

 **Roland**[®]

GENERAL
MIDI

GM DAUGHTER BOARD

SCB-7

OWNER'S MANUAL

For Germany

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das
Roland GM Daughter Board SCB-7

(Gerät, Typ, Bezeichnung)

in Übereinstimmung mit den Bestimmungen der BMPT-AmtsblVfg 243/1991 funk-entstört ist. Der vorschriftsmäßige Betrieb mancher Geräte (z. B. Meßsender) kann allerdings gewissen Einschränkungen unterliegen. Beachten Sie deshalb die Hinweise in der Bedienungsanleitung.

Dem Zentralamt für Zulassungen im Fernmeldewesen wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf die Einhaltung der Bestimmungen eingeräumt.

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(Name und Anschrift des Herstellers/Importeurs)

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

CLASS B

NOTICE

This digital apparatus does not exceed the Class B limits for radio noise emissions set out in the Radio Interference Regulations of the Canadian Department of Communications.

CLASSE B

AVIS

Cet appareil numérique ne dépasse pas les limites de la classe B au niveau des émissions de bruits radioélectriques fixés dans le Règlement des signaux parasites par le ministère canadien des Communications.

GM DAUGHTER BOARD

SCB-7

Owner's Manual

We'd like to take a moment to thank you for purchasing the SCB-7 GM Daughter Board. The SCB-7 is a daughterboard containing high-quality sounds compatible with the GM (General MIDI) system.

In order to gain a thorough understanding of the SCB-7's many features, please take the time to read this manual carefully.

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FEATURES

Easy Installation

All you need to do is to mount the SCB-7 onto a sound card compatible with Sound Blaster, and you can enjoy high-quality sounds with music or game software.

16-part Multi-Timbral Sound Generator

The SCB-7 is a 16-part multi-timbral (including the drum part) sound generator. It can play up to 28 notes simultaneously, making possible ensembles of up to 16 parts.

Reverb and Chorus Effects

The onboard reverb enhances expressiveness by adding an expansive feeling, while chorus can be used to add fullness to the sound for majestic ensembles. These digital effects let you create music with virtually the same fidelity and acoustics as a concert hall.

Compatible with GM (General MIDI) System Level 1

The SCB-7 is compatible with GM System Level 1, which was designed to transcend variations among different manufacturers and models, and allow for sound generators to respond in a more standardized way. This means you can play music data for GM sound sources without any additional modification.

IMPORTANT NOTES

[Placement]

- Do not subject the unit to temperature extremes (e.g. direct sunlight in an enclosed vehicle). Avoid using or storing the unit in dusty or humid areas, or areas that are subject to high levels of vibration.
- Using the unit near power amplifiers (or other equipment containing large power transformers) may induce hum.
- This device may interfere with radio and television reception. Do not use this device in the vicinity of such receivers.

[Additional Precautions]

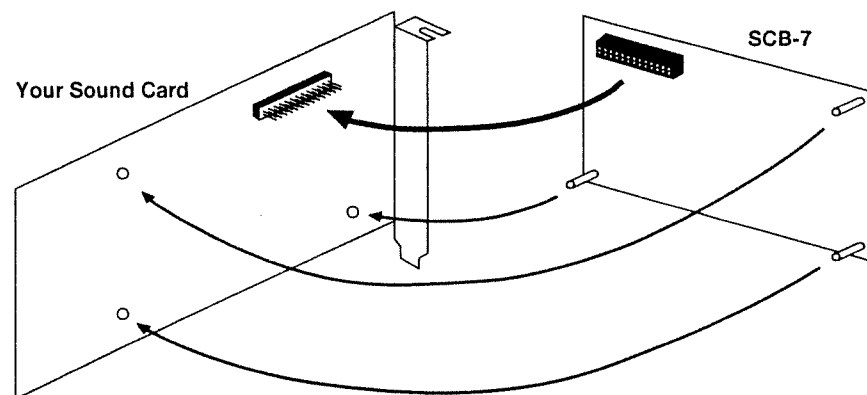
- Protect the unit from strong impact.
- Do not allow objects or liquids of any kind to penetrate the unit. In the event of such an occurrence, discontinue use immediately. Contact qualified service personnel as soon as possible.
- Should a malfunction occur, or if you suspect there is a problem, discontinue use immediately. Contact qualified service personnel as soon as possible.

1. INSTALLING THE SCB-7

Available Sound Cards

Sound Blaster 16 Basic
Sound Blaster 16
Sound Blaster 16 ASP
Sound Blaster 16 SCSI-2
Sound Galaxy NX PRO 16
Sound Galaxy PRO 16 Extra

1. Turn off your computer and all peripheral devices (such as printers and monitors connected to it) and unplug the power cable.
2. Remove the computer's cover. For more information, see the owner's manual for your computer.
3. Remove your sound card from the expansion slot of your computer.
4. Connect the Extension Connector (your sound card may call it "the MIDI Connector") of the SCB-7 to your sound card as shown below. Be sure to properly and securely attach the SCB-7.



* Do not touch the printed circuit and terminals.

* If a plastic spacer touches parts on your sound card (e.g. an IC socket), remove the unnecessary plastic spacer from the SCB-7.

5. Install the sound card in your computer.
6. Replace the computer's cover.

2. THE GENERAL MIDI SYSTEM

MIDI is a universally recognized standard that was created as a means to exchange performance information between electronic musical instruments—regardless of model or manufacturer. Thanks to MIDI, electronic musical instruments now enjoy a level of communicative freedom that was unimaginable a decade or so ago. Without MIDI, sequenced music and the use of computers running Desk Top Music Systems would not be possible.

However, certain inconveniences have become more apparent, even while MIDI has become an indispensable part of electronic musical instruments. This is because many of the finer details concerning the communication of performance data were not originally decided upon.

For example, MIDI defines things in terms such as “the Program Change message is used primarily to transmit the tone number when switching to different tones.” However, details such as which specific numbers will cause a change to a certain type of sound were never decided upon. As a result, the differences in the numbers and the actual sounds obtained can create a great deal of confusion when working with a variety of different devices.

Given these circumstances, song data that was created using one sound generating device will often not play as expected when played by some other sound generator. The General MIDI System was formulated in order to alleviate such problems.

General MIDI System and General MIDI Scores

The General MIDI System is a universal set of specifications for sound generating devices which has been agreed upon by both the American MMA (MIDI Manufacturer's Association) and the Japanese MIDI Standards Committee. These specifications seek to allow for the creation of music data which is compatible with a much larger range of devices, without being limited to equipment by a particular manufacturer or to specific models.

The General MIDI System defines a range of items, such as the minimum number of voices that need to be supported, the MIDI messages that must be recognized; and describes the specific sounds which correspond to the range of Program Change numbers, and the manner in which drum sounds should be assigned to positions on the keyboard. Thanks to these specifications, any device that is equipped with sound sources supporting the General MIDI System will be able to correctly reproduce General MIDI Scores (music data created specifically for devices supporting the General MIDI System), regardless of the make or model.

However, the General MIDI System does not define what type of sound generation a device should use, or any of the details concerning the various kinds of expression that could be applied. This was done in order to provide for a greater amount of freedom, and allow manufacturers to design new features for sound generating devices. As a result, however, with each addition of some unique feature, the likelihood of complete compatibility with other devices decreases.

3. PARTS, VOICES AND POLYPHONY

(1) Parts

The SCB-7 provides 16 Parts, and thus allows for a maximum of 16 different performance parts to be played at the same time. Part 10 is reserved for drum instruments.

MIDI deals with a great variety of data (or messages) which describe a performance. One of the most common messages is the instruction to play a note—the “Note message.” Though this is a simple message, it needs to include information about which key is to be played, at what velocity (volume), and for how long. MIDI performance data consists of an ongoing stream of such messages.

Each Part is assigned a MIDI channel on which it receives performance data. The Part will play any data that arrives on its channel, and ignore the data on all other channels. This is the reason why each Part is able to perform a different musical part. On the SCB-7, the channel number and the Part number are the same as the default setting.

Part 10 is dedicated to drum instruments and therefore functions differently than the other Parts. In Part 10 a different percussion sound is assigned to each note (Note Number) on the keyboard. Any key you press will play the assigned sound.

(2) Voices and Polyphony

The SCB-7 contains 28 internal components (Voices), each of which is capable of generating sound. All 28 Voices can operate simultaneously. However, some sounds require 2 Voices to produce one note. For this reason, the number of notes actually available can be 28 or less. For example, if every sound you are using consists of 2 Voices, the maximum number of notes you could play at once would be 14.

To determine how many Voices the SCB-7 is using, add up the number of Voices used by all the Parts. Note that it is possible to have all 28 Voices working to produce the sound of only one Part.

For information on the number of Voices used by particular sounds, refer to the “TONE TABLE” (p. 12).

(3) Maximum Polyphony

When the number of Voices being used exceeds 28, some of the notes that should be played could be cut. To avoid 'loosing' important notes, there are two features you can use to insure that a particular Part has all the notes it is supposed to. The settings for the parameters which control these features are made using Exclusive messages (p. 19).

Part Priority

When the SCB-7 receives performance data which requests it to produce more than the 28 Voices available, priority is given to producing the most recently received note messages. Those that have been sounding for a while will be cut, in order, starting with the oldest ones, and the ones that are assigned to the Parts with the lowest priority:

Part Priority Ordering:

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

For this reason, consider a part's importance (bass, chords, melody etc.) carefully when assigning it to a Part on the SCB-7.

Voice Reserve

The Voice Reserve function allows you to specify a minimum number of Voices that will always be reserved and made available for certain Parts. This becomes effective in instances when the total number of Voices that have been requested exceeds the capacity of the unit.

When shipped, the following settings were made for Voice Reserve :

| | |
|--------------|---|
| Part 1: | 6 |
| Parts 2-10: | 2 |
| Parts 11-16: | 0 |

As Voice Reserve for Part 1 is set to "6", Part 1 will always have at least 6 Voices—even when all Parts combined are requesting more than 28 Voices. In other words, with Part 1 set this way, all the notes that it should play will be played faithfully (as long as the sounds assigned to it do not use more than 6 Voices).

4. ABOUT MIDI

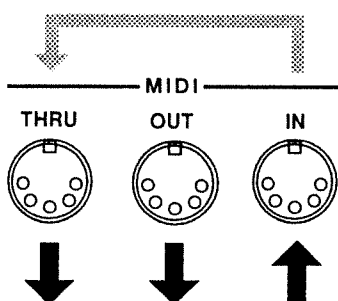
MIDI stands for Musical Instrument Digital Interface. MIDI is a world-wide standard that allows musical instruments and computers to exchange musical data. Most electronic musical instruments sold today are MIDI compatible. MIDI compatible devices have MIDI connectors which are used to physically link instruments (using special cables). MIDI does not transmit the sound of an instrument, but rather 'messages' in digital form that tell the receiving instrument to "do something". These are known as MIDI messages.

(1) MIDI Message Exchange

How the exchange of MIDI messages is carried out is explained in the following.

MIDI Connectors

In carrying out the exchange of MIDI messages, three connectors are used. MIDI cables are connected to these connectors in various ways depending on the desired result:



MIDI IN connector:

This connector receives incoming MIDI messages.

MIDI OUT connector:

This connector transmits outgoing MIDI messages to other devices.

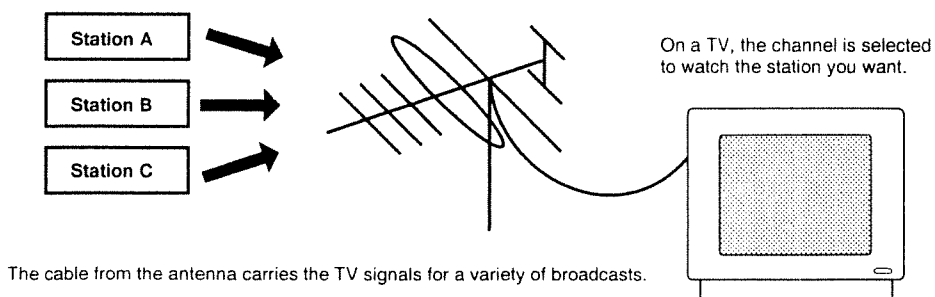
MIDI THRU connector:

MIDI messages received at MIDI IN are re-transmitted by the MIDI THRU connector. (This connector does not transmit messages that originate inside the unit itself.)

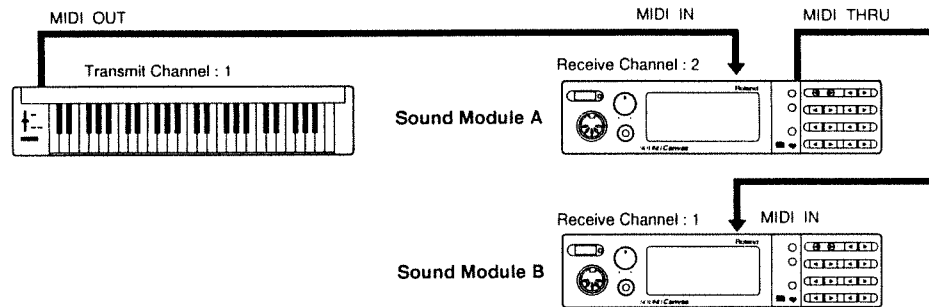
MIDI Channels and Multi-Timbral Capabilities

With MIDI, a single cable can be used for carrying differing sets of performance information, for a number of MIDI devices. This is possible thanks to the concept of MIDI channels. MIDI channels are easy to understand if we use the analogy of television broadcasting.

Many television programs are broadcast from many TV stations and your TV antenna receives them all. By setting your television to a specific channel, you can watch only the desired program. The same idea applies to MIDI channels. The master device is somewhat like the broadcast station, and the slave device is like a television receiver. The MIDI messages carried by the MIDI cable are like the programs that are transmitted from the broadcast stations.



MIDI provides sixteen channels (1—16). When the channel which the sending device (the master) is using to transmit on matches the channel which the receiving device (the slave) is using to receive on, the performance data is conveyed. When the MIDI channels are set as illustrated below and you play the keyboard, sound will be produced only by sound module B. Sound module A will not sound. This is because only sound module B is set to receive on the same channel that the keyboard is using to transmit on. Sound module A's channel doesn't match, so it won't sound.



The SCB-7 is capable of simultaneously recognizing the MIDI messages on all 16 channels. In other words, it is capable of playing 16 different Parts at the same time. Of these, the Part which is set to receive on MIDI channel 10 is known as the Drum Part. This Part provides a collection of percussive instrument sounds, with a different sound for each Note Number (p. 14). The other Parts, those having a MIDI receive channel from 1-9 or 11-16, are known as Standard Parts, and are used for melody or bass, chords, etc. Sound modules such as the SCB-7 are multi-timbral, which means they can simultaneously receive data on a multiple number of MIDI channels, and can play the musical data for a number of Parts simultaneously.

(2) MIDI Messages Handled by the SCB-7

Each of the Parts on the SCB-7 is capable of receiving the following MIDI Messages:

Note Messages

These messages convey what is played on a keyboard or other instrument. The types of Note messages are as follows:

- Note Number: A number representing the position of a key on a keyboard.
- Note On: Indicates that a key has been pressed.
- Note Off: Indicates that a key has been released.
- Note On Velocity: The strength with which a key has been pressed.

Note Numbers range from 0—127 and correspond with the positions of keys on a keyboard. Middle C (C4) is number 60. In the Drum Part, a different percussive instrument sound is assigned to each Note Number.

Pitch Bend Change Messages

These messages convey the action of the Bender Lever (wheel) that is found on many synthesizers. They allow for smooth changes in the pitch to be made.

Aftertouch Messages

These messages convey aftertouch (applying pressure to keyboard keys after the notes have been played initially). Many keyboards are equipped with this feature.

There are two types of aftertouch; Channel and Polyphonic.

Channel aftertouch provides aftertouch control for each MIDI channel, regardless of the pressure applied to individual keys.

Polyphonic aftertouch provides response to the pressure applied to individual keys.

Program Change Messages

These messages are used for changing sounds.

Control Change Messages

These messages are used to enhance the expressiveness of a performance, and include Vibrato, Hold, Volume, and Pan. Each function is identified by a Control Number ranging from 0—127, and the functions which can be controlled will vary depending on the MIDI device.

- Modulation (Control Number: 1)

Adjusts the depth of the vibrato effect. The actual effect obtained is set individually for each sound.

- Data Entry (Control Number: 6, 38)

Used to supply the value for the parameter selected for NRPN and RPN.

- Volume (Control Number: 7)

Provides adjustment of the volume for each Part and allows the balance to be controlled. The actual volume level obtained depends on a combination of settings; Volume (Control Number: 7), Expression (Control Number: 11), and Master Volume (Exclusive).

- Panpot (Control Number: 10)

Provides adjustment for the sound location in the stereo field (L/R). Effective only when a stereo output is used.

| Orientation | Left | Center | Right |
|-------------|------|--------|-------|
| Pan | 0 | 64 | 127 |

- Expression (Control Number: 11)

Provides adjustment of the volume for each Part and allows the balance to be controlled. The actual volume level obtained depends on a combination of settings; Volume (Control Number: 7), Expression (Control Number: 11), and Master Volume (Exclusive).

- Hold 1 (Control Number: 64)

Allows the sound to be sustained. (Similar to the function of a piano's damper pedal).

- General Purpose Effect 1 (Reverb Send Level) (Control Number: 91)

Adjusts the reverb level for each Part.

- General Purpose Effect 3 (Chorus Send Level) (Control Number: 93)

Adjusts the chorus level for each Part.

- NRPN LSB, NRPN MSB (Control Number: 98, 99)

- RPN LSB, RPN MSB (Control Number: 100, 101)

Provide control over the sound source's parameters.

The parameter to be controlled is specified by means of NRPN MSB/LSB and RPN MSB/LSB. The Data Entry message is used to set the value for the selected parameter.

* *For a list of parameters which can be controlled, refer to the "MIDI IMPLEMENTATION".*

- All Sounds Off (Control Number: 120)

Cuts off all sounds.

- Reset All Controllers (Control Number: 121)

When this message is received, the controllers will be set as follows:

| | |
|-------------------|--|
| Pitch Bend Change | +/-0 (median) |
| Channel Pressure | 0 (min.) |
| Modulation | 0 (min.) |
| Expression | 127 (max.) |
| Hold 1 | 0 (off) |
| NRPN | No number selected; no change in internal data |
| RPN | No number selected; no change in internal data |

Active Sensing Messages

These messages monitor the integrity of MIDI connections. The reception of Active Sensing messages (at MIDI IN) will cause the SCB-7 to switch into a monitor mode where it continually watches for intermittent Active Sensing messages.

If an interval of more than 420 milliseconds (on the SCB-7) should pass without an Active Sensing message being received, the unit will assume that a cable has been disconnected or damaged. As a result, all sound production will stop, and the unit takes all the measures it normally would upon reception of a Reset All Controllers message. No further monitoring of Active Sensing messages occurs.

Exclusive Messages

Exclusive messages handle information that is unique to a particular device (such as sound editing data). For details, refer to "MIDI IMPLEMENTATION" (p. 15).

(3) Default Settings

Part Settings

| | | |
|-------------------|--------------|----------------|
| MIDI channel/Part | 1-9, 11-16 | 10 (Drum Part) |
| Tone | Piano 1 (#1) | STANDARD set |
| Part Volume | 100 | 100 |
| Pan | 64 | 64 |
| Reverb Send | 40 | 40 |
| Chorus Send | 0 | 0 |
| Bend Sens. | 2 | 2 |

Overall Part Settings

| Master Volume | Reverb | | | Chorus | | | | | Key Shift |
|---------------|--------|-------|------|--------|----------|-------|------|-------|-----------|
| | Type | Level | Time | Level | Feedback | Delay | Rate | Depth | |
| 127 | Hall2 | 88 | 64 | 64 | 8 | 80 | 3 | 19 | 0 |

(4) About the MIDI Implementation Chart

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. By looking at this chart, you can quickly 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 Transmission and Reception 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 Transmission column of the master and the Reception 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 SCB-7, can be found starting on page 15.

5. TONE TABLE

| | PC# | Tone Name | V | TVF | | PC# | Tone Name | V | TVF | | |
|----------------------|-----|-----------|-----------------|-----|--|---------------------|-----------|-----|---------------|---|-----|
| Piano | 1 | 00h | Piano 1 | 1 | | Bass | 33 | 20h | Acoustic Bs. | 1 | |
| | 2 | 01h | Piano 2 | 1 | | | 34 | 21h | Fingered Bs. | 1 | |
| | 3 | 02h | Piano 3 | 1 | | | 35 | 22h | Picked Bs. | 1 | |
| | 4 | 03h | Honky-tonk | 2 | | | 36 | 23h | Fretless Bs. | 1 | |
| | 5 | 04h | E.Piano 1 | 1 | | | 37 | 24h | Slap Bass 1 | 1 | |
| | 6 | 05h | E.Piano 2 | 1 | | | 38 | 25h | Slap Bass 2 | 1 | |
| | 7 | 06h | Harpsichord | 1 | | | 39 | 26h | Synth Bass 1 | 1 | |
| | 8 | 07h | Clav. | 1 | | | 40 | 27h | Synth Bass 2 | 2 | |
| Chromatic Percussion | 9 | 08h | Celesta | 1 | | Strings & Orchestra | 41 | 28h | Violin | 1 | |
| | 10 | 09h | Glockenspiel | 1 | | | 42 | 29h | Viola | 1 | |
| | 11 | 0Ah | Music Box | 1 | | | 43 | 2Ah | Cello | 1 | |
| | 12 | 0Bh | Vibraphone | 1 | | | 44 | 2Bh | Contrabass | 1 | |
| | 13 | 0Ch | Marimba | 1 | | | 45 | 2Ch | Tremolo Str | 1 | |
| | 14 | 0Dh | Xylophone | 1 | | | 46 | 2Dh | Pizzicato Str | 1 | |
| | 15 | 0Eh | Tubular-bell | 1 | | | 47 | 2Eh | Harp | 1 | |
| | 16 | 0Fh | Dulcimer | 1 | | | 48 | 2Fh | Timpani | 1 | |
| Organ | 17 | 10h | Organ 1 | 1 | | Ensemble | 49 | 30h | Strings | 1 | |
| | 18 | 11h | Organ 2 | 1 | | | 50 | 31h | Slow Strings | 1 | |
| | 19 | 12h | Organ 3 | 2 | | | 51 | 32h | Syn.Strings1 | 1 | |
| | 20 | 13h | Church Org.1 | 1 | | | 52 | 33h | Syn.Strings2 | 2 | |
| | 21 | 14h | Reed Organ | 1 | | | 53 | 34h | Choir Aahs | 1 | |
| | 22 | 15h | Accordion Fr | 2 | | | 54 | 35h | Voice Oohs | 1 | |
| | 23 | 16h | Harmonica | 1 | | | 55 | 36h | SynVox | 1 | |
| | 24 | 17h | Tango Accordion | 2 | | | 56 | 37h | Orchestra Hit | 2 | OFF |
| Guitar | 25 | 18h | Nylon-str.Gt | 1 | | Brass | 57 | 38h | Trumpet | 1 | |
| | 26 | 19h | Steel-str.Gt | 1 | | | 58 | 39h | Trombone | 1 | |
| | 27 | 1Ah | Jazz Gt. | 1 | | | 59 | 3Ah | Tuba | 1 | |
| | 28 | 1Bh | Clean Gt. | 1 | | | 60 | 3Bh | Muted Trumpet | 1 | |
| | 29 | 1Ch | Muted Gt. | 1 | | | 61 | 3Ch | French Horn | 2 | |
| | 30 | 1Dh | Overdrive Gt | 1 | | | 62 | 3Dh | Brass 1 | 1 | |
| | 31 | 1Eh | Distortion Gt | 1 | | | 63 | 3Eh | Synth Brass1 | 2 | |
| | 32 | 1Fh | Gt.Harmonics | 1 | | | 64 | 3Fh | Synth Brass2 | 2 | |

PC#: Program Change Number

V: Number of voices used

TVF: Instruments marked "OFF" cannot have their TVF's (Time Variant Filter) modified by Channel aftertouch.

* Reception of channel aftertouch on the SCB-7 is disabled as a default setting. When you wish to use this function, enable it from your application software. See the MIDI Implementation for more details.

| | PC# | Tone Name | V | TVF | | PC# | Tone Name | V | TVF | | |
|------------|-----|-----------|--------------|-----|-----|-------------|-----------|-----|--------------|---|-----|
| Reed | 65 | 40h | Soprano Sax | 1 | | Synth SFX | 97 | 60h | Ice Rain | 2 | |
| | 66 | 41h | Alto Sax | 1 | | | 98 | 61h | Soundtrack | 2 | |
| | 67 | 42h | Tenor Sax | 1 | | | 99 | 62h | Crystal | 2 | |
| | 68 | 43h | Baritone Sax | 1 | | | 100 | 63h | Atmosphere | 2 | |
| | 69 | 44h | Oboe | 1 | | | 101 | 64h | Brightness | 2 | OFF |
| | 70 | 45h | English Horn | 1 | | | 102 | 65h | Goblin | 2 | |
| | 71 | 46h | Bassoon | 1 | | | 103 | 66h | Echo Drops | 1 | |
| | 72 | 47h | Clarinet | 1 | | | 104 | 67h | Star Theme | 2 | |
| Pipe | 73 | 48h | Piccolo | 1 | | Ethnic Misc | 105 | 68h | Sitar | 1 | |
| | 74 | 49h | Flute | 1 | | | 106 | 69h | Banjo | 1 | |
| | 75 | 4Ah | Recorder | 1 | | | 107 | 6Ah | Shamisen | 1 | |
| | 76 | 4Bh | Pan Flute | 1 | | | 108 | 6Bh | Koto | 1 | |
| | 77 | 4Ch | Bottle Blow | 2 | | | 109 | 6Ch | Kalimba | 1 | |
| | 78 | 4Dh | Shakuhachi | 2 | | | 110 | 6Dh | Bag Pipe | 1 | |
| | 79 | 4Eh | Whistle | 1 | OFF | | 111 | 6Eh | Fiddle | 1 | |
| | 80 | 4Fh | Ocarina | 1 | | | 112 | 6Fh | Shannai | 1 | |
| Synth Lead | 81 | 50h | Square Wave | 2 | | Percussive | 113 | 70h | Tinkle Bell | 1 | |
| | 82 | 51h | Saw Wave | 2 | | | 114 | 71h | Agogo | 1 | |
| | 83 | 52h | Syn.Calliope | 2 | | | 115 | 72h | Steel Drums | 1 | |
| | 84 | 53h | Chiffer Lead | 2 | | | 116 | 73h | Woodblock | 1 | OFF |
| | 85 | 54h | Charang | 2 | | | 117 | 74h | Taiko | 1 | |
| | 86 | 55h | Solo Vox | 2 | | | 118 | 75h | Melo. Tom 1 | 1 | OFF |
| | 87 | 56h | 5th Saw Wave | 2 | | | 119 | 76h | Synth Drum | 1 | OFF |
| | 88 | 57h | Bass & Lead | 2 | | | 120 | 77h | Reverse Cym. | 1 | OFF |
| Synth Pad | 89 | 58h | Fantasia | 2 | | SFX | 121 | 78h | Gt.FretNoise | 1 | OFF |
| | 90 | 59h | Warm Pad | 1 | | | 122 | 79h | Breath Noise | 1 | |
| | 91 | 5Ah | Polysynth | 2 | | | 123 | 7Ah | Seashore | 1 | |
| | 92 | 5Bh | Space Voice | 1 | | | 124 | 7Bh | Bird | 2 | OFF |
| | 93 | 5Ch | Bowed Glass | 2 | | | 125 | 7Ch | Telephone 1 | 1 | OFF |
| | 94 | 5Dh | Metal Pad | 2 | | | 126 | 7Dh | Helicopter | 1 | |
| | 95 | 5Eh | Halo Pad | 2 | | | 127 | 7Eh | Applause | 2 | |
| | 96 | 5Fh | Sweep Pad | 1 | | | 128 | 7Fh | Gun Shot | 1 | OFF |

PC#: Program Change Number

V: Number of voices used

TVF: Instruments marked "OFF" cannot have their TVF's (Time Variant Filter) modified by Channel aftertouch.

* Reception of channel aftertouch on the SCB-7 is disabled as a default setting. When you wish to use this function, enable it from your application software. See the MIDI Implementation for more details.

6. DRUM SET TABLE

| PC# | 1 | 17 | 25 | 26 | 41 | 49 |
|----------|----------------------------|-------------------------|-------------------------|--------------------------|-------------------------|-----------------------------|
| Drum set | Standard set (60 tones) | Power set (60 tones) | Elec. set (60 tones) | TR-808 set (60 tones) | Brush set (60 tones) | Orchestra set (61 tones) |
| 28 | 27 High Q | | | | | Closed HH [EXC1] |
| | Slap | | | | | Pedal HH [EXC1] |
| 29 | Scratch Push | | | | | Open HH [EXC1] |
| | 30 Scratch Pull | | | | | Ride Cymbal |
| 31 | Sticks | | | | | |
| 32 | Square Click | | | | | |
| 33 | Metronome Click | | | | | |
| 34 | Metronome Bell | | | | | |
| 35 | Kick Drum 2 | | | | | Concert BD 2 |
| | 36 Kick Drum 1 | MONDO Kick | Elec BD (•) | 808 Bass Drum (•) | | Concert BD 1 (•) |
| 37 | Side Stick | | | 808 Rim Shot | | |
| 38 | 39 Snare Drum 1 | Gated SD | Elec SD | 808 Snare Drum | Brush Swish | Concert SD (•) |
| 40 | Hand Clap | | | | Brush Slap | Castanets |
| | Snare Drum 2 | | Gated SD | | Brush Swirl (•) | Concert SD (•) |
| 41 | Low Tom 2 | | Elec LowTom 2 | 808 Low Tom 2 | | Timpani F (•) |
| 42 | Closed Hi-Hat [EXC1] | | | 808 CHH (•) [EXC1] | | Timpani F# (•) |
| 43 | Low Tom 1 | | Elec LowTom 1 | 808 Low Tom 1 | | Timpani G (•) |
| 44 | Pedal Hi-Hat [EXC1] | | | 808 CHH (•) [EXC1] | | Timpani G# (•) |
| 45 | Mid Tom 2 | | Elec MidTom 2 | 808 Mid Tom 2 | | Timpani A (•) |
| 46 | Open Hi-Hat [EXC1] | | | 808 OHH (•) [EXC1] | | Timpani A# (•) |
| 47 | Mid Tom 1 | | Elec MidTom 1 | 808 Mid Tom 1 | | Timpani B (•) |
| 48 | High Tom 2 | | Elec Hi Tom 2 | 808 Hi Tom 2 | | Timpani c (•) |
| | 49 Crash Cymbal 1 (•) | | | 808 Cymbal (•) | | Timpani c# (•) |
| 50 | High Tom 1 | | Elec Hi Tom 1 | 808 Hi Tom 1 | | Timpani d (•) |
| 51 | Ride Cymbal 1 | | | | | Timpani d# (•) |
| 52 | Chinese Cymbal | | Reverse Cymbal | | | Timpani e (•) |
| 53 | Ride Bell (•) | | | | | Timpani f (•) |
| 54 | Tambourine | | | | | |
| 55 | Splash Cymbal (•) | | | | | |
| 56 | Cowbell | | | 808 Cowbell | | |
| 57 | Crash Cymbal 2 (•) | | | | | Concert Cymbal2 (•) |
| 58 | Vibra-slap | | | | | |
| 59 | Ride Cymbal 2 | | | | | Concert Cymbal1 |
| 60 | High Bongo | | | | | |
| | 61 Low Bongo | | | | | |
| 62 | Mute High Conga | | | 808 Hi Conga (•) | | |
| 63 | Open High Conga | | | 808 Mid Conga (•) | | |
| 64 | Low Conga | | | 808 Low Conga (•) | | |
| 65 | High Timbale | | | | | |
| 66 | Low Timbale | | | | | |
| 67 | High Agogo | | | | | |
| 68 | Low Agogo | | | | | |
| 69 | Cabasa | | | | | |
| 70 | Maracas | | | 808 Maracas | | |
| 71 | Short Hi Whistle [EXC2] | | | | | |
| | Long Low Whistle [EXC2] | | | | | |
| 72 | 73 Short Guiro [EXC3] | | | | | |
| 74 | Long Guiro [EXC3] | | | | | |
| 75 | Claves | | | 808 Claves | | |
| 76 | High Wood Block | | | | | |
| 77 | Low Wood Block | | | | | |
| 78 | Mute Cuica [EXC4] | | | | | |
| 79 | Open Cuica [EXC4] | | | | | |
| 80 | Mute Triangle (•) [EXC5] | | | | | |
| 81 | Open Triangle [EXC5] | | | | | |
| 82 | Shaker | | | | | |
| 83 | Jingle Bell | | | | | |
| 84 | --- | --- | --- | --- | --- | --- |
| | 85 Castanets | | | | | |
| 86 | Mute Surdo (•) [EXC6] | | | | | |
| 87 | Open Surdo (•) [EXC6] | | | | | |
| 88 | --- | --- | --- | --- | --- | Applause |

- The blank positions have the same instruments as the "Standard set." "----" means "empty."
- Instruments with the same [EXC#] (Exclusive group number) will mute each other when played in combination.
- Instruments marked with "(•)" can have their TVF's (Time Variant Filter) modified by Channel airtouch.

MIDI IMPLEMENTATION

1. RECEIVED DATA

[Channel Voice Message]

<1> NOTE OFF

| Status | Second | Third |
|--------|--------|-------|
| 8nH | kkH | vvH |
| 9nH | kkH | 00H |

n = MIDI channel : 0H...FH (ch1...ch16)
kk = Note number : 00H...7FH (0...127)
vv = Velocity : 00H...7FH (0...127)

- Velocity is ignored
- Drum Instruments (except 'Applause' of Drum Part) ignore both messages.

<2> NOTE ON

| Status | Second | Third |
|--------|--------|-------|
| 9nH | kkH | vvH |

n = MIDI channel : 0H...FH (ch1...ch16)
kk = Note number : 00H...7FH (0...127)
vv = Velocity : 00H...7FH (0...127)

<3> CONTROL CHANGE

Control value is not affected when receiving Program Change messages. However, that of Drum Part by NRPN is reset when receiving Program Change messages. (Refer to //NRPN//)

(1) Modulation (#1)

| Status | Second | Third |
|--------|--------|-------|
| BnH | 01H | vvH |

n = MIDI channel : 0H...FH (ch1...ch16)
vv = Modulation depth : 00H...7FH (0...127)

- Affects pitch modulation or rate control (Refer to p. 19 'PATCH PARAMETERS')

(2) Data entry (#6, #38)

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

n = MIDI channel : 0H...FH (ch1...ch16)
mm = MSB value of the parameter specified by RPN or NRPN
ll = LSB value of the parameter specified by RPN or NRPN

(3) Volume (#7)

| Status | Second | Third |
|--------|--------|-------|
| BnH | 07H | vvH |

n = MIDI channel : 0H...FH (ch1...ch16)
vv = Volume : 00H...7FH (0...127)

- Real volume is determined by
(Volume value) x (Expression value) x (Master Volume value)

(4) Panpot (#10)

| Status | Second | Third |
|--------|--------|-------|
| BnH | 0AH | vvH |

n = MIDI channel : 0H...FH (ch1...ch16)
vv = Panpot : 00H...40H...7FH (0...64...127) |Left..Center..Right|

- 0 and 1 mean Left, 64 means Center, 127 means Right
Total 127 steps from Left to Right

(5) Expression (#11)

| Status | Second | Third |
|--------|--------|-------|
| BnH | 0BH | vvH |

n = MIDI channel : 0H...FH (ch1...ch16)
vv = Expression : 00H...7FH (0...127)

- Affects volume
- Real volume is determined by
(Volume value) x (Expression value) x (Master Volume value)

(6) Hold1 (#64)

| Status | Second | Third |
|--------|--------|-------|
| BnH | 40H | vvH |

n = MIDI channel : 0H...FH (ch1...ch16)
vv = Control Value : 0H...3FH (0...63) : Hold OFF
40H...7FH (64...127) : Hold ON

(7) Effect1 depth (Reverb depth) (#91)

| Status | Second | Third |
|--------|--------|-------|
| BnH | 5BH | vvH |

n = MIDI channel : 0H...FH (ch1...ch16)
vv = Reverb send level : 00H...7FH (0...127)

- Real sending level is determined by Volume value, Expression value, Master Volume value and this value. (Refer to block diagram on page 20)

(8) Effect3 depth (Chorus depth) (#93)

| Status | Second | Third |
|--------|--------|-------|
| BnH | 5DH | vvH |

n = MIDI channel : 0H...FH (ch1...ch16)
vv = Chorus send level : 00H...7FH (0...127)

- Real sending level is determined by Volume value, Expression value, Master Volume value and this value. (Refer to block diagram on page 20)

(9) NRPN MSB/LSB (#98, #99)

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

n = MIDI channel : 0H...FH (ch1...ch16)
ll = LSB value of the parameter specified by NRPN
mm = MSB value of the parameter specified by NRPN

- At power up or receiving a "Turn General MIDI System On (f0 7E 7F 09 01 F7)" message, NRPN is not recognized (Rx.NRPN = OFF). System Exclusive message can enable NRPN. (Refer to p. 19 'PATCH PARAMETERS')

//NRPN//

NRPN (Non Registered Parameter Number) is the expanded Control Change message to control native functions of each MIDI instrument. NRPN is used to modify tone parameters that are relative values from pre-set or absolute values. NRPN MSB/LSB should be set before sending data entry.

NRPN is available for only the Drum Part in the SCB-7.

| NRPN | Data Entry | | |
|---------|------------|-------------|--|
| MSB LSB | MSB LSB | Description | |
| 18H rrH | mmH | --- | Pitch coarse of Drum Instruments (relative change) mm : 00H...7FH (-64...0...+63 semitones) |
| 1AH rrH | mmH | --- | TVA level of Drum Instruments (absolute change) mm : 00H...7FH |
| 1CH rrH | mmH | --- | Panpot of Drum Instrument (absolute change) mm : 01H...40H...7FH (Left-Center-Right) |
| 1DH rrH | mmH | --- | Reverb send depth of Drum Instruments (absolute change) mm : 00H...7FH |
| 1EH rrH | mmH | --- | Chorus send depth of Drum Instruments (absolute change) mm : 00H...7FH |

rr : key number of Drum and Percussion

- * LSB of data entry is ignored.
- * Relative parameter specifies relative value regarding preset value as 40H.
- * Absolute parameter specifies absolute value regardless of current value.

<< How to use NRPN >>

Recognizing NRPN is always off at power up or when receiving 'Turn GM System On', because parameters specified by NRPN can be assigned native functions of each MIDI instrument and may cause problems.

NRPN is available for only the Drum Part in the SCB-7.

- (1) Enable to receive NRPN by System Exclusive message

```
'F0 41 10 56 12 01 00 01 01 sum(7D) F7'
```

Part10 = Drum Part

- (2) Specify the parameter to NRPN

B9 63 mm (B9) 62 ll mm: parameter
 ll: key number of Drum Instrument

- (3) Set parameter value using data entry

(B9) 06 vv vv: parameter value (use only MSB in SCB-7)

- (4) Reset NRPN (no parameter specified by NRPN)

(B9) 65 7F (B9) 64 7F

Once the parameter is specified by NRPN (Step 2), all values sent by data entry are valid (Step 3). It is recommended to reset NRPN after sending the value so as to avoid any problems (Step 4).

(10) RPN MSB/LSB (#100, #101)

| Status | Second | Third |
|--------|--------|-------|
| BnH | 64H | llH |
| BnH | 65H | mmH |

n = MIDI channel : 0H...FH (ch1...ch16)
ll = LSB of parameter specified by RPN
mm = MSB of parameter specified by RPN

There is no change in parameter values via RPN by Program Change messages.

//RPN//

RPN (Registered Parameter Number) is the expanded Control Change message defined by the MIDI standard. Each RPN function is described in "MIDI 1.0 DETAILED SPECIFICATION DOCUMENT". RPN MSB/LSB should be set before sending data entry.

| RPN | Data Entry | | |
|---------|------------|-------------|--|
| MSB LSB | MSB LSB | Description | |
| 00H 00H | mmH | --- | Pitch bend sensitivity mm : 00H...18H (0...24 semitones) * Up to 2 octaves; default setting is 2 semitones |
| 00H 01H | mmH llH | --- | Master fine tuning mm,ll : 00H,00H...40H,00H...7FH,7FH (-100.....0.....+100 cent) |
| 00H 02H | mmH | --- | Master coarse tuning mm : 28H...40H...58H (-24....0....+24 semitones) |
| 7FH 7FH | --- | --- | RPN reset * No specified parameter is assigned to RPN and NRPN. Current value is not affected. |

<< How to use RPN >>

- (1) Specify the parameter to RPN

Bn 65 mm (Bn) 64 ll mm: MSB of parameter name
 ll: LSB of parameter name

- (2) Set parameter value using data entry

(Bn) 06 vm (Bn) 26 vl vm: MSB of parameter value
 vl: LSB of parameter value

Sending only the MSB value is possible, if the required resolution of the value is 128 steps. Omitting the MSB value is allowed, if the required range of the value is less than 128.

- (3) Reset RPN (no parameter specified by RPN)

(Bn) 65 7F (Bn) 64 7F

Once the parameter is specified by RPN (Step 1), all values sent by data entry are valid (Step 2). It is recommended to reset RPN after sending the value so as to avoid any problems (Step 3).

<4> PROGRAM CHANGE

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

n = MIDI channel : 0H...FH (ch1...ch16)
pp = Program number : 00H...7FH (0...127)

- * Current active voices are not affected when receiving PROGRAM CHANGE messages. New sounds will be played after receiving PROGRAM CHANGE messages.

<5> CHANNEL PRESSURE

| Status | Second |
|--------|--------|
| DnH | vvH |

n = MIDI channel : 0H...FH (ch1...ch16)
vv = Value : 00H...7FH (0...127)

- * TVF cutoff, volume, LFO rate and LFO pitch depth can be controlled. Default has no effect. System Exclusive Messages can enable and change depth of each. (Refer to p. 19 'PATCH PARAMETERS')

<6> PITCH BEND CHANGE

| Status | Second | Third |
|--------|--------|-------|
| EnH | llH | mmH |

n = MIDI channel : 0H...FH (ch1...ch16)
mm,ll = Value : 00H,00H...40H,00H...7FH,7FH
 (-8192 0 +8191)

- * The default bend range is from +/-2 semitones. (Refer to //RPN//)

[Channel Mode Message]

<1> ALL SOUNDS OFF (#120)

| Status | Second | Third |
|--------|--------|-------|
| BnH | 78H | 00H |

n = MIDI channel : 0H...FH (ch1...ch16)

- All current active voices in the specified channel will be shut off. However, current mode is not affected.

<2> RESET ALL CONTROLLERS (#121)

| Status | Second | Third |
|--------|--------|-------|
| BnH | 79H | 00H |

n = MIDI channel : 0H...FH (ch1...ch16)

- The following control values on the specified channel return to the default values:

| Controller | Default Value |
|-------------------|--|
| Pitch bend change | 0 (center) |
| Channel pressure | 0 (off) |
| Modulation | 0 (min) |
| Expression | 127 (max) |
| Hold1 | 0 (off) |
| RPN | No specified parameter No change in value |
| NRPN | No specified parameter No change in value |

<3> ALL NOTES OFF

| Status | Second | Third |
|--------|--------|-------|
| BnH | 7BH | 00H |

n = MIDI channel : 0H...FH (ch1...ch16)

- All active voices on the specified channel are turned off. (Each voice responds as to a "NOTE OFF"). If HOLD1 is ON, this message does not become effective until HOLD1 is OFF.
- Drum Instruments (except 'Applause' of Drum Part) ignore this message.

<4> OMNI OFF

| Status | Second | Third |
|--------|--------|-------|
| BnH | 7CH | 00H |

n = MIDI channel : 0H...FH (ch1...ch16)

- OMNI OFF is only recognized as "ALL NOTES OFF". Current mode doesn't change. (always at Mode 3)

<5> OMNI ON

| Status | Second | Third |
|--------|--------|-------|
| BnH | 7DH | 00H |

n = MIDI channel : 0H...FH (ch1...ch16)

- OMNI ON is only recognized as "ALL NOTES OFF". Current mode doesn't change. (always at Mode 3)

<6> MONO

| Status | Second | Third |
|--------|--------|-------|
| BnH | 7EH | mmH |

mm = number of mono : 00H...10H (0...16)
n = MIDI channel : 0H...FH (ch1...ch16)

- MONO is only recognized as "ALL NOTES OFF". Current mode doesn't change. (always at Mode 3)

<7> POLY

| Status | Second | Third |
|--------|--------|-------|
| BnH | 7FH | 00H |

n = MIDI channel : 0H...FH (ch1...ch16)

- POLY is only recognized as "ALL NOTES OFF". Current mode doesn't change. (always at Mode 3)

[System Realtime Message]

<1> ACTIVE SENSING

| Status |
|--------|
| EEH |

- Once received, these messages monitor the integrity of the MIDI connections. If the interval of reception is longer than 420 ms, "ALL SOUNDS OFF, ALL NOTES OFF and RESET ALL CONTROLLERS" are executed. Monitoring is then terminated.

[System Exclusive Message]

| Status | Data | Status |
|--------|---------------------|--------|
| F0H | iiH, ddH,....., eeH | F7H |

F0H : Status for System Exclusive
ii = ID number : Manufacturer ID
This ID indicates that manufacturer's System Exclusive Messages.
(Ex.) 41H (56) = Roland Corporation
7EH (126) = Universal Non-Realtime Messages
7FH (127) = Universal Realtime Messages
dd....., ee : Data 00H...7FH (0...127)
F7H : FOX (End of Exclusive)

SCB-7 has nothing to transmit. SCB-7 recognizes the following System Exclusive messages.

- General MIDI System Messages
- Universal Realtime System Exclusive Messages
- Data Set (DT1)

<1> GENERAL MIDI SYSTEM MESSAGES

Turn General MIDI System On

| Status | Data | Status |
|--------|--------------------|--------|
| F0H | 7EH, 7FH, 09H, 01H | F7H |

F0H : Status for System Exclusive Message
7EH : ID number (Universal Non-Realtime Exclusive Messages)
7FH : Device ID (Broadcast)
09H : sub-ID #1 (General MIDI message)
01H : sub-ID #2 (General MIDI On)
F7H : FOX

- Sets GM (General MIDI Performance—Level 1) and NRPN is disabled. The unit can reproduce GM scores (Level 1) correctly.
- About 50ms is needed to complete this reset.

<2> UNIVERSAL REALTIME SYSTEM EXCLUSIVE MESSAGES

| Status | Data | Status |
|--------|------------------------------|--------|
| F0H | 7FH, 7FH, 04H, 01H, 11H, mmH | F7H |

F0H : Status for System Exclusive Message
7FH : ID number (Universal Realtime Exclusive Messages)
7FH : Device ID (Broadcast)
04H : sub-ID #1 (Device Control Messages)
01H : sub-ID #2 (Master Volume)
11H : LSB of Master Volume
mmH : MSB of Master Volume
F7H : FOX

- This message has the same effect as Master Volume addressed in 40 00 04H of System Exclusive Message. Whichever message is received, the latest message is valid as the Master Volume.

<3> DATA SET

Internal setting of SCB-7 can be controlled by System Exclusive Messages. When sending data to SCB-7, use Model ID = 56H (but some data uses 42H) and Device ID = 10H.

Data Set 1 DT1 (12H)

This message is used when sending actual parameter values to the unit.

Status Data
F0H 41H, 10H, 56(42)H, 12H, aaH, bbH, ccH, ddH, ..., eeH, sum F7H

F0H : Status for System Exclusive Messages
41H : Manufacturer ID number (Roland)
10H : Device ID
56H : Model ID (SCB-7) (* Some data uses 42H)
12H : Command ID (DT1)
aaH : MSB of data address (Upper byte of the top of data address)
bbH : Data address (Middle byte of the top of data address)
ccH : LSB of data address (Lower byte of the top of data address)
ddH : Data (Several bits of data should be sent in address order)
:
:
:
:
eeH : Data
sum : Check sum
F7H : FOx

- Some parameters are fixed in data size. These parameters should be transmitted as fixed-size data from the top of address described in section 2 "PARAMETER ADDRESS MAP".
- Divide data of more than 256 bytes into two or more packets containing 256 bytes or less (if transmitting data size is over 256 bytes).
- Allow more than 40ms between each packet.
- Refer to "Checksums for Exclusive Messages" (p. 21).

2. PARAMETER ADDRESS MAP

This PARAMETER ADDRESS MAP shows details of parameters used when its value is changed by the "Data Set 1" method of System Exclusive messages.

PARAMETER ADDRESS MAP contains Address, Data size, Data range, Parameter name, Description, Default value of parameter.

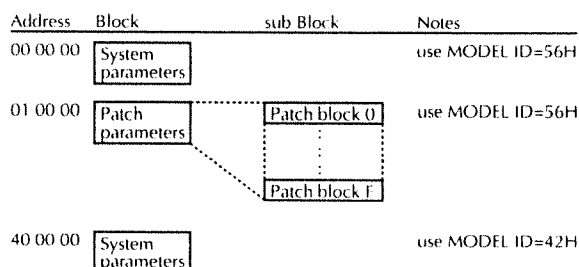
<< Example >>

Address : Top of parameter address
Size : Data size (Ex. 01H means 1byte)
Data : Available range of data value
Parameter : Parameter name
Description : Explanation of data value
Default value : Initial data value

| Address (H) | Size (H) | Data (H) | Parameter | Description | Default Value (H) |
|-------------|----------|----------|------------------|---|-------------------|
| 00 00 00 | 01 | 00...07 | REVERB CHARACTER | 00 : Room 1 01 : Room 2 02 : Room 3 03 : Hall 1 04 : Hall 2 05 : Plate 06 : Delay 07 : Panning Delay | 04 |
| 00 00 01 | 01 | 00...7F | REVERB LEVEL | 0...127 | 40 |
| | | | : | | |
| | | | : | | |
| | | | : | | |

[ADDRESS BLOCK MAP]

Entire address map for Exclusive Messages is shown below:



[PARAMETER ADDRESS MAP]

<1> SYSTEM PARAMETERS

System parameters affect system setup. Addresses marked "#" cannot be used as the top of an address.

(1) Effect Control (Recognized when MODEL ID = 56H)

| Address (H) | Size (H) | Data (H) | Parameter | Description | Default Value (H) |
|-------------|----------|----------|------------------|---|-------------------|
| 00 00 00 | 01 | 00...07 | REVERB CHARACTER | 00 : Room 1 01 : Room 2 02 : Room 3 03 : Hall 1 04 : Hall 2 05 : Plate 06 : Delay 07 : Panning Delay | 04 |
| 00 00 01 | 01 | 00...7F | REVERB LEVEL | 0...127 | 58 |
| 00 00 02 | 01 | 00...7F | REVERB TIME | 0...127(*1) | 40 |
| 00 00 03 | 01 | 00...7F | DELAY TIME | 0...127 | 40 |
| 00 00 04 | 01 | 00...7F | DELAY FEEDBACK | 0...127(*1) | 00 |
| 00 00 05 | 01 | 00...7F | CHORUS LEVEL | 0...127 | 40 |
| 00 00 06 | 01 | 00...7F | CHORUS FEEDBACK | 0...127(*1) | 08 |
| 00 00 07 | 01 | 00...7F | CHORUS DELAY | 0...127 | 50 |
| 00 00 08 | 01 | 00...7F | CHORUS RATE | 0...127 | 03 |
| 00 00 09 | 01 | 00...7F | CHORUS DEPTH | 0...127 | 13 |

(*1) If the value is close to maximum, noise may occur. Reduce the value until the noise is gone.

(2) System Common (Recognized when MODEL ID = 42H)

| Address (H) | Size (H) | Data (H) | Parameter | Description | Default Value (H) |
|-------------|----------|-------------|-------------------|-------------------------|-------------------|
| 40 00 00 | 04 | 0018...07E8 | MASTER TUNE | -100.0...+100.0[cent] | 00 04 00 00 |
| 40 00 01# | | | | Use nibblized data (*1) | |
| 40 00 02# | | | | | |
| 40 00 03# | | | | | |
| 40 00 04 | 01 | 00...7F | MASTER VOLUME(*2) | 0...127 | 7F |
| 40 00 05 | 01 | 28...58 | MASTER KEY-SHIFT | -24...+24 semitone | 40 |

(*1) MASTER TUNE has different method of data transfer.

<< Example >>

If MASTER TUNE= +100 cents, the value should be set as '07E8H'.

- 1) Separate '07E8H' into four nibblized (to 4 bits) chunks like '0H','7H','EH','8H'.
- 2) Change each nibblized chunk into byte data as '00H','07H','0EH','08H' (only fills upper 4 bits with '0')
- 3) Send these data as follows.
" F0 41 10 42 12 40 00 00 00 07 0E 08 sum (23) F7 "
(07E8H → 0/7/E/8 → 00,07,0E,08)

(*2) This message has the same effect as Master Volume of Universal Realtime System Exclusive Message. Whichever message is received, the latest message is valid as the Master Volume.

<< Example >>

If Master Volume= 100(64H), send the following messages:

" F0 41 10 42 12 40 00 04 64 sum (58) F7 "

<2> PATCH PARAMETER

(1) Voice Reserve (Recognized when MODEL ID = 42H)

| Address (H) | Size (H) | Data (H) | Parameter | Description | Default Value (H) |
|-------------|----------|----------|---------------|-------------------|-------------------|
| 40 01 10 | 10 | 00...1A | VOICE RESERVE | PART 10 (DRUM) 02 | 06 |
| 40 01 11 | | | | PART 1 | 02 |
| 40 01 12 | | | | PART 2 | 02 |
| 40 01 13 | | | | PART 3 | 02 |
| 40 01 14 | | | | PART 4 | 02 |
| 40 01 15 | | | | PART 5 | 02 |
| 40 01 16 | | | | PART 6 | 02 |
| 40 01 17 | | | | PART 7 | 02 |
| 40 01 18 | | | | PART 8 | 02 |
| 40 01 19 | | | | PART 9 | 02 |
| 40 01 1A | | | | PART 11 | 00 |
| 40 01 1B | | | | PART 12 | 00 |
| 40 01 1C | | | | PART 13 | 00 |
| 40 01 1D | | | | PART 14 | 00 |
| 40 01 1E | | | | PART 15 | 00 |
| 40 01 1F | | | | PART 16 | 00 |

* The sum of voice reserves should be 28 voices or less. If its over 28, the Parts have the following priority. However, Part 10 always has the highest priority.

Before receiving data

part number 1101 11 21 31 41 51 61 71 81 91111121131141151161

value 1 21 61 21 21 21 21 21 21 01 01 01 01 01 01

Example (A) Received data : " F0 41 10 42 12 40 01 10 08 08 08 08 08 08 08 08 08 08 08 sum(2F) F7 "
(Set all value of voice reserve to '8')

part number 1101 11 21 31 41 51 61 71 81 91111121131141151161

value 1 81 81 81 41 01 01 01 01 01 01 01 01 01 01

* Part10, 1 and 2 become '8', but Part3 is set to '4'(=28-(8+8+8)). The others are set to '0'.

Example (B) Received data : " F0 41 10 42 12 40 01 14 07 sum (244) F7 "
(Set value of Part4 to '7')

part number 1101 11 21 31 41 51 61 71 81 91111121131141151161

value 1 21 61 21 21 71 21 21 11 01 01 01 01 01 01

* The rest of the voices are assigned to lower part numbers.

Example (C) Received data : " F0 41 10 42 12 40 01 1F 08 sum (18) F7 "
(Set value of Part 16 to '8')

part number 1101 11 21 31 41 51 61 71 81 91111121131141151161

value 1 21 61 21 21 21 21 21 21 21 01 01 01 01 41

* Part 16 is set '4' (=28-(2+6+2+2+2+2+2+2))

(2) PATCH PARAMETERS (Recognized when MODEL ID = 56H)

part number = 10, 1..9, 11..16

n = 0, 1..9, A..F

| Address (H) | SIZE (H) | Data (H) | Parameter | Description | Default Value (H) |
|-------------|----------|----------|-------------------------|--------------------------------|--|
| 01 0n 00 01 | | 00...10 | RX. CHANNEL | 00..0F : 1...16 ch 10 : OFF | Part10:09 Part 1:00 Part 2:01 Part 3:02 Part 4:03 Part 5:04 Part 6:05 Part 7:06 Part 8:07 Part 9:08 Part11:0A Part12:0B Part13:0C Part14:0D Part15:0E Part16:0F |
| 01 0n 01 01 | | 00 , 01 | RX. NRPN | 00 : OFF 01 : ON (*1) | 00 |
| 01 0n 02 01 | | 00...7F | MOD LFO RATE CONTROL | -10.0...+10.0 Hz (*2) | 40 |
| 01 0n 03 01 | | 00...7F | MOD LFO PITCH DEPTH | 0...600 cents (*2) | 0A |
| 01 0n 04 01 | | 00...7F | CAF TVE CUT OFF CONTROL | -9600...+9600 (*3)(*4) | 40 |
| 01 0n 05 01 | | 00...7F | CAF AMPLITUDE CONTROL | -100.0...+100.0% (*3) | 40 |
| 01 0n 06 01 | | 00...7F | CAF LFO RATE CONTROL | -10.0...+10.0 Hz (*3) | 40 |
| 01 0n 07 01 | | 00...7F | CAF LFO PITCH DEPTH | 0...600 cents (*3) | 00 |

CAF: Channel attentouch

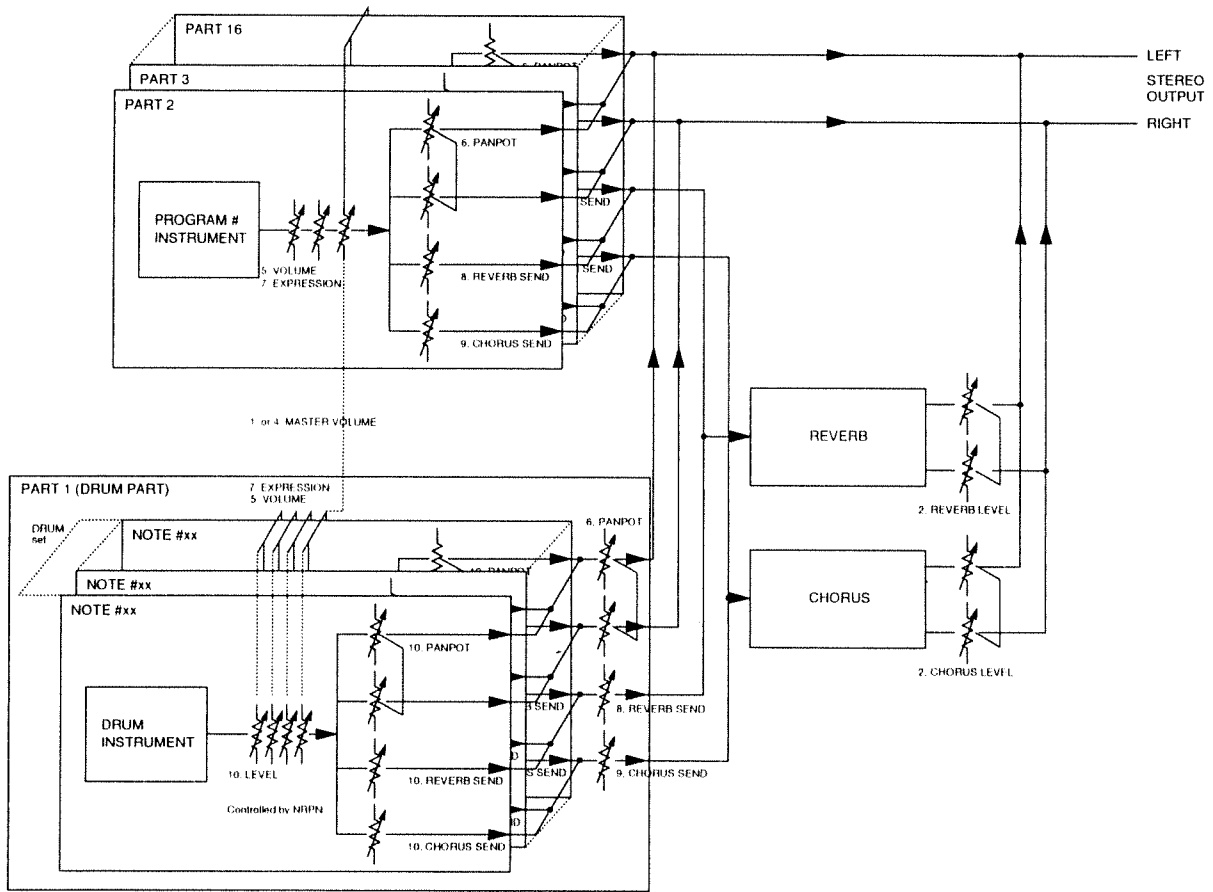
(*1) This value is available only for the Drum Part. The others ignore this value.

(*2) This value is valid by modulation control after the new value is set.

(*3) This value is valid by channel pressure after the new value is set.

(*4) Some of the sounds have no TVE parameter. This value then has no effect on those sounds. (Refer to p. 12 'TONE TABLE')

Block Diagram of the SCB-7



Useful Information

• Decimal and Hexadecimal

It is common to use 7-bit Hexadecimal numbers in MIDI communication. The following is a conversion table between decimal numbers and 7-bit Hexadecimal numbers.

| Decimal | Hexa-decimal | Decimal | Hexa-decimal | Decimal | Hexa-decimal | Decimal | Hexa-decimal |
|---------|--------------|---------|--------------|---------|--------------|---------|--------------|
| 0 | 00H | 32 | 20H | 64 | 40H | 96 | 60H |
| 1 | 01H | 33 | 21H | 65 | 41H | 97 | 61H |
| 2 | 02H | 34 | 22H | 66 | 42H | 98 | 62H |
| 3 | 03H | 35 | 23H | 67 | 43H | 99 | 63H |
| 4 | 04H | 36 | 24H | 68 | 44H | 100 | 64H |
| 5 | 05H | 37 | 25H | 69 | 45H | 101 | 65H |
| 6 | 06H | 38 | 26H | 70 | 46H | 102 | 66H |
| 7 | 07H | 39 | 27H | 71 | 47H | 103 | 67H |
| 8 | 08H | 40 | 28H | 72 | 48H | 104 | 68H |
| 9 | 09H | 41 | 29H | 73 | 49H | 105 | 69H |
| 10 | 0AH | 42 | 2AH | 74 | 4AH | 106 | 6AH |
| 11 | 0BH | 43 | 2BH | 75 | 4BH | 107 | 6BH |
| 12 | 0CH | 44 | 2CH | 76 | 4CH | 108 | 6CH |
| 13 | 0DH | 45 | 2DH | 77 | 4DH | 109 | 6DH |
| 14 | 0EH | 46 | 2EH | 78 | 4EH | 110 | 6EH |
| 15 | 0FH | 47 | 2FH | 79 | 4FH | 111 | 6FH |
| 16 | 10H | 48 | 30H | 80 | 50H | 112 | 70H |
| 17 | 11H | 49 | 31H | 81 | 51H | 113 | 71H |
| 18 | 12H | 50 | 32H | 82 | 52H | 114 | 72H |
| 19 | 13H | 51 | 33H | 83 | 53H | 115 | 73H |
| 20 | 14H | 52 | 34H | 84 | 54H | 116 | 74H |
| 21 | 15H | 53 | 35H | 85 | 55H | 117 | 75H |
| 22 | 16H | 54 | 36H | 86 | 56H | 118 | 76H |
| 23 | 17H | 55 | 37H | 87 | 57H | 119 | 77H |
| 24 | 18H | 56 | 38H | 88 | 58H | 120 | 78H |
| 25 | 19H | 57 | 39H | 89 | 59H | 121 | 79H |
| 26 | 1AH | 58 | 3AH | 90 | 5AH | 122 | 7AH |
| 27 | 1BH | 59 | 3BH | 91 | 5BH | 123 | 7BH |
| 28 | 1CH | 60 | 3CH | 92 | 5CH | 124 | 7CH |
| 29 | 1DH | 61 | 3DH | 93 | 5DH | 125 | 7DH |
| 30 | 1EH | 62 | 3EH | 94 | 5EH | 126 | 7EH |
| 31 | 1FH | 63 | 3FH | 95 | 5FH | 127 | 7FH |

- To indicate a decimal number for the MIDI channel and Program number, add one to the values in the table.
- The resolution of 7-bit Hexadecimal numbers is 128. Use several bytes for values which require greater resolution, i.e. The number "aa bbH" in 7-bit Hexadecimal is "aa x 128 + bb" in Decimal form.
- A signed number is indicated as 00H = -64, 40H = 0, 7FH = +63. So the signed number "aaH" in 7-bit Hexadecimal is "aa - 64". A signed number using two bytes is indicated as 00 00H = -8192, 40 00H = 0, 7F 7FH = +8191. So the signed number "aa bbH" in 7-bit Hexadecimal is "aa bbH - 40 00H = (aa x 128 + bb) - (64 x 128)"

- The data indicated as "nibbled" is a 4-bit Hexadecimal number. i.e. "0a 0bH" is "a x 16 + b".

<EXAMPLE 1> Convert "5AH" in Hexadecimal to a Decimal number. (By using the table) 5AH = 90

<EXAMPLE 2> Convert "12 34H" in 7-bit Hexadecimal to a Decimal number. (By using the table) 12H = 18, 34H = 52
So, 18 x 128 + 52 = 2356

<EXAMPLE 3> Convert "0A 03 09 0D" in nibbled form to a Decimal number (By using the table) 0AH = 10, 03H = 3, 09H = 9, 0DH = 13
So, ((10 x 16 + 3) x 16 + 9) x 16 + 13 = 41885

• Example of actual MIDI messages

<EXAMPLE 1> 92 3E 5F
"9n" is a status of a Note On message, and "n" is a MIDI channel number. The second byte is the Note number, and the third byte is Velocity.
2H = 2, 3EH = 62, 5FH = 95
So, this is a Note On message of MIDI channel=3, Note number=62(D4) and Velocity=95.

<EXAMPLE 2> CF 49
"Cn" is a status of a Program change message, and "n" is a MIDI channel number. The second byte is a Program number.
FH = 14, 49H = 73
So, this is a Program change message of MIDI channel=15, Program number= 74 (Flute in GM).

<EXAMPLE 3> EA 00 2B
"EnH" is a status of a Pitch bend change message, and "n" is a MIDI channel number. The second byte (00H) is an LSB and the third byte(2BH) is an MSB of a Pitch bend value (signed).
The Pitch bend value is :
2B 00H - 40 00H = 40 x 128 + 0 - (64 x 128 + 0) = 5120 - 8192 = -3072
So, this is a Pitch bend change message of MIDI channel=11, Pitch bend value = -3072

If the Pitch bend sensitivity is set to 2 semitones, and the Pitch bend value -8192 (00 00H) is defined as -200 cents,
The actual pitch bend value of this message is :
-200 x (-3072) / (-8192) = -75 cent

Checksums for Exclusive Messages

Roland System Exclusive messages (RQ1 and DT1) have a Checksum at the end of the data (before EOx) to be able to check for communication errors. The Checksum results from address and data (or size) included in the message.

[How to calculate Checksums ("H" indicates Hexadecimal.)]

The error checking process uses a Checksum which provides a number where the least significant 7 bits are zero when values for an address, data (or size) and the Checksum are summed. Use the table shown above to convert number between decimal and hexadecimal.

If the address is "aa bb ccH" and the data (or the size) is "dd ee HH"
aa + bb + cc + dd + ee + H = sum
sum / 128 = quotient ... remainder
128 - remainder = checksum

<EXAMPLE 1> Set "REVERB CHARACTER" to "ROOM 3"
According to the Parameter Address Map, the Address of REVERB CHARACTER is 00 00 00H, and the Value corresponding to ROOM 3 is 02H. So, the message should be :

F0 41 10 56 12 00 00 00 02 ?? F7
(1) (2) (3) (4) (5) address data checksum (6)
(1)Exclusive Status (4)Model ID
(2)ID (Roland) (5)Command ID (DT1)
(3)Device ID (16) (6)End of Exclusive

The Checksum is :
00H + 00H + 00H + 02H = 0 + 0 + 0 + 2 = 2(sum)
2(sum) / 128 = 0(quotient) ... 2(remainder)
checksum = 128 - 2(remainder) = 126 = 7EH
Therefore, the message to send is : F0 41 10 56 12 00 00 00 02 7E 17

<EXAMPLE 2> Set "MASTER TUNE" to +23.4 cents by System Exclusive. The Address of "MASTER TUNE" is 40 00 00H. The Value should be nibbled data whose resolution is 0.1 cents, and which is a signed value. (00 04 00 00H (= 1024) = +/- 0).
+23.4[cents] = 234 + 1024 = 1258 = 04 EAH = 00 04 0E 0AH (nibbled)
So, the message should be :

F0 41 10 42 12 40 00 00 00 04 0E 0A ?? F7
(1) (2) (3) (4) (5) address data checksum (6)
(1)Exclusive Status (4)Model ID
(2)ID (Roland) (5)Command ID (DT1)
(3)Device ID (16) (6)End of Exclusive

The Checksum is :
40H + 00H + 00H + 00H + 04H + 0EH + 0AH = 64 + 0 + 0 + 0 + 4 + 14 + 10 = 92(sum)
92(sum) / 128 = 0(quotient) ... 92(remainder)
checksum = 128 - 92(remainder) = 36 = 24H

Therefore, the message to send is :
F0 41 10 42 12 40 00 00 00 04 0E 0A 24 17

PARAMETER LIST

Parameters Common to All Parts

System Exclusive Messages

[System Common] MODEL ID=42H(p. 18)

MASTER TUNE
MASTER VOLUME (1)
MASTER KEY-SHIFT

[Effect Control] MODEL ID=56H(p. 18)

REVERB CHARACTER
REVERB LEVEL (2)
REVERB TIME
DELAY TIME
DELAY FEEDBACK
CHORUS LEVEL (3)
CHORUS FEEDBACK
CHORUS DELAY
CHORUS RATE
CHORUS DEPTH

[GENERAL MIDI SYSTEM MESSAGES](p. 17)

Turn General MIDI System On

[UNIVERSAL REALTIME SYSTEM EXCLUSIVE MESSAGES](p. 17)

Master Volume (4)

(?) : Refer to "Block Diagram of the SCB-7" (p. 20)

Parameters for Individual Parts

CONTROL CHANGE(p. 15)

- [Modulation].....(p. 15)
- [Volume] (5)(p. 15)
- [Panpot] (6).....(p. 15)
- [Expression] (7)(p. 15)
- [Effect1 depth (Reverb depth)] (8).....(p. 15)
- [Effect3 depth (Chorus depth)] (9)(p. 15)

[RPN](p. 16)

- Pitch bend sensitivity
- Master fine tuning
- Master coarse tuning

[NRPN (NRPN is available for only Drum Part)] (10)(p. 15)

- Pitch coarse of Drum Instrument
- TVA level of Drum Instrument
- Panpot of Drum Instrument
- Reverb send depth of Drum Instrument
- Chorus send depth of Drum Instrument

System Exclusive Message

[PATCH PARAMETER] MODEL ID=42H(p. 19)

- Voice Reserve

[PATCH PARAMETER] MODEL ID=56H(p. 19)

- RX. CHANNEL
- RX. NRPN (available for only Drum Part)
- MOD LFO RATE CONTROL
- MOD LFO PITCH DEPTH
- CAF TVF CUT OFF CONTROL
- (Some of sounds have no TVF parameter, then this value has no effect on those sounds.)
- CAF AMPLITUDE CONTROL
- CAF LFO RATE CONTROL
- CAF LFO PITCH DEPTH

(?) : Refer to “Block Diagram of the SCB-7” (p. 20)

SPECIFICATIONS

SCB-7 : GM Daughter Board

- **Sound Source**
RS-PCM Sound Generation
Compatible with GM System Level 1
- **Number of Parts**
16 parts
- **Maximum Polyphony**
28 voices
- **Number of Sounds**
Tones : 128 tones (includes 8 SFX tones)
Drum Sets : 6 sets (Standard set, Power set, Elec. set, TR-808 set, Brush set and Orchestra set)
** This board contains a total of 119 different tones which are used in 6 drum sets of approx. 60 tones each.*
- **Effects**
Reverb : 8 types with 4 parameters
Type : Room 1, Room 2, Room 3, Hall 1, Hall 2, Plate, Delay and Panning Delay
Parameter : Level, Time, Delay Time and Delay Feedback
Chorus : 1 type with 5 parameters
Parameter : Level, Feedback, Delay, Rate and Depth
- **Connector**
Extension Connector for Sound Blaster 16 series or Sound Galaxy PRO 16 series
- **Available Sound Cards**
Sound Blaster 16 Basic
Sound Blaster 16
Sound Blaster 16 ASP
Sound Blaster 16 SCSI-2
Sound Galaxy NX PRO 16
Sound Galaxy PRO 16 Extra
- **Power Supply**
Supplied from the attached sound card
- **Current Draw**
150 mA / +5V, 20 mA / +12V, 15 mA / -12V
- **Dimensions**
138.4 (W) x 88.9 (D) x 19.5 (H) mm
5-1/2 (W) x 3-1/2 (D) x 13/16 (H) inches
- **Weight**
65 g / 3 oz

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

MIDI Implementation Chart

| Function... | | Transmitted | Recognized | Remarks |
|-------------------------|---------------|---|------------------------|----------------------|
| Basic Channel | Default | x | 1-16 | |
| | Changed | x | 1-16 | |
| Mode | Default | x | Mode 3 | |
| | Messages | x | x | |
| | Altered | ***** | x | |
| Note Number | True Voice | x | 0-127 | |
| | | ***** | 0-127 | |
| Velocity | Note ON | x | o | |
| | Note OFF | x | x | |
| After Touch | Key's | x | x | |
| | Ch's | x | o | |
| Pitch Bend | | x | o | |
| Control Change | 1 | x | o | Modulation |
| | 6, 38 | x | o | Data entry |
| | 7 | x | o | Volume |
| | 10 | x | o | Panpot |
| | 11 | x | o | Expression |
| | 64 | x | o | Hold 1 |
| | 91 | x | o (Reverb) | Effect 1 depth |
| | 93 | x | o (Chorus) | Effect 3 depth |
| | 98, 99 | x | x / o | NRPN LSB, MSB(*) |
| | 100, 101 | x | o | RPN LSB, MSB |
| | 120 | x | o | All sounds off |
| 121 | x | o | Reset all contorollers | |
| Prog Change | True # | x | o | |
| | | ***** | 0-127 | Program number 1-128 |
| System Exclusive | | x | o | |
| System Common | Song Pos | x | x | |
| | Song Sel | x | x | |
| | True | x | x | |
| System Real Time | Clock | x | x | |
| | Commands | x | x | |
| AUX Messages | Local ON/OFF | x | x | |
| | All Notes OFF | x | o (123-127) | |
| | Active Sense | x | o | |
| | Reset | x | x | |
| Notes | | * NRPN can be enabled or disabled by System Exclusive Message. Default is always disabled. | | |

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P.O. Box 247, Manama 304,
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CYPRUS

Radex Sound Equipment Ltd.
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CYPRUS
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IRAN

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Rohravye Cerah Mirjamad
Tehran, IRAN
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KUWAIT

Easa Husain Al-Yousifi
Abdullah Salem Street,
Satar, KUWAIT
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LEBANON

A. Chahine & Fils
Gerge Zaidan St., Chahine Bldg.,
Achratieh, P.O. Box: 16-5857
Beirut, LEBANON
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QATAR

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& Stores)**
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**Technical Light & Sound
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Khaled Ebn Al Walid St.
Damascus, SYRIA
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Taksim - Istanbul, TURKEY
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