruments at once. In other words, you can create an orchestra-like ensemble of 32 musical parts. In the SC-88ST Pro, the sound selected for each Part is called an Instrument. (Instrument List, p.77) You can assign the sounds you want to each of 32 Parts to create your own ensemble.

There are two types of Parts: Normal Parts and Drum Parts. We refer to this difference as the Part mode (p.24). Normal Parts are used for playing melody or bass lines. Drum Parts are used for playing percussion instruments

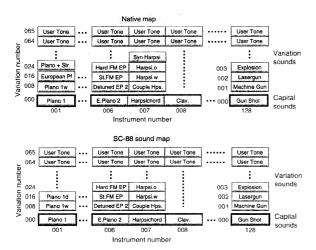
The SC-88ST Pro provides three sound maps: the Native map, which contains its own original sounds; the SC-88 map, which contains the same sounds as the SC-88; and the SC-55 map, which contains essentially the same sounds as the SC-55/SC-55mkII. (p. 77)

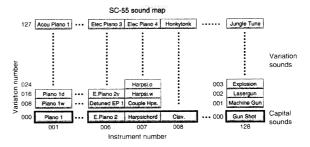
\* For details about MIDI and Part Mode, refer to p.13, 24.

### Reading the Instrument Numbers and Variation Numbers

Each sound (Instrument) of the SC-88ST Pro has two numbers; an Instrument number and a Variation number. Sounds with Variation number 000 are Capitals, and the sounds with numbers other than 000 are Variations.

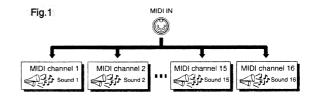
\* Variation numbers 64 and 65 of the Native map/the SC-88 map are where User Instruments can be stored. User Instrument settings are made using MIDI Exclusive messages (p.120). When the SC-88ST Pro is turned off, the values set for User Instrument will revert to their defaults.





#### Part Channels

To each of the SC-88ST Pro's 32 Parts, there is assigned an instrument and also a Channel. Channels are a concept used in MIDI to distinguish notes that should be played by different instruments in an ensemble. Normally, there is no need to change the channel of a Part when using the SC-88ST Pro. However it may sometimes be interesting to set two Parts to the same channel so that two sounds will simultaneously play the same musical line (Fig.1). To change the MIDI channel of a Part, use System Exclusive Message (p. 116).

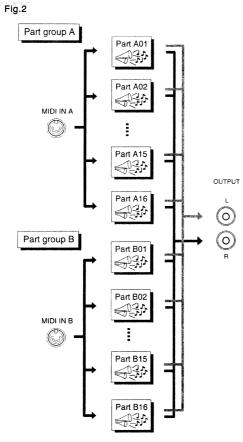


### Which MIDI IN Will Be Used by Each Part?

The SC-88ST Pro has two MIDI IN jacks. This is because since there are only 16 MIDI channels, it is necessary to have two MIDI jacks in order to play 32 Parts(Fig.2).

Parts are classified into Group A (A01 – A16) and Group B (B01 – B16), with sixteen in each group. The MIDI channels assigned to the Parts also are organized into groups A and B (A01 - A16, B11 - B16). Groups A and B correspond to the SC-88ST Pro's two MIDI IN jacks A and B. In other words, MIDI messages received at MIDI IN A are sent to the group A Parts, and MIDI messages received at MIDI IN B are sent to the group B Parts. For example, a MIDI message on channel 5 received at MIDI IN B will sound Part B05 (with the initial settings).

\* Exclusive messages received at MIDI IN A can be passed on to Parts of group B, depending on the specified address. (p.73)



### How Simultaneous Note Numbers and Voices Are Related

The sounds of the SC-88ST Pro consist of units called "Voices". There is a limit to how many of these "Voices" can sound at once, and in the case of the SC-88ST Pro, up to 64 simultaneous voices can be used. Some sounds (Instruments) use 1 voice and others use 2 voices (Instrument List, p.77). The main reason that some sounds use 2 voices is to allow different timbres to be produced by different velocity values.

If more than 64 voices are used at once, later-sounded notes will be given priority, and notes sounded previously will be turned off starting from the oldest. If you use only single-voice instruments, you will be able to play 64 notes simultaneously, but if some of the instruments are 2-voice, you will be able to play less than 64 simultaneous notes. Even if a MIDI Note Off message (p.14) is received, voices will be used for as long as the sound is heard. Be aware of this especially in the case of sound with a long release (p.29).

\* If song data created with 64 voice playback in mind is played back on a sound source with fewer voices, some notes will drop out, and the musical result will not be as it should. The SC-55 has 24 voices, and the SC-55mkII has 28 voices.

#### **Concerning Legato-enabled Sounds**

The SC-88ST Pro provides legato-enabled sounds that are ideally suited to legato playing, and which can realistically simulate this instrumental performance technique.

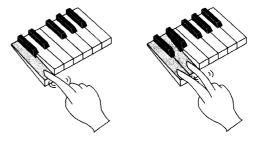
To understand this feature, consider how most string instruments produce sound. Usually, a brief attack-like sound will be heard only at the very instant the string is made to vibrate. After that a much mellower, attack-free sound continues to emanate during the string's vibration. The legato-enabled sounds simulates such variable attack-portion characteristics of string sounds by switching on or off certain special voices within an Instrument according to the way the keyboard is played.

Sounds in the "Instrument List" (p. 77) that have a ":" appearing next to them are legato sounds.

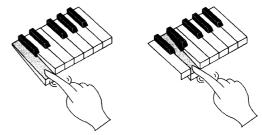
Example "violin:"

Try out one of these Instruments to hear how it works. If you are using a keyboard, play a note and keep your finger on that key while playing another note.

You should hear a distinct attack portion with the first note you play, while the second one contains almost no attack components, and sounds much smoother.



If you want to sound the attack portion each time, simply release your finger from a key before playing the next note.



\* Legato Control cannot be switched on and off on an Instrument basis. You should choose and edit an Instrument that meets your intended usage.

#### Selecting Sounds and Drum Sets on the SC-88ST Pro

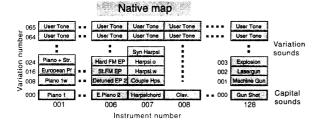
#### **Selecting Sounds**

By sending MIDI messages from a MIDI keyboard or sequencer, you can remotely select the sound (Instrument) for each Part. When you press a sound select button on a MIDI keyboard, a MIDI message selecting a sound will be transmitted (Program Change, p.14).

You can also use your personal computer to select the SC-88ST Pro sounds. You can specify sounds by inputting the Variation number and the Instrument number (p.77) into your computer program, but depending on your software the way in which numbers are displayed may differ, so be aware of this. On the SC-88ST Pro, Variation numbers begin with 0, and Instrument numbers begin with 1.

Variation numbers correspond to MIDI Bank numbers, and Instrument numbers correspond to MIDI Program numbers.

- \* MIDI Bank numbers have an upper (MSB) and lower (LSB) part. Each can specify a number 0 127, allowing you to specify 128 × 128 = 16384 banks. The upper part of the Bank number corresponds to the SC-88ST Pro Variation number. The lower part switches between SC-55 map, SC-88 map and Native map (MIDI Implementation, p.108).
- \* For the relation between the sound names and program numbers of your MIDI keyboard, refer to the manual for your MIDI keyboard.
- \* If you specify a sound number that the SC-88ST Pro does not have, a sound will not change. Refer to the Instrument List on page 77 when selecting sounds.



\* Variation numbers 64 and 65 of the Native map / SC-88 map are where User Instruments can be stored.

User Instrument settings (P.120) are made using MIDI Exclusive messages.

When creating MIDI messages on a sequencer or personal computer and transmitting them, use the following procedure.

- 1. The value of Control Change 0 : MIDI Bank Number (upper) (the SC-88ST Pro Variation number)
- 2. The value of Control Change 32: MIDI Bank Number (lower)
- 3. Program Change value : MIDI Program Number (the SC-88ST Pro Instrument number)
- 1. and 2. are the Bank Select message. Bank Select messages are a type of Control Change message (p.15).

For example if you wish to select the Instrument (Piano3w) of Variation 8, Instrument number 3, you would transmit the following data to the SC-88ST Pro. (Expressed in decimal notation.)

- 1. The value of Control Change 0 : 8 (Bank number (upper) 8; Variation number 8)
- 2. The value of Control Change 32:0 (always leave this set
- 3. Program Change value : 2 (Program number 3 : Instrument number 3)
- \* Note that the data actually transmitted as the Program Change will be one less than the Program number.

The example above can be expressed in hexadecimal as follows.

(Expressed in hexadecimal notation)

- 1. BnH 00H 08H
- 2. BnH 20H 00H
- 3. CnH 02H
- \* H indicates that the value is expressed as a hexadecimal number. Decimal 32 is written as hexadecimal 20H.
- \* n indicates the MIDI channel.
- \* Note that for MIDI channels and Instrument numbers, the number is one less than the channel or Instrument number. For example if you wish to select a sound on the Part receiving MIDI channel 4, n would be 3. If you wish to select Instrument 3, the value in step 3 would be 2.

The SC-88ST Pro processes the lower part of the bank select message (LSB) as follows (p.108).

#### Least significant byte (LSB)

00H The setting of the [MAP] button is followed.

When the front panel [MAP] button is lit, the SC-55 map is selected. When the [MAP] button is blinking, the SC-88 map is selected. When it is dark, the Native Map is selected (p. 8).

01H SC-55 map will be selected.

02H SC-88 map will be selected.

03H Native map will be selected.

If we use the previous example of selecting the Piano3w sound, we would transmit

- 1. BnH 00H 08H
- 2. BnH 20H 03H
- 3. CnH 02H

to the SC-88ST Pro, and Piano3w of Native map will be selected. If we transmit BnH 20H 01H in step 2, the SC-55 map Piano3w will be selected. If we transmit BnH 20H 02H in step 2, the SC-88 map Piano3w will be selected.

#### **Selecting Drum Sets**

You can select Drum Sets by transmitting MIDI Program Change messages from a MIDI keyboard or sequencer, in the same way as you can select Instruments. When a Program Change message is received, the Drum Set will change. Transmit a Program Change message on the channel being received by the Drum Part. With the initial settings, Part 10 is the Drum Part (MIDI receive channel:10). On the SC-88ST Pro, Drum Set numbers correspond to program numbers (p.85).

\* Set the note numbers of the rhythm data being played back to match the note numbers of the Drum Set you are using (p.86).

Drum Set name and Drum Set number (Program number)



<sup>\*</sup> Native, SC-88 Drum Set program numbers 65 and 66 are where User Drum Sets (p.120) can be stored. User Drum Set settings are made using MIDI Exclusive messages.



### **Parameters**

In this chapter, we provide a general description of each of the parameters. A "parameter" is something that affects the sound. The process of modifying parameter values is called "editing." For instructions on how to make settings, please refer to the MIDI Implementation (p.108). The range shown in this chapter is the same as that shown in the "Description" column of the MIDI Implementation.

#### Part Parameters for Performance

These parameters determine how each Part behaves when it receives MIDI messages. The way in which the sound changes in response to messages such as velocity, pitch bend, modulation and aftertouch will be determined by the settings of these parameters.

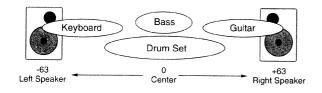
# ■ The Function of Each Parameter

#### LEVEL (Volume level): 0 — 127

This parameter adjusts the volume of each Part. Higher values result in a louder sound.

#### PAN (Panning): Rnd(-64), -63 — 0 — +63

Pan refers to the position in the stereo field. For example, you might place the drum set and bass in the center, the guitar at the right, and the keyboard at the left. To place the sound in the center, set this value to 0. As the - (minus) number decreases the sound will move further to the left, and as the + (plus) number increases the sound will move further to the right. With a setting of Random (-64), each note will be placed at an unpredictable location.



- \* In the case of a Drum Set, the pan position has been fixed for each percussion instrument. Adjusting the Pan of a Drum Set will shift the overall set to left or right.
- \* For some instruments, some sound may be heard from the opposite speaker even if Pan has been set fully left or right.

- \* If your amp/speaker system is mono, Pan will have no effect.
- \* The Random setting can only be made using exclusive messages. Control Change messages cannot be used to make this setting.

## KEY SHIFT: -24 — ±0 — +24: semitone steps, 2 octaves

This parameter transposes the Part. As the value increases (decreases) the pitch will rise (fall) in steps of a semitone. 12 steps make a difference of 1 octave. With a setting of 0 the pitch will not be affected.

## USE FOR RHYTHM PART ( Part Mode ): OFF/MAP1/MAP2

For Parts which are playing conventional instrument sounds, select OFF (Normal mode). For Parts which are playing percussion or drums, select MAP1 or MAP2 (Drum Parts). Drum Parts play a different sound (Instrument) for each different MIDI note number. In other words, a single Part can play many different percussion instrument sounds (List of drum sets p.85).

The MAP1 and MAP2 Parts allow you to simultaneously use two drum sets. For example if Drum Parts are set as shown below, when you change the STAN-DARD1 drum set of Part A10 to the TR-808Set, the selection for Part A12 will also change to TR-808Set. For details on how to assign a drum set to a Part, refer to page.117.

Part name	(USE FOR RHYTHM PART)	Name of drum set
Part A10	(MAP1)	STANDARD1
Part A11	(MAP2)	JAZZ
Part A12	(MAP1)	STANDARD1

#### Mono/Poly Mode: Mono/Poly

If a Part is set to Mono (Mono Mode), that Part will play only one note at a time. It is effective to select Mono Mode for parts that are playing a naturally monophonic instrument such as a trumpet or sax. Select Poly Mode for Parts that are playing chords.

\* For a Drum Set, changing the Mono/Poly Mode setting will not affect the sound.

#### Fine Tune: -100.0 — +100.0 cent

Use this parameter when you wish to make fine adjustments to the tuning of a Part. Positive (+) settings will raise the pitch, and negative (-) settings will lower the pitch. If two or more Parts are set to the same MIDI channel and the same sound, you can spread their Fine Tuning settings apart to add rich depth and breath to the sound.

- \* To adjust the pitch of all Parts, use the Master Tune parameter (p.29).
- \* To transposes the Part, use the KEY SHIFT parameter (p.24).

### Rx Bank SELECT (Bank Select Receive Switch): On/Off

To remotely select the SC-88ST Pro sounds from another MIDI device, you can send Bank Select messages and Program Change messages to the SC-88ST Pro. If Rx Bank Select is turned on, these MIDI messages can select Variation sounds (p.20). If this parameter is turned off, MIDI messages cannot select Variation sounds or User sounds (they will select Capital sounds).

#### Rx NRPN (NRPN Receive Switch): On/Off

NRPN (Non-registered Parameter Number p.16) messages allow you to modify vibrato, filter and envelope values (p.28, 29) via MIDI. If Rx NRPN is on, these sound parameters can be modified by MIDI messages. If Rx NRPN is off, this will not be possible.

- \* When General MIDI System On is received, Bank Select Receive Switch and NRPN Receive Switch will be turned off.
- \* When GS Reset is received, Bank Select Receive Switch and NRPN Receive Switch will be turned on.

#### Pitch Bend Sensitivity: ±0 — +24

When you move the pitch bend lever or pitch bend wheel of a MIDI keyboard, pitch bend messages are transmitted to modify the pitch. The Pitch Bend Sensitivity setting determines the maximum range of pitch change that will result from incoming pitch bend messages. At a setting of 12, the pitch can be modified through a range of 2 octaves. At a setting of 0, pitch bend messages will have no effect.

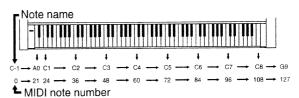
\* For some sounds, the pitch may not rise as far as specified by the Pitch Bend Sensitivity setting.

#### MOD, LFO1 PITCH DEPTH: 0 — 600 cent

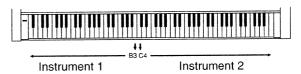
When you move the modulation lever or modulation wheel of a MIDI keyboard, modulation messages are transmitted to control effects such as vibrato (with the initial settings). Vibrato is an effect that adds expression to the sound by cyclically varying the pitch. The MOD. LFO1 PITCH DEPTH setting determines the maximum effect of incoming modulation messages. Higher values will allow more modulation to be applied. At a setting of 0, modulation messages will have no effect.

#### Key Range Low: C-1 — G9 Key Range High: C-1 — G9

The Key Range parameters determine the pitch range over which the instrument will be sounded. Key Range Low (the lowest note) and Key Range High (the highest) note will determine the range of notes that will sound. You can specify a value between C-1 and G9 (MIDI note number:0 – 127), and middle C is C4 (MIDI note number:60)



For example, if you assign two Parts to the same MIDI channel and set the Key Range of one to C-1 — B3 and the other to C4 — G9. Then you could assign different sounds to each Part, and play two different sounds on either side of C4. Or, you could set the keyboard ranges of two Parts to overlap, and layer the two sounds.



\* Be aware that if Key Range High is set to a note name lower than Key Range Low, there will be no sound.

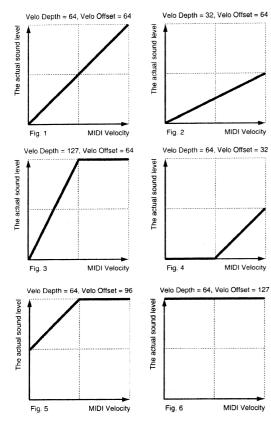
#### Velocity Sense Depth: 0 — 127 Velocity Sense Offset: 0 — 127

The force with which you play a note on MIDI key-board is transmitted as MIDI Velocity data. Strongly played notes will have a higher velocity value. The Velocity Sense Depth and Velocity Sense Offset parameters determine the relation between the force of your keyboard playing and the loudness of the sound that results.

If Velocity Sense Depth is increased, small differences in your playing dynamics will make a large difference in the loudness of the sound (Fig.3). If Velocity Sense Depth is decreased, even large differences in your playing dynamics will make only a small difference in the loudness of the sound (Fig.2).

If Velocity Sense Offset is set higher than 64, even softly played notes (i.e., notes with a low velocity) will be sounded loudly (Fig.5). If Velocity Sens Offset is set lower than 64, even strongly played notes (i.e., notes with a high velocity) will be sounded softly (Fig.4).

\* For some settings, there may be no sound. If so, increase Velocity Sense Depth or Velocity Sense Offset.



#### CC1/CC2 Controller Number: 1 — 95

Set the controller number which will control the CC1/CC2 parameter (p.27) via MIDI. For example if you set CC1 Controller Number to 16, the value of an incoming MIDI controller number 16 message will affect the sound as specified by the setting of the CC1 parameter.

#### Output Assign: OUT-1/2/2L/2R

Specify the output jack from which the sound of each part will be output.

- **OUT-1** The sound together with the effect sound will be output in stereo from the OUTPUT 1 jacks.
- OUT-2 The direct sound without the effect sound will be output in stereo from the OUTPUT 2 jacks.
- OUT-2L The direct sound without effects will be output from the OUTPUT 2L jack. (The Pan setting will have no effect.)
- OUT-2R The direct sound without effects will be output from the OUTPUT 2R jack. (The Pan setting will have no effect.)
- \* The headphone jack will output the sound of OUT-PUT 1. This means that the sound of Parts assigned to OUTPUT 2 will not be heard from the headphone jack.
- \* With the factory settings, all Parts are set to OUT-1.
- \* The sound from OUTPUT 2 is output at a fixed volume, unaffected by the position of the volume knob.

#### Scale Tuning C - B : -64 — +63

Scale Tuning is a parameter which makes fine adjustments to the pitch of each note in the octave. These settings are for one octave of notes, and will simultaneously adjust the pitch of that note in all octaves. By using Scale Tuning, you can perform using a variety of temperaments other than equal temperament. Here we will give three settings as examples.

#### < Equal temperament >

This tuning divides the octave into 12 equal parts, and is the most widely used method of temperament used in western music. The default setting of the SC-88ST Pro's Scale Tune function is Equal temperament.

#### < Just intonation (tonic of C) >

Compared with Equal temperament, the principle triads sound pure in this tuning. However this effect is achieved only in one key, and the triads will turn muddy if you transpose. Here is an example of the settings for a tonic of C.

#### < Arabian-style scale >

A variety of ethnic tunings can be achieved by using the Scale Tuning function. Here are settings for a tuning representative of Arabian-style scales

Example settings ("Cents" are a unit of tuning equal to 1/100th of a semitone.)

Note name	Equal temperament	Just intonation	Arabian-style scale
		(tonic of C)	
С	0	0	-6
C#	0	-8	+45
D	0	+4	-2
D#	0	+16	-12
E F	0	-14	-51
F	0	-2	-8
F#	0	-10	+43
G	0	+2	-4
G#	0	+14	+47
Α	0	-16	0
A#	0	+14	-10
В	0	-12	-49

#### Mod ~ / Bend ~ / CAf ~ / PAf ~ / CC1 ~ / CC2 ~

\* The following explains the two parts that go together to make up a parameter name.

#### The front half of the parameter name

#### Mod (Modulation) ~

When you move the modulation lever or modulation wheel of a MIDI keyboard, modulation messages are transmitted, modifying the sound. The Mod ~ parameters specify the way in which the sound will change when these messages are received. With the factory settings of these parameters, vibrato will be applied to the sound.

#### Bend ~

When you move the pitch bend lever or pitch wheel of a MIDI keyboard, pitch bend messages are transmitted, modifying the sound. The Bend ~ parameters specify the way in which the sound will change when these messages are received. With the factory settings of these parameters, the pitch will be modified.

## CAf (Channel aftertouch) ~ PAf (Polyphonic aftertouch) ~

Some MIDI keyboards transmit messages known as "aftertouch" when pressure is applied to the keyboard after playing a note. There are two types of aftertouch. Channel aftertouch (also known as channel pressure) transmits only one data value even if two or more notes are being pressed. Polyphonic aftertouch (also known as polyphonic key pressure) transmits independent data values for each key. When a sound generator receives these messages, it can modify the sound in various ways. The CAf~/PAf~ parameters specify how the sound will change when these messages are received. At the factory settings, no change will occur when these messages are received.

\* Check whether your MIDI keyboard is able to transmit aftertouch messages.

#### CC1 ~ / CC2 ~

Some MIDI keyboards allow controller numbers to be assigned to the sliders. When these sliders are moved, messages of the specified controller number are transmitted, causing the sound to be modified. The CC1~ / CC2~ parameters specify how the sound will change when messages of the corresponding control number are received.

First use the CC1 / CC2 Controller Number parameter (previous page) to select the controller number that you are assigning.

#### The latter half of the parameter name

- \* When these settings are at 0, there will be no effect.
- ~ Range -24 +24 (Bend Range is ±0 +24) These parameters specify the maximum pitch change that will occur when the corresponding message is received. A setting of 12 allows 1 octave of change, and a setting of 24 allows 2 octaves of change. With a setting of 0, there will be no pitch change.
- \* For some sounds, the pitch may not rise as high as specified by the Range setting.

#### ~ Cutoff (Cutoff frequency) -64 — +63

These parameters specify how the cutoff frequency will change when the corresponding message is received. Higher values will cause the cutoff frequency to rise. Positive (+) settings allow the sound to be made brighter, and negative (-) settings allow the sound to be made more mellow.

#### ~ Amplitude -64 — +63

These parameters specify the way in which the sound will change when the corresponding message is received. Higher values allow a greater increase in volume.

#### ~ LFO Rate -64 — +63

These parameters specify the way in which the LFO frequency will change when the corresponding message is received, adjusting the speed at which the sound is modulated or varied. Higher values allow the modulation or variation to be speeded up.

#### ~ LFO Pitch 0 − 127

These parameters specify the way in which the depth of the vibrato effect (cyclic modulation of pitch) will change when the corresponding message is received. Higher values allow the modulation effect to be increased.

#### ~ LFO TVF 0 − 127

These parameters specify the way in which the depth of the growl effect (cyclic modulation of tone) will change when the corresponding message is received. Higher values allow the growl effect to be increased.

#### ~ LFO TVA 0 — 127

These parameters specify the way in which the depth of the tremolo effect (cyclic modulation of volume) will change when the corresponding message is received. Higher values allow the tremolo effect to be increased.

# Part Parameters for Sound Editing

On the SC-88ST Pro, you can modify the values of a variety of parameters in order to create the sound most suitable for your playing. Sound parameters affect the volume, timbre and pitch of the sound.

#### ■ The Function of Each Parameter

On the SC-88ST Pro, parameter settings are made for each Part. In other words, parameter values belong to Parts, and not to sounds (Instruments). For example if you set Vibrato Rate to +20 and then select a different sound for that Part, the Vibrato Rate of +20 will apply to the newly selected sound (not the initial value of  $\pm 0$ ). In this way, parameters belonging to Parts are called Part Parameters.

#### **Vibrato**

Vibrato is an effect created by modulating the pitch. Applying vibrato makes the sound more expressive.

#### Vibrato Rate: -64 — +63

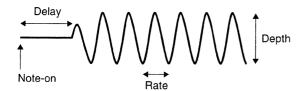
This parameter adjusts the speed (frequency) of the pitch modulation. Positive (+) settings make the pitch modulation faster, and negative (-) settings make it slower.

#### Vibrato Depth: -64 — +63

This parameter adjusts the depth of the pitch modulation. Positive (+) settings make the pitch modulation deeper, and negative (-) settings make it shallower.

#### Vibrato Delay: -64 — +63

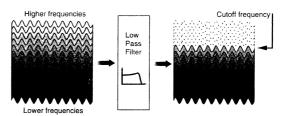
This parameter adjusts the time required for the vibrato effect to begin. Positive (+) settings increase the time before vibrato will begin, and negative settings shorten the time.



#### **Filter**

By modifying the filter settings, you can control the timbre (tone) of the sound. The type of filters in the SC-88ST Pro are called Low Pass Filters, and allow only frequencies lower than a specified frequency to pass. This frequency is called the Cutoff Frequency. By modifying the setting of the Cutoff Frequency you can make the sound brighter or darker.

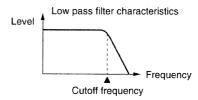
The Cutoff Frequency can change over time, controlled by the "envelope". By adjusting the filter and envelope settings, you can create sounds that have movement and expression.



## TVF Cutoff Freq (Cutoff Frequency): -64 — +63

Positive settings of TVF Cutoff Freq will raise the cutoff frequency. Negative settings will lower the cutoff frequency. As you set this value higher in the positive direction, more overtones will be allowed to pass, and the sound will become harder (brighter). The further this value is set in the negative direction, the fewer overtones will be allowed to pass, and the sound will become softer (darker).

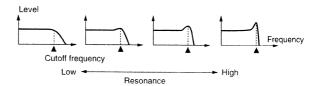
\* For some sounds, positive (+) settings of Cutoff Freq will cause no noticeable change in the sound.



#### TVF Resonance: -64 — +63

When the TVF Resonance value is increased, the overtones in the area of the cutoff frequency will be emphasized, creating a sound with a strong character.

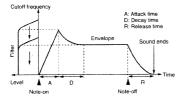
\* For some sounds, negative (-) settings of Resonance will cause no noticeable change in the sound.



#### **Envelope**

The volume of an instrument changes with time, from the moment the note begins to sound to when it disappears. This change can be indicated on a graph as shown in the following diagram. This shape is unique to each instrument, and is an important element in how we distinguish sounds we hear. This shape is called the "envelope."

The envelopes of musical instrument sounds can change depending on how the instrument is played. For example if a trumpet is played sharply and strongly, the attack will be quick and the sound will be sharp. But if a trumpet is played lightly and softly, the attack will be softer. In order to adjust the attack of a sound, we can modify the Attack Time of the envelope. By modifying the values of the envelope we can simulate the characteristics of many different instruments.



The envelope shape that we create in this way will also affect the way in which the cutoff frequency changes. If the cutoff frequency had been lowered, it will rise as the envelope rises, and will fall as the envelope falls.

## TVF & TVA Env.attack (Attack Time): -64 — +63

This parameter adjusts the sharpness of the beginning of the sound.

### TVF & TVA Env.decay(Decay Time): -64 — +63

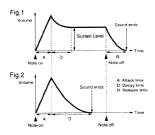
This parameter adjusts the time over which the sound will fall from the highest point of the attack down to the sustain level (Fig.1).

\* Some sounds have a sustain level of 0 (Fig.2). Piano and guitar sounds are in this category.

### TVF & TVA Env.release(Release Time): -64 — +63

This parameter adjusts the time over which the sound will decay after the note is released until it is no longer heard. The cutoff frequency will also fall according to this.

\* For some sound, modifying the various Time settings of the envelope will cause no noticeable change in the sound.



# Parameters Common to All Parts

Here's how to make settings for parameters that are common to all Parts.

#### ■ The Function of Each Parameter

#### Master Volume level: 0 — 127

This parameter adjusts the volume of all the Parts. As the value increases, the volume will increase. The basic volume level of the entire the SC-88ST Pro is adjusted by the Volume knob. If the volume knob is at minimum position, there will be no sound even if you increase this parameter.

#### Master Pan: - 63 — 0 — + 63

This parameter sets the Pan (stereo position) for all the Parts. As the - (minus) value decreases the sound will move further left, and as the + (plus) value increases the sound will move further right.

- \* For some instruments, a bit of sound may be heard from the opposite speaker even if Pan has been set fully left or right.
- \* If you are listening to the SC-88ST Pro in mono, Pan settings will have no effect.

#### Master Key Shift:

#### $-24 - \pm 0 - \pm 24$ semitone steps, 2 octaves

Key Shift adjusts the pitch of the sound in semitone steps. For example if you are singing along with sequence data, you can adjust Key Shift to move the song to the key most comfortable for your voice. As the value rises (falls) one step, the pitch will rise (fall) one semitone. This means that 12 steps equal one octave.

\* Even if you adjust Key Shift for all Parts, the pitch of the Drum Part will not be affected.

#### **Master Tune:**

#### -100.0 - 0 - +100.0 cent

When you are playing in an ensemble with other instruments or need to set the SC-88ST Pro to match the pitch of another instrument, adjust the Master Tune setting.

### **Effects**

#### The Effect Structure of the SC-88ST Pro

The effects of the SC-88ST Pro can be categorized into System effects, commom to all parts (p.32), and Insertion effects, which can be applied to a specific part(p.35).

System effects include 8 types of reverb and chorus, 10 types of delay, and 2-band equalizer. Insertion effects include a variety of 64 different effect types.

Of the System effects, the reverb/chorus/delay effects take a portion of the sound from each Part to create a new effect portion (reverberation, etc.), which is then added to the original sound.

For these effects, you can specify the amount of the sound for each Part sent to the effect unit (Send Level). Higher settings will increase the level of the signal that is sent to the effect unit, causing the effect sound that is produced to be louder. The result is that the effect becomes deeper.

For the equalizer of System effects, on the other hand, you can select whether the sound of the Part will pass through the equalizer or not; i.e., make an on/off setting to modify the sound.

Insertion effects are effects that modify the sound itself, and are able to give it a completely different character. You can specify for each Part whether or not it will pass through the effect.

Since only one type of Insertion effect can be applied at a time, turning it on for two or more Parts will cause the sound of these Parts to be mixed. If a System effect is applied to a Part for which the Insertion effect is turned on, the Insertion effect Send Level will be used instead of the Send Level of the Part itself (p.35).

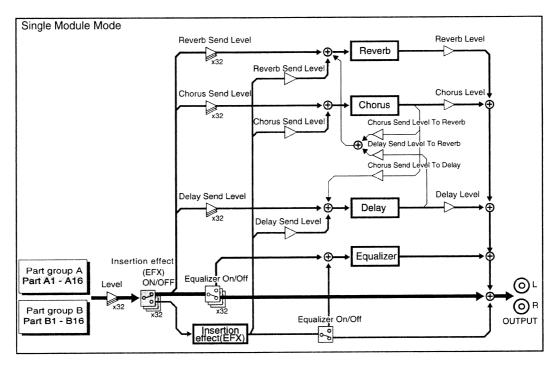
Also, the type of effects that are available here will depend on the System mode setting.

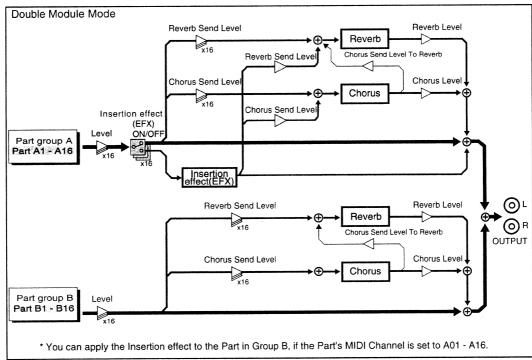
In Single Module mode (mode 1), each will have one set of effects.

In Double Module mode (mode 2), equalizer and delay are unavailable, but there are two sets each for Reverb and Chorus settings, and these can be used simultaneously.

This is especially valuable when you wish to have different effect types or settings for each Part. Also, the Insertion effect can be used only for the Part group A. This is every effective when you wish to apply a special effect to the solo part that you play.

\* For details on Single Module mode and Double Module mode, refer to page 74.





#### **Effects Common to All Parts**

The System effects, common to all parts of the SC-88ST Pro, include 8 types of reverb and chorus, and 10 types of delay. In addition, for each of these effects you can specify parameter values such as character, depth, rate and time. Reverb is an effect that adds reverberation to a sound, as you would hear in a concert hall. Chorus broadens the spatial image of the sound, adding depth and richness. Delay creates echoes. It is also possible to give depth and width to a sound by adding a short delay to the original sound. For these effects, you can set the overall level for all Parts and also individual levels for each Part.

The SC-88ST Pro has a two-band equalizer (high range, low range). An equalizer lets you boost or cut specified frequency ranges of a sound to adjust the tone. For each range, high and low, you can specify the frequency and the amount of boost or cut (gain).

# ■ Reverb/Chorus/Delay Types Reverb MACRO

Reverb is an effect that adds reverberation to a sound, as you would hear in a concert hall. You can choose from 8 types of reverb.

#### Room1 Room2 Room3

These reverbs simulate the reverberation of a room. They provide a well-defined spacious reverberation.

#### Hall1 Hall2

These reverbs simulate the reverberation of a concert hall. They provide a deeper reverberation than the Room reverbs.

#### **Plate**

This simulates a plate reverb (a studio device using a metal plate).

#### Delay

This is a conventional delay that produces echo effects.

#### **Panning Delay**

This is a special delay in which the delayed sounds move left and right. It is effective when you are listening in stereo.

#### Chorus MACRO

Chorus broadens the spatial image of the sound, adding depth and richness. You can choose from 8 types of chorus.

#### Chorus 1 Chorus 2 Chorus 4

These are conventional chorus effects that add spaciousness and depth to the sound.

#### Feedback Chorus

This is a chorus with a flanger-like effect and a soft sound.

#### Flanger

This is an effect sounding somewhat like a jet airplane taking off and landing.

#### **Short Delay**

This is a delay with a short delay time.

#### Short Delay (FB)

This is a short delay with many repeats.

#### **Delay MACRO**

Delay creates echoes. It is also possible to give depth and width to a sound by adding a short delay to the original sound. You can choose from 10 types of delay.

#### Delay1 Delay2 Delay3

These are conventional delays. 1, 2 and 3 have progressively longer delay times.

#### Delay4

This is a delay with a rather short delay time.

#### Pan Delay 1 Pan Delay 2 Pan Delay 3

The delay sound moves between left and right. This is effective when listening in stereo. 1, 2 and 3 have progressively longer delay times.

#### Pan Delay4

This is a rather short delay with the delayed sound moving between left and right. It is effective when listening in stereo.

#### Dly To Rev

Reverb is added to the delay sound which moves between left and right. It is effective when listening in stereo.

#### **PanRepeat**

The delay sound moves between left and right, but the pan positioning is different than the effects listed above. It is effective when listening in stereo.

\* Delay cannot be used when Double Module Mode (p.74) is selected.

When you change the Reverb MACRO, Chorus MACRO, Delay MACRO, the following parameter values will automatically change. This is so that the parameter values will have the settings most appropriate for the selected Effect Type. You can select these parameters and modify the values to adjust the effect to your taste.

#### ■ Reverb Parameters

#### Reverb Character: 0 — 7

This parameter selects the type of reverb. 0-5 are reverb effects, and 6 and 7 are delay effects.

#### Reverb Pre - LPF: 0 — 7

A low pass filter can be applied to the sound coming into the reverb to cut the high frequency range. Higher values will cut more of the high frequencies, resulting in a more mellow reverberation.

#### Reverb Level: 0 — 127

This parameter sets the amount of the reverberant sound. Higher values result in louder reverberation.

#### Reverb Time: 0 — 127

This parameter sets the time over which the reverberation will continue. Higher values result in longer reverberation.

#### Reverb Delay Feedback: 0 — 127

This parameter is used when the Reverb Type is set to Delay or Panning Delay (Rev Charac.6, 7). It sets the way in which delays repeat. Higher values result in more delay repeats.

#### Reverb Pre-Delay Time: 0ms — 127ms

This parameter sets the delay time until the reverberant sound is heard. Higher values result in a longer pre-delay time, simulating a larger reverberant space.

\* Reverb Pre-Delay Time cannot be used when Double Module Mode (p.74) is selected.

#### **About Reverb MACRO**

When you change the Reverb MACRO, the above-listed six reverb parameters (including Reverb Character) will be automatically adjusted to the optimal values. Rather than individually adjusting each reverb parameter, it is easier to first set the Reverb MACRO and then modify only those parameters that you wish to modify. In particular when using MIDI exclusive messages, this method of making settings will minimize the amount of data.

Chorus MACRO and Delay MACRO can be used in the same way.

#### **■** Chorus Parameters

#### Chorus Pre - LPF: 0 — 7

A low pass filter can be applied to the sound coming into the chorus to cut the high frequency range. Higher values will cut more of the high frequencies, resulting in a more mellow chorus sound.

#### Chorus Level: 0 — 127

This parameter sets the amount of the chorus sound.

#### Chorus Feedback Level: 0 — 127

This parameter sets the level at which the chorus sound is re-input (fed back) into the chorus. By using feedback, a denser chorus sound can be created. Higher values result in a greater feedback level.

#### Chorus Delay Time: 0 — 127

This parameter sets the delay time of the chorus effect.

#### Chorus Rate: 0 — 127

This parameter sets the speed (frequency) at which the chorus sound is modulated. Higher values result in faster modulation.

#### Chorus Depth: 0 — 127

This parameter sets the depth at which the chorus sound is modulated. Higher values result in deeper modulation.

#### Chorus Send Level To Reverb: 0 — 127

This parameter sets the amount of chorus sound that will be sent to the reverb. Higher values result in more sound being sent.

#### Chorus Send Level To Delay: 0 — 127

This parameter sets the amount of chorus sound that will be sent to the delay. Higher values result in more sound being sent.

\* Chorus Send Level To Delay cannot be used when Double Module Mode (p.74) is selected.

#### **■ Delay Parameters**

#### Delay Pre - LPF : 0 - 7

A low pass filter can be applied to the sound coming into the delay to cut the high frequency range. Higher values will cut more of the high frequencies, resulting in a more mellow delay sound.

#### Delay Time Center: 0.1ms — 1.0s

The delay effect of the SC-88ST Pro allow you to set three delay times; center, left and right (when listening in stereo). Delay Time Center sets the delay time of the delay located at the center.

#### Delay Time Ratio Left: 4% — 500%

This parameter sets the delay time of the delay located at the left as a percentage of the Delay Time Center. (up to a max. of 1.0s)

#### Delay Time Ratio Right: 4% — 500%

This parameter sets the delay time of the delay located at the right as a percentage of the Delay Time Center. (up to a max. of 1.0s)

#### Delay Level Center: 0 — 127

This parameter sets the volume of the central delay. Higher values result in a louder center delay.

#### Delay Level Left: 0 — 127

This parameter sets the volume of the left delay. Higher values result in a louder left delay.

#### Delay Level Right: 0 — 127

This parameter sets the volume of the right delay. Higher values result in a louder right delay.

#### **Delay Level : 0 — 127**

This parameter sets the overall volume of the three delays (center, left and right). Higher values result in a louder overall delay.

#### **Delay Feedback : -64 — 0 — +63**

This parameter affects the number of times the delay will repeat. With a value of 0, the delay will not repeat. With higher values there will be more repeats. With negative (-) values, the center delay will be fed back with inverted phase. Negative values are effective with short delay times.

#### Delay Send Level To Reverb: 0 — 127

This parameter sets the amount of delay sound that is sent to the reverb. Higher values result in more sound being sent.

\* Delay cannot be used when Double Module Mode (p.74) is selected.

### **■ Equalizer Parameters**

#### EQ Low Freq.

## (Equalizer Low Frequency): 200, 400 Hz EQ High Freq.

#### (Equalizer High Frequency): 3, 6 kHz

These parameters set the cutoff frequencies of the ranges boosted or cut by the equalizer.

#### **EQ** Low Gain

#### (Equalizer Low Gain): -12 — 0 — +12dB EQ High Gain

#### (Equalizer High Gain): -12 — 0 — +12dB

Specify the amount of boost or cut (gain) for the high frequency range and the low frequency range. Positive (+) settings will boost, and negative (-) settings will cut.

- \* With a Gain setting of 0, the equalizer will have no effect.
- \* The Equalizer cannot be used when Double Module Mode (p.74) is selected.
- \* The Equalizer gain settings are common to all Parts.

  They cannot be set independently for individual Parts.

## Controlling the depth of a System Effect

#### ○ Reverb/Chorus/Delay

Using control change messages, the depth of the System Effects reverb/chorus/delay can be set independently for each part. (p. 15, 16)

Reverb Send Level (controller number 91)

Chorus Send Level (controller number 93)

Delay Send Level (controller number 94)

The reverb/chorus/delay effects use a portion of the sound of each part to create a new effect sound (such as reverberation, etc.), which is then added to the original sound.

The above parameters control the amount of the sound (signal) of each part that will be sent to the effect. As the value is increased, more of the signal will be sent to the effect, and the effect sound will be louder. This will increase the depth of the effect.

#### ○ Equalizer

The equalizer modifies the tonal quality of the sound. You can specify whether or not (on/off) the sound of each part will be sent through the equalizer. Equalizer settings are made using exclusive data, rather than control changes. (p. 119)

< Example settings >

Turn on the equalizer of part 1

F0 41 10 42 12 40 41 20 01 5E F7

The address Value to for the part 1 turn it on equalizer

# Effect That Can Be Applied to a Specific Part

Insertion effects, which can be applied to a specific part, provide 64 effect types. Since appropriate parameters are provided for each effects, you can make fine adjustments to the sound for professional-level control.

\* For details on System effects and Insertion effects, and on the effect structure of the SC-88ST Pro, refer to page 30.

Insertion effects can be applied independently to an individual Part.

### **○ Effect Types**

Effect types can be broadly grouped into the following categories.

Effects that modify the tone col	or (filter type)	(1 - 4)
Effects that distort the sound	(distortion type)	(5 - 6)
Effects that modulate the sound	d (modulation type)	(7 - 13)
Effects that affect the level	(compressor type)	(14 - 15)
Effects that broaden the sound	(chorus type)	(16 - 20)
Effects that reverberate the sou	ind (delay/reverb type)	(21 - 28)
Effects that modify the pitch	(pitch shift type)	(29 - 30)
Others		(31 - 34)
Effects that connect two types of	of effect in series	
	(series 2)	(35 - 46)

Effects that connect three or more types of effect in series

(series 3 / series 4 / series 5)(47 - 55)

Effects that connect two types of effect in parallel

(parallel 2) (56 - 64)

In the explanations that follow, the hexadecimal values used when making settings via exclusive messages are given at the end of the effect type line. The parameter number is given in decimal form at the end of the Effect Parameter line. Use these values when you use MIDI messages to set parameters. For details on using exclusive messages, refer to page 111.

< Example >

#### 1: Stereo-EQ

[01H, 00H]

This means that the value for Address corresponding to EFX 40H 03H 00H is MSB:01H, LSB:00H.

#### Low Freq

200/400 1

"[1]" describes that it's the first parameter.

For example, if you wish to set the effect type to 1:Stereo-EQ (stereo equalizer) and set Low Freq (low frequency) to 400, transmit the following exclusive message.

1. Set the effect type to 1:Stereo-EQ.

F0 41 10 42 12 40 03 00 01 00 3C F7

Address Value set for EFX for Stereo

2. Select the Low Freq.

F0 41 10 42 12 40 03 03 01 39 F7

Address Corresponding to [11]

Value to select to select +400

- \* See the Effect List on page 98 for the correspondence of Parameter to Value.
- \* See page 116 for the correspondence of Parameter number to Address.
- \* Parameters with "+" or "#" symbols allow you to modify their value using specified controller, such as pitch bend lever and sliders, or with control change messages. (Modifying the Effect Parameters p.69)

#### 0: Thru [00H, 00H]

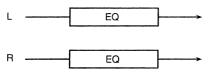
No Effect will be applied. When a GM System On or GS Reset messages (p.18,111) is received, 0:Thru will be selected for Insertion Effect.

#### Effects that modify the tone color (filter type)

#### 1: Stereo-EQ (Stereo Equalizer)

[01H, 00H]

This is a four-band stereo equalizer (low, mid x 2, high).



Low Freq (Low Frequency)

200/400 [1]

Select the frequency of the low range (200 Hz/400 Hz).

Low Gain -12 - +12 [2]

Adjust the gain of the low frequency.

Hi Freq (High Frequency) 4k/8k [3]

Select the frequency of the high range (4kHz/8kHz).

-12 - +12 [4]

Adjust the gain of the high frequency.

M1 Freq (Mid 1 Frequency) 200 - 6.3k [5]

Adjust the frequency of Mid 1 (mid range1).

#### M1 Q (Mid 1 Q) 0.5/1.0/2.0/4.0/9.0 [6]

This parameter adjusts the width of the area around the M1 Freq parameter that will be affected by the Gain setting. Higher values of Q will result in a narrower area being affected.

#### M1 Gain (Mid 1 Gain) -12 - +12 [7]

Adjust the gain for the area specified by the M1 Freq parameter and M1 Q parameter settings.

M2 Freq (Mid 2 Frequency) 200 - 6.3k [8] Adjust the frequency of Mid 2 (mid range2).

#### M2 Q (Mid 2 Q) 0.5/1.0/2.0/4.0/9.0 [9]

This parameter adjusts the width of the area around the M2 Freq parameter that will be affected by the Gain setting. Higher values of Q will result in a narrower area being affected

#### M2 Gain (Mid 2 Gain) -12 - +12 [10]

Adjust the gain for the area specified by the M2 Freg parameter and M2 Q parameter settings.

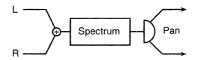
#### +Level (Output Level)

0 - 127 [20]

Adjust the output level.

#### 2: Spectrum [01H, 01H]

Spectrum is a type of filter which modifies the timbre by boosting or cutting the level at specific frequencies. It is similar to an equalizer, but has 8 frequency points fixed at locations most suitable for adding character to the sound.



Band 1 (Band 1 Gain)

-12 - +12 [1]

Adjust the 250 Hz level.

Band 2 (Band 2 Gain)

Adjust the 500 Hz level.

-12 - +12 [2]

Band 3 (Band 3 Gain) Adjust the 1000 Hz level.

-12 - +12 [3]

Band 4 (Band 4 Gain)

-12 - +12 [4]

Adjust the 1250 Hz level.

Band 5 (Band 5 Gain)

-12 - +12 [5]

Adjust the 2000 Hz level.

Band 6 (Band 6 Gain) Adjust the 3150 Hz level.

-12 - +12 [6]

Band 7 (Band 7 Gain)

-12 - +12 [7]

Adjust the 4000 Hz level.

Band 8 (Band 8 Gain) -12 - +12 [8]

Adjust the 8000 Hz level.

#### Width (Band Width)

0.5/1.0/2.0/4.0/9.0 [9]

Adjust the width of the frequency bands whose gain is being modified (common to all bands). Higher settings will make the frequency band narrower.

#### +Pan (Output Pan)

L63 - 0 - R63 [19]

Adjust the stereo location of the output sound. L63 is far left, 0 is center, and R63 is far right.

#### #Level (Output Level)

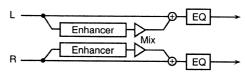
0 - 127 [20]

Adjust the output level.

#### 3: Enhancer

[01H, 02H]

The Enhancer controls the overtone structure of the high frequencies, adding sparkle and tightness to the sound.



#### +Sens (Sensitivity)

0 - 127[1]

Adjust the sensitivity of the enhancer.

#### #Mix (Mix Level)

0 - 127 [2]

Adjust the ratio with which the overtones generated by the enhancer are combined with the direct sound.

Low Gain Adjust the gain of the low frequency range.

-12 - +12 [17]

Hi Gain (High Gain)

-12 - +12 [18]

Adjust the gain of the high frequency range.

#### Level (Output Level)

0 - 127 [20]

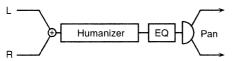
Adjust the output level.

4: Humanizer

[01H, 03H]

Off/On [2]

This adds a vowel character to the sound, making it similar to a human voice.



Drive 0 - 127 [1]

Adjust the depth of distortion.

Drive Sw (Drive Switch)

Turn Drive on/off.

+Vowel a/i/u/e/o [3]

Select the vowel.

Accel 0 - 15 [4]

Adjust the time over which the sound will move to the specified Vowel. Smaller values will require more time.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the high frequency gain.

Pan (Output Pan) L63 - 0 - R63 [19]

Adjust the stereo position of the output sound. L63 is far left, 0 is center, and R63 is far right.

**#Level (Output Level)** 

0 - 127 [20]

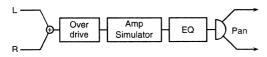
Adjust the output volume.

#### Effects that distort the sound (distortion type)

#### 5: Overdrive

[01H, 10H]

This effect creates a soft distortion similar to that produced by tube amplifiers.



+Drive 0 - 127 [1]

Adjust the degree of distortion.

#### **Amp Type (Amp Simulator Type)**

Small/Bltln/2-Stk/3-Stk [2]

Select the type of guitar amp.

Small : small amp

Bitin : single-unit type amp
2-Stk : large double stack amp
3-Stk : large triple stack amp

Amp Sw (Amp Switch) Off/On [3]

Turn the Amp Type on/off.

Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range.

#Pan (Output Pan) L63 - 0 - R63 [19]

Adjust the stereo location of the output sound. L63 is far left, 0 is center, and R63 is far right.

Level (Output Level)

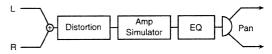
0 - 127 [20]

Adjust the output level.

#### 6: Distortion

[01H, 11H]

This effect produces a more intense distortion than Overdrive.



+Drive 0 - 127 [1]

Adjust the degree of distortion.

Amp Type (Amp Simulator Type)

Small/Bltln/2-Stk/3-Stk [2]

Select the type of guitar amp.

Small : small amp

Bitin : single-unit type amp

2-Stk : large double stack amp

3-Stk : large triple stack amp

Amp Sw (Amp Switch) Off/On [3]

Turn the Amp Type on/off.

Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range.

#Pan (Output Pan) L63 - 0 - R63 [19]

Adjust the stereo location of the output sound. L63 is far left, 0 is center, and R63 is far right.

Level (Output Level) 0 - 127 [20]

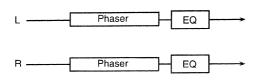
Adjust the output level.

## Effects that modulate the sound (modulation type

#### 7: Phaser

A phaser adds a phase-shifted sound to the original sound, producing a twisting modulation that creates spaciousness and depth.

[01H, 20H]



+Manual

100 - 8.0k [1]

Adjust the basic frequency from which the sound will be modulated.

#Rate

0.05 - 10.0 [2]

Adjust the frequency (period) of modulation.

Depth

0 - 127 [3]

Adjust the depth of modulation.

Reso (Resonance)

0 - 127 [4]

Adjust the amount of emphasis added to the frequency range surrounding the basic frequency determined by the Manual parameter setting.

Mix (Mix Level)

0 - 127 [5]

Adjust the ratio with which the phase-shifted sound is combined with the direct sound.

Low Gain

-12 - +12 [17]

Adjust the gain of the low frequency range.

Hi Gain (High Gain)

-12 - +12 [18]

Adjust the gain of the high frequency range.

Level (Output Level)

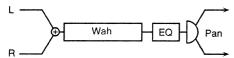
0 - 127 [20]

Adjust the output level.

\_\_\_\_

8: Auto Wah [01H, 21H]

The Auto Wah cyclically controls a filter to create cyclic change in timbre.



Fil Type (Filter Type)

LPF/BPF [1]

Select the type of filter.

LPF : The wah effect

: The wah effect will be applied over a wide

frequency range.

BPF

: The wah effect will be applied over a nar-

row frequency range.

Sens (Sensitivity) 0 - 127 [2]

Adjust the sensitivity with which the filter is controlled. If this value is increased, the filter frequency will change more readily in response to the input level.

+Manual 0 - 127 [3]

Adjust the center frequency from which the effect is applied.

Peak 0 - 127 [4]

Adjust the amount of the wah effect that will occur in the area of the center frequency. Lower settings will cause the effect to be applied in a broad area around the center frequency. Higher settings will cause the effect to be applied in a more narrow range. In the case of LPF, decreasing the value will cause the wah effect to change less.

#Rate

0.05 - 10.0 [5]

Adjust the speed of the modulation.

Depth

0 - 127 [6]

Adjust the depth of the modulation.

Polarity

Down/Up [7]

Set the direction in which the frequency will change when the filter is modulated. With a setting of Up, the filter will change toward a higher frequency. With a setting of Down it will change toward a lower frequency.

Low Gain

-12 - +12 [17]

Adjust the gain of the low frequency range for EQ.

Hi Gain (High Gain)

-12 - +12 [18]

Adjust the gain of the high frequency range for EQ.

Pan (Output Pan)

L63 - 0 - R63 [19]

Adjust the stereo location of the output sound. L63 is far left, 0 is center, and R63 is far right.

Level (Output Level)

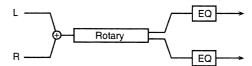
0 - 127 [20]

Adjust the output level.

9: Rotary

[01H, 22H]

The Rotary effect simulates the sound of a classic rotary speakers. Since the movement of the high range and low range rotors can be set independently, the unique type of modulation characteristic of these speakers can be simulated quite closely. This effect is most suitable for electric organ.



Low Slow (Low Frequency Slow Rate)

0.05 - 10.0 [1]

Adjust the slow speed of the low frequency rotor.

Low Fast (Low Frequency Fast Rate) 0.05 - 10.0 [2] Adjust the fast speed of the low frequency rotor.

Low AccI (Low Frequency Acceleration) 0 - 15 [3] Adjust the time it takes for the low frequency rotor to reach the newly selected speed when switching from fast to slow

the newly selected speed when switching from fast to slow (or slow to fast) speed. Lower values will require longer times.

Low Level (Low Frequency Level) 0 - 127 [4]
Adjust the volume of the low frequency rotor.

Hi Slow (High Frequency Slow Rate) 0.05 - 10.0 [5] Adjust the slow speed of the high frequency rotor.

Hi Fast (High Frequency Fast Rate) 0.05 - 10.0 [6] Adjust the fast speed of the high frequency rotor.

Hi Accl (High Frequency Acceleration) 0 - 15 [7] Adjust the time it takes for the high frequency rotor to reach the newly selected speed when switching from fast to slow (or slow to fast) speed. Lower values will require longer times.

Hi Level (High Frequency Level) 0 - 127 [8]
Adjust the volume of the high frequency rotor.

Separate (Separation) 0 - 127 [9] Adjust the spatial dispersion of the sound.

+Speed Slow/Fast [11]
Simultaneously switch the rotational speed of the low frequency rotor and high frequency rotor.

Slow : Slow down the rotation to the specified speed (the Low Slow parameter / Hi Slow parameter values).

Fast : Speed up the rotation to the specified speed (the Low Fast parameter / Hi Fast

parameter values).

Low Gain
-12 - +12 [17]
Adjust the gain of the low frequency range for EQ.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range for EQ.

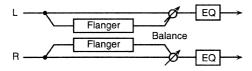
**#Level (Output Level)**Adjust the output level.

0 - 127 [20]

## 10: Stereo Flanger

[01H, 23H]

This is a stereo flanger. It produces a metallic resonance that rises and falls like a jet airplane taking off or landing. A filter is provided so that you can adjust the timbre of the flanged sound.



Pre Filter (Pre Filter Type) Off/LPF/HPF [1] Select the type of filter.

Off : a filter will not be used

LPF : cut the frequency range above the Cutoff

parameter

HPF : cut the frequency range below the Cutoff

parameter

#### Cutoff (Cutoff Frequency)

250 - 8k [2]

Adjust the basic frequency of the filter.

Pre Dly (Pre Delay Time) 0 - 100m [3]

Adjust the time delay from when the direct sound begins until the processed sound is heard.

+Rate 0.05 - 10.0 [4]

Adjust the rate of modulation.

Depth 0 - 127 [5]

Adjust the depth of modulation.

#Feedback (Feedback Level) -98% - +98% [6]

Adjust the amount (%) of the processed sound that is returned (fed back) into the input. Negative (-) settings will invert the phase.

Phase 0 - 180 [7]

Adjust the spatial spread of the sound.

Balance (Effect Balance) 100:0 - 0:100 (D:E)[16] Adjust the volume balance between the direct and the processed sound.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range.

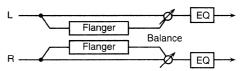
Level (Output Level) 0 - 127 [20]

Adjust the output level.

#### 11: Step Flanger

[01H, 24H]

The Step Flanger is an effect in which the flanger pitch changes in steps.



#### Pre Dly (Pre Delay Time)

0 - 100m [1]

Adjust the time delay from when the direct sound begins until the processed sound is heard.

Rate 0.05 - 10.0 [2]

Adjust the rate of modulation.

invert the phase.

Depth 0 - 127 [3]

Adjust the depth of modulation.

+Feedback (Feedback Level) -98% - +98% [4]
Adjust the amount (%) of the processed sound that is returned (fed back) into the input. Negative (-) settings will

Phase 0 - 180 [5]

Adjust the spatial spread of the sound.

#Step Rate

0.05 - 10.0 [6]

Adjust the rate (period) of pitch change.

Balance (Effect Balance) 100:0 - 0:100 (D:E) [16] Adjust the volume balance between the direct and the processed sound.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain

-12 - +12 [17]

Adjust the gain of the low frequency range.

Hi Gain (High Gain)

-12 - +12 [18]

Adjust the gain of the high frequency range.

Level (Output Level)

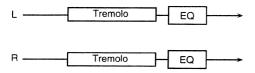
0 - 127 [20]

Adjust the output level.

12: Tremolo

[01H, 25H]

Tremolo cyclically modulates the volume to add tremolo effect to the sound.



#### Mod Wave (Modulation Wave)

Tri/Sqr/Sin/Saw1/Saw2 [1]

Select the type of modulation.

Tri : The sound will be modulated like a triangle

wave.

Sqr : The sound will be modulated like a square

wave.

Sin : The sound will be modulated like a sine

wave.

Saw1,2 : The sound will be modulated like a saw-

tooth wave. The "teeth" in Saw1 and Saw2

point at opposite directions.





+Mod Rate (Modulation Rate)

0.05 - 10.0 [2]

Adjust the speed of modulation.

#Mod Depth (Modulation Depth) 0 - 127 [3]

Adjust the depth of modulation.

Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range.

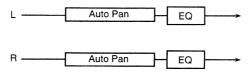
Level (Output Level) 0 - 127 [20]

Adjust the output level.

#### 13: Auto Pan

[01H, 26H]

The Auto Pan effect cyclically modulates the stereo location of the sound.



#### Mod Wave (Modulation Wave)

Tri/Sqr/Sin/Saw1/Saw2 [1]

Select the type of modulation.

Tri : The sound will be modulated like a triangle

wave.

Sqr : The sound will be modulated like a square

wave.

Sin : The sound will be modulated like a sine

wave.

Saw1,2 : The sound will be modulated like a saw-

tooth wave. The "teeth" in Saw1 and Saw2 point at opposite direction.



0.05 - 10.0 [2]

+Mod Rate (Modulation Rate)
Adjust the frequency of modulation.

## #Mod Depth (Modulation Depth)

0 - 127 [3]

Adjust the depth of modulation.

Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range.

Hi Gain (High Gain)

-12 - +12 [18]

Adjust the gain of the high frequency range.

Level (Output Level)
Adjust the output level.

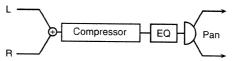
0 - 127 [20]

# Effects that affect the level (compressor type)

#### 14: Compressor

[01H, 30H]

The Compressor flattens out high levels and boosts low levels, smoothing out unevenness in volume.



**Attack** 

0 - 127 [1]

Adjust the attack time of an input sound.

Sustain

0 - 127 [2]

Adjust the time over which low level sounds are boosted until they reach the specified volume.

Increasing the value will shorten the time. When the value is modified, the level will also change.

Post Gain 0/+6/+12/+18 [3]

Adjust the output gain.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the high frequency gain.

+Pan (Output Pan) L63 - 0 - R63 [19]

Adjust the stereo location of the output sound. L63 is far left, 0 is center, and R63 is far right.

#Level (Output Level) 0 - 127 [20]

Adjust the output level.

### 15: Limiter [01H, 31H]

The Limiter compresses signals that exceed a specified volume level, preventing distortion from occurring.



Threshold (Threshold Level)

0 - 127 [1]

Adjust the volume at which compression will begin.

Ratio (Compression Ratio) 1/1.5,1/2,1/4,1/100 [2]

This adjusts the compression ratio for signals that are louder than the Threshold Level. 1/100 is the highest compression ratio, and the output level will decrease.

Release (Release Time) 0 - 127 [3]

Adjust the time from when the volume falls below the Threshold Level until compression is no longer applied.

Post Gain 0/+6/+12/+18 [4]

Adjust the output gain.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the high frequency gain.

+Pan (Output Pan) L63 - 0 - R63 [19]

Adjust the stereo location of the output sound. L63 is far left, 0 is center, and R63 is far right.

#Level (Output Level) 0 - 127 [20]

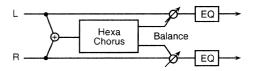
Adjust the output level.

### Effects that broaden the sound (chorus type)

#### 16: Hexa Chorus

[01H, 40H]

Hexa-chorus uses a six-phase chorus (six layers of chorused sound) to give richness and spatial spread to the sound.



#### Pre Dly (Pre Delay Time)

0 - 100m [1]

Adjust the time delay from when the direct sound begins until the processed sound is heard.

+Rate 0.05 - 10.0 [2]

Adjust the rate of modulation.

Depth 0 - 127 [3]

Adjust the depth of modulation.

#### Pre Dly Dev (Pre Delay Deviation) 0 - 20 [4]

The Pre Delay is the time from when the original sound begins until when the chorus sound is heard. This adjusts the difference in Pre Delay between each of the six phases of chorus sound.

#### Depth Dev (Depth Deviation) -20 - +20 [5]

Adjust the difference in modulation depth between each of the six phases of chorus sound.

#### Pan Dev (Pan Deviation) 0 - 20 [6]

Adjust the difference in stereo position between each of the six phases of chorus sound. With a setting of 0, all the chorus sound will be located in the center. With a setting of 20, each chorus sound will be placed in 30 degree intervals relative to the center position.

#### #Balance (Effect Balance) 100:0 - 0:100 (D:E) [16]

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

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the high frequency gain.

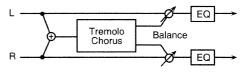
Level (Output Level) 0 - 127 [20]

Adjust the output level.

#### 17: Tremolo Chorus

[01H, 41H]

Tremolo Chorus is a chorus effect with added Tremolo (cyclic modulation of volume).



Pre Dly (Pre Delay Time)

Adjust the time delay from when the direct sound begins until the chorus sound is heard.

**Cho Rate (Chorus Rate)** 

0.05 - 10.0 [2]

Adjust the modulation speed of the chorus effect.

Cho Depth (Chorus Depth)

0 - 127[3]

0 - 100m [1]

Adjust the modulation depth of the chorus effect.

**Trem Phase (Tremolo Phase)** 

+Trem Rate (Tremolo Rate)

0 - 180 [4]

Adjust the width of the tremolo sound.

0.05 - 10.0 [5]

Adjust the modulation speed of the tremolo effect.

**Trem Sep (Tremolo Separation)** 0 - 127[6]

Adjust the spatial spread of the tremolo effect.

#Balance (Effect Balance) 100:0 - 0:100 (D:E) [16]

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

D and E stand for "dry sound" and "effect sound" respectively.

Low Gain

-12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain)

-12 - +12 [18]

Adjust the high frequency gain.

Level (Output Level)

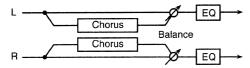
0 - 127 [20]

Adjust the output level.

## 18: Stereo Chorus

[01H, 42H]

This is a stereo chorus. A filter is provided so that you can adjust the timbre of the chorus sound.



### Pre Filter (Pre Filter Type)

Off/LPF/HPF [1]

Select the type of filter.

Off : a filter will not be used

: cut the frequency range above the cutoff LPF **HPF** : cut the frequency range below the cutoff

**Cutoff (Cutoff Frequency)** 

250 - 8k [2]

Adjust the center frequency of the filter for the chorus sound.

Pre Dly (Pre Delay Time)

0 - 100m [3]

Adjust the time delay from when the direct sound begins

until the processed sound is heard.

0.05 - 10.0 [4] +Rate

Adjust the rate of modulation.

0 - 127 [5]

Adjust the depth of modulation.

0 - 180 [7]

Adjust the spatial spread of the sound.

100:0 - 0:100 (D:E)[16] #Balance (Effect Balance)

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

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range

Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range.

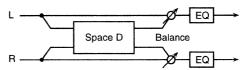
Level (Output Level) 0 - 127 [20]

Adjust the output level.

#### 19: Space D

[01H, 43H]

Space-D is a multiple chorus that applies two-phase modulation in stereo. It gives no impression of modulation, but produces a transparent chorus effect.



#### Pre Dly (Pre Delay Time)

0 - 100m [1]

Adjust the time delay from when the direct sound begins until the processed sound is heard.

+Rate 0.05 - 10.0 [2]

Adjust the rate of modulation.

Depth 0 - 127[3]

Adjust the depth of modulation.

Phase 0 - 180 [4]

Adjust the spatial spread of the sound.

#Balance (Effect Balance) 100:0 - 0:100 (D:E) [16]

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

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range.

Level (Output Level)

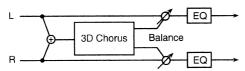
0 - 127 [20]

Adjust the output level.

## 20: 3D Chorus

[01H, 44H]

This applies a 3D effect to the chorus sound. The chorus sound will be positioned 90 degrees left and 90 degrees right.



#### Pre Dly (Pre Delay Time)

0 - 100m [1]

Adjust the time delay from when the direct sound begins until the processed sound is heard.

#### +Cho Rate (Chorus Rate)

0.05 - 10.0 [2]

Adjust the modulation speed of the chorus sound.

#### **Cho Depth (Chorus Depth)**

0 - 127 [3]

Adjust the modulation depth of the chorus sound.

## Out (Output Mode) Speaker/Phones [15]

Specify the method that will be used to hear the sound which is output to the OUTPUT jacks. The optimal 3D effect will be achieved if you select Speaker when using speakers, or Phones when using headphones (p.69).

#### #Balance (Effect Balance) 100:0 - 0:100 (D:E) [16]

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

D and E stand for "dry sound" and "effect sound", respectively.

#### Low Gain

-12 - +12 [17]

Adjust the gain of the low frequency range.

#### Hi Gain (High Gain)

-12 - +12 [18]

Adjust the gain of the high frequency range.

## Level (Output Level)

0 - 127 [20]

Adjust the output level.

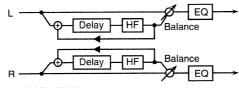
Effects that reverberate the sound (delay/reverb type

#### 21: Stereo Delay

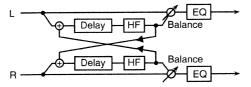
[01H, 50H]

This is a stereo delay.

#### Fb Mode is Norm:



#### Fb Mode is Cross:



#### Dly Tm L (Delay Time Left)

0 - 500m [1]

Adjust the time from the original sound until when the left delay sound is heard.

#### Dly Tm R (Delay Time Right) 0 - 500m [2]

Adjust the time from the original sound until when the right delay sound is heard.

#### +Feedback (Feedback Level)

-98% - +98% [3]

Adjust the proportion (%) of the processed sound that is fed back into the effect. Negative (-) settings will invert the phase.

## Fb Mode (Feedback Mode) Norm/Cross [4]

Select the way in which processed sound is fed back into the effect.

Norm

: The left delay sound will be fed back into the left delay, and the right delay sound into

the right delay.

Cross

: The left delay sound will be fed back into the right delay, and the right delay sound into the left delay.

## Phase L (Phase Left) Norm/Invert [5]

Select the phase of the left delay sound.

Norm : Phase will not be changed.

Invert : Phase will be inverted.

### Phase R (Phase Right) Norm/Invert [6]

Select the phase of the right delay sound.

Norm : Phase will not be changed.
Invert : Phase will be inverted.

#### HF Damp 315 - 8k/Bypass [8]

Adjust the frequency above which sound fed back to the effect will be cut. If you do not want to cut the high frequencies of the feedback, set this parameter to Bypass.

# #Balance (Effect Balance) 100:0 - 0:100 (D:E) [16]

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

D and E stand for "dry sound" and "effect sound", respectively.

#### Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range.

## Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range.

#### Level (Output Level)

0 - 127 [20]

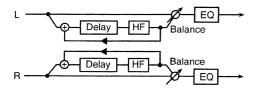
Adjust the output level.

## 22: Mod Delay (Modulation Delay)

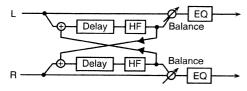
[01H, 51H]

This effect adds modulation to the delayed sound, producing an effect similar to a flanger.

Fb Mode is Norm:



Fb Mode is Cross:



Dly Tm L (Delay Time Left) 0 - 500m [1] Adjust the time from the original sound until when the left delay sound is heard.

Dly Tm R (Delay Time Right) 0 - 500m [2] Adjust the time from the original sound until when the right delay sound is heard.

Feedback (Feedback Level) -98% - +98% [3] Adjust the proportion (%) of the processed sound that is fed back into the effect. Negative (-) settings will invert the phase.

Fb Mode (Feedback Mode) Norm/Cross [4] Select the way in which processed sound is fed back into the effect.

: The left delay sound will be fed back into Norm the left delay, and the right delay sound into

the right delay.

Cross : The left delay sound will be fed back into the right delay, and the right delay sound

into the left delay.

+Mod Rate (Modulation Rate) 0.05 - 10.0 [5] Adjust the speed of the modulation.

**Mod Depth (Modulation Depth)** 

0 - 127 [6] Adjust the depth of the modulation.

Mod Phase (Modulation Phase) 0 - 180 [7] Adjust the spatial spread of the sound.

**HF Damp** 315 - 8k/Bypass [8]

Adjust the frequency above which sound fed back to the effect will be cut. If you do not wish to cut the high frequencies of the feedback, set this parameter to Bypass.

**#Balance (Effect Balance)** 100:0 -0:100 (D:E)[16] Adjust the volume balance between the direct and the processed sound.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range.

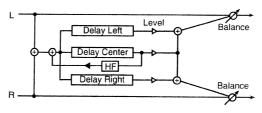
Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range.

Level (Output Level) 0 - 127 [20] Adjust the output level.

#### 23: 3 Tap Delay (Triple Tap Delay) [01H, 52H]

The Triple Tap Delay produces three delay sounds; center, left and right.



Dly Tm C (Delay Time Center) 200m - 990m/1sec [1] Adjust the time delay from the direct sound until when the center delay sound is heard.

Dly Tm L (Delay Time Left) 200m - 990m/1sec [2] Adjust the time delay from the direct sound until when the left delay sound is heard.

Dly Tm R (Delay Time Right) 200m - 990m/1sec [3] Adjust the time delay from the direct sound until when the right delay sound is heard.

+Feedback (Feedback Level) -98% - +98% [4] Adjust the proportion (%) of the Center Delay sound that is fed back into the effect. Negative (-) settings will invert the phase.

Dly Lev C (Delay Level Center) 0 - 127 [5] Adjust the volume of Center Delay sound.

Dly Lev L (Delay Level Left) 0 - 127 [6] Adjust the volume of Left Delay sound.

Dly Lev R (Delay Level Right) 0 - 127 [7] Adjust the volume of Right Delay sound.

315 - 8k/Bypass [8]

This adjusts the frequency at which the high range is cut when the Center Delay sound is returned to the input. If you do not wish to cut the high range, set this to Bypass.

#Balance (Effect Balance) 100:0 - 0:100 (D:E) [16] Adjust the volume balance between the direct and the processed sound.

D and E stand for "dry sound" and "effect sound", respectively.

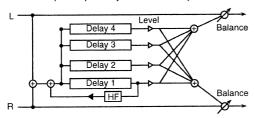
Low Gain -12 - +12 [17] Adjust the gain of the low frequency range.

Hi Gain (High Gain) -12 - +12 [18] Adjust the gain of the high frequency range.

Level (Output Level) 0 - 127 [20] Adjust the output level.

## 24: 4 Tap Delay (Quadruple Tap Delay) [01H, 53H]

The Quadruple Tap Delay has four delays.



Dly Tm 1 (Delay Time 1) 200m - 990m/1sec [1] Adjust the time delay from the direct sound until when the Delay 1 sound is heard.

Dly Tm 2 (Delay Time 2) 200m - 990m/1sec [2] Adjust the time delay from the direct sound until when the Delay 2 sound is heard.

Dly Tm 3 (Delay Time 3) 200m - 990m/1sec [3] Adjust the time delay from the direct sound until when the Delay 3 sound is heard.

Dly Tm 4 (Delay Time 4) 200m - 990m/1sec [4] Adjust the time delay from the direct sound until when the Delay 4 sound is heard.

Dly Lev 1 (Delay Level 1) 0 - 127 [5] Adjust the volume of the Delay 1 sound.

Dly Lev 2 (Delay Level 2) 0 - 127 [6] Adjust the volume of the Delay 2 sound.

Dly Lev 3 (Delay Level 3) 0 - 127 [7] Adjust the volume of the Delay 3 sound.

Dly Lev 4 (Delay Level 4) 0 - 127 [8] Adjust the volume of the Delay 4 sound.

+Feedback (Feedback Level) -98% - +98% [9]
Adjust the proportion (%) of the Delay 1 sound that is fed back into the effect. Negative (-) settings will invert the phase.

HF Damp 315 - 8k/Bypass [10]

This adjusts the frequency at which the high range is cut when the Delay 1 sound is returned to the input. If you do not wish to cut the high range, set this to Bypass.

#Balance (Effect Balance) 100:0 - 0:100 (D:E)[16]
Adjust the volume balance between the direct and the processed sound.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain
-12 - +12 [17]
Adjust the gain of the low frequency range.

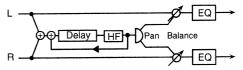
Hi Gain (High Gain) -12 - +12 [18]
Adjust the gain of the high frequency range.

**Level (Output Level)**Adjust the output level.

0 - 127 [20]

#### 25: Tm Ctrl Delay (Time Control Delay) [01H, 54H]

This effect allows you to use a specified controller (the controller selected in EFX C.Src (p.69)) to control the delay time and pitch in realtime. Lengthening the delay time will lower the pitch, and shortening it will raise the pitch.



+Dly Time (Delay Time) 200m - 990m/1sec [1]
Adjust the time delay from the direct sound until when each delay sound is heard.

#### Accel (Acceleration) 0 - 15 [2]

This parameter adjusts the speed over which the Delay Time will change from the current setting to a newly specified setting. The rate of change for the Delay Time directly affects the rate of pitch change.

#Feedback (Feedback Level) -98% - +98% [3]
Adjust the proportion (%) of the processed sound that is

Adjust the proportion (%) of the processed sound that is fed back into the effect. Negative (-) settings will invert the phase.

HF Damp 315 - 8k/Bypass [4]

Adjust the frequency above which sound fed back to the effect will be cut. If you do not wish to cut the high frequencies of the feedback, set this parameter to Bypass.

**EFX Pan (Effect Output Pan)**L63 - 0 - R63 [5]
Adjust the stereo location of the processed sound. L63 is far left, 0 is center, and R63 is far right.

Balance (Effect Balance) 100:0 - 0:100 (D:E) [16] Adjust the volume balance between the direct and the processed sound.

D and E stand for "dry sound" and "effect sound", respectively.

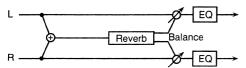
**Low Gain** -12 - +12 [17] Adjust the gain of the low frequency range.

Hi Gain (High Gain) -12 - +12 [18]
Adjust the gain of the high frequency range.

**Level (Output Level)** 0 - 127 [20] Adjust the output level.

26: Reverb

The Reverb effect adds reverberation to the sound, simulating an acoustic space.



# Type (ReverbType) Room1/2/Stage1/2/Hall1/2 [1] Select the type of Reverb effect.

Room1 : dense reverb with short decay
 Room2 : sparse reverb with short decay
 Stage1 : reverb with greater late reverberation
 Stage2 : reverb with strong early reflections
 Hall1 : reverb with clear reverberance
 Hall2 : reverb with rich reverberance

#### Pre Dly (Pre Delay Time)

0 - 100m [2]

[01H, 55H]

Adjust the time delay from when the direct sound begins until the reverb sound is heard.

#### +Time (Reverb Time)

0 - 127 [3]

Adjust the time length of reverberation.

#### HF Damp 315 - 8k/Bypass [4]

Adjust the frequency above which the reverberant sound will be cut. As the frequency is set lower, more of the high frequencies will be cut, resulting in a softer and more muted reverberance. If you do not want the high frequencies to be cut, set this parameter to Bypass.

#### #Balance (Effect Balance) 100:0 - 0:100 (D:E)[16]

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

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range.

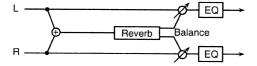
Level (Output Level) 0 - 127 [20]

Adjust the output level.

[01H, 56H]

## 27: Gate Reverb

Gate Reverb is a special type of reverb in which the reverberant sound is cut off before its natural length.



#### Type (Gate Reverb Type)

Norm/Reverse/Sweep1/2 [1]

Select the type of reverb.

Norm : conventional gate reverb

Reverse: backwards reverb

Sweep1: the reverberant sound moves from right to

left

Sweep2: the reverberant sound moves from left to

right

#### Pre Dly (Pre Delay Time) 0 - 100m [2]

Adjust the time delay from when the direct sound begins until the reverb sound is heard.

#### Gate Time 5 - 500m [3]

Adjust the time from when the reverb is heard until when it disappears.

## +Balance (Effect Balance) 100:0 - 0:100 (D:E)[16]

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

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range.

## Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range.

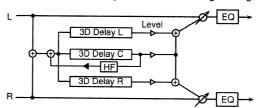
#### **#Level (Output Level)**

0 - 127 [20]

Adjust the output level.

## 28: 3D Delay [01H, 57H]

This applies a 3D effect to the delay sound. The delay sound will be positioned 90 degrees left and 90 degrees right.



#### Dly Tm C (Delay Time Center)

0m - 500m [1]

Adjust the time from the original sound until when the center delay sound begins.

## Dly Tm L (Delay Time Left)

0m - 500m [2]

Adjust the time from the original sound until when the left delay sound begins.

# Dly Tm R (Delay Time Right) 0m - 500m [3] Adjust the time from the original sound until when the right delay sound begins.

+Feedback (Delay Feedback) -98% - +98% [4]

Adjust the amount (%) of the center delay sound that will be returned to the input. With negative (-) settings, the phase will be inverted.

# Dly Lev C (Delay Level Center) 0 - 127 [5] Adjust the volume of the Center Delay sound.

Dly Lev L (Delay Level Left) 0 - 127 [6]

Adjust the volume of the Left Delay sound.

Dly Lev R (Dely Level Right) 0 - 127 [7]

Adjust the volume of the Right Delay sound.

### HF Damp 315 - 8k/Bypass [8]

This adjusts the frequency at which the high range is cut when the Center Delay sound is returned to the input. If you do not wish to cut the high range, set this to Bypass.

#### Out (Output Mode) Speaker/Phones [15]

Specify the method that will be used to hear the sound which is output to the OUTPUT jacks. The optimal 3D effect will be achieved if you select Speaker when using speakers, or Phones when using headphones (p.69).

## #Balance (Effect Balance) 100:0 - 0:100 (D:E)[16]

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

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range.

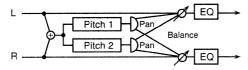
Level (Output Level) 0 - 127 [20]

Adjust the output level.

## Effects that modify the pitch (pitch shift type)

#### 29: 2 Pitch Shifter (2-Voice Pitch Shifter) [01H, 60H]

A Pitch Shifter shifts the pitch of the original sound. This 2-voice pitch shifter has two pitch shifters, and can add two pitch shifted sounds to the original sound.



#### +Coarse 1 (Coarse Pitch 1)

-24 - 0 - +12 [1]

Adjust the pitch of Pitch Shift 1 in semitone steps (-2 - +1 octaves).

## Fine 1 (Fine Pitch 1) -100 - 0 - +100 [2]

Make fine adjustments to the pitch of Pitch Shift 1 in 2-cent steps (-100 - +100 cents).

#### Pre Dly 1 (Pre Delay Time 1) 0 - 100m [3]

Adjust the time delay from when the direct sound begins until the Pitch Shift 1 sound is heard.

**EFX Pan 1 (Effect Output Pan 1)** L63 - 0 - R63 [4] Adjust the stereo location of the Pitch Shift 1 sound. L63 is far left, 0 is center, and R63 is far right.

#### #Coarse 2 (Coarse Pitch 2)

-24 - 0 - +12 [5]

Adjust the pitch of Pitch Shift 2 in semitone steps (-2 - +1 octaves).

#### Fine 2 (Fine Pitch 2)

-100 - 0 - +100 [6]

Make fine adjustments to the pitch of Pitch Shift 2 in 2-cent steps (-100 - +100 cents).

#### Pre Dly 2 (Pre Delay Time 2)

0 - 100m [7]

Adjust the time delay from when the direct sound begins until the Pitch Shift 2 sound is heard.

## EFX Pan 2 (Effect Output Pan 2) L63 - 0 - R63 [8]

Adjust the stereo location of the Pitch Shift 2 sound. L63 is far left, 0 is center, and R63 is far right.

#### Shift Mode (Pitch Shifter Mode) 1 - 5 [9]

Higher settings of this parameter will result in slower response, but steadier pitch.

#### L.Bal (Level Balance)

100:0 - 0:100 (Pitch1:Pitch2)

Adjust the volume balance between the Pitch Shift 1 and the Pitch Shift 2 sounds.

#### Balance (Effect Balance) 100:0 - 0:100 (D:E)[16]

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

D and E stand for "dry sound" and "effect sound", respectively.

#### Low Gain

-12 - +12 [17]

Adjust the gain of the low frequency range.

#### Hi Gain (High Gain)

-12 - +12 [18]

Adjust the gain of the high frequency range.

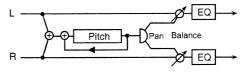
#### Level (Output Level)

0 - 127 [20]

Adjust the output level.

#### 30: Fb P.Shifter (Feedback Pitch Shifter) [01H, 61H]

This pitch shifter allows the pitch shifted sound to be returned into the effect.



### +P.Coarse (Coarse Pitch)

-24 - 0 - +12 [1]

Adjust the pitch of the pitch shifted sound in semitone steps (-2 - +1 octaves).

#### P.Fine (Fine Pitch)

-100 - 0 - +100 [2]

Make fine adjustments to the pitch of the pitch shifted sound in 2-cent steps (-100 - +100 cents).

#### #Feedback (Feedback Level) -98% - +98% [3]

Adjust the proportion (%) of the processed sound that is fed back into the effect. Negative (-) settings will invert the phase.

#### Pre Dly (Pre Delay Time)

0 - 100m [4]

Adjust the time delay from when the direct sound begins until the pitch shifted sound is heard.

## Mode (Pitch Shifter Mode)

1 - 5 [5]

Higher settings of this parameter will result in slower response, but steadier pitch.

#### EFX Pan (Effect Output Pan) L63 - 0 - R63 [6]

Adjust the stereo location of the pitch shifted sound. L63 is far left, 0 is center, and R63 is far right.

#### Balance (Effect Balance) 100:0 - 0:100 (D:E)[16]

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

D and E stand for "dry sound" and "effect sound", respectively.

#### Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range.

#### Hi Gain (High Gain)

-12 - +12 [18]

Adjust the gain of the high frequency range.

#### Level (Output Level)

0 - 127 [20]

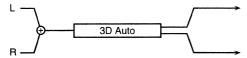
Adjust the output level.

### Others

#### 31: 3D Auto

[01H, 70H]

The 3D Auto effect rotates the location of the sound.



#### **Azimuth**

180/L168 - 0 - R168 [1]

Set the location at which the sound will stop when rotation is stopped.

A setting of 0 positions the sound in the center.

#### +Speed

0.05 - 10.0 [2]

Set the speed of rotation.

#### Clockwise

-/+ [3]

Set the direction of rotation. A setting of "-" is counter-clockwise, and "+" is clockwise.

#### #Turn

Off/On [4]

This stops or starts the rotation. When this is turned On, the sound will rotate. When turned Off, rotation will stop at the location specified by Azimuth.

#### **Out (Output Mode)**

Speaker/Phones [15]

Specify the method that will be used to hear the sound which is output to the OUTPUT jacks. The optimal 3D effect will be achieved if you select Speaker when using speakers, or Phones when using headphones (p.69).

#### Level (Output Level)

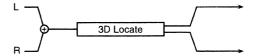
0 - 127 [20]

Adjust the output level.

#### 32: 3D Manual

[01H, 71H]

This places the 3D effect at a desired location.



#### +Azimuth

180/L168 - 0 - R168 [1]

Specify the location. A setting of 0 positions the sound in the center.

#### **Out (Output Mode)**

Speaker/Phones [15]

Specify the method that will be used to hear the sound which is output to the OUTPUT jacks. The optimal 3D effect will be achieved if you select Speaker when using speakers, or Phones when using headphones (p.69).

#### **#Level (Output Level)**

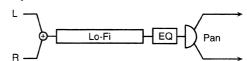
0 - 127 [20]

Adjust the output level.

#### 33: Lo-Fi 1

[01H, 72H]

Lo-Fi 1 is an effect that intentionally degrades the sound quality.



#### Pre Filter (Pre Filter Type)

1 - 6 [1]

Specify the type of filter that will be applied before the sound passes through the Lo-Fi effect.

#### Lo-Fi Type

1 - 9 [2]

Degrade the sound quality. The sound quality will become poorer as this value is increased.

## Post Filter (Post Filter Type)

1 - 6 [3]

Specify the type of filter that will be applied after the sound passes through the Lo-Fi effect.

### +Balance (Effect Balance) 100:0 - 0:100 (D:E) [16]

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

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the gain of the low frequency range

Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range

**#Pan (Output Pan)** L63 - 0 - R63 [19]

Adjust the stereo location of the output sound. L63 is far left, 0 is center, and R63 is far right.

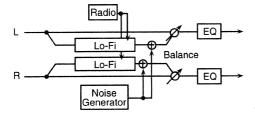
Level (Output Level) 0 - 127 [20]

Adjust the output level.

34: Lo-Fi 2 [01H, 73H]

Lo-Fi 2 is an effect that intentionally degrades the sound quality and allows a variety of noise to be added.

\* If the R.Detune (Radio Detune), W/P Level (White/Pink Noise Level), Disc Nz Lev (Disc Noise Level), or Hum Level settings are raised, there will be noise even when the input sound is silent.



Lo-Fi Type 1 - 6 [1]

Degrade the sound quality. The sound quality will become poorer as this value is increased.

Off/LPF/HPF [2] Fil Type (Filter Type)

Specify the type of filter that is applied after the sound passes through the Lo-Fi effect.

**Cutoff (Cutoff Frequency)** 250 - 8 k [3]

Specify the cutoff frequency of the filter that is applied after the sound passes through the Lo-Fi effect.

+R.Detune (Radio Detune) 0 - 127 [4]

This simulates the tuning noise of a radio. As this value is raised, the tuning will drift further.

0 - 127[5]R.Nz Lev (Radio Noise Level) Adjust the volume of the radio noise.

W/P Sel (White/Pink Noise Select) White/Pink [6] Select either white noise or pink noise.

W/P LPF (White/Pink Noise LPF)

250 - 6.3 k/Bypass [7]

Specify the cutoff frequency of the low pass filter that is applied to the white noise or pink noise.

W/P Level (White/Pink Noise Level) 0 - 127[8]Specify the volume of the white noise or pink noise.

Disc Type (Disc Noise Type) LP/EP/SP/RND [9] Select the type of record noise. The frequency at which the noise is heard will depend on the selected type.

Disc LPF (Disc Noise LPF) 250 - 6.3 k/Bypass [10] Specify the cutoff frequency of the low pass filter that is applied to the record noise.

0 - 127 [11] Disc Nz Lev (Disc Noise Level) Specify the volume of the record noise.

50/60 Hz [12] **Hum Type (Hum Noise Type)** Select the type of hum noise.

Hum LPF (Hum Noise LPF) 250 - 6.3 k/Bypass [13] Specify the cutoff frequency of the low pass filter that is applied to the hum noise.

0 - 127 [14] **Hum Level (Hum Noise Level)** Specify the volume of the hum noise.

M/S (Mono/Stereo Switch) Mono/Stereo [15] Select whether the effect sound will be monaural or stereo.

#Balance (Effect Balance) 100:0 - 0:100 (D:E) [16] Adjust the volume balance between the direct and the effect sound.

D and E stand for "dry sound" and "effect sound", respectively.

-12 - +12 [17] Low Gain

Adjust the gain of the low frequency range.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the gain of the high frequency range.

Pan (Mono) (Output Pan (Mono))

L63 - 0 - R63 [19]

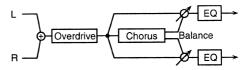
When Mono mode is used, adjust the stereo location of the output sound, L63 is far left, 0 is center, and R63 is far right.

0 - 127 [20] Level (Output Level) Adjust the output level.

## Effects that connect two types of effect in series ( series 2 )

#### 35: OD $\rightarrow$ Chorus (Overdrive $\rightarrow$ Chorus) [02H, 00H]

This effect connects an overdrive and a chorus in series.



#### OD Drive (Overdrive Drive)

0 - 127 [1]

Adjust the degree of overdrive distortion. The volume will change together with the degree of distortion.

+OD Pan (Overdrive Drive Output Pan)

L63 - 0 - R63 [2]

Adjust the stereo location of the overdrive sound. L63 is far left, 0 is center, and R63 is far right.

# OD Amp (Overdrive Amp Simulator Type) Small/Bltln/2-Stk/3-Stk [3]

Select the type of guitar amp.

Small : small amp

Bitin : single-unit type amp

2-Stk : large double stack amp

3-Stk : large triple stack amp

OD Amp Sw (Overdrive Amp Switch) Off/On [4] Turn OD Amp on/off.

Cho Dly (Chorus Pre Delay) 0 - 100m [6]
Adjust the time delay from when the direct sound begins until the chorus sound is heared.

Cho Rate (Chorus Rate) 0.05 - 10.0 [7]
Adjust the modulation speed of the chorus effect.

Cho Depth (Chorus Depth) 0 - 127 [8] Adjust the modulation depth of the chorus effect.

#### #Cho Bal (Chorus Balance) 100:0 - 0:100 (D:E)[10]

Adjust the volume balance between the sound which passes through the chorus and the sound which does not. With a setting of 100:0, only the overdrive sound will be output, and with a setting of 0:100, the overdrive sound which passes through the chorus will be output.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain) -12 - +12 [18]

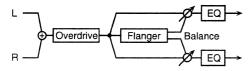
Adjust the high frequency gain

Level (Output Level) 0 - 127 [20]

Adjust the output level.

#### 36: OD $\rightarrow$ Flanger (Overdrive $\rightarrow$ Flanger) [02H, 01H]

This effect connects an overdrive and a flanger in series.



#### **OD Drive (Overdrive Drive)**

0 - 127 [1]

Adjust the degree of overdrive distortion. The volume will change together with the degree of distortion.

+OD Pan (Overdrive Output Pan) L63 - 0 - R63 [2]
Adjust the stereo location of the overdrive sound. L63 is far left, 0 is center, and R63 is far right.

#### OD Amp (Overdrive Amp Simulator Type) Small/Bltln/2-Stk/3-Stk [3]

Select the type of guitar amp.

Small : small amp

Bitin : single-unit type amp

2-Stk : large double stack amp

3-Stk : large triple stack amp

OD Amp Sw (Overdrive Amp Switch) Off/On [4] Turn OD Amp on/off.

## FL Dly (Flanger Pre Delay) 0 - 100m [6]

Adjust the time delay from when the direct sound begins until the flanger sound is heard.

**FL Rate (Flanger Rate)** 0.05 - 10.0 [7] Adjust the modulation speed of the flanger effect.

Adjust the modulation speed of the hanger effect.

FL Depth (Flanger Depth) 0 - 127 [8] Adjust the modulation depth of the flanger effect.

FL Fb (Flanger Feedback Level) -98% - +98% [9] Adjust the proportion (%) of the flanger sound that is fed back into the effect. Negative (-) settings will invert the phase.

#### #FL Bal (Flanger Balance) 100:0 - 0:100 (D:E)[10]

Adjust the volume balance between the sound which passes through the flanger and the sound which does not. With a setting of 100:0, only the overdrive sound will be output, and with a setting of 0:100, the overdrive sound which passes through the flanger will be output.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain) -12 - +12 [18]

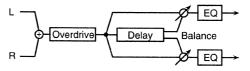
Adjust the high frequency gain.

Level (Output Level) 0 - 127 [20]

Adjust the output level.

## 37: OD $\rightarrow$ Delay (Overdrive $\rightarrow$ Delay) [02H, 02H]

This effect connects an overdrive and a delay in series.



## **OD Drive (Overdrive Drive)**

0 - 127 [1]

Adjust the degree of overdrive distortion. The volume will change together with the degree of distortion.

## +OD Pan (Overdrive Output Pan) L63 - 0 - R63 [2]

Adjust the stereo location of the overdrive sound. L63 is far left, 0 is center, and R63 is far right.

#### **OD Amp (Overdrive Amp Simulator Type)** Small/Bltln/2-Stk/3-Stk [3]

Select the type of guitar amp.

Small : small amp

Bitin : single-unit type amp 2-Stk : large double stack amp 3-Stk : large triple stack amp

#### OD Amp Sw (Overdrive Amp Switch) Off/On [4]

Turn OD Amp on/off.

#### Dly Time (Delay Time) 0 - 500m [6]

Adjust the time delay from when the direct sound begins until the delay sound is heard.

#### Dly Fb (Delay Feedback Level) -98% - +98% [7] Adjust the proportion (%) of the delay sound that is fed back into the effect. Negative (-) settings will invert the phase.

#### Dly HF (Delay HF Damp) 315 - 8k/Bypass [8]

Adjust the frequency above which delayed sound fed back to the effect will be cut. If you do not wish to cut the high frequencies of the feedback, set this parameter to Bypass.

#### #Dly Bal (Delay Balance) 100:0 - 0:100 (D:E)[10]

Adjust the volume balance between the sound which passes through the delay and the sound which does not. With a setting of 100:0, only the overdrive sound will be output, and with a setting of D 0:100, the overdrive sound which passes through the delay will be output.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain) -12 - +12 [18]

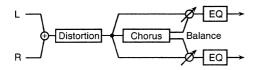
Adjust the high frequency gain.

0 - 127 [20] Level (Output Level)

Adjust the output level.

#### 38: DS → Chorus (Distortion → Chorus) [02H, 03H]

This effect connects a distortion and a chorus in series.



#### **DS Drive (Distortion Drive)** 0 - 127[1]

Adjust the degree of distortion. The volume will change together with the degree of distortion.

#### +DS Pan (Distortion Output Pan) L63 - 0 - R63 [2]

Adjust the stereo location of the distortion sound. L63 is far left, 0 is center, and R63 is far right.

#### DS Amp (Distortion Amp Simulator Type) Small/Bltln/2-Stk/3-Stk [3]

Select the type of guitar amp.

Small : small amp

Bitin : single-unit type amp 2-Stk : large double stack amp 3-Stk : large triple stack amp

#### DS Amp Sw (Distortion Amp Switch) Off/On [4]

Turn DS Amp on/off.

#### Cho Dly (Chorus Pre Delay) 0 - 100m [6] Adjust the time delay from when the direct sound begins until the chorus sound is heard.

#### Cho Rate (Chorus Rate) 0.05 - 10.0 [7]

Adjust the modulation speed of the chorus effect.

#### **Cho Depth (Chorus Depth)** 0 - 127 [8]

Adjust the modulation depth of the chorus effect.

#### #Cho Bal (Chorus Balance) 100:0 - 0:100 (D:E)[10]

Adjust the volume balance between the sound which passes through the chorus and the sound which does not. With a setting of 100:0, only the distortion sound will be output, and with a setting of 0:100, the distortion sound which passes through the chorus will be output.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12[17]

Adjust the low frequency gain.

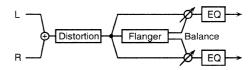
Hi Gain (High Gain) -12 - +12 [18]

Adjust the high frequency gain.

0 - 127 [20] Level (Output Level) Adjust the output level.

#### 39: DS → Flanger (Distortion → Flanger) [02H, 04H]

This effect connects a distortion and a flanger in series.



#### **DS Drive (Distortion Drive)**

0 - 127 [1]

Adjust the degree of distortion. The volume will change together with the degree of distortion.

+DS Pan (Distortion Output Pan) L63 - 0 - R63 [2]

Adjust the stereo location of the distortion sound. L63 is far left. 0 is center, and R63 is far right.

# DS Amp (Distortion Amp Simulator Type) Small/Bltln/2-Stk/3-Stk [3]

Select the type of guitar amp.

Small : small amp

Bitin : single-unit type amp

2-Stk : large double stack amp

3-Stk : large triple stack amp

DS Amp Sw (Distortion Amp Switch) Off/On [4]

Turn DS Amp on/off.

FL Dly (Flanger Pre Delay) 0 - 100m [6]

Adjust the time delay from when the direct sound begins until the flanger sound is heard.

FL Rate (Flanger Rate) 0.05 - 10.0 [7]

Adjust the modulation speed of the flanger effect.

FL Depth (Flanger Depth) 0 - 127 [8]

Adjust the modulation depth of the flanger effect.

FL Fb (Flanger Feedback Level) -98% - +98% [9] Adjust the proportion (%) of the flanger sound that is fed back into the effect. Negative (-) settings will invert the

phase

#FL Bal (Flanger Balance) 100:0 - 0:100 (D:E)[10]

Adjust the volume balance between the sound which passes through the flanger and the sound which does not. With a setting of 100:0, only the distortion sound will be output, and with a setting of 0:100, the distortion sound which passes through the flanger will be output.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain) -12 - +12 [18]

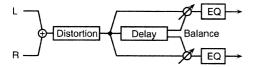
Adjust the high frequency gain.

Level (Output Level) 0 - 127 [20]

Adjust the output level.

#### 40: DS $\rightarrow$ Delay (Distortion $\rightarrow$ Delay ) [02H, 05H]

This effect connects a distortion and a delay in series.



#### **DS Drive (Distortion Drive)**

0 - 127 [1]

Adjust the degree of distortion. The volume will change together with the degree of distortion.

+DS Pan (Distortion Output Pan) L63 - 0 - R63 [2]

Adjust the stereo location of the distortion sound. L63 is far left, 0 is center, and R63 is far right.

#### **DS Amp (Distortion Amp Simulator Type)**

Small/Bltln/2-Stk/3-Stk [3]

Select the type of guitar amp.

Small : small amp

Bitin : single-unit type amp

2-Stk : large double stack amp

3-Stk : large triple stack amp

DS Amp Sw (Distortion Amp Switch) Off/On [4]

Turn DS Amp on/off.

Dly Time (Delay Time) 0 - 500m [6]

Adjust the time delay from when the direct sound begins until the delay sound is heard.

Dly Fb (Delay Feedback Level) -98% - +98% [7]

Adjust the proportion (%) of the delay sound that is fed back into the effect. Negative (-) settings will invert the phase.

Dly HF (Delay HF Damp) 315 - 8k/Bypass [8]

Adjust the frequency above which delayed sound fed back to the effect will be cut. If you do not wish to cut the high frequencies of the feedback, set this parameter to Bypass.

#Dly Bal (Delay Balance) 100:0 - 0:100 (D:E) [10]

Adjust the volume balance between the sound which passes through the delay and the sound which does not. With a setting of 100:0, only the distortion sound will be output, and with a setting of 0:100, the distortion sound which passes through the delay will be output.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain) -12 - +12 [18]

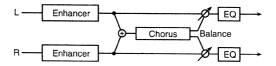
Adjust the high frequency gain.

Level (Output Level) 0 - 127 [20]

Adjust the output level.

#### 41: EH → Chorus (Enhancer → Chorus) [02H, 06H]

This effect connects an enhancer and a chorus in series.



#### 0 - 127 [1] +EH Sens (Enhancer Sensitivity) Adjust the sensitivity of the enhancer.

#### **EH Mix (Enhancer Mix Level)** 0 - 127[2]

Adjust the ratio with which the overtones generated by the enhancer are combined with the direct sound.

Cho Dly (Chorus Pre Delay) 0 - 100m [6] Adjust the time delay from when the direct sound begins until the chorus sound is heard.

Cho Rate (Chorus Rate) 0.05 - 10.0 [7] Adjust the modulation speed of the chorus effect.

**Cho Depth (Chorus Depth)** 0 - 127 [8] Adjust the modulation depth of the chorus effect.

#### #Cho Bal (Chorus Balance) 100:0 - 0:100 (D:E)[10] Adjust the volume balance between the sound which passes through the chorus and the sound which does not. With a setting of 100:0, only the enhancer sound will be output, and with a setting of 0:100, the enhancer sound which passes through the chorus will be output.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

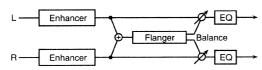
Hi Gain (High Gain) -12 - +12 [18]

Adjust the high frequency gain.

Level (Output Level) 0 - 127 [20] Adjust the output level.

#### 42: EH → Flanger (Enhancer → Flanger) [02H, 07H]

This effect connects an enhancer and a flanger in series.



+EH Sens (Enhancer Sensitivity) 0 - 127[1]Adjust the sensitivity of the enhancer.

**EH Mix (Enhancer Mix Level)** 0 - 127 [2] Adjust the ratio with which the overtones generated by the enhancer are combined with the direct sound.

FL Dly (Flanger Pre Delay) 0 - 100m [6] Adjust the time delay from when the direct sound begins until the flanger sound is heard.

FL Rate (Flanger Rate) 0.05 - 10.0 [7] Adjust the modulation speed of the flanger effect.

FL Depth (Flanger Depth) 0 - 127[8]Adjust the modulation depth of the flanger effect.

FL Fb (Flanger Feedback Level) -98% - +98% [9] Adjust the proportion (%) of the flanger sound that is fed back into the effect. Negative (-) settings will invert the phase.

### #FL Bal (Flanger Balance) 100:0 - 0:100 (D:E)[10]

Adjust the volume balance between the sound which passes through the flanger and the sound which does not. With a setting of 100:0, only the enhancer sound will be output, and with a setting of 0:100, the enhancer sound which passes through the flanger will be output.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

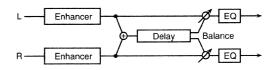
Hi Gain (High Gain) -12 - +12 [18]

Adjust the high frequency gain.

Level (Output Level) 0 - 127 [20] Adjust the output level.

#### 43: EH → Delay (Enhancer → Delay) [02H, 08H]

This effect connects an enhancer and a delay in series.



#### 0 - 127[1]+EH Sens (Enhancer Sensitivity)

Adjust the sensitivity of the enhancer.

#### **EH Mix (Enhancer Mix Level)** 0 - 127 [2] Adjust the ratio with which the overtones generated by the

enhancer are combined with the direct sound.

Dly Time (Delay Time) 0 - 500m [6] Adjust the time delay from when the direct sound begins until the delay sound is heard.

Dly Fb (Delay Feedback Level) -98% - +98% [7] Adjust the proportion (%) of the delay sound that is fed back into the delay input. Negative (-) settings will invert the phase.

Dly HF (Delay HF Damp) 315 - 8k/Bypass [8] Adjust the frequency above which delayed sound fed back to the delay input will be cut. If you do not wish to cut the high frequencies of the delay feedback, set this parameter to Bypass.

#### **#Dly Bal (Delay Balance)** 100:0 - 0:100 (D:E)[10] Adjust the volume balance between the sound which passes through the delay and the sound which does not. With a setting of 100:0, only the enhancer sound will be output,

and with a setting of 0:100, the enhancer sound which passes through the delay will be output. D and E stand for "dry sound" and "effect sound", respec-

tively.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the high frequency gain.

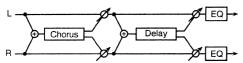
Level (Output Level) 0 - 127 [20]

Adjust the output level.

44: Cho → Delay (Chorus → Delay)

[02H, 09H]

This effect connects a chorus and a delay unit in series.



Cho Dly (Chorus Pre Delay) 0 - 100m [1]

Adjust the time delay from when the direct sound begins until the chorus sound is heard.

Cho Rate (Chorus Rate) 0.05 - 10.0 [2]

Adjust the modulation speed of the chorus effect.

Cho Depth (Chorus Depth) 0 - 127 [3]

Adjust the modulation depth of the chorus effect.

+Cho Bal (Chorus Balance) 100:0 - 0:100 (D:E) [5]
Adjust the volume balance between the direct sound and the chorus sound. With a setting of 100:0, only the direct sound will be output. With a setting of 0:100, only the chorus sound will be output.

D and E stand for "dry sound" and "effect sound", respectively.

Dly Time (Delay Time) 0 - 500m [6]

Adjust the time delay from when the direct sound begins until the delay sound is heard.

**Dly Fb (Delay Feedback Level)** -98% - +98% [7] Adjust the proportion (%) of the delay sound that is fed back into the delay input. Negative (-) settings will invert the phase.

Dly HF (Delay HF Damp) 315 - 8k/Bypass [8]

Adjust the frequency above which delayed sound fed back to the delay input will be cut. If you do not wish to cut the high frequencies of the feedback, set this parameter to Bypass.

#Dly Bai (Delay Baiance) 100:0 - 0:100 (D:E) [10]

Adjust the volume balance between the sound which passes through the delay and the sound which does not. With a setting of 100:0, only the chorus sound will be output, and with a setting of 0:100, the chorus sound which passes through the delay will be output.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain) -12 - +12 [18]

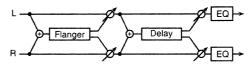
Adjust the high frequency gain.

Level (Output Level) 0 - 127 [20]

Adjust the output level.

#### 45: $FL \rightarrow Delay$ (Flanger $\rightarrow Delay$ ) [02H, 0AH]

This effect connects a flanger and a delay in series.



#### FL Dly (Flanger Pre Delay)

0 - 100m [1]

Adjust the time delay from when the direct sound begins until the flanger sound is heard.

FL Rate (Flanger Rate) 0.05 - 10.0 [2] Adjust the modulation speed of the flanger effect.

FL Depth (Flanger Depth) 0 - 127 [3]

Adjust the modulation depth of the flanger effect.

+FL Fb (Flanger Feedback Level) -98% - +98% [4]
Adjust the proportion (%) of the flanger sound that is fed back into the effect. Negative (-) settings will invert the phase.

FL Bal (Flanger Balance) 100:0 - 0:100 (D:E) [5] Adjust the volume balance between the direct sound and the flanger sound. With a setting of 100:0, only the direct sound will be output. With a setting of 0:100, only the flanger sound will be output.

D and E stand for "dry sound" and "effect sound", respectively.

Dly Time (Delay Time) 0 - 500m [6]

Adjust the time delay from when the direct sound begins until the delay sound is heard.

**Dly Fb (Delay Feedback Level)** -98% - +98% [7] Adjust the proportion (%) of the delay sound that is fed back into the delay input. Negative (-) settings will invert the phase.

**Dly HF (Delay HF Damp)** 315 - 8k/Bypass [8] Adjust the frequency above which delayed sound fed back to the delay input will be cut. If you do not wish to cut the high frequencies of the delay feedback, set this parameter to Bypass.

#Dly Bal (Delay Balance) 100:0 - 0:100 (D:E) [10]

Adjust the volume balance between the sound which passes through the delay and the sound which does not. With a setting of 100:0, only the flanger sound will be output, and with a setting of 0:100, the flanger sound which passes through the delay will be output.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain) -12 - +12 [18]

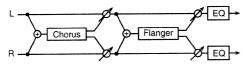
Adjust the high frequency gain.

Level (Output Level) 0 - 127 [20]

Adjust the output level.

### 46: Cho → Flanger (Chorus → Flanger) [02H, 0BH]

This effect connects a chorus and a flanger in series.



## Cho Dly (Chorus Pre Delay)

0 - 100m [1]

Adjust the time delay from when the direct sound begins until the chorus sound is heard.

Cho Rate (Chorus Rate) 0.05 - 10.0 [2] Adjust the modulation speed of the chorus effect.

Cho Depth (Chorus Depth) 0 - 127 [3]

Adjust the modulation depth of the chorus effect.

+Cho Bal (Chorus Balance) 100:0 - 0:100 (D:E) [5]
Adjust the volume balance between the direct sound and the chorus sound. With a setting of 100:0, only the direct sound will be output. With a setting of 0:100, only the chorus sound will be output.

D and E stand for "dry sound" and "effect sound", respectively.

FL Dly (Flanger Pre Delay Time) 0 - 100m [6] Adjust the time delay from when the direct sound begins until the flanger sound is heard.

FL Rate (Flanger Rate) 0.05 - 10.0 [7]
Adjust the modulation speed of the flanger effect.

FL Depth (Flanger Depth) 0 - 127 [8] Adjust the modulation depth of the flanger effect.

FL Fb (Flanger Feedback Level) -98% - +98% [9] Adjust the proportion (%) of the flanger sound that is fed back into the effect. Negative (-) settings will invert the phase.

## #FL Bal (Flanger Balance) 100:0 - 0:100 (D:E) [10]

Adjust the volume balance between the sound which passes through the flanger and the sound which does not. With a setting of 100:0, only the chorus sound will be output, and with a setting of 0:100, the chorus sound which passes through the flanger will be output.

D and E stand for "dry sound" and "effect sound", respectively.

Low Gain -12 - +12 [17]

Adjust the low frequency gain.

Hi Gain (High Gain) -12 - +12 [18]

Adjust the high frequency gain.

Level (Output Level)
Adjust the output level.

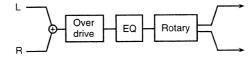
0 - 127 [20]

Effects that connect three or more types of effect in series (series 3 / series 4 / series 5)

### 47: Rotary Multi

[03H, 00H]

This connects Overdrive (OD), 3-band equalizer (EQ), and Rotary (RT) effects in series.



### OD (Overdrive)

+OD Drive 0 - 127 [1]

Adjust the degree of distortion. The volume will change together with the degree of distortion.

OD Sw (Overdrive Switch)

Off/On [2]

Turn the Overdrive effect on/off.

#### EQ (Equalizer)

EQ L Gain (EQ Low Gain) -12 - +12 [3]

Adjust the low range gain of the equalizer.

EQ M Fq (EQ Mid Frequency) 200 - 6.3k [4] Set the center frequency for the equalizer mid-range.

EQ M Q (EQ Mid Q) 0.5/1.0/2.0/4.0/9.0 [5] Adjust the width of the area centered at the EQ M Fq set-

ting in which the gain will be affected. The area affected will become narrower as this value is increased.

EQ M Gain (EQ Mid Gain) -12 - +12 [6]

Adjust the gain of the area specified by the EQ M Fq parameter and the EQ M Q parameter.

**EQ H Gain (EQ High Gain)** -12 - +12 [7] Adjust the high-range gain of the equalizer.

#### RT (Rotary)

#### RT L Slow (RT Low Frequency Slow Rate)

0.05 - 10.0 [8]

Adjust the speed of the low-range rotor for the slow-speed setting.

#### RT L Fast (RT Low Frequency Fast Rate)

0.05 - 10.0 [9]

Adjust the speed of the low-range rotor for the fast-speed setting.

#### RT Lo Accl (RT Low Frequency Accelaration)

0 - 15 [10]

Adjust the time over which the rotation speed of the lowrange rotor will change from slow-speed to fast-speed (or fast-speed to slow-speed) rotation. Smaller values will require greater time to reach the new rotational speed. RT Lo Lev (RT Low Frequency Level) 0 - 127 [11] Adjust the volume of the low-range rotor.

#### RT H Slow (RT High Frequency Slow Rate)

0.05 - 10.0 [12]

Adjust the speed of the high-range rotor for the slow-speed setting.

#### RT H Fast (RT High Frequency Fast Rate)

0.05 - 10.0 [13]

Adjust the speed of the high-range rotor for the fast-speed setting.

## RT Hi Accl (RT High Frequency Accelaration)

0 - 15 [14]

Adjust the time over which the rotation speed of the highrange rotor will change from slow-speed to fast-speed (or fast-speed to slow-speed) rotation. Smaller values will require greater time to reach the new rotational speed.

#### RT Hi Lev (RT High Frequency Level)

0 - 127 [15]

Adjust the volume of the high-range rotor.

## RT Sept (RT Separation)

0 - 127 [16]

Adjust the spatial spread of the rotary sound

#### **#RT Speed** Slow/Fast [17]

Simultaneously switch the rotational speed of both the lowrange and the high-range rotors.

Slow

: Slow down the rotation to the specified speeds (RT L Slow parameter / RT H Slow

parameter values).

Fast

: Speed up the rotation to the specified speeds (RT L Fast parameter / RT H Fast parameter values).

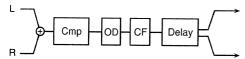
#### Level (Output Level)

0 - 127 [20]

Adjust the output level.

#### 48: GTR Multi 1 (Guitar Multi 1) [04H, 00H]

Guitar Multi 1 connects Compressor (Cmp), Overdrive or Distortion (OD), Chorus or Flanger (CF), and Delay (Dly) effects in series.



#### Cmp (Compressor)

**Cmp Atck (Compressor Attack)** 

0 - 127[1]

Adjust the time over which the sound will rise after input.

#### Cmp Sus (Compressor Sustain) 0 - 127 [2]

Adjust the time over which low-level sounds are boosted until they reach a specified volume.

Increasing the value will shorten the time. When the value is modified, the level will also change.

## Cmp Level (Compressor Level)

0 - 127 [3]

Adjust the volume of the compressor sound.

#### Cmp Sw (Compressor Switch)

Off/On [4]

Turn the compressor on/off.

# OD (Overdrive/Distortion)

**OD Sel (OD Select)** 

Odrv/Dist [5]

Select either Overdrive or Distortion.

#### +OD Drive

0 - 127 [6]

Adjust the depth of distortion. The volume will change together with the depth of distortion,

## **OD Amp (OD Amp Simulator Type)**

Small/Bltln/2-Stk/3-Stk [7]

Select the type of guitar amp.

Small : small amp

Bitin : single-unit type amp 2-Stk : large double stack amp 3-Stk : large triple stack amp

#### OD Amp Sw (OD Amp Switch)

Off/On [8]

Turn OD Amp on/off.

OD L Gain (OD Low Gain)

-12 - +12 [9]

Adjust the low-range gain.

OD H Gain (OD High Gain) Adjust the high-range gain.

-12 - +12 [10]

#### OD Sw (OD Switch) Turn Overdrive or Distortion on/off.

Off/On [11]

### CF (Chorus/Flanger)

## CF Sel (CF Select)

Chorus/Flangr [12]

Select either Chorus or Flanger.

**CF Rate** 

0.05 - 6.40 [13]

Adjust the speed of modulation

CF Depth

0 - 127 [14]

Adjust the depth of modulation.

#### CF Fb (CF Feedback) -98% - +98% [15]

Adjust the amount (%) of the flanger sound that is returned to the input. Negative (-) values will invert the phase.

In the case of Chorus, this will have no effect.

#### **CF Mix**

0 - 127 [16]

Adjust the volume of the chorus or flanger sound.

#### Dly(Delay)

Dly Time (Delay Time)

0m - 635m [17]

Adjust the time from the original sound until when the delay sound is heard.

## Dly Fb (Delay Feedback Level) 0 - 127 [18]

Adjust the amount of the delay sound that is returned to the input.

### #Dly Mix (Delay Mix) 0 - 127 [19]

Adjust the volume of the delay sound.

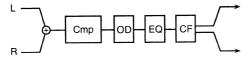
## Level (Output Level) 0 - 127 [20]

Adjust the output level.

## 49: GTR Multi 2 (Guitar Multi 2)

[04H, 01H]

Guitar Multi 2 provides Compressor (Cmp), Overdrive or Distortion (OD), Equalizer (EQ), and Chorus or Flanger (CF) effects connected in series.



#### Cmp (Compressor)

### Cmp Atck (Compressor Attack) 0 - 127 [1]

Adjust the time over which the sound will rise after it is input.

#### Cmp Sus (Compressor Sustain) 0 - 127 [2]

Adjust the time over which low-level sounds are boosted until they reach a specified volume.

Increasing the value will shorten the time. When the value is modified, the level will also change.

## Cmp Level (Compressor Level) 0 - 127 [3]

Adjust the volume of the compressor sound.

### Cmp Sw (Compressor Switch) Off/On [4]

Turn the compressor on/off.

## OD (Overdrive/Distortion)

#### OD Sel (OD Select) Odrv/Dist [5]

Select either Overdrive or Distortion.

## +OD Drive (OD Drive) 0 - 127 [6]

Adjust the degree of distortion. The volume will change together with the degree of distortion.

#### **OD Amp (OD Amp Simulator Type)**

Small/Bltln/2-Stk/3-Stk [7]

Select the type of guitar amp

Small : small amp

Bitin : single-unit type amp

2-Stk : large double stack amp

3-Stk : large triple stack amp

## OD Amp Sw (OD Amp Switch) Off/On [8]

Turn OD Amp on/off.

#### OD Sw (OD Switch) Off/On [9]

Turn Overdrive or Distortion on/off.

### EQ (Equalizer)

## EQ L Gain (EQ Low Gain) -12 - +12 [10]

Adjust the low-range gain of the equalizer.

# EQ M Fq (EQ Mid Frequency) 200 - 6.3k [11]

Set the center frequency for the equalizer mid-range.

#### EQ M Q (EQ Mid Q) 0.5/1.0/2.0/4.0/9.0 [12]

Adjust the width of the area centered at the EQ M Fq setting in which the gain will be affected. The area affected will become narrower as this value is increased.

#### EQ M Gain (EQ Mid Gain) -12 - +12 [13]

Adjust the gain of the area specified by the EQ M Fq parameter and the EQ M Q parameter.

## EQ H Gain (EQ High Gain) -12 - +12 [14]

Adjust the high-range gain of the equalizer.

#### CF (Chorus/Flanger)

#### CF Sel (CF Select) Chorus/Flangr [15]

Select either Chorus or Flanger.

#### CF Rate 0.05 - 6.40 [16]

Adjust the speed of modulation for the chorus or flanger.

#### CF Depth 0 - 127 [17]

Adjust the depth of modulation for the chorus or flanger.

#### CF Fb (CF Feedback) -98% - +98% [18]

Adjust the amount (%) of the flanger sound that will be returned to the input. Negative (-) values will invert the phase.

\* In the case of Chorus, this will have no effect.

#### #CF Mix (CF Mix)

0 - 127 [19]

Adjust the volume of the chorus or flanger sound.

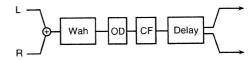
### Level (Output Level) 0 - 127 [20]

Adjust the output level.

#### 50: GTR Multi 3 (Guitar Multi 3)

[04H, 02H]

Guitar Multi 3 connects Wah (Wah), Overdrive or Distortion (OD), Chorus or Flanger (CF), and Delay (Dly) effects in series.



#### Wah

## Wah Fil (Wah Filter Type)

LPF/BPF [1]

Select the type of filter.

LPF : The wah effect will be produced over a

broad frequency range.

BPF : The wah effect will be produced in a narrow

frequency range.

#### +Wah Man (Wah Manual)

0 - 127 [2]

Set the center frequency at which the effect will be produced.

Wah Peak 0 - 127 [3]

Adjust the way in which the wah effect will be applied to the region of the center frequency. Lower settings will produce a wah effect in a broad area around the center frequency, and higher settings will produce a wah effect in a narrower area around the center frequency.

#### Wah Sw (Wah Switch)

Off/On [4]

Turn Wah on/off.

#### **OD (Overdrive/Distortion)**

#### **OD Sel (OD Select)**

Odrv/Dist [5]

Select either Overdrive or Distortion.

#### **#OD Drive (Overdrive Drive)**

0 - 127 [6]

Adjust the depth of distortion. The volume will change together with the depth of distortion.

#### **OD Amp (OD Amp Simulator Type)**

Small/Bltin/2-Stk/3-Stk [7]

Select the type of guitar amp

Small : small amp

Bitin : single-unit type amp

2-Stk : large double stack amp

3-Stk : large triple stack amp

### OD Amp Sw (OD Amp Switch) Off/On [8]

Turn OD Amp on/off.

#### OD L Gain (OD Low Gain) -12 - +12 [9]

Adjust the low-range gain for the overdrive (or distortion) sound.

#### OD H Gain (OD High Gain) -12 - +12 [10]

Adjust the high-range gain for the overdrive (or distortion) sound.

#### OD Sw (OD Switch)

Off/On [11]

Turn overdrive or distortion on/off.

## CF (Chorus/Flanger)

CF Sel (CF Select) Chorus/Flangr [12]

Select either Chorus or Flanger.

CF Rate 0.05 - 6.40 [13]

Adjust the modulation speed for the chorus or flanger.

CF Depth 0 - 127 [14]

Adjust the modulation depth for the chorus or flanger.

CF Fb (CF Feedback) -98% - +98% [15]

Adjust the amount (%) of the flanger sound that is returned to the input. Negative (-) values will invert the phase.

\* In the case of Chorus, this will have no effect.

CF Mix 0 - 127 [16]

Adjust the volume of the chorus or flanger sound.

#### Dly (Delay)

Dly Time (Delay Time)

0m - 635m [17]

Adjust the time from the original sound until when the delay sound is heard.

Dly Fb (Delay Feedback Level)

0 - 127 [18]

Adjust the amount of the delay sound that is returned to the input.

Dly Mix (Delay Mix)

0 - 127 [19]

Adjust the volume of the delay sound.

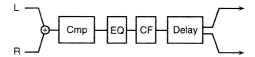
**Level (Output Level)** 

0 - 127 [20]

Adjust the output level.

### 51: Clean Gt Multi1 (Clean Guitar Multi 1) [04H, 03H]

Clean Guitar Multi 1 connects Compressor (Cmp), Equalizer (EQ), Chorus or Flanger (CF), and Delay (Dly) effects in series.



#### Cmp (Compressor)

**Cmp Atck (Compressor Attack)** 

0 - 127 [1]

Adjust the time over which the sound will rise after it is input.

#### Cmp Sus (Compressor Sustain) 0 - 127 [2]

Adjust the time over which low-level sounds are boosted until they reach a specified volume.

Increasing the value will shorten the time. When the value is modified, the level will also change.

Cmp Level (Compressor Level)
Adjust the volume of the compressor sound.

0 - 127 [3]

**Cmp Sw (Compressor Switch)** 

Off/On [4]

Turn the compressor on/off.

#### EQ (Equalizer)

EQ L Gain (EQ Low Gain)

-12 - +12 [5]

Adjust the low-range gain of the equalizer.

EQ M Fq (EQ Mid Frequency)

200 - 6.3k [6]

Set the center frequency for the equalizer mid-range.

EQ M Q (EQ Mid Q)

0.5/1.0/2.0/4.0/9.0 [7]

Adjust the width of the area centered at the EQ M Fq setting in which the gain will be affected. The area affected will become narrower as this value is increased.

EQ M Gain (EQ Mid Gain)

-12 - +12 [8]

Adjust the gain of the area specified by the EQ M Fq parameter and the EQ M Q parameter.

EQ H Gain (EQ High Gain)

-12 - +12 [9]

Adjust the high-range gain of the equalizer.

#### CF (Chorus/Flanger)

CF Sel (CF Select) Chorus/Flangr [10]

Select either Chorus or Flanger.

**CF Rate** 0.05 - 6.40 [11]

Adjust the speed of modulation for the chorus or flanger.

**CF Depth** 0 - 127 [12]

Adjust the depth of modulation for the chorus or flanger.

#### CF Fb (CF Feedback)

-98% - +98% [13]

Adjust the amount (%) of the flanger sound that will be returned to the input. Negative (-) values will invert the phase.

\* In the case of Chorus, this will have no effect.

#### +CF Mix (CF Mix)

0 - 127 [14]

Adjust the volume of the chorus or flanger sound.

## Dly (Delay)

Dly Time (Delay Time)

0m - 635m [15]

Adjust the time from the original sound until when the delay sound is heard.

Dly Fb (Delay Feedback Level) 0 - 127 [16]

Adjust the amount of the delay sound that is returned to the input.

#### Dly HF (Delay HF Dump) 315-8k/Bypass[17]

Adjust the frequency at which the high range will be cut from the delay sound that is returned to the input. If you do not wish to cut the high range of the returned sound, select Bypass.

### **#Dly Mix (Delay Mix)**

0 - 127 [18]

Adjust the volume of the delay sound.

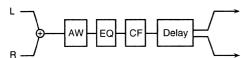
### Level (Output Level)

0 - 127 [20]

Adjust the output level.

#### 52: Clean Gt Multi2 (Clean Guitar Multi 2) [04H, 04H]

Clean Guitar Multi 2 provides Auto-wah (AW), Equalizer (EQ), Chorus or Flanger (CF), and Delay (Dly) effects connected in series.



#### AW (Auto-wah)

**LPF** 

LPF/BPF [1] AW Filter (Auto-wah Filter Type) Select the type of filter for the Auto-wah.

: The wah effect will be produced over a

broad frequency range.

BPF : The wah effect will be produced over a nar-

row frequency range.

#### +AW Man (Auto-wah Manual) 0 - 127[2]

Set the center frequency at which the auto-wah effect will be produced.

#### AW Peak (Auto-wah Peak)

0 - 127 [3]

Adjust the way in which the wah effect will be applied to the region of the center frequency. Lower settings will produce a wah effect in a broad area around the center frequency, and higher settings will produce a wah effect in a narrower area around the center frequency.

AW Rate (Auto-wah Rate)

0.05 - 6.40 [4]

Adjust the modulation speed of the Auto-wah.

AW Depth (Auto-wah Depth)

0 - 127 [5]

Adjust the modulation depth of the Auto-wah.

AW Sw (Auto-wah Switch)

Off/On [6]

Turn Auto-wah on/off.

#### EQ (Equalizer)

EQ L Gain (EQ Low Gain)

-12 - +12 [7]

Adjust the low-range gain of the equalizer.

EQ M Fq (EQ Mid Frequency)

200 - 6.3k [8]

Set the center frequency for the equalizer mid-range.

#### EQ M Q (EQ Mid Q) 0.5/1.0/2.0/4.0/9.0 [9]

Adjust the width of the area centered at the EQ M Fg setting in which the gain will be affected. The area affected will become narrower as this value is increased.

#### EQ M Gain (EQ Mid Gain)

-12 - +12 [10]

Adjust the gain of the area specified by the EQ M Fq parameter and the EQ M Q parameter.

EQ H Gain (EQ High Gain)

-12 - +12 [11]

Adjust the high-range gain of the equalizer.

#### CF (Chorus/Flanger)

CF Sel (CF Select)

Chorus/Flangr [12]

Select either Chorus or Flanger.

**CF Rate** 

0.05 - 6.40 [13]

Adjust the speed of modulation for the chorus or flanger.

**CF Depth** 0 - 127 [14] Adjust the depth of modulation for the chorus or flanger.

## CF Fb (CF Feedback)

-98% - +98% [15]

Adjust the amount (%) of the flanger sound that will be returned to the input. Negative (-) values will invert the phase.

\* In the case of Chorus, this will have no effect.

**CF Mix** 

0 - 127 [16]

Adjust the volume of the chorus or flanger sound.

#### Dly (Delay)

Dly Time (Delay Time)

0m - 635m [17]

Adjust the time from the original sound until when the delay sound is heard.

#### Dly Fb (Delay Feedback Level)

0 - 127 [18]

Adjust the amount of the delay sound that is returned to the input.

#### **#Dly Mix (Delay Mix)**

0 - 127 [19]

Adjust the volume of the delay sound.

#### Level (Output Level)

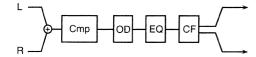
0 - 127 [20]

Adjust the output level.

#### 53: Bass Multi

[04H, 05H]

Bass Multi provides Compressor (Cmp), Overdrive or Distortion (OD), Equalizer (EQ), and Chorus or Flanger (CF) effects connected in series.



#### Cmp (Compressor)

## **Cmp Atck (Compressor Attack)**

Adjust the time over which the sound will rise after it is input.

### Cmp Sus (Compressor Sustain)

0 - 127 [2]

0 - 127[1]

Adjust the time over which low-level sounds are boosted until they reach a specified volume.

Increasing the value will shorten the time. When the value is modified, the level will also change.

## Cmp Level (Compressor Level)

0 - 127[3]

Adjust the volume of the compressor sound.

Cmp Sw (Compressor Switch) Turn the compressor on/off.

Off/On [4]

#### OD (Overdrive/Distortion)

## OD Sel (OD Select)

Odrv/Dist [5]

Select either bass guitar Overdrive or Distortion.

#### +OD Drive (OD Drive)

0 - 127 [6]

Adjust the depth of distortion. The volume will change together with the depth of distortion.

## **OD Amp (OD Amp Simlation Type)**

Small/Bltln/2-Stk [7]

Select the type of bass amp Small

: small amp Bitin : single-unit type amp

2-Stk : large double stack amp

#### OD Amp Sw (OD Amp Switch)

Off/On [8]

Turn OD Amp on/off.

#### OD Sw (OD Switch)

Off/On [9]

Turn Overdrive/Distortion on/off.

#### EQ (Equalizer)

### EQ L Gain (EQ Low Gain)

-12 - +12 [10]

Adjust the low-range gain of the equalizer.

#### EQ M Fq (EQ Mid Frequency)

200 - 6.3k [11]

Set the center frequency for the equalizer mid-range.

#### EQ M Q (EQ Mid Q)

0.5/1.0/2.0/4.0/9.0 [12]

Adjust the width of the area centered at the EQ M Fg setting in which the gain will be affected. The area affected will become narrower as this value is increased.

#### EQ M Gain (EQ Mid Gain)

-12 - +12 [13]

Adjust the gain of the area specified by the EQ M Fq parameter and the EQ M Q parameter.

#### EQ H Gain (EQ High Gain)

-12 - +12 [14]

Adjust the high-range gain of the equalizer.

#### CF(Chorus/Flanger)

## CF Sel (CF Select)

Chorus/Flangr [15]

Select either Chorus or Flanger.

#### **CF Rate**

0.05 - 6.40 [16]

Adjust the speed of modulation for the chorus or flanger.

#### **CF Depth**

0 - 127 [17]

Adjust the depth of modulation for the chorus or flanger.

#### CF Fb (CF Feedback Level)

-98% - +98% [18]

Adjust the amount (%) of the flanger sound that will be returned to the input. Negative (-) values will invert the phase.

\* In the case of Chorus, this will have no effect.

#### #CF Mix

0 - 127 [19]

Adjust the volume of the chorus or flanger sound.

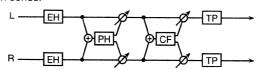
#### Level (Output Level) Adjust the output level.

0 - 127 [20]

[04H, 06H]

#### 54: Rhodes Multi

Rhodes Multi provides Enhancer (EH), Phaser (PH), Chorus or Flanger (CF), and Tremolo or Pan (TP) effects connected in series



#### EH (Enhancer)

### EH Sens (Enhancer Sensitivity)

0 - 127[1]

Adjust the sensitivity of the enhancer.

#### EH Mix (Enhancer Mix Level)

0 - 127 [2]

Adjust the level at which the overtones generated by the enhancer will be mixed with the direct sound

#### PH (Phaser)

PH Man (Phaser Manual) 100 - 8.0k [3]

Adjust the center frequency at which the sound will be modulated.

PH Rate (Phaser Rate) 0.05 - 6.40 [4]

Adjust the modulation speed.

PH Depth (Phaser Depth) 0 - 127 [5]

Adjust the modulation depth.

PH Reso (Phaser Resonance) 0 - 127 [6]

Adjust the emphasis for the region around the center frequency specified by the PH Man parameter.

PH Mix (Phaser Mix) 0 - 127 [7]

Adjust the proportion of the phase-shifted sound that will be mixed with the direct sound.

#### CF (Chorus/Flanger)

CF Sel (CF Select) Chorus/Flangr [8]

Select either Chorus or Flanger.

CF LPF (CF Low Pass Filter) 250 - 6.3k/Bypass [9] Cut the high frequency range of the chorus or flanger

Cut the high frequency range of the chorus or flange sound.

CF Dly (CF Pre Dealy) 0 - 100m [10]

Adjust the time from the direct sound until when the chorus or flanger sound is heard.

CF Rate 0.05 - 6.40 [11]

Adjust the modulation speed.

CF Depth 0 - 127 [12]

Adjust the modulation depth.

CF Fb (CF Feedback Level) -98% - +98% [13] Adjust the amount (%) of the flanger sound that will be returned to the input. Negative (-) values will invert the phase.

\* In the case of Chorus, this will have no effect.

CF Mix 0 - 127 [14]

Adjust the volume of the chorus or flanger sound.

#### TP (Tremolo/Pan)

TP Sel (TP Select) Trem/Pan [15]

Select either Tremolo or Pan.

## **TP Mod WV (TP Modulation Wave)**

Tri/Sqr/Sin/Saw1/Saw2 [16]

Select the way in which tremolo or pan will be modulated.

Tri : The sound will be modulated like a triangle wave.

Sqr : The sound will be modulated like a square wave.

Sin : The sound will be modulated like a sine wave.

Saw1,2: The sound will be modulated like a sawtooth wave. The "teeth" in Saw1 and Saw2 point in

opposite directions.



**+TP Mod RT (TP Modulation Rate)** 0.05 - 6.40 [17] Adjust the modulation speed.

#TP Mod Dep (TP Modulation Depth) 0 - 127 [18]
Adjust the modulation depth.

TP Sw (TP Switch) Off/On [19]

Turn tremolo or pan on/off.

Level (Output Level) 0 - 127 [20]

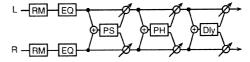
Adjust the output level.

#### 55: Keyboard Multi

[05H, 00H]

Keyboard Multi provides Ring Modulator (RM), Equalizer (EQ), Pitch Shifter (PS), Phaser (PH) and Delay (Dly) effects connected in series.

Ring Modulator is an effect which applies amplitude modulation (AM) to the input signal, producing bell-like sounds.



#### RM (Ring Modulator)

+RM Mod Freq (RM Modulation Frequency)

0 - 127 [1]

Set the frequency at which modulation will be applied.

#RM Bal (RM Balance) 100:0 - 0:100 (D:E) [2]

Adjust the balance between the direct and the ring modulated sound.

D and E stand for "dry sound" and "effect sound", respectively.

## EQ (Equalizer)

EQ L Gain (EQ Low Gain) -12 - +12 [3]

Adjust the low range gain of the equalizer.

**EQ M Fq (EQ Mid Frequency)** 200 - 6.3k [4] Set the center frequency for the equalizer mid-range.

EQ M Q (EQ Mid Q) 0.5/1.0/2.0/4.0/9.0 [5]

Adjust the width of the area centered at the EQ M Fq setting in which the gain will be affected. The area affected will become narrower as this value is increased.

EQ M Gain (EQ Mid Gain) -12 - +12 [6]

Adjust the gain of the area specified by the EQ M Fq parameter and the EQ M Q parameter.

#### EQ H Gain (EQ High Gain)

-12 - +12 [7]

Adjust the high-range gain of the equalizer.

#### PS (Pitch Shifter)

PS Coarse (PS Coarse Pitch) -24 - 0 - +12 [8] Adjust the amount of pitch shift in semitone steps (-2 to +1

octaves).

PS Fine (PS Fine Pitch) -100 - 0 - +100 [9]

Make fine adjustments to the pitch shift in 2-cent steps (-100 to +100 cents).

PS Mode (PS Shifter Mode) 1 - 5 [10]

As this value is increased, the response will become slower but the sound will be more stable.

PS Bal (PS Balance) 100:0 - 0:100 (D:E) [11]

Adjust the volume balance between the direct and the pitch shifted sound.

D and E stand for "dry sound" and "effect sound", respectively.

#### PH (Phaser)

PH Man (Phaser Manual) 100 - 8.0k [12]

Set the center frequency at which the phaser sound will be modulated.

PH Rate (Phaser Rate) 0.05 - 6.40 [13] Adjust the modulation speed of the phaser.

PH Depth (Phaser Depth) 0 - 127 [14]

Adjust the modulation depth of the phaser.

PH Reso (Phaser Resonance) 0 - 127 [15]

Adjust the emphasis for the region in the area of the center frequency specified by the PH Man parameter.

0 - 127 [16] PH Mix (Phaser Mix)

Adjust the proportion at which the phase-shifted sound will be mixed with the original sound.

#### Dly (Delay)

Dly Time (Delay Time) 0m - 635m [17]

Adjust the time from the original sound until when the delay sound is heard.

Dly Fb (Delay Feedback Level) 0 - 127 [18]

Adjust the amount of the delay sound that is returned to the input.

Dly Mix (Delay Mix Level) 0 - 127 [19]

Adjust the proportion at which the delay sound is mixed with the direct sound.

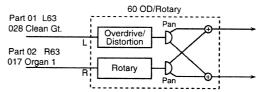
Level (Output Level) 0 - 127 [20]

Adjust the output level.

#### Effects that connect two types of effect in parallel (parallel 2)

Effect types in which two different effects are connected in parallel allow you to apply different effects to L and R independently. By using parallel effects for the sound of two Parts, you can achieve a result as if two separate effect units were used.

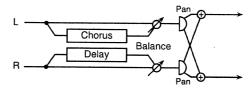
For example you might select a guitar sound for Part 1 and an organ sound for Part 2. Then set the pan setting to L63 (far left) for Part 1, and to R63 (far right) for Part 2. Apply the effect "60: OD/Rotary" to both Parts 1 and 2. By then making appropriate settings for the "OD Pan" and "RT Pan" effect parameters, you can apply Overdrive to the guitar sound and Rotary to the organ sound, effectively allowing you to use two separate effects at once.



#### 56: Cho / Delay (Chorus / Delay)

[11H, 00H]

This effect connects a chorus and a delay in parallel.



#### Cho Dly (Chorus Pre Delay)

0 - 100m [1]

Adjust the time delay from when the direct sound begins until the chorus sound is heard.

Cho Rate (Chorus Rate) 0.05 - 10.0 [2] Adjust the modulation speed of the chorus effect.

**Cho Depth (Chorus Depth)** 0 - 127 [3]

Adjust the modulation depth of the chorus effect.

+Cho Bal (Chorus Balance) 100:0 - 0:100 (D:E) [5] Adjust the volume balance between the direct and the chorus sound.

D and E stand for "dry sound" and "effect sound", respectively.

Cho Pan (Chorus Output Pan) L63 - 0 - R63 [16] Adjust the stereo position of the chorus sound. L63 is far

left, 0 is center, and R63 is far right. Cho Level (Chorus Level) 0 - 127 [17]

Adjust the volume of the chorus sound.

0 - 500m [6]

Dly Time (Delay Time) Adjust the time delay from when the direct sound begins until the delay sound is heard.

**Dly Fb (Delay Feedback Level)** -98% - +98% [7] Adjust the proportion (%) of the delay sound that is fed back into the delay input. Negative (-) settings will invert the phase.

Dly HF (Delay HF Damp) 315 - 8k/Bypass [8] Adjust the frequency above which delayed sound fed back to the delay input will be cut. If you do not wish to cut the high frequencies of the feedback, set this parameter to Bypass.

#Dly Bal (Delay Balance) 100:0 - 0:100 (D:E) [10]
Adjust the volume balance between the direct and the delay sound.

D and E stand for "dry sound" and "effect sound", respectively.

**Dly Pan (Delay Output Pan)**L63 - 0 - R63 [18]
Adjust the stereo position of the delay sound. L63 is far left, 0 is center, and R63 is far right.

Dly Level (Delay Level) 0 - 127 [19]
Adjust the volume of the delay sound.

Level (Output Level)

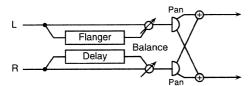
0 - 127 [20]

Adjust the output level.

## 57: FL / Delay (Flanger / Delay)

[11H, 01H]

This effect connects a flanger and a delay in parallel.



FL Dly (Flanger Pre Delay) 0 - 100m [1] Adjust the time delay from when the direct sound begins until the flanger sound is heard.

FL Rate (Flanger Rate) 0.05 - 10.0 [2] Adjust the modulation speed of the flanger effect.

FL Depth (Flanger Depth) 0 - 127 [3] Adjust the modulation depth of the flanger effect.

FL Fb (Flanger Feedback Level) -98% - +98% [4] Adjust the proportion (%) of the flanger sound that is fed back into the effect. Negative (-) settings will invert the phase.

**+FL Bal (Flanger Balance)**100:0 - 0:100 [5]
Adjust the volume balance between the direct sound and the flanger sound.

D and E stand for "dry sound" and "effect sound", respectively.

FL Pan (Flanger Output Pan) L63 - 0 - R63 [16] Adjust the stereo position of the flanger sound. L63 is far left, 0 is center, and R63 is far right.

FL Level (Flanger Level) 0 - 127 [17]
Adjust the volume of the flanger sound.

Dly Time (Delay Time) 0 - 500m [6] Adjust the time delay from when the direct sound begins until the delay sound is heard.

**Dly Fb (Delay Feedback Level)** -98% - +98% [7] Adjust the proportion (%) of the delay sound that is fed back into the delay input. Negative (-) settings will invert the phase.

Dly HF (Delay HF Damp) 315 - 8k/Bypass [8] Adjust the frequency above which delayed sound fed back to the delay input will be cut. If you do not want to cut the high frequencies of the delay feedback, set this parameter to Bypass.

#Dly Bal (Delay Balance) 100:0 - 0:100 (D:E)[10]
Adjust the volume balance between the direct and the delay sound.

D and E stand for "dry sound" and "effect sound", respectively.

**Dly Pan (Delay Output Pan)**L63 - 0 - R63 [18]
Adjust the stereo position of the delay sound. L63 is far left, 0 is center, and R63 is far right.

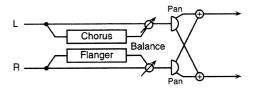
Dly Level (Delay Level) 0 - 127 [19] Adjust the volume of the delay sound.

**Level (Output Level)** 0 - 127 [20] Adjust the output level.

#### 58: Cho / Flanger (Chorus / Flanger)

[11H, 02H]

This effect connects a chorus and a flanger in parallel.



Cho Dly (Chorus Pre Delay) 0 - 100m [1] Adjust the time delay from when the direct sound begins until the chorus sound is heard.

Cho Rate (Chorus Rate) 0.05 - 10.0 [2] Adjust the modulation speed of the chorus effect.

Cho Depth (Chorus Depth) 0 - 127 [3] Adjust the modulation depth of the chorus effect.

#### +Cho Bal (Chorus Balance)

100:0 - 0:100 [5]

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

D and E stand for "dry sound" and "effect sound", respectively.

Cho Pan (Chorus Output Pan) L63 - 0 - R63 [16] Adjust the stereo position of the chorus sound. L63 is far left, 0 is center, and R63 is far right.

Cho Level (Chorus Level) 0 - 127 [17]
Adjust the volume of the chorus sound.

FL Dly (Flanger Pre Delay) 0 - 100m [6] Adjust the time delay from when the direct sound begins until the flanger sound is heard.

FL Rate (Flanger Rate) 0.05 - 10.0 [7]
Adjust the modulation speed of the flanger effect.

**FL Depth (Flanger Depth)** 0 - 127 [8] Adjust the modulation depth of the flanger effect.

**FL Fb (Flanger Feedback Level)** -98% - +98% [9] Adjust the proportion (%) of the flanger sound that is fed back into the effect. Negative (-) settings will invert the phase.

**#FL Bal (Flanger Balance)** 100:0 - 0:100 (D:E) [10] Adjust the volume balance between the direct sound and the flanger sound.

D and E stand for "dry sound" and "effect sound", respectively.

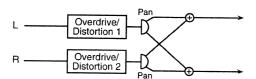
FL Pan (Flanger Output Pan) L63 - 0 - R63 [18] Adjust the stereo position of the flanger sound. L63 is far left, 0 is center, and R63 is far right.

FL Level (Flanger Level) 0 - 127 [19]
Adjust the volume of the flanger sound.

**Level (Output Level)** 0 - 127 [20] Adjust the output level.

## 59: OD1 / OD2 (Overdrive / Distortion 1, 2)[11H, 03H]

This connects two effect units in parallel, each of which allows you to select Overdrive or Distortion.



### OD1 (Overdrive/Distortion 1)

**OD1 Sel (OD1 Select)** 

Odrv/Dist [1]

Select either Overdrive or Distortion for set 1.

+OD1 Drive (OD1 Drive)

0 - 127 [2]

Adjust the degree of distortion for set 1. The volume will change together with the degree of distortion.

OD1 Amp (OD1 Amp Simulator Type)

Small/Bltln/2-Stk/3-Stk [3]

Select the type of guitar amp for set 1.

Small : small amp

Bitin : single-unit type amp

2-Stk : large double stack amp

3-Stk : large triple stack amp

OD1 Amp Sw (OD1 Amp Switch) Off/On [4]

Turn OD1 Amp on/off.

OD1 Pan (OD1 Output Pan) L63 - 0 - R63 [16] Set the stereo location of the overdrive or distortion sound for set 1. L63 is far left, 0 is center, and R63 is far right.

OD1 Level 0 - 127 [17]

Adjust the overdrive or distortion volume for set 1.

## OD2 (Overdrive/Distortion 2)

OD2 Sel (OD2 Select)

Odrv/Dist [6]

Select either Overdrive or Distortion for set 2.

**#OD2 Drive (OD2 Drive)** 

0 - 127[7]

Adjust the degree of distortion for set 2. The volume will change together with the degree of distortion.

OD2 Amp (OD2 Amp Simulator Type)

Small/Bltin/2-Stk/3-Stk [8]

Select the type of guitar amp for set 2.

Small : small amp

BltIn : single-unit type amp

2-Stk : large double stack amp

3-Stk : large triple stack amp

OD2 Amp Sw (OD2 Amp Switch) Off/On [9]
Turn OD2 Amp on/off.

rum ODZ Amp on/on.

OD2 Pan (OD2 Output Pan) L63 - 0 - R63 [18] Set the stereo location of the overdrive or distortion sound for set 2. L63 is far left, 0 is center, and R63 is far right.

OD2 Level 0 - 127 [19]

Adjust the overdrive or distortion volume for set 2.

Level (Output Level)

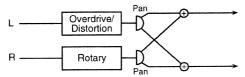
Adjust the output level.

0 - 127 [20]

## 60: OD / Rotary (Overdrive/Distortion, Rotary)

[11H, 04H]

This connects Overdrive or Distortion in parallel with Rotary.



### **OD (Overdrive/Distortion)**

#### **OD Sel (OD Select)**

Odrv/Dist [1]

Select either Overdrive or Distortion.

#### +OD Drive (OD Drive)

0 - 127 [2]

Adjust the depth of overdrive or distortion. The volume will change together with the depth of distortion.

## **OD Amp (OD Amp Simulator Type)**

Small/Bltln/2-Stk/3-Stk [3]

Select the type of guitar amp for overdrive or distortion.

Small : small amp

Bitin : single-unit type amp 2-Stk : large double stack amp 3-Stk : large triple stack amp

#### OD Amp Sw (OD Amp Switch)

Off/On [4]

Turn the OD Amp parameter on/off.

#### OD Pan (OD Output Pan) L63 - 0 - R63 [16]

Set the stereo location of the overdrive or distortion sound. L63 is far left, 0 is center, and R63 is far right.

#### 0 - 127 [17] **OD Level**

Adjust the volume of the overdrive or distortion sound.

#### RT (Rotary)

#### RT L Slow (RT Low Frequency Slow Rate)

0.05 - 10.0 [6]

Adjust the speed of the low-range rotor for the slow-speed settina.

#### RT L Fast (RT Low Frequency Fast Rate)

0.05 - 10.0 [7]

Adjust the speed of the low-range rotor for the fast-speed setting.

## RT Lo Accl (RT Low Frequency Acceleration)

Adjust the time over which the rotation speed of the lowrange rotor will change from low-speed to high-speed (or high-speed to low-speed) rotation. Smaller values will require greater time to reach the new rotational speed.

#### RT Lo Lev (RT Low Frequency Level) 0 - 127 [9] Adjust the volume of the low-range rotor.

#### RT H Slow (RT High Frequency Slow Rate)

0.05 - 10.0 [10]

Adjust the speed of the high-range rotor for the slow-speed setting.

#### RT H Fast (RT High Frequency Fast Rate)

0.05 - 10.0 [11]

Adjust the speed of the high-range rotor for the fast-speed setting.

## RT Hi Accl (RT High Frequency Acceleration)

0 - 15 [12]

Adjust the time over which the rotation speed of the highrange rotor will change from slow-speed to fast-speed (or fast-speed to slow-speed) rotation. Smaller values will require greater time to reach the new rotational speed.

#### RT Hi Lev (RT High Frequency Level)

0 - 127 [13]

Adjust the volume of the high-range rotor.

#### RT Sept (RT Separation) 0 - 127 [14]

Adjust the spatial spread of the rotary sound.

### **#RT Speed**

Slow/Fast [15]

Simultaneously switch the rotational speed of both the lowrange and the high-range rotors.

: Slow down the rotation to the specified Slow

speeds (RT L Slow parameter / RT H Slow

parameter values).

: Speed up the rotation to the specified Fast

speeds (RT L Fast parameter / RT H Fast

parameter values).

#### RT Pan (RT Output Pan) L63 - 0 - R63 [18] Adjust the stereo position of the rotary sound. L63 is far

left, 0 is center, and R63 is far right.

0 - 127 [19] RT Level

Adjust the volume of the rotary sound.

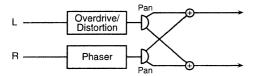
#### Level (Output Level)

0 - 127 [20]

Adjust the output level.

# 61: OD / Phaser(Overdrive/Distortion, Phaser) [11H, 05H]

This connects an overdrive or distortion in parallel with a phaser.



#### OD (Overdrive/Distortion)

OD Sel (OD Select)

Odrv/Dist [1]

Select either Overdrive or Distortion.

#### +OD Drive (OD Drive)

0 - 127[2]

Off/On [4]

Adjust the degree of distortion. The volume will change together with the degree of distortion.

## **OD Amp (OD Amp Simulator Type)**

Smal/Bitin/ 2-Stk/3-Stk [3]

Select the type of guitar amp.

Small : small amp

Bitin : single-unit type amp

2-Stk : large double stack amp

3-Stk : large triple stack amp

#### OD Amp Sw (OD Amp Switch)

Adjust the

np Sw (OD Amp Switch)

Turn the OD Amp parameter on/off.

OD Pan (OD Output Pan) L63 - 0 - R63 [16] Set the stereo location of the overdrive or distortion sound. L63 is far left, 0 is center, and R63 is far right.

OD Level 0 - 127 [17]

Adjust the overdrive or distortion volume.

#### PH (Phaser)

PH Man (Phaser Manual)

100 - 8.0k [6]

Adjust the center frequency at which the sound will be modulated.

#PH Rate (Phaser Rate)

0.05 - 10.0 [7]

Adjust the modulation speed.

0 - 127 [8]

PH Depth (Phaser Depth) Adjust the modulation depth.

0 - 127 [9]

Adjust the emphasis for the region around the center frequency specified by the PH Man parameter.

PH Mix (Phaser Mix Level)

PH Reso (Phaser Resonance)

0 - 127 [10]

Adjust the proportion of the phase-shifted sound that will be mixed with the direct sound

PH Pan (Phaser Output Pan) L63 - 0 - R63 [18]

Set the stereo location of the phaser sound. L63 is far left, 0 is center, and R63 is far right.

PH Level

0 - 127 [19]

Adjust the volume of the phaser sound.

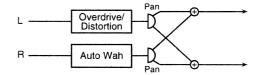
Level (Output Level)

0 - 127 [20]

Adjust the output level.

# 62: OD / Auto Wah (Overdrive/Distortion, Auto-wah)

This connects an Overdrive or Distortion in parallel with an Auto-wah.



#### OD (Overdrive/Distortion)

**OD Sel (OD Select)** 

Odrv/Dist [1]

Select either Overdrive or Distortion.

+OD Drive (OD Drive)

0 - 127 [2]

Adjust the degree of overdrive or distortion. The volume will change together with the degree of distortion.

### **OD Amp (OD Amp Simulator Type)**

Small/Bltln/2-Stk/3-Stk [3]

Select the type of guitar amp for overdrive or distortion.

Small : small amp

Bitin : single-unit type amp

2-Stk : large double stack amp

3-Stk : large triple stack amp

OD Amp Sw (OD Amp Switch) Off/On [4]

Turn the OD Amp parameter on/off.

OD Pan (OD Output Pan) L63 - 0 - R63 [16]

Set the stereo location of the overdrive or distortion sound. L63 is far left, 0 is center, and R63 is far right.

OD Level 0 - 127 [17]

Adjust the volume of the overdrive or distortion sound.

#### AW (Auto-wah)

AW Filter (Auto-wah Filter Type)
Select the type of filter for the auto-wah.

LPF/BPF [6]

LPF : The wah effect will be produced over a

broad frequency range.

BPF : The wah effect will be produced over a nar-

row frequency range.

#### AW Sens (Auto-wah Sensitivity) 0 - 127 [7]

Adjust the sensitivity with which the auto-wah filter will be controlled.

### #AW Man (Auto-wah Manual) 0 - 127 [8]

Set the center frequency at which the auto-wah effect will be produced.

#### AW Peak (Auto-wah Peak) 0 - 127 [9]

Adjust the way in which the wah effect will be applied to the region of the center frequency. Lower settings will produce a wah effect in a broad area around the center frequency, and higher settings will produce a wah effect in a narrower area around the center frequency.

# AW Rate (Auto-wah Rate) 0.05 - 10.0 [10] Adjust the modulation speed of the auto-wah.

# **AW Depth (Auto-wah Depth)** 0 - 127 [11] Adjust the modulation depth of the auto-wah.

### AW Pol (Auto-wah Polarity) Down/Up [12]

Set the direction in which the frequency will change when the auto-wah filter is modulated. With a setting of Up, the filter will change toward a higher frequency. With a setting of Down, it will change toward a lower frequency.

#### AW Pan (Auto-wah Output Pan)

L63 - 0 - R63 [18]

Adjust the stereo position of the auto-wah sound. L63 is far left, 0 is center, and R63 is far right.

## AW Level (Auto-wah Level) 0 - 127 [19]

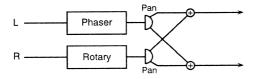
Adjust the volume of the auto-wah sound.

# Level (Output Level) 0 - 127 [20]

Adjust the output level.

# 63: PH / Rotary (Phaser, Rotary) [11H, 07H]

This connects a Phaser effect in parallel with a Rotary effect.



#### PH (Phaser)

#### PH Man (Phaser Manual) 100 - 8.0k [1]

Adjust the center frequency at which the sound will be modulated.

### +PH Rate (Phaser Rate) 0.05 - 10.0 [2]

Adjust the modulation speed of the phaser.

## PH Depth (Phaser Depth) 0 - 127 [3]

Adjust the modulation depth of the phaser.

#### PH Reso (Phaser Resonance) 0 - 127 [4]

Adjust the emphasis for the region around the center frequency specified by the PH Man parameter.

#### PH Mix (Phaser Mix Level) 0 - 127 [5]

Adjust the proportion of the phase-shifted sound that will be mixed with the direct sound.

PH Pan (Phaser Output Pan) L63 - 0 - R63 [16] Set the stereo location of the phaser sound. L63 is far left, 0 is center, and R63 is far right.

## PH Level (Phaser Level) 0 - 127 [17]

Adjust the volume of the phaser sound.

#### RT (Rotary)

#### RT L Slow (RT Low Frequency Slow Rate)

0.05 - 10.0 [6]

Adjust the speed of the low-range rotor for the slow-speed setting.

#### RT L Fast (RT Low Frequency Fast Rate)

0.05 - 10.0 [7]

Adjust the speed of the low-range rotor for the fast-speed setting.

#### RT Lo Accl (RT Low Frequency Acceleration)

0 - 15 [8]

Adjust the time over which the rotation speed of the lowrange rotor will change from slow-speed to fast-speed (or fast-speed to slow-speed) rotation. Smaller values will require greater time to reach the new rotational speed.

RT Lo Lev (RT Low Frequency Level) 0 - 127 [9] Adjust the volume of the low-range rotor.

#### RT H Slow (RT High Frequency Slow Rate)

0.05 - 10.0 [10]

Adjust the speed of the high-range rotor for the slow-speed setting.

## RT H Fast (RT High Frequency Fast Rate)

0.05 - 10.0 [11]

Adjust the speed of the high-range rotor for the fast-speed setting.

## RT Hi Accl (RT High Frequency Acceleration)

0 - 15 [12]

Adjust the time over which the rotation speed of the highrange rotor will change from slow-speed to fast-speed (or fast-speed to slow-speed) rotation. Smaller values will require greater time to reach the new rotational speed.

# RT Hi Lev (RT High Frequency Level) 0 - 127 [13] Adjust the volume of the high-range rotor.

## RT Sept (RT Separation) 0 - 127 [14]

Adjust the spread of the rotary sound.

# #RT Speed Slow/Fast [15]

Simultaneously switch the rotational speed of both the low-range and the high-range rotors.

Slow : Slow down the rotation to the specified speeds (RT L Slow parameter / RT H Slow

parameter values).

Fast : Speed up the rotation to the specified speeds (RT L Fast parameter / RT H Fast

parameter values).

# RT Pan (RT Output Pan) L63 - 0 - R63 [18] Adjust the stereo position of the rotary sound. L63 is far left, 0 is center, and R63 is far right.

#### RT Level 0 - 127 [19]

Adjust the volume of the rotary sound.

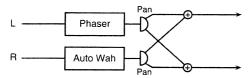
## Level (Output Level)

0 - 127 [20]

Adjust the output level.

#### 64: PH / Auto Wah (Phaser, Auto-wah) [11H, 08H]

This connects a Phaser effect and an Auto-wah effect in parallel.



#### PH (Phaser)

#### PH Man (Phaser Manual)

100 - 8.0k [1]

Adjust the center frequency at which the phaser sound will be modulated.

#### +PH Rate (Phaser Rate)

0.05 - 10.0 [2]

Adjust the modulation speed of the phaser.

#### PH Depth (Phaser Depth)

0 - 127 [3]

Adjust the modulation depth of the phaser.

#### PH Reso (Phaser Resonance)

0 - 127 [4]

Adjust the emphasis for the region around the center frequency specified by the PH Man parameter.

#### PH Mix (Phaser Mix Level)

0 - 127 [5]

Adjust the proportion of the phase-shifted sound that will be mixed with the direct sound.

### PH Pan (Phaser Output Pan)

L63 - 0 - R63 [16]

Set the stereo location of the phaser sound. L63 is far left, 0 is center, and R63 is far right.

#### PH Level (Phaser Level)

0 - 127 [17]

Adjust the volume of the phaser sound.

#### AW (Auto-wah)

# AW Filter (Auto-wah Filter Type)

LPF/BPF [6]

Select the type of filter for the auto-wah.

: The wah effect will be produced over a

broad frequency range.

**BPF** 

**LPF** 

: The wah effect will be produced over a nar-

row frequency range.

#### AW Sens (Auto-wah Sensitivity)

0 - 127 [7] Adjust the sensitivity with which the auto-wah filter will be modulated.

#### **#AW Man (Auto-wah Manual)**

0 - 127 [8]

Set the center frequency at which the auto-wah effect will be produced.

#### AW Peak (Auto-wah Peak)

0 - 127 [9]

Adjust the way in which the wah effect will be applied to the region of the center frequency. Lower settings will produce a wah effect in a broad area around the center frequency, and higher settings will produce a wah effect in a narrower area around the center frequency.

### AW Rate (Auto-wah Rate)

0.05 - 10.0 [10]

Adjust the modulation speed of the auto-wah.

#### AW Depth (Auto-wah Depth)

0 - 127 [11]

Adjust the modulation depth of the auto-wah

#### AW Pol (Auto-wah Polarity)

Down/Up [12]

Set the direction in which the frequency will change when the auto-wah filter is modulated. With a setting of Up, the filter will change toward a higher frequency. With a setting of Down it will change toward a lower frequency.

## AW Pan (Auto-wah Output Pan) L63 - 0 - R63 [18]

Adjust the stereo position of the auto-wah sound. L63 is far left, 0 is center, and R63 is far right.

#### AW Level (Auto-wah Level)

0 - 127 [19]

Adjust the volume of the auto-wah sound.

## Level (Output Level)

0 - 127 [20]

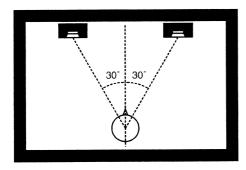
Adjust the output level.

## When using 3D effects

The following four 3D effects utilize RSS (Roland Sound Space) technology to create a spaciousness that cannot be produced by delay, reverb, or chorus etc.

20: 3D Chorus28: 3D Delay31: 3D Auto32: 3D Manual

When using these effects, we recommend that you place your speakers as follows. Also, make sure that the speakers are at a sufficient distance from the walls on either side.



If the left and right speakers are too far apart, or if there is too much reverberation, the full 3D effect may not appear.

Each of these effects has an "Out (Output Mode)" parameter. If the sound from the OUTPUT jacks will be heard through speakers, set this parameter to Speaker. If the sound will be heard through headphones, set it to Phones. This will ensure that the optimal 3D effect will be heard. If this parameter is not set correctly, the full 3D effect may not appear.

# **Modifying the Effect Parameters**

The value of some insertion effect parameters can be modified using controllers.

When using MIDI messages to modify effect parameters during a song, using exclusive messages to perform all of the control would excessively increase the amount of data. For this reason, the SC-88ST Pro lets you use controllers to modify some of the principle parameters of each effect type. By taking advantage of this, you can use control change messages to modify parameter values during a song without excessively increasing the amount of data.

When playing the SC-88ST Pro from a keyboard, etc., you can also use a pedal or other controller to modify the values in real time.

EFX C.Src1, 2 (Effect control source 1, 2) EFX C.Dep1, 2 (Effect control depth 1, 2)

# ■ The Function of Each Parameter

# EFX C.Src1, 2 (Effect Control Source): Off/CC1 - 95/CAf/Bend

Specify the controllers that you wish to use. EFX C.Src1 will control the parameter marked with a "+" at the left of the parameter name. EFX C.Src2 will control the parameter marked with a "#" at the left of the parameter name.

CC1 - 95 : Controller numbers 1 - 95
CAf : Channel aftertouch
Bend : Pitch bend

\* For CC1 - 95, make sure that the setting matches the controller number of the device that is transmitting the MIDI messages.

# EFX C.Depth 1, 2 (Effect Control Depth): -100 - +100 (%)

This specifies the percentage of the full parameter range in which change will actually occur when a controller is used. Higher values will allow a greater range of change. If this value is set to 0, the controller will not affect the effect parameter. With negative (-) settings, the change will be inverted. The controller will increase/decrease the value of the effect parameter realtime to the value that was set.

When Depth has a positive (+) setting

Setting value + value from controller × depth (%) / 100

When Depth has a negative (-) setting

Setting value - value from controller × depth (%) / 100

#### < Example >

The Drive parameter of 5: Overdrive normally changes in the range of 0 - 127.

When this parameter is modified by a controller, it will change in the range of 0 - 127 if the Effect Control Depth value is +100. With a value of +50, it will change in the range of 0 - 64 (i.e., 50% of 127).

Normally  $\rightarrow 0 - 127$ Depth = +100%  $\rightarrow 0 - 127$ Depth = +50%  $\rightarrow 0 - 64$ Depth = -100%  $\rightarrow 127 - 0$ 

# ■ Examples of Using Effect Controllers

Here are some examples of how effect controllers can be used.

Hexadecimal values in the < Settings > sections denote exclusive messages, and hexadecimal values in the < Modifying the value > sections denote control change messages. After the settings in < Settings > have been made, the control change messages described in < Modifying the value > can be transmitted to modify the parameters to the desired value.

For details on exclusive messages, refer to p.111 and following.

\* For the correspondence between the hexadecimal values and the parameter values, refer to p.105.

# Using Control Change 16 to modify the Drive value of 6: Distortion

- < Settings >
- 1. Turn EFX on for Part 1. F0 41 10 42 12 40 41 22 01 5C F7
- 2. Set the effect type to 6: Distortion (value: 01H 11H) F0 41 10 42 12 40 03 00 01 11 2B F7
- 3. Set Drive (address: 40H 03H 03H) to 0 (00H). F0 41 10 42 12 40 03 03 00 3A F7
- 4. Set Effect Control Source 1 (address: 40H 03H 1BH) to CC16 (10H).

F0 41 10 42 12 40 03 1B 10 12 F7

5. Set Effect Control Depth 1 (address: 40H 03H 1CH) to +100% (7FH).

F0 41 10 42 12 40 03 1C 7F 22 F7

< Modifying the value >

# Using Control Change 16 to modify the Speed value of 9: Rotary

- < Settings >
- 1. Turn EFX on for Part 1.

F0 41 10 42 12 <u>40 41 22 01</u> 5C F7

- 2. Set the effect type to 9: Rotary (value: 01H 22H) F0 41 10 42 12 40 03 00 01 22 1A F7
- 3. Set Speed (address: 40H 03H 0DH) to Slow (00H). F0 41 10 42 12 40 03 0D 00 30 F7
- Set Effect Control Source 1 (address: 40H 03H 1BH) to CC16 (10H).
  - F0 41 10 42 12 <u>40 03 1B 10</u> 12 F7
- Set Effect Control Depth 1 (address: 40H 03H 1CH) to +100% (7FH).

F0 41 10 42 12 40 03 1C 7F 22 F7

#### < Modifying values >

Since the Speed parameter has only two values, Slow and Fast, the lower half of the range (00H -- 3FH) will select Slow, and the upper half (40H--7FH) will select Fast.

B0 10 00	Speed	$\rightarrow$ Slow
:	:	
B0 10 3F	Speed	$\to {\sf Slow}$
B0 10 40	Speed	$\to \textbf{Fast}$
:	:	
B0 10 7F	Speed	$\rightarrow$ Fast

#### Using Control Change 16 to modify the Wah Man value of 50:GTR Multi3

< Settings >

1. Turn EFX on for Part 1.

F0 41 10 42 12 40 41 22 01 5C F7

- 2. Set the effect type to 50: GTR Multi 3 (value: 04H 02H) F0 41 10 42 12 40 03 00 04 02 37 F7
- 3. Set Wah Man (address: 40H 03H 04H) to 0 (00H). F0 41 10 42 12 40 03 04 00 39 F7
- 4. Set Effect Control Source 1 (address: 40H 03H 1BH) to CC16 (10H).

F0 41 10 42 12 40 03 1B 10 12 F7

'5. Set Effect Control Depth 1 (address: 40H 03H 1CH) to +100% (7FH).

F0 41 10 42 12 40 03 1C 7F 22 F7

< Modifying the value >

# Using Control Change 17 to modify the Feedback value of 10: Stereo Flanger

Example 1: When Effect Control Depth is set to +100

- < Settings >
- 1. Turn EFX on for Part 1. F0 41 10 42 12 40 41 22 01 5C F7
- Set the effect type to 10: Stereo Flanger (value: 01H 23H)
   F0 41 10 42 12 40 03 00 01 23 19 F7
- Set Feedback (address: 40H 03H 08H) to -98% (00H).
   F0 41 10 42 12 40 03 08 00 35 F7
- Set Effect Control Source 2 (address: 40H 03H 1DH) to CC17 (11H).

F0 41 10 42 12 40 03 1D 11 0F F7

 Set Effect Control Depth 2 (address: 40H 03H 1EH) to +100% (7FH).

F0 41 10 42 12 <u>40 03 1E 7F</u> 20 F7

#### < Modifying the value >

The Feedback parameter changes in 2% steps, with 40H as the center.

B0 11 00	Feedback	→ -98%
:	*	
B0 11 0F	Feedback	$\rightarrow$ -98%
B0 11 10	Feedback	$\rightarrow$ -96%
:	:	
B0 11 3E	Feedback	→ -4%
B0 11 3F	Feedback	→ -2%
B0 11 40	Feedback	→ +/-0%
B0 11 41	Feedback	<b>→</b> +2%
B0 11 42	Feedback	<b>→</b> +4%
:	:	
B0 11 70	Feedback	<b>→</b> +96%
B0 11 71	Feedback	<b>→</b> +98%
:	:	
B0 11 7F	Feedback	→ +98%

# Using Control Change 17 to modify the Feedback value of 10: Stereo Flanger

Example 2: When Effect Control Depth is set to -100

- < Settings >
- 1. Turn EFX on for Part 1.

F0 41 10 42 12 40 41 22 01 5C F7

- 2. Set the effect type to 10: Stereo Flanger (value: 01H 23H) F0 41 10 42 12 40 03 00 01 23 19 F7
- Set Feedback (address: 40H 03H 08H) to +98% (7FH).
   F0 41 10 42 12 40 03 08 7F 36 F7
- 4. Set Effect Control Source 2 (address: 40H 03H 1DH) to CC17 (11H).

F0 41 10 42 12 40 03 1D 11 0F F7

5. Set Effect Control Depth 2 (address: 40H 03H 1EH) to -100% (00H).

F0 41 10 42 12 40 03 1E 00 1F F7

#### < Modifying the value >

The Feedback parameter changes in 2% steps, with 40H as the center. Since Effect Control Depth is set to -100%, increasing control change values will cause the value of the Feedback parameter to decrease.

B0 11 00	Feedback	<b>→</b> +98%
:	:	
B0 11 0F	Feedback	→ +98%
B0 11 10	Feedback	<b>→</b> +96%
;	:	
B0 11 3E	Feedback	<b>→</b> +4%
B0 11 3F	Feedback	<b>→</b> +2%
B0 11 40	Feedback	→ +/-0%
B0 11 41	Feedback	<b>→ -2</b> %
B0 11 42	Feedback	<b>→ -4%</b>
;	:	
B0 11 70	Feedback	→ -96%
B0 11 71	Feedback	→ -98%
:	:	
B0 11 7F	Feedback	<b>→</b> -98%

# **Appendix**

# **Troubleshooting**

If the the SC-88ST Pro does not function in the way you expect, first check the following points. If this does not resolve the problem, consult your dealer or a nearby Roland Service Station (listed at the end of this manual).

#### • Cannot turn the power on

• Is the AC adaptor correctly plugged into an outlet? Refer to "Connecting the AC adaptor" and make sure that connections have been made correctly. (p. 9, 10)

#### No sound

- Is the power turned on for the other devices connected to the the SC-88ST Pro?
- Is the volume turned down too far? Use VOLUME to adjust the overall volume.
- Have you incorrectly connected the MIDI IN and OUT connectors? (p.11, 12)
- Can you hear sound through headphones? If you can hear sound through headphones, the problem may be that the audio cable transmitting the sound to the other devices is broken or incorrectly connected, or that there is a problem with your mixer/amp/speaker system.
- Do the part monitoring indicators blink? If any of them is blinking, the SC-88ST Pro is receiving MIDI messages. Check the VOLUME and the cable connections once again.
- Has the Expression pedal etc. on a connected MIDI device turned the volume down?
- Is the overall volume for all parts turned down? (p.29)
- Are the settings for the OUTPUT 1,2 jacks correct? (p.26)
- Is the rear panel COMPUTER Switch set to the correct position for the software you are using? (p.11)
   After changing the position of the COMPUTER Switch you must turn power of the SC-88ST Pro on.
- Has the software volume setting been lowered? If the music files contains volume settings, set the volume again.

## • A specific Part does not sound

- Is the volume level of the Part turned down? (p.24)
- Does the MIDI Receive channel of the Part match the MIDI Transmit channel of the connected MIDI device? (p.20)

### A specific keyboard area does not sound

• Has the Keyboard Range been set? (p.25)

#### Cannot select the desired sound

 Are you sending an incorrect Program number? (p.22, 23)

#### Sound is distorted

- Is an effect which distorts the sound being applied? (p.35)
- If a specific sound or Part is distorted, lower the volume level of that Part. (p.24)
- If all sounds are distorted, lower the overall volume level of all Parts (p.29), or use the Volume knob to lower the volume level.

#### Pitch is incorrect

- Is the pitch of a specific Part incorrect? (Scale Tuning p.26, Pitch Offset Fine p.117, Pitch Fine Tune p.24)
- Is the pitch of all Parts incorrect by a semitone or more? (Master Key Shift p.29)
- Is the pitch of a specific Part incorrect by a semitone or more? (Key Shift p.24)
- Has a MIDI Pitch Bend message been received to change the pitch? Return the pitch bend lever or wheel to the central position. Or, transmit a Pitch Bend message with the central value (40 00H).

#### Sound is wrong

- Have you selected another sound after modifying sound parameter settings (filter, etc.)? Restore all sound parameter settings to a value of 0.
- If you wish to play back music files that bears the GM/GS logo, you will need to initialize the SC-88ST Pro for GM/GS. When initialization is performed, the SC-88ST Pro will be reset to the basic GM/GS settings, and you will be able to play back music files that bears the GM/GS logo.
- The beginning of music files bearing the GM/GS logo contains an initialization message (General MIDI System On, GS Reset, p. 18). This means that if you will be playing back the music files from the beginning, the SC-88ST Pro will be initialized automatically.

#### Sounds are interrupted

- If you attempt to play more than 64 voices at once, sounds will be interrupted.
- Is the same data being sent simultaneously to MIDI IN A and MIDI IN B?

# ● The SC-88ST Pro does not transmit MIDI data

- In order for the SC-88ST Pro to transmit data from the COMPUTER Connector, the COMPUTER Switch must be set to either PC-1, PC-2, or Mac, depending on the type of software you are using. (p. 11)
- When the rear panel COMPUTER Switch is in the MIDI position, the SC-88ST Pro will not transmit data from the COMPUTER Connector. In this case, data will be transmitted from the MIDI OUT connector. (p. 11)

## The sound module connected to the SC-88ST Pro cannot be played from a computer or sequencer

 Music data received at the COMPUTER Connector of the SC-88ST Pro is transmitted from the MIDI OUT connector, but the COMPUTER Switch must be in either the PC-1, PC-2 or Mac position, depending on the type of software that you are using. (p. 11)

## The setting of the computer switch does not take effect

 Turn off the power before changing the setting of the COMPUTER Switch. The new setting will take effect when the power is turned on. (p. 11)

## How can I restore the factory settings (Initialize)

 All settings of the SC-88ST Pro will return to their factory defaults when the power is turned on.

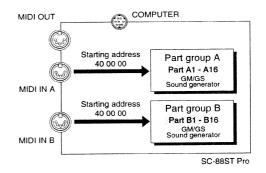
## **Exclusive Data Addresses**

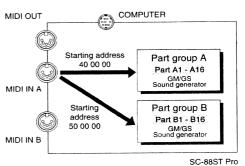
## Receiving exclusive data

As listed in "MIDI Implementation" (p.113), the address of MIDI exclusive data (GS format) is defined in units of 16 Parts. In other words, starting from address 40 00 00 are the parameters for 16 Parts. The SC-88ST Pro has data for another 16 Parts, making a total of 32 Parts. For this reason, the SC-88ST Pro's MIDI exclusive data format expands the addressing, and places the remaining 16 Parts at starting address 50 00 00.

In the same way as with channel messages, exclusive data received at MIDI IN A is passed to Group A Parts, and exclusive data received at MIDI IN B is passed to Group B Parts. In other words, exclusive data for the 32 Parts is received using two MIDI IN connectors. If this is done, each MIDI IN receives exclusive data for 16 Parts, so it is not necessary to split up the data into addresses 40 00 00 and 50 00 00.

However it is also possible for the SC-88ST Pro to receive exclusive data for all 32 Parts at a single MIDI IN. In this case it is necessary to use address 50 00 00. For example, the data at starting address 40 00 00 will be passed to Group A Parts, and the data at starting address 50 00 00 received at the same MIDI IN will be passed to Group B Parts. In other words, using starting address 50 00 00 means that the data will be passed to the Parts of the other Group than the MIDI IN that the data was received at.





Transmitting exclusive data

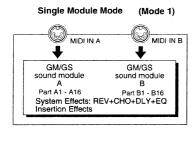
Since the SC-88ST Pro has only one MIDI OUT, the exclusive data transmitted is sent using the two address areas of 40 00 00 and 50 00 00. User sound data is located at starting areas of 20 00 00.

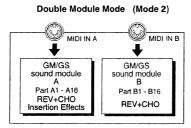
## Using the SC-88ST Pro As Two Sound Modules

The SC-88ST Pro has two system modes: Single Module Mode (Mode 1) and Double Module Mode (Mode 2). When Double Module Mode is selected, two types of system effect can be used simultaneously. For example, you could use different types of reverb on Drum Parts than on Normal Parts. Other parameters can also be set separately in two groups.

Insertion effects can be used only for part A.

Normally the SC-88ST Pro will be in Single Module mode. To change modes, use the system exclusive message "SYSTEM MODE SET" (p. 111).





\* Be aware that when you switch the operating mode, the settings of each part will be initialized (just as if GS Reset had been performed).

In both Single Module Mode and Double Module Mode, MIDI messages received at MIDI IN A are sent to Group A Parts, and MIDI messages received at MIDI IN B are sent to Group B Parts (p.20). It is possible to specify the address for Exclusive messages so that an Exclusive message received at MIDI A will be passed to Group B Parts. (p.73)

In Double Module Mode, two groups are provided for the following parameters.

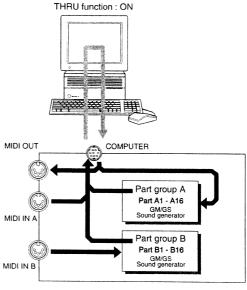
Master Volume Level	(p.29)
Master Pan	(p.29)
Master Key Shift	(p.29)
Master Tune	(p.29)
Reverb MACRO	(p.32)
Reverb Character	(p.32)
Reverb Pre-LPF (Reverb Pre Lowpass Filter)	(p.32)
Reverb Level	(p.32)
Reverb Time	(p.32)
Reverb Delay Feedback	(p.33)
Chorus MACRO	(p.32)
Chorus Pre-LPF (Chorus Pre-Lowpass Filter)	(p.33)
Chorus Level	(p.33)
Chorus Feedback Level	(p.33)
Chorus Delay Time	(p.33)
Chorus Rate	(p.33)
Chorus Depth	(p.33)
Chorus Send Level To Reverb	(p.33)

# **MIDI Data Flow Diagram**

# How MIDI Messages Are Exchanged with a Computer

Depending on the setting of the computer switch, MIDI data flow will be different as follows.

# When the computer switch is set to PC-1, PC-2 or Mac



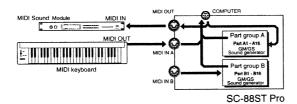
\* In order for data received at MIDI IN A to be sent to the sound generator section, the Thru function of the computer software must be turned on. When Thru function is turned on, the data received at MIDI IN A will pass through the computer and be played by the sound generator section.

The Thru function of the computer software must also be turned on if you want MIDI exclusive data from the sound generator to be transmitted from the MIDI OUT connector of the SC-88ST Pro.

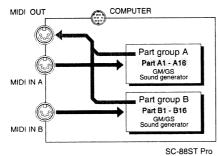
- \* For details on how to turn on the Thru function, refer to the owner's manual for the software that you are using.
- \* Data received at MIDI IN B will not be sent to the computer connector, but will be passed directly to the sound generator section.
- \* The number of sound generator Parts that can be controlled using the computer connector will depend on the software you are using. This means that if you are using the computer connector, you will not necessarily be able to play 32 Parts. Carefully read the operating manual for your software. Also be aware that although the SC-88ST Pro allows two connectors MIDI IN A and B to be used for 32 Part performance, this may impossible to achieve depending on your software.

# Connecting Another MIDI Sound Source to the SC-88ST Pro

If you wish to connect another MIDI sound source to the SC-88ST Pro's MIDI OUT connector, computer data received at the computer connector will be transmitted from the SC-88ST Pro MIDI OUT connector.



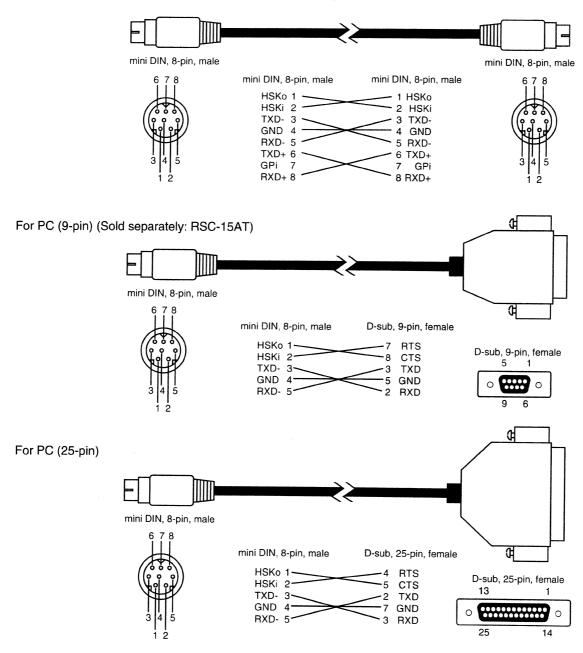
### When the computer switch is set to MIDI



\* Be aware that when the computer switch located on the back of the SC-88ST Pro is set to MIDI, data will not be exchanged via the computer connector.

# **COMPUTER Cable Wiring Diagrams**

For Apple Macintosh Series (Sold separately: RSC-15APL)



# **Instrument List**

PC	CCon	Native Map	Voices	SC88 Map	Voices	SC55 Map	Voices
	000	Piano 1	1	Piano 1	1	Piano 1	1
,,,	008	Piano 1w	1	Piano 1w	1	Piano 1w	1
	016	European Pf	1	Piano 1d	1	Piano 1d	1
	024	Piano + Str.	2				
002	000	Piano 2	2	Piano 2	1	Piano 2	1
	008	Piano 2w	2	Piano 2w	1	Piano 2w	1
	016	Dance Piano	2				
003	000	Piano 3	2	Piano 3	1	Piano 3	1
500	001	EG+Rhodes 1	2	EG+Rhodes 1	2		
	002	EG+Rhodes 2	2 #	EG+Rhodes 2	2		
	008	Piano 3w	2	Piano 3w	1	Piano 3w	1
004	000	Honky-tonk	2	Honky-tonk	2	Honky-tonk	2
504	008	Honky-tonk 2	2	Old Upright	2	HonkyTonk w	2
005	000	E.Piano 1	1	E.Piano 1	2	E.Piano 1	1
JUS		St.Soft EP	2#	St.Soft EP	2	Detuned EP1	2
	008	Cho.E.Piano	2 #	31.3011 EF	-		-
	010	SilentRhodes	2				
	016	FM+SA EP	2#	FM+SA EP	2	E.Piano 1v	2
	017	Dist E.Piano	2 #		-		-
	024	Wurly	2	60'sE.Piano	1	60s E.Piano	1
	025	Hard Rhodes	2#	Hard Rhodes	2		
	026	MellowRhodes	2 #	MellwRhodes	2		
006	000	E.Piano 2	2 #	E.Piano 2	2	E.Piano 2	1
000	008	Detuned EP 2	2#	Detuned EP2	2	Detuned EP2	2
	016	St.FM EP	2 #	St.FM EP	2	E.Piano 2v	2
	024	Hard FM EP	2 #	Hard FM EP	2		
007	000	Harpsichord	1 #	Harpsichord	1	Harpsichord	1
007	001	Harpsichord2	2		•		•
	008	Coupled Hps.	2#	Coupled Hps	2 *	Coupled Hps	2
	016	Harpsi.w	1#	Harpsi.w	1	Harpsi.w	1
	024	Harpsi.o	2 #	Harpsi.o	2	Harpsi.o	2
	032	Synth Harpsi	2				
008	000	Clav.	1#	Clav.	1	Clav.	1
000	008	Comp Clav.	1				
	016	Reso Clav.	1				
	024	Clav.o	2				
	032	Analog Clav.	2				
	033	JP8 Clav. 1	1				
	035	JP8 Clav. 2	1	*****			
CI	hro	matic Pe	erci	ssion			
	000	Celesta	1#	Celesta	1 *	Celesta	1
	001	Pop Celesta	2				
010	000	Glockenspiel	1 #	Glocknspiel	1	Glockenspl	1
		Music Box	1 #	Music Box	1	Music Box	1
				Vibraphone	<u> </u>	Vibraphone	1
011		Vihranhone	1			•	•
011	000	Vibraphone Pon Vibe	1 2	•	2		
011	000	Pop Vibe.	2	Hard Vibe	2 1 *		1
011	000 001 008	Pop Vibe. Vibraphone w	2 1	Hard Vibe Vib.w	2 1 *	Vib.w	1
011	000 001 008 009	Pop Vibe. Vibraphone w Vibraphones	2 1 2	Hard Vibe Vib.w	1 *	Vib.w	
011	000 001 008 009	Pop Vibe. Vibraphone w Vibraphones <b>Marimba</b>	2 1 2 1#	Hard Vibe Vib.w Marimba	1 *	Vib.w  Marimba	1
011	000 001 008 009 000 008	Pop Vibe. Vibraphone w Vibraphones Marimba Marimba w	2 1 2 1 # 1 #	Hard Vibe Vib.w Marimba Marimba w	1 1	Vib.w  Marimba Marimba w	
011	000 001 008 009 000 008 016	Pop Vibe. Vibraphone w Vibraphones  Marimba Marimba w Barafon	2 1 2 1 # 1 # 1 #	Hard Vibe Vib.w Marimba Marimba w Barafon	1 1 1 1	Vib.w  Marimba	1
011	000 001 008 009 000 008	Pop Vibe. Vibraphone w Vibraphones Marimba Marimba w	2 1 2 1 # 1 #	Hard Vibe Vib.w Marimba Marimba w	1 1	Vib.w Marimba Marimba w	1

PC	CC00	Native Map	Voices	SC88 Map	Voices	SC55 Map	Voices
015	000	Tubular-bell	1 #	Tubularbell	1 *	Tubularbeli	1
	800	Church Bell	1 #	Church Bell	1 *	Church Bell	1
	009	Carillon	1 #	Carillon	1 °	Carillon	1
016	000	Santur	1 #	Santur	1 *	Santur	1
	001	Santur 2	2 #	Santur 2	2		
	800	Cimbalom	2 #	Cimbalom	2		
	016	Zither 1	1				
	017	Zither 2	2				
	024	Dulcimer	2				
Oı	ga	n					
017	000	Organ 1	2	Organ 1	1	Organ 1	1
	001	Organ 101	2	Organ 101	2		
	800	Trem. Organ	2	DetunedOr.1	2	Detuned Or1	2
	009	Organ.o	2	Organ 109	2		
	016	60's Organ 1	1	60'sOrgan 1	1	60's Organ1	1
	017	60's Organ 2	1	60'sOrgan 2	1		
	018	60's Organ 3	1	60'sOrgan 3	1		
	019	Farf Organ	1				
	024	Cheese Organ	1 #	CheeseOrgan	1		
	025	D-50 Organ	2				
	026	JUNO Organ	2				
	027	Hybrid Organ	2				
	028	VS Organ	2	****			
	029	Digi Church	2				
	032	70's E.Organ	2	Organ 4	1	Organ 4	2
	033	Even Bar	2 #	Even Bar	2		
	040	Organ Bass	1 #	Organ Bass	1		
	048	5th Organ	2				
018	000	Organ 2	2	Organ 2	1	Organ 2	1
	001	Jazz Organ	2	Organ 201	2		
	002	E.Organ 16+2	2				
	008	Chorus Or.2	2	DetunedOr.2	2	Detuned Or2	2
	009	Octave Organ	2		_		
	032	Perc.Organ	2	Organ 5	2	Organ 5	2
		Organ 3	2 #	Organ 3	2 *	Organ 3	2
019	000					-	
019		-	1 #	Rotary Org.	1		
019	800	Rotary Org.	1 #	Rotary Org. RotaryOrg.S	1		
019	008 016	Rotary Org. Rotary Org.S		Rotary Org. RotaryOrg.S			
019	008 016 017	Rotary Org. Rotary Org.S Rock Organ 1	1 # 1 # 2	RotaryOrg.S			
019	008 016 017 018	Rotary Org. Rotary Org.S Rock Organ 1 Rock Organ 2	1 # 1 # 2 2	RotaryOrg.S			
	008 016 017 018 024	Rotary Org. Rotary Org.S Rock Organ 1 Rock Organ 2 Rotary Org.F	1 # 1 # 2 2 1 #	RotaryOrg.S RotaryOrg.F	1		1
	008 016 017 018 024	Rotary Org. Rotary Org.S Rock Organ 1 Rock Organ 2 Rotary Org.F Church Org.1	1 # 1 # 2 2 1 #	RotaryOrg.S RotaryOrg.F ChurchOrg.1	1	Church Org1	1 2
	008 016 017 018 024 <b>000</b> 008	Rotary Org. Rotary Org.S Rock Organ 1 Rock Organ 2 Rotary Org.F Church Org.1 Church Org.2	1 # 1 # 2 2 1 # 1 # 2 #	RotaryOrg.S RotaryOrg.F ChurchOrg.1 ChurchOrg.2	1 1 1		
	008 016 017 018 024 <b>000</b> 008 016	Rotary Org. Rotary Org.S Rock Organ 1 Rock Organ 2 Rotary Org.F Church Org.1 Church Org.2 Church Org.3	1 # 1 # 2 2 1 # 1 # 2 # 2 #	RotaryOrg.S  RotaryOrg.F ChurchOrg.1 ChurchOrg.2 ChurchOrg.3	1 1 2 2	Church Org1 Church Org2	2
	008 016 017 018 024 <b>000</b> 008 016 024	Rotary Org. Rotary Org.S Rock Organ 1 Rock Organ 2 Rotary Org.F Church Org.1 Church Org.2 Church Org.3 Organ Flute	1 # 1 # 2 1 # 1 # 2 # 2 # 1 #	RotaryOrg.S RotaryOrg.F ChurchOrg.1 ChurchOrg.2 ChurchOrg.3 Organ Flute	1 1 2 2 1	Church Org1 Church Org2 Church Org3	2
	008 016 017 018 024 <b>000</b> 008 016 024 032	Rotary Org. Rotary Org.S Rock Organ 1 Rock Organ 2 Rotary Org.F Church Org.1 Church Org.2 Church Org.3 Organ Flute Trem.Flute	1 # 1 # 2 1 # 1 # 2 # 2 # 1 # 2 # 2 #	RotaryOrg.S  RotaryOrg.F ChurchOrg.1 ChurchOrg.2 ChurchOrg.3	1 1 2 2	Church Org1 Church Org2 Church Org3	2
020	008 016 017 018 024 <b>000</b> 008 016 024	Rotary Org. Rotary Org.S Rock Organ 1 Rock Organ 2 Rotary Org.F Church Org.1 Church Org.2 Church Org.3 Organ Flute	1 # 1 # 2 1 # 1 # 2 # 2 # 1 #	RotaryOrg.S RotaryOrg.F ChurchOrg.1 ChurchOrg.2 ChurchOrg.3 Organ Flute Trem.Flute	1 1 2 2 1	Church Org1 Church Org2 Church Org3	2

PC CC00

Voices Remark #

Remark \* Remark +

: program number(Instrument number)
: value of controller number 0 (Bank number,
Variation number)
: legato-enabled sounds
: number of voices used by the Instrument
: same sounds as SC-88 map
: same sounds as SC-55 map
: a percussive sound which cannot be played melodically. Use near C4 (note number 60).

	CC0	0 Native Map	Voices	SC88 Map	Voice	s SC55 Map	Voices
022	000	Accordion Fr	1	AccordionFr	1	Accordion F	2
	800	Accordion It	1	AccordionIt	2	Accordion I	2
	009	Dist. Accord	2				
	016	Cho. Accord	2				
	024	Hard Accord	2				
	025	Soft Accord	2				
023	000	Harmonica	1	Harmonica	1	Harmonica	1
	001	Harmonica 2	1	Harmonica 2	2		
024	000	Bandoneon	2	Bandoneon	1	Bandoneon	2
UL-1	008	Bandoneon 2	2				
	016	Bandoneon 3	2				
<u>_</u>	uita						
				Node weeks OA		Mulan Ct	1
025	000	Nylon-str.Gt	2	Nylonstr.Gt	1	Nylon Gt.	
	800	Ukulele	1 #	Ukulele	1	Ukulele	1
	016	Nylon Gt.o	2	Nylon Gt.o	2	Nylon Gt.o	2
	024	Velo Harmnix	1 #	VeloHarmnix	1		
	032	Nylon Gt 2	1	Nylon Gt.2	1	Nylon Gt.2	1
	040	Lequint Gt.	1 #	Lequint Gt.	1		
026	000	Steel-str.Gt	1	Steelstr.Gt	1	Steel Gt.	1
	800	12-str.Gt	2	12-str.Gt	2	12-str.Gt	2
	009	Nylon+Steel	2	Nylon+Steel	2		
	016	Mandolin	2 #	Mandolin	2	Mandolin	1
	017	Mandolin 2	2				
	018	MandolinTrem	2				
	032	Steel Gt.2	1 #	Steel Gt.2	1		
027	000	Jazz Gt.	1	Jazz Gt.	1 *	Jazz Gt.	1
	001	Mellow Gt.	2 #	Mellow Gt.	2		
	800	Pedal Steel	1 #	Pedal Steel	1	Hawaiian Gt	1
028	000	Clean Gt.	1	Clean Gt.	1	Clean Gt.	1
	001	Clean Half	1				
	002	Open Hard 1	2				
	003	Open Hard 2	1				
	004	JC Clean Gt.	1				
	008	Chorus Gt.	2	Chorus Gt.	2	Chorus Gt.	2
	009	JC Chorus Gt	2				
	016	TC FrontPick	1				
	017	TC Rear Pick	1	****			
	018	TC Clean ff	2				
	019	TC Clean 2:	2	•			
200		Muted Gt.	1			Muted Gt.	1
423	000	muteu Gt.	•	Muted Gt.	1		•
		Mutad Dia C+	1 #	MutadDia C+	1		
	001	Muted Dis.Gt	1#	MutedDis.Gt	1		
	002	TC Muted Gt.	2				•
	002 008	TC Muted Gt. Funk Pop	2 1 #	 Funk Pop	1	Funk Gt.	1
	002 008 016	TC Muted Gt. Funk Pop Funk Gt.2	2 1 # 1 #	Funk Pop Funk Gt.2	1	Funk Gt. Funk Gt.2	1
	002 008 016 <b>000</b>	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt	2 1 # 1 # 2	Funk Pop Funk Gt.2	1	Funk Gt. Funk Gt.2  OverdriveGt	
	002 008 016 <b>000</b> 001	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt Overdrive 2	2 1 # 1 # <b>2</b> 2	Funk Pop Funk Gt.2  OverdriveGt	1	Funk Gt. Funk Gt.2 OverdriveGt	1
	002 008 016 <b>000</b> 001 002	TC Muted Gt. Funk Pop Funk Gt.2 OverdriveGt Overdrive 2 Overdrive 3	2 1 # 1 # <b>2</b> 2 2	Funk Pop Funk Gt.2	1	Funk Gt. Funk Gt.2  OverdriveGt	1
	002 008 016 <b>000</b> 001 002 003	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt Overdrive 2 Overdrive 3 More Drive	2 1 # 1 # <b>2</b> 2 2 2	Funk Pop Funk Gt.2  OverdriveGt	1	Funk Gt. Funk Gt.2  OverdriveGt	1
	002 008 016 000 001 002 003 008	TC Muted Gt. Funk Pop Funk Gt.2 OverdriveGt Overdrive 2 Overdrive 3 More Drive LP OverDrvGt	2 1 # 1 # 2 2 2 2 2	Funk Pop Funk Gt.2  OverdriveGt	1	Funk Gt. Funk Gt.2  OverdriveGt	1
	002 008 016 <b>000</b> 001 002 003	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt Overdrive 2 Overdrive 3 More Drive	2 1 # 1 # <b>2</b> 2 2 2	Funk Pop Funk Gt.2  OverdriveGt	1	Funk Gt. Funk Gt.2  OverdriveGt	1
030	002 008 016 000 001 002 003 008 009	TC Muted Gt. Funk Pop Funk Gt.2 OverdriveGt Overdrive 2 Overdrive 3 More Drive LP OverDrvGt	2 1 # 1 # 2 2 2 2 2	Funk Pop Funk Gt.2  OverdriveGt	1	Funk Gt. Funk Gt.2  OverdriveGt	1
	002 008 016 000 001 002 003 008 009	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt Overdrive 2  Overdrive 3  More Drive LP OverDrvGt LP OverDrv:	2 1 # 1 # 2 2 2 2 2 2 2	Funk Pop Funk Gt.2 OverdriveGt	1 1 1	Funk Gt.2  OverdriveGt	1
030	002 008 016 000 001 002 003 008 009	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt Overdrive 2  Overdrive 3  More Drive LP OverDrvGt LP OverDrv:  DistortionGt	2 1 # 1 # 2 2 2 2 2 2 2 2 2	Funk Pop Funk Gt.2  OverdriveGt DistortionGt	1 1 1	Funk Gt.2 OverdriveGt	1
030	002 008 016 000 001 002 003 008 009 000 001	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt Overdrive 2  Overdrive 3  More Drive LP OverDrvGt LP OverDrv:  DistortionGt Dist. Gt2:	2 1 # 1 # 2 2 2 2 2 2 2 2 2 2	Funk Pop Funk Gt.2  OverdriveGt DistortionGt Dist. Gt2	1 1 1 2	Funk Gt. Funk Gt.2 OverdriveGt	1
030	002 008 016 000 001 002 003 008 009 000 001	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt Overdrive 2 Overdrive 3 More Drive LP OverDrvGt LP OverDrv:  DistortionGt Dist. Gt2: Dazed Guitar	2 1 # 1 # 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Funk Pop Funk Gt.2  OverdriveGt DistortionGt Dist. Gt2 DazedGuitar	1 1 1 2	Funk Gt. Funk Gt.2  OverdriveGt Dist.Gt.	1
030	002 008 016 000 001 002 003 008 009 000 001 002 003	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt Overdrive 2 Overdrive 3 More Drive LP OverDrvGt LP OverDrv:  DistortionGt Dist. Gt2: Dazed Guitar Distortion:	2 1 # 1 # 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Funk Pop Funk Gt.2  OverdriveGt DistortionGt Dist. Gt2 DazedGuitar	1 1 1 2	Funk Gt. Funk Gt.2  OverdriveGt Dist.Gt	1
030	002 008 016 000 001 002 003 008 009 000 001 002 003 004	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt Overdrive 2 Overdrive 3 More Drive LP OverDrvGt LP OverDrv:  DistortionGt Dist. Gt2: Dazed Guitar Distortion: Dist.Fast:	2 1 # 1 # 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Funk Pop Funk Gt.2  OverdriveGt    DistortionGt Dist. Gt2 DazedGuitar  FeedbackGt.	1 1 1 2 2	Funk Gt. Funk Gt.2  OverdriveGt Dist.Gt	1 1
030	002 008 016 000 001 002 003 008 009 001 002 003 004 008 009	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt Overdrive 2 Overdrive 3 More Drive LP OverDrvCt LP OverDrv:  DistortionGt Dist. Gt2: Dazed Guitar Distortion: Dist.Fast: Feedback Gt. Feedback Gt.	2 1 # 1 # 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Funk Pop Funk Gt.2  OverdriveGt    DistortionGt  Dist. Gt2  DazedGuitar   FeedbackGt. FeedbackGt.	1 1 1 1 2 2	Funk Gt. Funk Gt.2  OverdriveGt  Dist.Gt Feedback Gt	1
030	002 008 016 000 001 002 003 008 009 001 002 003 004 008 009 016	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt Overdrive 2 Overdrive 3 More Drive LP OverDrvGt LP OverDrv:  DistortionGt Dist. Gt2: Dazed Guitar Distortion: Dist.Fast: Feedback Gt. Feedback Gt. Power Guitar	2 1 # 1 # <b>2</b> 2 2 2 2 2 2 2 2 2 2 2 2 4 2 2 # 2 2 # 2 2 #	Funk Pop Funk Gt.2  OverdriveGt    DistortionGt  Dist. Gt2  DazedGuitar   FeedbackGt. FeedbackGt2  PowerGuitar	1 1 1 2 2 2	Funk Gt. Funk Gt.2  OverdriveGt    Dist.Gt  Feedback Gt	1
030	002 008 016 000 001 002 003 008 009 001 002 003 004 008 009 016 017	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt Overdrive 2 Overdrive 3 More Drive LP OverDrvGt LP OverDrv:  DistortionGt Dist. Gt2: Dazed Guitar Distortion: Dist.Fast: Feedback Gt. Feedback Gt. Power Guitar Power Gt.2	2 1 1 # 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Funk Pop Funk Gt.2  OverdriveGt    DistortionGt  Dist. Gt2  DazedGuitar   FeedbackGt. FeedbackGt2  PowerGuitar Power Gt.2	1 1 1 2 2 2 2 2 2	Funk Gt. Funk Gt.2  OverdriveGt  Dist.Gt Feedback Gt	1 1
030	002 008 016 000 001 002 003 008 009 001 002 003 004 008 009 016	TC Muted Gt. Funk Pop Funk Gt.2  OverdriveGt Overdrive 2 Overdrive 3 More Drive LP OverDrvGt LP OverDrv:  DistortionGt Dist. Gt2: Dazed Guitar Distortion: Dist.Fast: Feedback Gt. Feedback Gt. Power Guitar	2 1 1 # 1 1 # 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Funk Pop Funk Gt.2  OverdriveGt    DistortionGt  Dist. Gt2  DazedGuitar   FeedbackGt. FeedbackGt2  PowerGuitar	1 1 1 2 2 2	Funk Gt. Funk Gt.2  OverdriveGt    Dist.Gt  Feedback Gt	1 1

C	CC00	) Native Map	Voice	s SC88 Map	Voice	s SC55 Map	Voices
)32	000	Gt.Harmonics	1#	Gt.Harmonix	1 *	Gt.Harmonix	1
	008	Gt. Feedback	1 #	Gt.Feedback	1 *	Gt.Feedback	1
	009	Gt.Feedback2	2				
	016	Ac.Gt.Harmnx	1 #	Ac.Gt.Harm.	1		
	024	E.Bass Harm.	1				
R	ass						
						A D -	-
)33	000	Acoustic Bs.	1	AcousticBs.	2	Acoustic Bs	1
	001	Rockabilly	2			*****	
	008	Wild A.Bass	2			****	
	016	Bass + OHH	2				
)34	000	Fingered Bs.	1	FingeredBs.	1	Fingered Bs	1
	001	Fingered Bs2	2	FingeredBs2	2		
	002	Jazz Bass	1 #	Jazz Bass	1		
	003	Jazz Bass 2	2				
	004	Rock Bass	2				
	008	ChorusJazzBs	2				
	016	F.Bass/Harm.	1				
035	000	Picked Bass	1	Picked Bass	1	Picked Bass	1
	001	Picked Bass2	2				
	002	Picked Bass3	2				
	003	Picked Bass4	2				
	008	Muted PickBs	1	MutePickBs.	1		
	016	P.Bass/Harm.	1	Widter ICKDS.	•		
036	000	Fretless Bs.	1 #	FretlessBs.	1	Fretless Bs	1
	001	Fretless Bs2	2	FretlessBs2	2		
	002	Fretless Bs3	2 #	FretlessBs3	2	*****	
	003	Fretless Bs4	2 #	FretlessBs4	2		
	004	Syn Fretless	2 #	SynFretless	2		
	005	Mr.Smooth	2 #	Mr.Smooth	2		
	008	Wood+FlessBs	2				
037	000	Slap Bass 1	1#	Slap Bass 1	1	Slap Bass 1	1
	001	Slap Pop	1			*****	
	008	Reso Slap	1 #	Reso Slap	1		
	009	Unison Slap	2				
138	000	Slap Bass 2	2 #	Slap Bass 2	2	Slap Bass 2	1
,,,,	008	FM Slap	2		•		•
		<del></del>					
J39	000	Synth Bass 1	2#	SynthBass 1	2	Syn.Bass 1	1
	001	SynthBass101	1#	Syn.Bass101	1 *	Syn.Bass101	1
	002	CS Bass	2				
	003	JP-4 Bass	1				
	004	JP-8 Bass	2	****			
	005	P5 Bass	1	****			
	006	JPMG Bass	2				
	800	Acid Bass	1 #	Acid Bass	1	Syn.Bass 3	1
	009	TB303 Bass	1 #	TB303 Bass	1		
	010	Tekno Bass	2 #	Tekno Bass	2		
	011	TB303 Bass 2	1				
	012	Kicked TB303	2	****			
	013	TB303 Saw Bs	1			*****	
	014	Rubber303 Bs	1	*****			
	015	Reso 303 Bs	1				
	016	Reso SH Bass	1#	Reso SHBass			
					1		
	017	303 Sqr Bs	1				
	018	TB303 DistBs	1				
	024	Arpeggio Bs	1				

PC	CCOO	Native Map	Voices	SC88 Map	Voices	SC55 Map	Voices
040	000	Synth Bass 2	2 #	SynthBass 2	2	Syn.Bass 2	2
	001	SynthBass201	2 #	Syn.Bass201	2		
	002	Modular Bass	2 #	ModularBass	2		
	003	Seq Bass	2 #	Seq Bass	2		
	004	MG Bass	1				
	005	Mg Oct Bass 1	2				
	006	MG Oct Bass2	2				
	007	MG Blip Bs:	2	*****			
	800	Beef FM Bass	2 #	Beef FMBass	2	Syn.Bass 4	2
	009	Dly Bass	2	X Wire Bass	2		
	010	X Wire Bass	2 #				
	011	WireStr Bss	2				
	012	Blip Bass :	2				
	013	RubberBass 1	2				
	016	RubberBass 2	2	Rubber Bass	2 *	Rubber Bass	2
	017	SH101 Bass 1	1 #	SH101Bass 1	1		
	018	SH101 Bass 2	1 #	SH101Bass 2	1		
	019	Smooth Bass	2 #	Smooth Bass	2		
	020	SH101 Bass 3	1			****	
	021	Spike Bass	1				
	022	House Bass:	2				
	023	KG Bass	2				
	023	Sync Bass	2				
	025	MG 5th Bass	2				
		RND Bass	2				
	026		2				
	027	WowMG Bass Bubble Bass					
<u>.</u>	028		2				
		gs/Orche					
041	000	Violin :	2	Violin	1	Violin	1
	001	Violin Atk:	2				
	800	Slow Violin	1	Slow Violin	1	Slow Violin	1
042	000	Viola :	2	Viola	1	Viola	1
	001	Viola Atk.:	2				
043	000	Cello :	2	Cello	1	Cello	1
	001	Cello Atk.:	2				
044	000	Contrabass	1	Contrabass	1	Contrabass	1
	000	Tremolo Str	1#	Tremolo Str	1	Tremolo Str	1
0.10	008	Slow Tremolo	1 #	SlowTremolo	1		
	009	Suspense Str	2 #	SuspenseStr	2	••••	
046	000	PizzicatoStr	1#	Pizz. Str.	1	Pizzicato	1
U46				F122. 3ti.	: '	Fizzicato	•
	001	Vcs&Cbs Pizz	2	r.			
	002	Chamber Pizz	2				
	003	St.Pizzicato	2				
	800	Solo Pizz.	1				
	016	Solo Spic.	1				
047	000	Harp	1 #	Harp	1	Harp	1
	016	Synth Harp	1				
	000	Timpani	1#	Timpani	1	Timpani	_1
E	nse	mble					
049	000	Strings :	2	Strings	1	Strings	1
	001	Bright Str:	1	Strings 2	1		
	002	ChamberStr:	2				
	003	Cello sect.	1				
	800	Orchestra	2	Orchestra	2	Orchestra	2
	009	Orchestra 2	2	Orchestra 2	2		
	010	Tremolo Orch	2 #	TremoloOrch	2		
	011	Choir Str.	2	Choir Str.	2		
	012	Strings+Horn	2				
	016	St. Strings	2	St.Strings	2		
			0 "	VeloStrings	2		
	024	Velo Strings	2 #	velocitings	-		
		Velo Strings Oct Strings1	2 #		_		

PC ——	UU00	Native Map		s SC88 Map		s SC55 Map	Voices
050	000	SlowStrings	1	SlowStrings	1	SlowStrings	1
	001	SlowStrings2	1	Slow Str. 2	1		
	800	Legato Str.	2 #	Legato Str.	2		
	009	Warm Strings	2 #	WarmStrings	2		
	010	St.Slow Str.	2	St.SlowStr.	2		
051	000	Syn.Strings1	2	SynStrings1	2	SynStrings1	1
	001	OB Strings	2	OB Strings	2		
	002	StackStrings	2				
	003	JP Strings	2				
	800	Syn.Strings3	2 #	SynStrings3	2 *	SynStrings3	2
	009	Syn.Strings4	2				
	016	High Strings	2				
	017	Hybrid Str.	2				
	024	Tron Strings	2				
	025	Noiz Strings	2				
052	000	Syn.Strings2	2 #	SynStrings2	2 *	SynStrings2	2
	001	Syn.Strings5	2				
	002	JUNO Strings	2				
	008	Air Strings	2				
053	000	Choir Aahs	1	Choir Aahs	1	Choir Aahs	1
000	008	St.ChoirAahs	2	St.Choir	2		•
	009	Melted Choir	2	Mello Choir	2		
	010	Church Choir	2		_		
	016	Choir Hahs	1				
	024	Chorus Lahs	1				
	032	Chorus Aahs	2	ChoirAahs 2	1 *	Choir Aahs2	1
	033	Male Aah+Str	2		'		•
			1#		1 *	Voice Oohs	1
054	000	Voice Oohs Voice Dahs	1 #	Voice Oohs	,	voice Cons	'
					1 *	SynVox	1
055	000	SynVox	1#	SynVox			'
	800	Syn.Voice	2 #	Syn.Voice	2		
	009	Silent Night	2				
	016	VP330 Choir	1				
	017	Vinyl Choir	2				
056	000	OrchestraHit	2 #	Orch. Hit	2	Orchest.Hit	2
	800	Impact Hit	2 #	Impact Hit	2		
	009	Philly Hit	2 #	Philly Hit	2		
	010	Double Hit	2 #	Double Hit	2		
	011	Perc.Hit	1				
	012	Shock Wave	2	••••			
	016	Lo Fi Rave	2 #	Lo Fi Rave	2		
	017	Techno Hit	1				
	018	Dist.Hit	1				
	019	Bam Hit	1				
	020	Bit Hit	1				
	021	Bim Hit	1	••••			
	022	Technorg Hit	1				
	023	Rave Hit	2	*****			
	024	Strings Hit	2				
	025	Stack Hit	2				

PC CC00

: Voices Remark # Remark \*

: program number(Instrument number)
: value of controller number 0 (Bank number,
Variation number)
: legato-enabled sounds
: number of voices used by the Instrument
: same sounds as SC-88 map
: same sounds as SC-55 map
: a percussive sound which cannot be played melodically. Use near C4 (note number 60). Remark +

PC	CCC	00 Native Map	Voice	es SC88 Map	Voic	es SC55 Map	Voices
	000		1	Trumpet	1	Trumpet	1
551	001	Trumpet 2	1#	Trumpet 2	1		•
	002	•	1				
	008		1 #	Flugel Horn	1		
	016	4th Trumpets	2				
	024	Bright Tp.	2	Bright Tp.	2		
	025	Warm Tp.	2 #	Warm Tp.	2		
	032	Syn. Trumpet	1				
058	000	Trombone	1	Trombone	1	Trombone	1
	001	Trombone 2	1	Trombone 2	2 *	Trombone 2	2
	002	Twin bones	2				
	008	Bs. Trombone	1				
059	000	Tuba	1#	Tuba	1	Tuba	1
	001	Tuba 2	1 #	Tuba 2	1		
060	000	MutedTrumpet	1#	Muted Tp.	1	MuteTrumpet	1
•••	008	Muted Horns	1				•
061	000	French Horns	1#	FrenchHorns	1	French Horn	2
JU 1	001	Fr.Horn 2	2#	Fr.Horn 2	2 *	Fr.Horn 2	2
	002	Horn + Orche	2		-		-
	003	Wide FreHrns	2				
	008	F.Hrn Slow:	1	Fr.HornSolo	1		
	009	Dual Horns	2				
	016	Synth Horn	2	Horn Orch	2		
	024	F.Horn Rip	1				
062	000	Brass 1	2	Brass 1	1 *	Brass 1	1
	001	Brass ff	1		•		•
	002	Bones Sect.	1				
	800	Brass 2	2	Brass 2	2	Brass 2	2
	009	Brass 3	2				
	010	Brass sfz	2				
	016	Brass Fall	1 #	Brass Fall	1		
	017	Trumpet Fall	1				
	024	Octave Brass	2				
	025	Brass + Reed	2				
63	000	Synth Brass1	2	SynthBrass1	2	Syn.Brass 1	2
	001	JUNO Brass	2	Poly Brass	2		
	002	Stack Brass	2				
	003	SH-5 Brass	2				
	004	MKS Brass	2				
	800	Pro Brass	2	Syn.Brass 3	2 *	Syn.Brass 3	2
	009	P5 Brass	2	Quack Brass	2		
	016	Oct SynBrass	2	OctaveBrass	2	Analog Brs1	2
	017	Hybrid Brass	2				
64	000	Synth Brass 2	2	Syn.Brass 2	2 *	Syn.Brass 2	2
	001	Soft Brass	2	Soft Brass	2		
	002	Warm Brass	2				
	800	SynBrass sfz	1	Syn.Brass 4	1 *	Syn.Brass 4	1
	009	OB Brass	2				
	010	Reso Brass	2				
	016	Velo Brass 1	2 #	VeloBrass 1	2	Analog Brs2	2
	017	Transbrass	2	VeloBrass 2	2		
	ed						
				C			
65		Soprano Sax	1	Soprano Sax	1	Soprano Sax	1
	800	Soprano Exp.	1				
66 (		Alto Sax	1	Alto Sax	1	Alto Sax	1
	800	AltoSax Exp.	1	Hyper Alto	1		
	009	Grow Sax	1				
(	016	AltoSax + Tp	2				

PC	CCO	0 Native Map	Voices	SC88 Map	Voice	s SC55 Map	Voices
067	000	Tenor Sax	2	Tenor Sax	2	Tenor Sax	1
	001	Tenor Sax :	2				
	008	BreathyTn.:	1	BreathyTnr.	1		
	009	St.Tenor Sax	2				
068	000	Baritone Sax	2	BaritoneSax	1	BaritoneSax	1
	001	Bari. Sax :	2	*****			
069	000	Oboe	1	Oboe	1	Oboe	1
•••	008	Oboe Exp.	1		•		•
	016	Multi Reed	1				
070	000	English Horn	1 #	EnglishHorn	1	EnglishHorn	1
	000	Bassoon	1 #	Bassoon	1	Bassoon	1
	000	Clarinet	1	Clarinet	- <del></del>	Clarinet	- <u>'</u>
0/2	008	Bs Clarinet	1#	Bs Clarinet	1	Ciarinet	'
	016	Multi Wind	1	DS Claimet	,		
<u>n:</u>		Walii Wina					
	pe			-			
073	000	Piccolo	1 #	Piccolo	1	Piccolo	1
	001	Piccolo :	1				
	800	Nay	2				
	009	Nay Tremolo	2				
	016	Di	2				
074	000	Flute	1 #	Flute	1	Flute	1
	001	Flute 2 :	1				
	002	Flute Exp.	1				
	003	Fit Travelso	2				
	800	Flute + VIn	2				
	016	Tron Flute	1				
075	000	Recorder	1 #	Recorder	1 *	Recorder	1
076	000	Pan Flute	2 #	Pan Flute	2	Pan Flute	1
	800	Kawala	2 #	Kawala	2		
	016	Zampona	2				
	017	Zampona Atk	1				
077	000	Bottle Blow	2 #	Bottle Blow	2	Bottle Blow	2
078	000	Shakuhachi	2 #	Shakuhachi	2 *	Shakuhachi	2
	001	Shakuhachi:	2				
079	000	Whistle	1 #	Whistle	1 *	Whistle	1
	001	Whistle 2			•		•
080	000	Ocarina	1 #	Ocarina	1 *	Ocarina	1
Sv	ntl	h Lead					
081		Square Wave	2	Square Wave	2 *	Causas Wass	
	001	MG Square		Square wave	1 *	Square Wave	2
	002	Hollow Mini		Hollow Mini		Square	1
	003	Mellow FM		Mellow FM	1		
	004	CC Solo			-		
				CC Solo	2		
	005	Shmoog		Shmoog	2		
	006	LM Square		LM Square	2	0: 11/	
	800	2600 Sine		Sine Wave	1 *	Sine Wave	1
	009	Sine Lead					
	010	KG Lead					
	016	P5 Square		*****		*****	
	017	OB Square					
		JP-8 Square					
	018						
	024	Pulse Lead	_				
	024 025	JP8 PulseLd1	2 -				
	024		2				

°C	CC00	Native Map	Voices	SC88 Map		SC55 Map	Voices
82	000	Saw Wave	2	Saw Wave	2 *	Saw Wave	2
	001	OB2 Saw	1	Saw	1 *	Saw	1
	002	Pulse Saw	2 #	Pulse Saw	2		
	003	Feline GR	2 #	Feline GR	2		
	004	Big Lead	2 #	Big Lead	2		
	005	Velo Lead	2 #	Velo Lead	2		
	006	GR-300	2 #	GR-300	2		
	007	LA Saw	1 #	LA Saw	1		
	800	Doctor Solo	2 #	Doctor Solo	2 *	Doctor Solo	2
	009	Fat Saw Lead	2				
	011	D-50 Fat Saw	2				
	016	Waspy Synth	2 #	Waspy Synth	2		
	017	PM Lead	1				
	018	CS Saw Lead	1				
	024	MG Saw 1	1				
	025	MG Saw 2	1				
	026	OB Saw 1	1				
	027	OB Saw 2	1				
	028	D-50 Saw	1				
	029	SH-101 Saw	1				
	030	CS Saw	1				
	031	MG Saw Lead	1				
	032	OB Saw Lead	1				
	033	P5 Saw Lead	2				
	034	MG unison	2				
	035	Oct Saw Lead	2				
	040	SequenceSaw1	2				
	040	SequenceSaw1	1				
	041	Reso Saw	1				
	042	Cheese Saw 1	1				
	043	Cheese Saw 2	2				
	044	Rhythmic Saw	2				
					2 *		2
183	000	Syn.Calliope	2 #	SynCalliope	2 *	SynCalliope	2
	001	Vent Synth	2#	Vent Synth	2		
	002	Pure PanLead	2 #	PurePanLead	2		
)84	000	Chiffer Lead	2 #	ChifferLead	2 *	ChifferLead	2
	001	TB Lead	2				
	800	Mad Lead	2				
85	000	Charang	2 #	Charang	2 *	Charang	2
	800	Dist.Lead	2 #	Dist.Lead	2		
	009	Acid Guitar1	2				
	010	Acid Guitar2	2				
	016	P5 Sync Lead	1				
	017	Fat Sync Lead	2				
	018	Rock Lead	2				
	019	5th DecaSync	2				
	020	Dirty Sync	1				
	024	JUNO Sub Osc	1				
086	000	Solo Vox	2 #	Solo Vox	2 *	Solo Vox	2
	800	Vox Lead	2				
	009	LFO Vox	2				
		5th Saw Wave	2 #	5th Saw	2 *	5th Saw	2
087	000		- "	Big Fives	2		
087	000	Big Fives	2 #	J.M . 1700	-		
087	001	Big Fives	2 # 2	-			
087	001 002	5th Lead	2				
087	001 002 003	5th Lead 5th Ana.Clav	2 2				
	001 002 003 008	5th Lead 5th Ana.Clav 4th Lead	2 2 2		2 *	****	
	001 002 003 008 <b>000</b>	5th Lead 5th Ana.Clav 4th Lead Bass & Lead	2 2 2 2 #	Bass & Lead	2 *	Bass & Lead	2
******	001 002 003 008 <b>000</b> 001	5th Lead 5th Ana.Clav 4th Lead Bass & Lead Big & Raw	2 2 2 2 # 2 #	Bass & Lead	2	Bass & Lead	2
	001 002 003 008 <b>3 000</b> 001 002	5th Lead 5th Ana.Clav 4th Lead Bass & Lead Big & Raw Fat & Perky	2 2 2 2 # 2 # 2 #	Bass & Lead Big & Raw Fat & Perky		Bass & Lead	2
	001 002 003 008 <b>3 000</b> 001 002 003	5th Lead 5th Ana.Clav 4th Lead Bass & Lead Big & Raw Fat & Perky JUNO Rave	2 2 2 2 # 2 # 2 # 1	Bass & Lead Big & Raw Fat & Perky	2	Bass & Lead	2
******	001 002 003 008 3 000 001 002 003 004	5th Lead 5th Ana.Clav 4th Lead Bass & Lead Big & Raw Fat & Perky JUNO Rave JP8 BsLead 1	2 2 2 # 2 # 2 # 1	Bass & Lead Big & Raw Fat & Perky	2	Bass & Lead	2
******	001 002 003 008 <b>3 000</b> 001 002 003	5th Lead 5th Ana.Clav 4th Lead Bass & Lead Big & Raw Fat & Perky JUNO Rave	2 2 2 2 # 2 # 2 # 1	Bass & Lead Big & Raw Fat & Perky	2	Bass & Lead	2

CC00	Native Map	Voices	SC88 Map	Voices	SC55 Map	Voices
000	Fantasia	2 #	Fantasia	2 *	Fantasia	2
001	Fantasia 2	2 #	Fantasia 2	2		
002	New Age Pad	2				
003	Bell Heaven	2				
000	Warm Pad					1
001	Thick Matrix	2				
002		2 #				
003						
				2		
						2
				2		
		_				
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	•		•		•	1
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				2 *		2
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				1 *		1
	•					•
	-		_			
				-		
011	Sag Strock	-				
/nt	h SFX					
<u> </u>	Ice Rain	2 #	Ice Rain	2 *	Ice Rain	2
			Harmo Rain	2		
			AfricanWood	2	••••	
003		2			*****	
		2				
008	Clavi Pad	2 #	Clavi Pad	2		
000	Soundtrack	2 #	Soundtrack	2 *	Soundtrack	2
001	Ancestral	2 #	Ancestral	2		
	Prologue	2 #	Prologue	2		
	•	2				
004	•	2				
	-	2 #	Rave	2		
					t number)	
000	: va Va	lue of triation	controller nu number)	mber (		ber,
ices					he Instrumer	nt
mark	(# :sa	me so	unds as SC-	вв та	р	
	000 001 002 003 000 001 002 003 000 001 002 003 008 009 010 011 002 003 008 009 010 011 002 003 008 009 011 002 001 001 002 003 001 001 002 001 001 002 001 002 003 001 001 002 003 001 002 003 001 002 003 004 008 000	000         Fantasia           001         Fantasia 2           002         New Age Pad           003         Bell Heaven           000         Warm Pad           001         Thick Matrix           002         Horn Pad           003         Rotary Strng           004         OB Soft Pad           009         Stack Pad           009         Stack Pad           000         Polysynth           001         80's PolySyn           002         Polysynth 2           003         Poly King           008         Power Stack           009         Octave Stack           010         Reso Stack           011         Techno Stack           000         Space Voice           014         Heaven II           002         SC Heaven           003         SC Heaven           004         Auh Auh           005         SUBBAR           006         Bowed Glass           007         Auh Auh           008         Cosmic Voice           009         Auh Auh           001         Tine Pad	000         Fantasia         2 #           001         Fantasia 2         2 #           002         New Age Pad         2           003         Bell Heaven         2           000         Warm Pad         1 #           001         Thick Matrix         2           002         Horn Pad         2 #           003         Rotary Strng         2 #           004         OB Soft Pad         2           009         Octave Pad         2           009         Stack Pad         2           000         Polysynth         2 #           001         80's PolySyn         2 #           002         Polysynth         2 #           003         Polysynth         2 2           004         Polysynth         2 #           005         Polysynth         2 #           006         Polysynth         2 #           007         Polysynth         2 #           008         Power Stack         2           010         Reso Stack         1           011         Techno Stack         2           000         Space Voice         1 #	000         Fantasia         2 # Fantasia           001         Fantasia 2         2 # Fantasia 2           002         New Age Pad         2           003         Bell Heaven         2           000         Warm Pad         1 # Warm Pad           001         Thick Matrix         2 # Horn Pad           002         Horn Pad         2 # Horn Pad           003         Rotary Strng         2 # RotaryStrng           004         OB Soft Pad         2           008         Octave Pad         2           009         Stack Pad         2           009         Stack Pad         2           009         Stack Pad         2           009         Stack Pad         2           000         Polysynth         2 # Polysynth           001         80's PolySyn         2 # So'sPolySyn           002         Polysynth         2 # Polysynth           001         80's PolySyn         2 # So'sPolySyn           002         Polysynth         2 # Polysynth           003         Polysynth         2 # Polysynth           004         # Reso Stack         1	000         Fantasia         2 # Fantasia         2 ° Ontone           001         Fantasia         2 # Fantasia         2 ° Ontone           001         Fantasia         2 000         New Age Pad         2 000           000         Bell Heaven         2 000         Thick Pad         1 ° Thick Pad         2 000           001         Thick Pad         2 000         Thick Pad         2 000         2 000         Poly String         2 000         2 000         Poly Sorting         2 000	Dotation   Comment   Com

PC	CC0	0 Native Map	Voices	SC88 Map	Voices	SC55 Map	Voices
099	000	Crystal	2 #	Crystal	2 *	Crystal	2
	001	Syn Mallet	1 #	Syn Mallet	1 *	Syn Mallet	1
	002	Soft Crystal	2 #	SoftCrystal	2		
	003	Round Glock	2 #	Round Glock	2		
	004	Loud Glock	2 #	Loud Glock	2		
	005	GlockenChime	2 #	GlocknChime	2		
	006	Clear Bells	2 #	Clear Bells	2		
	007	ChristmasBel	2 #	X'mas Bell	2		
	800	Vibra Bells	2 #	Vibra Bells	2	****	
	009	Digi Bells	2 #	Digi Bells	2		
	010	Music Bell	2				
	011	Analog Bell	1				
	016	Choral Bells	2 #	ChoralBells	2		
	017	Air Bells	2 #	Air Bells	2		
	018	Bell Harp	2 #	Bell Harp	2		
	019	Gamelimba	2#	Gamelimba	2		
	020	JUNO Bell	2 #	Gameiiniba	-		
					<u> </u>		
00	000	Atmosphere	2 #	Atmosphere	2 *	Atmosphere	2
	001	Warm Atmos	2 #	Warm Atmos	2		
	002	Nylon Harp	2 #	Nylon Harp	2		
	003	Harpvox	2 #	Harpvox	2		
	004	HollowReleas	2 #	HollowRels.	2		
	005	Nylon+Rhodes	2 #	NylonRhodes	2		
	006	Ambient Pad	2 #	Ambient Pad	2		
	007	Invisible	2				
	800	Pulsey Key	2				
	009	Noise Piano	2				
101	000	Brightness	2 #	Brightness	2 *	Brightness	2
	001	Shining Star	2				
	002	OB Stab	1				
	008	Org Bell	2				
102	000	Goblin	2 #	Goblin	2 *	Goblin	2
	001	Goblinson	2 #	Goblinson	2		
	002	50's Sci-Fi	2 #	50's Sci-Fi	2		
	003	Abduction	2				
	004	Auhbient	2				
	005	LFO Pad	2				
	006	Random Str	2				
	007	Random Pad	2				
	007	LowBirds Pad	2				
	009	Falling Down	2				
	010	LFO RAVE	2				
	011	LFO Toobno	2			••••	
	012	LFO Techno	2				
	013	Alternative	2				
	014	UFO FX	2	••••		••••	
	015	Gargle Man	1	••••		•••••	
	016	Sweep FX	1			*****	
03	000	Echo Drops	1 #	Echo Drops	1 *	Echo Drops	1
	001	Echo Bell	2 #	Echo Bell	2 *	Echo Bell	2
	002	Echo Pan	2 #	Echo Pan	2 *	Echo Pan	2
	003	Echo Pan 2	2 #	Echo Pan 2	2		
	004	Big Panner	2 #	Big Panner	2		
	005	Reso Panner	2 #	Reso Panner	2		
	006	Water Piano	2 #	Water Piano	2		
	000						
	800	Pan Sequence	2				

PC	CC00	Native Map	Voices	SC88 Map	Voice	s SC55 Map	Voices
104	000	Star Theme	2 #	Star Theme	2 *	Star Theme	2
	001	Star Theme 2	2 #	StarTheme 2	2		
	800	Dream Pad	2				
	009	Silky Pad	2				
	016	New Century	1				
	017	7th Atmos.	2				
	018	Galaxy Way	2				
Et	hn	ic, etc					
	000	Sitar	1#	Sitar	1 *	Sitar	1
	001	Sitar 2	2 #	Sitar 2	2 *	Sitar 2	2
	002	Detune Sitar	2 #	DetuneSitar	2		
	003	Sitar 3	2				
	008	Tambra	1 #	Tambra	1	****	
	016	Tamboura	2 #	Tamboura	2	****	
100	000		1#		<u>-</u>	Pania	1
100		Banjo Mutad Bania		Banjo		Banjo	1
	001	Muted Banjo	1#	Muted Banjo	1		
	008	Rabab San Vian	2 #	Rabab	2	*****	
	009	San Xian	2	0			
	016	Gopichant	2 #	Gopichant	2	*****	
	024	Oud	2 #	Oud	2	*****	
	028	Oud+Strings	2			****	
	032	Pi Pa	1				
107	000	Shamisen	1 #	Shamisen	1 *	Shamisen	1
	001	Tsugaru	2 #	Tsugaru	2		
	800	Syn Shamisen	2				
108	000	Koto	2	Koto	1 *	Koto	1
	001	Gu Zheng	2				
	800	Taisho Koto	1 #	Taisho Koto	1	Taisho Koto	2
	016	Kanoon	2 #	Kanoon	2		
	019	Kanoon+Choir	2				
	024	Oct Harp	1				
109	000	Kalimba	1	Kalimba	1	Kalimba	1
	800	Sanza	2	••••			
110	000	Bagpipe	1#	Bagpipe	1	Bagpipe	1
	800	Didgeridoo	1 +				
111	000	Fiddle	1 #	Fiddle	1 *	Fiddle	1
	800	Er Hu	1				
	009	Gao Hu	1				
112	000	Shanai	1#	Shanai	1 *	Shanai	1
	001	Shanai 2	1 #	Shanai 2	1	••••	
	800	Pungi	1 #	Pungi	1		
	016	Hichiriki	2 #	Hichiriki	2		
	024	Mizmar	1				
	032	Suona 1	1				
	033	Suona 2	1				
Pe		ussive					
	000	Tinkle Bell	1#	Tinkle Bell	1 *	Tinkle Bell	1
	800	Bonang	1#	Bonang	1	IIIIKIE BEII	'
	009	Gender	1#	Gender	1		
	010			GamelanGong			
		Gamelan Gong	1#	J	1		
	011	St.Gamelan	2 #	St.Gamelan	2		
		JangGu	2			•	
	012	DA144 C		RAMA Cymbal	1		
	016	RAMA Cymbal	1#				
114	016 <b>000</b>	Agogo	1#	Agogo	1	Agogo	1
114	016				1	Agogo	1
114	016 <b>000</b>	Agogo	1 #	Agogo			1
	016 000 008	Agogo Atarigane	1 #	Agogo Atarigane			1
	016 000 008 016	Agogo Atarigane Tambourine	1 # 1 # 1 +	Agogo Atarigane	1		~~~

PC ——	CCO	Native Map	Vo	ices	SC88 Map	Voice	s SC55 Map	Voices
116	000	Woodblock	1 #	# +	Woodblock	1 * +	Woodblock	1+
	800	Castanets	1 #	<b>#</b> +	Castanets	1 * +	Castanets	1 +
	016	Angklung	1					
	017	Angkl Rhythm	2					
	024	Finger Snaps	1	+	••••			
	032	909 HandClap	1	+				
117	000	Taiko	1 #	<b>#</b> +	Taiko	1 * +	Taiko	1 +
	001	Small Taiko	1	+				
	800	Concert BD	1 #	<b>#</b> +	Concert BD	1 * +	Concert BD	1 +
	016	Jungle BD	1	+				
	017	Techno BD	1	+				
	018	Bounce	1	+				
118	000	Melo. Tom 1	1 #	<b>#</b> +	Melo. Tom 1	1 * +	Melo. Tom 1	1+
	001	Real Tom	2 ‡	ŧ +	Real Tom	2 +		
	800	Melo. Tom 2	1 #	‡ +	Melo. Tom 2	1 * +	Melo. Tom 2	1 +
	009	Rock Tom	2 ‡	ŧ +	Rock Tom	2 +		
	016	Rash SD	1	+				
	017	House SD	1	+				
	018	Jungle SD	1	+				
	019	909 SD	1	+				
119	000	Synth Drum		; ; +	Synth Drum	1 * +	Synth Drum	1 +
	008	808 Tom		† +	808 Tom		808 Tom	1 +
	009	Elec Perc		* + * +	Elec Perc	1 * +	Elec Perc	1+
	010	Sine Perc.	1	, <del>T</del>		. +		· T
	011	606 Tom	1	+				
	012	909 Tom	1	+				
100								
120	000	Reverse Cym.	1#		Reverse Cym		Reverse Cym	1 +
	001	Reverse Cym2	1 #		ReverseCym2	1 +		
	002	Reverse Cym3	1	+	A			
	800	Rev.Snare 1	1#		Rev.Snare 1	1 +		
	009	Rev.Snare 2	1#		Rev.Snare 2	1 +		
	016	Rev.Kick 1	1 #		Rev.Kick 1	1 +		
	017	Rev.ConBD				1 +		
	024	Rev.Tom 1			Rev.Tom 1	1 +		
	025	Rev.Tom 2	1 #	+	Rev.Tom 2	1 +		
SF								
121	000	Gt.FretNoise	1 #	ļ	Gt.FretNoiz	1 *	Gt.FretNoiz	1
	001							•
	001	Gt.Cut Noise	1 #	+ +	Gt.CutNoise	1 * +	Gt.CutNoise	1 +
	002	Gt.Cut Noise String Slap	1 #	ŧ +	String Slap	1 * + 1 * +	Gt.CutNoise String Slap	
		String Slap Gt.CutNoise2	1 #	ŧ +				1 +
	002	String Slap	1 #	‡ + ‡ +	String Slap	1 * +	String Slap	1 +
	002 003	String Slap Gt.CutNoise2	1 # 1 # 1 #	‡ + ‡ + ‡ +	String Slap Gt.CutNz. 2 Dist.CutNz.	1 * + 1 +	String Slap	1 +
	002 003 004	String Slap Gt.CutNoise2 Dist.CutNoiz	1 # 1 # 1 #	‡ + ‡ + ‡ +	String Slap Gt.CutNz. 2 Dist.CutNz.	1 * + 1 + 1 +	String Slap	1 +
	002 003 004 005	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide	1 # 1 # 1 #	‡ + ‡ + ‡ +	String Slap Gt.CutNz. 2 Dist.CutNz. Bass Slide	1 * + 1 + 1 + 1 +	String Slap	1 +
	002 003 004 005 006	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape	1 # 1 # 1 # 1 #	‡ + ‡ + ‡ +	String Slap Gt.CutNz. 2 Dist.CutNz. Bass Slide Pick Scrape	1 * + 1 + 1 + 1 +	String Slap	1 +
	002 003 004 005 006 008	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu	1 # 1 # 1 # 1 #	‡ + ‡ + ‡ +	String Slap Gt.CutNz. 2 Dist.CutNz. Bass Slide Pick Scrape	1 * + 1 + 1 + 1 +	String Slap	1 +
	002 003 004 005 006 008	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu Bartok Pizz.	1 # 1 # 1 # 1 # 1 #	‡ + ‡ + ‡ +	String Slap Gt.CutNz. 2 Dist.CutNz. Bass Slide Pick Scrape	1 * + 1 + 1 + 1 +	String Slap	1 +
	002 003 004 005 006 008 009	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu Bartok Pizz. Guitar Slap	1 # 1 # 1 # 1 1 1 1	‡ + ‡ + ‡ +	String Slap Gt.CutNz. 2 Dist.CutNz. Bass Slide Pick Scrape	1 * + 1 + 1 + 1 +	String Slap	1 +
	002 003 004 005 006 008 009 010 011	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu Bartok Pizz. Guitar Slap Chord Stroke	1 # 1 # 1 # 1 1 1 1 1 1	‡ + ‡ + ‡ +	String Slap Gt.CutNz. 2 Dist.CutNz. Bass Slide Pick Scrape	1 * + 1 + 1 + 1 +	String Slap	1 +
122	002 003 004 005 006 008 009 010 011	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu Bartok Pizz. Guitar Slap Chord Stroke Biwa Stroke	1 # 1 # 1 # 1 # 1 1 1 1 1 1 1 1 1 1 1 1	‡ + ‡ + ‡ + ‡ + + + + +	String Slap Gt.CutNz. 2 Dist.CutNz. 2 Bass Slide Pick Scrape	1 * + 1 + 1 + 1 +	String Slap	1 +
122	002 003 004 005 006 008 009 010 011 012 013	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu Bartok Pizz. Guitar Slap Chord Stroke Biwa Stroke Biwa Tremolo	1 # 1 # 1 # 1 # 1 1 1 1 1 1 1 1 # 1 # 1	‡ + ‡ + ‡ + ‡ + + + +	String Slap Gt.CutNz. 2 Dist.CutNz. 2 Bass Slide Pick Scrape	1 * + 1 + 1 + 1 + 1 + 1 +	String Slap	1+1+
	002 003 004 005 006 008 009 010 011 012 013 <b>000</b>	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu Bartok Pizz. Guitar Slap Chord Stroke Biwa Stroke Biwa Tremolo	1 # # # # # # # # # # # # # # # # # # #	‡ + ‡ + ‡ + ‡ + + + + ‡ +	String Slap Gt.CutNz. 2 Dist.CutNz. 2 Bass Slide Pick Scrape BreathNoise	1 * + 1 + 1 + 1 + 1 + 1 +	String Slap	1+1+1+
	002 003 004 005 006 008 009 010 012 013 <b>000</b> 001	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu Bartok Pizz. Guitar Slap Chord Stroke Biwa Stroke Biwa Tremolo Breath Noise FI.Key Click	1 # 1 # 1 # 1 # 1 # 1 # 1 # 1 # 1 # 1 #	# + + # + + + + + + + + + + + + + + + +	String Slap Gt.CutNz. 2 Dist.CutNz. 2 Dist.CutNz. Bass Slide Pick Scrape BreathNoise Fl.KeyClick Seashore	1 * + 1 + 1 + 1 + 1 + 1 +	String Slap BreathNoise FI.KeyClick Seashore	1+1+1+
	002 003 004 005 006 008 009 010 012 013 <b>000</b> 001 <b>000</b>	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu Bartok Pizz. Guitar Slap Chord Stroke Biwa Stroke Biwa Tremolo Breath Noise Fl.Key Click Seashore Rain	1 # 1 # 1 # 1 # 1 # 1 # 1 # 1 # 1 # 1 #	\$ + \$ + \$ + \$ + \$ + + + + \$ + \$ +	String Slap Gt.CutNz. 2 Dist.CutNz. 2 Dist.CutNz. Bass Slide Pick Scrape BreathNoise Fl.KeyClick Seashore Rain	1 * + 1 + 1 + 1 + 1 + 1 + 1 * +	String Slap BreathNoise Fl.KeyClick Seashore Rain	1 1 + 1 + 1 + 1 + 1 +
	002 003 004 005 006 008 009 010 011 012 013 000 001 000	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu Bartok Pizz. Guitar Slap Chord Stroke Biwa Stroke Biwa Tremolo Breath Noise Fl.Key Click Seashore Rain Thunder	1 # # # # # # # # # # # # # # # # # # #	\$ + \$ + \$ + \$ + \$ + + + + + + \$ + \$ + + + +	String Slap Gt.CutNz. 2 Dist.CutNz. 2 Bass Slide Pick Scrape BreathNoise Fl.KeyClick Seashore Rain Thunder	1 * + 1 + + 1 + + 1 + + 1 + + 1 * +	String Slap	1 1 + 1 + 1 + 1 + 1 + 1 +
	002 003 004 005 006 008 009 010 011 012 013 000 001 000 001	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu Bartok Pizz. Guitar Slap Chord Stroke Biwa Stroke Biwa Tremolo Breath Noise FI.Key Click Seashore Rain Thunder Wind	1 # # # # # # # # # # # # # # # # # # #	\$ + + \$ + + + + + + + + + + + + + + + +	String Slap Gt.CutNz. 2 Dist.CutNz. 2 Dist.CutNz. Bass Slide Pick Scrape BreathNoise Fl.KeyClick Seashore Rain Thunder Wind	1 * + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 * + 1	String Slap	1
	002 003 004 005 006 008 009 010 011 012 013 000 001 000 001 002 003 004	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu Bartok Pizz. Guitar Slap Chord Stroke Biwa Stroke Biwa Tremolo Breath Noise FI.Key Click Seashore Rain Thunder Wind Stream	1 # # # # # # # # # # # # # # # # # # #	\$ + + \$ + + + + + + + + + + + + + + + +	String Slap Gt.CutNz. 2 Dist.CutNz. 2 Dist.CutNz. Bass Slide Pick Scrape BreathNoise Fl.KeyClick Seashore Rain Thunder Wind Stream	1° + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 +	String Slap BreathNoise FI.KeyClick Seashore Rain Thunder Wind Stream	1 + 1 + 1 + 1 + 1 + 2 +
	002 003 004 005 006 008 009 010 011 012 013 000 001 000 001 002 003 004 005	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu Bartok Pizz. Guitar Slap Chord Stroke Biwa Stroke Biwa Tremolo Breath Noise Fl.Key Click Seashore Rain Thunder Wind Stream Bubble	1	\$ + + + + + + + + + + + + + + + + + + +	String Slap Gt.CutNz. 2 Dist.CutNz. 2 Dist.CutNz. Bass Slide Pick Scrape BreathNoise Fl.KeyClick Seashore Rain Thunder Wind Stream Bubble	1° + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 +	String Slap	1 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1
	002 003 004 005 006 008 009 010 011 012 013 000 001 000 001 002 003 004	String Slap Gt.CutNoise2 Dist.CutNoiz Bass Slide Pick Scrape Gt. FX Menu Bartok Pizz. Guitar Slap Chord Stroke Biwa Stroke Biwa Tremolo Breath Noise FI.Key Click Seashore Rain Thunder Wind Stream	1 # # # # # # # # # # # # # # # # # # #	\$ + + \$ + + + + + + + + + + + + + + + +	String Slap Gt.CutNz. 2 Dist.CutNz. 2 Dist.CutNz. Bass Slide Pick Scrape BreathNoise Fl.KeyClick Seashore Rain Thunder Wind Stream	1° + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 +	String Slap BreathNoise FI.KeyClick Seashore Rain Thunder Wind Stream Bubble	1+ 1+ 1+ 1+ 1+ 1+ 1+ 2+

PC 	CC00	Native Map	Voices	SC88 Map	Voices	SC55 Map	Voices
124	000	Bird	2 # +	Bird	2 * +	Bird	2 +
	001	Dog	1#+	Dog	1 * +	Dog	1 +
	002	Horse-Gallop	1#+	HorseGallop	1 * +	HorseGallop	1 +
	003	Bird 2	1#+	Bird 2	1 * +	Bird 2	1 +
	004	Kitty	1#+	Kitty	1 +		
	005	Growl	1#+	Growl	1 +		
125	000	Telephone 1	1#+	Telephone 1	1 * +	Telephone 1	1 +
	001	Telephone 2	1#+	Telephone 2	1 * +	Telephone 2	1 +
	002	DoorCreaking	1#+	Creaking	1 * +	Creaking	1 +
	003	Door	1 # +	Door	1 * +	Door	1 +
	004	Scratch	1#+	Scratch	1 * +	Scratch	1 +
	005	Wind Chimes	2 # +	Wind Chimes	2 * +	Wind Chimes	2 +
	007	Scratch 2	1#+	Scratch 2	1 +		
	800	ScratchKev	2 +				
	009	TapeRewind	1 +				
	010	Phono Noise	1 +	****			
	011	MC-500 Beep	1			*****	
126	000	Helicopter	1#+	Helicopter	1 * +	Helicopter	1 +
	001	Car-Engine	1#+	Car-Engine	1 * +	Car-Engine	1 +
	002	Car-Stop	1#+	Car-Stop	1 * +	Car-Stop	1 +
	003	Car-Pass	1#+	Car-Pass	1 * +	Car-Pass	1 +
	004	Car-Crash	2#+	Car-Crash	2 * +	Car-Crash	2 +
	005	Siren	1#+	Siren	1 * +	Siren	1 +
	006	Train	1#+	Train	1 * +	Train	1 +
	007	Jetplane	2#+	Jetplane	2 * +	Jetplane	2 +
		•				•	2 +
	800	Starship	2#+	Starship	2 * +	Starship	
	009	Burst Noise	2 # +	Burst Noise	2 * +	Burst Noise	2 +
	010	Calculating	2 +				
		Perc. Bang	2 +				
127	000	Applause	2#+	Applause		Applause	2 +
	001	Laughing	1 # +	Laughing	1 * +	Laughing	1 +
	002	Screaming	1 # +	•	1 * +	Screaming	1 +
	003	Punch	1#+	Punch	1 * +	Punch	1 +
	004	Heart Beat	1 #	Heart Beat	1 *	Heart Beat	1
	005	Footsteps	1 # +	Footsteps	1 * +	Footsteps	1 +
	006	Applause 2	2 # +	Applause 2	2 +		
	007	Small Club	2 +				
	800	ApplauseWave	2 +				
	016	Voice One	1 +				
	017	Voice Two	1 +				
	018	Voice Three	1 +				
	019	Voice Tah	1 +				
	020	Voice Whey	1 +				
128	000	Gun Shot	1#+	Gun Shot	1 * +	Gun Shot	1+
	001	Machine Gun	1 # +	Machine Gun	1 * +	Machine Gun	1 +
	002	Lasergun	1 # +	Lasergun	1 * +	Lasergun	1 +
	003	Explosion	2 # +	Explosion	2 * +	Explosion	2 +
	004	Eruption	1 +				
	UU- <del>1</del>						

: program number(Instrument number)
: value of controller number 0 (Bank number, Variation number)
: legato-enabled sounds
: number of voices used by the Instrument
: same sounds as SC-88 map
: same sounds as SC-55 map
: a percussive sound which cannot be played melodically. Use near C4 (note number 60). PC CC00

: Voices Remark # Remark \* Remark +

# SC-55 MAP (CM-64 Sound Map)

: a percussive sound which cannot be played melodically. Use near C4 (note number 60).

CM-64 Sc	ound Map (PCM S	• ound)	CM-64 So	und Map (LA Sou	ınd)	melouical	iy. Ose fleaf C4	(note num.	<i>Del 60)</i> .
PC CC	OO instrument 1	No. of voices	PC CCC	O Instrument N	No. of voices	PC CC0	O Instrument	No. of voices	
001 126	Piano 2	1	001 127	Acou Piano1	1	065 127	Acou Bass 1	1	
002 126	Piano 2	1	002 127	Acou Piano2	1	066 127	Acou Bass 2	11	
003 126	Piano 2		003 127	Acou Piano3	1	067 127	Elec Bass 1	1	
004 126	Honky-tonk	2	004 127	Elec Piano1		068 127	Elec Bass 2	1	
005 126	Piano 1	1	005 127	Elec Piano2		069 127	Slap Bass 1	1	
006 126 007 126	Piano 2 Piano 2	1	006 127 007 127	Elec Piano3 Elec Piano4	1	070 127 071 127	Slap Bass 2	1	
007 120	E.Piano 1	1	007 127	Honkytonk	2	071 127 072 127	Fretless 1 Fretless 2	1	
009 126	Detuned EP1	2	009 127	Elec Org 1	1	073 127	Flute 1	1	
010 126	E.Piano 2	1	010 127	Elec Org 2	2	074 127	Flute 2	<u>·</u> 1	
011 126	Steel Gt.	1	011 127	Elec Org 3	1	075 127	Piccolo 1	1	*******************************
012 126	Steel Gt.	1	012 127	Elec Org 4	1	076 127	Piccolo 2	2	
013 126	12-str.Gt	2	013 127	Pipe Org 1	2	077 127	Recorder	1	
014 126	Funk Gt.	1	014 127	Pipe Org 2	2	078 127	Pan Pipes	1	
015 126	Muted Gt.	1	015 127	Pipe Org 3	2	079 127	Sax 1	1	
016 126	Slap Bass 1	1	016 127	Accordion	2	080 127	Sax 2	1	
017 126	Slap Bass 1	1	017 127	Harpsi 1		081 127	Sax 3		
018 126 019 126	Slap Bass 1 Slap Bass 1	1	018 127	Harpsi 2	2	082 127	Sax 4	1	
020 126	Slap Bass 1	1	019 127 020 127	Harpsi 3 Clavi 1	1	083 127 084 127	Clarinet 1	1	
021 126	Slap Bass 2	1	020 127	Clavi 1	1	084 127	Clarinet 2 Oboe	1	
022 126	Slap Bass 2	1	022 127	Clavi 3	<u> </u>	086 127	Engl Horn	1	
023 126	Slap Bass 2	1	023 127	Celesta 1	1	087 127	Bassoon	1	
024 126	Fingered Bs	1	024 127	Celesta 2	1	088 127	Harmonica	1	
025 126	Fingered Bs	1	025 127	Syn Brass 1	2	089 127	Trumpet 1	1	
026 126	Picked Bass	1	026 127	Syn Brass 2	2	090 127	Trumpet 2	1	
027 126	Picked Bass	1	027 127	Syn Brass 3	2	091 127	Trombone 1	2	
028 126	Fretless Bs		028 127	Syn Brass 4	2	092 127	Trombone 2	2	
029 126	Acoustic Bs		029 127	Syn Bass 1	1	093 127	Fr Horn 1	2	
030 126	Choir Aahs	1	030 127	Syn Bass 2	2	094 127	Fr Horn 2	2	
031 126 032 126	Choir Aahs Choir Aahs	1	031 127	Syn Bass 3	2	095 127	Tuba		
032 126	Choir Aans	<del></del>	032 127 033 127	Syn Bass 4 Fantasy	2	096 127	Brs Sect 1	1	
034 126	SlowStrings	1	033 127	Harmo Pan	2	097 127 098 127	Brs Sect 2 Vibe 1	2 1	
035 126	Strings	1	035 127	Chorale	1	099 127	Vibe 1	1	
036 126	SynStrings3	2	036 127	Glasses	2	100 127	Syn Mallet	1	
037 126	SynStrings3	2	037 127	Soundtrack	2	101 127	Windbell	2	
038 126	Organ 1	1	038 127	Atmosphere	2	102 127	Glock	1	***************************************
039 126	Organ 1	1	039 127	Warm Bell	2	103 127	Tube Bell	1	
040 126	Organ 1	1	040 127	Funny Vox	1	104 127	Xylophone	1	
041 126	Organ 2		041 127	Echo Bell	2	105 127	Marimba	1	
042 126	Organ 1	1	042 127	Ice Rain	2	106 127	Koto	1	
043 126	Organ 1	1	043 127	Oboe 2001	2	107 127	Sho	2	
044 126 045 126	Organ 2 Organ 2	1	044 127 045 127	Echo Pan Doctor Solo	2	108 127	Shakuhachi	2	
046 126	Organ 2	1	045 127	School Daze	1	109 127 110 127	Whistle 1	2	
047 126	Trumpet	1	047 127	Bellsinger	1	111 127	Whistle 2 Bottleblow	1	
048 126	Trumpet	1	048 127	Square Wave	2	112 127	Breathpipe	1	
049 126	Trombone	1	049 127	Str Sect 1	1	113 127	Timpani	1	
050 126	Trombone	1	050 127	Str Sect 2	1	114 127	Melodic Tom	1	
051 126	Trombone	1	051 127	Str Sect 3	1	115 127	Deep Snare	1	+
052 126	Trombone	1	052 127	Pizzicato	1	116 127	Elec Perc 1	1	+
053 126	Trombone	1	053 127	Violin 1	1	117 127	Elec Perc 2	1	+
054 126	Trombone		054 127	Violin 2	1	118 127	Taiko	1	+
055 126	Alto Sax	1	055 127	Cello 1	1	119 127	Taiko Rim	1	
056 126 057 126	Tenor Sax	1	056 127	Cello 2	1	120 127	Cymbal	1	
057 126 058 126	BaritoneSax Alto Sax	1	057 127	Contrabass	1	121 127	Castanets	1	+
059 126	Brass 1	1	058 127 059 127	Harp 1	1	122 127	Triangle	1	+
060 126	Brass 1	1	060 127	Harp 2 Guitar 1	1	123 127	Orche Hit		
061 126	Brass 2	2	061 127	Guitar 2	1	124 127 125 127	Telephone Bird Tweet	1	+
062 126	Brass 2	2	062 127	Elec Gtr 1	1	126 127	Bird Tweet OneNote Jam	1 1	+
063 126	Brass 1	1	063 127	Elec Gtr 2	1	127 127	Water Bell	2	+
064 126	Orchest.Hit	2	064 127	Sitar	2	128 127	Jungle Tune	2	
							3.5 . 4.10		

## **Drum Set List**

The drum sets of the SC-88ST Pro are organized as follows.

The Native map has 25 types, the SC-88 map has 14 types, and the SC-55 map has 10 types.

PC	Native Map		SC-88Map	SC-55Map
001	STANDARD 1		STANDARD 1	STANDARD
002	STANDARD 2	#	STANDARD 2	
003	STANDARD 3	*		
009	ROOM	#	ROOM	ROOM
010	HIP HOP			
011	JUNGLE			
012	TECHNO			
017	POWER		POWER	POWER
025	ELECTRONIC	#	ELECTRONIC	ELECTRONIC
026	TR-808		TR-808/909	TR-808
027	DANCE		DANCE	
028	CR-78			
029	TR-606			
030	TR-707			
031	TR-909			
033	JAZZ		JAZZ	JAZZ
041	BRUSH		BRUSH	BRUSH
049	ORCHESTRA	#	ORCHESTRA	ORCHESTRA
050	ETHNIC	#	ETHNIC	
051	KICK & SNARE	#	KICK & SNARE	
053	ASIA			
054	CYMBAL&CLAPS			
057	SFX		SFX	SFX
058	RHYTHM FX	#	RHYTHM FX	
059	RHYTHM FX 2			
128				CM-64/32L

- # : Same as the SC-88 map drum sets
- : Sounds in the STANDARD 3 drum set that have "RND" appended to their name (such as Kick, Snare, and Hi-Hat) in the list on the next page are sounds which will change randomly with each note played (these changes affect the timbre and timing). The purpose of this is to create a more natural sounding performance-even if all note messages for percussive instruments are sent with absolute precision, subtle fluctuations will be applied so the performance sounds less mechanical.

Note, however, that you may not always be able to obtain the desired effect, depending on the circumstances.

PC			um set	• •	PC3		PC9		PC10	
	ANDARD 1		STANDARD 2 #		STANDARD 3		ROOM #		HIP-HOP	
_	-500 Beep 1		<del>←</del>		<del>←</del>		<u>←</u>		<u>←</u>	
	-500 Beep 2 ncert SD		<u>←</u>		<u>←</u>		<del>-</del>		<del>-</del>	
	are Roll		<del>`</del>		÷		<b>←</b>		<b>←</b>	
	ger Snap 2		Finger Snap		←		Finger Snap		<del>←</del>	
Hig	h Q		<u>←</u>		<b>←</b>		<del>-</del>		←	
Sla			<del>←</del>		<del>-</del>		<del>←</del>		<u> </u>	
	atch Push	[EXC7]			<u></u>		<u>←</u>		Scratch Push 2	[EXC7]
-	atch Pull	[EXC7]	<u>←</u>		<b>←</b>		<u>←</u>		Scratch Pull 2  ←	[EXC7]
Stic Squ	uare Click		<u>←</u>		<del>-</del>		<u>←</u>		<del>-</del>	
	tronome Click	,	<del>`</del>		<del></del>		<u>←</u>		<del></del>	
	tronome Bell		<b>←</b>		<b>←</b>		<b>←</b>		←	
Sta	ndard 1 Kick 2		Standard 2 Kick 2		Standard 3 Kick 2		Room Kick 2		Hip-Hop Kick 2	
Sta	ndard 1 Kick 1	***************************************	Standard 2 Kick 1		[RND] Kick		Room Kick 1		Hip-Hop Kick 1	
	e Stick		<u>←</u>		<b>←</b>		<u> </u>		TR-808 Rim Shot	
	ndard 1 Snare 1		Standard 2 Snare 1		[RND] Snare	·	Room Snare 1		Rap Snare	
	909 Hand Clap ndard 1 Snare 2		Hand Clap Standard 2 Snare 2		[RND] Hand Clap 3 Standard 3 Snare 2		Hand Clap Room Snare 2		Hip-Hop Snare 2	
	v Tom 2 *		←		←		Room Low Tom 2	*	TR-909 Low Tom 2	
-	sed Hi-Hat	[EXC1]	Closed Hi-Hat	[EXC1]	[RND] Closed Hi-Hat	[EXC1]	Closed Hi-Hat 3	[EXC1]	Room Closed Hi-Hat	[EXC1]
	v Tom 1 *		<u>←</u>		<u>←</u>		Room Low Tom 1	*	TR-909 Low Tom 1	
Pec	fal Hi-Hat	[EXC1]	Pedal Hi-Hat	[EXC1]	[RND] Pedal Hi-Hat	[EXC1]	Pedal Hi-Hat	[EXC1]	Pedal Hi-Hat	[EXC1]
	Tom 2 *		<b>←</b>		<b>←</b>		Room Mid Tom 2	*	TR-909 Mid Tom 2	
_	en Hi-Hat	[EXC1]	Open Hi-Hat	[EXC1]	[RND] Open Hi-Hat	[EXC1]	Open Hi-Hat 3		Room Open Hi-Hat	[EXC1]
	Tom 1 *		<u> </u>		<u>←</u>		Room Mid Tom 1	*	TR-909 Mid Tom 1	
	h Tom 2 * sh Cymbal1		<u>←</u>		(RND) Crash Cymbal		Room High Tom 2 ←		TR-909 High Tom 2 TR-909 Crash Cymba	
	h Tom 1 *		<del>-</del>		←		Room High Tom 1	*	TR-909 High Tom 1	
	e Cymbal 1		<del>-</del>		[RND] Ride Cymbal 1 *	,	←		←	
_	nese Cymbal		<b>←</b>		<del>-</del>		<b>←</b>		Reverse Cymbal	
Ride	e Bell		<u>←</u>		[RND] Ride Bell 1		<u> </u>		<b>←</b>	
	nbourine		<b>←</b>		<u>←</u>		←		Shake Tambourine	
_	ash Cymbal		<b>←</b>		<u>←</u>		<del>-</del>		<del>←</del>	
	vbell		<u>←</u>		<u>←</u>		<u>←</u>	***************************************	TR-808 Cowbell	
-	sh Cymbal 2		<u>←</u>		<b>←</b>		<u> </u>		<u> </u>	
	a-slap e Cymbal 2		<del></del>		[RND] Ride Cymbal 2 *		<u>←</u> ←		<u>←</u>	
_	n Bongo		<del>-</del>		←		<del>-</del>		<del>-</del>	
	Bongo		<b>←</b>		<b>←</b>		<u>-</u>		<u>`</u>	
	e High Conga		<b>←</b>		<b>←</b>		<del>←</del>		<del></del>	
Ope	n High Conga		<del>-</del>		<b>←</b>		←		<b>←</b>	
Low	Conga		<del>-</del>		<u>←</u>		<b>←</b>		<b>←</b>	
	n Timbale		<del>-</del>		<u> </u>		<del>-</del>		<b>←</b>	
-	Timbale		<b>←</b>		<del>-</del>		<b>←</b>		<u> </u>	
_	n Agogo		<del>-</del>		<u>←</u>		<del>-</del>		<b>←</b>	
Cab	Agogo		<del>-</del>		<u> </u>		<del>-</del>		<del></del>	
_	acas		←		<u>←</u>		<u>←</u>		TR-808 Maracas	***************************************
		[EXC2]			<b>←</b>		←		← Maracas	
		[EXC2]			<u>`</u>		<del>-</del>		<del>-</del>	
		[EXC3]			<b>←</b>		<u></u>		<del>`</del>	
Long	g Guiro	[EXC3]	<b>←</b>		<b>←</b>		<b>←</b>		CR-78 Guiro	[EXC3]
Clay			<del>←</del>		<del>-</del>		←		TR-808 Claves	
	Wood Block		<del>-</del>		<del>-</del>		←		<del></del>	
	Wood Block		<del>-</del>		<u>-</u>		<del>-</del>		<u>←</u>	
		[EXC4] [EXC4]			<del>-</del>		<u>←</u>		High Hoo	[EXC4]
		EXC5			<b>←</b>		←		Low Hoo	[EXC4]
		EXC5			<b>←</b>		←		Mute Triangle Open Triangle	
Shal			<del>-</del>		<b>←</b>		<b>←</b>	*	TR-626 Shaker	
	le Bell		<u>`</u>		<b>←</b>		<del>-</del>		←	
	Tree		Bar Chimes		<b>←</b>		<u>`</u>		<del>-</del>	-
Cast	tanets		<del>-</del>		<b>←</b>		<del>-</del>		<del>-</del>	
			←		←		<b>←</b>		<b>←</b>	
		[EXC6]			<b>←</b>		←		<b>←</b>	
-	lause 2 *		←		<del></del>		←		Small Club 1 *	k
] =			•••		***				***	
===										
===										
===			***						***	

← : Same as the percussion sound of "STANDARD1"(PC1).

[EXC]: Percussion sounds of the same number will not be heard at the same lime.

[88]: Same as the percussion sound of SC-88

[55]: Same as the percussion sound of SC-85

[55]: Same as the percussion sound of SC-85

	Native	Dru	um set (2	2)		# :Sam	e as ui	e drum set of SC-	00
21	PC 11		PC 12		PC 17	PC 25		PC 26	
22	JUNGLE 		TECHNO ←		POWER ←	ELECTRONIC # ←		TR-808 ←	
23	<u>←</u>		<b>←</b>		<del>-</del>	<u></u>		<u>←</u>	
24	<u>←</u>		<u>←</u>		<u></u>	<u></u>		<del>←</del>	
25	<u>←</u>		<u>←</u>		<u> </u>	— ← Finger Snap 2		<del></del>	
26 27	<u>←</u>		<del>-</del>		<u>←</u>	Finger Shap 2		<del>-</del>	
28	<del>`</del>		<del>`</del>		<del>`</del>	<b>←</b>		<b>←</b>	
29	Scratch Push 2	[EXC7]	Scratch Push 2 [I	EXC7]	<b>←</b>	Scratch Push 2	[EXC7]	Scratch Push 2	[EXC7]
30	Scratch Pull 2	[EXC7]		EXC7]		Scratch Pull 2	[EXC7]	Scratch Pull 2 ←	[EXC7]
31 32	<del>-</del>		<u>←</u>		<u>←</u>	<del></del>		<del></del>	
33	<del>-</del>		<del>-</del>		<del>-</del>	<del></del>		<u>`</u>	
34	<del>-</del>		<del>(-</del>		<b>←</b>	<del></del>		←	
35	Jungle Kick 2		Techno Kick 2		Power Kick 2	Electric Kick 2		TR-808 Kick 2	
36	Jungle Kick 1		Techno Kick 1 TR-808 Rim Shot		Power Kick 1	Electric Kick 1 * ←		TR-808 Kick 1 TR-808 Rim Shot	
37 38	Jungle Snare 1		Techno Snare 1		Power Snare 1	Electric Snare 1		TR-808 Snare 1	
39	Hand Clap 2		TR-707 Hand Clap		Hand Clap	Hand Clap		Hand Clap	
40	Jungle Snare 2		Techno Snare 2		Power Snare 2	Electric Snare 2		TR-808 Snare 2	
41	TR-909 Low Tom 2		TR-808 Low Tom 2 *	EVC:	Power Low Tom 2 *	Electric Low Tom 2 *		TR-808 Low Tom 2 *	
42	TR-606 Closed Hi-Hat TR-909 Low Tom 1	[EXC1]	TR-707 Closed Hi-Hat [I	EXU1]	← Power Low Tom 1 *	Closed Hi-Hat 2 Electric Low Tom 1 *		TR-808 Closed Hi-Hat 2 TR-808 Low Tom 1	
44	Jungle Hi-Hat	[EXC1]	CR-78 Closed Hi-Hat [I	EXC11	1 01101 2011 10111 1	Pedal Hi-Hat		TR-808 Closed Hi-Hat	[EXC1]
15	TR-909 Mid Tom 2		TR-808 Mid Tom 2 *		Power Mid Tom 2 *	Electric Mid Tom 2 *		TR-808 Mid Tom 2 *	
46	TR-606 Open Hi-Hat			EXC1]		Open Hi-Hat 2		TR-808 Open Hi-Hat	
	TR-909 Mid Tom 1		TR-808 Mid Tom 1 *		Power Mid Tom 1 * Power High Tom 2 *	Electric Mid Tom 1 * Electric High Tom 2 *		TR-808 Mid Tom 1 * TR-808 High Tom 2 *	
48 49	TR-909 High Tom 2 TR-808 Crash Cymbal		TR-808 High Tom 2 * TR-909 Crash Cymbal		←	←		TR-808 Crash Cymba	
50	TR-909 High Tom 1		TR-808 High Tom 1 *		Power High Tom 1 *	Electric High Tom 1 *	k	TR-808 High Tom 1 *	
51	<del></del>		<del>←</del>		<b>←</b>	<b>←</b>		TR-606 Ride Cymbal	
52	Reverse Cymbal		Reverse Cymbal		<u>←</u>	Reverse Cymbal		<u>←</u>	
53	← Shake Tambourine		Shake Tambourine		<u>←</u>	<del></del>		← CR-78 Tambourine	
54	←		←		<del>-</del>	<del></del>		←	
55	TR-808 Cowbell		TR-808 Cowbell		<b>←</b>	<b>←</b>		TR-808 Cowbell	
57	<del></del>		TR-909 Crash Cymbal		<u></u>	<u></u>		TR-909 Crash Cymba	
58 59	<u>←</u>		<u></u>		<u>←</u>	<del>-</del>		← Ride Cymbal 2	
	<del></del>		← CR-78 High Bongo		<u>←</u>	<u>←</u>		CR-78 High Bongo	
60	<del></del>		CR-78 Low Bongo		<b>←</b>	<b>←</b>		CR-78 Low Bongo	
62	<del>-</del>		TR-808 High Conga		<b>←</b>	<b>←</b>		TR-808 High Conga	
64 63	←		TR-808 Mute Conga		<u> </u>	<u> </u>		TR-808 Mute Conga TR-808 Low Conga	
	<del></del>		TR-808 Low Conga ←		<u>←</u> ←	<u>←</u>		←	
65	<del>`</del>		<del>`</del>		+	<b>←</b>		<b>←</b>	
67	<b>←</b>		<b>←</b>		+	<b>←</b>		<b>←</b>	
- 68	<u>←</u>		<b>←</b>		<b>←</b>	<u> </u>		<u>←</u>	
69	← TR-808 Maracas		TR-808 Maracas		<u>←</u>	<b>←</b>		← TR-808 Maracas	
71	←		←		<del>-</del>	<del>-</del>		←	
72	<del>-</del>		<b>←</b>		<b>←</b>	-		<u> </u>	
73	<b>←</b>		←		<del></del>	<u></u>		<del>-</del>	
74	CR-78 Guiro	[EXC3]	CR-78 Guiro [ TR-808 Claves	EXC3]		<u>←</u>		CR-78 Guiro TR-808 Claves	[EXC3]
75 76	TR-808 Claves ←		←		<u>←</u>	<del>-</del>		←	
	<del>-</del>		<b>←</b>		<b>←</b>	←		←	
77   78	High Hoo			EXC4]		<u></u>		High Hoo	[EXC4]
79	Low Hoo	[EXC4]		EXC4]		<u> </u>		Low Hoo	[EXC4]
80	Mute Triangle Open Triangle		Mute Triangle Open Triangle		<u>←</u>	<u>←</u>		Mute Triangle Open Triangle	
81	TR-626 Shaker		TR-626 Shaker		<del>`</del>	<b>←</b>		TR-626 Shaker	
83	←		<del></del>		<del>-</del>	<b>←</b>		<b>←</b>	
84	←		<del>-</del>		<del></del>	<b>←</b>		<u>←</u>	
85	<u> </u>		<del></del>		<del></del>	<u>←</u>		<u>←</u>	
86	<u>←</u>		<u>←</u>		<del></del>	<del>-</del>		<del>-</del>	
88		*	<b>←</b>		<b>←</b>	Small Club 1	*	Small Club 1	k
89			•••						
90								***	
91									
93			•••						
94			***						
95									

	Native D	<b>)</b> run	n set (3)		#	:Same	e as the drum set of t	SC-88
1	PC 27		PC 28		PC 29		PC 30	
22	DANCE	····	CR-78 ←		TR-606 ←		TR-707	
3	1		<del></del>		<del>-</del>		<del></del>	
4	<del>-</del>		<del></del>		<u> </u>		<del>-</del>	
25	←	***************************************	<b>←</b>		<del>-</del>		<del></del>	
3	Finger Snap 2		<b>←</b>		<b>←</b>		<b>←</b>	
27	<u>←</u>		<b>←</b>		<del>-</del>		<b>←</b>	
	<u>←</u>		<del>-</del>		<del>-</del>		<b>←</b>	
20	Scratch Push 2	[EXC7]	Scratch Push 2	[EXC7]	Scratch Push 2	[EXC7]	Scratch Push 2	[EXC7]
30	Scratch Pull 2	[EXC7]	Scratch Pull 2 ←	[EXC7]	Scratch Pull 2 ←	[EXC7]	Scratch Pull 2 ←	[EXC7]
32	<del></del>		<del>-</del>		<del></del>		<del>-</del>	
3	<b>←</b>		<del>(-</del>		÷		<del>-</del>	
34	<b>←</b>		<b>←</b>		<del></del>		<del>(</del>	
)	TR-909 Comp Kick		CR-78 Kick 2		CR-78 Kick 2		TR-707 Kick 2	
<u></u>	Electric Kick 2		CR-78 Kick 1		TR-606 Kick 1		TR-707 Kick 1	
37	<u>←</u>		CR-78 Rim Shot		CR-78 Rim Shot		TR-707 Rim Shot	
39	House Snare		CR-78 Snare 1		TR-606 Snare 1		TR-707 Snare 1	
_ 39	← Dance Snare 2		TR-707 Hand Clap CR-78 Snare 2		TR-707 Hand Clap TR-606 Snare 2		TR-707 Hand Clap TR-707 Snare 2	
***********	Electric Low Tom 2	*	CR-78 Low Tom 2	*	TR-606 Low Tom 2		TR-707 Share 2	*
42	CR-78 Closed Hi-Hat	[EXC1]	CR-78 Closed Hi-Hat	[EXC1]	TR-606 Closed Hi-Hat	[EXC1]	TR-707 Closed Hi-Hat	[EXC1]
	Electric Low Tom 1	*	CR-78 Low Tom 1	*	TR-606 Low Tom 1		TR-707 Low Tom 1	*
44	TR-808 Closed Hi-Hat 2	[EXC1]	TR-606 Closed Hi-Hat	[EXC1]	TR-606 Closed Hi-Hat	[EXC1]	TR-707 Closed Hi-Hat	[EXC1]
1.40	Electric Mid Tom 2	*	CR-78 Mid Tom 2	*	TR-606 Mid Tom 2		TR-707 Mid Tom 2	ж
46	CR-78 Open Hi-Hat	[EXC1]	CR-78 Open Hi-Hat	[EXC1]	TR-606 Open Hi-Hat	[EXC1]	TR-707 Open Hi-Hat	[EXC1]
	Electric Mid Tom 1	*	CR-78 Mid Tom 1	*	TR-606 Mid Tom 1		TR-707 Mid Tom 1	*
1.0	Electric High Tom 2 TR-808 Crash Cymbal	*	CR-78 High Tom 2 TR-808 Crash Cymbal	*	TR-606 High Tom 2		TR-707 High Tom 2	*
49	Electric High Tom 1	*	CR-78 High Tom 1	*	TR-808 Crash Cymbal		TR-909 Crash Cymbal	*
51	TR-606 Ride Cymbal		TR-606 Ride Cymbal		TR-606 High Tom 1 TR-606 Ride Cymbal		TR-707 High Tom 1 TR-909 Ride Cymbal	*
	Reverse Cymbal		←		←		← ←	
	←		<del>-</del>		<b>←</b>		<del>-</del>	
54	Shake Tambourine		CR-78 Tambourine		CR-78 Tambourine		Tambourine 2	
56	← TR-808 Cowbell		← CR-78 Cowbell		← CR-78 Cowbell		← TD 000 O	
00	<u>←</u>		TR-909 Crash Cymbal		TR-909 Crash Cymbal		TR-808 Cowbell ←	
58	<b>←</b>		←		←		<del>-</del>	
	←		Ride Cymbal Edge		Ride Cymbal Edge		Ride Cymbal Edge	
	←		CR-78 High Bongo		CR-78 High Bongo		+	
61	<u>←</u>		CR-78 Low Bongo		CR-78 Low Bongo		<b>←</b>	
	<u>←</u>		TR-808 High Conga		TR-808 High Conga		←	
63	<u>←</u>		TR-808 Mute Conga		TR-808 Mute Conga		<b>←</b>	
	<u>+</u>		TR-808 Low Conga ←		TR-808 Low Conga		<u> </u>	
66	4-		<del>-</del>		<b>←</b>		<del>-</del>	
_ 00	<u>`</u>		<b>←</b>		<del>-</del>		<b>←</b>	
68	<u>←</u>	V-17-1	<b>←</b>		<del>-</del>		<b>←</b>	
	<b>←</b>		<b>←</b>		÷		<b>←</b>	
70	<del>-</del>		CR-78 Maracas		CR-78 Maracas		TR-808 Maracas	
	<del>-</del>		<del></del>		<b>←</b>		<b>←</b>	
	<b>←</b>		<u>←</u>		<b>←</b>		<b>←</b>	
73	<del></del>		← CD 70 0: i		<del>-</del>		<b>←</b>	
75	<u>←</u>		CR-78 Guiro CR-78 Claves	[EXC3]	CR-78 Guiro	[EXC3]	<b>←</b>	
75	<del></del>		← CH-78 Claves		CR-78 Claves ←		<del>(</del>	
	<del></del>	*****	<u></u>		<del>-</del>		<del>-</del>	***************************************
78	High Hoo	[EXC4]	High Hoo	[EXC4]	High Hoo	[EXC4]	High Hoo	[EXC4]
	Low Hoo	[EXC4]	Low Hoo	[EXC4]	Low Hoo	[EXC4]	Low Hoo	[EXC4]
80	Mute Triangle		CR-78 Metalic Beat 1	[EXC5]	CR-78 Metalic Beat 1	[EXC5]	Mute Triangle	[EXO4]
	Open Triangle		CR-78 Metalic Beat 2	[EXC5]	CR-78 Metalic Beat 2	[EXC5]	Open Triangle	**************************************
82	TR-626 Shaker		TR-626 Shaker		TR-626 Shaker		TR-626 Shaker	
	<u> </u>		<b>←</b>		<u></u>		<b>(</b>	
	<del></del>		<del></del>		<del>-</del>		<del>-</del>	
85	<del>-</del>		<b>←</b>		<del>-</del>		<b>←</b>	
87	<del></del>		<b>←</b>		<del></del>		<b>←</b>	
07		*	Small Club 1	*	← Small Club 1	*	← Small Club 1	*
							Small Club 1	+
90								
	***		***		***			
			***		***			****
92								
	***		***					
92 94							•••	

PC : Program Number (Drum Set Number)
... : No sound
x : Tones which are created using two voices

Same as the percussion sound of "STANDARD1"(PC1).

[EXC]: Percussion sounds of the same number will not be heard at the same time.

[88]: Same as the percussion sound of SC-88

[55]: Same as the percussion sound of SC-58

	Native D	. 0			DC 41		PC 49	
	PC 31 TR-909		PC 33 JAZZ		PC 41 BRUSH		ORCHESTRA #	
22	<u></u>		<b>←</b>		<b>←</b>		<del>←</del>	
	<del>-</del>		<b>←</b>		<u> </u>		<b>←</b>	
. 05	<del>-</del>		<u>←</u>		<u>←</u>		<del>-</del>	
25	<b>←</b>		Finger Snap 2		Finger Snap 2		Finger Snap	
27	<del>-</del>		←		÷		Closed Hi-Hat 2	[EXC1]
and the state of t	<del>-</del>		<b>←</b>		<del>-</del>		Pedal Hi-Hat	[EXC1]
	Scratch Push 2	[EXC7]	<u></u>		←		Open Hi-Hat 2	[EXC1]
30	Scratch Pull 2	[EXC7]	<u>←</u>		<b>←</b>		Ride Cymbal 1	
- 00	<del></del>		<u>←</u>		<del>-</del>		<b>←</b>	
32	<del>-</del>		<u>←</u>		<u>←</u>		<del>-</del>	
34	<u>←</u>		<del>-</del>		<b>←</b>		<del>←</del>	
	TR-909 Kick 2		Jazz Kick 2		Jazz Kick 2		Jazz Kick 1	
	TR-909 Kick 1	*	Jazz Kick 1		Jazz Kick 1		Concert BD 1	A
37	TR-909 Rim		<del>←</del>		<del>-</del>		<b>←</b>	
	TR-909 Snare 1		Jazz Snare 1		Brush Tap 1		Concert SD	
39	<u>←</u>		Hand Clap 2		Brush Slap 1 Brush Swirl 1		Castanets Concert SD	
	TR-909 Snare2	,	Jazz Snare 2  ←		Brush Low Tom 2	*	Timpani F	
42	TR-909 Low Tom 2 TR-707 Closed Hi-Hat	[EXC1]	Closed Hi-Hat 2	[EXC1]	Brush Closed Hi-Hat	[EXC1]	Timpani F#	
42	TR-909 Low Tom 1	[EXO.]	<b>←</b>		Brush Low Tom 1	*	Timpani G	
44	TR-707 Closed Hi-Hat	[EXC1]	Pedal Hi-Hat	[EXC1]	Pedal Hi-Hat	[EXC1]	Timpani G#	
	TR-909 Mid Tom 2		←		Brush Mid Tom 2	*	Timpani A	
46	TR-909 Open Hi-Hat	[EXC1]	Open Hi-Hat 2	[EXC1]	Brush Open Hi-Hat	[EXC1]	Timpani A#	
	TR-909 Mid Tom 1		<del>-</del>		Brush Mid Tom 1 ·	*	Timpani B Timpani c	
	TR-909 High Tom 2		÷		Brush High Tom 2 Brush Crash Cymbal		Timpani c#	
49	TR-909 Crash Cymbal TR-909 High Tom 1		<u>←</u>		Brush High Tom 1	*	Timpani d	
51	TR-909 Ride Cymbal	*	Ride Cymbal Inner		Ride Cymbal Inner		Timpani d#	
	<u>←</u>		<b>←</b>		<b>←</b>		Timpani e	
	<b>(-</b>		<b>←</b>		Brush Ride Bell		Timpani f	
54	Tambourine 2		<b>←</b>		<u>←</u>		<u> </u>	A
	<u>←</u>		<del></del>		<u> </u>		<b>←</b>	
_56_	TR-808 Cowbell		<u>←</u>		<b>←</b>		Concert Cymbal 2	
58	<u>←</u>		<b>←</b>		<del>-</del>		<b>←</b>	
	Ride Cymbal Edge		Ride Cymbal Edge		Ride Cymbal Edge		Concert Cymbal 1	
	←		<b>←</b>		<b>←</b>		<del>-</del>	
61	<b>←</b>		<b>←</b>		+		<u> </u>	
	<u>←</u>		<b>←</b>		<del>-</del>		<b>←</b>	
63	<u>←</u>		← ←		<del></del>		<del>-</del>	
	<del>-</del>		<del>-</del>		<u>+</u>		<b>←</b>	
66	<del>-</del>		<del>-</del>		<b>←</b>		<b>←</b>	
_ 00	<b>←</b>		<b>←</b>		<b>←</b>		<b>←</b>	
68	←		<b>←</b> ′		<u> </u>		<del></del>	
	<b>←</b>		<del></del>		<del>-</del>		<u> </u>	
70	TR-808 Maracas		<del></del>		<del>-</del>		<u>←</u>	
	<u> </u>		<del>-</del>		<u>←</u>		<del>-</del>	
70	<u>←</u>		<b>←</b>		<del></del>		<del></del>	
73	CR-78 Guiro	[EXC3]	<del>-</del>		<b>←</b>		<b>←</b>	
75	TR-808 Claves		<b>←</b>		<del></del>		<b>←</b>	
L	<b>←</b>		<del>-</del>		<u></u>		<del></del>	
	<u> </u>		<del>-</del>		<b>←</b>		<del>-</del>	
78	High Hoo	[EXC4]	<u> </u>		<del>-</del>		<u>←</u>	
	Low Hoo	[EXC4]	<u>←</u>		<u>←</u>		<del>-</del>	
80	Mute Triangle Open Triangle		<u>←</u>		<del>-</del>		<b>←</b>	
82	TR-626 Shaker		+		<b>←</b>		<b>←</b>	
	<u>←</u>		+		<b>←</b>		<del>-</del>	
	<b>←</b>		<b>←</b>		<del></del>		<del>-</del>	
85	<u>←</u>		<u>←</u>		<del>-</del>		<u> </u>	
	<u></u>		<u> </u>		<u></u>		<u></u>	
87	<u>←</u>		<u> </u>	*	←	*	← Applause	*
			Applause 	· · · · · · · · · · · · · · · · · · ·	Applause		Applause	
90	•••							
92								
94								

	Native D		PC 51	PC 53		PC 54	
	ETHNIC #		KICK & SNARE #	ASIA		CYMBAL&CLAPS	
-	Finger Snap Tambourine		CR-78 Kick 1 CR-78 Kick 2	Gamelan Gong 1 Gamelan Gong 2			
	Castanets		TR-606 Kick	Gamelan Gong 3			
7 .	Crash Cymbal 1		TR-707 Kick	Gamelan Gong 4		•••	
٦.	Snare Roll		TR-808 Kick 1	Gamelan Gong 5		***	
	Concert SD		TR-909 Kick 1	Gamelan Gong 6		***	
	Concert Cymbal		TR-909 Kick 2 *	Gamelan Gong 7		Downer Or on Hillet	
٦.	Concert BD 1		Hip-Hop Kick 2	Gamelan Gong 8 Gamelan Gong 9		Reverse Open Hi-Hat Reverse Closed Hi-Hat 1	
	Jingle Bell Bell Tree		Hip-Hop Kick 1 Jungle Kick 2	Gamelan Gong 10		Reverse Closed Hi-Hat 2	***********
1 -	Bar Chimes		Jungle Kick 1	Gender 1		Jungle Hi-Hat	[EXC1
1 -	Wadaiko	*	Techno Kick 2	Gender 2		[55] Closed Hi-Hat	[EXC1
1	Wadaiko Rim	*	Techno KicK 1	Gender 3		[88] Closed Hi-Hat 2	[EXC1
•	Shime Taiko		Standard 1 Kick 2	Gender 4		[88] Closed Hi-Hat 3	[EXC1
7 -	Atarigane		Standard 1 Kick 1	Gender 5		Closed Hi-Hat 4 Closed Hi-Hat	[EXC1
٦,	Hyoushigi		[88] Standard 1 Kick 1 [88] Standard 1 Kick 2	Bonang 1 Bonang 2		TR-707 Closed Hi-Hat	[EXC1
-	Ohkawa High Kotsuzumi		[88] Standard 2 Kick 1	Bonang 3		TR-606 Closed Hi-Hat	[EXC1
7	Low Kotsuzumi		[88] Standard 2 Kick 2	Bonang 4		[88] TR-808 Closed Hi-Hat	[EXC1
	Ban Gu		[55] Kick Drum1	Bonang 5		TR-808 Closed Hi-Hat	[EXC1
٦.	Big Gong		[55] Kick Drum 2	Rama Cymbal Low		CR-78 Closed Hi-Hat	[EXC1
	Small Gong		[88] Soft Kick	Rama Cymbal High		[55] Pedal Hi-Hat	[EXC1
7 -	Bend Gong		[88] Jazz Kick 1	Sagat Open	[EXC7]	[88] Pedal Hi-Hat	[EXC1
	Thai Gong		[88] Jazz Kick 2	Sagat Closed	[EXC7]	Pedal Hi-Hat	[EXC1
-	Rama Cymbal		[55] Concert BD 1	Jaws Harp	*	Half-Open Hi-Hat 1	[EXC
	Gamelan Gong	[EVO41	[88] Room Kick 1	Wadaiko Wadaiko Rim	*	Half-Open Hi-Hat 2 [55] Open Hi Hat	[EXC:
٠.	Udo Short Udo Long	[EXC1] [EXC1]	[88] Room Kick 2 [88] Power Kick1	Small Taiko		[88] Open Hi-Hat 2	[EXC
- 1	Udo Long Udo Slap	[EAU I]	[88] Power Kick2	Shimedaiko		[88] Open Hi-Hat 3	[EXC
-	Bendir		[88] Electric Kick 2	Atarigane		Open Hi-Hat 2	[EXC
١.	Req Dum		[88] Electric Kick 1 *	Hyoushigi		TR-909 Open Hi-Hat	[EXC
	Req Tik		[55] Electric Kick	Ohkawa		TR-707 Open Hi-Hat	[EXC1
-	Tabla Te		[88] TR-808 Kick	High Kotsuzumi		TR-606 Open Hi-Hat	[EXC1
7 -	Tabla Na		[88] TR-909 Kick	Low Kotsuzumi		[88] TR-808 Open Hi-Hat	[EXC1
1 -	Tabla Tun		[88] Dance Kick	Yyoo Dude		TR-808 Open Hi-Hat	[EXC
	Tabla Ge		[88] Standard 1 Snare 1	Buk Buk Rim		CR-78 Open Hi-Hat	[EXC
-	Tabla Ge Hi Talking Drum	*	[88] Standard 1 Snare 2 [88] Standard 2 Snare 1	Gengari p	[EXC1]	Crash Cymbal 1 Crash Cymbal 2	[EXC
-	Bend Talking Drum	*	[88] Standard 2 Snare 2	Gengari Mute Low	[EXC1]	Crash Cymbal 3	1-10-
7 -	Caxixi		[55] Tight Snare	Gengari f	[EXC2]	Brush Crash Cymbal	
- 1	Djembe		[55] Concert Snare	Gengari Mute High	[EXC2]		*
Ī	Djembe Rim		[88] Jazz Snare 1	Gengari Samll		TR-909 Crash Cymbal	
-	Timbales Low		[88] Jazz Snare 2	Jang-Gu Che		TR-808 Crash Cymbal	
1 -	Timbales Paila		[88] Room Snare 1	Jang-Gu Kun		Mute Crash Cymbal 1	[EXC
-	Fimbales High		[88] Room Snare 2	Jang-Gu Rim	[EVC9]	Mute Crash Cymbal 2 Reverse Crash Cymbal 1	[EXC4
1 -	Cowbell High Bongo		[88] Power Snare 1 [88] Power Snare 2	Jing p Jing f	* [EXC3]	Reverse Crash Cymbal 1	
1 -	Low Bongo		[55] Gated Snare	Jing Mute	[EXC3]	Reverse Crash Cymbal 3	
	Mute High Conga		[88] Dance Snare 1	Asian Gong	[00]	Reverse TR-909 Crash Cyn	nbal
	Open High Conga		[88] Dance Snare 2	Big Gong		[55] Splash Cymbal	
_	Mute Low Conga		[88] Disco Snare	Small Gong		Splash Cymbal	
_	Conga Slap		[88] Electric Snare 2	Pai Ban		[88] Ride Bell	
-	Open Low Conga		[88] House Snare *	Ban Gu		[88] Brush Ride Bell	
-	Conga Slide	*	[55] Electric Snare 1	Tang Gu	[EXC4]	[88] Ride Cymbal 1	
-	Mute Pandiero		[88] Electric Snare 3 *	Tang Gu Mute	[EXC4] *	[88] Ride Cymbal 2	
-	Open Pandiero Open Surdo	[EXC2]	[88] TR-808 Snare 1 [88] TR-808 Snare 2 *	Shou Luc Bend Gong		[88] Brush Ride Cymbal	
-	Mute Surdo	[EXC2]	[88] TR-909 Snare 1	Hu Yin Luo Low	*	Ride Cymbal Low Inner Ride Cymbal Mid Inner	
-	Tamborim	(	[88] TR-909 Snare 2 *	Hu Yin Luo Mid	[EXC5]	Ride Cymbal High Inner	
-	High Agogo		[88] Brush Tap 1	Hu Yin Luo Mid 2	[EXC5]	Ride Cymbal Low Edge	-
-	ow Agogo		[88] Brush Tap 2	Hu Yin Luo High	[EXC6]	Ride Cymbal Mid Edge	
_	Shaker		[88] Brush Slap 1	Hu Yin Luo High 2	[EXC6]	Ride Cymbal High Edge	
-	High Whistle	[EXC3]	[88] Brush Slap 2	Nao Bo		TR-606 Ride Cymbal	
-	ow Whistle	[EXC3]	[88] Brush Slap 3	Xiao Bo		TR-808 Ride Cymbal	
-	Mute Cuica	[EXC4]	[88] Brush Swirl 1			Chinese Cymbal	
-	Open Cuica	[EXC4]	[88] Brush Swirl 2		*	Chinese Cymbal 2	
-	Mute Triangle	[EXC5]	[88] Brush Long Swirl	***		[55] Hand Clap	
-	Open Triangle Short Guiro	[EXC5] [EXC6]	Standard 1 Snare 1 Standard 1 Snare 2			[88] Hand Clap 2	
-	ong Guiro	[EXC6]	Standard 1 Share 3			[88] Hand Clap	
-	Cabasa Up	[EXOO]	Rap Snare			Hand Clap Hand Clap 2	
-	Cabasa Down		Hip-Hop Snare 2			TR-707 Hand Clap	
_	Claves		Jungle Snare 1				************
_	ligh Wood Block		Jungle Snare 2			***	
÷	ow Wood Block		Techno Snare 1			***	

Native Drum	•	PC 58		PC 59
SFX		RHYTHM FX #		RHYTHM FX 2
MC-500 Beep 1				
MC-500 Beep 2 Guitar Slide		***		***
Guitar Wah				
Guitar Slap				***
Chord Stroke Down				***
Chord Stroke Up	*			
Biwa FX	*			
Phonograph Noise Tape Rewind				
Scratch Push 2	[EXC1]			
Scratch Pull 2	[EXC1]			
Cutting Noise 2 Up				
Cutting Noise 2 Down		***		
Distortion Guitar Cutting Noise Up Distortion Guitar Cutting Noise Down		Reverse Kick 1		Reverse TR-707 Kick 1
Bass Slide		Reverse Concert Bass Drum		Reverse TR-909 Kick 1
Pick Scrape		Reverse Power Kick1		Reverse Hip-Hop Kick 1
High Q		Reverse Electric Kick 1		Reverse Jungle Kick 2
Slap	(2)	Reverse Snare 1		Reverse TR-606 Snare 2
Scratch Push	[EXC7]	Reverse Snare 2  Reverse Standard 1 Snare 1		Reverse CR-78 Snare 1
Scratch Pull Sticks	[EXC/]	Reverse Tight Snare		Reverse CR-78 Snare 2
Square Click		Reverse Dance Snare		Reverse Jungle Snare 2
Metronome Click		Reverse 808 Snare		Reverse Techno Snare 2
Metronome Bell		Reverse Tom 1		Reverse TR-707 Snare
Guitar Fret Noise		Reverse Tom 2		Reverse TR-606 Snare 1 Reverse TR-909 Snare 1
Guitar Cutting Noise Up		Reverse Sticks		Reverse Hip-Hop Snare 2
Guitar Cutting Noise Down String Slap of Double Bass		Reverse Slap Reverse Cymbal 1		Reverse Jungle Snare 1
Flute Key Click Noise		Reverse Cymbal 2		Reverse House Snare
Laughing		Reverse Open Hi-Hat		Reverse Closed Hi-Hat
Screaming		Reverse Ride Cymbal		Reverse TR-606 Closed Hi-Hat
Punch		Reverse CR-78 Open Hi-Hat		Reverse TR-707 Closed Hi-Hat
Heart Beat		Reverse Closed Hi-Hat Reverse Gong		Reverse TR-808 Closed Hi-Hat Reverse Jungle Hi-Hat
Footsteps 2		Reverse Bell Tree		Reverse Tambourine 2
Applause	*	Reverse Guiro		Reverse Shake Tambourine
Door Creaking		Reverse Bendir		Reverse TR-808 Open Hi-Hat
Door		Reverse Gun Shot		Reverse TR-707 Open Hi-Hat
Scratch	*	Reverse Scratch		Reverse Open Hi-Hat Reverse TR-606 Open Hi-Hat
Wind Chimes	*	Reverse Laser Gun Key Click		Reverse Hu Yin Luo
Car - Engine Car - Stop		Techno Thip		Reverse TR-707 Crash Cymbal *
Car - Passing		Pop Drop		Voice One
Car - Crash	*	Woody Slap		Reverse Voice One
Siren		Distortion Kick	*	Voice Two
Train	*	Syn. Drops		Reverse Voice Two Voice Three
Jetplane	T	Reverse Hi Q Pipe		Reverse Voice Three
Helicopter Starship	*	ice Block		Voice Tah
Gun Shot		Digital Tambourine	*	Reverse Voice Tah
Machine Gun		Alias		Voice Ou
Laser Gun		Modulated Bell		Voice Au
Explosion	*	Spark		Voice Whey
Dog		Metallic Percussion		Frog Vpoce *  Reverse Yyoo Dude
Horse-Gallop Birds	*	Velocity Noise FX Stereo Noise Clap	*	Douby
Rain		Swish		Reverse Douby
Thunder		Slappy	*	Baert High
Wind		Voice Ou		Baert Low
Seashore		Voice Au		Bounce
Stream	*	H00	*	Reverse bounce Distortion Knock
Bubble	*	Tape Stop 1 Tape Stop 2	*	Guitar Slide
Kitty Bird 2		Missile	*	Sub Marine
Growl		Space Birds		Noise Attack
<del></del>		Flying Monster		Space Worms
Telephone 1				Emergency! *
Telephone 2				Calculating
Small Club 1	*			Saw LFO Saw
Small Club 2 Applause Wave	*			
Eruption				
Big Shot	*			***

# Native Drum set (7)

Notes 0-19 and 97-127 are as follows.

		PC 25 ELECTRONIC			
	PC1 STANDARD 1	PC 26 TR-808 PC 27 DANCE			
	PC2 STANDARD 2	PC 28 CR-78			
	PC3 STANDARD 3	PC 29 TR-606			
	PC9 ROOM	PC 30 TR-707	PC 33 JAZZ		
0	PC 17 POWER [88] Standard 1 Kick 1	PC 31 TR-909 [88] Electric Kick 2	PC 41 BRUSH ←	PC 49 ORCHESTRA ←	PC 51 KICK & SNARE
	[88] Standard 1 Kick 2	[88] Electric Kick 1 *	<del>-</del>	<del>-</del>	
2	[88] Standard 2 Kick 1	CR-78 Kick 1	<b>←</b>	<del>-</del>	
4 3	[88] Standard 2 Kick 2	CR-78 Kick 2	<b>←</b>	<b>←</b>	
	[55] Kick Drum 1	TR-606 Kick1	<u> </u>	-	***
5 6	[55] Kick Drum 2 [88] Jazz Kick 1	TR-707 Kick 1 [55] TR-808 Kick	<b>←</b>	<u>←</u>	***
7	[88] Jazz Kick 2	[88] TR-808 Kick	<del>-</del>	<b>←</b>	
8	[88] Room Kick 1	TR-808 Kick 2	<b>←</b>	<del>-</del>	•••
9	[88] Room Kick 2	[88] TR-909 Kick	<b>←</b>	<del>-</del>	
11	_ [GO] T GWCT TRICK T	[88] Dance Kick	<del>-</del>	<u></u>	
	[88] Power Kick 2 [88] Electric Kick 2	Hip-Hop Kick 2 TR-909 Kick 1 *	<b>←</b>	<del>-</del>	•••
12	[88] Electric Kick 1 *	Hip-Hop Kick 3	<del>-</del>	<b>←</b>	***
14	[88] TR-808 Kick	Jungle Kick 1	<del>+</del>	<del></del>	***
16	[88] TR-909 Kick	Techno Kick 1	<b>←</b>	<b>←</b>	
	[88] Dance Kick	Bounce Kick	<del></del>	<del></del>	
17 18	Voice One Voice Two	<u> </u>	<del>-</del>	<b>←</b>	
19	Voice Three	<u>←</u>	<b>←</b>	<u>←</u>	***
	:	:	:	:	
	:		:	:	:
97	[88] Standard 1 Snare1	Techno Hit	•••	Applause 2 *	Jungle Snare 1
98	[88] Standard 1 Snare 2	Philly Hit *	***	Small Club 1 *	Jungle Snare 2
100	[88] Standard 2 Snare 1 [88] Standard 2 Snare 2	Impact Hit * Lo-Fi Rave *	[88] Brush Tap 1	[55] Timpani D#	Techno Snare 1
101	[55] Snare Drum 2	Bam Hit	[88] Brush Tap 2	[55] Timpani E [55] Timpani F	Techno Snare 2 House Snare 2
102		Bim Hit	[88] Brush Slap 1	[55] Timpani F#	CR-78 Snare 1
103	Standard 1 Snare 2	Tape Rewind	[88] Brush Slap 2	[55] Timpani G	CR-78 Snare 2
104 105	Standard 1 Snare 3	Phonograph Noise	[88] Brush Slap 3	[55] Timpani G#	TR-606 Snare 1
106	[88] Jazz Snare 1 [88] Jazz Snare 2	[88] Power Snare 1	[88] Brush Swirl 1	[55] Timpani A	TR-606 Snare 2
107	[88] Room Snare 1	[88] Dance Snare 1 [88] Dance Snare 2	[88] Brush Swirl 2 [88] Brush Long Swirl	[55] Timpani A#	TR-707 Snare 1
108	[88] Room Snare 2	[88] Disco Snare	[88] Jazz Snare 1	[55] Timpani B [55] Timpani c	TR-707 Snare 2 Standard 3 Snare 2
109		[88] Electric Snare 2	[88] Jazz Snare 2	[55] Timpani c#	TR-808 Snare 2
103	[88] Power Snare 2	[55] Electric Snare	[88] Standard 1 Snare1	[55] Timpani d	TR-909 Snare 1
110	[55] Gated Snare	[88] Electric Snare 3 *	[88] Standard 1 Snare2	[55] Timpani d#	TR-909 Snare 2
110			[88] Standard 2 Snare1	[55] Timpani e	
110 111 112	[88] Dance Snare 1	TR-606 Snare 2			
110 111 112 113	[88] Dance Snare 1 [88] Dance Snare 2	TR-707 Snare 1	[88] Standard 2 Snare2	[55] Timpani f	
110 111 112 113 114	[88] Dance Snare 1 [88] Dance Snare 2 [88] Disco Snare	TR-707 Snare 1 [88] TR-808 Snare 2	[88] Standard 2 Snare2 [55] Snare Drum 2	[55] Timpani f 	
110 111 112 113 114	[88] Dance Snare 1 [88] Dance Snare 2 [88] Disco Snare [88] Electric Snare 2	TR-707 Snare 1 [88] TR-808 Snare 2 [88] TR-808 Snare 1 *	[88] Standard 2 Snare2 [55] Snare Drum 2 Standard 1 Snare 1	[55] Timpani f  	
110 111 112 113 114 15 116	[88] Dance Snare 1 [88] Dance Snare 2 [88] Disco Snare [88] Electric Snare 2 [55] Electric Snare [88] Electric Snare 3 *	TR-707 Snare 1 [88] TR-808 Snare 2	[88] Standard 2 Snare2 [55] Snare Drum 2	[55] Timpani f 	
110 111 112 113 114 15 116 117	88  Dance Snare 1  88  Dance Snare 2  88  Disco Snare  88  Electric Snare 2  55  Electric Snare 3  88  Electric Snare 3	TR-707 Snare 1 [88] TR-808 Snare 2 [88] TR-808 Snare 1 * TR-808 Snare 2	[88] Standard 2 Snare2 [55] Snare Drum 2 Standard 1 Snare 1 Standard 1 Snare 2	[55] Timpani f  	
110 111 112 113 114 15 116 117 118	[88] Dance Snare 1 [88] Dance Snare 2 [88] Disco Snare [88] Electric Snare 2 [55] Electric Snare 3  TR-707 Snare 1 [88] TR-808 Snare 1	TR-707 Snare 1 [88] TR-808 Snare 2 [88] TR-808 Snare 1 * TR-808 Snare 2 [88] TR-909 Snare 1 [88] TR-909 Snare 2 * TR-909 Snare 1	[88] Standard 2 Snare2 [55] Snare Drum 2 Standard 1 Snare 1 Standard 1 Snare 2 Standard 1 Snare 3 [88] Room Snare 1 [88] Room Snare 2	[55] Timpani f	
110 111 112 113 114 15 116 117 118 119	[88] Dance Snare 1 [88] Dance Snare 2 [88] Disco Snare [88] Electric Snare 2 [55] Electric Snare 3 [78-707 Snare 1 [88] TR-808 Snare 1 [88] TR-808 Snare 2 [88] TR-808 Snare 2	TR-707 Snare 1 [88] TR-808 Snare 2 [88] TR-808 Snare 1 * TR-808 Snare 2 [88] TR-909 Snare 1 [88] TR-909 Snare 2 * TR-909 Snare 1 TR-909 Snare 2	[88] Standard 2 Snare2 [55] Snare Drum 2 Standard 1 Snare 1 Standard 1 Snare 2 Standard 1 Snare 3 [88] Room Snare 1 [88] Room Snare 2 [88] Power Snare 1	[55] Timpani f	
110 1112 113 114 15 116 117 118 119	[88] Dance Snare 1 [88] Dance Snare 2 [88] Disco Snare [88] Electric Snare 2 [55] Electric Snare 3 * TR-707 Snare 1 [88] TR-808 Snare 1 [88] TR-808 Snare 2 * [88] TR-909 Snare 1	TR-707 Snare 1 [88] TR-808 Snare 2 [88] TR-808 Snare 1 * TR-808 Snare 2 [88] TR-909 Snare 1 [88] TR-909 Snare 2 * TR-909 Snare 2 TR-909 Snare 2 Rap Snare	[88] Standard 2 Snare2 [55] Snare Drum 2 Standard 1 Snare 1 Standard 1 Snare 2 Standard 1 Snare 3 [88] Room Snare 1 [88] Room Snare 2 [88] Power Snare 1 [88] Power Snare 2	[55] Timpani f	
1110 1111 1112 1113 1114 115 116 117 118 119 120 121	[88] Dance Snare 1 [88] Dance Snare 2 [88] Disco Snare 2 [88] Electric Snare 2 [55] Electric Snare 3 [88] Electric Snare 1 [88] TR-808 Snare 1 [88] TR-808 Snare 2 [88] TR-909 Snare 1 [88] TR-909 Snare 2 [88] TR-909 Snare 2	TR-707 Snare 1 [88] TR-808 Snare 2 [88] TR-808 Snare 1 * TR-808 Snare 2 [88] TR-909 Snare 1 [88] TR-909 Snare 2 * TR-909 Snare 1 TR-909 Snare 1 TR-909 Snare 2 Rap Snare Jungle Snare	[88] Standard 2 Snare2 [55] Snare Drum 2 Standard 1 Snare 1 Standard 1 Snare 2 Standard 1 Snare 3 [88] Room Snare 1 [88] Room Snare 2 [88] Power Snare 1 [88] Power Snare 2 [88] Gated Snare	[55] Timpani f	
110 1112 113 114 15 116 117 118 119	[88] Dance Snare 1 [88] Dance Snare 2 [88] Disco Snare 2 [88] Electric Snare 2 [55] Electric Snare 3 [88] Electric Snare 1 [88] TR-808 Snare 1 [88] TR-808 Snare 2 [88] TR-909 Snare 1 [88] TR-909 Snare 2 [88] TR-909 Snare 2	TR-707 Snare 1 [88] TR-808 Snare 2 [88] TR-808 Snare 1 * TR-808 Snare 2 [88] TR-909 Snare 1 [88] TR-909 Snare 2 * TR-909 Snare 2 TR-909 Snare 2 Rap Snare	[88] Standard 2 Snare2 [55] Snare Drum 2 Standard 1 Snare 1 Standard 1 Snare 2 Standard 1 Snare 3 [88] Room Snare 1 [88] Room Snare 2 [88] Power Snare 2 [88] Power Snare 1 [88] Power Snare 2 [88] Gated Snare [88] Dance Snare 1	[55] Timpani f	
1110 1111 112 113 114 15 116 117 118 119 120 121 122 123 24	[88] Dance Snare 1 [88] Dance Snare 2 [88] Disco Snare [88] Electric Snare 2 [55] Electric Snare 2 [55] Electric Snare 3 TR-707 Snare 1 [88] TR-808 Snare 1 [88] TR-908 Snare 2 * [88] TR-909 Snare 2 * Rap Snare	TR-707 Snare 1 [88] TR-808 Snare 2 [88] TR-808 Snare 1 * TR-808 Snare 2 [88] TR-909 Snare 1 [88] TR-909 Snare 2 TR-909 Snare 1 TR-909 Snare 2 Rap Snare Jungle Snare House Snare 1	[88] Standard 2 Snare2 [55] Snare Drum 2 Standard 1 Snare 1 Standard 1 Snare 2 Standard 1 Snare 3 [88] Room Snare 1 [88] Room Snare 2 [88] Power Snare 1 [88] Power Snare 2 [88] Gated Snare	[55] Timpani f	
1110 1111 1112 1113 1114 115 1116 117 118 119 120 121 122	[88] Dance Snare 1 [88] Dance Snare 2 [88] Disco Snare [88] Electric Snare 2 [55] Electric Snare 3 TR-707 Snare 1 [88] TR-808 Snare 1 [88] TR-909 Snare 2 Rap Snare 2 Rap Snare 2 Rap Snare 2 Rap Snare 1	TR-707 Snare 1  [88] TR-808 Snare 2  [88] TR-808 Snare 1 *  TR-808 Snare 2 *  188] TR-909 Snare 1  [88] TR-909 Snare 2 *  TR-909 Snare 1  TR-909 Snare 2  Rap Snare  Jungle Snare  House Snare 1  [88] House Snare *	[88] Standard 2 Snare2 [55] Snare Drum 2 Standard 1 Snare 1 Standard 1 Snare 2 Standard 1 Snare 3 [88] Room Snare 1 [88] Room Snare 2 [88] Power Snare 1 [88] Power Snare 2 [88] Gated Snare [88] Dance Snare 1 [88] Dance Snare 1	[55] Timpani f	

<b>SC-88</b>	Drum	set	(1)
PC 1	PC 2		

26 27 28 29 30 31 32 33 34 35 52 36 37 38 39 40 41 42 43 44 45 46 47	STANDARD 1 Snare Roll Finger Snap High Q Slap Scratch Push Scratch Pull Sticks Square Click Metronome Click Metronome Bell Standard 1 Kick 2 Standard 1 Kick 1 Side Stick Standard 1 Kick 1 Side Stick Standard 1 Snare 1 Hand Clap Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	* [EXC1] * [EXC1]	STANDARD 2	2 1 e 1	## ROOM  ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ←		← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ←		← ← ← ← Scratch Push2 Scratch Pull2 ← ← ← ← Electric Kick 2 Electric Kick 1 ← Electric Snare 1	[EXC7]
28 27 28 30 31 32 33 34 35 52 36 37 38 39 40 41 42 43 44 45 46 47	High Q Slap Scratch Push Scratch Pull Slicks Square Click Metronome Click Metronome Bell Slandard 1 Kick 2 Standard 1 Kick 1 Side Stick Standard 1 Snare 1 Hand Clap Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	[EXC7]  *  [EXC1]  *  [EXC1]  *	← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ←	e 1 e 2	←- ←- ←- ←- ←- ←- Room Kick 2 Room Kick 1 ←- Room Snare 1 ←- Room Snare 2		← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ←		Scratch Push2 Scratch Pull2  Electric Kick 2 Electric Kick 1	
28 29 30 31 32 33 34 35 22 36 37 38 40 41 42 43 44 45 46 46 47	Slap Scratch Push Scratch Pull Scratch Pull Scratch Pull Stricks Square Click Metronome Click Metronome Bell Standard 1 Kick 2 Standard 1 Kick 1 Side Stick Standard 1 Snare 1 Hand Clap Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	[EXC7]  *  [EXC1]  *  [EXC1]  *	← ← ← ← ← Standard 2 Kick Standard 2 Kick ← Standard 2 Snar ← Standard 2 Snar ← Closed Hi-hat2 ←	e 1 e 2	← ← ← ← ← ← ← Room Kick 2 Room Kick 1 ← Room Snare 1 ← Room Snare 2		← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ←		← Scratch Push2 Scratch Pull2 ← ← ← ← ← Electric Kick 2 Electric Kick 1 ← ←	
29 30 31 32 33 34 35 35 34 39 40 41 42 43 44 45 46 47	Scratch Push Scratch Push Scratch Pull Sticks Square Click Metronome Click Metronome Bell Standard 1 Kick 2 Standard 1 Kick 2 Standard 1 Kick 1 Side Stick Standard 1 Snare 1 Hand Clap Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	[EXC7]  *  [EXC1]  *  [EXC1]  *	← ← ← Standard 2 Kick Standard 2 Kick ← Standard 2 Snar ← Closed Hi-hat2 ←	e 1 e 2	← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ←		← ← ← ← ← ← ← Power Kick 2 Power Kick 1 ← Power Snare 1		Scratch Push2 Scratch Pull2  Electric Kick 2 Electric Kick 1	
31 32 33 34 35 35 36 37 38 39 40 41 42 43 44 45 46 47	Scratch Pull Sticks Square Click Metronome Click Metronome Bell Standard 1 Kick 2 Standard 1 Kick 1 Side Stick Standard 1 Snare 1 Hand Clap Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	[EXC7]  *  [EXC1]  *  [EXC1]  *	← ← ← Standard 2 Kick Standard 2 Kick ← Standard 2 Snar ← Closed Hi-hat2 ←	e 1 e 2	← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← Foom Kick 2 Room Kick 1 ← ← Foom Snare 1 ← ← Room Snare 2		← ← ← ← ← ← ← Power Kick 2 Power Kick 1 ← Power Snare 1		Scratch Pull2  Electric Kick 2 Electric Kick 1	
31 32 33 34 35 35 37 38 39 40 41 42 43 44 45 46 47	Sticks Square Click Metronome Click Metronome Bell Standard 1 Kick 2 Standard 1 Kick 1 Side Stick Standard 1 Snare 1 Hand Clap Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	* [EXC1] *	← ← ← Standard 2 Kick Standard 2 Kick ← Standard 2 Snar ← Standard 2 Snar ← Closed Hi-hat2 ←	e 1 e 2	← ← ← Room Kick 2 Room Sick 1 ← Room Snare 1 ← Room Snare 2		← ← ← Power Kick 2 Power Kick 1 ← Power Snare 1		← ← ← Electric Kick 2 Electric Kick 1 ←	
32 33 35 35 36 37 38 39 40 41 42 43 44 45 46 47	Square Click Metronome Click Metronome Bell Standard 1 Kick 2 Standard 1 Kick 1 Side Stick Standard 1 Snare 1 Hand Clap Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	* [EXC1] * [EXC1]	← ← ← Standard 2 Kick Standard 2 Kick ← Standard 2 Snar ← Standard 2 Snar ← Closed Hi-hat2 ←	e 1 e 2	← ← ← Room Kick 2 Room Kick 1 ← ← Room Snare 1 ← Room Snare 2		← ← Power Kick 2 Power Kick 1 ← Power Snare 1		← ← Electric Kick 2 Electric Kick 1	
33 35 36 37 38 39 40 41 42 43 44 45 46 47	Metronome Click Metronome Bell Standard 1 Kick 2 Standard 1 Kick 1 Side Stick Standard 1 Snare 1 Hand Clap Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	* [EXC1] * [EXC1]	← ← Standard 2 Kick Standard 2 Kick ← Standard 2 Snar ← Standard 2 Snar ← Closed Hi-hat2 ←	e 1 e 2	← ← ← Room Kick 2 Room Kick 1 ← Room Snare 1 ← Room Snare 2		←  Power Kick 2  Power Kick 1  ←  Power Snare 1		← ← Electric Kick 2 Electric Kick 1 ←	
35 34 35 32 36 37 38 39 40 41 42 43 44 45 46 47	Metronome Bell Standard 1 Kick 2 Standard 1 Kick 1 Side Stick Standard 1 Snare 1 Hand Clap Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	* [EXC1] * [EXC1]	← Standard 2 Kick Standard 2 Kick ← Standard 2 Snar ← Standard 2 Snar ← Closed Hi-hat2 ←	e 1 e 2	Room Kick 2 Room Kick 1  Room Snare 1  Room Snare 2		← Power Kick 2 Power Kick 1 ← Power Snare 1		Electric Kick 2 Electric Kick 1 ←	
35 22 36 38 39 40 41 42 43 44 45 46 47	Standard 1 Kick 2 Standard 1 Kick 1 Side Stick Standard 1 Snare 1 Hand Clap Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	* [EXC1] * [EXC1]	Standard 2 Kick Standard 2 Kick  Standard 2 Snar  Standard 2 Snar  Closed Hi-hat2	e 1 e 2	Room Kick 1  ← Room Snare 1  ← Room Snare 2		Power Kick 1 ← Power Snare 1		Electric Kick 1 ←	
22 36 37 38 39 40 41 42 43 44 45 46 47	Standard 1 Kick 1 Side Stick Standard 1 Snare 1 Hand Clap Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	* [EXC1] * [EXC1]	Standard 2 Kick  ← Standard 2 Snar  ← Standard 2 Snar  ← Closed Hi-hat2  ←	e 1 e 2	← Room Snare 1 ← Room Snare 2		← Power Snare 1		<u> </u>	
37 38 39 40 41 42 43 44 45 46	Standard 1 Snare 1 Hand Clap Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	* [EXC1] * [EXC1]	Standard 2 Snar  ← Standard 2 Snar  ← Closed Hi-hat2  ←	e 2	Room Snare 1 ← Room Snare 2		Power Snare 1			
41 42 43 44 45 46 47	Hand Clap Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	* [EXC1] * [EXC1]	← Standard 2 Snar ← Closed Hi-hat2 ←	e 2	← Room Snare 2				Electric Snare 1	
41 42 43 44 45 46 47	Standard 1 Snare 2 Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	* [EXC1]  * [EXC1]  *	Standard 2 Snar ← Closed Hi-hat2 ←		Room Snare 2		←			
41 42 43 44 45 46	Low Tom2 Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	* [EXC1]  * [EXC1]  *	← Closed Hi-hat2 ←						<del>-</del>	
43 44 45 46	Closed Hi-hat1 Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	[EXC1] * [EXC1] *	Closed Hi-hat2 ←	[EXC1]	Room Low Tom2		PowerSnare 2		Electric Snare 2	
42 43 44 45 46	Low Tom1 Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	* [EXC1] *	<del>-</del>	[EXC1]		*	Power Low Tom2	*	Electric Low Tom2	*
44 45 46 47	Pedal Hi-hat Mid Tom2 Open Hi-hat1 Mid Tom1	[EXC1]			Closed Hi-hat3	[EXC1]	Closed Hi-hat3	[EXC1]	Closed Hi-hat2	[EXC1]
45 46	Mid Tom2 Open Hi-hat1 Mid Tom1	*			Room Low Tom1	*	Power Low Tom1	*	Electric Low Tom1	*
47	Open Hi-hat1 Mid Tom1		<u>←</u>		<u>←</u>		<u>←</u>	*	←	*
47	Mid Tom1		<u>←</u>	'E1041	Room Mid Tom2	*	Power Mid Tom2		Chan Hi hat?	
		[EXC1]	Open Hi-hat2	[EXC1]	Open Hi-hat3	[EXC1] *	Open Hi-hat3 Power Mid Tom1	[EXC1]	Open Hi-hat2 Electric Mid Tom1	[EXC1]
1 1 1		*	<u></u>		Room Mid Tom1 Room Hi Tom2	*	Power Mid Tom1	*	Electric Hi Tom2	*
	High Tom2	*	<u>←</u>		Hoom Hi Tom2		←		←	
-	Crash Cymbal1 High Tom1	*	<del>-</del>		Room Hi Tom1	*	Power Hi Tom1	*	Electric Hi Tom1	*
	Ride Cymbal1		<del></del>		←		<b>←</b>		<b>←</b>	
52	Chinese Cymbal		<del></del>		<u>←</u>		<b>←</b>		Reverse Cymbal	
	Ride Bell		÷		<b>(</b>		<b>←</b>		<b>←</b>	
33	Tambourine		<b>←</b>	4-4-4-4	<b>←</b>		<b>←</b>		←	· · · · · · · · · · · · · · · · · · ·
	Splash Cymbal		<b>←</b>		<b>←</b>		<b>←</b>		<del>-</del>	
	Cowbell		<b>←</b>		<b>←</b>		<del>←</del>		<b>←</b>	
57	Crash Cymbal2		<b>←</b>		<b>←</b>		<u></u>		<b>←</b>	
58	Vibra-slap		<b>←</b>		<b>←</b>		<b>←</b>		<u>←</u>	
59	Ride Cymbal2		<b>←</b>		←		<u></u>		<del></del>	
24 60	High Bongo		<b>←</b>		<u>←</u>		<del>-</del>		<b>←</b>	
61	Low Bongo		←		<u>←</u>		<u> </u>		<u> </u>	
	Mute High Conga		<u>←</u>		<del>-</del>		<del></del>		<u></u>	
16/	Open High Conga		<del>-</del>		<u>←</u>		<del></del>		<u>←</u>	
	Low Conga		<u></u>		<u>←</u>		<u>←</u>		<u>←</u>	
	High Timbale		<u> </u>		<u>←</u>		<del>-</del>		<del>-</del>	
	Low Timbale		<del>-</del>		<u>←</u>		<del>-</del>		<del>-</del>	
	High Agogo Low Agogo		<u>←</u>		<del>-</del>		<del>-</del>		<u></u>	
00	Cabasa		<del>-</del>		<u></u>		<b>←</b>		<b>←</b>	
70	Maracas		<u></u>		<b>←</b>		<b>←</b>		<b>←</b>	
71	Short Hi Whistle	[EXC2]	<b>←</b>		<b>←</b>		<b>←</b>		<b>←</b>	
	Long Low Whistle	[EXC2]	<b>←</b>		←		←		<del>-</del>	
00//2	Short Guiro	[EXC3]	<b>←</b>		←		<b>←</b>		<del>-</del>	
74	Long Guiro	[EXC3]	<del>-</del>		<b>←</b>		<del>-</del>		<b>(</b> mor	
75	Claves		<b>←</b>		<del>-</del>		<b>←</b>		<u></u>	
76	High Wood Block		<u> </u>		←		<u> </u>		<del>-</del>	
77	Low Wood Block		<b>←</b>		<del></del>		<u> </u>		<b>←</b>	
74 78	Mute Cuica	[EXC4]			<u></u>		<del>-</del>		<del>-</del>	
-	Open Cuica	[EXC4]	<u> </u>		<del>-</del>		<del>-</del>		<u></u>	
	Mute Triangle	[EXC5]	<b>←</b>		<u> </u>		<u> </u>		<u></u>	
81	Open Triangle	[EXC5]	<u></u>		<u> </u>		<del>-</del>		<b>←</b>	
83	Shaker lingle Bell		<u> </u>		<u>←</u>		<del>-</del>		<b>←</b>	
-	Jingle Bell		← Bar Chimes		<u>←</u>		<del>-</del>		<del>-</del>	
	Bell Tree		⊕ Bar Chimes		<del>-</del>		<del>-</del>		<del>-</del>	
85 86	Castanets Mute Surdo	[EXC6]	<del>-</del>		<del>-</del>		<del></del>		<del></del>	
87	Open Surdo	[EXC6]	<del>-</del>		÷		<b>←</b>		<b>←</b>	
88									****	
20	****									
89					****					
91			****							
92										
93										
94										
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C7 96										
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98									•	Annual Control of the
A 99		DC 5		n Cot Number		as the percussi	on sound of "STANDARD	I"(PC1)		s the percussion sound of SC-8
Ť		: N	Program Number (Drur To sound Tones which are create		[EXC]: Percus	sion sounds of	the same number will not	be heard at t		s the percussion sound of SC-5

Same as the percussion sound of 'STANDARD1'(PC1).

[EXC]: Percussion sounds of the same number will not be heard at the same time.

[88]: Same as the percussion sound of SC-58 (ES): Same as the percussion sound of SC-59 (ES): Same as the

	PC 26		um set (	.—,	PC 33		PC 41		PC 49
	TR-808/909		DANCE		JAZZ		BRUSH		ORCHESTRA
5	<del>-</del>		<u></u>		←		<b>←</b>		<b>←</b>
7	<u>←</u>		<del>-</del>		<u>+</u>	*************	<del>-</del>		Classification (EVO
	<del>-</del>		<b>←</b>		<u>←</u>		<b>←</b>		Closed Hi-hat2 [EXC Pedal Hi-hat [EXC
	Scratch Push2	[EXC7]	Scratch Push2	[EXC7]	<del>(</del>		÷		Open Hi-hat2 [EXC1
0	Scratch Pull2	[EXC7]	Scratch Pull2	[EXC7]	<b>←</b>		<b>(</b>		Ride Cymbal1
2	←		<del>-</del>		<del>-</del>		<del></del>		<u> </u>
	<u>←</u>		<b>←</b>		<u>←</u>		<u> </u>		<del>-</del>
4	<u>←</u>	-	<b>←</b>		<u>←</u>		<u>←</u>		<b>←</b>
	909 Bass Drum		Dance Kick		Jazz Kick 2		Jazz Kick 2		 Jazz Kick 1
	808 Bass Drum		Electric Kick 2		Jazz Kick 1		Jazz Kick 1		Concert BD1
7	808 Rim Shot		<u></u>		<u>←</u>		←		<b>←</b>
	808 Snare 1		Dance Snare 1		Jazz Snare 1		Brush Tap1		Concert SD
_	<u>←</u>		<u>←</u>		Hand Clap2		Brush Slap1		Castanets
	909 Snare 1	*	Dance Snare 2		Jazz Snare 2		Brush Swirl1		Concert SD
_	808 Low Tom2 808 CHH	[EXC1]	Electric Low Tom2 CR-78 CHH	EXC1]	← Closed Hi-hat2	(EVC1)	Brush Classed III bet	* (EVO4)	Timpani F
	808 Low Tom1	*	Electric Low Tom1	*	←	[EXCI]	Brush Closed Hi-hat Brush Low Tom1	[EXC1]	Timpani F# Timpani G
	808 CHH	[EXC1]	808 CHH	[EXC1]	<del></del>		←		Timpani G#
_	808 Mid Tom2	*	Electric Mid Tom2	*	<b>←</b>		Brush Mid Tom2	*	Timpani A
1 .	808 OHH	[EXC1]	CR-78 OHH	[EXC1]	Open Hi-hat2	[EXC1]	Brush Open Hi-hat	[EXC1]	Timpani A#
<b>-</b> -	808 Mid Tom1	*	Electric Mid Tom1	*	<b>←</b>		Brush Mid Tom1	*	Timpani B
_	808 Hi Tom2	*	Electric High Tom2	*	<u></u>		Brush Hi Tom2	*	Timpani c
_	808 Cymbal 808 Hi Tom1		← Electric High Tom1	*	<del></del>		Brush Crash Cymbal	_	Timpani c#
	608 HI 10M1 ←		← Electric High Tom1		<u>←</u>		Brush Hi Tom1 Brush Ride Cymbal	*	Timpani d Timpani d#
┑:	<del>`</del>	***************************************	Reverse Cymbal		<del>-</del>		←		Timpani e
	<b>←</b>		<b>←</b>		<del>-</del>	***************************************	Brush Ride Bell		Timpani f
•	<b>←</b>		<b>←</b>		<b>←</b>		<b>←</b>		←
] :	<del>(</del>		<b>←</b>		<b>←</b>		<b>←</b>		<b>←</b>
<u> </u>	808 Cowbell	*****	<b>←</b>		<b>←</b>		<b>←</b>		←
و ا	<del>-</del>		<del></del>		<u> </u>		<b>←</b>		Concert Cymbal2
4 5	<u>-</u>		<del></del>		<u></u>		<u> </u>		<u></u>
15	<del>-</del>		<u>←</u>		<del></del>		<del>-</del>		Concert Cymbal1
1	<del>-</del>		<b>←</b>		<u>←</u>		<u>←</u>		÷
عَ ا	308 High Conga		<del></del>		<del>-</del>	-	<del>-</del>		<u>←</u>
-	308 Mid Conga		<b>←</b>		<u></u>		<del></del>		<del>-</del>
1 8	308 Low Conga		<del>(</del>		<b>←</b>		<b>←</b>		<u> </u>
<u> </u>			<u></u>		←		<u> </u>		<b>←</b>
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+	-		←	****	<del></del>		<del></del>		<u>←</u>
-	308 Maracas		<u>←</u>		<u>←</u>		<del></del>		<b>←</b>
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8	08 Claves		<b>←</b>		<b>←</b>	-	<b>←</b>		<del>`</del>
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<u></u>			<b>←</b>		<del>←</del>		<b>←</b>		<u>←</u>
+			High Hoo	[EXC4]	<u></u>		<u> </u>		<b>←</b>
<b>↓</b>			Low Hoo Electric Mute Triangle	[EXC4] [EXC5]	<del>-</del>		<u> </u>		<b>←</b>
<u>~</u>	_		Electric Mute Triangle		<del>←</del>		<del></del>		<u>←</u>
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±		-	<b>←</b>		<u>←</u>		<b>←</b>		-
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	PC 50		PC 51	PC 57		PC 58
0=	ETHNIC		KICK&SNARE	SFX		RHYTHM FX
25	Finger Snap		****	••••		
27	Tambourine Castanets		****			
	Crash Cymbal1					
	Snare Roll			****		
30	Concert Snare Dru	ım		****		
00	Concert Cymbal			Scratch Push2	[EXC1]	****
32	Concert BD1	p		Scratch Pull2	[EXC1]	
34	Jingle Bell			Cutting Noise 2 Up Cutting Noise 2 Dow	ın.	
	Bell Tree Bar Chimes			Distortion Guitar Cu		
	Wadaiko	*	••••	Distortion Guitar Cu		Reverse Kick 1
37	Wadaiko Rim	*	****	Bass Slide		Reverse Concert BD 1
	Shime Taiko		•	Pick Scrape		Reverse Power Kick 1
39	Atarigane		****	High Q		Reverse Electric Kick 1
	Hyoushigi	•	Standard 1 Kick 1	Slap	/EVOT)	Reverse Snare 1
10	Ohkawa		Standard 1 Kick 2	Scratch Push	[EXC7]	Reverse Snare 2  Reverse Standard set1 Snare 1
42	High Kotsuzumi		Standard 2 Kick 1 Standard 2 Kick 2	Scratch Pull Sticks	[EXC7]	Reverse Tight Snare
44	Low Kotsuzumi Ban Gu		Kick 1	Square Click		Reverse Dance Snare
	Big Gong		Kick 2	Metronome Click		Reverse 808 Snare
46	Small Gong		Soft Kick	Metronome Bell		Reverse Tom1
	Bend Gong		Jazz Kick 1	Guitar Fret Noise		Reverse Tom2
	Thai Gong		Jazz Kick 2	Guitar Cutting Noise		Reverse Sticks
49	Rama Cymbal		Concert BD	GuitarCutting Noise		Reverse Slap
-	Gamelan Gong		Room Kick 1	String Slap of Doub	e Bass	Reverse Cymbal1 Reverse Cymbal2
51	Udo Short	[EXC1]	Room Kick 2 Power Kick 1	Fl.Key Click Laughing		Reverse Open Hi-hat
	Udo Long Udo Slap	[EXC1]	Power Kick 2	Scream		Reverse Ride Cymbal
54	Bendir		Electric Kick 2	Punch		Reverse CR-78 OHH
THE RESERVE OF THE PERSON NAMED IN	Req Dum		Electric Kick 1 *	Heart Beat		Reverse Closed Hi-hat
56	Req Tik		Electric Kick	Footsteps1		Reverse Gong
	Tabla Te		808 Bass Drum	Footsteps2		Reverse Bell Tree
58	Tabla Na		909 Bass Drum	Applause	*	Reverse Guiro
	Tabla Tun		Dance Kick	Door Creaking  Door		Reverse Bendir Reverse Gun Shot
61	Tabla Ge Tabla Ge Hi		Standard 1 Snare 1 Standard 1 Snare 2	Scratch		Reverse Scratch
61	Talking Drum	*	Standard 2 Snare 1	Wind Chimes	*	Reverse Laser
63	Bend Talking Drui	n *	Standard 2 Snare 2	Car-Engine		Key Click
	Caxixi		Tight Snare	Car-Stop		Tekno Thip
	Djembe		Concert Snare	Car-Pass		Pop Drop
66	Djembe Rim		Jazz Snare 1	Car-Crash	*	Woody Slap
	Timbales Low		Jazz Snare 2	Siren		Distortion Kick * Syn.Drop
68	Timbales Paila Timbales High		Room Snare 1 Room Snare 2	Train Jetplane	*	Reverse High Q
70	Cowbell		Power Snare 1	Helicopter		Pipe
	Hi Bongo		Power Snare 2	Starship	*	Ice Block
	Low Bongo		Gated Snare	Gun Shot		Digital Tambourine *
73	Mute Hi Conga		Dance Snare 1	Machine Gun		Alias
	Open Hi Conga		Dance Snare 2	Lasergun		Modulated Bell
75	Mute Low Conga		Disco Snare	Explosion	*	Spark  Matelia Paravesias
	Conga Slap		Electric Snare2	Dog Haras Gallan		Metalic Percussion  Velocity Noise FX
70	Open Low Conga	*	House Snare * Electric Snare 1	Horse-Gallop Birds	*	Stereo Noise Clap *
78	Conga Slide  Mute Pandiero		Electric Share 3 *	Rain		Swish
80	Open Pandiero		808 Snare 1	Thunder		Slappy *
	Open Surdo	[EXC2]	808 Snare 2 *	Wind		Voice Ou
82	Mute Surdo	[EXC2]	909 Snare 1	Seashore		Voice Au
	Tamborim		909 Snare 2 *	Stream	*	Hoo *
	High Agogo		Brush Tap1	Bubble	*	Tape Stop1 * Tape Stop2 *
85	Low Agogo		Brush Tap2 Brush Slap1	Kitty Bird2		Missile *
87	Shaker High Whistle	[EXC3]	Brush Slap2	Growl		Space Bird
	Low Whistle	[EXC3]	Brush Slap3	Applause2	*	Flying Monster
	Mute Cuica	[EXC4]	Brush Swirl1	Telephone1		
90	Open Cuica	[EXC4]	Brush Swirl2	Telephone2		
	Mute Triangle	[EXC5]	Brush Long Swirl			
92	Open Triangle	[EXC5]				
0.4	Short Guiro	[EXC6]				
94	Long Guiro	[EXC6]				
	Cabasa Up Cabasa Down			****		
97	Claves			****		••••
31	High Wood Block			4224		
99	Low Wood Block			••••		
and a state of the state of						

	PC 1 / PC 33		PC 9	PC 17	PC 25	PC 26	PC 41	PC 49
	STANDARD / JA	ZZ	ROOM	POWER	ELECTRONIC	TR-808	BRUSH	ORCHESTRA
25				****				
_				****		****	*-*-	
7	High Q		<u> </u>	<u> </u>	<u></u>	<del></del>	<b>←</b>	Closed Hi-hat [EXC1]
	Slap		<del>-</del>	-	<del>-</del>	<u></u>	<b>←</b>	Pedal Hi-hat [EXC1]
`	Scratch Push		<u></u>	<del>-</del>	<del>-</del>	<del>-</del>	<del></del>	Open Hi-hat [EXC1]
)	Scratch Pull		<u> </u>	<b>←</b>	<del>-</del>	<u> </u>	<u></u>	Ride Cymbal1
2	Sticks		<b>←</b>	<u> </u>	<del></del>	<del>-</del>	<u></u>	<u> </u>
-	Square Click		<u></u>		<u> </u>	<del></del>	<u></u>	<u> </u>
ļ	Metronome Click		<u> </u>	<u> </u>	<u> </u>	<u></u>	<u>←</u>	<u></u>
_	Metronome Bell		<u> </u>	<u> </u>	<u> </u>	<del>-</del>	<u>←</u>	<del>-</del>
	Kick Drum2 / Jaz		<u> </u>	<del>-</del>	<del></del>	<del>-</del>	Jazz BD2	Concert BD2
	Kick Drum1 / Jazz	z BD1	<u></u>	MONDO Kick	Elec BD	808 Bass Drum	Jazz BD1	Concert BD1
	Side Stick		<b>←</b>	←	<b>←</b>	808 Rim Shot	<b>←</b>	<b>←</b>
	Snare Drum1		<b>←</b>	Gated SD	Elec SD	808 Snare Drum	Brush Tap	Concert SD
	Hand Clap		<b>←</b>	<b>←</b>	<b>←</b>	<u> </u>	Brush Slap	Castanets
	Snare Drum2		<b>←</b>	<b>←</b>	Gated SD	<u> </u>	Brash Swirl	Concert SD
	Low Tom2		Room Low Tom2	Room Low Tom2	Elec Low Tom2	808 Low Tom2	←	Timpani F
	Closed Hi-hat	[EXC1]	<u> </u>	←	<b>←</b>	808 CHH [EXC1]	←	Timpani F#
	Low Tom1		Room Low Torn1	Room Low Tom1	Elec Low Tom1	808 Low Tom1	<b>←</b>	Timpani G
	Pedal Hi-hat	[EXC1]	<b>←</b>	<u>←</u>	<b>←</b>	808 CHH [EXC1]	<b>←</b>	Timpani G#
	Mid Tom2		Room Mid Tom2	Room Mid Tom2	Elec Mid Tom2	808 Mid Tom2	<b>←</b>	Timpani A
	Open Hi-hat	[EXC1]	<b>←</b>	+	<b>←</b>	808 OHH [EXC1]	<b>←</b>	Timpani A#
	Mid Tom1		Room Mid Tom1	Room Mid Tom1	Elec Mid Tom1	808 Mid Tom1	<del>-</del>	Timpani B
_	High Tom2		Room Hi Tom2	Room Hi Tom2	Elec Hi Tom2	808 Hi Tom2	<del>`</del>	Timpani c
ľ	Crash Cymbal1		<b>←</b>	<b>←</b>	<u>←</u>	808 Cymbal	÷	Timpani c#
1	High Tom1		Room Hi Tom1	Room Hi Tom1	Elec Hi Tom1	808 Hi Tom1	<del></del>	Timpani d
ı	Ride Cymbal1		←	←	←	← 608 HI TOTTI	<u>←</u>	
٦	Chinese Cymbal		<del>-</del>	<del>-</del>	Reverse Cymbal	<del></del>		Timpani d# Timpani e
٦	Ride Bell						<u> </u>	
			<del>-</del>	<u></u>	<del>-</del>	<del></del>	<u> </u>	Timpani f
-	Tambourine		<u> </u>	<del>-</del>	<u>←</u>	<u> </u>	<u>←</u>	<u>←</u>
	Splash Cymbal		<u></u>	<del>-</del>	<u> </u>	<u> </u>	<u></u>	<del>-</del>
٩	Cowbell		<u></u>	<del>-</del>	<u> </u>	808 Cowbell	<b>←</b>	-
	Crash Cymbal2		<u> </u>	<u>←</u>	<u>←</u>	<del></del>	<b>←</b>	Concert Cymbal2
-	Vibra-slap		<u> </u>	<u> </u>	<b>←</b>	<b>←</b>	<b>←</b>	←
4	Ride Cymbal2		←	<b>←</b>	←	<b>←</b>	←	Concert Cymbal1
	High Bongo		<b>←</b>	<u>←</u>	<del>-</del>	<b>←</b>	←	<del>(</del>
	Low Bongo		<u> </u>	<b>←</b>	←	←	<b>←</b>	<u></u>
	Mute High Conga		<b>←</b>	-	←	808 High Conga	<b>←</b>	<del>(</del>
	Open High Conga		<b>←</b>	←	←	808 Mid Conga	<b>←</b>	<b>←</b>
	Low Conga		<b>←</b>	<b>←</b>	<b>←</b>	808 Low Conga	<b>←</b>	<del>-</del>
7	High Timbale		<del></del>	<b>←</b>	<b>←</b>	←	<del></del>	<del>-</del>
	Low Timbale		<b>←</b>	<b>←</b>	<b>←</b>	<del>-</del>	<b>←</b>	<del>-</del>
	High Agogo		<b>←</b>	<del></del>	<del></del>	<del>-</del>	<del>`</del>	<del>-</del>
	Low Agogo		<b>←</b>	<b>←</b>	<b>←</b>	<u></u>	<u> </u>	<del>-</del>
7	Cabasa		<b>←</b>	<del></del>	<del>-</del>	<u></u>	<del>-</del>	
	Maracas		<b>←</b>	<del>-</del>	<del></del>			<del>-</del>
- 1	Short Hi Whistle	[EXC2]	<del>-</del>	<u>+</u>	<del>-</del>	808 Maracas	<u>←</u>	<u> </u>
	Long Low Whistle		<u>+</u>	<del>-</del>	<del>-</del>	<u> </u>	<u> </u>	<u> </u>
-		LAOL				<del></del>	<u> </u>	<u> </u>
_	Short Guiro		<del>-</del>	<u>←</u>	<u></u>	<u></u>	<b>←</b>	<del>-</del>
	Long Guiro		<u>←</u>	<del>-</del>	<u>←</u>	<b>←</b>	<u> </u>	<u></u>
7	Claves		<b>←</b>	<del>-</del>	<u>←</u>	808 Claves	<del>-</del>	<del>-</del>
┥ .	High Wood Block		<u>←</u>	<b>←</b>	<u> </u>	<u></u>	<b>←</b>	-
•	Low Wood Block		<b>←</b>	<del>-</del>	<u></u>	<del></del>	<u>←</u>	-
٩.		[EXC4]	<del></del>	<u> </u>	<u>←</u>	<u></u>	<u>←</u>	<b>←</b>
	Open Cuica	[EXC4]	<b>←</b>	<del></del>	<del></del>	<del>-</del>	<u>←</u>	<b>←</b>
١.	Mute Triangle	[EXC5]	<u> </u>	<b>←</b>	<b>←</b>	<u>←</u>	<b>←</b>	←
	Open Triangle	[EXC5]	<u></u>	<b>←</b>	<b>←</b>	<b>←</b>	←	<b>←</b>
1 .	Shaker		<b>←</b>	<del>-</del>	<b>←</b>	<b>←</b>	<b>←</b>	<b>←</b>
:	Jingle Bell		<b>←</b>	<del>-</del>	<b>←</b>	<b>←</b>	<b>←</b>	<del></del>
1	Bell Tree		<b>←</b>	<b>←</b>	<b>←</b>	<u></u>	<del>-</del>	<u></u>
ľ	Castanets		<b>←</b>	<b>←</b>	<b>←</b>	<del>-</del>	<del></del>	<del>-</del>
1	Mute Surdo	[EXC6]	<b>←</b>	<b>←</b>	<del>-</del>	<u></u>	<del></del>	
ί.		[EXC6]	<del></del>	<del></del>	<del></del>	<del>-</del>		<del>-</del>
				****			<u>←</u>	<u>←</u>
1:				****				Applause *
١.								
٠.					****		****	
٠.						****	****	
•					••••			
1 -								
1 -								****
-								****
١.	***							
-						****		
-								

## **SC-55 Drum set**

		30 33 DIO	501
		PC 57	PC 128
	35	SFX	CM-64/32L CM Kick Drum
	36		CM Kick Drum
C2	36		CM Rim Shot
	38	••••	CM Snare Drum
	39	High Q	CM Hand Clap
	40	Slap	CM Electronic Snare Drum
	41	Scratch Push [EXC7]	CM Acoustic Low Tom
	42	Scratch Pull [EXC7]	CM Closed High Hat [EXC1]
	43	Sticks	CM Acoustic Low Tom CM Open Hi-Hat2
	45	Square Click Metronome Click	CM Acoustic Middle Tom
	46	Metronome Bell	CM Open Hi-Hat1 [EXC1]
	47	Guitar Fret Noise	CM Acoustic Middle Tom
СЗ	48	Guitar cuttingnoise/up	CM Acoustic High Tom
	49	Guitar cutting noise/down	CM Crash Cymbal
	50	String slap of double bass	CM Acoustic High Tom
	52	FI.Key Click	CM Ride Cymbal
		Laughing Scream	
	53	Punch	CM Tambourine
	55	Heart Beat	
	56	Footsteps1	CM Cowbell
	57	Footsteps2	
	58	Applause *	
	39	Door Creaking	
C4		Door	CM High Bongo
	61	Scratch Wind Chimes *	CM Low Bongo CM Mute High Conga
	63	Car-Engine	CM High Conga
	64	Car-Stop	CM Low Conga
	e E	Car-Pass	CM High Timbale
	65	Car-Crash *	CM Low Timbale
	67	Siren	CM High Agogo
	68 69	Train *	CM Low Agogo CM Cabasa
	70	Jetplane * Helicopter	CM Maracas
	71	Starship *	CM Short Whistle
C5	72	Gun Shot	CM Long Whistle
	73	Machine Gun	CM Vibrato Slap
	74 75	Lasergun Explosion *	CM Claves
	76	Dog	Laughing
	77	Horse-Gallop	Scream
	77 78	Birds *	Punch
	79	Rain *	Heart Beat
	80	Thunder	Footsteps1
	81	Wind Seashore	Footsteps2 Applause *
	83	Stream *	Creaking
0	84	Bubble *	Door
C	85	****	Scratch
	86		Wind Chimes *
	88		Car-Engine
	00		Car-Stop Car-Pass
	89 90		Car-Crash *
	91		Siren
	92		Train
	93		Jetplane *
	94		Helicopter
	93		Starship *
C.	7 96		Gun Shot Machine Gun
	97 98		Lasergun
	99		Explosion *
	100		Dog
	101		Horse-Gallop  Rirds  *
	102		Birds *
	103		Thunder
	105		Wind
	106		SeaShore
	107 8 108		Stream * Bubble *

#### Switching between the Native map, the SC-88 map, and the SC-55 map

Press the [MAP] button on the front panel (the indicator lights), and the SC-55 map will be selected. (p. 8)

Press the [MAP] button once again (the indicator should begin blinking), and the SC-88 map will be selected. (p.

Press the [MAP] button yet again to make the indicator go dark, and the Native map will be selected. (This is the factory setting, and the power-on default.) (p. 8)

You can use MIDI Bank Select messages to switch between the Native map, SC-88 map, and SC-55 map.(p. 22)



Program Number (Drum Set Number) No sound Tones which are created using two voices

EXC]: Percussion sounds of the same number will not be heard at the same time.

[EXC]: Same as the percussion sound of SC-88 [55]: Same as the percussion sound of SC-88 [55]: Same as the percussion sound of SC-55 [55]: Same as the percussion sound of SC-55 [55]: Same as the percussion sound of SC-55 [55]: Same as the percussion sound of SC-88 [55]: Same as the percussion

# **Effect List**

Parameter	Value (Dec.)	Value (Hex.) min - max	MSB/LSB(H)	
0: Thru			00 00	

<ul> <li>Effects that modify the tone</li> </ul>	color	(filter	type)
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(	) Enects the	at modify the tone c	oloi (iiitei ty	he)	
1	: Stereo-EQ			01	00
	Low Freq	200/400	00/01		03
	Low Gain	-12 - <b>+5</b> - +12	34 - 4C		04
	Hi Freq	4k/ <b>8k</b>	00/01		05
	Hi Gain	<b>-12</b> - +12	34 - 4C		06
	M1 Freq	200 - <b>1.6k</b> - 6.3k	*10		07
	M1 Q	<b>0.5</b> /1.0/2.0/4.0/9.0	00/01/02/03/04		80
	M1 Gain	-12 - <b>+8</b> - +12	34 - 4C		09
	M2 Freq	200 - 1k - 6.3k	*10		0A
	M2 Q	<b>0.5</b> /1.0/2.0/4.0/9.0	00/01/02/03/04		0B
	M2 Gain	-12 - <b>-8</b> - +12	34 - 4C		0C
+	Level	0 - 127	00 - 7F		16
2	: Spectrum			01	01
	Band 1	-12 - <b>-4</b> - +12	34 - 4C		03
	Band 2	-12 - <b>+1</b> - +12	34 - 4C		04
	Band 3	-12 - <b>+3</b> - +12	34 - 4C		05
	Band 4	-12 - <b>+6</b> - +12	34 - 4C		06
	Band 5	-12 - <b>+2</b> - +12	34 - 4C		07
	Band 6	-12 - <b>-1</b> - +12	34 - 4C		80
	Band 7	-12 - <b>-4</b> - +12	34 - 4C		09
	Band 8	-12 - <b>-5</b> - +12	34 - 4C		0A
	Width	0.5/1.0/2.0/4.0/9.0	00/01/02/03/04		0B
+	Pan	L63 - <b>0</b> - R63	00 - 7F		15
#	Level	0 - 127	00 - 7F		16
3	: Enhancer			01	02
+	Sens	0 - <b>64</b> - 127	00 - 7F		03
#	Mix	0 - <b>127</b>	00 - 7F		04
	Low Gain	-12 - <b>+3</b> - +12	34 - 4C		13
	Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14
	Level	0 - 127	00 - 7F		16
4	: Humanizer			01	03
	Drive	0 - <b>48</b> - 127	00 - 7F		03
	Drive Sw	Off/ <b>On</b>	00/01		04
+	Vowel	a/i/u/e/o	00/01/02/03/04		05
	Accel	0 - 15	*14		06
	Low Gain	-12 - <b>0</b> - +12	34 - 4C		13
	Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14
	Pan	L63 - <b>0</b> - R63	00 - 7F		15
#	Level	0 - 127	00 - 7F		16
_					

## O Effects that distort the sound (distortion type)

		•	• • •
5 : Overdrive			01 10
+ Drive	0 - <b>48</b> - 127	00 - 7F	03
Amp Type	Small/Bitin/2-Stk/3-Stk	00/01/02/03	04
Amp Sw	Off/ <b>On</b>	00/01	05
Low Gain	-12 - <b>0</b> - +12	34 - 4C	13
Hi Gain	-12 - <b>0</b> - +12	34 - 4C	14
# Pan	L63 - 0 - R63	00 - 7F	15
Level	0 - <b>96</b> - 127	00 - 7F	16
6: Distortion			01 11
+ Drive	0 - <b>76</b> - 127	00 - 7F	03
Amp Type	Small/Bltin/2-Stk/3-Stk	00/01/02/03	04
Amp Sw	Off/On	00/01	05
Low Gain	-12 - <b>0</b> - +12	34 - 4C	13
Hi Gain	-12 - <b>-8</b> - +12	34 - 4C	14
# Pan	L63 - 0 - R63	00 - 7F	15
Level	0 - <b>84</b> - 127	00 - 7F	16

O Effects that modulate the sound (mo	dulation type)
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Parameter	Value (Dec.) Value (Hex	.) min - max	MSB/LSE	
7 : Phaser		***	01	20
+ Manual	100 <b>- 620</b> - 8k	*12		03
# Rate	0.05 <b>- 0.85</b> - 10.0	*6		04
Depth	0 - <b>64</b> - 127	00 - 7F		05
Reso	0 - <b>16</b> - 127	00 - 7F		06
Mix	0 - <b>127</b>	00 - 7F		07
Low Gain	-12 - <b>0</b> - +12	34 - 4C		13
Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14
Level	0 <b>- 104</b> - 127	00 - 7F		16
8: Auto Wah			01	21
Fil Type	LPF/ <b>BPF</b>	00/01		03
Sens	<b>0</b> - 127	00 - 7F		04
+ Manual	0 - <b>68</b> - 127	00 - 7F		05
Peak	0 - <b>62</b> - 127	00 - 7F		06
# Rate	0.05 <b>- 2.05</b> - 10.0	*6		07
Depth	0 - <b>72</b> - 127	00 - 7F		80
Polarity	Down/ <b>Up</b>	00/01		09
Low Gain	-12 - 0 - +12	34 - 4C		13
Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14
Pan	L63 - <b>0</b> - R63	00 - 7F		15
Level	0 - <b>96</b> - 127	00 - 7F		16
9 : Rotary			01	22
Low Slow	0.05 - <b>0.35</b> - 10.0	*6		03
Low Fast	0.05 - <b>6.40</b> - 10.0	*6		04
Low Acci	0 - <b>3</b> - 15	*14		05
Low Level	0 - 127	00 - 7F		06
Hi Slow	0.05 <b>- 0.90</b> - 10.0	*6		07
Hi Fast	0.05 - <b>7.50</b> - 10.0	*6		08
	0.05 - <b>7.30</b> - 10.0 0 - <b>11</b> - 15	*14		09
Hi Accl				
Hi Level	0 - <b>64</b> - 127	00 - 7F		0A
Separate	0 - <b>96</b> - 127	00 - 7F		0B
+ Speed	Slow/Fast	00/7F		0D
Low Gain	-12 - <b>0</b> - +12	34 - 4C		13
Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14
# Level	0 - 127	00 - 7F		16
10 : Stereo Flar			01	23
Pre Filter	Off/LPF/HPF	00/01/02		03
Cutoff	<b>250</b> - 8k	*9		04
Pre Dly	0 - <b>1.6m</b> - 100m	*1		05
+ Rate	0.05 - <b>0.60</b> - 10.0	*6		06
Depth	0 - <b>24 -</b> 127	00 - 7F		07
# Feedback	-98% - <b>+80%</b> - +98%	0F - 71		80
Phase	0 <b>- 180</b>	00 - 5A		09
Balance	100:0 - 100:100 - 0:100 (D:E)	00 - 7F		12
Low Gain	-12 - <b>0</b> - +12	34 - 4C		13
Hi Gain	-12 <b>- 0</b> - +12	34 - 4C		14
Level	0 - <b>104</b> - 127	00 - 7F		16
11 : Step Flang			01	24
Pre Dly	0 - <b>1.0m</b> - 100m	*1		03
Rate	0.05 - <b>0.30</b> - 10.0	*6		04
Depth	0 - <b>95 -</b> 127	00 - 7F		05
+ Feedback	-98% <b>- +30%</b> - +98%	0F - 71		06
Phase	0 - 180	00 - 5A		07
# Step Rate	0.05 - <b>2.75</b> - 10.0	*6		08
Balance	100:0 - 100:100 - 0:100 (D:E)			
Low Gain	, ,			12
Low Gaiii	-12 - <b>0</b> - +12	34 - 4C 34 - 4C		13
Hi Gain				
Hi Gain Level	-12 <b>- 0</b> - +12 0 - <b>96</b> - 127	00 - 7F		14 16

The correspondence between setting values and hexadecimal values for items in the Value column indicated with "\*" is shown in the "Effect Data Table" (p. 105).

- Pre Delay Time
- \*8 HF Damp \*9 Cutoff Freq
- Delay Time 1 Delay Time 2 Delay Time 3 \*2 \*3 \*4
- \*10 EQ Freq \*11 LPF
- \*5 Delay Time 4 Rate 1 Rate 2
- \*12 Manual \*13 Azimuth \*14 Accl

- : Effect control 1 can be used to modify the value (p.69) : Effect control 2 can be used to modify the value (p.69)
- MSB/LSB: Indicates the \*\* portion of the following exclusive mes-

sages. (p.116) (hexadecimal notation)

For Effect Type (data section) F0 41 10 42 12 40 03 00 \*\* \*\* sum F7 For Effect Parameters (LSB part of address)

F0 41 10 42 12 40 03 \*\* data sum F7 (sum: checksum)

Default : values shown in bold

Parameter	Value (Dec.) Value (Hex	x.) min - max MSB/	LSB	(H)	Para	meter	Value (Dec.)	Value (Hex	.) min - max	MSB/LS	B(H)
2 : Tremolo				25	19:	Space D				01	43
Mod Wave	Tri/Sqr/Sin/Saw1/Saw2	00/01/02/03/04		03	Р	e Dlv	0 - <b>3.2m</b> - 100m		•1		03
Mod Rate	0.05 - <b>3.05</b> - 10.0	*6		04	+ R	ate	0.05 - <b>0.45</b> - 10.	0	*6		04
Mod Depth	0 - <b>96</b> - 127	00 - 7F		05		epth	0 - 127		00 - 7F		05
Low Gain	-12 - <b>0</b> - +12	34 - 4C		13		nase	0 - 180		00 - 5A		06
Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14		alance	100:0 - 100:100 - 0	):100 (D:F)			12
Level	0 - 127	00 - 7F		16		w Gain	-12 - <b>0</b> - +12	,, 100 (D.L.)	34 - 4C		13
	0-121					Gain	-12 - <b>0</b> - +12		34 - 4C		14
3 : Auto Pan				26					00 - 7F		16
Mod Wave	Tri/Sqr/Sin/Saw1/Saw2	00/01/02/03/04		03		evel	0 - <b>96</b> - 127		00 - 71		
Mod Rate	0.05 - <b>3.05 -</b> 10.0	*6		04		3D Chorus				01	44
Mod Depth	0 - <b>96</b> - 127	00 - 7F		05	Р	e Dly	0 - <b>1.0m</b> - 100m		*1		03
Low Gain	-12 - <b>0</b> - +12	34 - 4C		13	+ C	ho Rate	0.05 - <b>0.45 - 1</b> 0.	0	*6		04
Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14	С	ho Depth	0 - <b>72 -</b> 127		00 - 7F		05
Level	0 - 127	00 - 7F		16	0	ut	Speaker/Phone	S	00/01		11
> F# 1 - 4	1 - ff 1 1   - 1 1 /-		\		# B	alance	100:0 - 100:100 - 0	):100 (D:E)	00 - 7F		12
) Effects tha	it affect the level (co	ompressor typ	pe)		Lo	w Gain	-12 - <b>0</b> - +12	, ,	34 - 4C		13
4 : Compressor			01	30		Gain	-12 - <b>0</b> - +12		34 - 4C		14
Attack .	0 - <b>72</b> - 127	00 - 7F		03		evel	0 - <b>80</b> - 127		00 - 7F		16
Sustain	0 - <b>100</b> - 127	00 - 7F		04							
Post Gain	0/+6/+12/+18	00/01/02/03		05		Effects tha	it reverberate	e the so	und (del	lay/reve	erb ty
Low Gain	-12 - <b>0</b> - +12	34 - 4C		13		Stereo Delay				01	50
Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14		ly Tm L	0 - <b>150m</b> - 500n	n	*4		03
Pan	L63 - <b>0</b> - R63	00 - 7F		15		ly Tm R	0 - <b>300m</b> - 500n		*4		04
		00 - 7F 00 - 7F				,	-98% - <b>+48%</b> - +		0F - 71		05
Level	0 - <b>104</b> - 127			16		eedback		90%			
5 : Limiter				31		Mode	Norm/Cross		00/01		06
Threshold	0 - <b>85</b> - 127	00 - 7F		03		nase L	Norm/Invert		00/01		07
Ratio	1/1.5,1/2,1/4, <b>1/100</b>	00/01/02/03		04		nase R	Norm/Invert		00/01		08
Release	0 - <b>16</b> - 127	00 - 7F		05	Н	F Damp	315 - 8k/ <b>Bypas</b> :	S	*8		OΑ
Post Gain	0/+6/+12/+18	00/01/02/03		06	# B	alance	100:0 - 100:74 - 0:	100 (D:E)	00 - 7F		12
Low Gain	-12 - <b>0</b> - +12	34 - 4C		13	Le	ow Gain	-12 - <b>0</b> - +12		34 - 4C		13
Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14	Н	i Gain	-12 - <b>0</b> - +12		34 - 4C		14
- Pan	L63 - <b>0</b> - R63	00 - 7F		15		evel	0 - <b>127</b>		00 - 7F		16
Level	0 - 127	00 - 7F		16		Mod Delay				01	51
Level	0-127	00 - 71		10		ly Tm L	0 - <b>40m</b> - 500m		*4	٠.	03
O Effects that	it broaden the soun	d (chorus typ	e)			-	0 - <b>220m</b> - 500n	2	*4		04
6 : Hexa Chorus			01	40		ly Tm R			0F - 71		05
Pre Dly	0 - <b>2.4m</b> - 100m	*1		03		edback	-98% - <b>+48%</b> - +	-98%			
,				03		o Mode	Norm/Cross	_	00/01		06
Rate	0.05 - <b>0.45</b> - 10.0	*6				od Rate	0.05 - <b>0.65 -</b> 10.	0	*6		07
Depth	0 - <b>127</b>	00 - 7F		05	M	od Depth	0 - <b>21</b> - 127		00 - 7F		80
Pre Dly Dev	0 - <b>5</b> - 20	00 - 14		06	M	od Phase	0 - <b>180</b>		00 - 5A		09
Depth Dev	-20 - <b>+2</b> - +20	2C - 54		07	Н	F Damp	315 - 8k/Bypas	S	*8		OΑ
Pan Dev	0 - <b>16</b> - 20	00 - 14		08	# B	alance	100:0 - 100:61 - 0:	100 (D:E)	00 - 7F		12
Balance	100:0 - 100:100 - 0:100 (D:E	) 00 - 7F		12	Le	ow Gain	-12 - <b>0</b> - +12	, ,	34 - 4C		13
Low Gain	-12 - <b>0</b> - +12	34 - 4C		13		Gain	-12 - <b>0</b> - +12		34 - 4C		14
Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14		evel	0 - 127		00 - 7F		16
Level	0 - <b>112</b> - 127	00 - 7F		16			V 141			01	52
7 : Tremolo Cho				41		3 Tap Delay	000	200 /4 -	-*0	01	
Pre Dly						ly Tm C	200m - 300m - 9				03
	0 - <b>1.6m</b> - 100m	*1		03		ly Tm L	200m - <b>200m</b> - 9				04
•	0.05 - <b>0.45</b> - 10.0	*6		04		ly Tm R	200m - <b>235m</b> - 9				05
Cho Rate		00 - 7F		05	+ F	edback	-98% - <b>+32%</b>	-98%	0F - 71		06
Cho Rate Cho Depth	0 - <b>40</b> - 127			06	D	ly Lev C	0 - <b>127</b>		00 - 7F		07
Cho Rate	0 <b>- 80 -</b> 180	00 - 5A					0 127		00 - 7F		08
Cho Rate Cho Depth Trem Phase				07		ly Lev L	0 - <b>127</b>				09
Cho Rate Cho Depth Trem Phase	0 <b>- 80 -</b> 180	00 - 5A			D	•	0 - 127				OA
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep	0 - <b>80</b> - 180 0.05 - <b>3.05</b> - 10.0	00 - 5A *6		07	D D	ly Lev R	0 - <b>127</b>	s	00 - 7F		
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance	0 - <b>80</b> - 180 0.05 - <b>3.05</b> - 10.0 0 - <b>96</b> - 127 100:0 - <b>0:100</b> (D:E)	00 - 5A *6 00 - 7F 00 - 7F		07 08 12	D D H	ly Lev R F Damp	0 - <b>127</b> 315 - 8k/ <b>Bypas</b>		00 - 7F *8		
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain	0 - <b>80</b> - 180 0.05 - <b>3.05</b> - 10.0 0 - <b>96</b> - 127 100:0 - <b>0:100</b> (D:E) -12 - <b>0</b> - +12	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C		07 08 12 13	D D H # B	ly Lev R F Damp alance	0 - <b>127</b> 315 - 8k/ <b>Bypas</b> 100:0 - <b>100:74</b> - 0:		00 - 7F *8 00 - 7F		12
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain	0 - <b>80</b> - 180 0.05 - <b>3.05</b> - 10.0 0 - <b>96</b> - 127 100:0 - <b>0:100</b> (D:E) -12 - <b>0</b> - +12 -12 - <b>0</b> - +12	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C		07 08 12 13	D D H # B	ly Lev R F Damp alance ow Gain	0 - <b>127</b> 315 - 8k/ <b>Bypas</b> 100:0 - <b>100:74</b> - 0: -12 - <b>0</b> - +12		00 - 7F *8 00 - 7F 34 - 4C		12 13
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain Level	0 - 80 - 180 0.05 - 3.05 - 10.0 0 - 96 - 127 100:0 - 0:100 (D:E) -12 - 0 - +12 -12 - 0 - +12 0 - 127	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C 00 - 7F		07 08 12 13 14	D D H B L H	ly Lev R F Damp alance ow Gain i Gain	0 - <b>127</b> 315 - 8k/ <b>Bypas</b> 100:0 - <b>100:74</b> - 0: -12 - <b>0</b> - +12 -12 - <b>0</b> - +12		00 - 7F *8 00 - 7F 34 - 4C 34 - 4C		12 13 14
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain Level 8 : Stereo Choru	0 - 80 - 180 0.05 - 3.05 - 10.0 0 - 96 - 127 100:0 - 0:100 (D:E) -12 - 0 - +12 -12 - 0 - +12 0 - 127	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C 00 - 7F	01	07 08 12 13 14 16 42	D H # B La H	ly Lev R F Damp alance ow Gain i Gain evel	0 - <b>127</b> 315 - 8k/ <b>Bypas</b> 100:0 - <b>100:74</b> - 0: -12 - <b>0</b> - +12		00 - 7F *8 00 - 7F 34 - 4C		12 13 14 16
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain Level 8: Stereo Chort Pre Filter	0 - 80 - 180 0.05 - 3.05 - 10.0 0 - 96 - 127 100:0 - 0:100 (D:E) -12 - 0 - +12 -12 - 0 - +12 0 - 127 US Off/LPF/HPF	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C 00 - 7F	01	07 08 12 13 14 16 <b>42</b> 03	D H # B La H	ly Lev R F Damp alance ow Gain i Gain	0 - <b>127</b> 315 - 8k/ <b>Bypas</b> 100:0 - <b>100:74</b> - 0: -12 - <b>0</b> - +12 -12 - <b>0</b> - +12		00 - 7F *8 00 - 7F 34 - 4C 34 - 4C	01	12 13 14
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain Level 8 : Stereo Choru	0 - 80 - 180 0.05 - 3.05 - 10.0 0 - 96 - 127 100:0 - 0:100 (D:E) -12 - 0 - +12 -12 - 0 - +12 0 - 127	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C 00 - 7F	01	07 08 12 13 14 16 42	D D H # B L H <u>L</u> 2	ly Lev R F Damp alance ow Gain i Gain evel	0 - <b>127</b> 315 - 8k/ <b>Bypas</b> 100:0 - <b>100:74</b> - 0: -12 - <b>0</b> - +12 -12 - <b>0</b> - +12	100 (D:E)	00 - 7F *8 00 - 7F 34 - 4C 34 - 4C 00 - 7F	01	12 13 14 16
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain Level 8: Stereo Chort Pre Filter	0 - 80 - 180 0.05 - 3.05 - 10.0 0 - 96 - 127 100:0 - 0:100 (D:E) -12 - 0 - +12 -12 - 0 - +12 0 - 127 US Off/LPF/HPF	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C 00 - 7F	01	07 08 12 13 14 16 <b>42</b> 03	D D H # B L H L 24:	y Lev R F Damp alance bw Gain i Gain evel 4 Tap Delay by Tm 1	0 - <b>127</b> 315 - 8k/ <b>Bypas</b> 100:0 - <b>100:74</b> - 0: -12 - <b>0</b> - +12 -12 - <b>0</b> - +12 0 - <b>127</b> 200m - <b>500m</b> - 5	100 (D:E)	00 - 7F *8 00 - 7F 34 - 4C 34 - 4C 00 - 7F	01	12 13 14 16 53
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain Level 8: Stereo Choru Pre Filter Cutoff Pre Dly	0 - 80 - 180 0.05 - 3.05 - 10.0 0 - 96 - 127 100:0 - 0:100 (D:E) -12 - 0 - +12 -12 - 0 - +12 0 - 127 US Off/LPF/HPF 250 - 8k 0 - 1.0m - 100m	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C 00 - 7F	01	07 08 12 13 14 16 <b>42</b> 03 04	D D H # B L H L 24: D	y Lev R F Damp alance by Gain i Gain evel 4 Tap Delay by Tm 1 by Tm 2	0 - 127 315 - 8k/Bypas 100:0 - 100:74 - 0: -12 - 0 - +12 -12 - 0 - +12 0 - 127 200m - 500m - 1200m - 1	990m/1sec	00 - 7F *8 00 - 7F 34 - 4C 34 - 4C 00 - 7F	01	12 13 14 16 53 03 04
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain Level 8: Stereo Choru Pre Filter Cutoff Pre Dly Rate	0 - 80 - 180 0.05 - 3.05 - 10.0 0 - 96 - 127 100:0 - 0:100 (D:E) -12 - 0 - +12 -12 - 0 - +12 0 - 127 US Off/LPF/HPF 250 - 8k 0 - 1.0m - 100m 0.05 - 0.45 - 10.0	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C 00 - 7F	01	07 08 12 13 14 16 <b>42</b> 03 04 05 06	D D H # B L H L 24: D D	y Lev R F Damp alance by Gain i Gain evel 4 Tap Delay by Tm 1 by Tm 2 by Tm 3	0 - 127 315 - 8k/Bypas 100:0 - 100:74 - 0: -12 - 0 - +12 -12 - 0 - +12 0 - 127 200m - 500m - 200m - 300m - 200m - 400m - 300m	990m/1sec	00 - 7F *8 00 - 7F 34 - 4C 34 - 4C 00 - 7F	01	12 13 14 16 53 03 04 05
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain Level 8: Stereo Choru Pre Filter Cutoff Pre Dly Rate Depth	0 - 80 - 180 0.05 - 3.05 - 10.0 0 - 96 - 127 100:0 - 0:100 (D:E) -12 - 0 - +12 -12 - 0 - +12 0 - 127 us Off/LPF/HPF 250 - 8k 0 - 1.0m - 100m 0.05 - 0.45 - 10.0 0 - 111 - 127	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C 00 - 7F	01	07 08 12 13 14 16 	D D H # B L L 24 : D D D	y Lev R F Damp alance bw Gain i Gain evel 4 Tap Delay ly Tm 1 ly Tm 3 ly Tm 4	0 - 127 315 - 8k/Bypas 100:0 - 100:74 - 0: -12 - 0 - +12 -12 - 0 - +12 0 - 127 200m - 500m - 200m -	990m/1sec	00 - 7F *8 00 - 7F 34 - 4C 34 - 4C 00 - 7F	01	12 13 14 16 53 03 04 05 06
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain Level S: Stereo Chort Pre Filter Cutoff Pre Dly Rate Depth Phase	0 - 80 - 180 0.05 - 3.05 - 10.0 0 - 96 - 127 100:0 - 0:100 (D:E) -12 - 0 - +12 -12 - 0 - +12 0 - 127 US Off/LPF/HPF 250 - 8k 0 - 1.0m - 100m 0.05 - 0.45 - 10.0 0 - 111 - 127 0 - 180	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C 00 - 7F  00/01/02 *9 *1 *6 00 - 7F 00 - 5A	01	07 08 12 13 14 16 <b>42</b> 03 04 05 06 07 09	D D D D D D D	y Lev R F Damp alance ow Gain i Gain evel 4 Tap Delay by Tm 1 by Tm 2 by Tm 3 by Tm 4 by Lev 1	0 - 127 315 - 8k/Bypas 100:0 - 100:74 - 0: -12 - 0 - +12 -12 - 0 - +12 0 - 127 200m - 500m - 200m - 2	990m/1sec	00 - 7F *8 00 - 7F 34 - 4C 34 - 4C 00 - 7F 2:2 2:2 0:2 00 - 7F	01	12 13 14 16 53 03 04 05 06 07
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain Level 8: Stereo Choru Pre Filter Cutoff Pre Dly Rate Depth Phase Balance	0 - 80 - 180 0.05 - 3.05 - 10.0 0 - 96 - 127 100:0 - 0:100 (D:E) -12 - 0 - +12 -12 - 0 - +12 0 - 127 US Off/LPF/HPF 250 - 8k 0 - 1.0m - 100m 0.05 - 0.45 - 10.0 0 - 111 - 127 0 - 180 100:0 - 100:100 - 0:100 (D:E	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C 00 - 7F  00/01/02 *9 *1 *6 00 - 7F 00 - 5A ) 00 - 7F	01	07 08 12 13 14 16 <b>42</b> 03 04 05 06 07 09 12	D D D D D D D D D D D D D D D D D D D	y Lev R F Damp alance ow Gain of Gain ovel 4 Tap Delay by Tm 1 by Tm 2 by Tm 3 by Tm 4 by Lev 1 by Lev 2	0 - 127 315 - 8k/Bypas 100:0 - 100:74 - 0: -12 - 0 - +12 -12 - 0 - +12 0 - 127 200m - 500m - 200m - 200m - 200m - 200m - 200m - 200m - 1200m - 127	990m/1sec	00 - 7F *8 00 - 7F 34 - 4C 34 - 4C 00 - 7F 0-2 0-2 0-2 00 - 7F 00 - 7F	01	12 13 14 16 53 03 04 05 06 07 08
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain Level 8: Stereo Choru Pre Filter Cutoff Pre Dly Rate Depth Phase Balance Low Gain	0 - 80 - 180 0.05 - 3.05 - 10.0 0 - 96 - 127 100:0 - 0:100 (D:E) -12 - 0 - +12 -12 - 0 - +12 0 - 127 US Off/LPF/HPF 250 - 8k 0 - 1.0m - 100m 0.05 - 0.45 - 10.0 0 - 111 - 127 0 - 180 100:0 - 100:100 - 0:100 (D:E -12 - 0 - +12	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C 00 - 7F  00/01/02 *9 *1 *6 00 - 7F 00 - 5A ) 00 - 7F 34 - 4C	01	07 08 12 13 14 16 <b>42</b> 03 04 05 06 07 09 12	D D D D D D D D D D D D D D D D D D D	y Lev R F Damp lance ww Gain i Gain svel  4 Tap Delay ly Tm 1 ly Tm 2 ly Tm 3 ly Tm 4 ly Lev 1 ly Lev 1 ly Lev 2 ly Lev 3	0 - 127 315 - 8k/Bypas 100:0 - 100:74 - 0: -12 - 0 - +12 -12 - 0 - +12 0 - 127 200m - 500m - 200m - 200m - 400m - 200m - 2	990m/1sec	00 - 7F *8 00 - 7F 34 - 4C 34 - 4C 00 - 7F 	01	12 13 14 16 53 03 04 05 06 07 08 09
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain Level 8: Stereo Choru Pre Filter Cutoff Pre Dly Rate Depth Phase Balance Low Gain Hi Gain	0 - 80 - 180 0.05 - 3.05 - 10.0 0 - 96 - 127 100:0 - 0:100 (D:E) -12 - 0 - +12 -12 - 0 - +12 0 - 127 US Off/LPF/HPF 250 - 8k 0 - 1.0m - 100m 0.05 - 0.45 - 10.0 0 - 111 - 127 0 - 180 100:0 - 100:100 - 0:100 (D:E -12 - 0 - +12 -12 - 0 - +12	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C 00 - 7F  00/01/02 *9 *1 *6 00 - 7F 00 - 5A ) 00 - 7F 34 - 4C 34 - 4C	01	07 08 12 13 14 16 <b>42</b> 03 04 05 06 07 09 12 13 14	D D D D D D D D D D D D D D D D D D D	y Lev R F Damp alance ow Gain of Gain ovel 4 Tap Delay by Tm 1 by Tm 2 by Tm 3 by Tm 4 by Lev 1 by Lev 2	0 - 127 315 - 8k/Bypas 100:0 - 100:74 - 0: -12 - 0 - +12 -12 - 0 - +12 0 - 127 200m - 500m - 200m - 200m - 200m - 200m - 200m - 200m - 1200m - 127	990m/1sec	00 - 7F *8 00 - 7F 34 - 4C 34 - 4C 00 - 7F 0-2 0-2 0-2 00 - 7F 00 - 7F	01	12 13 14 16 53 03 04 05 06 07 08
Cho Rate Cho Depth Trem Phase Trem Rate Trem Sep Balance Low Gain Hi Gain Level 8: Stereo Choru Pre Filter Cutoff Pre Dly Rate Depth Phase Balance Low Gain	0 - 80 - 180 0.05 - 3.05 - 10.0 0 - 96 - 127 100:0 - 0:100 (D:E) -12 - 0 - +12 -12 - 0 - +12 0 - 127 US Off/LPF/HPF 250 - 8k 0 - 1.0m - 100m 0.05 - 0.45 - 10.0 0 - 111 - 127 0 - 180 100:0 - 100:100 - 0:100 (D:E -12 - 0 - +12	00 - 5A *6 00 - 7F 00 - 7F 34 - 4C 34 - 4C 00 - 7F  00/01/02 *9 *1 *6 00 - 7F 00 - 5A ) 00 - 7F 34 - 4C	01	07 08 12 13 14 16 <b>42</b> 03 04 05 06 07 09 12	D D D D D D D D D D D D D D D D D D D	y Lev R F Damp lance ww Gain i Gain svel  4 Tap Delay ly Tm 1 ly Tm 2 ly Tm 3 ly Tm 4 ly Lev 1 ly Lev 1 ly Lev 2 ly Lev 3	0 - 127 315 - 8k/Bypas 100:0 - 100:74 - 0: -12 - 0 - +12 -12 - 0 - +12 0 - 127 200m - 500m - 200m - 200m - 400m - 200m - 2	990m/1sec	00 - 7F *8 00 - 7F 34 - 4C 34 - 4C 00 - 7F 	01	12 13 14 16 53 03 04 05 06 07 08 09

## **Appendix**

Parameter	Value (Dec.) Value (He	x.) min - max	MSB/LSB(H)	Parameter	Value (Dec.)	/alue (Hex.) min - max	MSB/LSE	B(H)
# Balance	100:0 - 100:74 - 0:100 (D:E)		12	30 : Fb P.Shif		, , , , , , , , , , , , , , , , , , , ,	01	61
Low Gain	-12 - <b>0</b> - +12	34 - 4C	13	+ P.Coarse	-24 - +7 - +12	28 - 4C	•	03
Hi Gain	-12 - <b>0</b> - +12	34 - 4C	14	P.Fine	-100 - <b>0</b> - +100	0E - 72		04
Level	0 - <b>127</b>	00 - 7F	16	# Feedback	-98% - <b>+40%</b> - +			05
25 : Tm Ctrl De			01 54	Pre Dly	0 - <b>45m -</b> 100m	*1		06
+ Dly Time	200m - <b>500m</b> - 990m/1se	ec*3	03	Mode	1 - 3 - 5	00 - 04		07
Accel	0 - <b>10</b> - 15	*14	04	EFX Pan	L63 - <b>0</b> - R63	00 - 7F		08
# Feedback	-98% - <b>+32%</b> - +98%	0F - 71	05	Balance		:100 (D:E) 00 - 7F		12
HF Damp	315 - 8k/ <b>Bypass</b>	*8	06	Low Gain	-12 - <b>0</b> - +12	34 - 4C		13
EFX Pan	L63 - <b>0</b> - R63	00 - 7F	07	Hi Gain	-12 - <b>-6</b> - +12	34 - 4C		14
Balance	100:0 - <b>100:74</b> - 0:100 (D:E)		12	Level	0 - 127	00 - 7F		16
Low Gain	-12 - <b>0</b> - +12	34 - 4C	13		· · · · · · · · · · · · · · · · · · ·			
Hi Gain	-12 - <b>0</b> - +12	34 - 4C	14	○ Others				
Level	0 - 127	00 - 7F	16	31 : 3D Auto			01	70
26 : Reverb	0 121		01 55	Azimuth	180/L168 - <b>0</b> - R	168 *13		03
Type	Room1/2/Stage1/2/Hall1/2	0.00/01/02/02		+ Speed	0.05 - <b>1.30</b> - 10.0	0 *6		04
Pre Dly	0 - <b>74m</b> - 100m	*1	04	Clockwise	-/+	00/01		05
•	0 - <b>120</b> - 127	00 - 7F	05	# Turn	Off/ <b>On</b>	00/01		06
+ Time				Out	Speaker/Phone:			11
HF Damp	315 - <b>6.3k</b> - 8k/Bypass	*8	06	Level	0 - <b>127</b>	00 - 7F		16
# Balance	100:0 - <b>100:100</b> - 0:100 (D:E		12 13	32 : 3D Manua			01	71
Low Gain	-12 - <b>0</b> - +12	34 - 4C		+ Azimuth	180/L168 - <b>0</b> - R	168 *13	٠.	03
Hi Gain	-12 - <b>0</b> - +12	34 - 4C	14	Out	Speaker/Phone:			11
Level	0 - 127	00 - 7F	16	# Level	0 - <b>127</b>	00 - 7F		16
27 : Gate Rever			01 56	33 : Lo-Fi 1	0-121	00-71		
Type	Norm/Reverse/Sweep1/2			Pre Filter	1 0 0	00.05	01	72
Pre Dly	0 - <b>0.5m</b> - 100m	*1	04		1 - 2 - 6	00 - 05		03
Gate Time	0 - <b>65m</b> - 500m	00 - 63	05	Lo-Fi Type	1-6-9	00 - 08		04
+ Balance	100:0 - <b>100:65</b> - 0:100 (D:E)		12	Post Filter	1 - 2 - 6	00 - 05		05
Low Gain	-12 - <b>0</b> - +12	34 - 4C	13	+ Balance	100:0 - <b>0:100</b> (D:	,		12
Hi Gain	-12 - <b>-3</b> - +12	34 - 4C	14	Low Gain	-12 - <b>0</b> - +12	34 - 4C		13
# Level	0 - <b>112</b> - 127	00 - 7F	16	Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14
28 : 3D Delay			01 57	# Pan	L63 - <b>0</b> - R63	00 - 7F		15
Dly Tm C	0m - <b>300m</b> - 500m	*4	03	Level	0 - 127	00 - 7F		16
Dly Tm L	0m - <b>200m</b> - 500m	*4	04	34 : Lo-Fi 2			01	73
Dly Tm R	0m - <b>240m</b> - 500m	*4	05	Lo-Fi Type	1 - <b>2</b> - 6	00 - 05		03
+ Feedback	-98% - <b>+32%</b> - +98%	0F - 71	06	Fil Type	Off/ <b>LPF</b> /HPF	00/01/02		04
Dly Lev C	0 - <b>40 -</b> 127	00 - 7F	07	Cutoff	250 <b>- 630</b> - 8k	*9		05
Dly Lev L	0 - <b>64</b> - 127	00 - 7F	08	+ R.Detune	<b>0</b> - 127	00 - 7F		06
Dly Lev R	0 - <b>64 -</b> 127	00 - 7F	09	R.Nz Lev	0 - <b>64 -</b> 127	00 - 7F		07
HF Damp	315 - 8k/ <b>Bypass</b>	*8	0A	W/P Sel	White/Pink	00/01		80
Out	Speaker/Phones	00/01	11	W/P LPF	250 - 6.3k/ <b>Bypa</b> :	ss *11		09
# Balance	100:0 - 100:74 - 0:100 (D:E)	00 - 7F	12	W/P Level	<b>0</b> - 127	00 - 7F		0A
Low Gain	-12 - <b>0</b> - +12	34 - 4C	13	Disc Type	LP/EP/SP/RND	00/01/02/0	3	0B
Hi Gain	-12 - <b>0</b> - +12	34 - 4C	14	Disc LPF	250 - 6.3k/ <b>Bypa</b> s	ss *11		0C
Level	0 - 127	00 - 7F	16	Disc Nz Lev	<b>0</b> - 127	00 - 7F		0D
O Effects th	at madify the nitch (	nitah ahif	t tunol	Hum Type	<b>50Hz</b> /60Hz	00/01		0E
	at modify the pitch (	pitcii siiii	t type)	Hum LPF	250 - 6.3k/Bypas	ss *11		0F
29: 2 Pitch Shif			01 60	Hum Level	<b>0</b> - 127	00 - 7F		10
+ Coarse 1	-24 - <b>+7</b> - +12	28 - 4C	03	M/S	Mono/Stereo	00 - 01		11
Fine 1	-100 - <b>-4</b> - +100	0E - 72	04	# Balance	100:0 - 0:100 (D:8	E) 00 - 7F		12
Pre Dly 1	<b>0</b> - 100m	*1	05	Low Gain	-12 - <b>0</b> - +12 `	34 - 4C		13
EFX Pan 1	L63 - 0 - <b>R63</b>	00 - 7F	06	Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14
# Coarse 2	-24 - <b>-5</b> - +12	28 - 4C	07	Pan(Mono)	L63 - 0 - R63	00 - 7F		15
Fine 2	-100 - <b>+4</b> - +100	0E - 72	80	Level	0 - 127	00 - 7F		16
Pre Dly 2	<b>0</b> - 100m	*1	09					
EFX Pan 2	L63 - 0 - R63	00 - 7F	0A					
Shift Mode	1 - 3 - 5	00 - 04	0B					
L.Bal	100:0 - <b>100:100</b> - 0:100 ( Pitchi1:Pitchi2 )	00 - 7F	0C					
Balance	100:0 - 100:74 - 0:100 (D:E)	00 - 7F	12					
Low Gain	-12 - <b>0</b> - +12	34 - 4C	13					
Hi Gain	-12 - <b>0</b> - +12	34 - 4C	14					
Level	0 - <b>95</b> - 127	00 - 7F	16					

The correspondence between setting values and hexadecimal values for items in the Value column indicated with "\*" is shown in the "Effect Data Table" (p. 105).

\*1 Pre Delay Time \*8 HF Damp

\*1 \*2 HF Damp Delay Time 1 \*9 Cutoff Freq \*3 \*4 Delay Time 2 Delay Time 3 \*10 EQ Freq \*11 LPF \*5 Delay Time 4 \*12 Manual \*6 \*7 Rate 1 \*13 Azimuth \*14 Accl Rate 2

+ : Effect control 1 can be used to modify the value (p.69)
# : Effect control 2 can be used to modify the value (p.69)
MSB/LSB : Indicates the \*\* portion of the following exclusive mes-

sages. (p.116) (hexadecimal notation)
For Effect Type (data section)
F0 41 10 42 12 40 03 00 \*\* \*\* sum F7
For Effect Parameters (LSB part of address)
F0 41 10 42 12 40 03 \*\* data sum F7

(sum: checksum)
Default : values shown in bold

	nat connect two ty	pes of eff	ect i	n series	Parame		/alue (Dec.) Value	(Hex.) min - max		
(series 2)						S → Delay	0 40 407	00 75	02	<b>05</b>
arameter	Value (Dec.) Value (Hex	.) min - max M	SB/LSE	3(H)	DS		0 - 48 - 127	00 - 7F		03
5 : OD → Choru		.,	02	00	+ DS F		L63 - <b>0</b> - R63	00 - 7F	,	04
OD Drive	0 - <b>48</b> - 127	00 - 7F	02	03	DS A		Small/Bitin/2-Stk/3-9		3	05
OD Pan	L63 - <b>0</b> - R63	00 - 7F		04			Off/On	00/01		06
		00/01/02/03		05	Dly 7		0 - <b>250m</b> - 500m	*4		80
OD Amp	Small/Bltln/2-Stk/3-Stk			06	Dly F		-98% - <b>+32%</b> - +98%			09
OD Amp Sw	Off/On	00/01			Dly i	⊣F	315 - 8k/ <b>Bypass</b>	*8		0A
Cho Dly	0 - <b>1.0m</b> - 100m	*1	,	08	# Dly E	Bal 1	00:0 - <b>100:74</b> - 0:100 (	D:E) 00 - 7F		0C
Cho Rate	0.05 <b>- 0.45</b> - 10.0	*6		09	Low	Gain	-12 - <b>0</b> - +12	34 - 4C		13
Cho Depth	0 - <b>72</b> - 127	00 - 7F		0 <b>A</b>	Hi G	ain	-12 - <b>0</b> - +12	34 - 4C		14
Cho Bal	100:0 - 100:100 - 0:100 (D:E)	00 - 7F		0C	Leve		0 - <b>72</b> - 127	00 - 7F		16
Low Gain	-12 - <b>0</b> - +12	34 - 4C		13		i I → Chorus			02	06
Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14				00 75	02	03
Level	0 - <b>80</b> - 127	00 - 7F		16	+ EH 9		0 - <b>64</b> - 127	00 - 7F		
			- 00	01	EH N		0 - <b>127</b>	00 - 7F		04
6 : OD → Flang			02		Cho	Dly	0 - <b>14m</b> - 100m	*1		08
OD Drive	0 - <b>48</b> - 127	00 - 7F		03	Cho	Rate	0.05 - <b>0.45</b> - 10.0	*6		09
OD Pan	L63 - <b>0</b> - R63	00 - 7F		04	Cho	Depth	0 - <b>101</b> - 127	00 - 7F		OA
OD Amp	Small/Bltln/2-Stk/3-Stk	00/01/02/03		05	# Cho	Bal -	100:0 - <b>100:100</b> - 0:100	(D:E) 00 - 7F		0C
OD Amp Sw	Off/On	00/01		06		Gain	-12 - <b>0</b> - +12	34 - 4C		13
FL Dly	0 - <b>1.6m</b> - 100m	*1		08	Hi G		-12 - <b>0</b> - +12	34 - 4C		14
FL Rate	0.05 <b>- 0.60</b> - 10.0	*6		09			0 - <b>80</b> - 127	00 - 7F		16
FL Depth	0 - <b>40</b> - 127	00 - 7F		0A	Leve					
FL Fb	-98% - <b>+80%</b> - +98%	0F - 71		0B		l → Flange			02	07
				0C	+ EH 9		0 - <b>64</b> - 127	00 - 7F		03
FL Bal	100:0 - <b>100:49</b> - 0:100 (D:E)	00 - 7F			EH N	Mix	0 - <b>127</b>	00 - 7F		04
Low Gain	-12 - <b>0</b> - +12	34 - 4C		13	FL D	Oly	0 - <b>1.6m</b> - 100m	*1		08
Hi Gain	-12 <b>- 0 -</b> +12	34 - 4C		14	FL F	-	0.05 - <b>0.60</b> - 10.0	*6		09
Level	0 - <b>80 -</b> 127	00 - 7F		16		Depth	0 - 24 - 127	00 - 7F		0A
7 : OD → Delay			02	02	FLF	- 1-	-98% - <b>+80%</b> - +98%			0B
OD Drive	0 <b>- 48</b> - 127	00 - 7F		03						OC
OD Pan	L63 - <b>0</b> - R63	00 - 7F		04	# FLB		100:0 - <b>100:74</b> - 0:100 (	'		
						Gain	-12 - <b>0</b> - +12	34 - 4C		13
OD Amp	Small/Bltln/2-Stk/3-Stk	00/01/02/03		05	Hi G	iain	-12 - <b>0</b> - +12	34 - 4C		14
OD Amp Sw	Off/On	00/01		06	Leve	el	0 - <b>96 -</b> 127	00 - 7F		16
Dly Time	0 - <b>250m</b> - 500m	*4		08	43 : EH	H → Delay			02	08
Dly Fb	-98% - <b>+32%</b> - +98%	0F - 71		09	+ EH 9	-	0 - <b>64</b> - 127	00 - 7F		03
Dly HF	315 - 8k/Bypass	*8		0A			0 - 127	00 - 7F		04
Dly Bal	100:0 - 100:74 - 0:100 (D:E)	00 - 7F		0C	EHI					08
Low Gain	-12 - <b>0</b> - +12	34 - 4C		13	•	Time	0 - <b>250m</b> - 500m	*4		
		34 - 4C		14	Dly I	Fb	-98% - <b>+32%</b> - +98%			09
Hi Gain	-12 - <b>0</b> - +12				Dly I	HF	315 - 8k/ <b>Bypass</b>	*8		OA
Level	0 - <b>80</b> - 127	00 - 7F		16	# Dly l	Bal	100:0 - <b>100:74 -</b> 0:100 (	(D:E) 00 - 7F		OC.
8: DS → Choru			02	03	Low	Gain	-12 - <b>0</b> - +12	34 - 4C		13
DS Drive	0 - <b>48 -</b> 127	00 - 7F		03	Hi G	ain	-12 - <b>0</b> - +12	34 - 4C		14
DS Pan	L63 - <b>0</b> - R63	00 - 7F		04	Leve		0 - 88 - 127	00 - 7F		16
DS Amp	Small/Bltin/2-Stk/3-Stk	00/01/02/03		05		no → Delay			02	09
DS Amp Sw	Off/On	00/01		06		-		*1	02	03
Cho Div	0 - <b>1.0m</b> - 100m	*1		08	Cho	•	0 - <b>1.0m</b> - 100m	*1		
		*6		09		Rate	0.05 - <b>0.50</b> - 10.0	*6		04
Cho Rate	0.05 - <b>0.45 -</b> 10.0				Cho	Depth	0 - <b>120</b> - 127	00 - 7F		05
Cho Depth	0 - <b>72</b> - 127	00 - 7F		0A	+ Cho	Bal	100:0 - <b>100:100</b> - 0:100	(D:E) 00 - 7F		07
Cho Bal	100:0 - <b>100:100</b> - 0:100 (D:E)			0C		Time	0 - <b>250m</b> - 500m	*4		08
Low Gain	-12 - <b>0</b> - +12	34 - 4C		13	Dly I		-98% - <b>+32%</b> - +98%	6 0F - 71		09
Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14	Dly I		315 - 8k/Bypass	*8		0A
Level	0 - <b>72</b> - 127	00 - 7F		16			100:0 - <b>100:74</b> - 0:100			oC
			02	04	# Dly					
l9: DS → Flang		00 - 7F	02	03		Gain	-12 - 0 - +12	34 - 4C		13
DS Drive	0 - <b>48</b> - 127				Hi G		-12 - <b>0</b> - +12	34 - 4C		14
- DS Pan	L63 - <b>0</b> - R63	00 - 7F		04	Leve	el	0 - <b>127</b>	00 - 7F		16
DS Amp	Small/Bltln/2-Stk/3-Stk	00/01/02/03		05	45 : FL	_ → Delay			02	0A
DS Amp Sw	Off/On	00/01		06	FL	-	0 - <b>1.6m</b> - 100m	*1		03
FL Dly	0 - <b>1.1m</b> - 100m	*1		08	FLF	-	0.05 <b>- 0.60</b> - 10.0	*6		04
FL Rate	0.05 - <b>0.60 -</b> 10.0	*6		09				00 - 7F		05
FL Depth	0 - <b>24</b> - 127	00 - 7F		0 <b>A</b>		Depth 	0 - 24 - 127			
	-98% - <b>+80%</b> - +98%	0F - 71		0B	+ FLF		-98% - <b>+80%</b> - +98%			06
FL Fb					FLE	Bal	100:0 - <b>100:100</b> - 0:100			07
FL Bal	100:0 - <b>100:49</b> - 0:100 (D:E)	00 - 7F		0C	Dly '	Time	0 - <b>250m</b> - 500m	*4		08
Low Gain	-12 - <b>0</b> - +12	34 - 4C		13	Dly		-98% - <b>+32%</b> - +98%	6 0F - 71		09
Hi Gain	-12 - <b>0</b> - +12	34 - 4C		14	Dly		315 - 8k/Bypass	*8		0A
Level	0 - <b>72</b> - 127	00 - 7F		16			100:0 - <b>100:74</b> - 0:100			OC
					# Dly			, ,		
						/ Gain	-12 - 0 - +12	34 - 4C		13
					Hi G	ain	-12 - <b>0</b> - +12	34 - 4C 00 - 7F		14 16

## **Appendix**

Parameter	Value (Dec.) Value (He	ex.) min - max MS	B/LSB(H)	Parameter	Value (Dec.)	Value (Hex.) min - ma	xMSB/LSB(H
46 : Cho→ Flar			02 0B	49 : GTR Multi 2			04 01
Cho Dly	0 - <b>1.0m</b> - 100m	*1	03	Cmp Atck	0 - <b>70</b> - 127	00 - 7F	03
Cho Rate	0.05 - <b>0.45 -</b> 10.0	*6	04	Cmp Sus	0 - <b>127</b>	00 - 7F	04
Cho Depth	0 - <b>120</b> - 127	00 - 7F	05	Cmp Level	0 <b>- 90</b> - 127	00 - 7F	05
+ Cho Bal	100:0 - <b>100:100</b> - 0:100 (D:E		07	Cmp Sw	Off/On	00/01	06
FL DIV	0 - <b>1.6m</b> - 100m	*1	08	OD Sel	Odrv/Dist	00/01	07
FL Diy	0.05 - <b>0.60 -</b> 10.0	*6	09	+ OD Drive	0 - <b>80</b> - 127	00 - 7F	08
	0 - <b>24</b> - 127	00 - 7F	0A	OD Amp	Small/BltIn/2-Stk/3-Stk	00/01/02/03	09
FL Depth		0F - 71	0B	OD Amp Sw	Off/On	00/01	0A
FL Fb	-98% - <b>+80%</b> - +98%		OC	OD Sw	Off/ <b>On</b>	00/01	0B
FL Bal	100:0 - <b>100:100</b> - 0:100 (D:E			EQ L Gain	-12 - <b>+12</b>	34 - 4C	0C
Low Gain	-12 - 0 - +12	34 - 4C	13		200 - <b>1k</b> - 6.3k	*10	0D
Hi Gain	-12 - <b>0</b> - +12	34 - 4C	14	EQ M Fq			0E
Level	0 - <b>112</b> - 127	00 - 7F	16	EQ M Q	0.5/1.0/ <b>2.0</b> /4.0/9.0	00/01/02/03/04	
) Effects t	hat connect three o	r more types	of effect in	EQ M Gain	-12 - <b>+5</b> - +12	34 - 4C	0F
	eries 3 / series 4 / se			EQ H Gain	-12 - <b>-10</b> - +12	34 - 4C	10
		1163 3)		CF Sel	Chorus/Flangr	00/01	11
7 : Rotary Mul	lti		02 OC	CF Rate	0.05 - <b>0.45</b> - 6.40	*7	12
OD Drive	0 - <b>13</b> - 127	00 - 7F	03	CF Depth	0 - <b>96</b> - 127	00 - 7F	13
OD Sw	Off/On	00/01	04	CF Fb	-98% <b>- +76%</b> - +98%	0F - 71	14
EQ L Gain	-12 - <b>0</b> - +12	34 - 4C	05	# CF Mix	<b>0</b> - 127	00 - 7F	15
EQ M Fq	200 - <b>1.6k</b> - 6.3k	*10	06	Level	0 - <b>80 -</b> 127	00 - 7F	16
EQMQ	0.5/1.0/2.0/4.0/9.0	00/01/02/03/04	07	50 : GTR Multi 3			04 02
EQ M Gain	-12 - 0 - +12	34 - 4C	08	Wah Fil	LPF/ <b>BPF</b>	00/01	03
EQ H Gain	-12 - <b>0</b> - +12	34 - 4C	09	+ Wah Man	0 - <b>60</b> - 127	00 - 7F	04
		*6	0A	Wah Peak	0 - <b>10</b> - 127	00 - 7F	05
RT L Slow	0.05 - <b>0.35</b> - 10.0		0B				06
RT L Fast	0.05 - <b>6.40</b> - 10.0	*6		Wah Sw	Off/ <b>On</b>	00/01	
RT Lo Acci	0 - <b>3</b> - 15	*14	OC	OD Sel	Odrv/ <b>Dist</b>	00/01	07
RT Lo Lev	0 - <b>127</b>	00 - 7F	0D	# OD Drive	0 - <b>80</b> - 127	00 - 7F	08
RT H Slow	0.05 - <b>0.90</b> - 10.0	*6	0E	OD Amp	Small/Bitln/ <b>2-Stk</b> /3-Stk	00/01/02/03	09
RT H Fast	0.05 - <b>7.50</b> - 10.0	*6	0F	OD Amp Sw	Off/ <b>On</b>	00/01	0A
RT Hi Accl	0 - <b>11</b> - 15	*14	10	OD L Gain	-12 - <b>0</b> - +12	34 - 4C	0B
RT Hi Lev	0 - <b>64</b> - 127	00 - 7F	11	OD H Gain	-12 - <b>0</b> - +12	34 - 4C	0C
RT Sept	0 - <b>96 -</b> 127	00 - 7F	12	OD Sw	Off/On	00/01	0D
RT Speed	Slow/Fast	00/7F	13	CF Sel	Chorus/Flangr	00/01	0E
Level	0 - <b>96</b> - 127	00 - 7F	16	CF Rate	0.05 - <b>0.45</b> - 6.40	*7	0F
3 : GTR Multi			04 00	CF Depth	<b>0</b> - 127	00 - 7F	10
Cmp Atck	0 - <b>100</b> - 127	00 - 7F	03	CF Fb	-98% - <b>+50%</b> - +98%	0F - 71	11
			03	CF Mix	0 - <b>50</b> - 127	00 - 7F	12
Cmp Sus	0 - <b>80 -</b> 127	00 - 7F			0 - 30 - 127 0m - 160m - 635m	*5	13
Cmp Level	0 - <b>100</b> - 127	00 - 7F	05	Dly Time			
Cmp Sw	Off/ <b>On</b>	00/01	06	Dly Fb	0 - <b>64</b> - 127	00 - 7F	14
OD Sel	Odrv/Dist	00/01	07	Dly Mix	0 - <b>30</b> - 127	00 - 7F	15
OD Drive	0 - <b>80</b> - 127	00 - 7F	08	Level	0 - 88 - 127	00 - 7F	16
OD Amp	Small/BitIn/2-Stk/3-Stk	00/01/02/03	09	51 : Clean Gt Mu	ilti1		04 03
OD Amp Sw	Off/ <b>On</b>	00/01	0A	Cmp Atck	0 - <b>50</b> - 127	00 - 7F	03
OD L Gain	-12 - <b>+5</b> - +12	34 - 4C	0B	Cmp Sus	0 - <b>127</b>	00 - 7F	04
OD H Gain	-12 - <b>+10</b> - +12	34 - 4C	0C	Cmp Level	0 <b>- 75</b> - 127	00 - 7F	05
OD Sw	Off/On	00/01	0D	Cmp Sw	Off/ <b>On</b>	00/01	06
CF Sel	Chorus/Flangr	00/01	0E	EQ L Gain	-12 - <b>+12</b>	34 - 4C	07
CF Rate	0.05 <b>- 0.45</b> - 6.40	*7	0F	EQ M Fq	200 - 6.3k	*10	08
CF Depth	0 - <b>30</b> - 127	00 - 7F	10	EQ M Q	0.5/1.0/ <b>2.0</b> /4.0/9.0	00/01/02/03/04	09
CF Deptil	-98% - <b>+76%</b> - +98%	00 - 7F 0F - 71	11				
		0F - 7T 00 - 7F	12	EQ M Gain	-12 - <b>+5</b> - +12	34 - 4C	OA OD
CF Mix	0 - <b>40</b> - 127			EQ H Gain	-12 - +12	34 - 4C	0B
Dly Time	0m - <b>300m</b> - 635m	*5	13	CF Sel	Chorus/Flangr	00/01	0C
Dly Fb	0 - <b>34</b> - 127	00 - 7F	14	CF Rate	0.05 <b>- 0.45 -</b> 6.40	•7	0D
Dly Mix	0 - <b>15</b> - 127	00 - 7F	15	CF Depth	0 - <b>40 -</b> 127	00 - 7F	0E
Level	0 - <b>110</b> - 127	00 - 7F	16	CF Fb	-98% - <b>+30%</b> - +98%	0F - 71	0F
				+ CF Mix	0 - <b>100 -</b> 127	00 - 7F	10
				Dly Time	0m - <b>120m</b> - 635m	*5	11
				Dly Fb	0 - 40 - 127	00 - 7F	12
				Dly HF	315 - 8k/ <b>Bypass</b>	*8	13
					0 - <b>30</b> - 127	00 - 7F	
				# Dly Mix			14
				Level	0 - <b>95 -</b> 127	00 - 7F	16

The correspondence between setting values and hexadecimal values for items in the Value column indicated with "\*" is shown in the "Effect Data Table" (p. 105).

Pre Delay Time \*8 HF Damp Cutoff Freq \*2 Delay Time 1 \*9 Delay Time 2 \*10 EQ Freq \*3 \*4 Delay Time 3 \*11 LPF \*5 \*6 \*7 \*12 Manual Delay Time 4 \*13 Azimuth Rate 1 \*14 Accl Rate 2

: Effect control 1 can be used to modify the value (p.69)

: Effect control 2 can be used to modify the value (p.69)

MSB/LSB: Indicates the \*\* portion of the following exclusive messages. (p.116) (hexadecimal notation)

For Effect Type (data section) F0 41 10 42 12 40 03 00 \*\* \*\* sum F7 For Effect Parameters (LSB part of address) F0 41 10 42 12 40 03 \*\* data sum F7

(sum: checksum)

Default : values shown in bold

Parameter	Value (Dec.)	Value (Hex.) min -	max	:	Pa	ırameter	Value (Dec.) Value (He	x.) min - max MS	B/LSE	3(H)
52 : Clean Gt Mu		······	04	04	55	: Keyboard Mi	ulti		05	00
AW Filter	LPF/BPF	00/01		03	+	RM Mod Freq	0 - <b>50</b> - 127	00 - 7F		03
- AW Man	0 - <b>55</b> - 127	00 - 7F		04	#	RM Bal	100:0 - 100:30 - 0:100 (D:E)	00 - 7F		04
AW Peak	0 - 40 - 127	00 - 7F		05		EQ L Gain	-12 - <b>+3</b> - +12	34 - 4C		05
AW Rate	0.05 - <b>1.50</b> - 6.40	*7		06		EQ M Fq	<b>200</b> - 6.3k	*10		06
AW Depth	0 - <b>80</b> - 127	00 - 7F		07		EQ M Q	0.5/1.0/ <b>2.0</b> /4.0/9.0	00/01/02/03/04		07
				08		EQ M Gain	-12 - <b>+5</b> - +12	34 - 4C		08
AW Sw	Off/On	00/01					-12 - <b>-3</b> - +12	34 - 4C		09
EQ L Gain	-12 - <b>+12</b>	34 - 4C		09		EQ H Gain				03 0A
EQ M Fq	200 - <b>1.6k</b> - 6.3k	*10		0A		PS Coarse	-24 - <b>+7</b> - +12	28 - 4C		
EQ M Q	<b>0.5</b> /1.0/2.0/4.0/9.0	00/01/02/03/04		0B		PS Fine	-100 - <b>0</b> - +100	0E - 72		0B
EQ M Gain	-12 - <b>0</b> - +12	34 - 4C		0C		PS Mode	1 - 5	00 - 04		0C
EQ H Gain	-12 - <b>0</b> - +12	34 - 4C		0D		PS Bal	100:0 - <b>100:60</b> - 0:100 (D:E			0D
CF Sel	Chorus/Flangr	00/01		0E		PH Man	100 - <b>620</b> - 8k	*12		0E
CF Rate	0.05 - <b>0.45</b> - 6.40	*7		0F		PH Rate	0.05 - <b>0.45</b> - 6.40	*7		0F
CF Depth	0 - <b>20</b> - 127	00 - 7F		10		PH Depth	0 - <b>90</b> - 127	00 - 7F		10
CF Fb	-98% - <b>+76%</b> - +98%	0F - 71		11		PH Reso	0 - <b>80</b> - 127	00 - 7F		11
				12		PH Mix	0 - <b>75</b> - 127	00 - 7F		12
CF Mix	0 - 100 - 127	00 - 7F						*5		13
Dly Time	0m - <b>30m</b> - 635m	*5		13		Dly Time	0m - <b>100m -</b> 635m			14
Dly Fb	0 - <b>15</b> - 127	00 - 7F		14		Dly Fb	0 - <b>64</b> - 127	00 - 7F		
Dly Mix	0 - <b>80 -</b> 127	00 - 7F		15		Dly Mix	0 - <b>40</b> - 127	00 - 7F		15
Level	0 - <b>76</b> - 127	00 - 7F		16		Level	0 - <b>96 -</b> 127	00 - 7F		16
3 : Bass Multi	Company of the Compan		04	05	$\overline{}$	Effects th	at connect two ty	pes of effec	t in	parall
Cmp Atck	0 - <b>72</b> - 127	00 - 7F		03				pes of effec	,	paran
Cmp Sus	0 - 100 - 127	00 - 7F		04		(parallel 2)	)			
•	0 - <b>75</b> - 127	00 - 7F		05	56	: Cho / Delay			11	00
Cmp Level				06	•	Cho Dly	0 - <b>1.0m</b> - 100m	*1		03
Cmp Sw	Off/On	00/01				Cho Rate	0.05 - <b>0.45</b> - 10.0	<b>*</b> 6		04
OD Sel	Odrv/Dist	00/01		07						05
OD Drive	0 - <b>48</b> - 127	00 - 7F		08		Cho Depth	0 - <b>120</b> - 127	00 - 7F		
OD Amp	Small/BltIn/2-Stk	00/01/02		09	+	Cho Bal	100:0 - <b>100:100</b> - 0:100 (D:			07
ÖD Amp Sw	Off/On	00/01		0A		Cho Pan	<b>L63</b> - 0 - R63	00 - 7F		12
OD Sw	Off/On	00/01		0B		Cho Level	0 - <b>127</b>	00 - 7F		13
EQ L Gain	-12 - <b>+2</b> - +12	34 - 4C		oC		Dly Time	0 - <b>250m</b> - 500m	*4		08
EQ M Fq	200 - <b>1.6k</b> - 6.3k	*10		0D		Dly Fb	-98% - <b>+32%</b> - +98%	0F - 71		09
		00/01/02/03/04		0E		Dly HF	315 - 8k/Bypass	*8		0A
EQ M Q	0.5/ <b>1.0</b> /2.0/4.0/9.0					Dly Bai	100:0 - <b>100:61</b> - 0:100 (D:E			0C
EQ M Gain	-12 - <b>+4</b> - +12	34 - 4C		0F	#	•		00 - 7F		14
EQ H Gain	-12 - <b>0</b> - +12	34 - 4C		10		Dly Pan	L63 - 0 - <b>R63</b>			
CF Sel	Chorus/Flangr	00/01		11		Dly Level	0 - 127	00 - 7F		15
CF Rate	0.05 - <b>0.30 -</b> 6.40	<b>*</b> 7		12		Level	0 - <b>96</b> - 127	00 - 7F		16
CF Depth	0 - <b>20</b> - 127	00 - 7F		13	57	: FL / Delay			11	01
CF Fb	-98% - <b>+76%</b> - +98%	0F - 71		14		FL Dly	0 - <b>1.6m</b> - 100m	*1		03
CF Mix	0 - <b>64</b> - 127	00 - 7F		15		FL Rate	0.05 - <b>0.60</b> - 10.0	*6		04
	0 - <b>76</b> - 127	00 - 7F		16		FL Depth	0 - <b>24</b> - 127	00 - 7F		05
Level		00 - 71			-	FL Fb	-98% - <b>+80%</b> - +98%	0F - 71		06
4 : Rhodes Mul			04	06			100:0 - <b>100:100</b> - 0:100 (D:			07
EH Sens	0 - <b>64</b> - 127	00 - 7F		03	+	FL Bal				
EH Mix	0 - <b>64</b> - 127	00 - 7F		04		FL Pan	L63 - 0 - R63	00 - 7F		12
PH Man	100 - <b>620</b> - 8k	*12		05		FL Level	0 - <b>127</b>	00 - 7F		13
PH Rate	0.05 - <b>0.85 -</b> 6.40	*7		06		Dly Time	0 - <b>250m</b> - 500m	*4		80
PH Depth	0 <b>- 32</b> - 127	00 - 7F		07		Dly Fb	-98% - <b>+32%</b> - +98%	0F - 71		09
PH Reso	0 - <b>16</b> - 127	00 - 7F		08		Dly HF	315 - 8k/Bypass	*8		0A
		00 - 7F 00 - 7F		09	#	Dly Bal	100:0 - 100:74 - 0:100 (D:E			0C
PH Mix	0 - <b>64</b> - 127				π	Dly Pan	L63 - 0 - <b>R63</b>	00 - 7F		14
CF Sel	Chorus/Flangr	00/01		0A			0 - <b>127</b>	00 - 7F		15
CF LPF	250 - 6.3k/ <b>Bypass</b>	*11		0B		Dly Level				
CF Dly	0 - <b>1.0m</b> - 100m	*1		0C		Level	0 - <b>96</b> - 127	00 - 7F		16
CF Rate	0.05 <b>- 0.45</b> - 6.40	*7		0D	58	3 : Cho / Flange			11	02
CF Depth	0 - <b>64</b> - 127	00 - 7F		0E		Cho Dly	0 - <b>1.6m</b> - 100m	*1		03
CF Fb	-98% - <b>+80%</b> - +98%	0F - 71		0F		Cho Rate	0.05 - <b>0.45</b> - 10.0	*6		04
CF Mix	0 - 127	00 - 7F		10		Cho Depth	0 - <b>120</b> - 127	00 - 7F		05
TP Sel	Trem/ <b>Pan</b>	00/01		11	_	Cho Bal	100:0 - <b>100:100</b> - 0:100 (D:			07
					т.	Cho Pan	<b>L63</b> - 0 - R63	00 - 7F		12
TP Mod WV	Tri/Sqr/ <b>Sin</b> /Saw1/Saw2	00/01/02/03/04		12				00 - 7F		13
TP Mod RT	0.05 - <b>3.05</b> - 6.40	*7		13		Cho Level	0 - 127			
TP Mod Dep	0 - <b>64</b> - 127	00 - 7F		14		FL Dly	0 - <b>1.6m</b> - 100m	*1		80
TP Sw	Off/On	00/01		15		FL Rate	0.05 - <b>0.60</b> - 10.0	*6		09
Level	0 - 127	00 - 7F		16		FL Depth	0 - <b>24</b> - 127	00 - 7F		0A
					-	FL Fb	-98% - <b>+80%</b> - +98%	0F - 71		0B
					#	FL Bal	100:0 - <b>100:100</b> - 0:100 (D:			0C
					#			00 - 7F		14
						FL Pan	L63 - 0 <b>- R63</b>			
								00 75		45
						FL Level Level	0 - <b>127</b> 0 - <b>88</b> -127	00 - 7F 00 - 7F		15 16

Pa	rameter	Value (Dec.) Value (H	ex.) min - max	MSB/LSB(H)
	: OD1 / OD2	Value (Dec.)	CA., IIIII IIIAA	11 03
	OD1 Sel	Odrv/Dist	00/01	03
	OD1 Oci	0 - 48 - 127	00 - 7F	04
	OD1 Drive	Small/Bitin/2-Stk/3-Stk	00/01/02/03	
	OD1 Amp Sw			
		Off/On	00/01	06
	OD1 Pan	L63 - 0 - R63	00 - 7F	12
	OD1 Level	0 - <b>96</b> - 127	00 - 7F	13
	OD2 Sel	Odrv/ <b>Dist</b>	00/01	08
	OD2 Drive	0 - <b>76</b> - 127	00 - 7F	09
	OD2 Amp	Small/BltIn/2-Stk/3-Stk	00/01/02/03	
	OD2 Amp Sw	Off/ <b>On</b>	00/01	0B
(	OD2 Pan	L63 - 0 - <b>R63</b>	00 - 7F	14
(	OD2 Level	0 - <b>84</b> - 127	00 - 7F	15
1	_evel	0 - <b>127</b>	00 - 7F	16
60	: OD / Rotary			11 04
	DD Sel	Odrv/Dist	00/01	03
	DD Drive	0 - 48 - 127	00 - 7F	04
	OD Amp	Small/Bltln/2-Stk/3-Stk	00/01/02/03	05
	DD Amp Sw	Off/On	00/01	06
	DD Pan	<b>L63</b> - 0 - R63	00 - 7F	12
	OD Level	0 <b>- 96</b> - 127	00 - 7F	13
F	RT L Slow	0.05 - <b>0.35</b> - 10.0	*6	08
F	RT L Fast	0.05 - <b>6.40</b> -10.0	*6	09
F	RT Lo Accl	0 <b>- 3</b> - 15	*14	0 <b>A</b>
F	RT Lo Lev	0 - <b>127</b>	00 - 7F	0B
	RT H Slow	0.05 - <b>0.90</b> - 10.0	*6	0C
	RT H Fast	0.05 - <b>7.50</b> - 10.0	*6	0D
	RT Hi Accl	0 - <b>11</b> - 15	*14	0E
	RT Hi Lev	0 - <b>64</b> - 127	00 - 7F	
	RT Sept			0F
	•	0 - 96 - 127	00 - 7F	10
	RT Speed	Slow/Fast	00/7F	11
	RT Pan	L63 - 0 <b>- R63</b>	00 - 7F	14
F	RT Level	0 - <b>127</b>	00 - 7F	15
L	evel	0 - 127	00 - 7F	16
	evel OD / Phaser	0 - 127	00 - 7F	
61 :				16 11 05
61 :	<b>OD / Phaser</b> OD Sel	Odrv/Dist	00/01	16 11 05 03
61 : + C	OD / Phaser DD Sel DD Drive	<b>Odrv</b> /Dist 0 - <b>48</b> - 127	00/01 00 - 7F	16 11 05 03 04
61 : + C	OD / Phaser DD Sel DD Drive DD Amp	Odrv/Dist 0 - 48 - 127 Smal/BltIn/ 2-Stk/3-Stk	00/01 00 - 7F 00/01/02/03	16 11 05 03 04 05
61 : + C	OD / Phaser OD Sel OD Drive OD Amp OD Amp Sw	Odrv/Dist 0 - 48 - 127 Smal/Bitln/ 2-Stk/3-Stk Off/On	00/01 00 - 7F 00/01/02/03 00/01	16 11 05 03 04 05 06
61 : + C	OD / Phaser DD Sel DD Drive DD Amp DD Amp Sw DD Pan	Odrv/Dist 0 - 48 - 127 Smal/Bitin/ 2-Stk/3-Stk Off/On L63 - 0 - R63	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F	16 11 05 03 04 05 06 12
61 : + C	OD / Phaser DD Sel DD Drive DD Amp DD Amp Sw DD Pan DD Level	Odrv/Dist 0 - 48 - 127 Smal/Bltln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13
61: C + C C C C C C C C C C C C C C C C C C	OD / Phaser DD Sel DD Drive DD Amp DD Amp Sw DD Pan DD Level H Man	Odrv/Dist 0 - 48 - 127 Smal/Bitin/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F *12	16 11 05 03 04 05 06 12
61: C C C C C C C C P # P	OD / Phaser DD Sel DD Drive DD Amp DD Amp Sw DD Pan DD Level H Man H Rate	Odrv/Dist 0 - 48 - 127 Smal/Bitin/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F *12	16 11 05 03 04 05 06 12 13
61: C C C C C C C C P # P	OD / Phaser DD Sel DD Drive DD Amp DD Amp Sw DD Pan DD Level H Man	Odrv/Dist 0 - 48 - 127 Smal/BitIn/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F *12	16 11 05 03 04 05 06 12 13 08
61: C + C C C C C C P P P P	OD / Phaser DD Sel DD Drive DD Amp DD Amp Sw DD Pan DD Level H Man H Rate	Odrv/Dist 0 - 48 - 127 Smal/Bitin/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F *12	16 05 03 04 05 06 12 13 08 09
61: C + C C C C C C C P P P P P	OD / Phaser DD Sel DD Drive DD Amp DD Amp Sw DD Pan DD Level H Man H Rate H Depth	Odrv/Dist 0 - 48 - 127 Smal/BitIn/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F *12 *6 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A
61: C + C C C C C C C P P P P P P	OD / Phaser DD Sel DD Drive DD Amp DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Reso	Odrv/Dist 0 - 48 - 127 Smal/Bitln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F *12 *6 00 - 7F 00 - 7F	16 05 03 04 05 06 12 13 08 09 0A 0B
61: C C C C C C P P P P P P P	OD / Phaser DD Sel DD Drive DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Reso H Mix	Odrv/Dist 0 - 48 - 127 Smal/Bltln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F *12 *6 00 - 7F 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14
# P P P P P P P P P P P P P P P P P P P	OD / Phaser DD Sel DD Drive DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Reso H Mix H Pan	Odrv/Dist 0 - 48 - 127 Smal/Bitin/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 12 *6 00 - 7F 00 - 7F 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14
# P P P P L L	OD / Phaser DD Sel DD Drive DD Amp DD Amp Sw DD Amp Sw DD Han DD Level H Man H Rate H Depth H Reso H Mix H Pan H Level evel	Odrv/Dist 0 - 48 - 127 Smal/BitIn/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 0 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F *12 *6 00 - 7F 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16
61: + CCCCC P # P P P P P E E	OD / Phaser DD Sel DD Drive DD Amp DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Reso H Mix H Pan H Pan H Level evel OD / AutoWa	Odrv/Dist 0 - 48 - 127 Smal/Bitln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 0 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 12 *6 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16
61:: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	OD / Phaser DD Sel DD Drive DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Reso H Mix H Pan H Level evel OD / AutoWa	Odrv/Dist 0 - 48 - 127 Smal/Bltln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 0 - 127 ih Odrv/Dist	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 12 *6 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03
# P P P P P P P P P P P P P P P P P P P	OD / Phaser DD Sel DD Amp DD Amp DD Amp DD Level H Man H Bate H Depth H Reso H Mix H Pan H Level evel OD / AutoWa D Sel D Drive	Odrv/Dist 0 - 48 - 127 Smal/Bltln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 0 - 127 ih Odrv/Dist 0 - 48 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 112 *6 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04
# P P P P P P P P P P P P P P P P P P P	OD / Phaser DD Sel DD Drive DD Amp Sw DD Amp Sw DD Level H Man H Rate H Depth H Reso H Mix H Pan H Level evel OD / AutoWa D Sel D Drive D Amp	Odrv/Dist 0 - 48 - 127 Smal/Bitin/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 167 L63 - 0 - R63 0 - 127 L63 - 0 - R63 0 - 127 0 - 127 Uh Odrv/Dist 0 - 48 - 127 Small/Bitin/2-Stk/3-Stk	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 12 16 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05
# P P P P P P P P P P P P P P P P P P P	OD / Phaser DD Sel DD Drive DD Amp Sw DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Reso H Mix H Pan H Level evel OD / AutoWa D Sel D Drive D Amp D Amp Sw	Odrv/Dist 0 - 48 - 127 Smal/Bitin/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 16 - 127 L63 - 0 - R63 0 - 127 L63 - 0 - R63 0 - 127 b Odrv/Dist 0 - 48 - 127 Small/Bitin/2-Stk/3-Stk Off/On	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 12 *6 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05 06
# P P P P P P P P P P P P P P P P P P P	OD / Phaser DD Sel DD Drive DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Pan H Pan H Level evel DD / AutoWa D Sel D Amp	Odrv/Dist 0 - 48 - 127 Smal/Bitin/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 167 L63 - 0 - R63 0 - 127 L63 - 0 - R63 0 - 127 0 - 127 Uh Odrv/Dist 0 - 48 - 127 Small/Bitin/2-Stk/3-Stk	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 12 16 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05
# P P P P P P P P P P P P P P P P P P P	OD / Phaser DD Sel DD Drive DD Amp Sw DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Reso H Mix H Pan H Level evel OD / AutoWa D Sel D Drive D Amp D Amp Sw	Odrv/Dist 0 - 48 - 127 Smal/Bitin/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 16 - 127 L63 - 0 - R63 0 - 127 L63 - 0 - R63 0 - 127 b Odrv/Dist 0 - 48 - 127 Small/Bitin/2-Stk/3-Stk Off/On	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 12 *6 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05 06
# P P P P P P P P P P P P P P P P P P P	OD / Phaser DD Sel DD Drive DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Pan H Pan H Level evel DD / AutoWa D Sel D Amp	Odrv/Dist 0 - 48 - 127 Smal/Bltln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 0 - 127 In Odrv/Dist 0 - 48 - 127 Small/Bltln/2-Stk/3-Stk Off/On L63 - 0 - R63	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05 06 12
61: C C C C C C C C C C C C C C C C C C C	OD / Phaser DD Sel DD Drive DD Amp Sw DD Pan DD Level H Man H Reso H Mix H Pan H Level evel OD / AutoWa D Sel D Drive D Amp Sw D Pan D Level D Amp D D Level D Amp D D Amp Sw D Pan D Level	Odrv/Dist 0 - 48 - 127 Smal/Bltln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 0 - 127 In Odrv/Dist 0 - 48 - 127 Small/Bltln/2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 12 *6 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05 06 12 13 08
# P P P P P P P P P P P P P P P P P P P	OD / Phaser OD Sel OD Amp OD Amp OD Amp Sw OD Pan OD Level H Man H Rate H Depth H Reso H Mix H Pan H Level evel OD / AutoWa D Sel D Drive D Amp D Amp D Amp D D Hevel W Filter W Sens	Odrv/Dist 0 - 48 - 127 Smal/Bitin/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 0 - 127 wh Odrv/Dist 0 - 48 - 127 Small/Bitin/2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 LPF/BPF 0 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 112 *6 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05 06 12 13 08 09
61: CC	OD / Phaser OD Sel OD Drive OD Amp Sw OD Amp Sw OD Level H Man H Rate H Depth H Reso H Mix H Pan H Level evel OD / AutoWa D Sel D Drive D Amp D Amp Sw D Pan D Level W Filter W Sens W Man	Odrv/Dist 0 - 48 - 127 Smal/Bitin/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 167 L63 - 0 - R63 0 - 127 L63 - 0 - R63 0 - 127 bh Odrv/Dist 0 - 48 - 127 Small/Bitin/2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 LPF/BPF 0 - 127 0 - 68 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 12 *6 00 - 7F 00 - 7F 00/01/002/03 00/01 00 - 7F 00/01 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05 06 12 13 08 09 0A
61: CC	OD / Phaser DD Sel DD Arrive DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Reso H Mix H Pan D Level EVEL DD / AutoWa D Sel D Amp D Amp D Amp D Amp D Amp D Amp D Level W Filter W Sens W Man W Peak	Odrv/Dist 0 - 48 - 127 Smal/Bltln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 bh Odrv/Dist 0 - 48 - 127 Small/Bltln/2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 LPF/BPF 0 - 127 0 - 68 - 127 0 - 68 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 00/01/002/03 00/01 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05 06 12 13 08 09 0A 0B 0C
61: CC CC CC CC CC PP PP PP PP Lc CC CC CC CC PP PP PP PP PP PP PP PP PP	OD / Phaser DD Sel DD Sel DD Amp Sw DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Reso H Mix H Pan H Level evel OD / AutoWa D Sel D Drive D Amp Sw D Pan D Level W Filter W Sens W Man	Odrv/Dist 0 - 48 - 127 Smal/Bltln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 0 - 127 In Odrv/Dist 0 - 48 - 127 Small/Bltln/2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 LPF/BPF 0 - 127 0 - 68 - 127 0 - 68 - 127 0 - 62 - 127 0 - 62 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05 06 12 13 08 09 0A 0B 0C
61: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	OD / Phaser DD Sel DD Sel DD Amp DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Reso H Mix H Pan H Level evel D Drive D Amp Sw D Sel D Drive D Amp D Amp Sw D Pan D Level W Filter W Sens W Man W Peak W Rate W Depth	Odrv/Dist 0 - 48 - 127 Smal/Bltln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 0 - 127 in Odrv/Dist 0 - 48 - 127 Small/Bltln/2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 LPF/BPF 0 - 127 0 - 68 - 127 0 - 68 - 127 0 - 62 - 127 0 - 62 - 127 0 - 72 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 12 16 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05 06 12 13 08 09 0A
61: CCCCCCPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	OD / Phaser OD Sel OD Amp OD Amp OD Amp OD Amp OD Level H Man H Rate H Depth H Reso H Mix H Pan H Level evel OD / AutoWa D Sel D Drive D Amp D Amp D Amp D Level W Filter W Sens W Man W Peak W Peak W Rate W Depth N Pol	Odrv/Dist 0 - 48 - 127 Smal/Bltln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 0 - 127 ih Odrv/Dist 0 - 48 - 127 Small/Bltln/2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 LPF/BPF 0 - 127 0 - 62 - 127 0 - 62 - 127 0 - 62 - 127 Down/Up	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 12 16 00 - 7F 00 - 7F 00/01/002/03 00/01 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05 06 12 13 08 09 0A 0B 0C 0C 0D 0E
61: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	OD / Phaser DD Sel DD Sel DD Amp DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Pan H Level evel OD / AutoWa D Sel D D rive D Amp D Amp D Amp W Sens W Man W Peak W Rate W Depth W Pol W Pan	Odrv/Dist 0 - 48 - 127 Smal/Bitln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 O- 127 In Odrv/Dist 0 - 48 - 127 Small/Bitln/2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 LPF/BPF 0 - 127 0 - 68 - 127 0 - 62 - 127 0 - 62 - 127 0 - 62 - 127 0 - 72 - 127 Down/Up L63 - 0 - R63	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05 06 12 13 08 09 0A 0B 0C 0D 0C
61: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	OD / Phaser DD Sel DD Arive DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Reso H Mix H Pan D Sel D D / AutoWa D Sel D D rive D Amp Sw D Pan D Level W Filter W Sens W Man W Peak W Rate W Depth W Pol W Pol W Pol W Pol W Pol W Pan W Level	Odrv/Dist 0 - 48 - 127 Smal/Bltln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 bh Odrv/Dist 0 - 48 - 127 Small/Bltln/2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 LPF/BPF 0 - 127 0 - 68 - 127 0 - 68 - 127 0 - 62 - 127 Down/Up L63 - 0 - R63 0 - 72 - 127 Down/Up L63 - 0 - R63 0 - 127	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F 00/01 00 - 7F 00/01/002/03 00/01 00 - 7F 00 - 7F 00 - 7F 00/01 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05 06 12 13 08 09 0A 0B 0C 0C 0D 0E
61: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	OD / Phaser DD Sel DD Sel DD Amp DD Amp Sw DD Pan DD Level H Man H Rate H Depth H Pan H Level evel OD / AutoWa D Sel D D rive D Amp D Amp D Amp W Sens W Man W Peak W Rate W Depth W Pol W Pan	Odrv/Dist 0 - 48 - 127 Smal/Bitln/ 2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 100 - 620 - 8k 0.05 - 0.85 - 10.0 0 - 64 - 127 0 - 16 - 127 0 - 16 - 127 0 - 127 L63 - 0 - R63 0 - 127 O- 127 In Odrv/Dist 0 - 48 - 127 Small/Bitln/2-Stk/3-Stk Off/On L63 - 0 - R63 0 - 96 - 127 LPF/BPF 0 - 127 0 - 68 - 127 0 - 62 - 127 0 - 62 - 127 0 - 62 - 127 0 - 72 - 127 Down/Up L63 - 0 - R63	00/01 00 - 7F 00/01/02/03 00/01 00 - 7F 00 - 7F	16 11 05 03 04 05 06 12 13 08 09 0A 0B 0C 14 15 16 11 06 03 04 05 06 12 13 08 09 0A 0B 0C 0D 0C

The correspondence between setting values and hexadecimal val-
ues for items in the Value column indicated with "*" is shown in the
"Effect Data Table" (p. 105).

	eci Dala Table (p. 1	100).	
*1	Pre Delay Time	*8	HF Damp
*2	Delay Time 1	*9	Cutoff Freq
*3	Delay Time 2	*10	EQ Freq
*4	Delay Time 3	*11	LPF
*5	Delay Time 4	*12	Manual
*6	Rate 1	*13	Azimuth
*7	Rate 2	*14	Accl

Parameter	Value (Dec.)	Value (Hex.) min - max		
63: PH / Rotary			11	07
PH Man	100 - <b>620</b> - 8k	*12		03
+ PH Rate	0.05 - <b>0.85</b> - 10.			04
PH Depth	0 - <b>64</b> - 127	00 - 7F		05
PH Reso	0 - <b>16 -</b> 127	00 - 7F		06
PH Mix	0 - <b>127</b>	00 - 7F		07
PH Pan	L63 - 0 - R63	00 - 7F		12
PH Level	0 - <b>127</b>	00 - 7F		13
RT L Slow	0.05 - <b>0.35</b> - 10.			80
RT L Fast	0.05 <b>- 6.40</b> - 10.			09
RT Lo Accl	0 - <b>3</b> - 15	*14		0А
RT Lo Lev	0 - <b>127</b>	00 - 7F		0B
RT H Slow	0.05 - <b>0.90 -</b> 10.			0C
RT H Fast	0.05 - <b>7.50 -</b> 10.			0D
RT Hi Accl	0 - <b>11 -</b> 15	*14		0E
RT Hi Lev	0 - <b>64</b> - 127	00 - 7F		0F
RT Sept	0 <b>- 96 -</b> 127	00 - 7F		10
RT Speed	Slow/Fast	00/7F		11
RT Pan	L63 - 0 - <b>R63</b>	00 - 7F		14
RT Level	0 - <b>127</b>	00 - 7F		15
Level	0 - <b>127</b>	00 - 7F		16
4 : PH / AutoWa	ah		11	08
PH Man	100 - <b>620</b> - 8k	*12		03
- PH Rate	0.05 - <b>0.85</b> - 10.6	0 *6		04
PH Depth	0 - <b>64</b> - 127	00 - 7F		05
PH Reso	0 - <b>16</b> - 127	00 - 7F		06
PH Mix	0 - <b>127</b>	00 - 7F		07
PH Pan	<b>L63</b> - 0 - R63	00 - 7F		12
PH Level	0 - <b>127</b>	00 - 7 <b>F</b>		13
AW Filter	LPF/ <b>BPF</b>	00/01		80
AW Sens	<b>0</b> - 127	00 - 7F		09
AW Man	0 <b>- 68 -</b> 127	00 - 7F		0Α
AW Peak	0 - <b>62</b> - 127	00 - 7F		0B
AW Rate	0.05 <b>- 2.05</b> - 10.0	o *6		0C
AW Depth	0 - <b>72</b> - 127	00 - 7F		0D
AW Pol	Down/ <b>Up</b>	00/01		0E
AW Pan	L63 - 0 - <b>R63</b>	00 - 7F		14
AW Level	0 - <b>127</b>	00 - 7F		15
Level	0 - <b>127</b>	00 - 7F		16

# : Effect control 1 can be used to modify the value (p.69)
# : Effect control 2 can be used to modify the value (p.69)
MSB/LSB : Indicates the \*\* portion of the following exclusive messages. (p.116) (hexadecimal notation)

For Effect Type (data section)
F0 41 10 42 12 40 03 00 \*\* \*\* sum F7
For Effect Parameters (LSB part of address)
F0 41 10 42 12 40 03 \*\* data sum F7

(sum: checksum)

Default : values shown in bold

# Effect Data Table

	1	2	3	4	5	6	7	8	9 Cutoff	10 FO	11	12	13	14
	Pre Delay	Delay	Delay	Delay	Delay	Rate1	Datas	HF Damp	Cutoff Freq	EQ Freq	I DE	Manual	Azimuth	Acci
/alue(H)	Time (ms)	Time 1 (ms)	(ms)	Time 3 (ms)	Time 4 (ms)	Hate (Hz)	(Hz)	(Hz)	(Hz)	(Hz)	(Hz)	(Hz)	(deg)	7001
00	0.0	200	200	0.0	0	0.05	0.05	315	250	200	250	100	L180(=R180)	0
01	0.1	205	205	0.1	5	0.10	0.10	**				110	м	
02	0.2	210	210	0.2	10	0.15	0.15	"	н	"	u	120		3
03	0.3	215	215	0.3	15	0.20	0.20		"	"	и	130		и
04	0.4	220	220	0.4	20	0.25	0.25	· ·	п	11		140		**
05	0.5	225	225	0.5	25	0.30	0.30		"	u		150	"	91
06	0.6	230	230	0.6	30	0.35	0.35	н	u	и	и	160	L168	H
07	0.7	235	235	0.7	35	0.40	0.40	н	н			170		*
08	0.8	240	240	0.8	40	0.45	0.45	400	315	250	315	180		1
09	0.9	245	245	0.9	45	0.50	0.50	"	п	н	"	190	и	
0 <b>A</b>	1.0	250	250	1.0	50	0.55	0.55	"	a			200	L156	u
0B	1.1	255	255	1.1	55	0.60	0.60		"	11	"	210	н	
0C	1.2	260	260	1.2	60	0.65	0.65	и	"		и	220	н	
0D	1.3	265	265	1.3	65	0.70	0.70	н			и	230	11	
0E	1.4	270	270	1.4	70	0.75	0.75			В	и	240	L144	
0F	1.5	275	275	1.5	75	0.80	0.80					250		
10	1.6	280	280	1.6	80	0.85	0.85	500	400	315	400	260	и	2
11	1.7	285	285	1.7	85	0.90	0.90	"	ii ii			270	н	
12	1.8	290	290	1.8	90	0.95	0.95	"	**		**	280	L132	
13	1.9	295	295	1.9	95	1.00	1.00	**	"	"	,	290		
14	2.0	300	300	2.0	100	1.05	1.05		н	u	9	300	н	15
15	2.1	305	305	2.1	105	1.10	1.10	и	II .	"		320	ıı	
16	2.2	310	310	2.2	110	1.15	1.15					340	L120	
17	2.3	315	315	2.3	115	1.20	1.20	"				360	u	"
18	2.4	320	320	2.4	120	1.25	1.25	630	500	400	500	380		3
19	2.5	325	325	2.5	125	1.30	1.30	0			u	400		
1A	2.6	330	330	2.6	130	1.35	1.35	"	"		"	420	L108	
1B	2.7	335	335	2.7	135	1.40	1.40			"		440		
1C	2.8	340	340	2.8	140	1.45	1.45		•		"	460		,
1D	2.9	345	345	2.9	145	1.50	1.50		"			480		
1E	3.0	350	350	3.0	150	1.55	1.55					500	L96	
1F	3.1	355	355	3.1	155	1.60	1.60					520		
20	3.2	360		3.2	160	1.65	1.65	800	630	500	630			4
21	3.3	365		3.3	165	1.70	1.70	"				560		
22	3.4	370		3.4	170	1.75	1.75					580	L84	
23	3.5	375		3.5	175	1.80	1.80					600	п	
24	3.6	380		3.6		1.85	1.85					620	"	
25	3.7	385		3.7	185	1.90	1.90					640	1.70	
26	3.8	390		3.8	190	1.95	1.95					000	L72	
27	3.9	395		3.9	195	2.00	2.00					000		5
28	4.0	400		4.0		2.05	2.05		800	630	800		п	1
29	4.1	405		4.1	205	2.10	2.10			"		720	160	
2A	4.2	410		4.2		2.15	2.15					740	L60 "	
2B	4.3	415				2.20	2.20					700	n	
2C	4.4	420		4.4		2.25	2.25					780 800	u	
2D	4.5	425		4.5		2.30	2.30			н		820	L48	
2E	4.6	430		4.6		2.35	2.35					840	L40 #	
2F	4.7	435				2.40	2.40		1000	800	1000		N	6
30	4.8	440		4.8		2.45	2.45		1000	800	1000	880		,
31	4.9	445				2.50	2.50						L36	
32	5.0	450				2.55	2.55					000	"	
33	5.5	455				2.60	2.60					320	и	
34	6.0	460				2.65	2.65 2.70		11	u		340	п	
35	6.5	465				2.70				**		900	L24	
36	7.0	470				2.75	2.75					900	L-C-7	
37	7.5	475				2.80	2.80		1250	1000	1250	1000	u	
38	8.0	480				2.85	2.85		1250	1000	1250		n	
39	8.5	485				2.90	2.90					1200	L12	
3A	9.0	490				2.95	2.95					1300	-12	
3B	9.5	495				3.00	3.00					1400	н	
3C	10	500				3.05			п			1300	ıı	
		E0E	505	11	305	3.10	3.10	, "				1000		
3D 3E	11 12	505 510				3.15						1700	0	

	1	2	3	4	5	6	7	8	9	10		12	13	14
	Pre Delay	Delay	Delay	Delay	Delay	Datat	D-4-0	UF Dame	Cutoff	EQ		Manual	Azimuth	Acci
Value(H)	Time	Time 1			Time 4	Rate1 (Hz)	Hatez (Hz)	HF Damp (Hz)	Freq (Hz)	Freq (Hz)		(Hz)	(deg)	ACCI
40	(ms)	(ms) 520	(ms) 520	(ms) 14	(ms) 320	3.25	3.25	2000	1600	1250		1900	0	8
40 41	15	525	525	15	325	3.30	3.30		1000	1230		2000	"	,
41 42	16	530	530	16	330	3.35	3.35	u	u			2100	R12	**
43	17	535	535	17	335	3.40	3.40	n	u	11		2200	н	
44	18	540	540	18	340	3.45	3.45	н	"			2300	11	
45	19	545	545	19	345	3.50	3.50	н	"			2400	н	11
46	20	550	550	20	350	3.55	3.55		"			2500	R24	u
47	21	560	555	21	355	3.60	3.60	0	н			2600	н	
48	22	570	560	22	360	3.65	3.65	2500	2000	1600	2000	2700	я	9
49	23	580	565	23	365	3.70	3.70	u			11	2800	fi	21
4A	24	590	570	24	370	3.75	3.75	n		"	"	2900	R36	11
4B	25	600	575	25	375	3.80	3.80	"		п		3000		"
4C	26	610	580	26	380	3.85	3.85	H				3100	10	
4D	27	620	585	27	385	3.90	3.90	n		n	u	3200	N N	6
4E	28	630	590	28	390	3.95	3.95	14	u	11	п	3300	R48	0
4F	29	640	595	29	395	4.00	4.00	н	н		н	3400	24	ш
50	30	650	600	30	400	4.05	4.05	3150	2500	2000	2500	3500	þ	10
51	31	660	610	31	405	4.10	4.10		*	"		3600	н	"
52	32	670	620	32	410	4.15	4.15		"	u		3700	R60	н
53	33	680	630	33	415	4.20	4.20	u	tt	**		3800	**	
54	34	690	640	34	420	4.25	4.25					3900	te .	ii ii
55	35	700	650	35	425	4.30	4.30	п	"	u		4000	и	
56	36	710	660	36	430	4.35	4.35	11	n	"	и	4100	R72	"
57	37	720	670	37	435	4.40	4.40	"	II II	"	н	4200	н	u
58	38	730	680	38	440	4.45	4.45	4000	3150	2500	3150	4300	н	11
59	39	740	690	39	445	4.50	4.50		n	11		4400	и	н
5 <b>A</b>	40	750	700	40	450	4.55	4.55					4500	R84	
5B	41	760	710	50	455	4.60	4.60	"	"		n	4600	н	н
5C	42	770	720	60	460	4.65	4.65		"	м	**	4700	"	н
5D	43	780	730	70	465	4.70	4.70	н	и		"	4800	н	15
5E	44	790	740	80	470	4.75	4.75	н	"		"	4900	R96	*
5F	45	800	750	90	475	4.80	4.80					5000		
60	46	810	760	100	480	4.85	4.85	5000	4000	3150	4000	5100	11	12
61	47	820	770	110	485	4.90	4.90	"		"	"	5200	n	н
62	48	830	780	120	490	4.95	4.95		"		"	5300	R108	
63	49	840	790	130	495	5.00	5.00	"	"			5400	н	"
64	50	850	800	140	500	5.10	5.05	"	"	**	н	5500	"	"
65	52	860	810	150	505	5.20	5.10	"				5600	и	"
66	54	870	820	160	510	5.30	5.15			н	**	5700	R120	"
67	56	880	830	170	515	5.40	5.20	"	н		"	5800	н	п
68	58	890	840	180	520	5.50	5.25	6300	5000	4000	5000	5900	н	13
69	60	900	850	190	525	5.60	5.30		"		"	6000		11
6A	62	910	860	200	530	5.70	5.35	"		"	"	6100	R132	"
6B	64	920	870	210	535	5.80	5.40		"		"	6200		
6C	66	930	880	220	540	5.90	5.45			"	н	6300	19	н
6D	68	940	890	230	545	6.00	5.50			"	"	6400		н
6E	70	950	900	240	550	6.10	5.55	,,	11	"	"	6500	R144	16
6F	72	960	910	250	555	6.20	5.60					6600		
70	74 76	970	920	260	560	6.30	5.65	8000	6300	5000	6300	6700		14
71	76 70	980	930	270	565	6.40	5.70					6800		"
72 70	78	990	940	280	570	6.50	5.75				и	6900	R156	и
73	80	1000	950	290	575	6.60	5.80					7000		"
74 75	82		960	300	580	6.70	5.85					7100		и
75 76	84		970	320	585	6.80	5.90				"	7200		"
76	86		980	340	590	6.90	5.95					7300	R168	
77 70	88		990	360	595	7.00	6.00				. "	7400		"
78	90		1000	380	600	7.50		Bypass	8000	6300	Bypass	7500	"	15
79	92		1000	400	605	8.00 .	6.10			II.	"	7600		"
7A	94		1000	420	610	8.50	6.15	"			"	7700	R180(=L180	) "
7B	96		1000	440	615	9.00	6.20			h	"	7800	и	"
7C	98		1000	460	620	9.50	6.25			и	"	7900		11
	100		1000	480	625	10.00	6.30	"	"	11	н	8000	11	
7D 7E	100		1000	500	630	10.00	6.35					8000		

## The following effect types are used in the table on the preceding page.

#### 1.Pre Delay Time

- 10: Stereo Flanger
- 11: Step Flanger
- 16: Hexa Chorus
- 17: Tremolo Chorus
- 18: Stereo Chorus
- 19: Space-D
- 20: 3D Chorus
- 26: Reverb
- 27: Gate Reverb
- 29: 2 Pitch Shifter
- 30: Fb P.Shifter
- 35: OD → Chorus
- 36: OD → Flanger
- 38: DS → Chorus
- 39: DS → Flanger
- 41:  $EH \rightarrow Chorus$
- 42: EH → Flanger
- 44: Cho → Delay
- 45: FL → Delay
- 46: Cho → Flanger 54: Rhodes Multi
- 56: Cho / Delay
- 57: FL / Delay
- 58: Cho / Flanger

#### 2.Delay Time1

- 23: 3 Tap Delay
- 24: 4 Tap Delay

## 3.Delay Time2

25: Tm Ctrl Delay

## 4.Delay Time3

- 21: Stereo Delay 22: Mod Delay
- 28: 3D Delay
- 37: OD → Delay 40: DS → Delay
- 43: EH → Delay
- 44: Cho → Delay
- 45: FL → Delay
- 56: Cho / Delay
- 57: FL / Delay

## 5.Delay Time4

- 48: GTR Multi 1
- 50: GTR Multi 3
- 51: Clean Gt Multi 1
- 52: Clean Gt Multi 2
- 55: Keyboard Multi

## 6.Rate1

- 07: Phaser 08: Auto Wah
- 09: Rotary
- 10: Stereo Flanger
- 11: Step Flanger
- 12: Tremolo 13: Auto Pan
- 16: Hexa Chorus
- 17: Tremolo Chorus
- 18: Stereo Chorus
- 19: Space-D 20: 3D Chorus
- 22: Mod Delay
- 31:3D Auto
- 35: OD → Chorus
- 36: OD → Flanger
- 38: DS → Chorus

- 39: DS → Flanger
- 41: EH → Chorus
- 42: EH → Flanger
- 44: Cho → Delay
- 45: FL → Delay
- 46: Cho → Flanger
- 47: Rotary Multi
- 56: Cho / Delay
- 57: FL / Delay 58: Cho / Flanger
- 60: OD / Rotary
- 61: OD / Phaser
- 62: OD / Auto Wah
- 63: PH / Rotary
- 64: PH / Auto Wah

#### 7.Rate2

- 48: GTR Multi 1
- 49: GTR Multi 2
- 50: GTR Multi 3
- 51: Clean Gt Multi 1
- 52: Clean Gt Multi 2
- 53: Bass Multi
- 54: Rhodes Multi
- 55: Keyboard Multi

#### 8.HF Damp

- 21: Stereo Delay 22: Mod Delay
- 23: 3 Tap Delay
- 24: 4 Tap Delay
- 25: Tm Ctrl Delay
- 26: Reverb
- 28: 3D Delay
- 37: OD → Delay
- 40: DS → Delay
- 43: EH → Delay 44: Cho → Delay
- 45: FL → Delay
- 51: Clean Gt Multi 1
- 56: Cho / Delay
- 57: FL / Delay

## 9.Cutoff Freq

- 10: Stereo Flanger
- 18: Stereo Chorus 34: Lo-Fi 2

## 10.EQ Freq

- 01:Stereo-EQ 47:Rotary Multi
- 49:GTR Multi 2
- 51:Clean Gt Multi 1
- 52:Clean Gt Multi 2
- 53:Bass Multi
- 55:Keyboard Multi

### 11.LPF

- 34: Lo-Fi 2
- 54: Rhodes Multi

## 12.Manual

- 07: Phaser
- 54: Rhodes Multi 55: Keyboard Multi
- 61: OD / Phaser
- 63: PH / Rotary
- 64: PH / Auto Wah

#### 13.Azimuth

31: 3D Auto 32: 3D Manual

#### 14.Accl

- 04:Humanizer
- 09:Rotary 25:Tm Ctrl Delay
- 47:Rotary Multi
- 60:OD/Roraty
- 63:PH/Rotary

## MIDI Implementation

The SC-88ST Pro implements additional functionality and parameters over and above the SC-88, which itself was an expansion of the GS sound source format. These functions and parameters are marked by a [Pro] symbol. If MIDI messages marked by a [Pro] symbol are transmitted to another GS format sound source or to the SC-88, those messages may not be recognized. Also, functions and parameters which were added to the SC-88 over and above previous GS format sound sources are marked by an [88] symbol

#### Section 1. Receive data

#### ■ Channel Voice Messages

#### Note off

Status 2nd byte 3rd byte 8nH kkH

n = MIDI channel number 0H-FH (ch.1-ch.16) kk = note number 00H-7FH (0-127) 00H-7FH (0-127) vv = note off velocity

- \* For Drum Parts, these messages are received when Rx.NOTE OFF = ON for each
- \* The velocity values of Note Off messages are ignored.

#### ● Note or

Status 2nd byte 3rd byte kkH vvH

n = MIDI channel number 0H-FH (ch.1-ch.16) kk = note number 00H-7FH (0-127) : 01H-7FH (1-127) vv = note on velocity

- \* Not received when Rx.NOTE MESSAGE = OFF. (Initial value is ON)
- \* For Drum Parts, not received when Rx.NOTE ON = OFF for each Instrument

#### Polyphonic Key Pressure

2nd byte 3rd byte Status AnH kkH

n = MIDI channel number 0H-FH (ch.1-ch.16) kk = note number vv = key pressure 00H-7FH (0-127)

- Not received when Rx.POLY PRESSURE (PAf) = OFF, (Initial value is ON)
- \* The resulting effect is determined by System Exclusive messages. With the initial settings, there will be no effect.

#### Control Change

- \* When Rx.CONTROL CHANGE = OFF, all control change messages except for Channel Mode messages will be ignored.
  \* The value specified by a Control Change message will not be reset even by a Program
- Change, etc.

#### Bank Select (Controller number 0, 32)

Status 2nd byte 3rd byte 00H BnH 20H

0H-FH (ch.1-ch.16) n = MIDI channel number

: 00H-7FH (GS Variation number 0 - 127), Initial Value mm = Bank number MSB

= 00HII = Bank number LSB : 00H - 03H (MAP), Initial Value = 00H

\* Not received when Rx.BANK SELECT = OFF. "Rx.BANK SELECT" is set to OFF by "Turn General MIDI System On." and set to ON by "GS RESET." (Power-on default value is ON.) General MIDI System On. 3 and set to ON by "GS RESEL". (Power-on default value is ON.)

When Rx, BANK SELECT LSB = OFF, Bank number LSB will be handled as 00H regardless of the received value. However, when sending Bank Select messages, you have to send both the MSB (mmH) and LSB (IIH, the value should be 00H) together.

Bank Select processing will be suspended until a Program Change message is received.

The GS format "Variation number" is the value of the Bank Select MSB (Controller number) overgood is decimal.

- ber 0) expressed in decimal.
- \* The SC-88ST Pro recognizes the Bank Select LSB (Controller number 32) as a flag for switching between the Native MAP,SC-88MAP and the SC-55MAP. With a Bank Select LSB of 00H, the map selected by the front panel MAP button will be selected. With a LSB of 01H, the SC-55MAP will be selected. With a LSB of 02H, the SC-88MAP will be selected. ed. With a LSB of 03H, the Native MAP will be selected
- The lower byte of the Bank Select message (controller number 32) may not be recognized by some models of GS instrument

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#### O Modulation (Controller number 1)

Status 2nd byte 3rd byte 01H vvH

: 0H-FH (ch.1-ch.16) n = MIDI channel number vv = Modulation depth 00H-7FH (0-127)

- Not received when Rx.MODULATION = OFF. (Initial value is ON)
- \* The resulting effect is determined by System Exclusive messages. With the initial settings, this is Pitch Modulation Depth

#### O Portamento Time (Controller number 5)

2nd byte 3rd byte Status 05H

n = MIDI channel number 0H-FH (ch.1-ch.16)

: 00H-7FH (0-127), Initial value = 00H (0) vv = Portamento Time

\* This adjusts the rate of pitch change when Portamento is ON or when using the Portamento Control. A value of 0 results in the fastest change

#### O Data Entry (Controller number 6, 38)

Status 2nd byte 3rd byte mmH BnH 26H шн

n = MIDI channel number : 0H-FH (ch.1-ch.16) mm, II = the value of the parameter specified by RPN/NRPN mm = MSB, II = LSB

### O Volume (Controller number 7)

Status 2nd byte 3rd byte BnH 07H vvH

n = MIDI channel number 0H-FH (ch.1-ch.16)

: 00H-7FH (0-127), Initial Value = 64H (100) vv = Volume

- \* Volume messages are used to adjust the volume balance of each Part.
- \* Not received when Rx.VOLUME = OFF. (Initial value is ON)

#### O Pan (Controller number 10) Status 2nd byte 3rd byte OAH

n = MIDI channel number

0H-FH (ch.1-ch.16) 00H-40H-7FH (Left-Center-Right), vv = panInitial Value = 40H (Center)

\* For Rhythm Parts, this is a relative adjustment of each Instrument's pan setting. \* Not received when Rx.PANPOT = OFF. (Initial value is ON)

### O Expression (Controller number 11)

2nd byte 3rd byte 0BH vvH Status

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n = MIDI channel number 0H-FH (ch.1-ch.16)

: 00H-7FH (0-127), Initial Value = 7FH (127)

- This adjusts the volume of a Part. It can be used independently from Volume messages. Expression messages are used for musical expression within a performance; e.g., expression pedal movements, crescendo and decrescendo.

  \* Not received when Rx.EXPRESSION = OFF. (Initial value is ON)

### O Hold 1 (Controller number 64)

2nd byte 3rd byte Status 40H

n = MIDI channel number 0H-FH (ch.1-ch.16)

: 00H-7FH (0-127) 0-63 = OFF, 64-127 = ON vv = Control value

Not received when Rx.HOLD1 = OFF. (Initial value is ON)

#### O Portamento (Controller number 65)

2nd byte 41H 3rd byte

n = MIDI channel number 0H-FH (ch.1-ch.16)

: 00H-7FH (0-127) 0-63 = OFF, 64-127 = ON vv = Control value

\* Not received when Rx.PORTAMENTO = OFF. (Initial value is ON)

# O Sostenuto (Controller number 66) 3rd byte

Status 2nd byte

n = MIDI channel number 0H-FH (ch.1-ch.16)

: 00H-7FH (0-127) 0-63 = OFF, 64-127 = ON vv = Control value

\* Not received when Rx.SOSTENUTO = OFF. (Initial value is ON)

# O Soft (Controller number 67)

2nd byte 3rd byte Status 43H

n = MIDI channel number 0H-FH (ch.1-ch.16)

: 00H-7FH (0-127) 0-63 = OFF, 64-127 = ON vv = Control value

\* Not received when Rx.SOFT = OFF. (Initial value is ON)

# O Portamento control (Controller number 84)

Status 2nd byte 3rd byte 54H

: 0H-FH (ch.1-ch.16) n = MIDI channel number : 00H-7FH (0-127)

\* A Note-on received immediately after a Portamento Control message will change continuously in pitch, starting from the pitch of the Source Note Number.

ously in pital, stanting form the pital of the bounce invalidation of the Source Note Number, this voice will continue sounding (i.e., legato) and will, when the next Note-on is received, smoothly change to the pitch of that Note-on.

The rate of the pitch change caused by Portamento Control is determined by the Portamento Time value.

## Example 1.

On MIDI	Description	Result
90 3C 40	Note on C4	C4 on
B0 54 3C	Portamento Control from C4	no change
90 40 40	Note on E4	glide from C4 to E4
80 3C 40	Note off C4	no change
80 40 40	Note off E4	E4 off
Evample 2		

Example 2.			
On MIDI	Description	Result	
B0 54 3C	Portamento Control from C4	no change	
90 40 40	Note on E4	E4 is played with glide from C4 to E4	
80 40 40	Note off E4	E4 off	

# O Effect 1 (Reverb Send Level) (Controller number 91)

Status 2nd byte 3rd byte 5BH

· 0H-FH (ch.1-ch.16) n = MIDI channel number

: 00H-7FH (0-127), Initial Value = 28H (40) vv = Reverb Send Level

\* This message adjusts the Reverb Send Level of each Part.

# O Effect 3 (Chorus Send Level) (Controller number 93)

Status 2nd byte 3rd byte
BnH 5DH vvH

n = MIDI channel number

0H-FH (ch.1-ch.16) : 00H-7FH (0-127), Initial Value = 00H (0) vv = Chorus Send Level

\* This message adjusts the Chorus Send Level of each Part.

# O Effect 4 (Delay Send Level) (Controller number 94)

Status 2nd byte 3rd byte BnH 5EH vvH

n = MIDI channel number · 0H - FH (ch.1 - ch.16)

: 00H - 7FH (0 - 127), Initial value = 00H (0) vv = Delay Send Level

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\* This message adjusts the Delay Send Level of each Part.

\* Some other GS devices may not recognize this message.
\* Delay cannot be used in MODE-2 (Double Module Mode).

# O NRPN MSB/LSB (Controller number 98, 99)

2nd byte 3rd byte Status BnH 63H mmH 62H

n = MIDI channel number : 0H-FH (ch.1-ch.16) mm = upper byte of the parameter number specified by NRPN II = lower byte of the parameter number specified by NRPN

\* NRPN can be received when Rx.NRPN = ON. "Rx.NRPN" is set to OFF by power-on INTHEN CAIR DE RECEIVER WHEN HAVINHEN E UN. HIS MINTHEN IS SET TO UPE DOWER-ON reset or by receiving "Turn General MIDI System On," and it is set to ON by "GS RESET."

The value set by NRPN will not be reset even if Program Change or Reset All Controllers is received.

# \*\*NRPN\*\*

The NRPN (Non Registered Parameter Number) message allows an extended range of control changes to be used. On the SC-88ST Pro, NRPN messages can be used to modify sound parameters etc.

To use these messages, you must first use NRPN messages (Controller number 98 and 99, their order does not matter) to specify the parameter to be controlled, and then use Data Entry messages to specify the value of the specified parameter. Once an NRPN para-Data Entry messages to specify the value of the specified parameter. Once an NRPN parameter has been specified, all Data Entry messages received on that channel will modify value of that parameter. To prevent accidents, it is recommended that you set RPN Null (RPN Number = 7FH/7FH) when you have finished setting the value of the desired parameter. Refer to Section 5. Supplementary material "Examples of actual MIDI messages" <Example 4> (page 123). On the SC-88ST Pro, Data entry LSB (Controller number 38) of NRPN is ignored, so it is no problem to send Data entry MSB (Controller number 6) only (without Data entry LSB). (without Data entry LSB).

On the SC-88ST Pro, NRPN can be used to modify the following parameters.

NRPN	Data entry	
MSB LSB	MSB	Function and range
01H 08H	mmH	Vibrato Rate (relative change)
		mm: 00H - 40H - 7FH (-64 - 0 - +63)
01H 09H	mmH	Vibrato Depth (relative change)
		mm: 00H - 40H - 7FH (-64 - 0 - +63)
01H 0AH	mmH	Vibrato Delay (relative change)
		mm: 00H - 40H - 7FH (-64 - 0 - +63)
01H 20H	mmH	TVF Cutoff Frequency (relative change)
		mm: 00H - 40H - 7FH (-64 - 0 - +63)
01H 21H	mmH	TVF Resonance (relative change)
		mm: 00H - 40H - 7FH (-64 - 0 - +63)
01H 63H	mmH	TVF&TVA Envelope Attack Time (relative change)
		mm: 00H - 40H - 7FH (-64 - 0 - +63)
01H 64H	mmH	TVF&TVA Envelope Decay Time (relative change)
		mm: 00H - 40H - 7FH (-64 - 0 - +63)
01H 66H	mmH	TVF&TVA Envelope Release Time (relative change)
		mm: 00H - 40H - 7FH (-64 - 0 - +63)
18H rrH	mmH	Drum Instrument Pitch Coarse (relative change)
		rr: Drum Instrument note number
		mm: 00H - 40H - 7FH (-64 - 0 - +63 semitone)
1AH rrH	mmH	Drum Instrument TVA Level (absolute change)
		rr: Drum Instrument note number
		mm: 00H - 7FH (0 - max)
1CH rrH	mmH	Drum Instrument Panpot (absolute change)
		rr: Drum Instrument note number
		mm: 00H, 01H - 40H - 7FH (random, left-center-right)
1DH rrH	mmH	Drum Instrument Reverb Send Level (absolute change)
		rr: Drum Instrument note number
		mm: 00H - 7FH (0 - max)
1EH rrH	mmH	Drum Instrument Chorus Send Level (absolute change)
		rr: Drum Instrument note number
		mm: 00H - 7FH (0 - max)
1FH rrH	mmH	Drum Instrument Delay Send Level (absolute change) [88]
		rr: Drum Instrument note number
		mm: 00H - 7FH (0 - max)

<sup>\*</sup> Parameters marked "relative change" will change relative to the preset value(40H). Even among different GS devices, "relative change" parameters may sometimes differ in the way the sound changes or in the range of change.

<sup>\*</sup> Parameters marked "absolute change" will be set to the absolute value of the parameter, regardless of the preset value.

It is not possible to simultaneously use both Chorus Send Level and Delay Send Level on a single Drum Instrument.

# O RPN MSB/LSB (Controller number 100, 101)

2nd byte 65H Status 3rd byte BnH 64H

n = MIDI channel number : 0H-FH (ch.1-ch.16) mm = upper byte of parameter number specified by RPN II = lower byte of parameter number specified by RPN

- Not received when Rx.RPN = OFF. (Initial value is ON)
- The value specified by RPN will not be reset even by messages such as Program Change or Reset All Controller.

# \*\*RPN\*\*

The RPN (Registered Parameter Number) messages are expanded control changes, and each function of an RPN is described by the MIDI Standard.

To use these messages, you must first use RPN (Controller number 100 and 101, their order does not matter) to specify the parameter to be controlled, and then use Data Entry messages (Controller number 6, 38) to specify the value of the specified parameter. Once an RPN parameter has been specified, all Data Entry messages received on that channel will modify the value of that parameter. To prevent accidents, it is recommended that you set RPN Null (RPN Number = 7FH/7FH) when you have finished setting the value of the desired parameter.Refer to Section 5. "Examples of actual MIDI messages" <Example 4> (page 123).

On the SC-88ST Pro, RPN can be used to modify the following parameters.

	_	
RPN	Data entry	
MSB LSB	MSB LSB	Explanation
00H 00H	mmH	Pitch Bend Sensitivity
		mm: 00H-18H (0-24 semitones), Initial Value = 02H (2 semitones)
		II: ignored (processed as 00H)
		specify up to 2 octaves in semitone steps
00H 01H	mmH IIH	Master Fine Tuning
		mm, II: 00 00H - 40 00H - 7F 7FH (-100 - 0 - +99.99 cents).
		Initial Value = 40 00H (± 0 cent)
		Refer to 5. Supplementary material, "About tuning" (page 124).
00H 02H	mmH	Master Coarse Tuning
		mm: 28H-40H-58H (-24 - 0 - +24 semitones),
		Initial Value = 40H (±0 semitone)
		II: ignored (processed as 00H)
7FH 7FH		RPN null
		Set condition where RPN and NRPN are unspecified. The data entry messages after set RPN null will be ignored. (No Data entry mes-
		sages are required after RPN null).
		Settings already made will not change.
		mm, II: ignored
		mm, ii. ignorea

# ● Program Change Status 2nd byte ррН

CnH

n = MIDI channel number : 0H-FH (ch.1-ch.16) pp = Program number : 00H-7FH (prog.1-prog.128)

- Not received when Rx.PROGRAM CHANGE = OFF. (Initial value is ON)
- \* After a Program Change message is received, the sound will change beginning with the next Note-on. Voices already sounding when the Program Change message was received will not be affected.
- \*For Drum Parts, Program Change message will not be received on lower byte of the bank numbers (the value of Control Number 0) is other than 0 (00H).

# Channel Pressure

Status 2nd byte DnH

n = MIDI channel number : 0H-FH (ch.1-ch.16) vv = Channel Pressure : 00H-7FH (0-127)

- Not received when Rx.CH PRESSURE (CAf) = OFF. (Initial value is ON)
- Not received when the control of the control of the control of the resulting effect is determined by System Exclusive messages. With the initial settings there will be no effect.

# Pitch Bend Change

2nd byte 3rd byte Status EnH IIH

n = MIDI channel number

: 0H-FH (ch.1-ch.16) : 00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191) mm, II = Pitch Bend value

- \* Not received when Rx.PITCH BEND = OFF. (Initial value is ON)
- \* The resulting effect is determined by System Exclusive messages. With the initial settings the effect is Pitch Bend.

# ■ Channel Mode Messages

## All Sounds Off (Controller number 120)

Status 2nd byte 3rd byte

n = MIDI channel number : 0H-FH (ch.1-ch.16)

\* When this message is received, all currently-sounding notes on the corresponding channel will be turned off immediately.

# • Reset All Controllers (Controller number 121)

Status 2nd byte 3rd byte BnH 79H 00H

n = MIDI channel number : 0H-FH (ch.1-ch.16)

When this message is received, the following controllers will be set to their reset values.

Controller	Reset value
Pitch Bend Change	±0 (center)
Polyphonic Key Pressure	0 (off)
Channel Pressure	0 (off)
Modulation	O (off)
Expression	127 (max)
Hold 1	0 (off)
Portamento	0 (off)
Sostenuto	O (off)
Soft	0 (off)
RPN	unset; previously set data will not change
NRPN	unset; previously set data will not change

# ● All Notes Off (Controller number 123)

Status 2nd byte 3rd byte

n = MIDI channel number : 0H-FH (ch.1-ch.16)

\* When All Notes Off is received, all notes on the corresponding channel will be turned off. However if Hold 1 or Sostenuto is ON, the sound will be continued until these are turned off.

# OMNI OFF (Controller number 124)

Status 2nd byte 3rd byte BnH 7CH 00H

n = MIDI channel number : 0H-FH (ch.1-ch.16)

\* The same processing will be carried out as when All Notes Off is received.

# OMNI ON (Controller number 125)

Status 2nd byte 3rd byte BnH

n = MIDI channel number : 0H-FH (ch.1-ch.16)

\* The same processing will be carried out as when All Note Off is received. OMNI ON will not

# MONO (Controller number 126)

Status 2nd byte 3rd byte 7EH mmH BnH

n = MIDI channel number 0H-FH (ch.1-ch.16) mm = mono number : 00H-10H (0-16)

\* The same processing will be carried out as when All Sounds Off and All Notes Off is received, and the corresponding channel will be set to Mode 4 (M = 1) regardless of the value

# POLY (Controller number 127)

Status BnH 2nd byte 3rd byte 7FH 00H

n = MIDI channel number : 0H-FH (ch.1-ch.16)

The same processing will be carried out as when All Sounds Off and All Notes Off is received, and the corresponding channel will be set to Mode 3.

# System Realtime Message

#### Active Sensing

Status

\* When Active Sensing is received, the SC-88ST Pro will begin monitoring the intervals of all further messages. While monitoring, if the interval between messages exceeds 420 ms, the same processing will be carried out as when All Sounds Off, All Notes Off and Reset All Controllers are received, and message interval monitoring will be halted.

# ■ System Exclusive Message

Status F0H	Data byte iiH, ddH,,eeH	<u>Status</u> F7H
F0H ii = ID nu dd,,ee F7H		: System Exclusive Message status : an ID number (manufacturer ID) to indicate the manufacturer whose Exclusive message this is. Roland's manufacturer ID is 41H. ID numbers 7EH and 7FH are extensions of the MIDI standard; Universal Non-realtime Messages (7EH) and Universal Realtime Messages (7FH). : 00H-7FH (0-127) : EOX (End Of Exclusive)

The System Exclusive Messages received by the SC-88ST Pro are; messages related to mode settings, Universal Realtime System Exclusive messages, Data Requests (RQ1).

# • System exclusive messages related to mode settings

◆ System exclusive messages related to mode settings
These messages are used to initialize a device to GS or General MIDI mode, or change the operating mode. When creating performance data, a "Turn General MIDI System On" message should be inserted at the beginning of a General MIDI score, and a "GS Reset" message at the beginning of music files for GS. In the case of data for the SC-88 and for the SC-88T Pro, we recommend that "System Mode Set" be placed at the beginning of the song data. Each song should contain only one mode message as appropriate for the type

of data. (Do not insert two or more mode setting messages in a single sorg.)
"Turn General MIDI System On" use Universal Non-realtime Message format. "System Mode Set" and "GS Reset" use Roland system exclusive format "Data Set 1 (DT1)."

# ○ Turn General MIDI System On

This is a command message that resets the internal settings of the SC-88ST Pro to the General MIDI initial state (General MIDI System-Level 1). After receiving this message the SC-88ST Pro, will automatically be set to the proper condition for correctly playing a General MIDI score

Status	<u>Data byte</u>	Status
F0H	7EH, 7FH, 09H, 01H	F7H
Byte F0H 7EH 7FH 09H 01H F7H	Explanation Exclusive status ID number (Universal Non-realtime Message) Device ID (Broadcast) Sub ID#1 (General MIDI Message) Sub ID#2 (General MIDI On) EOX (End Of Exclusive)	

- \* When this message is received, Rx.BANK SELECT will be OFF and Rx.NRPN will be
- There must be an interval of at least 50 ms between this message and the next message.

# OGS reset

GS Reset is a command message that resets the internal settings of a device to the GS initial state. This message appears at the beginning of music files for GS, and a GS device tal state. This message appears at the beginning of missiones and St, and a So device that receives this message will automatically be set to the proper state to correctly playback music files for GS. If the SC-88ST Pro is in MODE-1 (single module mode) all 32 Parts will be initialized. If in MODE-2 (double module mode), only the corresponding 16 Parts will be initialized. In MODE-2 if the receiving MIDI connector for each Part has been changed, this may affect playback from the other MIDI connector. In this case, first perform initialization (page 73) before using this command.

Status	Data byte	Status
FOH	41H, 10H, 42H, 12H, 40H, 00H, 7FH, 00H, 41H	F7H

Byte	Explanation
FOH	Exclusive status
41H	ID number (Roland)
10H	Device ID
42H	Model ID (GS)
12H	Command ID (DT1)
40H	Address MSB
00H	Address
7FH	Address LSB
00H	Data (GS reset)
41H	Checksum
E7H	FOX (End Of Exclusive)

- When this message is received, Rx.NRPN will be ON.
- \* There must be an interval of at least 50 ms between this message and the next.

System Mode Set is a message that sets the SC-88ST Pro operating mode to MODE-1 (single module mode) or MODE-2 (double module mode). When this message is received, the operating mode will be set, and at the same time all internal parameters (except for the map settings of each Part) will be reset to the initial state.

Status F0H	<u>Data byte</u> 41H, 10H, 42H, 12	H, 00H, 00H, 7FH, ddH, sumH	Status F7H
Byte	Explanation		
FOH	Exclusive status		
41H	ID number	(Roland)	
10H	Device ID		
42H	Model ID	(GS)	
12H	Command ID	(DT1)	
00H	Address MSB		
00H	Address		
7FH	Address LSB		
ddH	Data	00H (MODE-1), 01H (MODE-	2)
sumH	Checksum	01H (MODE-1), 00H (MODE-	2)
F7H	EOX	(End Of Exclusive)	

- \* When this message is received, Rx.NRPN will be set ON.
- \* There must be an interval of at least 50 ms between this message and the next.

Status

# Universal Realtime System Exclusive Messages

# O Master volume

Status	Data byte	Status
FOH	7FH, 7FH, 04H, 01H, IIH, mmH	F7H
Byte	Explanation	
FOH	Exclusive status	
7FH	ID number (universal realtime message)	
7FH	Device ID (Broadcast)	
04H	Sub ID#1 (Device Control messages)	
01H	Sub ID#2 (Master Volume)	
IIH	Master volume lower byte	
mmH	Master volume upper byte	
F7H	EOX (End Of Exclusive)	

<sup>\*</sup> The lower byte (IIH) of Master Volume will be handled as 00H.

# ● Universal Non-realtime System Exclusive Messages

○ Identi		[Pro]	
Status	Data byte	Status	
FOH	7EH, dev, 06H, 01H	F7H	
Byte	Explanation		
FOH	Exclusive status		
7EH	ID number (Universal Non-realtime Message)		
10H	Device ID		
06H	Sub ID#1 (General Information)		
01H	Sub ID#2 (Identity Request)		
F7H	EOX (End Of Exclusive)		

## Data transmission

The SC-88ST Pro can use Exclusive messages to transmit internal settings to other devices. There are two types of Exclusive data transmitsion; Individual Parameter Transmission (page 113) in which single parameters are transmitted one by one, and Bulk Dump Transmission (page 121) in which a large amount of data is transmitted at once. The exclusive message used when transmitting music files for GS format has a model ID of 42H and a device ID of 10H.

# O Request data 1

This message requests the other device to send data. The Address and Size determine the type and amount of data to be sent. There are two types of request; Individual Parameter Request which requests data for an individual parameter, and Bulk Dump Request which requests data for an individual parameter, and Bulk Dump Request which requests a large amount of data at once. In either case, the "Data Request 1 (RQ1)" message format is used, and the Address and Size included in the message determine the type and amount of data that is desired.

For Individual Parameter Request, refer to "3. Individual Parameter Transmission" (page

113).

For Bulk Dump Request, refer to "4. Bulk Dump" (page 121).

When a Data Request message is received, if the device is ready to transmit data and if the address and size are appropriate, the requested data will be transmitted as a "Data Set 1 (DT1)" message. If not, nothing will be transmitted.

Status F0H	Data byte 41H, 10H, 42H, 11	H, aaH, bbH, ccH, ssH, ttH, uuH, sum	Status F7H
Byte FOH 41H 10H 42H 11H aaH bbH ccH ssH ttH uuH sum	Address Address LSB Size MSB Size Size LSB Checksum	(Roland)  (GS) (RQ1)  upper byte of the starting address of the rimiddle byte of the starting address of the ri	requested data
F7H	EOX	(End Of Exclusive)	

<sup>\*</sup> The amount of data that can be transmitted at once time will depend on the type of data, and data must be requested using a specific starting address and size. Refer to the Address and Size listed in Section 3 (page 113).

\* Regarding the checksum please refer to Section 5 (page 124).

# DT1(12H)

This is the message that actually performs data transmission, and is used when you wish to transmit the data

Status F0H	<u>Data byte</u> 41H, 10H, 42H, 12H, aaH, bbH, ccH, ddH, eeH, sum F7H
Byte F0H 41H 10H 42H 12H aaH bbH ccH ddH	Explanation Exclusive status ID number Device ID Model ID Command ID Address MSB Address Address LSB Data  (Roland) (GS) (DT1) Address of the transmitted data (Indeed byte of the starting address of the transmitted data)
: eeH sum F7H	: Data Checksum EOX (End Of Exclusive)

<sup>\*</sup> The amount of data that can be transmitted at one time depends on the type of data, and data can be received only from the specified starting address and size. Refer to the Address and Size given in Section 3 (page 113).

# Section 2. Transmit data

# ■ System Realtime Message

# Active sensing

Status FEH

\* This will be transmitted constantly at intervals of approximately 250 ms.

## ■ System exclusive messages

"Identity Reply" and "Data Set 1 (DT1)" are the only System Exclusive messages transmitted by the SC-88ST Pro.

When an appropriate "Identity Request Message" and "Data Request 1 (RQ1)" message are received, the requested internal data will be transmitted.

○ Identi	ty Reply	[Pro]
Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 42H, 00H, 00H, 04H, ssH, ssH, ssH, ssH	F7H
Byte	Explanation	
FOH	Exclusive status	
7EH	ID number (Universal Non-realtime Message)	
10H	Device ID	
06H	Sub ID#1 (General Information)	
02H	Sub ID#2 (Identity Reply)	
41H	ID number (Roland)	
42H	Device family code (LSB)	
00H	Device family code (MSB)	
00H	Device family number code (LSB)	
04H	Device family number code (MSB)	
ssH	Software revision level	
F7H	EOX (End of Exclusive)	

Reply the message by the unique device ID (10H) when the device has received the "Identity Request Message" in the Broadcast.

○ <b>Data :</b> <u>Status</u> F0H	s <b>et 1</b> <u>Data byte</u> 41H, 10H, 42H, 12H, aaH, bbH, ccH, ddH, eeH, sum	DT1 (12H) Status F7H
Byte F0H 41H 10H 42H 12H aaH	Explanation Exclusive status ID number (Roland) Device ID Model ID (GS) Command ID (DT1)	
bbH ccH ddH	Address MSB : upper byte of the starting address of the data middle byte of the starting address of the data clares. LSB : lower byte of the starting address of the data the actual data to be sent. Multiple bytes of din order starting from the address.	to be sent o be sent.
: eeH sum F7H	: Data Checksum EOX (End Of Exclusive)	

<sup>\*</sup> The amount of data that can be transmitted at one time depends on the type of data, and data will be transmitted from the specified starting address and size. Refer to the Address and Size given in Section 3 (page 113).

There are two ways in which GS data is transmitted: Individual Parameter Transmission (Section 3 page 113) in which individual parameters are transmitted one by one, and Bulk Dump Transmission (Section 4 page 121) in which a large amount of data is transmitted at

Data larger than 128 bytes must be divided into packets of 128 bytes or less. If "Data Set 1" is transmitted successively, there must be an interval of at least 40 ms between packets.

Regarding the checksum please refer to section 5 (page 124).

<sup>\*</sup> Data larger than 128 bytes will be divided into packets of 128 bytes or less, and each packet will be sent at an interval of about 40 ms.

\* Regarding the checksum please refer to section 5 (page 124).

# Section 3. Individual Parameter Transmission (Model ID=42H)

Individual Parameter Transmission transmits data (or requests data) for one parameter as

individual Parameter Transmission transmits data (or requests data) for one parameter as one exclusive message (one packet of "F0.... F7"). In Individual Parameter Transmission, you must use the Address and Size listed in the following "Parameter Address Map". Addresses marked at "#" cannot be used as starting addresses.

# ■ Address Block map

The Address map for Individual Parameter Transmission is as follows.

# <Model ID = 42H>

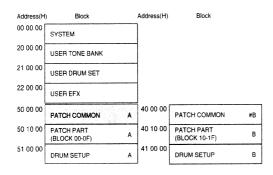
# ● Port-A

Address(H	) Block		Address(H)	Block
00 00 00	SYSTEM			
20 00 00	USER TONE BANK			
21 00 00	USER DRUM SET			
22 00 00	USER EFX			
40 00 00	PATCH COMMON	#A	50 00 00	PATCH COMMON B
40 10 00	PATCH PART (BLOCK 00-0F)	Α	50 10 00	PATCH PART (BLOCK 10-1F)
41 00 00	DRUM SETUP	Α	51 00 00	DRUM SETUP B

- \* The blocks displayed in gray cannot be accessed in Mode-1 (Single Module Mode).

  \* Blocks listed as "#A" are parameter blocks which are common to the entire device in Mode-1, and valid only for Parts A01 A16 in Mode-2 (Double Module Mode).

# ● Port-B



- \* The blocks displayed in gray cannot be accessed in Mode-1 (Single Module Mode).

  \* Blocks listed as "#B" are parameter blocks which are common to the entire device in Mode-1, and valid only for Parts B01 B16 in Mode-2 (Double Module Mode).

# ■ Parameter address map

This map indicates address, size, Data (range), Parameter, Description, and Default Value of parameters which can be transferred using "Request data 1 (RQ1)" and "Data set 1 (DT1)". All the numbers of address, size, Data, and Default Value are indicated in 7-bit Hexadecimal-form. Numbers in the explanatory column are given in decimal notation.

The parameters at address 5" " are not given in this map. The parameters for address 5" " are the same format as those at at address 4" " ".

# System Parameters [88]

Parameters affecting the entire unit, such as how the two MIDI IN connectors will function, are called System Parameters. System parameters will not be reset even when "GS Reset" or "GM System On" messages are received.

# <MODEL ID = 42H>

Address(H)	Size(H)	Data(H)	Parameter	Description	Default(H)	Description
00 00 7F	00 00 01	00 - 01	SYSTEM MODE SET	[88]	00	MODE1
				00: MODE-1 (Single me	odule mode)	
				01: MODE-2 (Double m	iodule mode)	
				(Rx. only)	· ·	
* Refer to "Sy	stem exclusive	messages related to	Mode settings" (page 111).			
			CHANNEL MSG RX PORT	[88]		
00 01 00	00 00 01	00 - 01	BLOCK00	PORT A - B	00	PORT A
				I OITI A - B	00	101117
1	:	:	:	TOMT A-B	:	101117
: 00 01 0F	: 00 00 01	: 00 - 01	: BLOCK0F	PORT A - B	: 00	PORT A
: 00 01 0F 00 01 10	: 00 00 01 00 00 01	: 00 - 01 00 - 01	:		1	
			: BLOCK0F	PORT A - B	:	PORT A

<sup>\*</sup> You can modify the receiving MIDI port at which channel messages will be received for each BLOCK. We suggest that normally you use PORT A for BLOCK01-0F, and PORT B for BLOCK10-

# O Patch Common parameters

In MODE-1 (Single module mode) the SC-88ST Pro functions as a single sound source module with 32 Parts. In MODE-2 (Double module mode) it functions as two sound source modules with 16 Parts each. The parameters common to all Parts in each module are called Patch Common parameters.

	· ·						
Address(H)	Size(H)	Data(H)	Parameter		Description	Default Value (H)	Description
40 00 00	00 00 04	0018 - 07E8	MASTER TUNE		-100.0 - +100.0 [cent]	00 04 00 00	0 [cent]
40 00 01#					Use nibblized data.		
40 00 02#							
40 00 03#							
* Refer to sec	ction 5. Supple	mentary material, "Abou	it tuning" (page 124).				
40 00 04	00 00 01	00 - 7F	MASTER VOLUME		0 - 127	7F	127
					(= F0 7F 7F 04 01 00 vv F7 )		
40 00 05	00 00 01	28 - 58	MASTER KEY-SHIFT		-24 - +24 [semitones]	40	0[semitones]
40 00 06	00 00 01	01 - 7F	MASTER PAN		-63 (LEFT) - +63 (RIGHT)	40	0 (CENTER)
40 00 7F	00 00 01	00	MODE SET		00 = GS Reset		
					(Rx. only)		
* Refer to "Sy	stem exclusive	messages related to M	lode settings" (page 111).				
40 01 30	00 00 01	00 - 07	REVERB MACRO		00: Room 1	04	Hall 2
					01: Room 2	• •	Tidil E
					02: Room 3		
					03: Hall 1		
					04: Hall 2		
					05: Plate		
					06: Delay		
					07: Panning Delay		
40 01 31	00 00 01	00 - 07	REVERB CHARACTER		0 - 7	04	4
40 01 32	00 00 01	00 - 07	REVERB PRE-LPF		0 - 7	00	0
40 01 33	00 00 01	00 - 7F	REVERB LEVEL		0 - 127	40	64
40 01 34	00 00 01	00 - 7F	REVERB TIME		0 - 127	40	64
40 01 35	00 00 01	00 - 7F	REVERB DELAY FEEDBACK		0 - 127	00	0
40 01 37	00 00 01	00 - 7F	REVERB PREDELAY TIME	[88]	0 - 127[ms]	00	0

<sup>\*</sup> REVERB MACRO is a macro parameter that allows global setting of reverb parameters. When you select the reverb type with REVERB MACRO, each reverb parameter will be set to the most suitable value.

\* REVERB CHARACTER is a parameter that changes the reverb algorithm. The value of REVERB CHARACTER corresponds to the REVERB MACRO of the same number.

\* in MODE-2 (Double module mode), REVERB PREDELAY TIME cannot be used.

<sup>1</sup>F. (In this case there is no need to change the setting.)
\* Refer to page 116 for details of each BLOCK.

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
40 01 38	00 00 01	00 - 07	CHORUS MACRO	00: Chorus 1	02	Chorus 3
				01: Chorus 2		
				02: Chorus 3		
				03: Chorus 4		
				04: Feedback Chorus		
				05: Flanger		
				06: Short Delay		
				07: Short Delay(FB)		
40 01 39	00 00 01	00 - 07	CHORUS PRE-LPF	0-7	00	0
40 01 3A	00 00 01	00 - 7F	CHORUS LEVEL	0-127	40	64
40 01 3B	00 00 01	00 - 7F	CHORUS FEEDBACK	0-127	08	8
40 01 3C	00 00 01	00 - 7F	CHORUS DELAY	0-127	50	80
40 01 3D	00 00 01	00 - 7F	CHORUS RATE	0-127	03	3
40 01 3E	00 00 01	00 - 7F	CHORUS DEPTH	0-127	13	19
40 01 3F	00 00 01	00 - 7F	CHORUS SEND LEVEL TO REVERB	0-127	00	0
40 01 40	00 00 01	00 - 7F	CHORUS SEND LEVEL TO DELAY[88]	0-127	00	0

<sup>\*</sup> CHORUS MACRO is a macro parameter that allows global setting of chorus parameters. When you use CHORUS MACRO to select the chorus type, each chorus parameter will be set to the most suitable value.
• In MODE-2 (Double module mode), CHORUS SEND LEVEL TO DELAY cannot be used.

40 01 50	00 00 01	00 - 09	DELAY MACRO	[88]	00: Delay 1 01: Delay 2 02: Delay 3 03: Delay 4 04: Pan Delay 1 05: Pan Delay 2 06: Pan Delay 3 07: Pan Delay 4 08: Delay to Reverb 09: Pan Repeat	00	Delay1
40 01 51	00 00 01	00 - 07	DELAY PRE-LPF	[88]		00	0
40 01 52	00 00 01	01 - 73	DELAY TIME CENTER	[88]	0.1ms - 1sec	61	340
40 01 53	00 00 01	01 - 78	DELAY TIME RATIO LEFT	[88]	4 - 500%	01	4
40 01 54	00 00 01	01 - 78	DELAY TIME RATIO RIGHT	[88]	4 - 500%	01	4
40 01 55	00 00 01	00 - 7F	DELAY LEVEL CENTER	[88]	0 - 127	7F	127
40 01 56	00 00 01	00 - 7F	DELAY LEVEL LEFT	[88]	0 - 127	00	0
40 01 57	00 00 01	00 - 7F	DELAY LEVEL RIGHT	[88]	0 - 127	00	0
40 01 58	00 00 01	00 - 7F	DELAY LEVEL	[88]	0 - 127	40	64
40 01 59	00 00 01	00 - 7F	DELAY FEEDBACK	[88]		50	+16
40 01 5A	00 00 01	00 - 7F	DELAY SENDLEVEL TO REVER	B <b>[88</b> ]	0 - 127	00	0

<sup>\*</sup> DELAY MACRO is a macro parameter that allows global setting of delay parameters. When you use DELAY MACRO to select the delay type, each delay parameter will be set to the most suit-

able value.
\* The relation between the DELAY TIME CENTER value and the actual delay time is as follows.

DELAY TIME	Time Range[ms]	Resolution[ms]	DELAY TIME	Time Range[ms]	Resolution[ms]
01 - 14	0.1 - 2.0	0.1	46 - 50	50.0 - 100.0	5.0
14 - 23	2.0 - 5.0	0.2	50 - 5A	100.0 - 200.0	10.0
23 - 2D	5.0 - 10.0	0.5	5A - 69	200.0 - 500.0	20.0
2D - 37	10.0 - 20.0	1.0	69 - 73	500.0 - 1000.0	50.0
37 - 46	20.0 - 50.0	2.0			

<sup>\*</sup> DELAY TIME RATIO LEFT and DELAY TIME RATIO RIGHT specify the ratio in relation to DELAY TIME CENTER. The resolution is 100/24(%).
\* In MODE-2 (Double module mode), Delay cannot be used.

40 02 00	00 00 01	00 - 01	EQ LOW FREQ.	[88] 200Hz, 400Hz	00	200Hz
40 02 01	00 00 01	34 - 4C	EQ LOW GAIN	[88] -12 - +12dB	40	0
40 02 02	00 00 01	00 - 01	EQ HIGH FREQ.	[88] 3kHz, 6kHz	00	3kHz
40 02 03	00 00 01	34 - 4C	EQ HIGH GAIN	[88] -12 - +12dB	40	0

<sup>\*</sup> In MODE-2 (Double module mode), EQ (Equalizer) cannot be used.

# **Appendix**

Address(H)	Size(H)	Data(H)	Parameter		Default Value (H)	Description
40 03 00	00 00 02	00 - 7F	EFX TYPE	[Pro]	00 00	00: Thru
40 03 01#						
40 03 03	00 00 01	00 - 7F	EFX PARAMETER 1	[Pro]		
40 03 04	00 00 01	00 - 7F	EFX PARAMETER 2	[Pro]		
40 03 05	00 00 01	00 - 7F	EFX PARAMETER 3	[Pro]		
40 03 06	00 00 01	00 - 7F	EFX PARAMETER 4	[Pro]		
40 03 07	00 00 01	00 - 7F	EFX PARAMETER 5	[Pro]		
40 03 08	00 00 01	00 - 7F	EFX PARAMETER 6	[Pro]		
40 03 09	00 00 01	00 - 7F	EFX PARAMETER 7	[Pro]		
40 03 0A	00 00 01	00 - 7F	EFX PARAMETER 8	[Pro]		
40 03 0B	00 00 01	00 - 7F	EFX PARAMETER 9	[Pro]		
40 03 0C	00 00 01	00 - 7F	EFX PARAMETER 10	[Pro]		
40 03 0D	00 00 01	00 - 7F	EFX PARAMETER 11	[Pro]		
40 03 0E	00 00 01	00 - 7F	EFX PARAMETER 12	[Pro]		
40 03 0F	00 00 01	00 - 7F	EFX PARAMETER 13	[Pro]		
40 03 10	00 00 01	00 - 7F	EFX PARAMETER 14	[Pro]		
40 03 11	00 00 01	00 - 7F	EFX PARAMETER 15	[Pro]		
40 03 12	00 00 01	00 - 7F	EFX PARAMETER 16	[Pro]		
40 03 13	00 00 01	00 - 7F	EFX PARAMETER 17	[Pro]		
40 03 14	00 00 01	00 - 7F	EFX PARAMETER 18	[Pro]		
40 03 15	00 00 01	00 - 7F	EFX PARAMETER 19	[Pro]		
40 03 16	00 00 01	00 - 7F	EFX PARAMETER 20	[Pro]		
10 00 10	55 55 61	00 /1	LI X I ATAWETER 20	[1 10]		

<sup>\*</sup> Reading EFX TYPE and EFX PARAMETER please refer to page 35, 98

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
40 03 17	00 00 01	00 - 7F	EFX SEND LEVEL TO REVERB [Pr	o] 0-127	28	40
40 03 18	00 00 01	00 - 7F	EFX SEND LEVEL TO CHORUS [Pr	o] 0-127	00	0
40 03 19	00 00 01	00 - 7F	EFX SEND LEVEL TO DELAY [Pr	o] 0-127	00	0
40 03 1B	00 00 01	00 - 7F	EFX CONTROL SOURCE1 [Pr	o] Off, CC1-95, CAf, Bend	00	Off
40 03 1C	00 00 01	00 - 7F	EFX CONTROL DEPTH1 [Pr	0] -100 - 0 - +100 [%]	40	0 (%)
40 03 1D	00 00 01	00 - 7F	EFX CONTROL SOURCE2 [Pr	o] Off, CC1 - 95, CAf, Bend	00	Off
40 03 1E	00 00 01	00 - 7F	EFX CONTROL DEPTH2 [Pr	0] -100 - 0 - +100 [%]	40	0 (%)
40 03 1F	00 00 01	00 - 7F	EFX SEND EQ SWITCH [Pr	o] OFF/ON	01	ON

<sup>\*</sup> EFX TYPE is a macro parameter which sets various Insertion Effect parameters as a group. When you use EFX TYPE to select an Insertion Effect type, the various effect parameters will be set to appropriate values.

\* In MODE:2 (Double module mode), EFX SEND TO DELAY and EFX SEND EQ SWITCH cannot be used.

\* In the case of Mode 2 (Double Module Mode), the Insertion effect cannot be used for Parts with a CHANNEL MSG RX PORT (page 114) setting of PORT B.

# O Patch Part parameters

O Patch Part parameters

The SC-88ST Pro has 16 Parts in Group A and 16 Parts in Group B. Parameters that can be set individually for each Part are called Patch Part parameters.

If you use exclusive messages to set Patch Part parameters, specify the address by Block number rather than Part Number (normally the same number as the MIDI channel). The Block number can be specified as one of 16 blocks, from O(H) to F(H).

To specify a Part of group A, use the Block number corresponding to the Part and specify an address of 40 \*\* \*\* via PORT A (normally MIDI IN A).

To specify a Part of group B, use the Block number corresponding to the Part and specify an address of 40 \*\* \*\* via PORT B (normally MIDI IN B).

To specify a Part of either group A or B from a single PORT, specify an address of 40 \*\* \*\* for group A Parts or an address of 50 \*\* \*\* for group B Parts. In other words, when specifying Parts of the opposite side as the PORT being used, use addresses 50 \*\* \*\*.

The relation between Part number and Block number is as follows.

xBLOCK NUMBER (0 - F),	Part 1	(default MIDIch = 1)	x=1
	Part 2	(default MIDIch = 2)	x=2
	:	:	:
	Part 9	(default MIDIch = 9)	x=9
	Part10	(default MIDIch =10)	x=0
	Part11	(default MIDIch =11)	x=A
	Part12	(default MIDIch =12)	x=B
	:	:	:
	Part16	(default MIDIch =16)	x=F

In the following map, the control numbers of the control changes are indicated as CC#.

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
40 1x 00	00 00 02	00 - 7F	TONE NUMBER	CC#00 VALUE 0 - 127	00	0
40 1x 01#		00 - 7F		P.C. VALUE 1 - 128	00	1
40 1x 02	00 00 01	00 - 10	Rx. CHANNEL	1 - 16, OFF		Same as the Part Number
40 1x 03	00 00 01	00 - 01	Rx. PITCH BEND	OFF / ON	01	ON
40 1x 04	00 00 01	00 - 01	Rx. CH PRESSURE(CAf)	OFF / ON	01	ON
40 1x 05	00 00 01	00 - 01	Rx. PROGRAM CHANGE	OFF / ON	01	ON
40 1x 06	00 00 01	00 - 01	Rx. CONTROL CHANGE	OFF / ON	01	ON
40 1x 07	00 00 01	00 - 01	Rx. POLY PRESSURE(PAf)	OFF / ON	01	ON
40 1x 08	00 00 01	00 - 01	Rx. NOTE MESSAGE	OFF / ON	01	ON
40 1x 09	00 00 01	00 - 01	Rx. RPN	OFF / ON	01	ON
40 1x 0A	00 00 01	00 - 01	Rx. NRPN	OFF / ON	00(01*)	OFF(ON*)

<sup>\*</sup> Rx.NRPN is set to OFF by power-on or by receving "Turn General MIDI System On", and it will be set ON when "GS RESET" is received.

		_	_			
Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
40 1x 0B	00 00 01	00 - 01	Rx. MODULATION	OFF / ON	01	ON
40 1x 0C	00 00 01	00 - 01	Rx. VOLUME	OFF / ON	01	ON
40 1x 0D	00 00 01	00 - 01	Rx. PANPOT	OFF / ON	01	ON
40 1x 0E	00 00 01	00 - 01	Rx. EXPRESSION	OFF / ON	01	ON
40 1x 0F	00 00 01	00 - 01	Rx. HOLD1	OFF / ON	01	ON
40 1x 10	00 00 01	00 - 01	Rx. PORTAMENTO	OFF / ON	01	ON
40 1x 11	00 00 01	00 - 01	Rx. SOSTENUTO	OFF / ON	01	ON
40 1x 12	00 00 01	00 - 01	Rx. SOFT	OFF / ON	01	ON
40 1x 13	00 00 01	00 - 01	MONO/POLY MODE	Mono / Poly (=CC# 126 01 / CC# 127	01 00)	Poly
40 1x 14	00 00 01	00 - 02	ASSIGN MODE	0 = SINGLE	SC-88/Native MAP	
				1 = LIMITED-MULTI	01	LIMITED-MULTI
				2 = FULL-MULTI	SC-55 MAP	
					00 at x=0	SINGLE (Drum Part)
					01 at x≠0	LIMITED-MULTI (Normal Part)

<sup>\*</sup> ASSIGN MODE is the parameter that determines how voice assignment will be handled when sounds overlap on identical note numbers in the same channel (i.e., repeatedly struck notes). This is initialized to a mode sultable for each Part, so for general purposes there is no need to change this.

40 1x 15 00 00 01 00 - 02 USE FOR RHYTHM PART 0 = OFF 00 at x≠0 OFF (Normal Part)
1 = MAP1 01 at x=0 MAP1 (Drum Part)
2 = MAP2

\* This parameter sets the Drum Map of the Part used as the Drum Part. The SC-88ST Pro can simultaneously (in different Parts) use up to two Drum Maps (MAP1, MAP2). With the initial settings, Part10 (MIDI CH=10, x=0) is set to MAP1 (1), and other Parts are set to normal instrumental Parts (OFF(0)).

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
40 1x 16	00 00 01	28 - 58	PITCH KEY SHIFT	-24 - +24 [semitones]	40	0 [semitones]
40 1x 17	00 00 02	08 - F8	PITCH OFFSET FINE	-12.0 - +12.0 [Hz]	08 00	0 [Hz]
40 1x 18#				Use nibblized data.		

\* PITCH OFFSET FINE allows you to alter, by a specified frequency amount, the pitch at which notes will sound. This parameter differs from the conventional Fine Tuning (RPN #1) parameter in that the amount of frequency alteration (in Hertz) will be identical no matter which note is played. When a multiple number of Parts, each of which has been given a different setting for PITCH OFFSET FINE, are sounded by means of an identical note number, you can obtain a Celeste effect.

40 1x 19	00 00 01	00 - 7F	PART LEVEL	0 - 127 (=CC# 7)	64	100
40 444	00.00.01	00 - 7F	VELOCITY SENSE DEPTH	0 - 127	40	64
40 1x 1A	00 00 01	00 - 7F	VELOCITY SENSE DEFTH	0 - 127	40	64
40 1x 1B	00 00 01		PART PANPOT		40	0 (CENTER)
40 1x 1C	00 00 01	00 - 7F	PART PANPOT	-64(RANDOM),	40	O (OLIVIEII)
				-63(LEFT) - +63(RIGHT)		
				(=CC# 10, except RANDON		0.1
40 1x 1D	00 00 01	00 - 7F	KEYBOARD RANGE LOW	(C-1) - (G9)	00	C-1
40 1x 1E	00 00 01	00 - 7F	KEYBOARD RANGE HIGH	(C-1) - (G9)	7F	G 9
40 1x 1F	00 00 01	00 - 5F	CC1 CONTROLLER NUMBER	0 - 95	10	16
40 1x 20	00 00 01	00 - 5F	CC2 CONTROLLER NUMBER	0 - 95	11	17
40 1x 21	00 00 01	00 - 7F	CHORUS SEND LEVEL	0 - 127	00	0
				(=CC# 93)		
40 1x 22	00 00 01	00 - 7F	REVERB SEND LEVEL	0 - 127	28	40
				(=CC# 91)		
				,		
40 1x 23	00 00 01	00 - 01	Rx.BANK SELECT	OFF / ON	01(00*)	ON(OFF*)
10 1/120		••			, ,	
* Rx.NRPN is	set to OFF by p	ower-on or by receving "Tu	rn General MIDI System On", and it w	vill be set ON when "GS RESET" is	received.	
		, ,	ŕ			
40 1x 24	00 00 01	00 - 01	Rx.BANK SELECT LSB	[88] OFF/ON	01	ON
* When Rx.B/	ANK SELECT L	SB = OFF, Bank Select LSB	(Bn 20 II) will be treated as 00H rega	rdless of its value.		
40 1x 2A	00 00 02	00 00 - 40 00 - 7F 7F	PITCH FINE TUNE	[88] -100 - 0 - +100 [cent]	40 00	0
				(= RPN#1)		
40 1x 2B#				, ,		
10 17 20"						
40 1x 2C	00 00 01	00 - 7F	DELAY SEND LEVEL	[88] 0-127	00	0
40 17 20	00 00 01	33		(=CC# 94)		

<sup>\*</sup> In MODE-2 (Double module mode), DELAY SEND LEVEL cannot be used.

Address(H)	Size(H)	Data(H)	Parameter		Description	Default Value (H)	Description
1x 30	00 00 01	00 - 7F	TONE MODIFY1	[88]	-64 - +63	40	0
			Vibrato Rate		(=NRPN# 8)		
1x 31	00 00 01	00 - 7F	TONE MODIFY2	[88]	-64 - +63	40	0
			Vibrato Depth		(=NRPN# 9)		
1x 32	00 00 01	00 - 7F	TONE MODIFY3	[88]	-64 - +63	40	0
			TVF Cutoff Freq.		(=NRPN# 32)		
1x 33	00 00 01	00 - 7F	TONE MODIFY4	[88]	-64 - +63	40	0
			TVF Resonance	• • •	(=NRPN# 33)		-
1x 34	00 00 01	00 - 7F	TONE MODIFY5	[88]	-64 - +63	40	0
			TVF&TVA Env.attack		(=NRPN# 99)		
1x 35	00 00 01	00 - 7F	TONE MODIFY6	[88]		40	0
			TVF&TVA Env.decay	,	(=NRPN# 100)		•
1x 36	00 00 01	00 - 7F	TONE MODIFY7	[88]		40	0
			TVF&TVA Env.release	,	(=NRPN# 102)		•
1x 37	00 00 01	00 - 7F	TONE MODIFY8	1881		40	0
			Vibrato Delay	[00]	(=NRPN# 10)		·
1x 40	00 00 OC	00 - 7F	SCALE TUNING C		-64 - +63 [cent]	40	0 [cent]
1x 41#		00 - 7F	SCALE TUNING C#		-64 - +63 [cent]	40	0 [cent]
1x 42#		00 - 7F	SCALE TUNING D		-64 - +63 [cent]	40	0 [cent]
1x 43#		00 - 7F	SCALE TUNING D#		-64 - +63 [cent]	40	0 [cent]
1x 44#		00 - 7F	SCALE TUNING E		-64 - +63 [cent]	40	0 [cent]
1x 45#		00 - 7F	SCALE TUNING F		-64 - +63 [cent]	40	0 [cent]
1x 46#		00 - 7F	SCALE TUNING F#		-64 - +63 [cent]	40	0 (cent)
1x 47#		00 - 7F	SCALE TUNING G		-64 - +63 [cent]	40	0 [cent]
1x 48#		00 - 7F	SCALE TUNING G#		-64 - +63 [cent]	40	0 (cent)
1x 49#		00 - 7F	SCALE TUNING A		-64 - +63 [cent]	40	0 [cent]
1x 4A#		00 - 7F	SCALE TUNING A#		-64 - +63 [cent]	40	0 (cent)
1x 4B#		00 - 7F	SCALE TUNING B		-64 - +63 [cent]	40	0 [cent]
CALE TUN	NNG is a funct	ion that allows fine ad	ljustment to the pitch of each note in th	e octave. Ti			• •
cent (40H	) is equal temp	erament (page 124).					
2v nn	00 00 01	28 - 58	MOD BITCH CONTROL		24 . 24 feamiliannel	40	0.1

40 2x 00	00 00 01	28 - 58	MOD PITCH CONTROL	-24 - +24 [semitones]	40	0 [semitones]
40 2x 01	00 00 01	00 - 7F	MOD TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40	0 (cent)
40 2x 02	00 00 01	00 - 7F	MOD AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40	0 [%]
40 2x 03	00 00 01	00 - 7F	MOD LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 04	00 00 01	00 - 7F	MOD LFO1 PITCH DEPTH	0 - 600 [cent]	0A	10 [cent]
40 2x 05	00 00 01	00 - 7F	MOD LFO1 TVF DEPTH	0 - 2400 [cent]	00	0 [cent]
40 2x 06	00 00 01	00 - 7F	MOD LFO1 TVA DEPTH	0 - 100.0 [%]	00	0 [%]
40 2x 07	00 00 01	00 - 7F	MOD LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 08	00 00 01	00 - 7F	MOD LFO2 PITCH DEPTH	0 - 600 [cent]	00	0 [cent]
40 2x 09	00 00 01	00 - 7F	MOD LFO2 TVF DEPTH	0 - 2400 [cent]	00	0 [cent]
40 2x 0A	00 00 01	00 - 7F	MOD LFO2 TVA DEPTH	0 - 100.0 [%]	00	0 [%]
				0 100.0 [70]	00	0 [ /6]
40 2x 10	00 00 01	40 - 58	BEND PITCH CONTROL	0 - 24 [semitones]	42	2 [semitones]
40 2x 11	00 00 01	00 - 7F	BEND TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40	0 [cent]
40 2x 12	00 00 01	00 - 7F	BEND AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40	0 [%]
40 2x 13	00 00 01	00 - 7F	BEND LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [/e] 0 [Hz]
40 2x 14	00 00 01	00 - 7F	BEND LFO1 PITCH DEPTH	0 - 600 [cent]	00	0 [cent]
40 2x 15	00 00 01	00 - 7F	BEND LFO1 TVF DEPTH	0 - 2400 [cent]	00	0 [cent]
40 2x 16	00 00 01	00 - 7F	BEND LFO1 TVA DEPTH	0 - 100.0 [%]	00	0 (cent) 0 [%]
40 2x 17	00 00 01	00 - 7F	BEND LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [%] 0 [Hz]
40 2x 18	00 00 01	00 - 7F	BEND LFO2 PITCH DEPTH	0 - 600 [cent]	00	
40 2x 19	00 00 01	00 - 7F	BEND LFO2 TVF DEPTH	0 - 2400 [cent]	00	0 [cent]
40 2x 1A	00 00 01	00 - 7F	BEND LFO2 TVA DEPTH	0 - 100.0 [%]	00	0 [cent]
		00 11	BENDER OF TVA BETTI	0 - 100.0 [ /8]	00	0 [%]
40 2x 20	00 00 01	28 - 58	CAFPITCH CONTROL	-24 - +24 [semitones]	40	0 [semitones]
40 2x 21	00 00 01	00 - 7F	CAI TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40	0 [cent]
40 2x 22	00 00 01	00 - 7F	CAF AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40	0 [%]
40 2x 23	00 00 01	00 - 7F	CALLFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [%] 0 [Hz]
40 2x 24	00 00 01	00 - 7F	CAI LFO1 PITCH DEPTH	0 - 600 [cent]	00	
40 2x 25	00 00 01	00 - 7F	CALLFO1 TVF DEPTH	0 - 2400 [cent]	00	0 [cent]
40 2x 26	00 00 01	00 - 7F	CAI LFO1 TVA DEPTH	0 - 100.0 [%]	00	0 [cent]
40 2x 27	00 00 01	00 - 7F	CAI LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [%]
40 2x 28	00 00 01	00 - 7F	CAI LFO2 PITCH DEPTH	0 - 600 [cent]		0 [Hz]
40 2x 29	00 00 01	00 - 7F	CAI LFO2 TVF DEPTH	0 - 2400 [cent]	00	0 [cent]
40 2x 2A	00 00 01	00 - 7F	CAI LFO2 TVA DEPTH	0 - 100.0 [%]	00	0 [cent]
	00 00 01	00 //	OAI EI OZ TVA DEI TIT	0 - 100.0 [%]	00	0 [%]
40 2x 30	00 00 01	28 - 58	PAF PITCH CONTROL	-24 - +24 [semitones]	40	0 [
40 2x 31	00 00 01	00 - 7F	PAI TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40	0 [semitones]
40 2x 32	00 00 01	00 - 7F	PAI AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40	0 [cent]
40 2x 33	00 00 01	00 - 7F	PAFLEO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [%]
40 2x 34	00 00 01	00 - 7F	PAI LEO1 PITCH DEPTH	0 - 600 [cent]		0 [Hz]
40 2x 35	00 00 01	00 - 7F	PAFLEO1 TVF DEPTH	0 - 2400 [cent]	00	0 [cent]
40 2x 36	00 00 01	00 - 7F	PAI LFO1 TVA DEPTH	0 - 2400 (cent) 0 - 100.0 [%]	00	0 [cent]
40 2x 37	00 00 01	00 - 7F	PAI LFO1 TVA DEFTH		00	0 [%]
40 2x 38	00 00 01	00 - 7F	PAI LFO2 HATE CONTROL PAI LFO2 PITCH DEPTH	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 39	00 00 01	00 - 7F	PAI LFO2 FITCH DEPTH	0 - 600 [cent]	00	0 [cent]
40 2x 3A	00 00 01	00 - 7F	PAI LFO2 TVP DEPTH PAI LFO2 TVA DEPTH	0 - 2400 [cent]	00	0 [cent]
70 2x 3M	00 00 01	00 - /F	PAILFUZ IVA DEPIH	0 - 100.0 [%]	00	0 [%]

0 2x 40	Size(H)	Data(H)	Parameter		Description	Default Value (H)	Description
	00 00 01	28 - 58	CC1 PITCH CONTROL		-24 - +24 [semitones]	40	0 [semitones]
	00 00 01	00 - 7F	CC1 TVF CUTOFF CONTROL		-9600 - +9600 [cent]	40	0 [cent]
0 2x 42	00 00 01	00 - 7F	CC1 AMPLITUDE CONTROL		-100.0 - +100.0 [%]	40	0 [%]
10 2x 43	00 00 01	00 - 7F	CC1 LFO1 RATE CONTROL		-10.0 - +10.0 [Hz]	40	0 [Hz]
10 2x 44	00 00 01	00 - 7F	CC1 LFO1 PITCH DEPTH		0 - 600 [cent]	00	0 [cent]
	00 00 01	00 - 7F	CC1 LFO1 TVF DEPTH		0 - 2400 [cent]	00	0 [cent]
	00 00 01	00 - 7F	CC1 LFO1 TVA DEPTH		0 - 100.0 [%]	00	0 [%]
		00 - 7F	CC1 LFO2 RATE CONTROL		-10.0 - +10.0 [Hz]	40	0 [Hz]
	00 00 01					00	
	00 00 01	00 - 7F	CC1 LFO2 PITCH DEPTH		0 - 600 [cent]		0 [cent]
10 2x 49	00 00 01	00 - 7F	CC1 LFO2 TVF DEPTH		0 - 2400 [cent]	00	0 [cent]
10 2x 4A	00 00 01	00 - 7F	CC1 LFO2 TVA DEPTH		0 - 100.0 [%]	00	0 [%]
0 2x 50	00 00 01	28 - 58	CC2 PITCH CONTROL		-24 - +24 [semitones]	40	0 [semitones]
	00 00 01	00 - 7F	CC2 TVF CUTOFF CONTROL		-9600 - +9600 [cent]	40	0 [cent]
	00 00 01	00 - 7F	CC2 AMPLITUDE CONTROL		-100.0 - +100.0 [%]	40	0 [%]
		00 - 7F	CC2 LFO1 RATE CONTROL		-10.0 - +10.0 [Hz]	40	0 [Hz]
	00 00 01						
	00 00 01	00 - 7F	CC2 LFO1 PITCH DEPTH		0 - 600 [cent]	00	0 [cent]
10 2x 55	00 00 01	00 - 7F	CC2 LFO1 TVF DEPTH		0 - 2400 [cent]	00	0 [cent]
	00 00 01	00 - 7F	CC2 LFO1 TVA DEPTH		0 - 100.0 [%]	00	0 [%]
	00 00 01	00 - 7F	CC2 LFO2 RATE CONTROL		-10.0 - +10.0 [Hz]	40	0 [Hz]
						00	
	00 00 01	00 - 7F	CC2 LFO2 PITCH DEPTH		0 - 600 [cent]		0 [cent]
0 2x 59	00 00 01	00 - 7F	CC2 LFO2 TVF DEPTH		0 - 2400 [cent]	00	0 [cent]
0 2x 5A	00 00 01	00 - 7F	CC2 LFO2 TVA DEPTH		0 - 100.0 [%]	00	0 [%]
You may not a	always be able	e to obtain the desire	d effect by modifying the LFO 1 and LFO 2	parame	ters.		
•	•					00	
10 4x 00	00 00 01	00 - 03	TONE MAP NUMBER	[Pro]	MAP 0 - 3	00	
			(= CC#32 : Bank number LSB)		00 : SELECTED		
					01 : SC-55 MAP		
					02 : SC-88 MAP		
					03 : Native MAP		
					SO . HARITO INAI		
When "GS Res	set" is receive	d, this will be 00: SEI	ECTED.				
10 4x 01	00 00 01	01 - 03	TONE MAP-0 NUMBER	[Prol	01 : SC-55 MAP	(03)	
				[: · -]	02 : SC-88 MAP	** **	
					03 : Native MAP		
					OS . I dalive IVIA		
When TONE	MAP NUMBE	R is 00, this specifies	the MAP. This setting will not be reset who	en "GS F	Reset" or "General MIDI Syste	em On" is received.	
			EQ ON/OFF		OFF/ON	01	ON
10 4x 20	00 00 01	00 - 01	EQ ON/OFF	[OO]	OFF / ON	O1	5.1
This turns the	EQ (Equalize	er) on/off. In MODE-2	(Double module mode) it cannot be used.				
10 4x 21	00 00 01	00 - 03	OUTPUT ASSIGN	[Pro]	00:OUTPUT-1	00	OUTPUT-1
					01:OUTPUT-2		
					02:OUTPUT-2L		
					03:OUTPUT-2R		
10 4x 22	00 00 01	00 - 01	PART EFX ASSIGN	[Pro]	00:BYPASS	00	BYPASS
	• •				01:EFX		
A Drum cot:-	noremotor-						
		IAP1, 1 = MAP2)					
n: Drum Map n	umber (0 = N	IAP1, 1 = MAP2) 0H - 7FH: 0 - 127)					
n: Drum Map n r: drum part no	number (0 = Note number (0		Parameter		Description		
n: Drum Map n r: drum part no Address(H)	number (0 = Mote number (0) Size(H)	0H - 7FH: 0 - 127) Data(H)			Description ASCII Character		
n: Drum Map n r: drum part no address(H) 1 m0 00	number (0 = Note number (0	0H - 7FH: 0 - 127)	Parameter DRUM MAP NAME				
r: drum part no Address(H) 11 m0 00 I #	number (0 = Mote number (0) Size(H)	0H - 7FH: 0 - 127) Data(H)					
n: Drum Map n r: drum part no Address(H) 11 m0 00 I # 11 m0 0B#	Size(H)	0H - 7FH: 0 - 127)  Data(H)  20 - 7F	DRUM MAP NAME		ASCII Character		
n: Drum Map n r: drum part no Address(H) 11 m0 00 I # I1 m0 0B#	number (0 = N ote number (00 Size(H) 00 00 0C	DH - 7FH: 0 - 127)  Data(H)  20 - 7F	DRUM MAP NAME PLAY NOTE NUMBER		ASCII Character  Pitch coarse		
n: Drum Map n r: drum part no address(H) 1 m0 00 1 # 1 m0 0B# 1 m1 rr	Size(H)	0H - 7FH: 0 - 127)  Data(H)  20 - 7F	DRUM MAP NAME		ASCII Character		
n: Drum Map n r: drum part no Address(H) 11 m0 00 1 # 11 m0 0B#	number (0 = N ote number (00 Size(H) 00 00 0C	DH - 7FH: 0 - 127)  Data(H)  20 - 7F	DRUM MAP NAME PLAY NOTE NUMBER		ASCII Character  Pitch coarse TVA level		
n: Drum Map n r: drum part no Address(H) 11 m0 00 1 # 11 m0 0B# 11 m1 rr	Size(H) 00 00 0C	DH - 7FH: 0 - 127)  Data(H) 20 - 7F  00 - 7F  00 - 7F	DRUM MAP NAME PLAY NOTE NUMBER LEVEL		ASCII Character  Pitch coarse TVA level (=NRPN# 26)		
n: Drum Map n r: drum part no Address(H) 11 m0 00	number (0 = N ste number (00 Size(H) 00 00 0C 00 00 01 00 00 01 00 00 01	0H - 7FH: 0 - 127)  Data(H) 20 - 7F  00 - 7F  00 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER  LEVEL  ASSIGN GROUP NUMBER		ASCII Character  Pitch coarse TVA level (=NRPN# 26) Non, 1 - 127		
n: Drum Map n r: drum part no Address(H) 11 m0 00 1 # 11 m0 0B# 11 m1 rr 11 m2 rr	Size(H) 00 00 0C	DH - 7FH: 0 - 127)  Data(H) 20 - 7F  00 - 7F  00 - 7F	DRUM MAP NAME PLAY NOTE NUMBER LEVEL	•	ASCII Character  Pitch coarse TVA level (=NRPN# 26) Non, 1 - 127 -64(RANDOM).		
n: Drum Map n r: drum part no kddress(H) -1 m0 00 -1 # -1 m0 0B# -1 m1 rr -1 m2 rr	number (0 = N ste number (00 Size(H) 00 00 0C 00 00 01 00 00 01 00 00 01	0H - 7FH: 0 - 127)  Data(H) 20 - 7F  00 - 7F  00 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER  LEVEL  ASSIGN GROUP NUMBER		ASCII Character  Pitch coarse TVA level (=NRPN# 26) Non, 1 - 127		
n: Drum Map n r: drum part no Address(H) 11 m0 00	number (0 = N ste number (00 Size(H) 00 00 0C 00 00 01 00 00 01 00 00 01	0H - 7FH: 0 - 127)  Data(H) 20 - 7F  00 - 7F  00 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER  LEVEL  ASSIGN GROUP NUMBER		ASCII Character  Pitch coarse TVA level (=\mathrm{\text{MRPN# 26}}\) Non, 1 - 127 -64(RANDOM), -63(LEFT) - +63(RIGHT)	OM)	
n: Drum Map n r: drum part no Address(H) id m0 00	wimber (0 = N te number	DH - 7FH: 0 - 127)  Data(H)  20 - 7F  00 - 7F  00 - 7F  00 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER LEVEL  ASSIGN GROUP NUMBER PANPOT		ASCII Character  Pitch coarse TVA level (=NRPN# 26) Non, 1 - 127 -64(RANDOM), -63(LEFT) - +63(RIGHT) (=NRPN# 28, except RAND	ОМ)	
n: Drum Map n r: drum part no Address(H) 11 m0 00 14 11 m0 08 14 m1 rr 11 m2 rr 11 m3 rr 11 m4 rr	number (0 = N ste number (00 Size(H) 00 00 0C 00 00 01 00 00 01 00 00 01	0H - 7FH: 0 - 127)  Data(H) 20 - 7F  00 - 7F  00 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER  LEVEL  ASSIGN GROUP NUMBER		ASCII Character  Pitch coarse TVA level (=NRPN# 26) Non, 1 - 127 -64(RANDOM), -63(LEFT) - +63(RIGHT) (=NRPN# 28, except RAND 0.0 - 1.0		
n: Drum Map n r: drum part no Address(H) 11 m0 00 I # 11 m0 0B# 11 m1 rr	wimber (0 = N te number	DH - 7FH: 0 - 127)  Data(H)  20 - 7F  00 - 7F  00 - 7F  00 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER LEVEL  ASSIGN GROUP NUMBER PANPOT		ASCII Character  Pitch coarse TVA level (=NRPN# 26) Non, 1 - 127 -64(RANDOM)63(LEFT) - +63(RIGHT) (=NRPN# 28, except RAND 0.0 - 1.0 Multiplicand of the part reve		
n: Drum Map n r: drum part no Address(H) 11 m0 00 14 11 m0 08 14 m1 rr 11 m2 rr 11 m3 rr 11 m4 rr	wimber (0 = N te number	DH - 7FH: 0 - 127)  Data(H)  20 - 7F  00 - 7F  00 - 7F  00 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER LEVEL  ASSIGN GROUP NUMBER PANPOT		ASCII Character  Pitch coarse TVA level (=NRPN# 26) Non, 1 - 127 -64(RANDOM), -63(LEFT) - +63(RIGHT) (=NRPN# 28, except RAND 0.0 - 1.0		
n: Drum Map'n r: drum part no Address(H) if m0 00	wimber (0 = Note number (0) Size(H) 00 00 0C  00 00 01 00 00 01 00 00 01 00 00 01	DH - 7FH: 0 - 127)  Data(H)  20 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER LEVEL  ASSIGN GROUP NUMBER PANPOT  REVERB SEND LEVEL		ASCII Character  Pitch coarse TVA level (=NRPN# 26) Non, 1 - 127 -64(RANDOM), -63(LEFT) - +63(RIGHT) (=NRPN# 28, except RAND 0.0 - 1.0 Multiplicand of the part reve (=NRPN# 29)		
n: Drum Map n r: drum part no Address(H) 11 m0 00 14 11 m0 08 14 m1 rr 11 m2 rr 11 m3 rr 11 m4 rr	wimber (0 = N te number	DH - 7FH: 0 - 127)  Data(H)  20 - 7F  00 - 7F  00 - 7F  00 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER LEVEL  ASSIGN GROUP NUMBER PANPOT		ASCII Character  Pitch coarse TVA level (=NRPN# 26) Non, 1 - 127 -64(RANDOM), -63(LEFT) - +63(RIGHT) (=NRPN# 28, except RAND O) 1.0  Multiplicand of the part reve (=NRPN# 29) 0.0 - 1.0	rb level	
n: Drum Map'n r: drum part no Address(H) if m0 00	wimber (0 = Note number (0) Size(H) 00 00 0C  00 00 01 00 00 01 00 00 01 00 00 01	DH - 7FH: 0 - 127)  Data(H)  20 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER LEVEL  ASSIGN GROUP NUMBER PANPOT  REVERB SEND LEVEL		ASCII Character  Pitch coarse TVA level (=\MPNN 26) Non, 1 - 127 -64(RANDOM)63(LEFT) - +63(RIGHT) (=\MPNN 28, except RAND 0.0 - 1.0 Multiplicand of the part reve (=\MPNN 29) 0.0 - 1.0 Multiplicand of the part chor	rb level	
n: Drum Map'n r: drum part no Address(H) ii m0 00	number (0 = N te number (0 = N te number (0   Size(H)	DH - 7FH: 0 - 127)  Data(H) 20 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER LEVEL  ASSIGN GROUP NUMBER PANPOT  REVERB SEND LEVEL  CHORUS SEND LEVEL		ASCII Character  Pitch coarse TVA level (=NRPN# 26) Non, 1 - 127 -64(RANDOM), -63(LEFT) - +63(RIGHT) (=NRPN# 28, except RAND 0.0 - 1.0 Multiplicand of the part reve (=NRPN# 29) 0.0 - 1.0 Multiplicand of the part chor (=NRPN# 30)	rb level	
n: Drum Map'n r: drum part no Address(H) if m0 00	wimber (0 = Note number (0) Size(H) 00 00 0C  00 00 01 00 00 01 00 00 01 00 00 01	DH - 7FH: 0 - 127)  Data(H)  20 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER LEVEL  ASSIGN GROUP NUMBER PANPOT  REVERB SEND LEVEL		ASCII Character  Pitch coarse TVA level (=NRPN# 26) Non, 1 - 127 -64(RANDOM), -63(LEFT) - +63(RIGHT) (=NRPN# 28, except RAND 0,0 - 1.0  Multiplicand of the part reve (=NRPN# 29) 0,0 - 1.0  Multiplicand of the part choi (=NRPN# 30) OFF / ON	rb level	
n: Drum Map n r: drum part no Address(H) if m0 00	number (0 = Note number (0) Size(H) 00 00 0C  00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01	DH - 7FH: 0 - 127)  Data(H) 20 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER LEVEL  ASSIGN GROUP NUMBER PANPOT  REVERB SEND LEVEL  CHORUS SEND LEVEL		ASCII Character  Pitch coarse TVA level (=NRPN# 26) Non, 1 - 127 -64(RANDOM), -63(LEFT) - +63(RIGHT) (=NRPN# 28, except RAND 0.0 - 1.0 Multiplicand of the part reve (=NRPN# 29) 0.0 - 1.0 Multiplicand of the part chor (=NRPN# 30)	rb level	
n: Drum Map'n r: drum part no kddress(H) 1 m0 00 1 # 1 m0 00B# 1 m1 m2 rr 1 m1 rr 1 m2 rr 1 m6 rr 1 m6 rr 1 m7 rr 1 m8 rr	number (0 = Note number (0) Size(H) 00 00 0C 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01	DH - 7FH: 0 - 127)  Data(H)  20 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER LEVEL  ASSIGN GROUP NUMBER PANPOT  REVERB SEND LEVEL  CHORUS SEND LEVEL  Rx. NOTE OFF Rx. NOTE ON	[88]	ASCII Character  Pitch coarse TVA level (=\MPNN 26) Non, 1 - 127 -64(RANDOM), -63(LEFT) - +63(RIGHT) (=\MPNN 28, except RAND 0.0 - 1.0 Multiplicand of the part reve (=\MPNN 29) 0.0 - 1.0 Multiplicand of the part chor (=\MPNN 30) OFF / ON OFF / ON	rb level	
n: Drum Map'n r: drum part no kddress(H)	number (0 = Note number (0) Size(H) 00 00 0C  00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01	DH - 7FH: 0 - 127)  Data(H)  20 - 7F  00 - 7F	DRUM MAP NAME  PLAY NOTE NUMBER LEVEL  ASSIGN GROUP NUMBER PANPOT  REVERB SEND LEVEL  CHORUS SEND LEVEL  Rx. NOTE OFF	[88]	ASCII Character  Pitch coarse TVA level (=NRPN# 26) Non, 1 - 127 -64(RANDOM), -63(LEFT) - +63(RIGHT) (=NRPN# 28, except RAND 0,0 - 1.0  Multiplicand of the part reve (=NRPN# 29) 0,0 - 1.0  Multiplicand of the part choi (=NRPN# 30) OFF / ON	rb level rus level	

<sup>\*</sup> When the Drum Set is changed, DRUM SETUP PARAMETER values will all be initialized.
\* It is not possible to simultaneously use both Chorus Send Level and Delay Send Level for a single Drum Instrument.

## User instrument

You can modify the parameters of the SC-88ST Pro sound to your taste, and save your new settings temporarily in Variation numbers 64 or 65 of the Native map / SC-88 map (p.20). A sound saved in this way is called a User Instrument, and this procedure is called User Editing. You can save 256 different sounds in this way. When the SC-88ST Pro is turned off, the values set for User Instrument will revert to their defaults.

User instrument will rever to mer derauits.

The parameters you can set are Vibrato, Filter and Envelope.

The other sound parameters will use the values specified for the Part (Part parameters, p.24). Each Part has Part parameters which are named identically to the User parameters listed above which can be set for each sound. This means that the parameter value that actually applies to the sound will be a combination of these two settings. For example, if the Vibrato Rate has been set to +20 as a Part parameter, and to -5 as a User sound parameter, the Vibrato Rate of the resulting sound will be 20-5=+15.

b: bank number (0H = GS Variation number 64, 1H = GS Variation number 65) pp: program number (00 - 7F: 1 - 128)

Address(H)	Size(H)	Data(H)	Parameter		Description	Default Value (H)	Description
20 b0 pp	00 00 01	01 - 03	SOURCE TONE# (MAP)	[88]			
20 b1 pp	00 00 01	00 - 7F	(CC#00 : Bank number MSB)	[88]			
20 b2 pp	00 00 01	00 - 7F	(PG# : Program number)	[88]			
20 b3 pp	00 00 01	00 - 7F	USER INST MODIFY1-2			40	0
			Vibrato Rate				
20 b4 pp	00 00 01	00 - 7F	USER INST MODIFY2-2	[88]	-64 - +63	40	0
			Vibrato Depth				
20 b5 pp	00 00 01	00 - 7F	USER INST MODIFY3-2	[88]	-64 - +63	40	0
			TVF Cutoff Freq				
20 b6 pp	00 00 01	00 - 7F	USER INST MODIFY4-2	[88]	-64 - +63	40	0
			TVF Resonance				
20 b7 pp	00 00 01	00 - 7F	USER INST MODIFY5-2	[88]	-64 - +63	40	0
			TVF&TVA Env.attack				
20 b8 pp	00 00 01	00 - 7F	USER INST MODIFY6-2	[88]	-64 - +63	40	0
			TVF&TVA Env.decay				
20 b9 pp	00 00 01	00 - 7F	USER INST MODIFY7-2	[88]	-64 - +63	40	0
			TVF&TVA Env.release				
20 bA pp	00 00 01	00 - 7F	USER INST MODIFY8-2	[88]	-64 - +63	40	0
			Vibrato Delay				

 $<sup>\</sup>mbox{\ensuremath{^{\star}}}$  On the SC-88ST Pro, these settings will be lost when the power is turned off.

#### User Drum Set

You can modify drum instrument parameters to your liking, and save this data as a Drum Set. A Drum Set saved in this way is called a User Drum Set. You can save up to two Drum Sets, and since each set contains 128 instrumental sounds, this provides a total of 256 instrumental sounds (Drum Instruments). User Drum Sets are stored in Drum Set numbers 65 and 66 of the Native

d: drum set number (0H = User drum set number 65, 1H = User Drum Set number 66) rr: drum part note number (00 - 7F)

Address(H)	Size(H)	Data(H)	Parameter		Description
21 d1 rr	00 00 01	00 - 7F	PLAY NOTE	[88]	0 - 127
21 d2 rr	00 00 01	00 - 7F	LEVEL	[88]	0 - 127
21 d3 rr	00 00 01	00 - 7F	ASSIGN GROUP	1881	0 - 127
21 d4 rr	00 00 01	00 - 7F	PAN	1881	0 - 127
21 d5 rr	00 00 01	00 - 7F	REVERB SEND LEVEL		0 - 127
21 d6 rr	00 00 01	00 - 7F	CHORUS SEND LEVEL	[88]	0 - 127
21 d7 rr	00 00 01	00 - 01	RX NOTE OFF	[88]	OFF / ON
21 d8 rr	00 00 01	00 - 01	RX NOTE ON	[88]	OFF / ON
21 d9 rr	00 00 01	00 - 7F	DELAY SEND LEVEL		
21 dA rr	00 00 01	01 - 03	SOURCE DRUM SET# (MAP)		
21 dB rr	00 00 01	00 - 7F	(PG#: Program number)		0 - 127
21 dC rr	00 00 01	00 - 7F	SOURCE NOTE NUMBER		0 - 127

 $<sup>^{\</sup>star}$  On the SC-88ST Pro, these settings will be lost when the power is turned off.

# User Effect

You can modify the Insertion Effect parameters as desired and store them as an Effect Type. Effect Types that are stored in this way are referred to as User Effects. 64 different Effect Types can be stored. These are stored in Effect Type numbers 40 00H through 40 3FH.

pp: LSB number of EFX TYPE (00 - 3F : 1 - 64)

	<b>-</b>				
Address(H)	Size(H)	Data(H)	Parameter		
22 00 pp	00 00 02		SOURCE EFX TYPE	[Pro]	
22 01 pp#					
22 03 pp	00 00 01	00 - 7F	EFX PARAMETER 1	[Pro]	
22 04 pp	00 00 01	00 - 7F	EFX PARAMETER 2	[Pro]	
22 05 pp	00 00 01	00 - 7F	EFX PARAMETER 3	[Pro]	
22 06 pp	00 00 01	00 - 7F	EFX PARAMETER 4	[Pro]	
22 07 pp	00 00 01	00 - 7F	EFX PARAMETER 5	[Pro]	
22 08 pp	00 00 01	00 - 7F	EFX PARAMETER 6	[Pro]	
22 09 pp	00 00 01	00 - 7F	EFX PARAMETER 7	[Pro]	
22 0A pp	00 00 01	00 - 7F	EFX PARAMETER 8	[Pro]	
22 0B pp	00 00 01	00 - 7F	EFX PARAMETER 9	[Pro]	
22 0C pp	00 00 01	00 - 7F	EFX PARAMETER 10	[Pro]	
22 0D pp	00 00 01	00 - 7F	EFX PARAMETER 11	[Pro]	
22 0E pp	00 00 01	00 - 7F	EFX PARAMETER 12	[Pro]	
22 0F pp	00 00 01	00 - 7F	EFX PARAMETER 13		
22 10 pp	00 00 01	00 - 7F	EFX PARAMETER 14	[Pro]	
22 11 pp	00 00 01	00 - 7F		[Pro]	
22 12 pp			EFX PARAMETER 15	[Pro]	
	00 00 01	00 - 7F	EFX PARAMETER 16	[Pro]	
22 13 pp	00 00 01	00 - 7F	EFX PARAMETER 17	[Pro]	
22 14 pp	00 00 01	00 - 7F	EFX PARAMETER 18	[Pro]	
22 15 pp	00 00 01	00 - 7F	EFX PARAMETER 19	[Pro]	
22 16 pp	00 00 01	00 - 7F	EFX PARAMETER 20	[Pro]	

<sup>\*</sup> On the SC-88ST Pro, these settings will be lost when the power is turned off.

# Section 4. Bulk Dump

Bulk Dump allows you to transmit a large amount of data at once, and is convenient for storing settings for the entire unit on a computer or sequencer.

To make the SC-88ST Pro perform a Bulk Dump transmission, send it a "Bulk Dump Request" message. Bulk Dump Request uses the Data Request 1 (RQ1) format, but unlike when transmitting individual parameters, the "Size" specified by the request message refers not to size of the data but rather specifies the contents of the data. For the data contents corresponding to each Size refer to "Parameter Dump."

When the SC-88ST Pro is also able to transmit a list of its internal sounds. This function can be used to display a list of sounds on a computer

# ■ Parameter dump

# O Parameter dump request (receive only) [Pro]

This is a command that requests a set of parameter data, and uses "Data Request 1 (RQ1)" format. The Size specifies the requested data contents

```
Address: 0C 00 00
               00 00 00 : ALL
                                                                        request a dump of all parameters
                                                                        request a during or an parallelers use this when not using USER TONE BANK or USER DRUM SET use this when USER TONE BANK, USER DRUM SET and DRUM SETUP settings have not been modified
               00 00 01 : ALL 1
              00 00 02 ALL 2
00 00 10 : 16-part GS 1
00 00 11 : 16-part GS 2
00 10 00 USER TONE BANK (ALL)

use this when USER TONE BANK, USER DRUM SET and DRUM SETUP settings have use this when using only 16 Parts
00 10 10 : USER TONE BANK (ALL)

request a dump of all USER TONE BANK data
                                                                        request a dump of USER TONE BANK #64 data (128 sounds) request a dump of USER TONE BANK #65 data (128 sounds)
               00 01 40 : USER TONE BANK #64
00 01 41 : USER TONE BANK #65
               00 02 00 : USER DRUM SET (ALL)
00 02 40 : USER DRUM SET #65
                                                                        request a dump of all USER DRUM SET data
                                                                        request a dump of USER DRUM SET #65 data
               00 02 41 : USER DRUM SET #66
00 03 00 : USER EFX
                                                                        request a dump of USER DRUM SET #66 data
                                                                        request a dump of USER EFX data
```

Example) Dump request for all parameters:

F0 41 10 42 11 0C 00 00 00 00 00 74 F7

Normally, using ALL (00 00 00) provides the greatest predictability, but the amount of data is very large, and transmission requires approximately 25 seconds. In order to reduce transmission time and data volume, we suggest that you request a dump only of the necessary data.

#### O Parameter dump [Pro]

When a Parameter Dump Request is received, the following data will be transmitted in "Data Set 1 (DT1)" format

		Number of				16-	part	USER	TONE	BANK	USER	DRUM	SET	USER	EFFECT		
Address	Description	packets	ALL	ALL1	ALL	2 GS1	GS2	ALL	#64	#65	ALL	#65	#66	EFX		 	
2A 00 00 - 2A 0F 7F	USER EFX #1-64	16	0											0			
08 00 00 - 08 00 7F	SETUP	1	0	0	0	0	0										
28 00 00 - 28 0A 7F	USER TONE BANK #64	11	0					0	0								
28 10 00 - 28 1A 7F	USER TONE BANK #65	11	0					0		0							
29 00 00 - 29 0B 0F	USER DRUM SET #65	12	$\circ$								$\circ$	0					
29 10 00 - 29 1B OF	USER DRUM SET #66	12	$\circ$								0		0				
48 1D 10 - 48 26 OF	PATCH EXTENSION A	9	0	0	0	0	0										
48 00 00 - 48 1D 0F	SYSTEM/PATCH A	30	$\circ$	0	0	0	0										
49 00 00 - 49 1F 7F	DRUM SETUP A	32	0	0		0											
58 1D 10 - 58 26 0F	PATCH EXTENSION B	9	0	$\circ$	0												
58 00 00 - 58 1D 0F	SYSTEM/PATCH B	30	0	0	0												
59 00 00 - 59 1F 7F	DRUM SETUP B	32	0	0													

This table lists the data contents that will be transmitted when a Parameter Dump Request is received at MIDI IN A. When a Parameter Dump Request is received at MIDI IN B, A and B will be reversed for PATCH EXTENSION, SYSTEM/PATCH and DRUM SETUP.

- \* When data dumped by the SC-88ST Pro is reloaded into the SC-88ST Pro, be aware that the data may not be set correctly if the transmission order of the packets is changed, if the time inter-
- val between packets is changed, or if other messages are inserted between packets.

  \* The Parameter Dump data of the SC-88ST Pro includes data for GS format compatible devices, and this data is compatible in both directions. However, depending on the settings of parameters are compatible in both directions. ters which are newly extended on the SC-88ST Pro, the musical result may differ.
- If the SC-88ST Pro does not operate correctly with Bulk Dump data from another GS format compatible device, first initialize the SC-88ST Pro before retransmitting the data.

  \*When another GS format compatible device receives Parameter Dump data that was transmitted by the SC-88ST Pro, it may display a message such as "Address Error", but this is because the parameter addresses newly extended on the SC-88ST Pro were not recognized by the other device. Parameters which could be recognized by that device have been correctly set.

# ■ Dumping a list of internal sounds

# • Instrument list dump

# ○ Instrument list dump request (request only) [Pro]

This command requests a bulk dump of a list of the preset sounds (Instruments) in internal memory, and uses "Data Request 1 (RQ1)" format. The Size specifies the contents of the requested data.

Address: 0C 00 01 Size: 00 00 00 : ALL 00 00 01 : SC-55 MAP 00 00 02 : SC-88 MAP 00 00 03 : Native MAP 00 mm bb mm = MAP# 01 - 03 ( 01 = SC-55 MAP, 02 = SC-88 MAP, 03 = Native MAP) bb = BANK# 00 - 7F

# ○ Instrument list dump (transmit only) [Pro]

When Instrument List Dump Request is received, the sound names of the specified map will be transmitted continuously in the format given below, where 16 bytes are used for each sound name. The Address of the transmitted data is 0C 00 01 for all packets. User bank sound names are not transmitted.

# DUMP FORMAT:

0	1	2	3	4	5	6	7	8	9	Α	В	С	D	Е	F
CCO	МАР	PC	00		TONE	NAM	E(AS	CII 12	Chara	acters	)				

CC0: Variation number

MAP : MAP number 01 = SC-55 MAP, 02 = SC-88 MAP, 03 = Native MAP
PC : Program number

# Drum set list dump

# O Drum set list dump request (receive only) [Pro]

This command requests a bulk dump transmission of a list of Preset Drum Sets in internal memory, and uses "Data Request 1 (RQ1)" format. The Size specifies the desired data

Address: OC 00 02 00 00 00 : ALL 00 00 01 : SC-55 MAP 00 00 02 : SC-88 MAP 00 00 03 : Native MAP

# O Drum set list dump (transmit only) [Pro]

When a Drum Set List Dump Request is received, the Drum Set names of the specified MAP will be transmitted successively in the format given below, where 16 bytes are used for each sound. The Address of the transmitted data will be 0C 00 02 for each packet.

# DUMP FORMAT:

0	1	2	3	4	5	6	7	8	9	Α	В	С	D	E	F
00	MAP	РС	00		DRUN	I TON	E NA	ME(A	SCII 1	2 Cha	racte	s)			

MAP : MAP number 01 = SC-55 MAP, 02 = SC-88 MAP, 03 = Native MAP

PC: Program number

# ■ Drum instrument list dumn

# O Drum instrument list dump request (receive only) [Pro]

This command requests a bulk dump transmission of the Instrument list of an internal Preset Drum Sets, and uses "Data Request 1 (RQ1)" format. The Size specifies the desired data contents.

Address: 0C 00 03 00 mm pp mm = MAP# 01 - 03 ( 01 = SC-55 MAP, 02 = SC-88 MAP, 03 = Size: Native MAP)
pp = Drum set# 00 - 7F (same as PC#)

# O Drum instrument list dump (transmit only) [Pro]

When a Drum Instrument List Dump Request is received, the Drum Instrument names of the specified Drum Set will be transmitted in the following format where 16 bytes are used for each Drum Instrument name. The address of the transmitted data will be 0C 00 03 for each packet.

# DUMP FORMAT:

0	1	2	3	4	5	6	7	8	9	Α	В	С	D	Ε	F
00	МАР	РС	KEY		DRUM	TON	E NA	ME(A	SCII 1	2 Cha	racte	rs)			

MAP: MAP number 01 = SC-55 MAP, 02 = SC-88 MAP, 03 = Native MAP

PC : Program number KEY : Note number

# Insertion effect list dump

# O Insertion effect list dump request (receive only) [Pro]

This command requests a bulk dump transmission of the Insertion effect list of an internal memory, and uses "Data Request 1 (RQ1)" format. The Size specifies the desired data contents

Address: 0C 00 04 00 00 00 : ALL Size:

# O Insertion effect list dump (transmit only) [Pro]

When a Insertion Effect List Dump Request is received, the specified Insertion Effect names will be transmitted in the following format where 20 bytes are used for each Effect name. The address of the transmitted data will be 0C 00 04 for each packet.

#### DUMP FORMAT:

0	1	2	3	4	5	6	7	8	9	Α	В	С	D	Ε	F	10	11	12	13
MSB	LSB	00	00		EFFE	CT N	ME(A	ASCII	16 Ch	aracte	rs)								

MSB: Category LSB: Type

# Section 5. Supplementary material

#### Decimal and Hexadecimal table

(An 'H' is appended to the end of numbers in hexadecimal notation.)

In MIDI documentation, data values and addresses/sizes of 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	00н	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 j	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	OAH	42	2AH	74	4AH	106	6AH
11	OBH	43	2BH	75	4BH	107	6BH
12	OCH	44	2CH	76	4CH	108	6CH
13	ODH	45	2 DH	77	4DH	109	6DH
14	OEH	46	2EH	78	4EH	110	6EH
15	OFH	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	3 BH	91	5BH	123	7BH
28	1CH	60	3CH	92	5CH	124	7CH
29	1DH	61	3 DH	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 number, and program number are listed as one 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 as bbH expressing two 7-bit bytes would indicate a value of aa x 128+bb.

In the case of values which have a  $\pm$  sign, 00H = -64, 40H =  $\pm$ 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,  $40.00H = \pm 0$ , and 7F.7FH = +8191. For example if as

bbH were expressed as decimal, this would be aa bbH - 40 00H = aa x 128+bb - 64 x 128.

\* Data marked "Use nibbled data" 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.

<Example 1> What is the decimal expression of 5AH ? From the preceding table, 5AH = 90

<Example 2> What is the decimal expression of the value 12 34H given as hexadecimal for each 7 bits?

From the preceding table, since 12H = 18 and 34H = 52  $18 \times 128 + 52 = 2356$ 

<Example 3> What is the decimal expression of the nibbled value 0A 03 09 0D ? From the preceding table, since 0AH = 10, 03H = 3, 09H = 9, 0DH = 13  $((10 \times 16+3) \times 16+9) \times 16+13 = 41885$ 

<Example 4> What is the nibbled expression of the decimal value 1258?

16) 1258 16) 78 ... 10 16) 4 ... 14 0 ... 4

Since from the preceding table, 0 = 00H, 4 = 04H, 14 = 0EH, 10 = 0AH, the answer is 00 04 0E 0AH

# ● Examples of actual MIDI messages

<Example 1> 92 3E 5F

9n is the Note-on status, and n is the MIDI channel number. Since 2H = 2, 3EH = 62, and 5FH = 95, this is a Note-on message with MIDI CH = 3, note number 62 (note name is D4), and velocity 95

CnH is the Program Change status, and n is the MIDI channel number. Since EH = 14 and 49H = 73, this is a Program Change message with MIDI CH = 15, program number 74 (Flute in GS).

# <Example 3> EA 00 28

EnH is the Pitch Bend Change status, and n is the MIDI channel number. The 2nd byte (00H = 0) is the LSB and the 3rd byte (28H = 40) is the MSB, but Pitch Bend Value is a signed number in which 40 00H (= 64 x 128+0 = 8192) is 0, so this Pitch Bend Value is 28 00H - 40 00H = 40 x 128+0 - (64 x 128+0) = 5120 - 8192 = -3072

If the Pitch Bend Sensitivity is set to 2 semitones, -8192 (00 00H) will cause the pitch to change -200 cents, so in this case -200 x (-3072) + (-8192) = -75 cents of Pitch Bend is being applied to MIDI channel 11.

<Example 4> B3 65 00 64 00 06 0C 26 00 65 7F 64 7F
BnH is the Control Change status, and n is the MIDI channel number. For Control Changes, the 2nd byte is the control number, and the 3rd byte is the value. In a case in which two or more messages consecutive messages have the same status, MIDI has a provision called "running status" which allows the status byte of the second and following messages to be omitted. Thus, the above messages have the following meaning.

В3	65 00	MIDI ch.4, upper byte of RPN parameter number	: 00H
(B3)	64 00	(MIDI ch.4) lower byte of RPN parameter number	: 00H
(B3)	06 0C	(MIDI ch.4) upper byte of parameter value	: 0CH
(B3)	26 00	(MIDI ch.4) lower byte of parameter value	: 00H
(B3)	65 7F	(MIDI ch.4) upper byte of RPN parameter number	: 7FH
(B3)	64 7F	(MIDI ch.4) lower byte of RPN parameter number	: 7FH

In other words, the above messages specify a value of 0C 00H for RPN parameter number 00 00H on MIDI channel 4, and then set the RPN parameter number to 7F 7FH.

RPN parameter number 00 00H is Pitch Bend Sensitivity, and the MSB of the value indicates semitone units, so a value of 0CH = 12 sets the maximum pitch bend range to ±12 semitones (1 octave). (On GS sound sources the LSB of Pitch Bend Sensitivity is ignored, but the LSB should be transmitted anyway (with a value of 0) so that operation will be correct on any device.)

Once the parameter number has been specified for RPN or NRPN, all Data Entry messages transmitted on that same channel will be valid, so after the desired value has been transmitted, it is a good idea to set the parameter number to 7F 7FH to prevent accidents. This is the reason for the (B3) 64 7F (B3) 65 7F at the end.

It is not desirable for performance data (such as Standard MIDI File data) to contain many events with running status as given in <Example 4>. This is because if playback is halted during the song and then rewound or fast-forwarded, the sequencer may not be able to transmit the correct status, and the sound source will then misinterpret the data. Take care to give each event its own status.

It is also necessary that the RPN or NRPN parameter number setting and the value setting be done in the proper order. On some sequencers, events occurring in the same (or consecutive) clock may be transmitted in an order different than the order in which they were received. For this reason it is a good idea to slightly skew the time of each event (about 1 tick for TPQN = 96, and about 5 ticks for TPQN = 480).

# • Example of an Exclusive message and calculating a Checksum

Roland Exclusive messages (RQ1, DT1) are transmitted with a checksum at the end (before F7) to make sure that the message was correctly received. The value of the checksum is determined by the address and data (or size) of the transmitted exclusive message.

# O How to calculate the checksum (hexadecimal numbers are indicated by 'H')

The checksum is a value derived by adding the address, size and checksum itself and inverting the lower 7 bits.

Here's an example of how the checksum is calculated. We will assume that in the exclusive message we are transmitting, the address is aa bb ccH and the data or size is dd ee ffH.

aa+bb+cc+dd+ee+ff = sum sum + 128 = quotient ... remainder 128 - remainder = checksum (However, the checksum will be 0 if the remainder is 0.)

<Example 1> Setting REVERB MACRO to ROOM 3

According to the "Parameter Address Map," the REVERB MACRO Address is 40 01 30H, and ROOM 3 is a value of 02H. Thus,

<u>F0</u>	<u>41</u>	<u>10</u>	<u>42</u>	<u>12</u>	40 01 30	<u>02</u>	??	<u>F7</u>
(1)	(2)	(3)	(4)	(5)	address	data	checksum	(6)
		ve Statu D (GS),	, , ,	ID (Ro Comm	land), and ID (DT1),		Device ID (17) End of Exclusi	

Next we calculate the checksum

40H+01H+30H+02H = 64+1+48+2 = 115 (sum) 115 (sum) + 128 = 0 (quotient) ... 115 (remainder) checksum = 128 - 115 (remainder) = 13 = 0DH

This means that F0 41 10 42 12 40 01 30 02 0D F7 is the message we transmit.

<Example 2> Requesting transmission of the LEVEL for DRUM MAP 1 NOTE NUMBER 75 (D#5; Claves)
NOTE NUMBER 75 (D#5) is 4BH in hexadecimal.
According to the "Parameter Address Map," LEVEL of NOTE NUMBER 75 (D#5; Claves) in DRUM MAP 1 has an Address of 41 02 4BH and a Size of 00 00 01H. Thus,

F0	41	10	42	11	41 02 4B	00 00 01	??	F7
(1)	(2)	(3)	(4)	(5)	address	size	checksum	

(1) Exclusive Status, (2) ID (Roland), (3) Device ID (17), (4) Model ID (GS), (5) Command ID(RQ1), (6) End of Exclusive

Next we calculate the checksum.

41H+02H+4BH+00H+00H+01H = 65+2+75+0+0+1 = 143 (sum) 143 (sum) + 128 = 1 (quotient) ... 15 (remainder) checksum = 128 - 15 (remainder) = 113 = 71H

This means that F0 41 10 42 11 41 02 4B 00 00 01 71 F7 is the message we transmit.

# About tuning

In MIDI, individual Parts are tuned by sending RPN #1 (Master Fine Tuning) to the appropriate MIDI channel.

In MIDI, an entire device is tuned by either sending RPN #1 to all MIDI channels being used, or by sending a System Exclusive MASTER TUNE (address 40 00 00H). RPN#1 allows tuning to be specified in steps of approximately 0.012 cents ( to be precise,

RPN#1 allows tuning to be specified in steps of approximately 0.012 cents ( to be precise, 100/8192 cent), and System Exclusive MASTER TUNE are added together to determine the actual pitch sounded by each part.

The pitch that actually sounds is determined for each part by the sum of RPN#1 (master fine tuning) and the system exclusive MASTER TUNE value.

Frequently used tuning values are given in the following table for your reference. Values are in hexadecimal (decimal in parentheses).

Hz at A4	cent	RPN #1	Sys.Ex. 40 00 00
445.0 444.0 443.0 442.0 441.0 440.0 439.0 438.0	+19.56   +15.67   +11.76   + 7.85   + 3.93   0   - 3.94   - 7.89	4C 43 (+1603) 4A 03 (+1283) 47 44 (+ 964) 45 03 (+ 643) 42 42 (+ 322) 40 00 (	00 04 0C 04 (+196)  00 04 09 0D (+157)  00 04 07 06 (+118)  00 04 04 0F (+ 79)  00 04 02 07 (+ 39)  00 04 00 00 ( 0)  00 03 0D 09 (- 39)  00 03 0B 01 (- 79)

<Example> Set the tuning of MIDI channel 3 to A4 = 442.0 Hz Send RPN#1 to MIDI channel 3. From the above table, the value is 45 03H.

B2	65 00	MIDI ch.3, upper byte of RPN parameter number	: 00H
(B2)	64 01	(MIDI ch.3) lower byte of RPN parameter number	: 01H
(B2)	06 45	(MIDI ch.3) upper byte of parameter value	: 45H
(B2)	26 03	(MIDI ch.3) lower byte of parameter value	: 03H
(B2)	65 7F	(MIDI ch.3) upper byte of RPN parameter number	: 7FH
(B2)	64 7F	(MIDI ch.3) lower byte of RPN parameter number	· 7FH

# ● The Scale Tune Feature (address: 40 1x 40)

The scale Tune feature allows you to finely adjust the individual pitch of the notes from C through B. Though the settings are made while working with one octave, the fine adjustments will affect all octaves. By making the appropriate Scale Tune settings, you can obtain a complete variety of tuning methods other than equal temperament. As examples, three possible types of scale setting are explained below.

# O Equal Temperament

This method of tuning divides the octave into 12 equal parts. It is currently the most widely used form of tuning, especially in occidental music. On the SC-88ST Pro, the default settings for the Scale Tune feature produce equal temperament.

# O Just Temperament (Keytone C)

The three main chords resound much more beautifully than with equal temperament, but this benefit can only be obtained in one key. If transposed, the chords tend to become ambiguous. The example given involves settings for a key in which C is the keynote.

# O Arabian Scale

By altering the setting for Scale Tune, you can obtain a variety of other tunings suited for ethnic music. For example, the settings introduced below will set the SC-88ST Pro to use the Arabian Scale

# Example Settings

Note name	Equal Temperament	Just Temperament (Keytone C)	Arabian Scale
С	0	0	-6
C#	0	-8	+45
D	0	+4	-2
D#	0	+16	-12
E	0	-14	-51
F	0	-2	-8
F#	0	-10	+43
G	0	+2	-4
G#	0	+14	+47
Α	0	-16	0
A#	0	+14	-10
B	0	-12	-49

The values in the table are given in cents. Refer to the explanation of Scale Tuning on page 118 to convert these values to hexadecimal, and transmit them as exclusive data. For example, to set the tune (C-B) of the Part1 Arabian Scale, send the data as follows:

F0 41 10 42 12 40 11 40 3A 6D 3E 34 0D 38 6B 3C 6F 40 36 0F 76 F7

# MIDI SOUND GENERATOR

Model SC-88ST Pro

# **MIDI Implementation Chart**

	Function	Transmitted	Recognized	Remarks
Basic Channel	Default Changed	×	1-16 1-16	
Mode	Default Message Altered	× × *******	Mode 3 Mode 3, 4(M=1)	*2
Note Number	: True Voice	× ********	0-127 0-127	
Velocity	Note ON Note OFF	×	O X	
After Touch	Key's Ch's	×	O *1 O *1	
Pitch Ben	d	×	O *1	
Control Change	0, 32 1 5 6, 38 7 10 11 64 65 66 67 84 91 93 94 98, 99 100, 101	× × × × × × × × × × × × × × × × × × ×	*1     *1	Bank select Modulation Portamento time Data entr Volume Pan Expression Hold 1 Portamento Sostenuto Soft Portamento control Effect 1 (Reverb Send Level Effect 4 (Delay Send Level NRPN LSB,MSB RPN LSB,MSB
Program Change	: True #	× *********	O *1 0-127	Program Number: 1-128
System E	xclusive	O	0	
System Common	: Song Pos : Song Sel : Tune	× × ×	× × ×	
System Real Time	: Clock e : Commands	×	×	
Aux Messages	: All Sounds OFF : Reset All Controllers : Local ON/OFF s : All Notes OFF : Active Sensing : Reset	× × × O ×	○ (120,126,127) ○ × ○ (123-125) ○ ×	
Notes		*1 ○ × is selectable. *2 Recognize as M=1 even if M ≠1		

Mode 1 : OMNI ON, POLY Mode 3 : OMNI OFF, POLY Mode 2 : OMNI ON, MONO Mode 4 : OMNI OFF, MONO O:Yes X:No

Date: '97.12.

Version: 1.00

# **Specifications**

Model: Sound Canvas SC-88ST Pro (General MIDI System ) / GS format )

# **Number of parts**

32

# **Maximum Polyphony**

64 (voices)

# **Internal Memory**

Sound map : 3 (Native map, SC-88, SC-55)

Preset sounds : 1117

Drum sound sets: 42 (include 3 SFX Sets)

# **Effects**

Reverb (8types)

Chorus (8types)

Delay (10types)

2 band equalizer

Insertion Effect (64types)

# **Indicators**

Power Indicator

Part Monitor Indicator x 32

# **Connectors**

MIDI connectors (IN A,IN B,OUT)

Audio Input jack x 2 (L,R)

Audio Output jack x 4 (OUTPUT-1L,1R,2L,2R)

Headphones jack

**COMPUTER Connector** 

# **Power Supply**

DC 9V (AC Adaptor)

# **Current Draw**

550 mA

# **Dimensions**

218 (W) x 251 (D) x 46 (H) mm 8-5/8 (W) x 9-15/16 (D) x 1-13/16 (H) inches

# Weight

1.3 kg (Excluding AC Adaptor) 2 lbs 14 oz

# **Accessories**

Owner's manual

**AC** Adaptor

ACI-120 (for 117V AC countries)

ACI-230 (for 230V AC countries)

ACB-240E (for the U.K./Hong Kong)

ACB-240A (for Australia/New Zealand/Papua New Guinea)

- \* Use Roland ACI or ACB adaptor depending on the voltage system in your country.
- \* In the interest of product improvement, the specifications and/or appearance of the SC-88ST Pro are subject to change without prior notice.

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Maison FO - YAM Marcel 25 Rue Jules MermanZL Chaudron - BP79 97491 Ste Clotilde REUNION TEL: 28 29 16

# **SOUTH AFRICA**

That Other Music Shop (PTY) Ltd. 11 Melle Street (Cnr Melle and Juta Street) Braamfontein 2001 Republic of SOUTH AFRICA TEL: (011) 403 4105

#### Paul Bothner (PTY) Ltd. 17 Werdmuller Centre Claremont 7700

Republic of SOUTH AFRICA TEL: (021) 64 4030

# **AUSTRIA**

E. Dematte &Co. Neu-Rum Siemens-Strasse 4 6063 Innsbruck AUSTRIA TEL: (0512) 26 44 260

# BELGIUM/HOLLAND/ LUXEMBOURG

Roland Benelux N. V. Houtstraat 3 B-2260 Oevel (Westerlo) BELGIUM TEL: (014) 575811

# **BELORUSSIA**

TUSHE UL. Rabkorovskaya 17 220001 MINSK TEL: (0172) 764-911

# **CYPRUS**

Radex Sound Equipment Ltd. 17 Diagorou St., P.O.Box 2046, Nicosia CYPRUS TEL: (02) 453 426

# DENMARK

Roland Scandinavia A/S Langebrogade 6 Post Box 1937 DK-1023 Copenhagen K. DENMARK TEL: 32 95 3111

# FRANCE

Roland France SA 4, Rue Paul Henri SPAAK Parc de l'Esplanade F 77 462 St Thibault Lagny Cedex FRANCE TEL: 01 600 73 508

# FINLAND

Roland Scandinavia As. Filial Finland Lauttasaarentie 54 B Fin-00201 Helsinki, FINLAND TEL: (9) 682 4020

# **GERMANY**

Roland Elektronische Musikinstrumente Handelsgesellschaft mbH. Oststrasse 96, 22844 Norderstedt, GERMANY TEL: (040) 52 60090

# **GREECE**

V. Dimitriadis & Co. Ltd. 20, Alexandras St. & Bouboulinas 54 St. 106 82 Athens, GREECE TEL: (01) 8232415

# HUNGARY

Intermusica Ltd. Warehouse Area 'DEPO' Pf.83 H-2046 Torokbalint, HUNGARY TEL: (23) 511011

# **IRELAND**

The Dublin Service Centre Audio Maintenance Limited 11 Brunswick Place Dublin 2 Republic of IRELAND TEL: (01) 677322

# ITALY

Roland Italy S. p. A. Viale delle Industrie, 8 20020 Arese Milano, ITALY TEL: (02) 937 781

# **NORWAY**

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# **PORTUGAL**

Caius - Tecnologias Audio e Musica , Lda. Rue de SANTA Catarina 131 4000 Porto, PORTUGAL TEL: (02) 38 4456

# **RUSSIA**

Slami Music Company Sadojava-Triumfalnaja st., 16 103006 Moscow, RUSSIA TEL: 095 209 2193

# SPAIN

Roland Electronics de España, S. A. Calle Bolivia 239 08020 Barcelona, TEL: (93) 308 1000

# **SWEDEN**

Roland Scandinavia A/S SWEDISH SALES OFFICE Danvik Center 28, 2 tr. S-131 30 Nacka SWEDEN TEL: (08) 702 0020

# SWITZERLAND

Roland (Switzerland) AG Musitronic AG Gerberstrasse 5, CH-4410 Liestal, SWITZERLAND TEL: (061) 921 1615

# **UKRAINE**

TIC-TAC Mira Str. 19/108 P.O.Box 180 295400 Munkachevo, UKRAINE TEL: (03131) 414-40

# **UNITED KINGDOM** Roland (U.K.) Ltd., Swansea

Office Atlantic Close, Swansea Enterprise Park SWANSEA West Glamorgan SA7 9FJ UNITED KINGDOM





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

For the USA

# FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

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

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

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

For Canada

# NOTICE

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

# **AVIS**

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

For the U.K.

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

BLUE: NEUTRAL BROWN: LIVE

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

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED. Under no circumstances must either of the above wires be connected to the earth terminal of a three pin plug.

# Roland® 71452001

UPC 71452001