



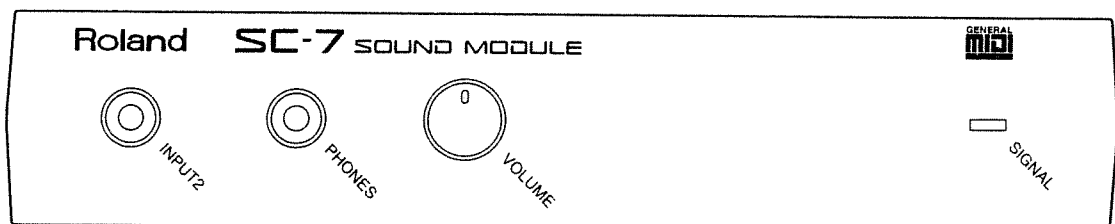
Roland



SOUND MODULE

SC-7

OWNER'S MANUAL



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SOUND MODULE

SC-7

OWNER'S MANUAL

Thank you and congratulations on your choice of the Roland SC-7 sound module. The SC-7 contains a large collection of high-quality sounds and is designed to support the General MIDI System.

In order to gain a thorough understanding of the module's many features, and to enjoy years of trouble-free service, please take the time to read this manual in its entirety.

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FEATURES

- **General MIDI System Level 1 Specifications**

The SC-7 accurately reproduces any GM Score as it complies with General MIDI System Level 1 specifications.

The General MIDI System provides definitions for the performance parts of each MIDI channel and for Program Changes (selection of different sounds).

- **16-Part Multi-Timbral Sound Module**

As the SC-7 is a 16-Part (including the Drum Part) multi-timbral sound module, it is capable of recreating almost any kind of ensemble.

- **28-Voice Polyphony**

The unit's 28-voice polyphony makes it possible to recreate large instrumental ensembles.

- **Reverb and Chorus**

The digital reverb and chorus effects are available to enhance your music: *reverb* is used to simulate spatial ambiance while *chorus* adds warmth and breadth to sound.

- **Simple Connections**

Optionally available serial cables allow you to connect your SC-7 directly to your Apple Macintosh or IBM PC/AT computer—without the need for an external MIDI interface.

- **Two Sets of Inputs**

Front and rear-panel input connectors allow you to input signals from external sources (audio output from your computer, cassette player, or CD player for example). External signals will be mixed with the SC-7's output.

- **Compact Design**

Its compact design makes the SC-7 ideal for integration into any desktop music system. In addition, as no MIDI interface is required, the SC-7 is perfect for use with notebook computers—an ideal combination for musicians on the move!

IBM PC/AT is a registered trademarks of International Business Machines Corporation.

Macintosh is a registered trademark of Apple Computer, Inc.

IMPORTANT NOTES

- When using an AC adaptor, use only the specified device. Use of any other power adaptor could result in damage, malfunction, or electric shock.
- Do not expose this unit to temperature extremes (e.g. direct sunlight in an enclosed vehicle can deform or discolor the unit) or install it near devices that radiate heat.

[Power Supply]

- When making any connections with other devices, always turn off the power to all equipment first; this will help prevent damage or malfunction.
- Do not use this unit on the same power circuit with any device that will generate line noise, such as a motor or variable lighting system.
- The power supply required for this unit is shown on its nameplate. Ensure that the line voltage in your installation meets this requirement.
- Avoid damaging the power cord; do not step on it, place heavy objects on it etc.
- When disconnecting the AC adaptor from the outlet, grasp the plug itself; never pull on the cord.
- If the unit is to remain unused for a long period of time, unplug the power cord.

[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 vibration levels.
- Using the unit near power amplifiers (or other equipment containing large transformers) may induce hum.
- This unit may interfere with radio and television reception. Do not use this unit in the vicinity of such receivers.

[Maintenance]

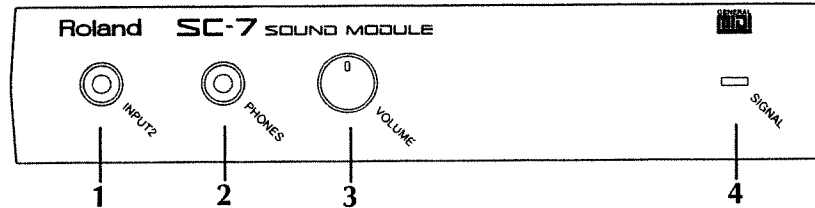
- For everyday cleaning wipe the unit with a soft, dry cloth (or one that has been slightly dampened with water). To remove stubborn dirt, use a mild neutral detergent. Afterwards, be sure to wipe the unit thoroughly with a soft, dry cloth.
- Never use benzene, thinners, alcohol or solvents of any kind,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

[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.
- A small amount of heat will radiate from the unit during normal operation.
- Before using the unit in a foreign country, consult with qualified service personnel.
- Should a malfunction occur (or if you suspect there is a problem) discontinue use immediately. Contact qualified service personnel as soon as possible.
- To prevent the risk of electric shock, do not open the unit or its AC adaptor.

1. PANEL DESCRIPTIONS

Front Panel



1. INPUT 2 (Audio Input 2 Jack)

This is where you can connect the audio output (OUTPUT) of your computer, CD-ROM drive, cassette player, tape recorder, CD player or other musical instrument.

2. PHONES (Headphone Jack)

Accepts connection of stereo headphones. Even with headphones connected, sound will still be output from the OUTPUT jacks.

3. VOLUME (Volume Knob)

Allows you to adjust the overall volume level that is output from the OUTPUT jacks and PHONES jack.

* The volume balance for each Part can be adjusted by means of MIDI Volume messages (Control Changes).

4. SIGNAL (Signal Indicator)

Lights when the power is turned ON. Also allows you to monitor the notes as they are produced by the SC-7.

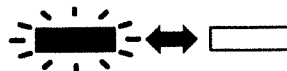
About the Indicator

[Lit]



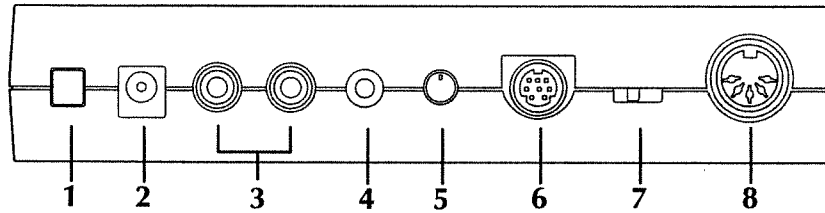
Power is ON, and no notes are being produced. (No 'Note-On' messages have been received.)

[Flashing]



When notes are being produced, the indicator will flash. This indicates that the SC-7 is performing properly.

Rear Panel



1. Power Switch

Turns the power ON/OFF.

** Due to a circuitry protection feature, the unit requires a few moments after power up before it is ready for operation.*

2. DC IN (AC Adaptor Jack)

This is where you connect the supplied AC adaptor.

3. OUTPUT (Audio Output Jacks)

Provides stereo output of the SC-7's sounds. If you wish to use a monaural output, use the L (MONO) jack.

4. INPUT 1 (Audio Input 1 Jack)

This is where you can connect the audio output (OUTPUT) of your computer, CD-ROM drive, cassette player, tape recorder, CD player or other musical instrument. [Audio Input 2 is on the front panel.]

5. INPUT 1 LEVEL (Input 1 Level Knob)

Allows you to adjust the signal level from the audio equipment or instrument you have connected to INPUT 1. [Clockwise rotation increases the signal level.]

6. COMPUTER (Serial Connector)

This is where you connect a special serial cable. The type of cable you require depends on the type of computer you are using. For details, refer to "3. SETUP" (p. 9).

7. RS422/RS232C-1/RS232C-2/MIDI (Selection Switch)

This switch is used to select the operating mode. The SC-7 can operate with either a computer (via its serial connector), or with other MIDI devices (via its MIDI connector).

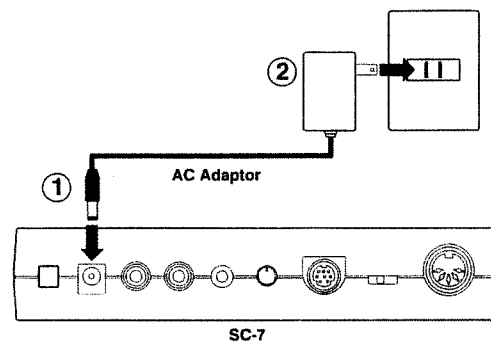
8. MIDI IN (MIDI Connector)

Provides for connection to other MIDI devices. Incoming MIDI messages are received via this connector. For details, see "ABOUT MIDI" (p. 20).

2. CONNECTIONS

The following explains how to connect the AC adaptor and audio cables. Concerning MIDI cables and connections made with a computer, see "3. SETUP" (p. 9).

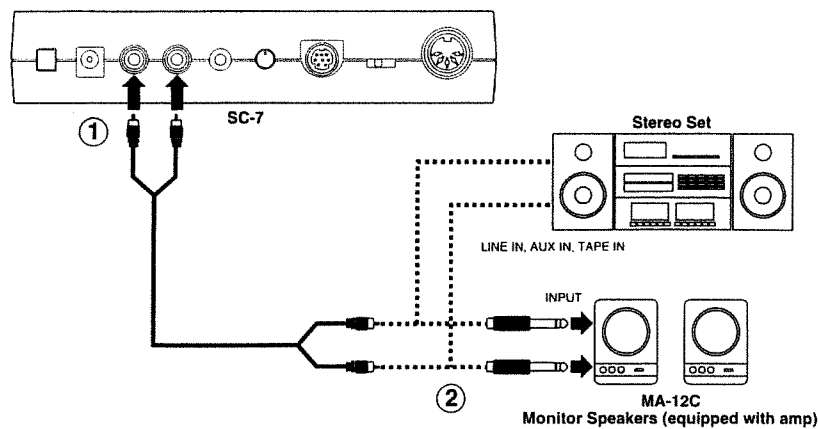
Connecting the AC Adaptor



1. Connect the AC adaptor to DC IN.
** Use only the supplied adaptor.*
2. Plug the AC adaptor into an outlet.

Connecting Audio Cables

Using audio cables, the OUTPUT jacks on the SC-7 can be connected to a keyboard amp, home stereo, radio-cassette player, or other audio equipment:



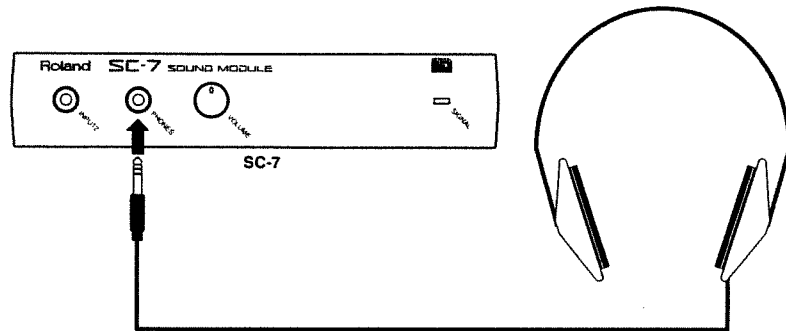
1. Connect audio cables to the OUTPUT jacks on the SC-7.
2. Connect the other ends of the cables to the INPUT jacks on your audio equipment.

Connect the cables to the LINE IN, AUX IN, or other appropriate input jacks on your audio equipment. If your equipment provides only RCA phono jacks, simply remove the plug adaptors from the cables.

** Never send the SC-7's output to the MIC IN, PHONO IN, or other mic-level inputs on your audio equipment. You risk damaging the equipment or speakers if you do.*

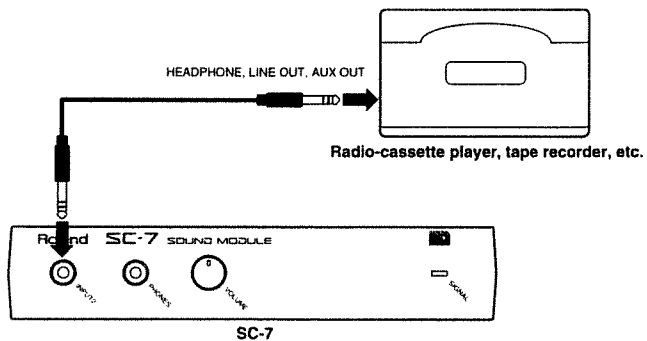
Using Headphones

Be sure to use headphones of 8 to 150 ohms impedance. Even with headphones connected, sound will still be output from the OUTPUT jacks.



Using External Inputs

The SC-7 is equipped with 2 separate inputs. You can send audio signals from your computer, CD-ROM drive, cassette player, or musical instrument to INPUT 1 (on the rear panel) or to INPUT 2 (on the front panel). The signals from INPUTs 1 and 2 will be mixed with the SC-7's sound and output through the OUTPUT jacks. Additionally, the volume level of INPUT 1 can be adjusted using INPUT 1 LEVEL.

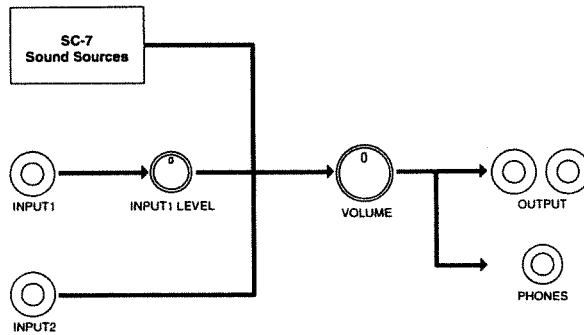


** Both INPUT 1 and INPUT 2 provide stereo-mini jacks. You will need to obtain the appropriate adaptors when necessary.*

** When using the LINE OUT or AUX OUT of a stereo or radio-cassette player, connect to INPUT 1, then adjust the volume level using INPUT 1 LEVEL.*

Adjusting the Volume of External Inputs

The output level of external sources (input via INPUTs 1 and 2) and the SC-7's output are all controlled by the Volume knob. Additionally, the signal level of INPUT 1 can be adjusted using INPUT 1 LEVEL to achieve the appropriate balance with respect to the SC-7's output.



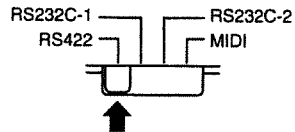
3. SETUP

The SC-7 can be connected to other MIDI devices and directly to personal computers (using an optional serial cable). Three configurations are possible:

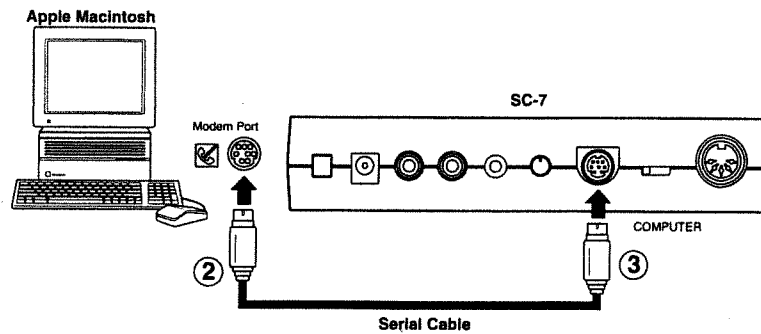
Connecting an Apple Macintosh Computer

Connection to a computer in the Macintosh family is made using a serial cable (designed for the Apple Macintosh series).

1. Move the selection switch on the SC-7 to the RS422 position.



2. Connect the serial cable to the modem/printer port on the rear of the Macintosh.
3. Connect the other end of the cable to the COMPUTER connector on the SC-7.

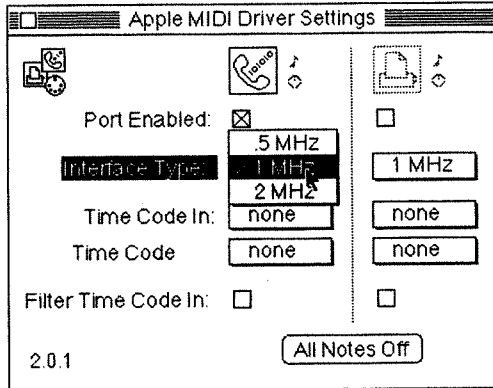


When Using MIDI Applications

You should have no problem using any MIDI application designed to be used with the Macintosh's serial ports. Before using the SC-7, however, check the MIDI interface and be sure it is set as explained below.

The port which is enabled should be the modem/printer port (the one to which the SC-7 is connected).

Be sure that the Interface Type (clock speed of the MIDI interface) is set to 1 MHz.

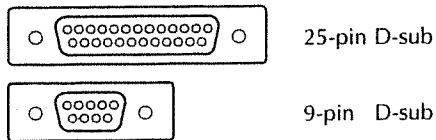


* The above screen (Settings) is accessed from the Apple MIDI Driver, and is used for making the MIDI interface settings.

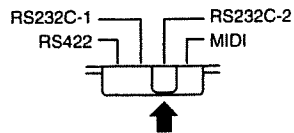
Connecting an IBM PC/AT Computer

The connection between a PC/AT (or compatible) computer and the SC-7 is made using a serial cable (designed for IBM PC/ATs and compatibles).

The serial port on a PC/AT can be one of two types; a 25-pin D-sub, or a 9-pin D-sub. Check which type your computer uses and then purchase the appropriate cable.



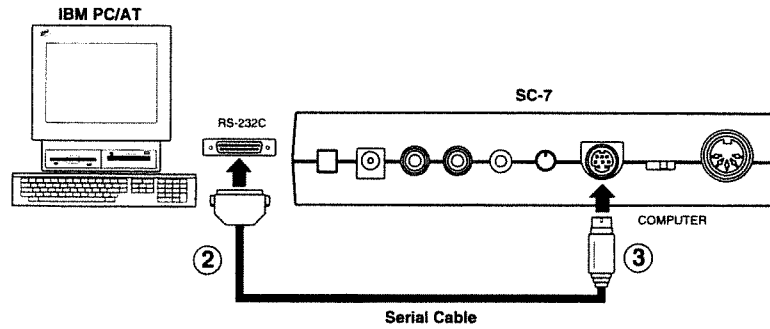
1. Move the selection switch on the SC-7 to the RS232C-2 position.



* A baud rate of 38.4 K (bps) will be used when set to the RS232C-2 position. If you use a MIDI application which uses a baud rate of 31.25 K (bps), set the switch to the RS232C-1 position.

2. Connect the serial cable to the RS-232C connector on the rear of the PC/AT.

3. Connect the other end of the cable to the COMPUTER connector on the SC-7.



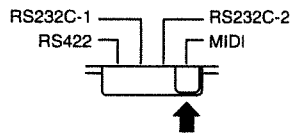
When Using MIDI Applications

You should have no problem using any MIDI application designed to use the RS-232C MIDI interface. Before using the SC-7, however, be sure the computer's RS port is set appropriately.

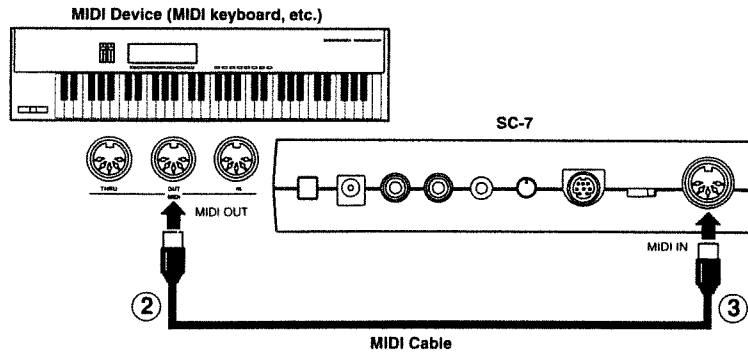
Connecting other MIDI Devices

The SC-7 can also be played by connecting a MIDI keyboard (or other MIDI device) to its MIDI IN connector:

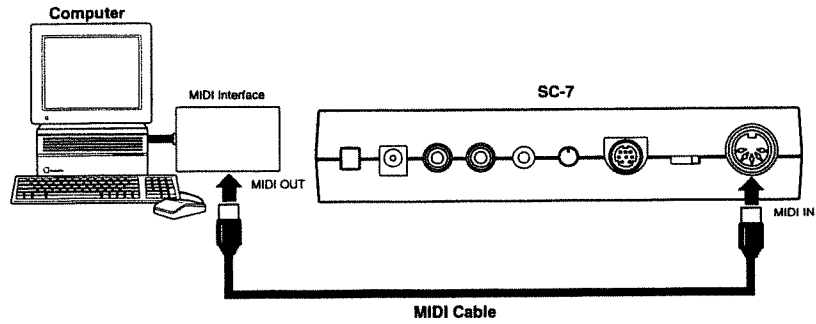
1. Move the selection switch on the SC-7 to the MIDI position.



2. Connect a MIDI cable to the MIDI OUT connector on the external MIDI device.
3. Connect the other end of the MIDI cable to the MIDI IN connector on the SC-7.



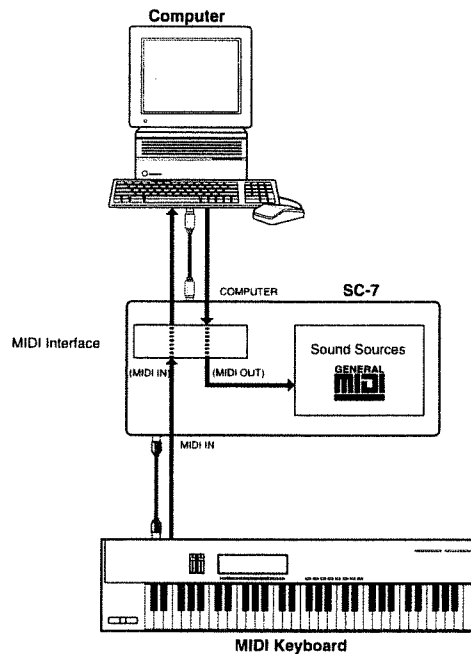
In addition, if you already have a MIDI interface, you can connect the SC-7 directly to it. When connected in this way, the SC-7 can be operated just like any other MIDI sound module.



4. HOW THE MIDI INTERFACE WORKS

When a serial configuration is used to connect the SC-7 to a computer (Macintosh or PC/AT), the SC-7 functions as a combined MIDI interface and MIDI sound module.

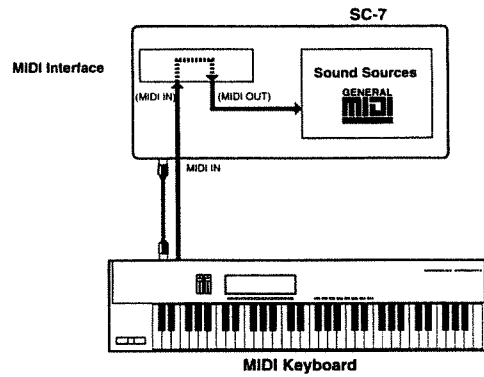
The MIDI IN on the SC-7 is equivalent to the MIDI IN on a MIDI interface. Therefore, all the MIDI messages that are sent to the MIDI IN by a connected keyboard will be relayed to the computer. Thus, by connecting a MIDI keyboard to the SC-7's MIDI IN, you will be able to record everything you play, and have it played by the SC-7.



When connected to a computer by means of a serial cable, the MIDI IN connector on the SC-7 becomes the computer's (MIDI interface's) MIDI IN. For this reason, you will not be able to play the SC-7's sounds if left this way. In order to have a MIDI keyboard play the SC-7's sounds, you must turn on the Soft Thru function within your MIDI application. (Soft Thru is a feature which will cause all MIDI messages that arrive at MIDI IN to be retransmitted from MIDI OUT.)

** For information on how to make the setting for Soft Thru (or equivalent feature), please refer to your MIDI application manual.*

When the selection switch on the SC-7 is set to the MIDI position, all MIDI messages that arrive at MIDI IN will be sent directly to the SC-7's internal sound sources. Therefore, the SC-7 will immediately respond to input from a connected MIDI keyboard.



5. POWERING UP

1. Check the following before turning on the SC-7:

- * Are the AC adaptor and audio cables connected properly?
- * Do you have the volume on your amplifier turned down?
 - When connected to a computer
Is the serial cable connected properly?
 - When connected to a MIDI device
Is the MIDI cable connected properly?

2. Turn the power on, and set the volume on your amplifier to an appropriate level.

- * To avoid damaging your speakers, set volume levels carefully. Keep in mind that consumer audio equipment is not designed to withstand the rigors of professional applications.
- * When powering down, first turn down the volume on your amplifier, then turn off the SC-7.

Default Settings (Settings in effect at power up)

< 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

- * Any setting changes that are made will be retained until the SC-7 is turned off.

6. 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 Japanese MIDI Standards Committee and the American MMA (MIDI Manufacturer’s Association). 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 rhythm 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.

7. PARTS, VOICES AND POLYPHONY

(1) Parts

The SC-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 rhythm 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 SC-7, the channel number and the Part number are the same as a default setting.

Part 10 is dedicated to rhythm 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 SC-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 SC-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. 25).

(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. 35).

Part Priority

When the SC-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 SC-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).

TROUBLESHOOTING

Whenever you suspect that the unit is not operating as it should, check the items below. If you are unable to restore normal operation, contact your retailer or the nearest Roland Service Center.

No sound is produced

- Are all the units in your system turned ON?
- Could you possibly be using the wrong type of input for your audio equipment?
- Are you sure you don't have the volume set too low on your audio equipment?
- Are you sure you don't have the software volume set too low (or at "0")?
If volume settings have been made within the performance data itself, you'll have to make appropriate settings.
- Does the Selection Switch position match your configuration?

The sound seems strange

- Have you changed the MIDI connections?
If you change the MIDI connections while music is playing, the data will no longer be played properly.

ABOUT MIDI

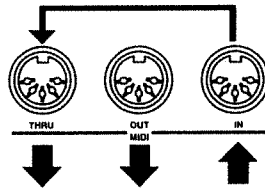
MIDI (pronounced *middy*) stands for Musical Instrument Digital Interface. MIDI is a world-wide standard that allows musical instruments and computers to exchange musical data. Most electronic musical instruments sold today are MIDI compatible. MIDI compatible devices have MIDI connectors which are used 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:

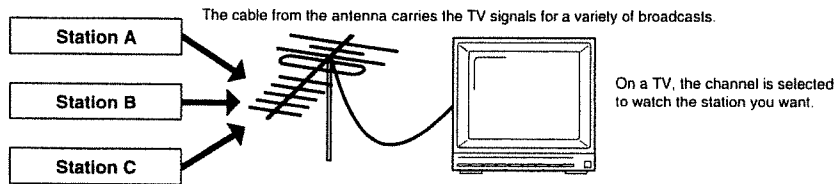
MIDI messages received at MIDI IN are re-transmitted by the MIDI THRU connector. (This connector does not transmit messages that originate inside the unit itself.)

** The SC-7 is not equipped with MIDI OUT or MIDI THRU connectors. Instead, the data output by the SC-7 can be received by a computer by means of a serial port connection.*

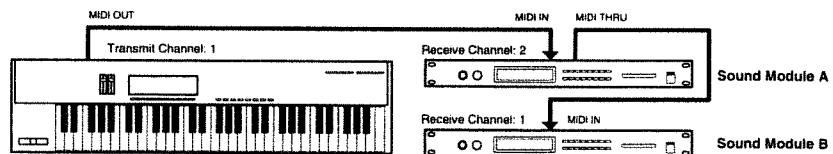
MIDI Channels and Multi-Timbral Capabilities

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 SC-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. 27). 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 SC-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 SC-7

Each of the Parts on the SC-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 rhythm or effect 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), Master Volume (Exclusive), and the setting of the Volume knob.
- 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), Master Volume (Exclusive), and the setting of the Volume knob.
- Hold 1 (Control Number: 64)
Allows the sound to be sustained. (Similar to the function of an acoustic 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 SC-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 SC-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). These messages can only be exchanged between identical units (e.g. two SC-7s). For details, refer to "MIDI IMPLEMENTATION" (p. 32).

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 SC-7, can be found starting on page 32.

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 modified by Channel aftertouch.

* Reception of channel aftertouch on the SC-7 is disabled as a default setting. When you wish to use these functions, set them by transmitting Exclusive messages from external MIDI device. 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
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 modified by Channel aftertouch.

* Reception of channel aftertouch on the SC-7 is disabled as a default setting. When you wish to use these functions, set them by transmitting Exclusive messages from external MIDI device. See the MIDI Implementation for more details.

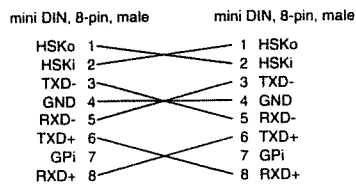
DRUM SET TABLE

PC#	1-16/00h-0Fh	17-24/10h-17h	25/18h, 27-40/1Ah-27h	26/19h	41-48/28h-2Fh	49-56/30h-37h
Drum set	Standard set	Power set	Elec. set	TR-808 set	Brush set	Orchestra set
27	High Q					Closed HH [EXC1]
28	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	Snare Drum 1	Gated SD	Elec SD	808 Snare Drum	Brush Swish	Concert SD (*)
39	Hand Clap				Brush Slap	Castanets
40	Snare Drum 2		Gated SD		Brush Swirl (*)	Concert SD (*)
41	Low Tom 2		Elec LowTom 1	808 Low Tom 2		Timpani F (*)
42	Closed Hi-Hat [EXC1]			808 CHH (*) [EXC1]		Timpani F# (*)
43	Low Tom 1		Elec LowTom 2	808 Low Tom 1		Timpani G (*)
44	Pedal Hi-Hat [EXC1]			808 CHH (*) [EXC1]		Timpani G# (*)
45	Mid Tom 2		Elec LowTom 1	808 Mid Tom 2		Timpani A (*)
46	Open Hi-Hat [EXC1]			808 OHH (*) [EXC1]		Timpani A# (*)
47	Mid Tom 1		Elec MidTom 2	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]					
72	Long Low Whistle [EXC2]					
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

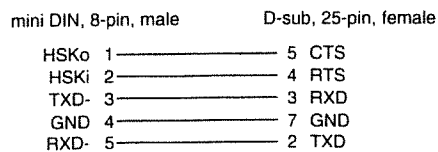
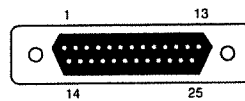
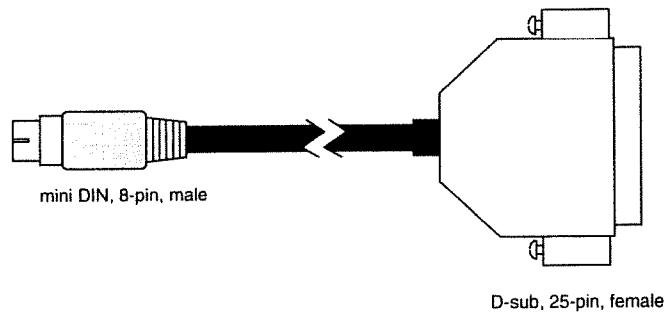
- The blank positions have the same instruments of "Standard set." "----" means "empty."
- Instruments with the same [EXC#] (Exclusive group number) will mute each other when played in combination.
- Instruments marked with "(*)" can have their TVF's modified by Channel aftertouch.

CABLE WIRING DIAGRAMS

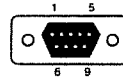
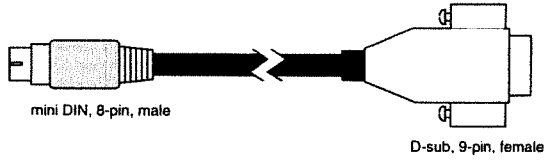
• For Apple Macintosh



• For IBM PC/AT



• For IBM PC/AT



mini DIN, 8-pin, male	D-sub, 25-pin, female
HSK _o 1	8 CTS
HSK _i 2	7 RTS
TXD- 3	2 RXD
GND 4	5 GND
RXD- 5	3 TXD

ROLAND EXCLUSIVE MESSAGES

1. Data Format for Exclusive Messages

Roland's MIDI implementation uses the following data format for all Exclusive messages (type IV):

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
CMD	Command ID
[BODY]	Main data
F7H	End of exclusive

• MIDI status: F0H, F7H

An Exclusive message must be flanked by a pair of status codes, starting with a Manufacturer ID immediately after F0H (MIDI version 1.0).

• Manufacturer ID: 41H

The Manufacturer ID identifies the manufacturer of a MIDI instrument that sends an Exclusive message. Value 41H represents Roland's Manufacturer ID.

• Device ID: DEV

The Device ID contains a unique value that identifies individual devices in the implementation of several MIDI instruments. It is usually set to 00H–0FH, a value smaller by one than that of a basic channel, but value 00H–1FH may be used for a device with several basic channels.

• Model ID: MDL

The Model ID contains a value that identifies one model from another. Different models, however, may share an identical Model ID if they handle similar data.

The Model ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Model IDs, each representing a unique model:

01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H

• Command ID: CMD

The Command ID indicates the function of an Exclusive message. The Command ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Command IDs, each representing a unique function:

01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H

• Main data: BODY

This field contains a message to be exchanged across an interface. The exact data size and content will vary with the Model ID and Command ID.

2. Address-mapped Data Transfer

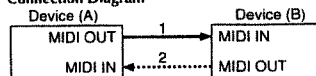
Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory-resident records—waveform and tone data, switch status, and parameters, for example, to specific locations in a machine-dependent address space, thereby allowing access to data residing at the address a message specifies.

Address-mapped data transfer is therefore independent of models and data categories. This technique allows use of two different transfer procedures: one-way transfer and handshake transfer.

• One-way transfer procedure (See Section 3 for details.)

This procedure is suited to the transfer of a small amount of data. It sends out an Exclusive message completely independent of the receiving device's status.

Connection Diagram



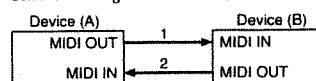
Connection at point 2 is essential for "Request data" procedures. (See Section 3.)

• Handshake-transfer procedure

(This device does not use this procedure)

This procedure initiates a predetermined transfer sequence (handshaking) across the interface before data transfer takes place. Handshaking ensures that reliability and transfer speed are high enough to handle a large amount of data.

Connection Diagram



Connection at points 1 and 2 is essential.

Notes on the above procedures

- There are separate Command IDs for different transfer procedures.
- Devices A and B cannot exchange data unless they use the same transfer procedure, share identical Device ID and Model ID, and are ready for communication.

3. One-way Transfer Procedure

This procedure sends out data until it has all been sent and is used when the messages are so short that answerbacks need not be checked. For longer messages, however, the receiving device must acquire each message in time with the transfer sequence, which inserts 20 milliseconds intervals.

Types of Messages

Message	Command ID
Request data 1	RQ1 (11H)
Data set 1	DT1 (12H)

• Request data #1: RQ1 (11H)

This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.

On receiving an RQ1 message, the remote device checks its memory for the data address and size that satisfy the request. If it finds them and is ready for communication, the device will transmit a "Data set 1 (DT1)" message, which contains the requested data. Otherwise, the device won't send out anything.

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
11H	Command ID
aaH	Address MSB
	LSB
ssH	Size MSB
	LSB
sum	Check sum
F7H	End of exclusive

- The size of the requested data does not indicate the number of bytes that will make up a DT1 message, but represents the address fields where the requested data resides.
- Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
- The same number of bytes comprises address and size data, which, however, vary with the Model ID.
- The error-checking process uses a checksum that provides a bit pattern where the last 7 bits are zero when values for an address, size, and that checksum are summed.

• Data set 1: DT1 (12H)

This message corresponds to the actual data transfer process. Because every byte in the data is assigned a unique address, a DT1 message can convey the starting address of one or more bits of data as well as a series of data formatted in an address-dependent order.

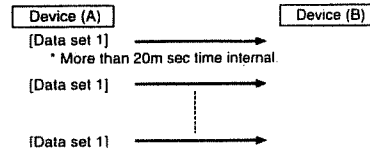
The MIDI standards inhibit non real-time messages from interrupting an Exclusive one. This fact is inconvenient for devices that support a "soft-thru" function. To maintain compatibility with such devices, Roland has limited the DT1 to 256 bytes so that an excessively long message is sent out in separate 'segments'.

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
12H	Command ID
aaH	Address MSB
	LSB
ddH	Data MSB
	LSB
sum	Check sum
F7H	End of exclusive

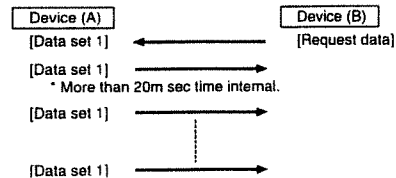
- A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.
- Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
- The number of bytes comprising address data varies from one Model ID to another.
- The error-checking process uses a checksum that provides a bit pattern where the last 7 bits are zero when values for an address, size, and that checksum are summed.

• Example of Message Transactions

- Device A sending data to Device B
Transfer of a DT1 message is all that takes place.



- Device B requesting data from Device A
Device B sends an RQ1 message to Device A. Checking the message, Device A sends a DT1 message back to Device B.



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 are reset when receiving Program Change messages. (Refer to /NRPN//)

(1) Modulation

Status	Second	Third
BnH	01H	vvH

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

- * Affect pitch modulation or rate control (Refer to P.35 'PATCH PARAMETER')

(2) Data entry

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

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

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

Status	Second	Third
BnH	0BH	vvH

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

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

(6) Hold1

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)

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 P.36)

(8) Effect3 depth (Chorus depth)

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 P.36)

(9) NRPN MSB/LSB

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.35 'PATCH PARAMETER')

//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 preset or absolute values.

NRPN MSB/LSB should be set before sending data entry.

NRPN is available for only the drum Part in the SC-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 SC-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 ( used only MSB in SC-7 )
```

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

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

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

(10) RPN MSB/LSB

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	Description
MSB LSB	MSB LSB	
00H 00H	mmH ll	Pitch bend sensitivity mm : 00H...1BH (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 ll	Master coarse tuning mm : 2BH...40H...5BH (-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

```
B9 65 mm (B9) 64 ll mm: MSB of parameter name
ll: LSB of parameter name
```

- (2) Set parameter value using data entry

```
(B9) 06 vm (B9) 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)

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

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

<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.35 'PATCH PARAMETER')

<6> PITCH BEND

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.

[Channel Mode Message]

<1> ALL SOUNDS OFF

Status	Second	Third
BnH	7BH	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

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
NRPN	No change in value
	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
FEH

* 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 : EOX (End of Exclusive)

SC-7 has nothing to transmit. SC-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 : EOX

- * 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, llH, 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)
llH : LSB of Master Volume
mmH : MSB of Master Volume
F7H : EOX

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

<3> DATA SET

Internal setting of SC-7 can be controlled by System Exclusive Messages. When sending data to SC-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	Status
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 (SC-7) (* Some data uses 42H)
12H : Command ID (DT1)
aaH : LSB of data address (Lower byte of the top of data address)
bbH : Data address (Middle byte of the top of data address)
ccH : MSB of data address (Upper 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 : EOX

- * Some parameters are fixed in data size. These parameters should be transmitted as fixed-size data from the top of address described in Section2 '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 .37.

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:

Address	Block	Sub Block	Notes
00 00 00	System parameters		use MODEL ID = 56H
01 00 00	Patch parameters	Patch block 0 : : Patch block F	use MODEL ID = 56H
40 00 00	System parameters		use MODEL ID = 42H

[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	40
00 00 02	01	00...7F	REVERB (DELAY) 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)	13
00 00 07	01	00...7F	CHORUS DELAY	0...127	13
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	03	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). Divide '07E8H' into four nibblized (consist of 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 → 07/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
40 01 11				PART 1	06
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 9111121131141151161
value	1 21 61 21 21 21 21 21 21 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 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 9111121131141151161
value	1 81 81 81 41 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 (23) 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 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 (23) 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 01 01 01 01 01 01 41

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

Address (H)	SIZE (H)	Data (H)	Parameter	Description	Default Value (H)
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 TVF 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 aftertouch

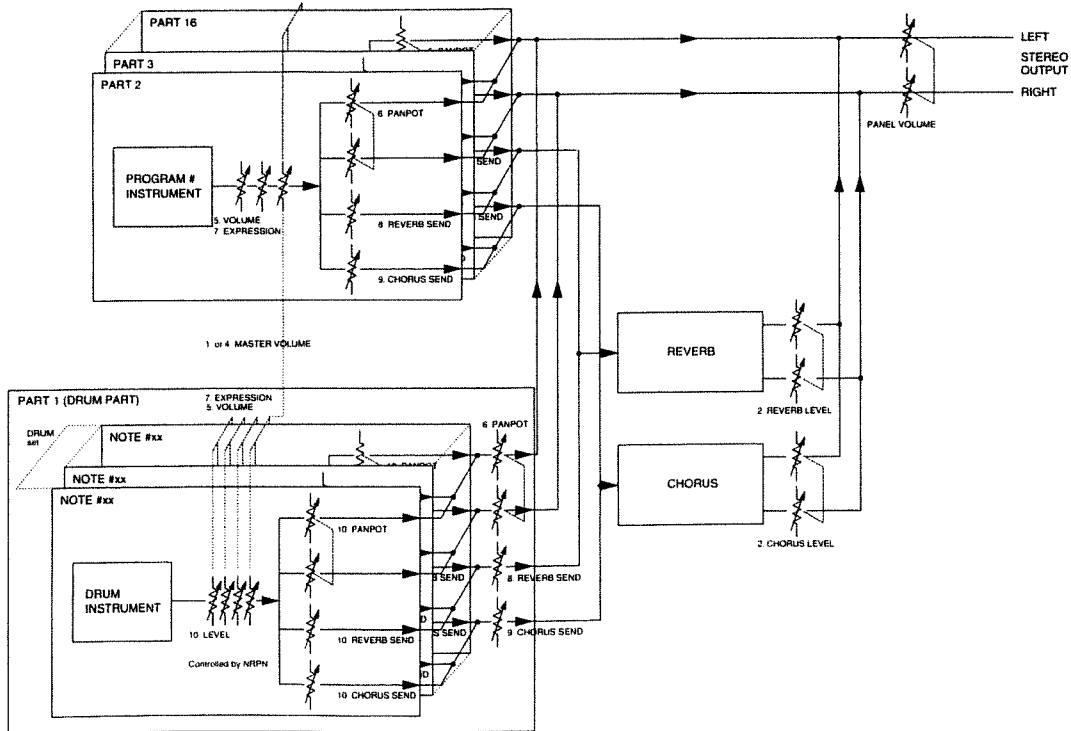
(*1) This value is available only for the drum Part. The others ignore this value.

(*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 TVF parameter. This value then has no effect on those sounds. (Refer to P.25 'TONE TABLE')

BLOCK DIAGRAM



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 and provides a bit pattern where the last significant 7 bits are zero when values for an address, data (or size) and the Checksum are summed.

If the address is "aa bb ccH" and the data (or the size) is "dd ee ffH"
 $aa + bb + cc + dd + ee + ff = \text{sum}$
 $\text{sum} / 128 = \text{quotient} \dots \text{remainder}$
 $128 \cdot \text{remainder} = \text{checksum}$

<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 correspond to ROOM 3 is 02H. So, the message should be :

```

FO 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 :
 $00H + 00H + 00H + 02H = 0 + 0 + 0 + 2 = 2(\text{sum})$
 $2(\text{sum}) / 128 = 0(\text{quotient}) \dots 2(\text{remainder})$
 $\text{checksum} = 128 \cdot 2(\text{remainder}) = 256 = 7EH$
 Therefore, the message to send is : FO 41 10 56 12 00 00 00 02 7E F7

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

```

FO 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 :
 $40H + 00H + 00H + 00H + 04H + 0EH + 0AH = 64 + 0 + 0 + 0 + 4 + 14 + 10 = 92(\text{sum})$
 $92(\text{sum}) / 128 = 0(\text{quotient}) \dots 92(\text{remainder})$
 $\text{checksum} = 128 \cdot 92(\text{remainder}) = 36 = 24H$

Therefore, the message to send is :
 FO 41 10 42 12 40 00 00 00 04 0E 0A 24 F7

Useful Informations

• 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	Hexa	Decimal	Hexa	Decimal	Hexa
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, use incremented values in the table.
- The resolution of 7-bit Hexadecimal numbers is 128. Use several bytes for values which require more 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, $18 \times 128 + 52 = 2356$

<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, $((10 \times 16 + 3) \times 16 + 9) \times 16 + 13 = 41885$

• 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> CE 49
 "Cn" is a status of a Program change message, and "n" is a MIDI channel number.
 The second byte is a Program number.
 $EH = 14, 49H = 73$
 So, this is a Program change message of MIDI channel=15, Program number=74 (Flute in GM).

<EXAMPLE 3> EA 00 28
 "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(28H) is an MSB of a Pitch bend value (signed).
 The Pitch bend value is :
 $28\ 00H - 40\ 00H = 40 \times 128 + 0 - (64 \times 128 + 0) = 5120 - 8192 = -3072$
 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 :
 $-200 \times (-3072) / (-8192) = -75 \text{ cent}$

PARAMETER LIST

Parameters Common to All Parts

System Exclusive Message

[System Common] MODEL ID=42H(p. 35)

MASTER TUNE
MASTER VOLUME (1)
MASTER KEY-SHIFT

[Effect Control] MODEL ID=56H(p. 35)

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. 34)

Turn General MIDI System On

[UNIVERSAL REALTIME SYSTEM EXCLUSIVE MESSAGES](p. 34)

Master Volume (4)

(?) : Refer to "BLOCK DIAGRAM" (p. 36)

Parameters for Individual Parts

CONTROL CHANGE	(p. 32)
[Modulation]	(p. 32)
[Volume] (5)	(p. 32)
[Panpot] (6)	(p. 32)
[Expression] (7)	(p. 32)
[Effect1 depth (Reverb depth)] (8)	(p. 32)
[Effect3 depth (Chorus depth)] (9)	(p. 32)
[RPN]	(p. 33)
Pitch bend sensitivity	
Master fine tuning	
Master coarse tuning	
[NRPN (NRPN is available for only drum part.)] (10)	(p. 32)
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. 35)
Voice Reserve	
[PATCH PARAMETER] MODEL ID=56H	(p. 36)
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 to those sounds.)	
CAF AMPLITUDE CONTROL	
CAF LFO RATE CONTROL	
CAF LFO PITCH DEPTH	

(?) : Refer to "BLOCK DIAGRAM" (p. 36)

SPECIFICATIONS

SC-7: Sound Module

(Conform to General MIDI System Level 1)

- **Number of Parts**
16 Parts
- **Number of Sounds**
Number of Sounds: 128
Number of Drum sets: 6
- **Maximum Polyphony**
28 Voices
- **Effects**
Reverb/Delay, Chorus
- **Interface with Host Computers**
RS-422 (for Apple Macintosh)
RS-232C (for IBM PC and others)
- **Connectors**
Input Jack x 2 (stereo mini type)
Headphone Jack (stereo mini type)
Output Jacks (RCA phone type L, R)
Host Computer Connector (mini DIN 8 pin)
MIDI Connector (IN)
- **Power Supply**
DC 9V (AC Adaptor)
- **Current Draw**
300 mA
- **Dimensions**
168 (W) x 203 (D) x 35 (H) mm
6-5/8 (W) x 8 (D) x 1-3/8 (H) inches
- **Weight**
0.5 kg / 1 lbs 2 oz
- **Accessories**
Owner's Manual
Connection Cable: Stereo Audio Cable x 1
AC Adaptor

In the interest of product improvement, the specifications of this unit are subject to change without prior notice.

MIDI Implementation Chart

Function...		Transmitted	Recongized	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	Pan
	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 Sound Off
121	x	o	Reset All Controllers	
Prog Change	True #	x	o	
		*****	0-127	Program# 1-128
System Exclusive		x	o	
System Common	Song Pos	x	x	
	Song Sel	x	x	
	Tune	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.		

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.

For Germany

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das

SOUND MODULE SC-7

(Gerät Typ Bezeichnung)

in Übereinstimmung mit den Bestimmungen der

Amtsbl. Vfg 1046/1984

(Amtsblattverfügung)

funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Roland Corporation Osaka/Japan

Name des Herstellers/Importeurs

For the USA

RADIO AND TELEVISION INTERFERENCE

WARNING — This equipment has been verified to comply with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC rules. Operation with non-certified or non-verified equipment is likely to result in interference to radio and TV reception.

The equipment described in this manual generates and uses radio frequency energy. If it is not installed and used properly, that is, in strict accordance with our instructions, it may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J, of Part 15 of FCC Rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by the following measure:

• Disconnect other devices and their input/output cables one at a time. If the interference stops, it is caused by either the other device or its I/O cable. These devices usually require Roland designated shielded I/O cables. For Roland devices, you can obtain the proper shielded cable from your dealer. For non-Roland devices, contact the manufacturer or dealer for assistance.

If your equipment does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- Turn the TV or radio antenna until the interference stops.
- Move the equipment to one side or the other of the TV or radio.
- Move the equipment farther away from the TV or radio.
- Plug the equipment into an outlet that is on a different circuit than the TV or radio. (That is, make certain the equipment and the radio or television set are on circuits controlled by different circuit breakers or fuses.)
- Consider installing a rooftop television antenna with coaxial cable lead-in between the antenna and TV. If necessary, you should consult your dealer or an experienced radio television technician for additional suggestions. You may find helpful the following booklet prepared by the Federal Communications Commission: "How to Identify and Resolve Radio — TV Interference Problems."

This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.

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.

 Roland®

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SC-7

 Roland