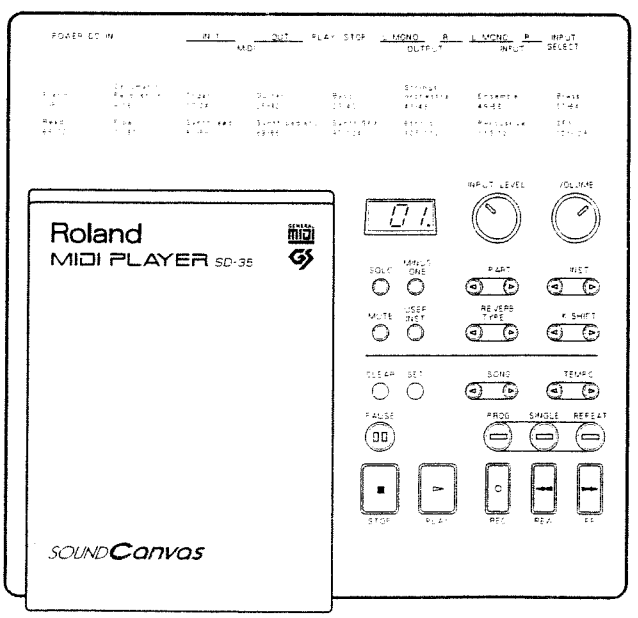
Roland

OWNER'S MANUAL

SD-35

MIDI PLAYER



GENERAL MIDI

GS

Information

When you need repair service, call your local Roland Service Station or the authorized Roland distributor in your country as shown below.

U. S. A.

Roland Corporation US
7200 Dominion Circle
Los Angeles, CA.
90040-3647, U. S. A.
☎ (213)685 - 5141

CANADA

Roland Canada Music Ltd
(Head Office)
5480 Parkwood
Richmond B. C., V6V 2M4
CANADA
☎ (604)270 - 6626

Roland Canada Music Ltd.
9425 Transcanadienne
Service Rd. N., St Laurent,
Quebec H4S 1V3.
CANADA
☎ (514)335 - 2009

Roland Canada Music Ltd.
346 Watline Avenue,
Mississauga, Ontario L4Z
1X2, CANADA
☎ (416)890 - 6488

AUSTRALIA

Roland Corporation
(Australia) Pty. Ltd.
(Head Office)
38 Campbell Avenue
Dee Why West. NSW 2099
AUSTRALIA
☎ (02)982 - 8266

Roland Corporation
(Australia) Pty. Ltd.
(Melbourne Office)
50 Garden Street
South Yarra, Victoria 3141
AUSTRALIA
☎ (03)241 - 1254

UNITED KINGDOM

Roland(U.K.) Ltd.
Rye Close
Ancells Business Park
Fleet, Hampshire GU13
8UY, UNITED KINGDOM
☎ 0252 - 816181

Roland(U.K.) Ltd.,
Swansea Office
Atlantic Close, Swansea
Enterprise Park, Swansea,
West Glamorgan SA79FJ,
UNITED KINGDOM
☎ (0792)700 - 139

ITALY

Roland Italy S. p. A.
Viale delle Industrie 8
20020 ARESE MILANO
ITALY
☎ 02 - 93581311

SPAIN

Roland Electronics
de España, S. A.
Calle Bolivia 239
08020 Barcelona, SPAIN
☎ 93 - 308 - 1000

GERMANY

Roland Elektronische
Musikinstrumente
Handelsgesellschaft mbH.
Oststrasse 96, 2000
Norderstedt, GERMANY
☎ 040/52 60 090

FRANCE

Musikengro
102 Avenue Jean-Jaures
69007 Lyon Cedex 07
FRANCE
☎ (7)858 - 54 60

Musikengro (Paris Office)
Centre Region Parisienne
41 rue Charles-Fourier,
94400 Vitry s/Seine
FRANCE
☎ (1)4680 86 62

BELGIUM/ HOLLAND/ LUXEMBOURG

Roland Benelux N. V.
Houtstraat 1
B-2260 Oevel-Westerlo
BELGIUM
☎ (0032)14 - 575811

DENMARK

Roland Scandinavia A/S
Langebrogade 6
Box 1937
DK-1023 Copenhagen K.
DENMARK
☎ 31 - 95 31 11

SWEDEN

Roland Scandinavia A/S
DanvikCenter 28 A, 2 tr.
S-131 30 Nacka
SWEDEN
☎ 08 - 702 00 20

NORWAY

Roland Scandinavia
Avd. Norge
Lilleakerveien 2
Postboks 95 Lilleaker
N-0216 Oslo 2
NORWAY
☎ 02 - 73 00 74

FINLAND

Fazer Musik Inc.
Länsituulentie
POB 169
SF-02101 Espoo
FINLAND
☎ 0 - 43 50 11

NEW ZEALAND

Roland Corporation
(NZ) Ltd.
97 Mt. Eden Road, Mt.
Eden, Auckland 3,
NEW ZEALAND
☎ (09)3098 - 715

SWITZERLAND

Musitronic AG
Gerberstrasse 5, CH-4410
Liestal, SWITZERLAND
☎ 061/921 16 15

Roland CK (Switzerland)
AG
Postfach/Hauptstrasse 21
CH-4456 Tenniken
SWITZERLAND
☎ 061/98 60 55
Repair Service by
Musitronic AG

AUSTRIA

E. Dematte &Co.
Neu-Rum Siemens-
Strasse 4
A-6021 Innsbruck Box 591
AUSTRIA
☎ (0512)63 451

GREECE

V. Dimitriadis & Co. Ltd.
2 Phidiou Str., GR 106 78
Athens, GREECE
☎ 1 - 3620130

PORTUGAL

Casa Caius Instrumentos
Musicais Lda.
Rua de Santa Catarina 131
Porto, PORTUGAL
☎ 02 - 38 44 56

HUNGARY

Intermusica Ltd.
Warehouse Area 'DEPO'
Torokbalint, Budapest
HUNGARY
☎ (1)1868905

ISRAEL

D.J.A. International Ltd.
25 Pinsker St., Tel Aviv
ISRAEL
☎ 972 - 3 - 5283015

CYPRUS

Radex Sound Equipment
Ltd.
17 Panteli Katelari Str.
P.O.Box 2046, Nicosia
CYPRUS
☎ 453426, 466423

TURKEY

Barkat Sanayi ve Ticaret
Siraselviler Cad. 86/6
Taksim Istanbul, TURKEY
☎ 149 93 24

EGYPT

Al Fanny Trading Office
9, Ebn Hagar Askalany
Street, Ard El Golf,
Heliopolis, Cairo, EGYPT
☎ 2917803 - 665918

BRAZIL

Roland Brasil Ltda.
R. Alvarenga 591
CEP-05509 Sao Paulo
BRAZIL
☎ (011)813 - 7967
Repair Service for Roland
and Rhodes products

Oliver do Brasil S.A.
Instrumentos Musicais
Av. Ceci. No.578 Centro
Empresarial Tambore
Barueri SP CEP 06400
BRAZIL
☎ (011)709 - 1267
Repair Service for BOSS
products

MEXICO

Case Veerkamp, s.a. de c.v.
Mesones No. 21
Col. Centro
C.P. 06080 Mexico, D.F.
MEXICO
☎ (5)709 - 3716

La Casa Wagner de
Guadalajara s.a. de c.v.
Av. Corona No. 202 S.J.
C.P.44100
Guadalajara, Jalisco
MEXICO
☎ (36)13 - 1414

ARGENTINA

Netto S.A.
Venezuela 1433
1095 Buenos Aires
ARGENTINA
☎ 37 - 1632

HONG KONG

Tom Lee Music Co., Ltd.
Service Division
22-32 Pun Shan Street,
Tsuen Wan, New
Territories, HONG KONG
☎ 415 - 0911

KOREA

Cosmos Corporation
Service Station
261 2nd Floor Nak-Won
arcade
Jong-Ro ku, Seoul, KOREA
☎ (02) 742 8844

SINGAPORE

Swee Lee Company
Bras Basah Complex
#03-23 Singapore 0178
SINGAPORE
☎ 3367886

THAILAND

Theera Music Co., Ltd.
330 Verng Nakorn Kasem,
Soi 2, Bangkok 10100,
THAILAND
☎ 2248821

MALAYSIA

Syarikat Bentley
No.142, Jalan Bukit
Bintang 55100 Kuala
Lumpur, MALAYSIA
☎ 2421288

INDONESIA

PT Galestra Inti
Kompleks Perkantoran
Duta Merlin Blok C/59
Jl. Gajah mada No.3-5
Jakarta 10130
INDONESIA
☎ (021) 354604, 354606

TAIWAN

Siruba Enterprise(Taiwan)
Co., LTD.
Room. 5, 9fl. No. 112
Chung Shan N.Road Sec.2
Taipei, TAIWAN, R.O.C.
☎ (02)5364546

SOUTH AFRICA

That Other Music
Shop(PTY) LTD.
256 Bree Street,
Johannesburg 2001
Republic of South Africa
☎ 337 - 6573

Paul Bothner(PTY) LTD.
17 Werdmuller Centre
Claremont 7700
Republic of South Africa
☎ 021 - 64 - 4030

As of Jan 8. 1992

■ CONTENTS

■ Introduction

Thank you for purchasing the Roland SD-35. The SD-35 is a MIDI suquencer with built-in sound module that contains a wide variety of high quality sounds. In order to take full advantage of the SD-35's capabilities, and to enjoy extended and trouble-free service, please read this manual carefully before use.

■ Main Features

- The SD-35 is a MIDI sequencer conforming to the GM system/GS format. The SD-35 contains a variety of high quality musical instrument sounds and complete drum sets.
- The SD-35 is compatible with standard MIDI files. You can of course, playback song data recorded by the SD-35, and also song data that was recorded by other MIDI sequencers.
- The SD-35 allows you to easily record and playback performances from MIDI synthesizers and other types of MIDI instruments.
- A wide variety of playback functions are provided, such as Programmed Performance which lets you play your performances in specified order.
- The SD-35 can function as a complete 16 part multi-timbral sound module.
- By using the internal reverb and chorus effects, it is easy to reproduce the acoustic ambience of a concert hall.
- A "Minus One" function is available that lets you temporarily mute a selected part of a song. You can then play that part yourself.
- An Audio Input jack is provided allowing you to mix the output from guitar, microphone, keyboard, or other sound sources with that of the SD-35. The signal of both units will be output from the Audio Output jacks.
- The compact size allows for easy transport.

GENERAL MIDI

General MIDI System

The General MIDI System is a set of recommendations which seek to provide a way for going beyond the limitations of proprietary designs, and standardize the MIDI capabilities provided by sound generating devices.
If you use a sound generating unit which carries the General MIDI logo (GENERAL MIDI), you will be able to faithfully reproduce any song data which also carries the General MIDI logo.

GS Format

The GS Format is Roland's universal set of specifications which were formulated in the interest of standardizing the way in which sound generating devices will operate when MIDI is used for the performance of music. If you use a sound generating unit which carries the GS logo (GS), you will be able to faithfully reproduce any commercially available song data which also carries the GS logo.

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

IMPORTANT NOTES

Be sure to use only the adaptor supplied with the unit. Use of any other power adaptor could result in damage, malfunction, or electric shock.

[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 of 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 (eg. 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.

●Observe the following when using the unit's disk drive. For further details, refer to "Before Using Disks".
- Do not place the unit near devices that produce a strong magnetic field (eg. loudspeakers).
- Install the unit on a solid, level surface.
- Do not move the unit or subject it to vibration while it is operating.

●Do not expose this unit to temperature extremes (eg. direct sunlight in an enclosed vehicle can deform or discolor the unit) or install it near devices that radiate heat.

[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.

●Never strike or apply strong pressure to the display.

●A small amount of heat will radiate from the unit, and thus should be considered normal.

●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.

[Before Using Disks]

Handling of the drive

●Install the unit on a solid, level surface in an area free from vibration. If the unit must be installed at an angle, be sure that the angle of installation falls within the tolerance range (upward; 20°: downward; 20°).

●Avoid using the drive in areas of high humidity (eg. condensation). High levels of moisture can adversely affect the operation of the drive and/or damage disks. When the unit has been transported, allow it to warm to room temperature before operating.

●To insert a disk, push it firmly into the drive. To remove a disk, press the eject button firmly. Do not use excessive force to remove a disk which is lodged in the drive.

●Never remove a disk from the drive while it is operating; damage could result to both the disk and the drive.

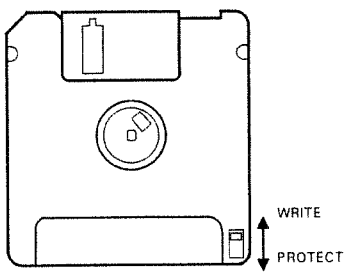
●Before powering up or powering down, remove any disk from the drive.

●When shipped, the disk drive contains transit-protection material. Press the eject button to remove this material before using the drive. This material should be saved and used whenever the unit is transported.

Handling Disks

●Floppy disks contain a plastic disk coated with magnetic particles. Observe the following when handling disks:
- Never touch the magnetic surface of the disk.
- Do not subject disks to temperature extremes (eg. direct sunlight in an enclosed vehicle). Recommended temperature range: 10 to 50 ℃.
- Do not expose disks to strong magnetic fields such as those generated by loudspeakers.

●Floppy disks contain a 'write protect' switch which can protect a disk from accidental erasure. It is recommended that the switch be kept in the 'protect' position and moved only when you wish to write new data onto the disk.



●All important data should be copied onto backup disks. This provides a complete duplicate of the data should the original disk be lost or damaged.

●Identification labels should be firmly fixed to the disks. Should a label come loose while the disk is in the drive, it may be difficult to remove the disk.

[Memory Backup]

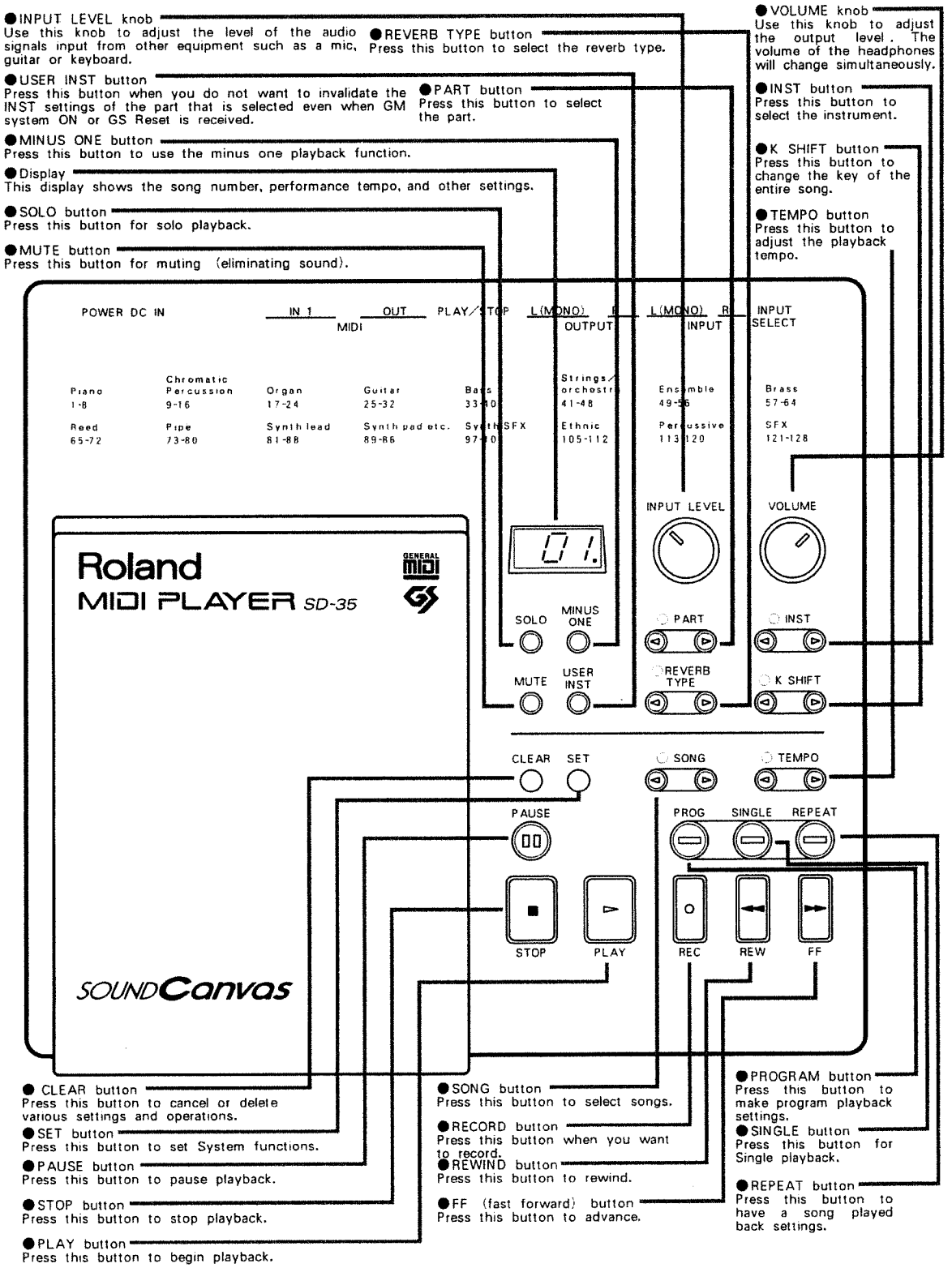
● The unit contains a battery which maintains the contents of memory while the main power is off. The expected life of this battery is 5 years or more. However, to avoid the unexpected loss of memory data, it is strongly recommended that you change the battery every 5 years.
Please be aware that the actual life of the battery will depend on the physical environment (especially temperature) in which the unit is used. When it is time to change the battery, consult with qualified service personnel.

● When the battery becomes weak the following message will appear in the display: " bAt ". Please change the battery as soon as possible to avoid the loss of memory data.

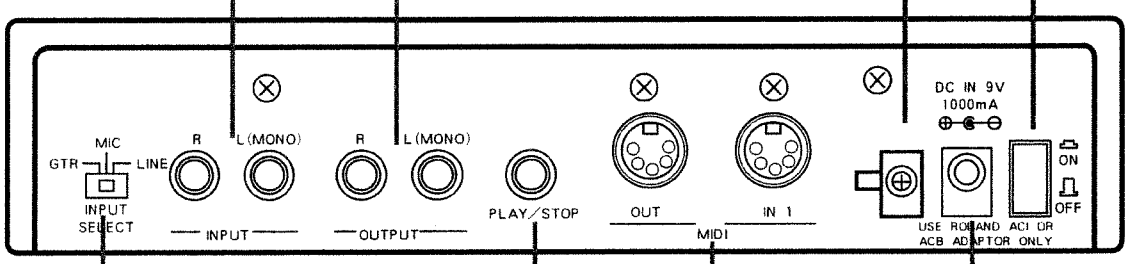
● Please be aware that the contents of memory may at times be lost; when the unit is sent for repairs or when by some chance a malfunction has occurred. Important data should be stored in another MIDI device (eg. a sequencer), or written down on paper. During repairs, due care is taken to avoid the loss of data. However, in certain cases, (such as when circuitry related to memory itself is out of order) we regret that it may be impossible to restore the data.

■ PANELS DESCRIPTIONS

● Top Panel



● Rear Panel



● Audio input terminals
These terminals accept the audio signals from other equipment. The input signal is output from the output terminal after being mixed with the SD-35's audio signal.

● Audio output terminals
These terminals output the audio signals.

● Cable hook
By looping the AC adaptor cable around the cable hook, you can prevent the plug from accidentally being disconnected.

● Power switch
This switch turns the power ON or OFF.

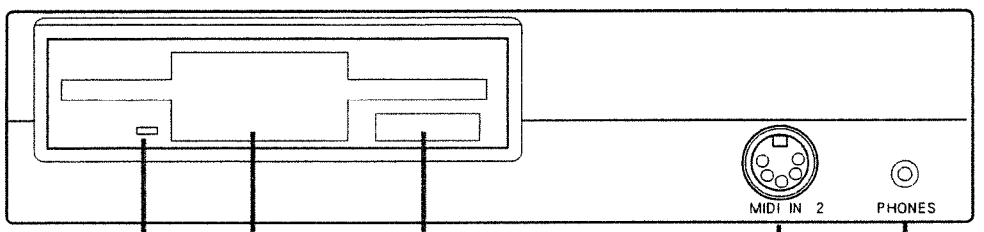
● PLAY/STOP jack
A DP-2 foot pedal can be connected to this jack to control the Play / Stop operations, etc.

● AC adaptor jack
This jack is for connecting the included AC adaptor.

● Input select switch
Set to accommodate the particular type of equipment that you are using with the SD-35. Lower the volume of the connented amplifier when making a selection.

● MIDI connectors (IN 1, OUT, THRU)
These connectors are for exchanging MIDI messages with other MIDI devices.

● Front Panel



● Disk drive

● Disk indicator
This light will be on when the disk drive is operating.

● EJECT button
Press this button to remove the floppy disk from the disk drive.

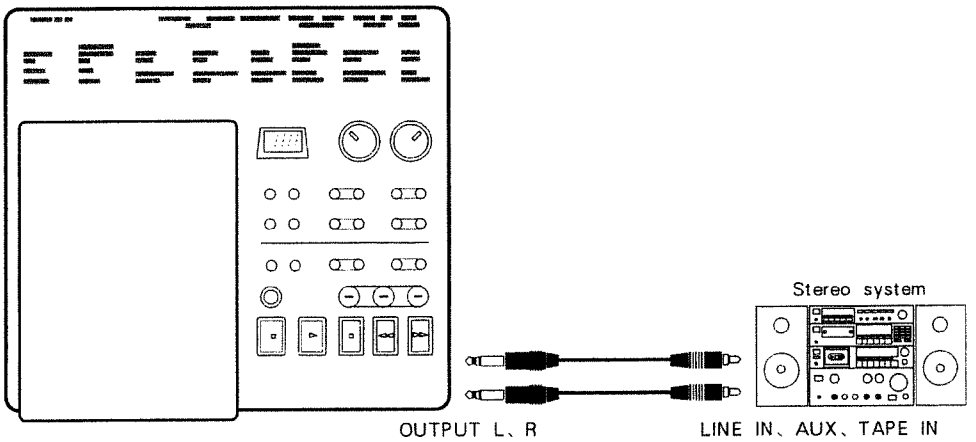
● PHONES jack
This jack is for connecting Headphones . Sound can be output from the Audio output terminals simultaneously.

● MIDI IN 2 connector

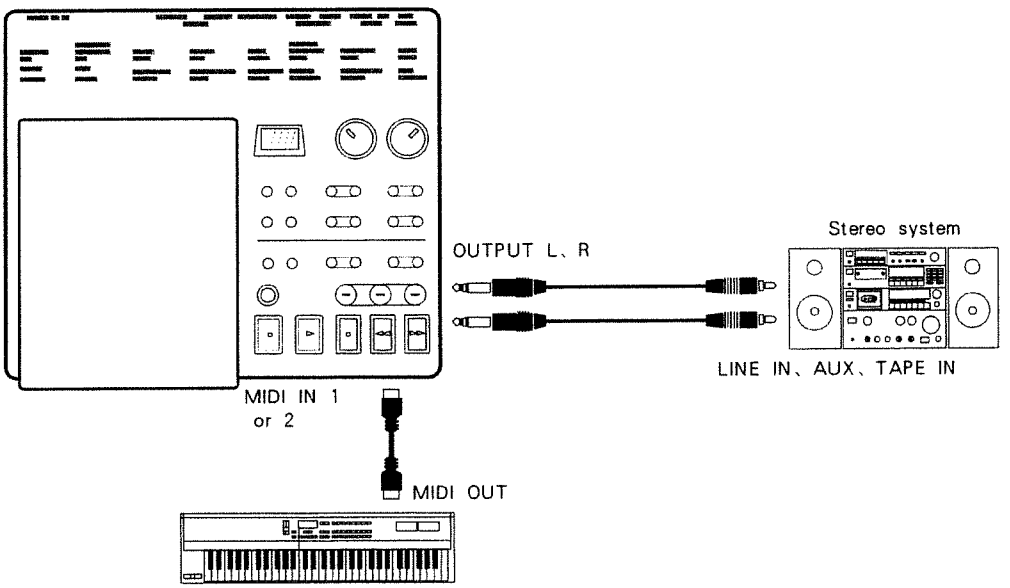
■ CONNECTIONS AND POWER

□ Connections

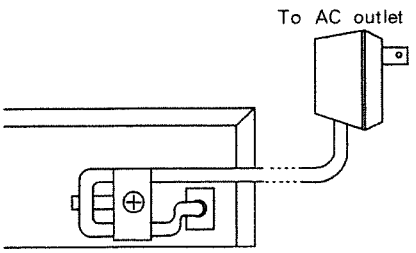
● When using this unit with a stereo system



● When using this unit with a MIDI keyboard



● Connecting the AC adaptor



Connect the included AC adaptor to the SD-35, and then plug it into an AC outlet. By looping the AC adaptor cable around the cable hook, you can prevent the plug from accidentally being disconnected.

Note : Use only the included AC adaptor. Using other AC adaptors can result in damage or malfunction.

☐ Turn the power on

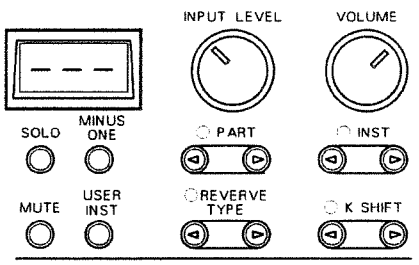
① Before you turn the power on, check the following points:

Is the SD-35 correctly connected to the other devices?

Is the volume of the amp or sound system turned down?

② Turn the power of each device on.

The following display will appear. The SD-35 is now ready to play.



■ HOW TO HEAR THE DEMO SONGS

The floppy disk included with the SD-35 contains song data.

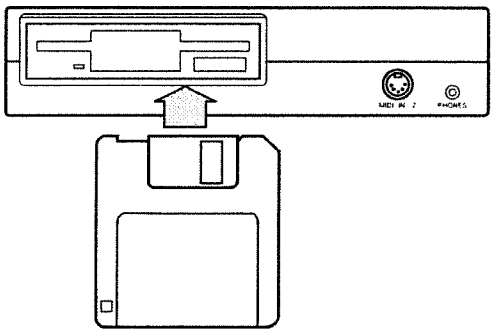
⇨Before you use the disk drive, read the precautions on P.6.

⇨The included leaflet describes the demo songs on the disk.

① Connect the SD-35 and your stereo set (☞ P.9).

② Insert the disk into the disk drive.

Be sure to insert the disk Properly (metal shutter first, label side up).



When you insert the disk, playback will begin automatically.

The display will show the song number of the currently selected song.

⇨To stop playback, press [STOP].

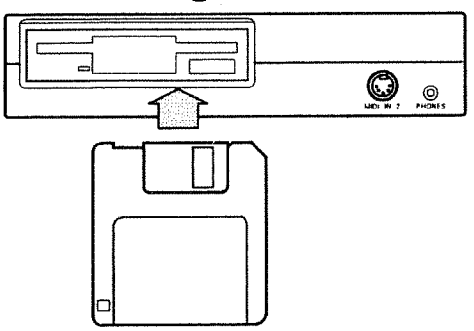
⇨To remove the disk, stop playback, and then press [EJECT].

■ PLAYBACK

Now we will explain the basic playback functions. Before playing back song data from your own disk, refer to "Playing your own song data" (☞ P.22).

⇨The SMF (Standard MIDI File) Music Data is available as an option.

● Inserting the disk

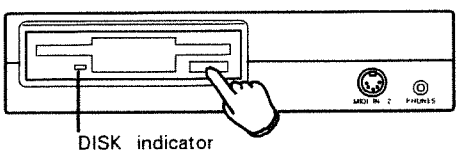


Insert the disk into the disk drive.

(Metal shutter first, label side up.)

⇨The SD-35 is initially set up to start playing automatically when you insert a disk. If you do not want it to start automatically, refer to "Auto Play Function" (☞ P.48).

● Removing the disk

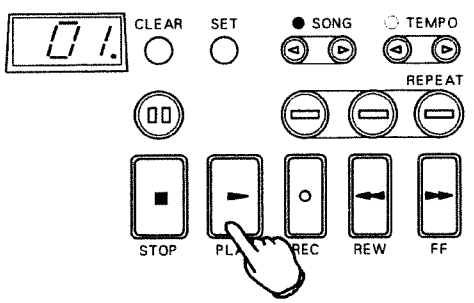


Make sure that the SD-35 is not playing, and then press [EJECT].

If the SD-35 is playing, first press [STOP], and then press [EJECT].

* The DISK indicator indicates that the disk drive is operating. Never attempt to remove a disk while the disk drive is operating.

● Start Playback



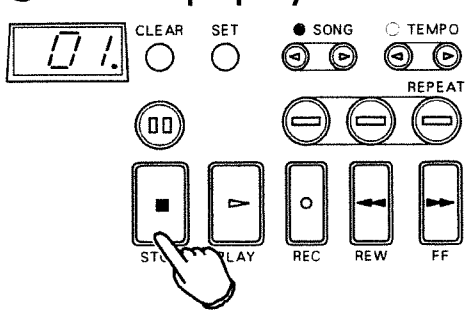
Press [PLAY].

Play starts from the beginning of the song which is selected. When [PAUSE] is pressed, playback starts from the stopped position.

⇨When [PLAY] is pressed without the disk in the drive, a TEST SOUND is played. (☞ P.24)

⇨To play from the start of a song, press [PLAY] while holding down [STOP], and a blank bar (one bar) will be inserted.

● To stop playback



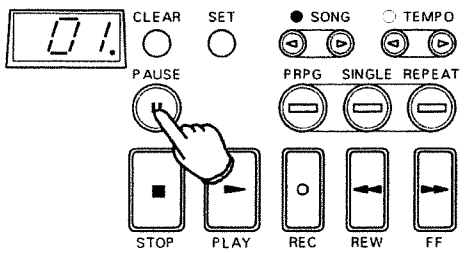
Press [STOP].

When you press [STOP], the song position will automatically return to the beginning of the song. You can listen to the song from the beginning by pressing [PLAY]. When you press [REW] ([FF]) while holding [STOP], the position will move to the beginning (end) of the song.

⇨If you want to stop at a certain point without returning to the beginning, turn off "Auto Rewind function". (☞ P.48)

⇨Songs that have not been converted with the fast forward/rewind high speed process, will take time to move to the beginning (end) of song.

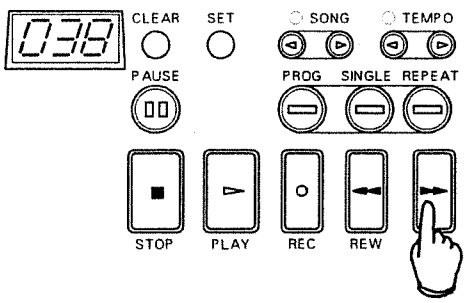
● Pause



Press [PAUSE].

Playback will stop. To resume playing, press either [PLAY] or [PAUSE], and playback will resume from the pause point.

● Fast forward



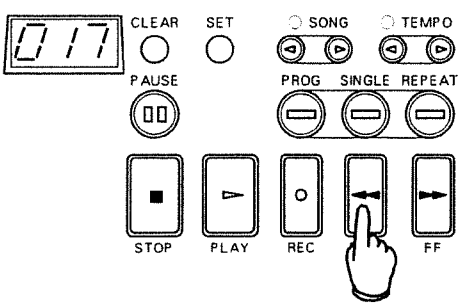
Press and hold [FF].

While this button is pressed, the song will rapidly advance. (The bar numbers will be displayed)

When you press [REW] while holding [FF], the position will more rapidly advance.

⇨You can use this Fast Forward function during STOP, PAUSE, or PLAY.

● Rewind



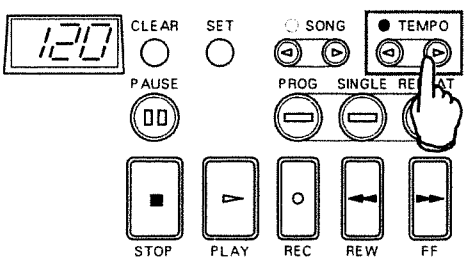
Press and hold [REW].

While this button is pressed, the song will rapidly rewind. (The bar numbers will be displayed.)

When you press [FF] while holding [REW], the position will more rapidly rewind.

⇨You can use this Rewind function during STOP, PAUSE, or PLAY.

● To adjust the tempo



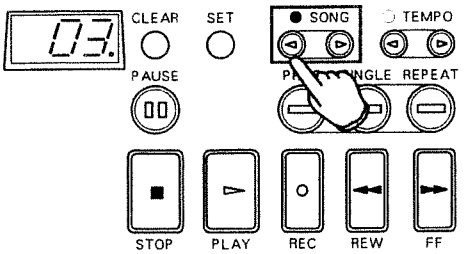
Adjust the tempo by pressing the TEMPO [◀][▶] buttons.

While adjusting the tempo, the tempo will be shown in the display. (The tempo range is ♩=5—260 beats per minute.)

When you press [◀]([▶]) while holding TEMPO[▶]([◀]), the setting value of the tempo will rapidly increase (decrease).

When you press TEMPO[◀]([▶]) while holding [CLEAR], the tempo will return to the reference value.

● Selecting a song



Select a song by pressing the SONG [◀][▶] buttons.

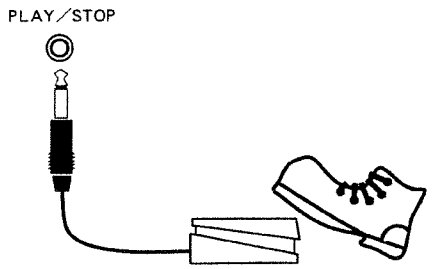
The song number will be shown in the display.

When you press [◀]([▶]) while holding [▶]([◀]), the song numbers will rapidly increase (decrease).

⇨You can select a song during STOP, PAUSE or PLAY.

If you select a song while a song is currently playing, the selected song will start playing.

● Controlling PLAY/STOP with a pedal switch

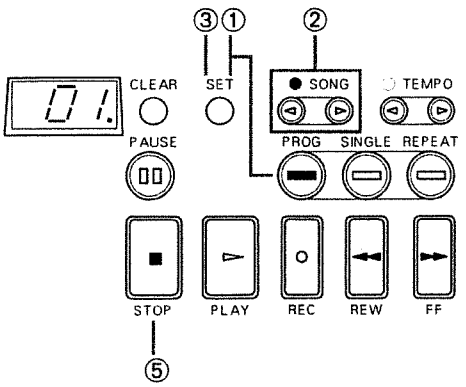


Connect a pedal switch to the PLAY/STOP jack on the rear panel of the SD-35. You can now control PLAY/STOP by pressing the pedal switch.

■ PROGRAM PLAYBACK

"Program Playback" makes two or more songs automatically playback in the order you specify.

● Program settings



① While holding [SET], press [PROG].
The button indicator will blink, indicating that you can now make settings.

② Use SONG [◄][►] to select the song you want the SD-35 to play first.

③ Press [SET] to store the song you selected.

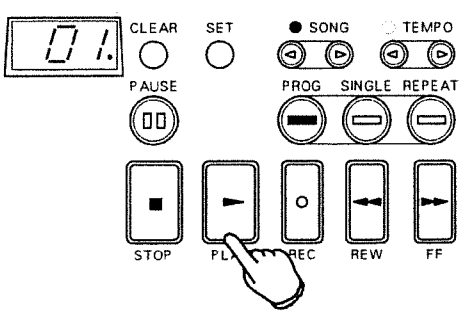
④ Repeat steps ② and ③ to specify the order of the songs.

⑤ When you finish setting the song order, press [STOP] (or [PLAY]).
The [PROG] button indicator will light to show that you are now in the Program Playback mode.

⇨You can specify a program of up to 99 songs.

* The song order you have set will remain in the SD-35 memory even after you turn the power off.
* If you don't cancel an old program, newly programmed songs will be added at the end of the old program. If you don't want this to happen, be sure to cancel the old program.

● Program playback

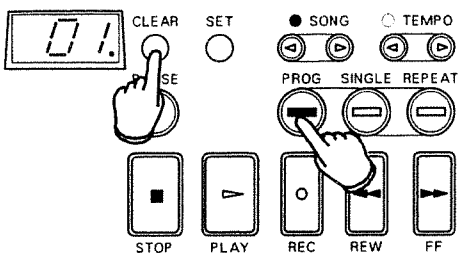


While the [PROG] indicator light is on, press [PLAY].
Program playback will begin, and will stop when the SD-35 has finished playing all the songs you programmed. Playback will also stop if you press [STOP].

⇨To return to regular playback mode, press [PROG] and the indicator will go out.
⇨If you press [PROG] during regular playback, programmed playback will begin when the song currently playing finishes.

* If you insert a disk which is different from the disk for which you created the program, program playback will not function.

● To cancel program settings



When the PROG indicator is on, press and hold CLEAR.

While continuing to press CLEAR, press PROG.

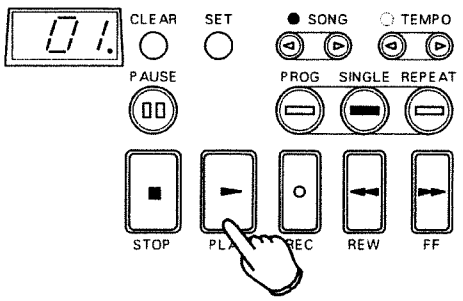
The PROG indicator will go out and the program will be canceled.

■ PLAYING INDIVIDUAL SONGS

(SINGLE PLAYBACK)

Single Playback will stop at the end of each song.

● Single playback



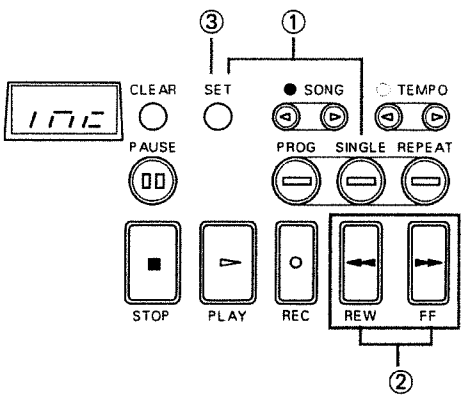
Press [SINGLE]. The indicator will light. Then press [PLAY].

Single playback will begin and will stop when it reaches the end of the song.

⇨To return to regular playback, press [SINGLE]. The indicator will go out.

● Single play mode

In the single play mode, the method of starting playback can be set.



① While holding [SET], press [SINGLE].

② Select increment (inc) or repeat (rEP) with [REW] [FF].

inc : When restarting playback after, the playback will start at the beginning of the next song.

rEP : When restarting playback after, the playback will start from the beginning of the currently selected song.

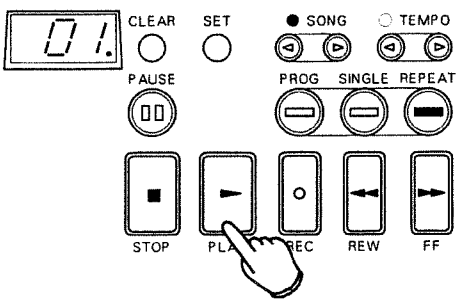
③ Press [SET] to complete the setting.

■ PLAYING SONGS MANY TIMES

(REPEAT PLAYBACK)

Repeat Playback will repeatedly playback songs.

● Repeat playback



Press [REPEAT]. The indicator will light. Then press [PLAY].

Repeat performance will begin and will continue until you press [STOP] or [PAUSE].

⇨To return to regular playback, press [REPEAT]. The indicator will go out.

<How playback functions can be combined in various ways>

○ : on
× : off

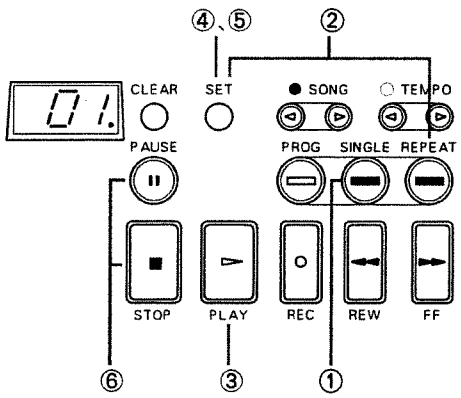
Single playback	Repeat	Programmed	
○	×	○	Playback will stop at the end of each song. After stopping, the song which is next in the program order will begin playing.
○	×	×	Playback will stop at the end of each song.
×	○	○	The program will be repeated.
×	○	×	All songs on the disk will repeat until you stop playback.
○	○	○ or ×	The currently selected song will repeat continuously.

* When you want to repeat a certain section of a song, refer to Block Repeat playback (☞ P.19).

■ REPEATING A SPECIFIED SECTION (BLOCK) OF A SONG (BLOCK REPEAT PLAYBACK)

"Block Repeat" playback makes a specified section of a song repeat. (This is valid only in Single Playback mode.)
It is sometimes convenient to use this function to repeat a certain phrase over and over when practicing.

● Setting and using Block Repeat (during playback)



① Press [SINGLE] to enter the Single playback mode (the button indicator will light).

② While holding [SET], press [REPEAT].
The button indicator will begin blinking. Now you can specify the area for Block Repeat.

③ Press [PLAY] to begin playback.

④ At the beginning of the section (block) you want to repeat, press [SET].

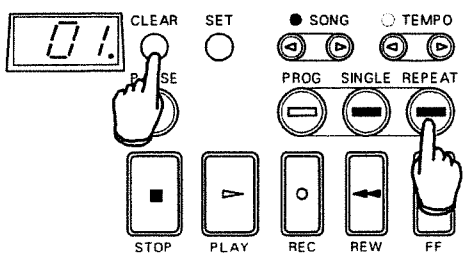
⑤ At the end of the section (block) you want to repeat, press [SET] again.
The indicator will light steadily and Block Repeat playback will begin.

⑥ To stop Block Repeat playback, press [STOP] (or [PAUSE]).

⇨To return to regular playback, press [REPEAT] and [SINGLE]. The indicators will go out.

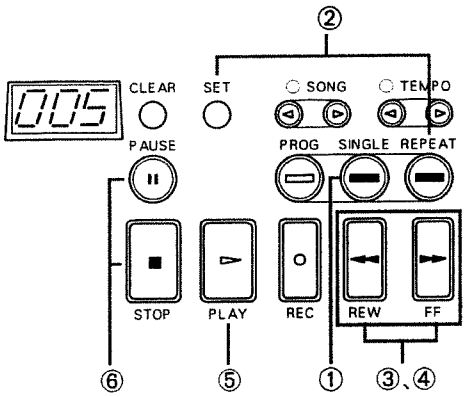
* The time it takes for the SD-35 to return to the starting point of a repeat section will depend on the song data.
* When you reset a repeat block, previous settings are erased.

● How to cancel Block Repeat settings



While holding [CLEAR], press [REPEAT].
The button indicator will go out and the Block Repeat setting will be canceled.

● Setting and using Block Repeat (while stopped or paused)



① Press [SINGLE] to enter the Single performance mode (the button indicator will light).

② While holding [SET], press [REPEAT].
The button indicator will begin blinking. Now you can specify the area for Block Repeat.

③ Use the [FF] and [REW] buttons to move to the first bar of the section you want to repeat. When on the display changes from a flicker to a steady light, press [SET].

④ Use the [FF] and [REW] buttons to move to the last bar of the section you want to repeat. When the display changes from a flicker to a steady light, press [SET].

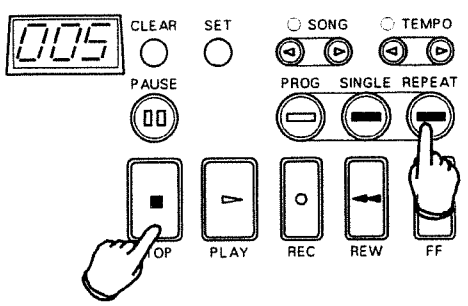
⑤ Press [PLAY] to begin Block Repeat playback.

⑥ To stop Block Repeat playback, press [STOP] (or [PAUSE]).

⇨To return to regular playback, press [REPEAT] and [SINGLE]. The indicators will go out.

* The time it takes for the SD-35 to return to the starting point of a repeat block will depend on the song data.
* When you reset a repeat block, previous settings are erased.

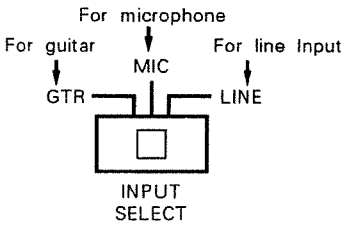
● How to move to the repeat block



While holding [STOP], press [REPEAT] to move to the beginning point of the repeat block. While holding [STOP], press [REPEAT] once again to move to the end of the repeat block.

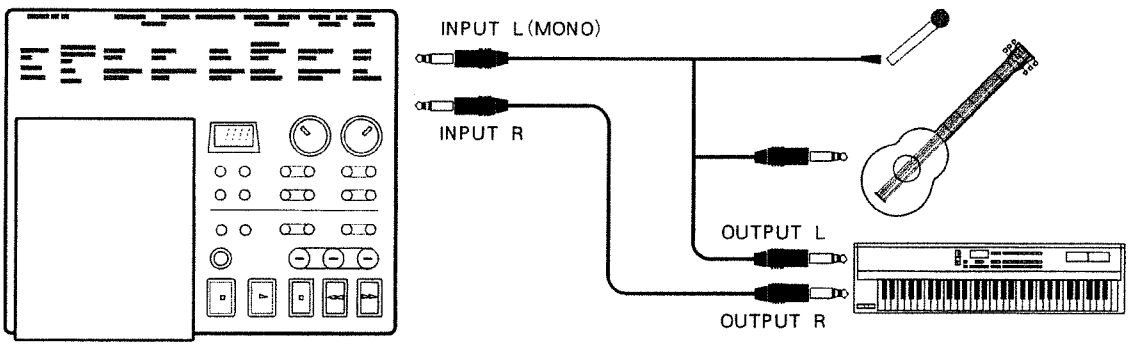
■ PLAYING AN ENSEMBLE SONG USING A MIC, GUITAR OR KEYBOARD

Try ensemble playback by adding a microphone, guitar or keyboard to the SD-35. You can play your instruments with the SD-35 accompanying you in the background.
The enclosed disk has demonstration songs for ensemble playback with each device.

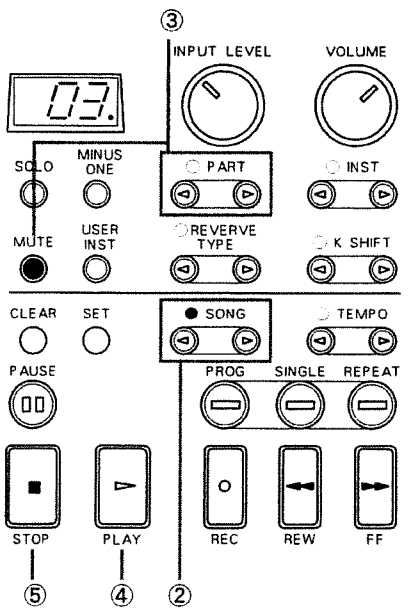


<INPUT SELECT switch>
There are switch positions for the guitar, line and microphone on the rear of the SD-35.
When connecting other instruments to INPUT, select the switch according to the type of instrument being connected.
Lower the volume of the connected amplifier when making a selection.

● How to connect



● Playback



① Set the INPUT SELECT switch on the rear panel of the SD-35.
Guitar → GTR
Keyboards → LINE
Microphone → MIC

② Use SONG [◄][►] to select the song you want to playback.

③ Use PART [◄][►] to select the part you want to play (sing), and then press [MUTE] to mute.

④ Press [PLAY].
Start to play your instrument or sing your part.

⑤ Press [STOP] when you are finished.

■ PLAYING YOUR OWN SONG DATA

You can play song data that was created on other computers or sequencers, if it is in the standard MIDI file format. Standard MIDI file is a type of data format created so that song data can be compatible with various different devices. This data format can be used for devices of manufacturers from all over the world.

● **The Roland sequencers listed below** can convert song data to the Standard MIDI file format.
The MC-50, MC-500mk Ⅱ , MC-300 and MC-500 can convert song data into Standard MIDI file format by using a Standard MIDI file converter, such as the optional Roland MRM-500.
The **MV-30** can convert song data into Standard MIDI file format and save the data by using the Save MIDI File function.

● For Standard MIDI files created on **IBM-PC and Atari computers**:
Save the Standard MIDI file to a disk which has been formatted for the SD-35 (P.41). The SD-35 may not be able to play disks formatted by your device.
Change the file extension to ".MID" if the extension is not so named.

● For Standard MIDI files created on **a Macintosh computer**:
Save the Standard MIDI file to a disk which has been formatted for the SD-35 (P.41). The SD-35 may not be able to play disks formatted by your device.
For **a Macintosh equipped with an Apple Super Drive**, use the "Apple File Exchange" software to save data to disk, converting Standard MIDI files to MS-DOS data. A disk drive such as a "DaynaFile" is necessary for **a Macintosh which is not equipped with a Super Drive (SE/ Ⅱ /Plus)**.
Change the file extension to ".MID" if the extension is not so named.

* Song data may not be played back correctly depending on the device (or software) that was used for converting to Standard MIDI file format.

⇨The SD-35 numbers song data recorded on a disk using the order of the following characters, numbers and marks (the order of the ASCII characters). If you number the play order at the beginning of the song before hand when playing song data which has been recorded with another sequencer, you can have it correspond with the indicated song number.

! # $ % & ' ( ) — 0 ... 9 A ... Z a ... z ^ _ { } ~

* Macintosh is a trademark of Apple Computer Inc.
* Dayna File is a trademark of Dayna Communication Inc.
* MS-DOS is a registered trademark of the Microsoft Corporation.

< What are Standard MIDI Files >

The SD-35 can use the following types of Standard MIDI Files. Song data will be recorded by the SD-35 in Format 0.

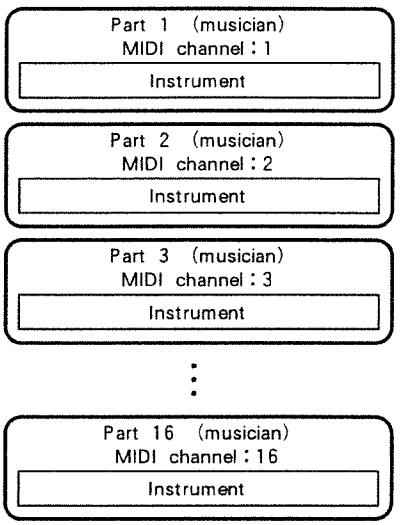
- Format 0 : Multiple channels of MIDI data are stored on one track.
- Format 1 : Multiple tracks are used, with multiple channels of MIDI data on each track. (The SD-35 is able to use up to 17 tracks.)

⇨ When using song data in format 1, the Rewind and Fast Forward functions will be slightly slower than for song data in format 0. To convert song data from format 1 to format 0, please read P.55.

■ SELECTING INST

How to select an instrument for each part.

● Part and Instrument



The following section briefly explains the relationship between Part and "Instrument".

The SD-35 has 16 Parts, and a different instrument can be assigned to each. You can think of a Part as being a musician playing an instrument, and in this way, the SD-35 can be thought of as 16 musicians playing many different instruments together.
A sound module such as the SD-35 is generally called a Multi-timbral sound module.

In an external MIDI device, MIDI channels 1—16 correspond to Parts 1—16 of the SD-35. When the SD-35 left the factory, it was preset so that part 1 corresponds to MIDI channel 1, part 2 corresponds to MIDI channel 2 and so on. When you want to hear the instrument of a particular Part, set the MIDI transmit channel of the external device (i.e. MIDI keyboard) to match the number of the Part that you want to hear.

⇨For more details about MIDI refer to "About MIDI" (☞ P.App.5).

< About the playable range of some instrument >

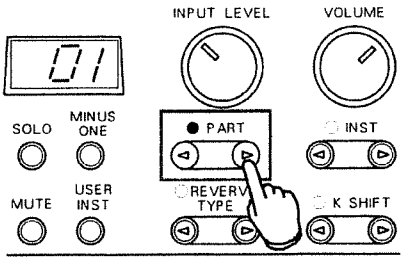
There are some notes that cannot be heard above or below a certain point depending on the particular instrument. This is because the instruments of the SD-35 are created based on the actual playable range of each acoustic instrument. Please consider the individuality of each instrument carefully before using it in a composition.

< Maximum polyphony >

In the SD-35, the unit of sound is called a voice. Up to 28 voices can be played simultaneously. Some instruments consist of two voices combined.
In instruments that use one voice for one tone, up to 28 tones can be played simultaneously. But when an instrument that uses two voices is used, the maximum number of tones will be 14.
The number of voices that are used when making a tone are calculated by the total of Parts.

Refer to the "INST TABLE" for the number of voices used in each instrument.

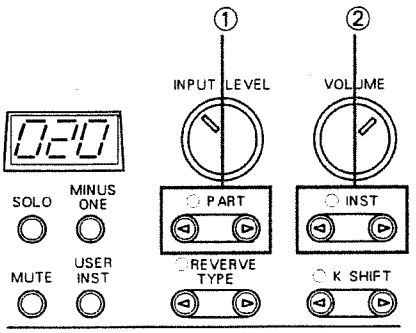
● Selecting a Part



Press PART◀▶.

⇨Part 10 is reserved for percussion sounds.

● Select an instrument



① Use PART◀▶ to select the Part for which an instrument is to be selected.

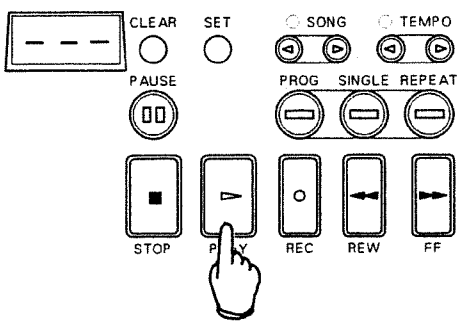
② Use INST◀▶ to select the instrument.

The display shows INST number. Please refer to PC# of the "INST TABLE" (p. App.16) for INST numbers.

③ If a MIDI keyboard is connected, use the keyboard to listen to the instrument.

If [PLAY] is pressed when there is no disk in the disk drive, the instrument for the currently selected Part will sound.

● Test sounds (preview)



① Press [PLAY] without a disk in the disk drive.

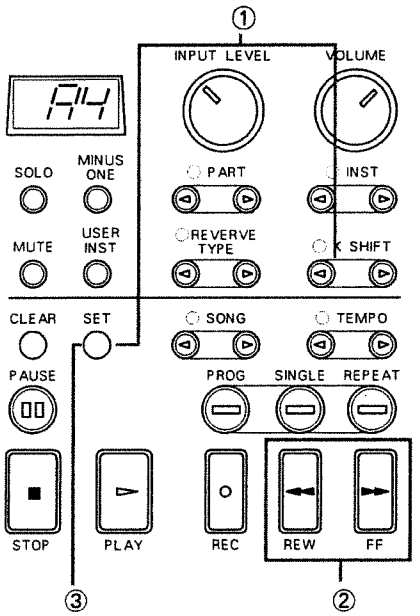
The INST of the Part that is selected will sound.

While holding [PLAY], press [PAUSE] and the instrument will sound continuously. In this case, the sound will stop when [STOP] or [PAUSE] are pressed.

* The Part that is muted will also sound.

* If minus one is set, the instrument for the Part which has been muted will sound. (P. 34)

●Setting of TEST SOUND pitch (preview note)



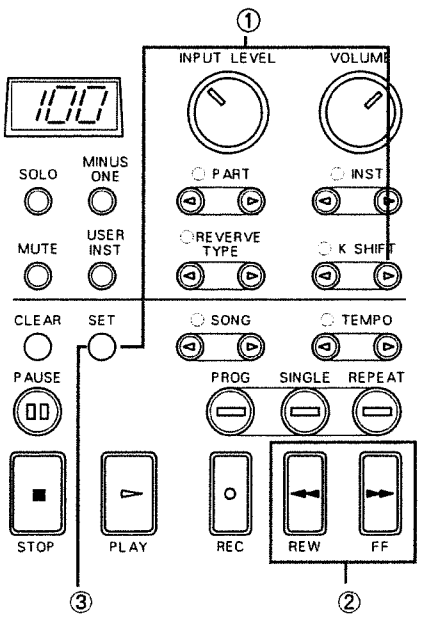
① While holding [SET], press K SHIFT [◀].

The display will show the current set value (initial value: A4).

② Set the sound pitch by using the [REW] and [FF] buttons.

③ Press [SET] to complete the operation.

●Setting of TEST SOUND velocity



① While holding [SET], press K SHIFT [▶].

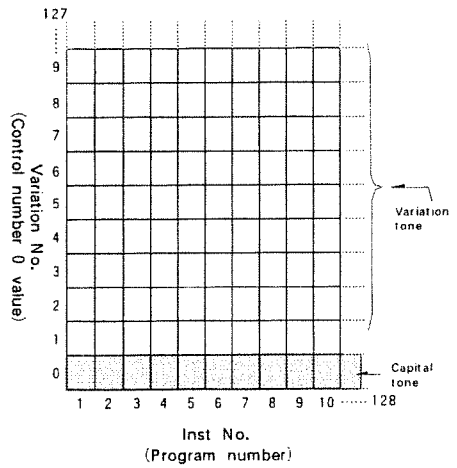
The display will show the current set value (initial value: 100).

② Set the sound velocity by pressing the [REW] and [FF] buttons.

The setting range is 0—127.

③ Press [SET] to complete the operation.

< About INST >



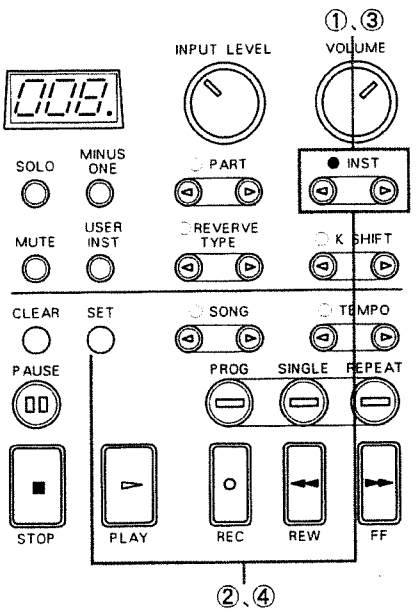
The SD-35 INST section contains Capital (primary) and Variation tones. Each instrument (Capital tone) has up to 128 Variation tones. The relationship between Instrument numbers (Capital tones) and Variation numbers is shown in the diagram.

Instruments with a Variation number of "0" are called "Capital" tones. The 128 (1-128) Capital tones cover all the basic instrument sounds. Instruments with a Variation number other than "0" are called "Variation" tones. Variation tones are related to a Capital tone but they have different tonal characteristics.

⇨Please refer to the "INST TABLE" (App.16) to see the types of variations.

* The arrangement of the capital tones follow the tone arrangement of the 128 tones in the General MIDI system (App. 12).

● Select a Variation



① Press INST◀▶ to select the inst number that has the Variation you wish to use.

② While holding SET, press INST◀▶.

The display value will change to the Variation number, and a point will appear in the lower right corner of the display. The Variation instrument can be selected in this state.

③ Use INST◀▶ to select the Variation No.

④ Hold SET and press INST◀▶ to complete the setting.

⇨Variation numbers that are not found in the SD-35 cannot be selected.

⇨When returning to the Capital instrument, repeat steps ② to ④. Set the Variation No. to "0" in step ③.

● Selecting an inst from an external MIDI device

When selecting the SD-35 instrument from an external MIDI device, the Control Change message (Control Number 0 and 32: Bank Select) and the Program Change message are sent on the MIDI channel that is the same as the Part to be changed.

Transmission is carried out with the following procedure.

① Control number 0 value ... Variation number
② Control number 32 value ... 0
③ Program number

For example, to change instrument number 5: E.Piano 1, transmit the MIDI data with the following procedure.

① Control number 0 value ... 0 (Variation number)
② Control number 32 value ... 0
③ Program number ... 5 (Inst number)

To change to instrument number 5 and the variation number 8: Detuned EP1, transmit the MIDI data with the following procedure.

① Control number 0 value ... 8 (Variation number)
② Control number 32 value ... 0
③ Program number ... 5 (Inst number)

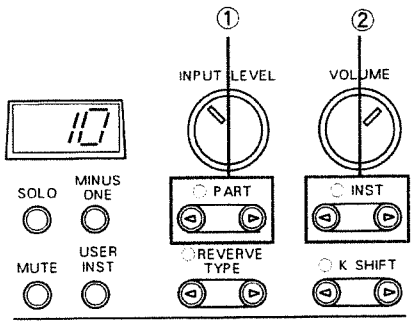
* Please refer to the "INST TABLE" (App. 16) for the Variation numbers and Program numbers corresponding to each INST number.

* Not all Variations have an instrument. If the instrument is not found in the designated place, "noi" will be displayed, and a sound will not be produced. When changing the tone with bank select, confirm the built-in instruments on the "INST TABLE" (App. 16) beforehand.

⇨The value for Control number 32 is always set to 0.

⇨Refer to the instruction manual for the MIDI device you are using for the methods of transmitting the Control Change message and Program Change message.

●How to select a drum set



The SD-35 contains Drum Sets with various percussion sounds. There are nine drum sets available, including the standard drum set. In the SD-35, part 10 is the drum part. Other Parts cannot be set to the drum part.

① Select Part 10 using the PART [◀][▶] buttons.
The display will show the drum set number.

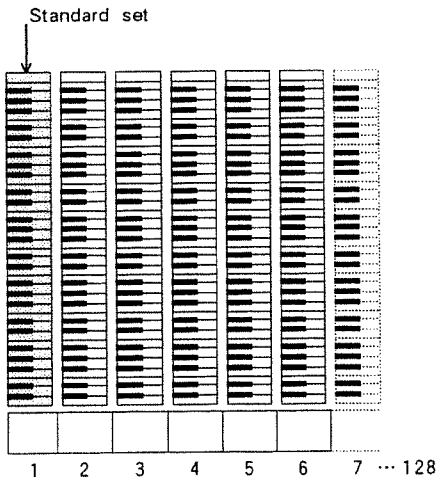
② Select Drum Set by using the INST [◀][▶] buttons.
Please refer to the "Drum Set Table" (App.19) for the drum set corresponding to the drum set number.

③ If your MIDI keyboard is connected now, you can hear the various percussion instrument sounds by pressing the keys. (Some keys will not make any sound.)
When you press [PLAY] without a disk in the disk drive, the percussion instrument sounds corresponding to the note number set in Preview note (P. 25).

⇨Refer to the "Drum Set Table" (App. 19) for the percussion sounds in each drum set.

⇨The percussion instruments for Note Number 35-81 in the Standard Set (drum set number 1) all have the same key assignments as the 47 percussion instrument types in the General MIDI system.

●How to select a drum set from an external MIDI device



When selecting a drum set from an external MIDI device, the Program Change message is transmitted on the MIDI channel that is the same as the SD-35 drum Part. (The channel is channel 10 as long as the drum channel setting has not been changed externally.)

In the SD-35, the drum set number that is displayed corresponds to the Program number.

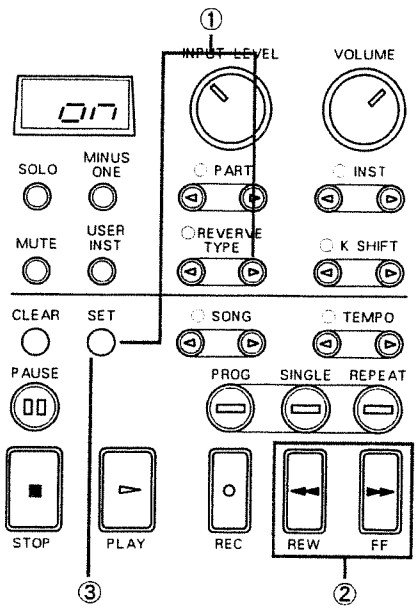
* Program numbers 1 to 128 are available, but the SD-35 does not have 128 drum sets built-in. If the drum set is not found in the designated place, "noi" will be displayed, and a sound will not be produced. When changing the drum set with a Program change, confirm the on-board sets in the "Drum Set Table" (App. 19) beforehand.

■ STORING SETTINGS OF THE SOUND SOURCE

The SD-35 contains a backup switch which allows you to retain settings of the sound source even after the power is turned off.

Usually, this switch is set to on, but when you want to turn the power back on, or if you want to reset the SD-35 to the basic setting of General MIDI/GS, turn the backup switch off using the following procedure.

● Backup Switch On/Off



① While holding [SET], press REVERB TYPE [▶].

② Press [REW] to turn the switch "oFF".
When you want to turn the switch "on", press [FF].

③ Press [SET] to finalize.

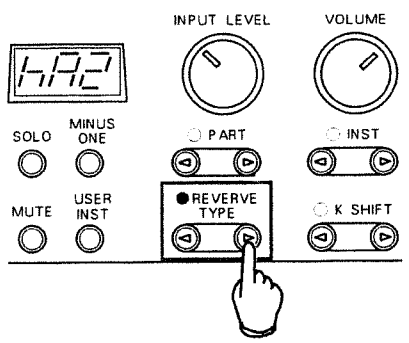
■ CHANGING THE TYPE OF REVERB

You can select one of eight types of Reverb. The effect that is chosen will be applied to all Parts.

< Reverb type >

Display	Type	Effect
r o 1~3	Room 1–3	Reverb that simulates the natural echo of a room. Sharply-defined reverb with a broad spread.
h A 1~2	Hall 1–2	Reverb that simulates the natural echo of a hall. Smooth reverb, with greater depth than room.
P L t	Plate	This effect simulates a Plate Echo (a type of reverb that uses the vibration of metal plates to produce a metallic reverb).
d L y	Delay	Standard delay effect.
P d L	Panning Delay	Delay repetitions pan to left and right. This effect can be used if the unit is connected to a stereo audio device. It is effective when the SD-35 is connected to a stereo system.

● How to change the Reverb



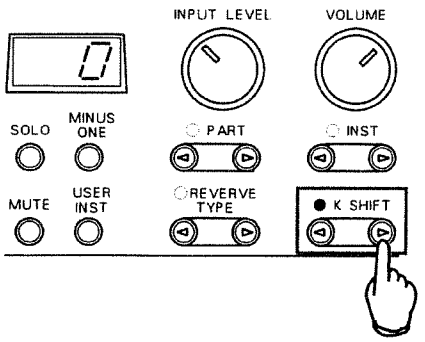
Use the REVERB TYPE [◀][▶] buttons to select the type.

■ HOW TO TRANSPOSE ALL (KEY SHIFT)

Key shift is a function that changes the pitch of notes in semitone steps. You can transpose to a different pitch without changing the data of the song during playing.

* Changing pitch using the Key shift function will not affect the pitch of the drum set.

●How to Key shift (−24—0—+24 : in semitone steps ; ±2 octaves)



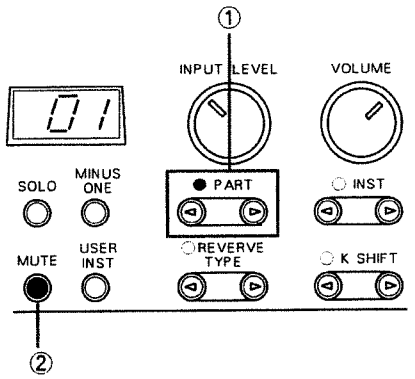
Change Key shift values by using the K SHIFT ◀ ▶ buttons.

As the value goes up (down) by 1, the pitch goes up (down) by one semitone. As the value goes up (down) by 12, the pitch goes up (down) by one octave. A setting of "0" indicates standard pitch.

■ MUTE

Mute is a function that temporarily mutes the sound of a Part. The Mute function is used when you don't want sound to be heard for a moment.

● Mute a specified part



① Use the PART [◀][▶] buttons to select the part that you want to mute.

② Press [MUTE] (to turn the button indicator on).
Press [MUTE] again to turn off the indicator and MUTE.

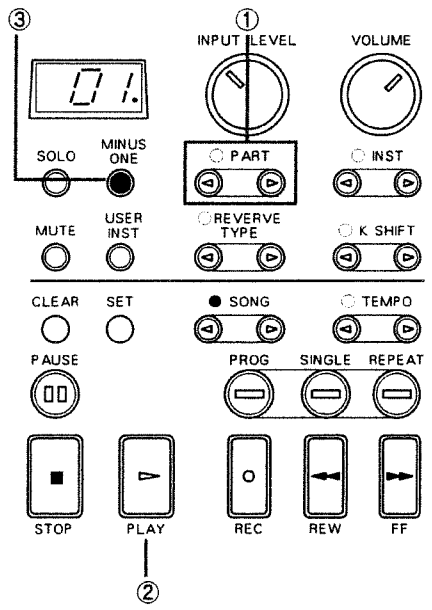
⇨ The [MUTE] indicator will be lit only when the muted Part is selected.

⇨ When several Parts are muted, hold down [CLEAR] and press [MUTE] to cancel the mute on all Parts.

■ USING MINUS-ONE PLAY

Try playing a Part in real time from a MIDI keyboard while playing the song data with that one Part muted. Muting a Part and playing it by yourself is called "Minus-one Play".

●How to use Minus-one Play



① Indicate the Part to be muted in the song data using the PART [◀][▶] buttons.

② Press [PLAY] to start playback.

③ Press [MINUS ONE] (to turn on the button indicator). (MINUS ONE on)

The displayed Part and the Parts set to the same receive channel as the displayed Part are muted from the play data. You can now play the missing Parts on a connected MIDI keyboard.

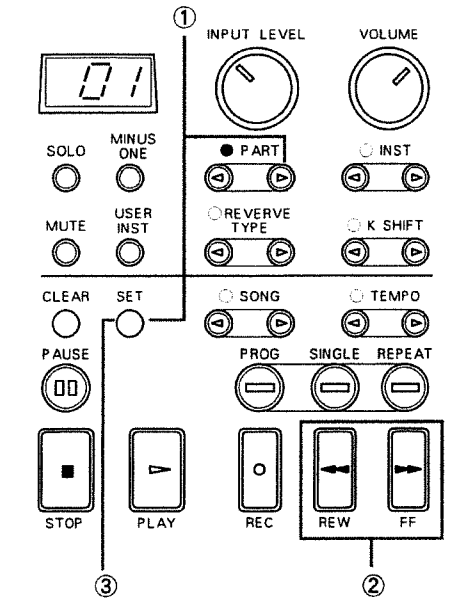
Press [MINUS ONE] (to turn off the button indicator) to turn MINUS ONE off.

⇨When the pedal selection is set to "–1" (refer to next page), the minus-one on/off can be selected by pressing the connected pedal instead of pressing [MINUS ONE].

⇨When the Minus-one function is active, the selected Part can be minus-one played.

*The Minus-one function can sound the displayed PART regardless of the transmission channel settings of the MIDI keyboard.

● Change the volume of the minus-one part (Minus one setup level)



① While holding [SET], press PART [▶].

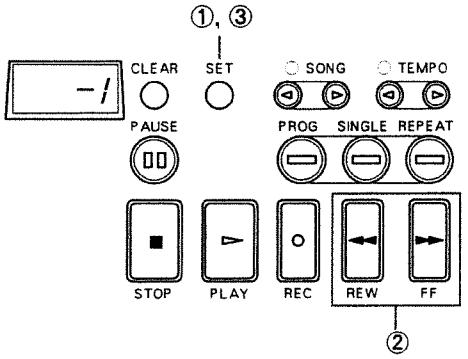
② Change the sound volume by pressing [REW] and [FF].

OFF : The volume of the part for which MINUS ONE is set ON cannot be changed.

0—127: The volume of the part for which MINUS ONE is set ON will change to the set value.

③ Press [SET] to complete the operation.

● Changing minus-one ON/OFF with the pedal (pedal selection)



① Press down the pedal while holding down [SET].

② Set to "–1" (minus-one) with [REW].
Press [FF] to return to P – S (play stop).

P – S : The playback start/stop will alternate each time the pedal is pressed.

– 1 : The minus-one on/off will alternate each time the pedal is pressed.

③ Press [SET] to complete the operation.

■PLAY A PART WITH THE DESIRED INSTRUMENT (USER INST)

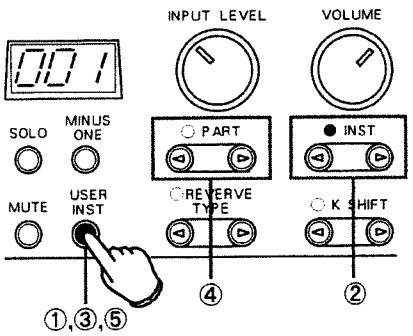
If playing back is restarted after the settings for each INST in each part of the song data are changed, the settings may be canceled. This is because of a message (General MIDI system on, GS reset) that resets the sound source to the basic settings of GM or GS or a message (Program change) that sets the INSTs are recorded at the beginning of the song.

The SD-35 has a USER INST function that will register your desired INSTs.

When turning USER INST of a Part on, the Part is always played with the instrument set by USER INST. (Only one Part can be set to USER INST on.) Then, you don't have to set the desired instrument before you start playback since the settings cannot be reset by the GM system ON, GS Reset signal or Program change.

USER INST ON is convenient for a MINUS-ONE Part when using Minus-one Play.

● How to set the USER INST



① Press [USER INST] (to turn the indicator on). (USER INST ON)

② Select INST by pressing INST[◀][▶].

③ Press [USER INST] again to turn the button indicator off. (USER INST OFF)

④ Select the part to be set by pressing PART[◀][▶].

⑤ Press [USER INST] (to turn the button indicator on). (USER INST ON)

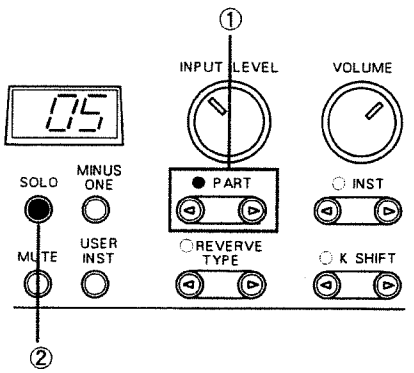
The selected part will sound with the selected INST.

Press it again to turn the button indicator off (USER INST OFF).

■SOLO

Solo is a function that plays one Part only. The Solo function is used to monitor the performance of one Part when a song contains several Parts.

●SOLO monitoring the sound of a Part



① Use PART [◀] and [▶] to select the Part that you want to solo.

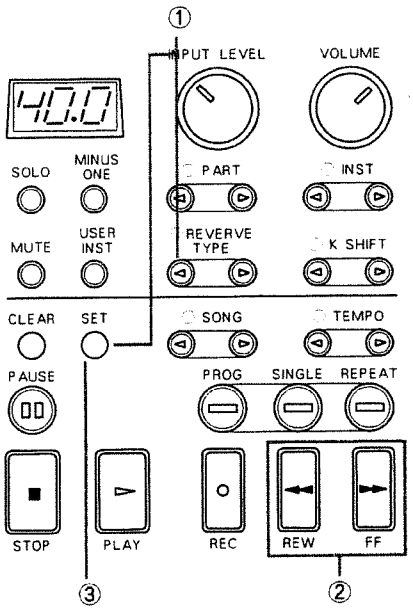
② Press [SOLO] (to turn the button indicator on), and the Part selected can be monitored.
Press [SOLO] again (to turn the button indicator off).

⇨If you change Parts in the solo mode, the sound of the Part that you selected can be played (even if you select a Part that is muted by Part Mute).

■ TUNING TO THE PITCH OF ANOTHER INSTRUMENT

Adjust Master Tune when you want to adjust the SD-35's pitch to match that of another instrument.

● Master Tune : 415.3—466.2Hz



① While holding [SET], press REVERB TYPE [◀].

② Use the [REW] [FF] buttons to adjust the pitch.

Because of display limitations, the first digit of the frequency readout will be omitted.

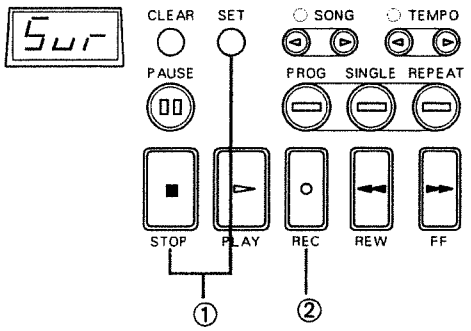
For example, a frequeny of 415.3Hz will be displayed as "15.3".

③ Press [SET] when tuning is complete.

■ MAKING THE BASIC GENERAL MIDI SYSTEM/ GS FORMAT SETTING

When you want to play General MIDI system/GS format song data, set the unit to the basic GM system/GS format settings. When you do so, the SD-35 will be returned to its factory presets (except for the system functions) (☞ P.App.14).

● Making the basic GM system settings

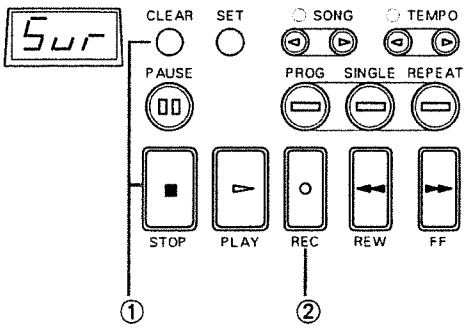


① While holding [STOP], press [SET].
"Sur" (Sure: are you sure you want to initialize all settings?) is displayed.

② Press [REC] to execute. (Press [STOP] to stop the operation.)

Note: Setting the unit to the basic GM system settings.
The above procedure will set the SD-35 to the GM system settings, even if the backup switch (☞ P.30) is on.

● Making the basic GS format settings



① While holding [STOP], press [CLEAR].
"Sur" (Sure: are you sure you want to initialize all settings?) is displayed.

② Press [REC] to execute. (Press [STOP] to stop the operation.)

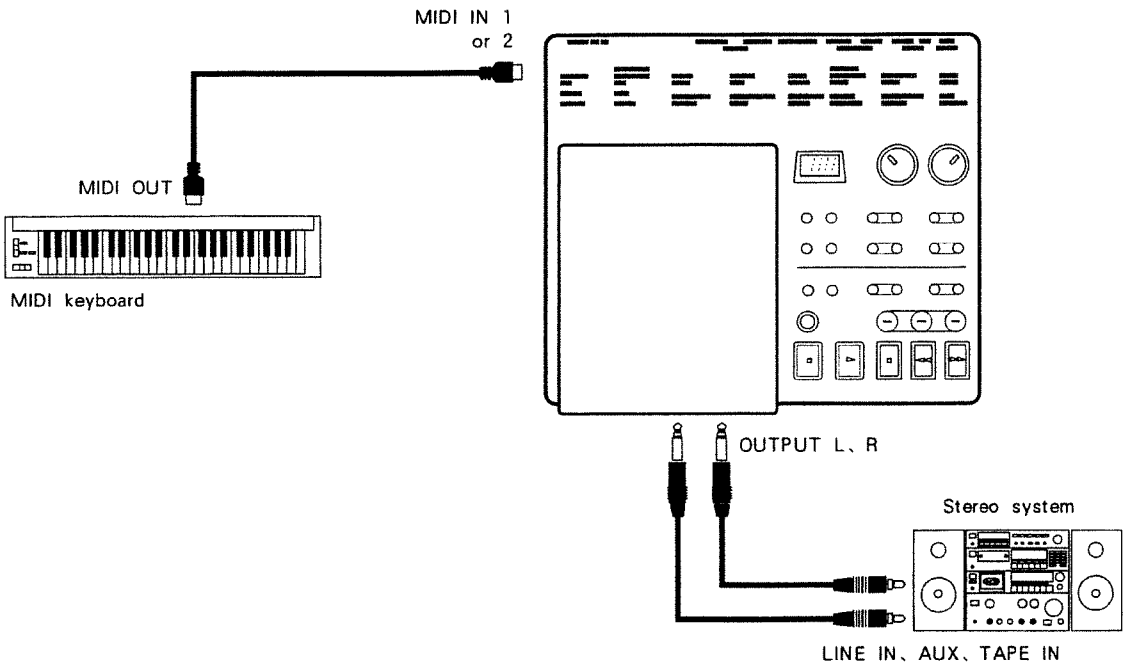
Note: Setting the unit to the basic GS format settings.
The above procedure will set the SD-35 to the GS format settings even if the backup switch (☞ P.30) is on.

■ RECORDING

Here's how to use a MIDI keyboard to record a musical performance.

● Connections

When using a MIDI keyboard controller



RECORDING

< What is a sequencer ? >

A sequencer is a device that records and plays back MIDI data, the common language of electronic musical instruments.

Instead of recording sound itself (as tape recorders do), sequencers record musical data (MIDI messages). Common MIDI messages include "note messages" that indicate which notes were played, for how long, and at what volume.

Sequencers differ from tape recorders in the following ways:
1) Since the sound itself is not being recorded, there is no loss in sound quality.
2) The tempo can be changed without affecting the pitch.
3) It is not possible to record vocals or acoustic instruments on a sequencer.
4) Some type of MIDI sound source is required in order to produce sound. (The SD-35 contains a MIDI sound source.)

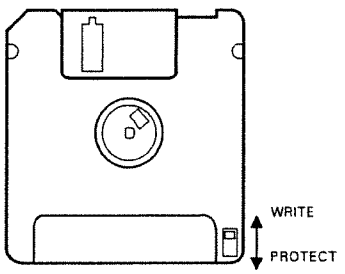
⇨ Please read "About MIDI" (☞ App.5) to learn about the basic ideas and applications of MIDI.

● Before you begin recording

When you record on the SD-35, the recorded data is stored directly onto floppy disk. You therefore must prepare a disk before you begin recording.

<If you are using a new disk>

Before the SD-35 can use a newly-purchased disk, the disk must be formatted (initialized) using the following procedure.



① Set the write protect tab of the disk to the "WRITE" position, and insert it into the SD-35.

Be sure not to insert the disk backwards or upside down.

"Sur" appears in the display after the disk is inserted.

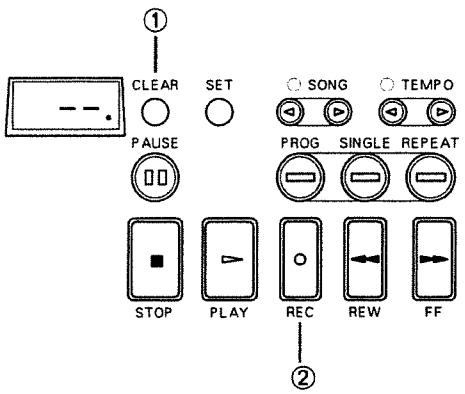
② Press [REC], and the disk will be formatted.

"F[]" appears in the display during formatting. "– –." appears when the format operation has been completed.

<If you wish to use other types of disks>

Before the SD-35 can use a disk formatted by another device (i.e., a device other than an IBM or ATARI computer), the disk must be formatted using the following procedure. This procedure can also be used to erase all songs from a disk.

Warning : When you format a disk, all data that was on that disk will be lost. Before you format a disk, make sure that it does not contain important data you wish to keep.



① While holding [CLEAR], insert the disk (with the protect tab at "WRITE") into the disk drive.

Be sure not to insert the disk backwards or upside down.

"Sur" appears in the display the disk is inserted.

② Press [REC] and the disk will be formatted.

"F[]" appears in the display during formatting. "– –." appears when the format operation has been completed.

< Selecting the Time Base >

Before using the SD-35 to record data that will be played back on a computer or other sequencer, set the Time Base to match that of the device which will be used for playing back the data.

Time Base settings (calculated for a quarter note)

Time Base of the SD-35	Time Base of the other device
96,192	24, 48, 96, 192, 384
120,240	30, 60, 120, 240, 480

The Time Base (also called "Resolution" on some devices) determines the timing resolution at which data will be recorded. This will be different for each device.

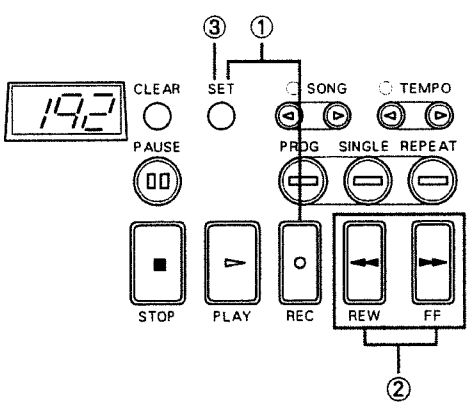
The SD-35 allows you to select a Time Base of 96/120/192/240 when recording. Refer to the chart on the left, and set the Time Base to match that of the other device you will be using. If the Time Base is incorrect, the timing of notes will be incorrect, and the playback will not sound as expected.

⇨When shipped, the SD-35 is set to a Time Base of 96.

⇨Time Base settings have effect only when recording. When using the SD-35 to playback song data that was recorded on other devices, the required Time Base will automatically be detected, and the Time Base settings have no effect.

⇨A song recorded by the SD-35 will automatically be named "_00000". If two or more songs are recorded on a disk, they will be named "_00000", "_00001", "_00002", etc., in the order in which they were recorded.

⇨Song data files created by the SD-35 will be given a filename extension of ".MIDI".
_00000.MID

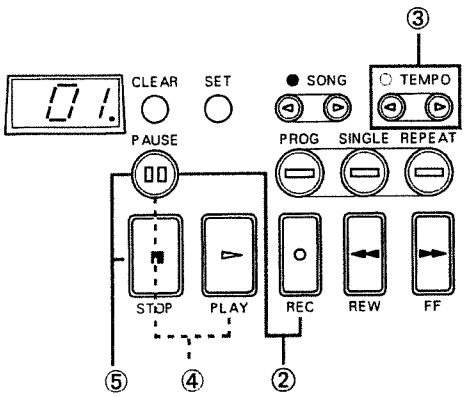


① While holding [SET], press [REC].
The display will show the current Time Base.

② Use [REW] [FF] to select the Time Base (96/120/192/240).

③ Press [SET] to complete the operation.

● How to record



① Insert a formatted disk into the drive.

②While holding [PAUSE], press [REC].

The song number of the song you are about to record will be displayed. The SD-35 will enter the record ready mode.

⇨If starting recording by pressing [REC] while holding [PAUSE] and [SET], the current settings of INST, REVERB TYPE and K SHIFT for each part are recorded simultaneously. (SETUP SAVE RECORDING)

⇨If this is the first song to be recorded on the disk, it will be song number 1 (displayed as song number 01). If the disk already contains song data, the newly recorded song will be numbered after the last song. However, if the disk contains song data that was created on another sequencer, the song numbers may be different, depending on the song names.

③ Set the play tempo by pressing TEMPO [◀][▶].

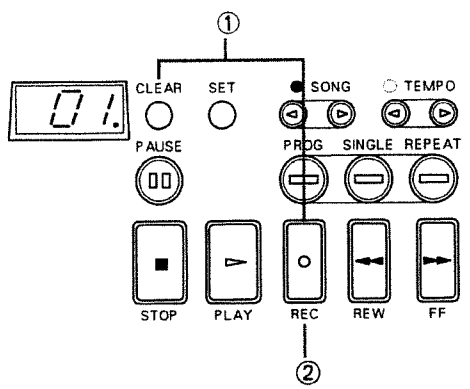
④ When you begin playing the keyboard, recording will start.

You can also start recording by pressing [PLAY] (or [PAUSE]).

⑤ When you finish your performance, press [STOP] (or [PAUSE]).

⇨If you pressed [PAUSE], you can press [PLAY] (or [PAUSE]) once again to resume recording from the pause point.

● How to re-record (clear song data)

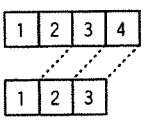


① While holding [REC], press [CLEAR].

② Press [REC] once again.

The song you recorded will be cleared (erased). Re-record the song using the procedure above.

⇨This operation can be used to clear not only the song you just recorded, but also other songs on the disk. To clear another song, select the song number, and perform the above operation. When you clear a song, the following song numbers will be renumberd.

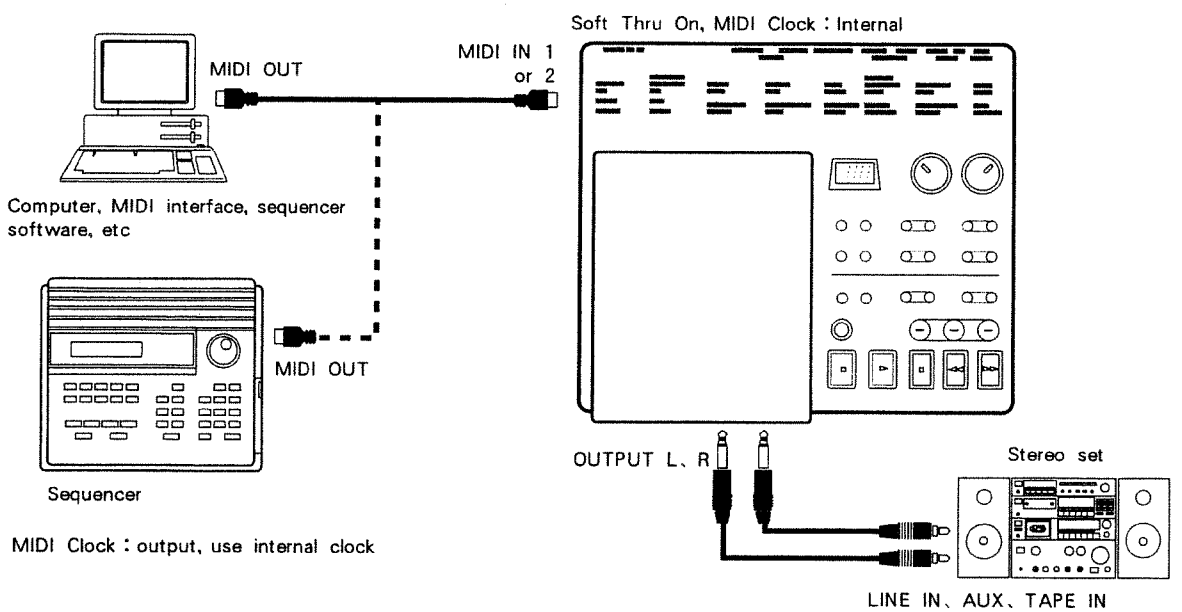


When song number 2 is cleared

■ RECORDING SONG DATA FROM ANOTHER DEVICE INTO THE SD-35

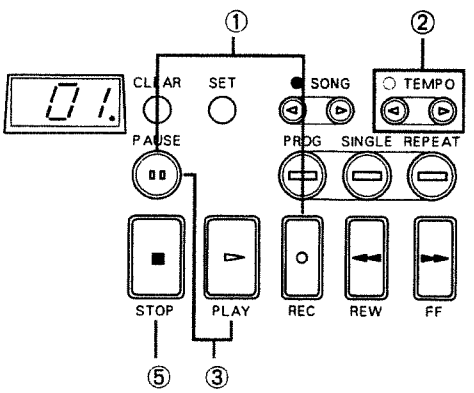
Song data that was created on a computer or other sequencer can be recorded into the SD-35 as explained below. If you wish to play song data that is not in Standard MIDI File format, use this procedure to re-record the data into the SD-35.

● Connections



⇨Since the internal SD-35 MIDI clock was set at the time of shipment, there is no need to change the settings.

● Recording



① While holding [PAUSE], press [REC].
You will enter the record ready mode.

② Set the play tempo by pressing TEMPO [◀][▶].

③ Press [PLAY] (or [PAUSE]) to begin recording.

④ Start playback on your computer or other sequencer.
The data will be recorded.

⑤ When recording is complete, press [STOP].

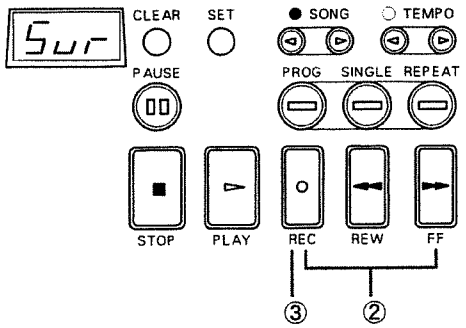
⇨If you set the SD-35 MIDI Clock parameter to "Remote", the SD-35 will play/stop in response to operation of the other device (computer or sequencer) (☞P.54).

* If the song data contains a large number of Exclusive messages, they may not be recorded.

■ RECORDING THE SD-35 SOUND SOURCE SETTINGS

The current sound source settings in the SD-35 can be recorded as bulk data and stored on a disk.

● How to record



① Set a disk.

② While holding [REC], press [FF].
The display will ask "Sur" (Sure: "Are you sure you want to record?").

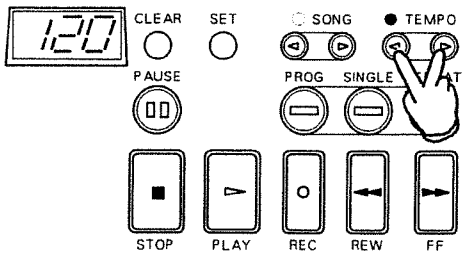
③ Press [REC], and recording will start. (To stop recording, press [STOP].)

⇨When recording the external device bulk data, use the normal recording procedure (P. 43).

■ SELECTING THE DISPLAY

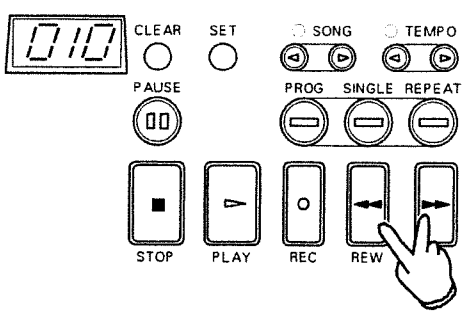
The display normally indicates the Song Number, but you can change the display to show the Tempo or the Measure Number. Set the display to whichever you like.

● Select the Tempo display



Press both TEMPO buttons ([◀][▶]) simultaneously.

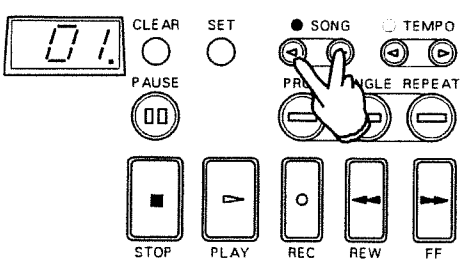
● Select the Measure Number display



Press [REW] and [FF] simultaneously.

⇨The measure number will be displayed using three digits.

● Select the Song Number display

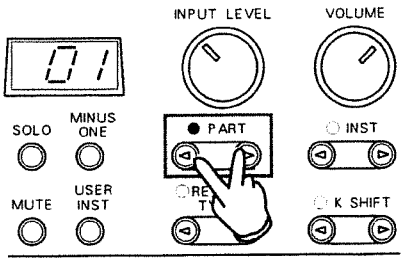


Press both SONG buttons ([◀][▶]) simultaneously.

⇨The song number will be displayed using two digits.

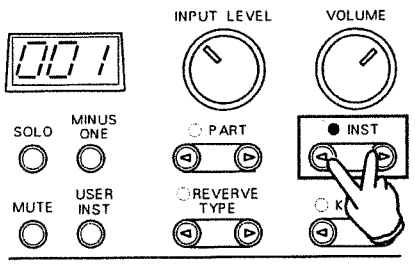
⇨The absence of a "." in the lower right part of the display indicates that the song is using high-speed correspondence data (☞ P.55).

●Select the Part Number display



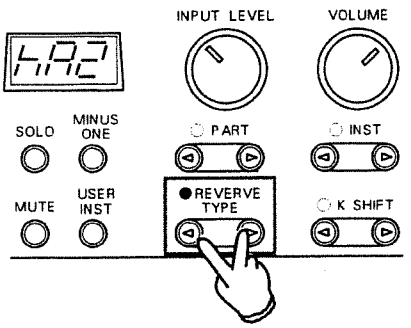
Press both PART buttons ([◀][▶]) simultaneously.

●Select the INST Number display



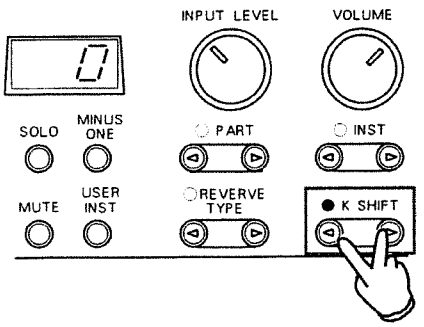
Press both INST buttons ([◀][▶]) simultaneously.

●Select the Reverb Type display



Press both REVERB TYPE buttons ([◀][▶]) simultaneously.

●Select the Key Shift display



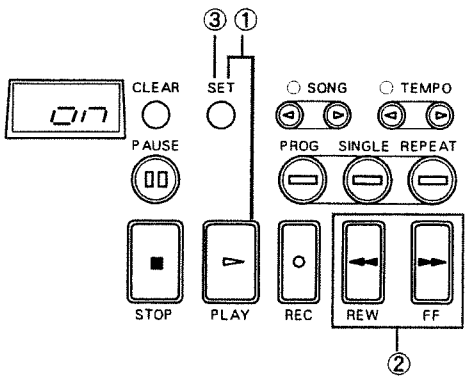
Press both K SHIFT buttons ([◀][▶]) simultaneously.

■ SETTING THE PLAYBACK FUNCTIONS

Use the following playback functions when necessary.

Auto Play : Playback will automatically begin when you insert a disk.
Song Interval Time: Specify the time interval between songs during continuous playback.
Auto Rewind : When you press [STOP] during playback, the SD-35 will rewind to the begining of the current song.

● Turning off Auto Play

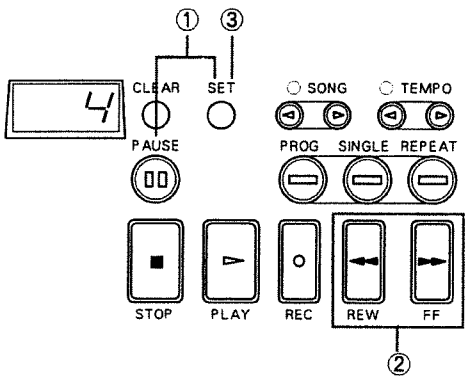


① While holding [SET], press [PLAY].
The display will show the current setting.

② Press [REW] to turn Auto Play "oFF".
To turn Auto Play on again, press [FF].

③ Press [SET] to complete the operation.

● Changing the Song Interval Time (0 — 99 seconds in 1 second steps)



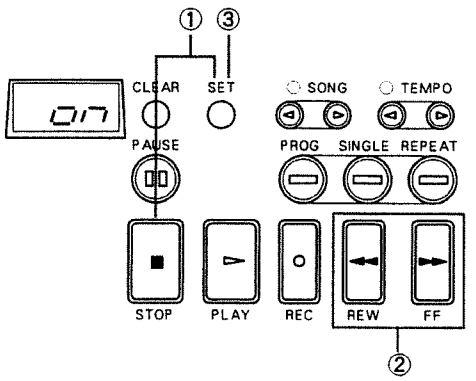
① While holding [SET], press [PAUSE].
The display will show the current Song Interval Time.

② Use [REW] [FF] to specify the Song Interval Time.

⇨"L" will be shown on the left of the display when TEMPO [▶] is pressed, and tempo keep will turn on. If the tempo is changed after tempo keep is tured on, the changed tempo rate will be continued to the original tempo. The tempo at start of playback will change with the same rate even when other songs are played.
Press TEMPO [◀] to turn tempo keep off.

③ Press [SET] to complete the operation.

● Turning off Auto Rewind



① While holding [SET], press [STOP].
The display will show the current setting.

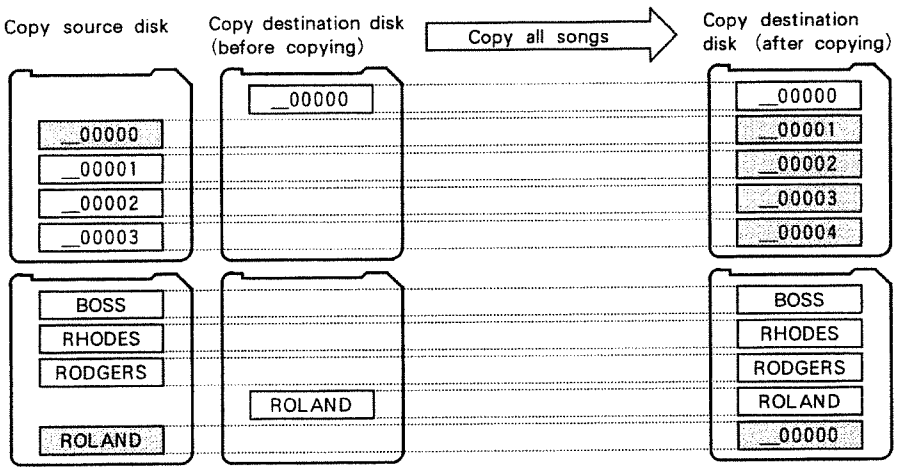
② Press [FF] to turn Auto Rewind "oFF".
To turn Auto Rewind on again, press [REW].

③ Press [SET] to complete the operation.

■ COPYING SONG DATA

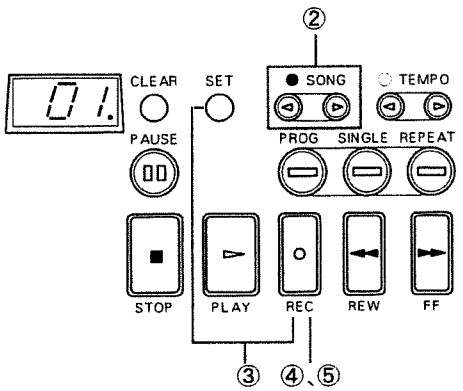
You can copy song data to other disks. This allows you to collect songs from different disks onto a single disk for convenient playback.
There are two ways to copy song data; copy only a single song, or copy an entire disk.

Warning : If the copy destination disk contains song data with the same name as the copied data, be sure to change the name of the song data before you copy it.



* Some songs have a Copyright Notice (data for protecting the composer's copyright) stored with them. The data of these songs can be copied from the master as many times as you want but another copy cannot be made from the data that was copied from the master. That is, you cannot make a copy of a copy.

● Copy only one song



① Insert the copy source disk.

② Use the SONG buttons ([◀][▶]) to select the song you wish to copy.

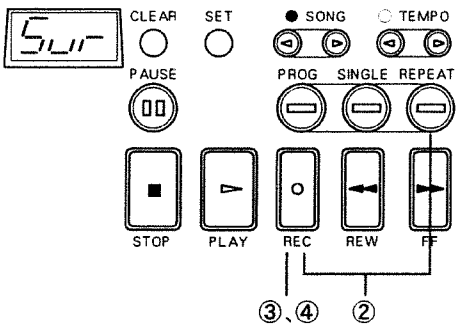
③ While holding [REC], press [SET].
The display will ask "Sur" (Sure: "are you sure you want to copy?").

④ Press [REC].
After a while, the display will ask "dSt" (Destination: the copy destination disk).

⑤ Insert the copy destination disk, and press [REC].
When copying is completed, the song number of the copied song will be displayed.

If the amount of data is large and cannot be copied in a single pass, the display will ask "Src" (Source: the copy source disk). Insert the copy source disk, and repeat steps ④ and ⑤ until copying is completed.

● Copy all songs



① Insert the copy source disk.

② While holding [REC], press [REPEAT].

The display will ask "Sur" (Sure: "are you sure you want to copy?").

③ Press [REC].

After a while, the display will ask "dSt" (Destination: the copy destination disk).

④ Insert the copy destination disk, and press [REC].

If the amount of data is large and cannot be copied in a single pass, the display will ask "Src" (Source: the copy source disk). Insert the copy source disk, and repeat steps ③ and ④ until copying is completed.

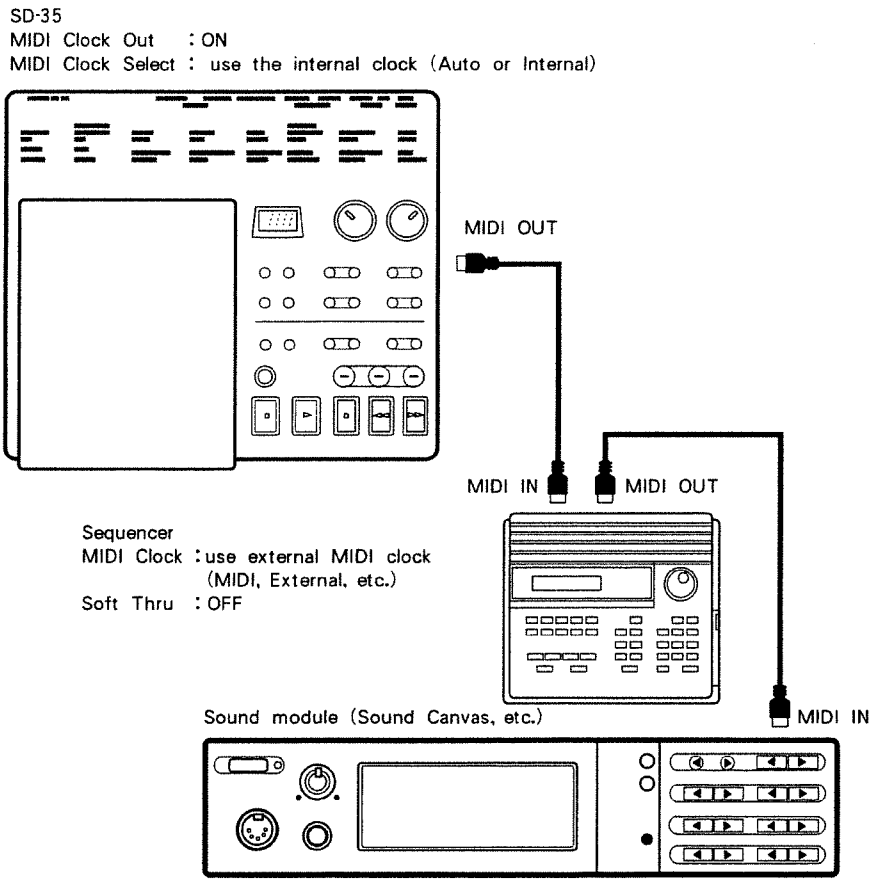
■ SYNCHRONIZED PLAYBACK WITH OTHER MIDI DEVICES

The SD-35 is able to playback in synchronization with other sequencers and computers. This allows you to play a song using two or more sequencers at once.

● Synchronize other devices to the SD-35

<Connections and preparation>

If you wish to synchronize other devices to the SD-35, make connections as shown below. Set the other sequencer to use incoming MIDI Clock messages as its timing source.



⇨The SD-35 is already set to operate on its own internal clock and to transmit MIDI Clock messages, so there is no need to change the settings on the SD-35.

<Synchronized playback>

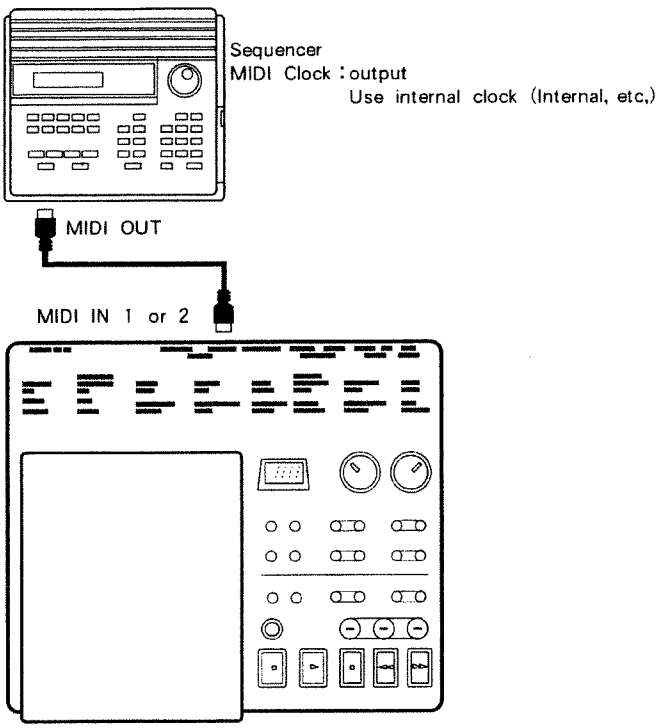
Prepare the SD-35 and the other sequencer for playback, and start playback on the SD-35. When playback begins, the other sequencer will begin playing back in synchronization with the MIDI Clock messages from the SD-35. You can adjust the playback tempo on the SD-35.

⇨If you wish to temporarily cancel synchronization, turn off the MIDI Clock Out (☞ P.53).

● Synchronize the SD-35 to other devices

<Connections and preparation>

If you wish to synchronize the SD-35 to other devices, make connections as shown below. Set the other sequencer to use its own internal clock as its timing source.

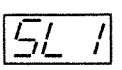
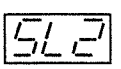


SD-35
MIDI Clock Sfelect : use external MIDI Clock (Auto, in 1, or in 2)

<Synchronized playback>

Prepare the SD-35 and the other sequencer for playback, and start playback on the other sequencer. When playback begins, the SD-35 will begin playing back in synchronization with the MIDI Clock messages from the other sequencer. You can adjust the playback tempo on the other sequencer.

⇨If the MIDI clock is set to "in1" or "in2", the SD-35 tempo display is as shown below.

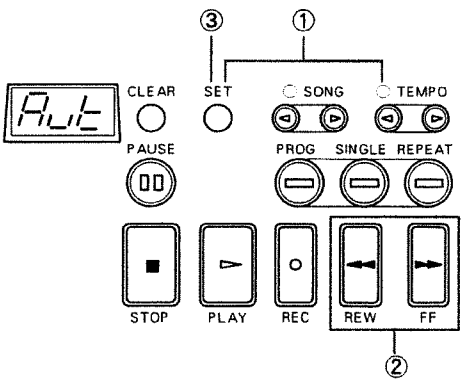
in1  in2 

* If the SD-35 MIDI clock was set to "AUTO", it may not operate correctly depending on the sequencer used. In such a case set, the MIDI clock to "in1" or "in2" (see the following page).

● MIDI Clock Select

These settings determine how the SD-35 handles MIDI Clock messages. Normally you will leave this set to Internal, but in some cases you may need to change it.

Value (display)	Operation
Auto (Aut)	Normally use the internal clock. If Start and MIDI Clock messages are received from an external MIDI device, playback will occur in synchronization with the MIDI Clock from the external MIDI device.
Internal (int)	Use the internal clock. MIDI Clock messages from an external MIDI device will be ignored.
MIDI (in1)	Use MIDI Clock messages from the MIDI IN 1 connector. MIDI Clock messages from MIDI IN 2 will be ignored.
MIDI (in2)	Use MIDI Clock messages from the MIDI IN 2 connector. MIDI Clock messages from MIDI IN 1 will be ignored.
Remote (rEt)	Use the internal clock. However, play/stop can be controlled from an external MIDI device. (☞P.54)

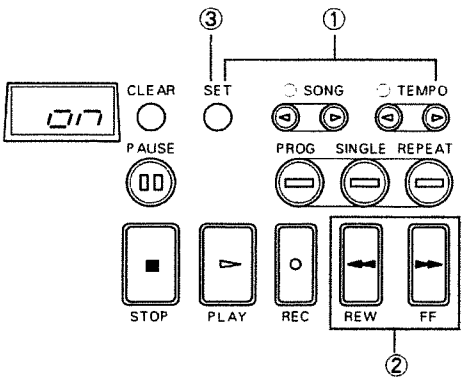


① While holding [SET], press TEMPO [◀].
The display will show the current setting.

② Use [REW] [FF] to select the setting.

③ Press [SET] to complete the operation.

● MIDI Clock Out on/off



① While holding [SET], press TEMPO [▶].
The display will show the current setting.

② Use [FF] [REW] to turn MIDI Clock Output on or oFF.

③ Press [SET] to complete the operation.

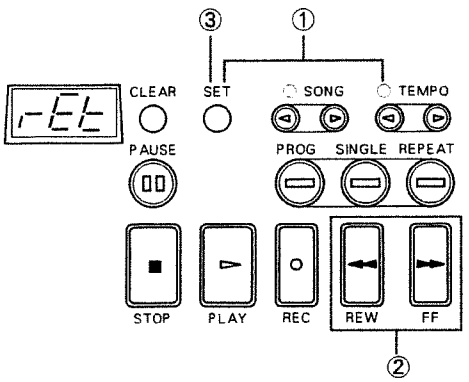
■ CONTROLLING PLAY/STOP FROM AN EXTERNAL MIDI DEVICE

You can control the [STOP] and [PLAY] functions of the SD-35 from an external MIDI device.
For example, if you are using a MIDI keyboard that has a built-in sequencer, or a MIDI keyboard that is able to transmit start/stop messages (such as the A-80), you can remotely control SD-35 playback from the play/stop buttons of your MIDI keyboard.
When using an external MIDI device to control the SD-35, set the SD-35's MIDI Clock to "Remote".

⇨If you wish to begin playback by remote control from the point where playback stopped, set the Auto Rewind function to Off (☞ P.48).

* When Remote is selected, the SD-35 will use its own internal clock, and will not synchronize to MIDI Clock messages from an external MIDI device.

● Set MIDI Clock to "Remote"



① While holding [SET], press TEMPO [◀].
The display will show the current setting.

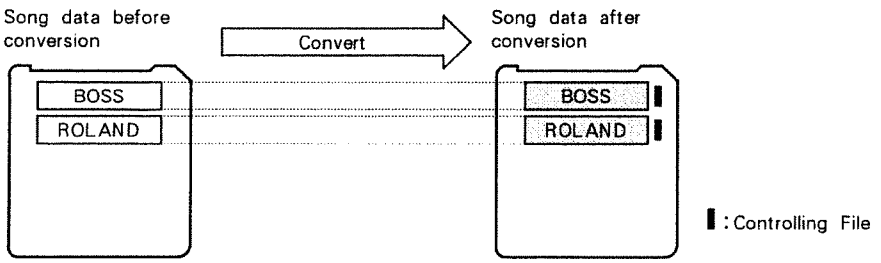
② Use [REW] [FF] to select "rEt" (Remote).

③ Press [SET] to complete the operation.

■CONVERSION PROCESSING FOR HIGH-SPEED FAST FORWARD/REWIND

Convert the song data in order to make the speed of fast forward/rewind operations faster than usual. When converting the song data of format 1, it is converted into format 0.
There are two methods of conversion: one is to convert only one song, and the other is to convert an entire disk.

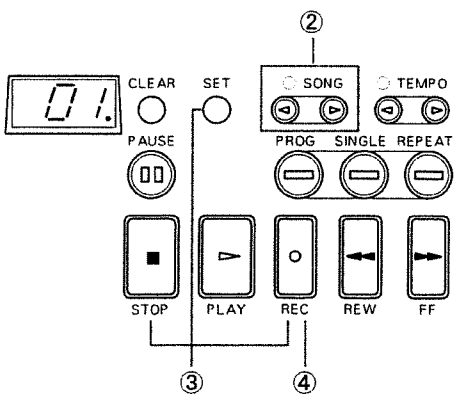
* The original song data will be erased when converting. To retain the original song data, copy it before using the conversion function (☞P.49).



* The conversion function cannot be executed when: 1) song data is incompatible with or cannot be played by the SD-35, or 2) when insufficient memory space is left on the disk.
* The speed of the Fast Forward/Rewind returns to the original speed when the converted song data is edited by another sequencer or computer. Convert the data back again.
* Standard MIDI files of Format 1 can be converted only if they have fewer than 17 tracks.

⇨When this conversion is done, a controlling file is made for each song's data. The SD-35 counts a single controlling file as one song. Therefore, the maximum number of the songs which can be recorded to the disk is actually less than 99.

● Converting only one song



① Insert the disk.

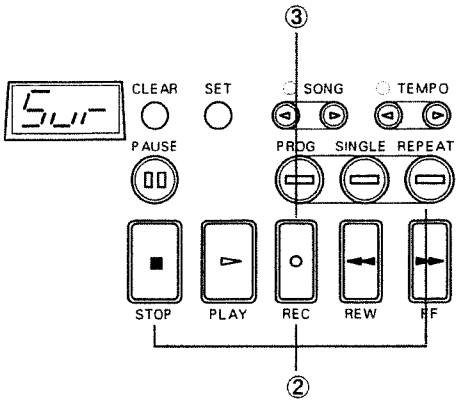
② Use the SONG buttons ([◀][▶]) to select the song you wish to convert.

③ While holding [REC] and [STOP], press [SET].
The display will ask "Sur" (Sure: "are you sure you want to convert?").

④ Press [REC].
When conversion is complete, the song number of the converted song will be displayed.

* If high-speed correspondence is being used, the following display will be shown.

● Converting all songs on a disk



① Insert the disk.

② While holding [REC] and [STOP], and then press [REPEAT].

The display will ask "Sur" (Sure: "are you sure you want to convert?").

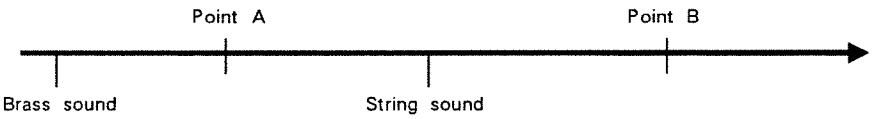
③ Press [REC].

■ MIDI UPDATE

The SD-35 provides a MIDI Update function that ensures that even when you resume playback from the middle of a song (e.g., after fast-forward, rewind, or block repeat), playback will resume correctly.

Song data contains many types of MIDI messages. When song data is played back from the beginning, it transmits these MIDI messages in the correct order to play the MIDI sound source. However, if you use fast-forward or rewind, etc. to change the location from which playback begins, the MIDI messages that were skipped over (Program Change messages, Control Change messages, etc.) will not be transmitted to the MIDI sound source. This means that when playback resumes, the sound may not be correct.

For example, if the song data contains Program Change messages (messages that select sounds) as shown below, when you rewind from point B to point A and then begin playback from point A, the string sound will be heard even though the brass sound should be selected.

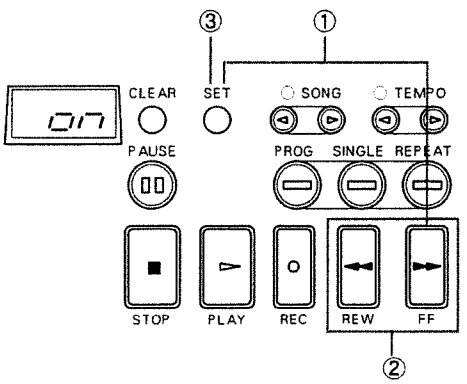


To solve such problems, the SD-35 provides a MIDI Update function. If MIDI Update is turned on, the song data will be checked from the beginning and the appropriate messages will be transmitted to ensure that the sound source will have the correct settings, even if you change the point from which to begin playback.

When the SD-35 is shipped, MIDI Update is turned on, and in most cases this will be the setting you want. However, if the amount of song data is huge, in some cases it will not be possible to process the data correctly. In this case, while holding [CLEAR], pressing [STOP] will transmit all MIDI messages (except note messages) from the beginning of the song to the current position.

The MIDI Update function can be turned "Off" if necessary.

● MIDI Update on/off



① While holding [SET], press [FF].
The display will show the current setting.

② Press [REW] to turn MIDI Update "oFF".
To turn it on, press [FF].

③ Press [SET] to complete the operation.

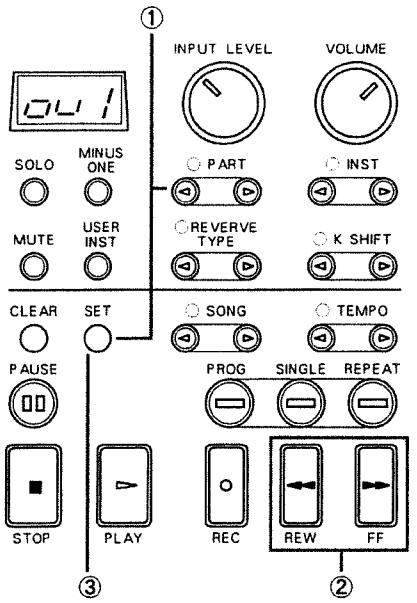
■TRANSMITTING SOUND SOURCE DATA FROM MIDI OUT

When transmitting MIDI data from MIDI OUT, you must select whether to transmit the internal sequencer data or to transmit the sound source data.

The normal SD-35 MIDI OUT is set to transmit the internal sequencer data.

To record bulk sound source data in the external sequencer, etc., reset the MIDI OUT selection switch.

●Setting the MIDI OUT selection switch



① While holding [SET], press PART [◀].

The current setting (ou1) will be displayed.

② Press [FF] and set to "ou2 (out2)".

To return to "ou1 (out1)", press [REW].

ou1 (out1): Transmit internal sequencer data from MIDI OUT.

ou2 (out2): Transmit sound source data from MIDI OUT.

③ Press [SET] to complete the setting.

The setting will change when the power is turned OFF and ON after making the setting.

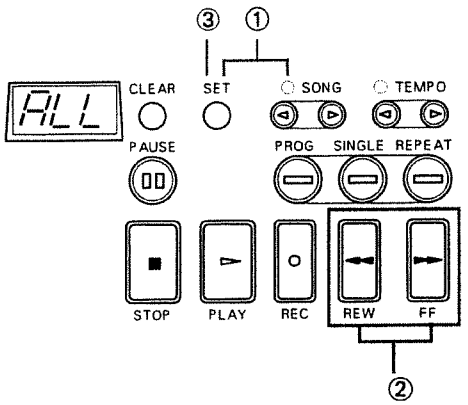
■ SETTING SOFT THRU

Most sequencers have a function called "soft thru" which allows messages received at MIDI IN to be re-transmitted from MIDI OUT. This will usually be set to "Thru on".

On the SD-35, both MIDI IN 1 and 2 are initially set to "Soft thru on" when the unit leaves the factory.

● Soft Thru settings

Depending on how you use the SD-35, you may find it necessary to set MIDI IN 1 or 2 (or both) to Soft Thru Off. Use the following procedure:



① While holding [SET], press SONG [◀].

The present setting will appear in the display.

② Use the [REW] and [FF] buttons to set the Soft Thru status.

oFF : Both MIDI IN 1 and 2 ports are set to Soft Thru Off.

in1 : Only MIDI IN 1 is set to Soft Thru On.

in2 : Only MIDI IN 2 is set to Soft Thru On.

ALL: Both MIDI IN 1 and 2 ports are set to Soft Thru On.

③ Press [SET] to finish the operation.

■ HOW TO RESTORE THE FACTORY SETTINGS

To return all the SD-35 original factory settings, use the following procedure. Please note that this operation will erase any settings or modifications you have made.

The factory settings of the functions are as follow.

	INST (P.23)	MUTE (P.33)
Part1	001 Piano 1	off
Part2	001 Piano 1	off
Part3	001 Piano 1	off
Part4	001 Piano 1	off
Part5	001 Piano 1	off
Part6	001 Piano 1	off
Part7	001 Piano 1	off
Part8	001 Piano 1	off
Part9	001 Piano 1	off
Part10	001 STANDARD	off
Part11	001 Piano 1	off
Part12	001 Piano 1	off
Part13	001 Piano 1	off
Part14	001 Piano 1	off
Part15	001 Piano 1	off
Part16	001 Piano 1	off

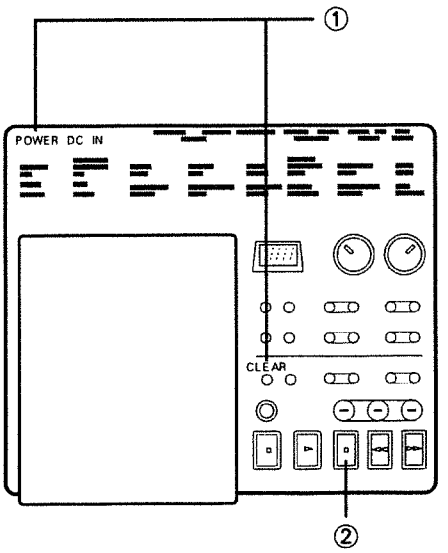
Function	Factory setting
Key shift (☞P.32)	0
Reverb type (☞P.31)	Hall2
Minus-one (☞P.34)	off
Minus-one setup level (☞P.35)	off
User inst (☞P.36)	off
Solo (☞P.37)	off
Backup switch (☞P.30)	on
Master tune (☞P.38)	440.0Hz
Transmission of MIDI clock (☞P.53)	on
Selection of MIDI clock (☞P.53)	Internal
Soft thru (☞P.59)	ALL
Active sensing (☞P.App.10)	on
All note off (☞P.App.9)	off
Auto rewind (☞P.48)	on
Auto play (☞P.48)	on
Time base (☞P.42)	96
Interval time (☞P.48)	4 seconds
Tempo keep (☞P.48)	space (oFF)
MIDI update (☞P.57)	on
Single play mode (☞P.17)	inc
MIDI out selection (☞P.58)	out 1
Pedal selection (☞P.35)	P—S (Play/Stop)

● To restore the factory settings

① While holding [CLEAR], turn the power on.

"Sur" (Sure: are you sure you wan to restore the factory setting?) is displayed.

② Press [REC] to execute. (Press [STOP] to stop the operation.)



Appendix

■ TROUBLESHOOTING

If the SD-35 does not perform as expected, refer to this section. If you can not solve the problem, discontinue use immediately, contact your Roland dealer or the nearest by Roland service station as soon as possible.

⇨If an error message appears in the display during operation, refer to the Error Message table on the following pages.

● Cannot turn the power on
● The disk drive will not work

Be sure to use only the included AC adaptor.

● No sound

Make sure that the power to all sound sources and amplifiers is turned on.

Is the MIDI cable connected correctly?

Check the Soft Thru setting. (☞P.59)

Are you using a MIDI device that is not able to correctly handle Active Sensing messages? If so, turn off Active Sensing Transmission (☞App.10).

Is the volume control knob turned all the way down?

Can you hear the sound in the headphones? If you can, the problem is probably in an audio cable connection, or an amp or mixer.

Is MUTE of a Part on?

Is an external device using an expression (volume) pedal which is turned down?

● When you play a connected MIDI keyboard, it does not sound correctly.

Check the Local Control setting of the MIDI keyboard.

● Playback does not begin when you insert a disk.

Is the Auto Play function turned off? (☞P.48)

● Cannot record

Is a disk inserted into the disk drive?

Are the external MIDI devices connected correctly? (☞P.40)

● Cannot use Block Repeat playback.

Are the [REPEAT] and [SINGLE] indicators lit? If they are not, press the buttons. (the indicators should light.)

Have you selected a song for which a repeat area has been specified?

● The sound is incorrect when you begin playback from the middle of the song.

Has the MIDI Update function been turned on? (☞P.57)

● A specified Part cannot be heard

Is Mute of the specified Part off?

● Distorted sound

When the overall sound distorts, decrease the volume level.

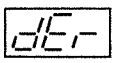
● The pitch is wrong

Is the Master Tune setting correct (☞P.38)?

Has pitch bend data been received, leaving the pitch "hanging" at some non-zero value? Return the bender to the center position or transmit the center value (63) of the pitch bend message.

■ ERROR MESSAGES

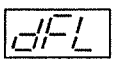
If you attempt to execute an incorrect operation or if an unexpected condition occurs, one of the following error messages will appear in the display. Refer to this list, and take the appropriate action.



Disk Error

Reason : It is possible that the data on the disk has been corrupted, or that the disk itself has been damaged.

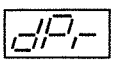
Action : Format the disk once again (☞P.41). If the disk is still not usable, throw it away.



Disk Full

Reason : No more data can be stored on the disk.

Action : Either delete unneeded song data (☞P.43), or use another disk.



Disk Protected

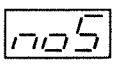
Reason : The protect tab of the disk is set to the PROTECT position.

Action : Set the protect tab of the disk to the WRITE position.

No Disk

Reason : There is no disk in the drive.

Action : Insert a disk into the drive.



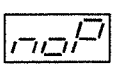
No Song

Reason 1 : The disk does not contain any song data.

Action 1 : Insert a disk that contains song data.

Reason 2 : The file extensions of all song data recorded to the disk are not ".MID".

Action 2 : Change the file extension to ".MID" with your sequencer or computer.



No Play

Reason 1 : The song data uses a Time Base that cannot be used by the SD-35.

Action 1 : If your sequencer or computer allows you to change the Time Base of a song, change it to a Time Base (☞P.42) that the SD-35 is able to use.

Reason 2 : The song data may be damaged.

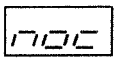
Action 2 : Delete the song data (☞P.43).

Reason 3 : The song data is a Standard MIDI File with a format other than 0 or 1 (of 17 tracks or less).

Action 3 : The SD-35 cannot play this data. Use your sequencer or computer to convert it to a format 0 or 1 (of 17 tracks or less).

Reason 4 : The song data is in Format 1 and contains 18 or more tracks.

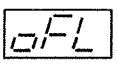
Action 4 : Use your computer or sequencer to modify the song data to 17 tracks or less.



No Copy

Reason : The specified song data cannot be copied because it has a Copyright Notice assigned to it. Song data that containsa a Copyright Notice can be copied from the master as many times as you want, but another copy cannot be made from the data that was copied from the master. That is, you cannot make a copy of a copy.

Action : Press [STOP] to cancel the operation. In the event that you want to copy the data of more than one song, press [REC] to copy the data of the next song.



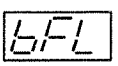
MIDI Off Line

Reason 1 : The MIDI device connected to MIDI IN has been turned off.

Action 1 : This is not a malfunction.
Turn the MIDI device on again.

Reason 2 : It is possible that the MIDI cable connected to MIDI IN has been disconnect or damaged.

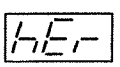
Action 2 : Check the MIDI cable connections.



MIDI Buffer Full

Reason : A large amount of MIDI data was received in a short time, and could not be processed.

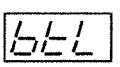
Action : Check that the transmitting device is not transmitting excessive amounts of MIDI data.



MIDI Hardware Error

Reason : The MIDI cable connected to MIDI IN is not connected securely.

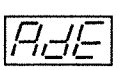
Action : Check the MIDI cable connections.



Battery Low

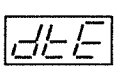
Reason : The internal memory backup battery is low.

Action : Consult the nearest Roland service station.



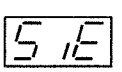
Address Error

Reason : The address of the Exclusive message that is being received is incorrect.



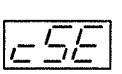
DT1 Data Error

Reason : DT 1 (Data set 1) data that is being received is incorrect.



RQ1 Size Error

Reason : The size of RQ 1 (Request data 1) data that is being received is incorrect.



Check Sum Error

Reason : The Check Sum that is being received is incorrect.

Action : Check the data that is being transmitted and try the operation again. Also, make sure the MIDI cable isn't unplugged, broken, or shorted.

■ ABOUT MIDI

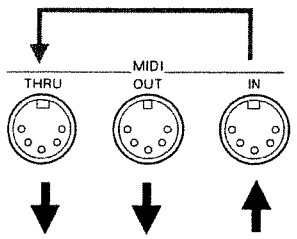
MIDI (Musical Instrument Digital Interface) is a world-wide standard that provides a way for electronic musical instruments to communicate. Instruments that have MIDI connectors can be connected to any other MIDI device, regardless of the manufacturer or model, and exchange musical data known as "MIDI messages".

□How MIDI messages are transmitted and received

First, we will give a simple explanation of how MIDI messages are transmitted and received.

●MIDI connectors

Three connectors are used to transmit and receive MIDI messages. Depending on your setup, you can use MIDI cables to connect your equipment in various ways.

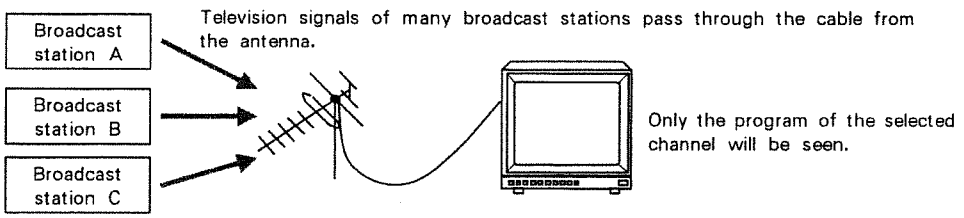


MIDI IN : This connector receives messages from another MIDI device.
MIDI OUT : This connector transmits messages from the device.
MIDI THRU : This connector re-transmits the messages from MIDI IN, exactly as they were received.

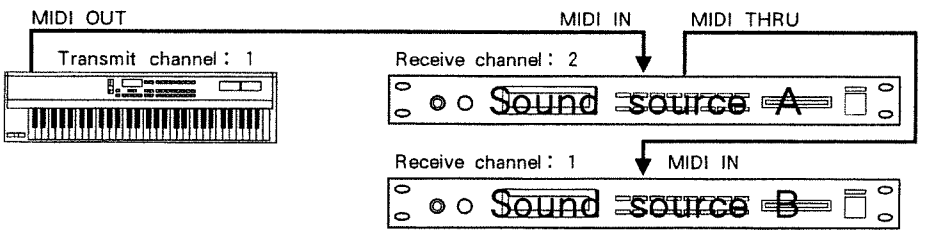
* MIDI THRU connectors can be used to "daisy-chain" any number of MIDI devices. However, in practice, four or five units is the limit. When the MIDI signal is passed through many THRU connectors, it may become unreadable.

●MIDI channels

MIDI uses "channels" to independently control many devices through a single cable. You may think of MIDI channels as being similar to television channels. Electrical signals come into a television set from the antenna on many different channels at once. However, only the channel to which the TV set is tuned will be received.



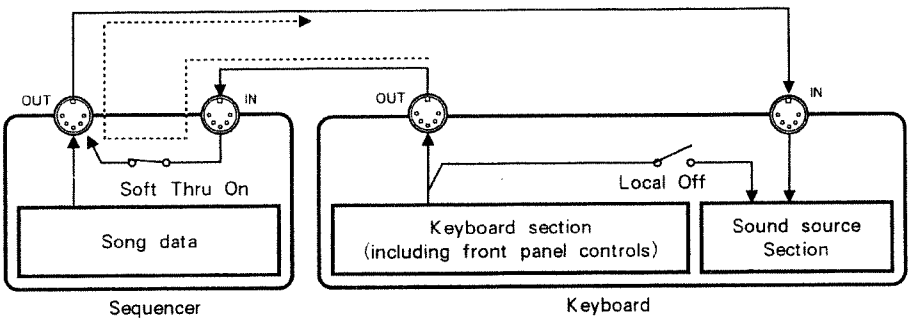
MIDI provides sixteen channels (1 — 16) on which messages can be sent. Messages will be received only when the receive channel matches the transmit channel. For example, with the MIDI channel settings in the following illustration, playing the keyboard will play only sound source B.



●Soft Thru and Local Control

Most sequencers have a Soft Thru function. This is a switch that determines whether the MIDI messages received at MIDI IN will be re-transmitted from MIDI OUT. (See following illustration)

If a keyboard is connected as shown in the following illustration, you can set the sequencer to Soft Thru On, and the keyboard to Local Off, and then record while hearing both the notes played by the sequencer and the notes you play on the keyboard.



⇨Local Control is a switch found on most keyboards, and determines whether or not the keyboard will be connected to its internal sound source. Normally you will leave this set to Local On. However when using a sequencer, or when you wish to use the keyboard to play only external MIDI sound sources, set this to Local Off.

□MIDI messages used by the SD-35

The various types of data transmitted and received via MIDI are called "MIDI messages". MIDI messages can be broadly divided into two categories; messages that are transmitted on a specific channel (Channel messages), and messages that carry information which applies to an entire MIDI system (System messages).

☆ marked MIDI messages are designated to be received when General MIDI system level 1 settings are in effect.

●Channel messages

Channel messages are used to convey musical actions, such as notes you play and controllers you move. Most MIDI messages fall into this category. The settings of the sound source will determine how it will produce sound in response to these messages.

Note messages ☆

Note messages are transmitted when you play the keyboard. Each message contains information telling which key was pressed (the note number) and how strongly it was pressed (the velocity). When you release a key, a similar message is sent, telling which key was released.

Note number	A number indicating the note (key) that was pressed or released.
Note on	A message indicating that a note was pressed.
Note off	A message indicating that a note was released.
Velocity	A number indicating how strongly the note was pressed.

Notes are numbered from 0 — 127, with middle C (C4) as 60. Rhythm sound sources usually assign a different drum sound to each note number. In other words, the note number will determine the drum sound that is played.

Pitch Bend messages ☆

Pitch Bend messages are transmitted when you move the bend lever found on most synthesizers.

Aftertouch messages (Only channel aftertouch ☆)

Aftertouch messages are transmitted when you press down on the keyboard (of a synthesizer that is able to transmit aftertouch messages) after playing a note. There are two types of aftertouch; Channel Aftertouch and Polyphonic Aftertouch.

Channel Aftertouch is transmitted as a single value for the entire keyboard, and applies to an entire MIDI channel. All notes receiving that MIDI channel will respond in the same way, regardless of which key you apply pressure to.

Polyphonic Aftertouch is transmitted independently for each key (note). Even for the same MIDI channel, only the note to which you apply pressure will be affected.

In the SD-35, Channel Aftertouch and Polyphonic Aftertouch cannot be received with the factory settings or the settings including GM system On/GS reset.

When you want to use those, change the settings by transmitting Exclusive messages via external MIDI.

Please refer to the "MIDI implementation"(p.23) for details.

Program Change messages ☆

Program Change messages contain a Program number 1 — 128 to select sounds or programs. The actual sound that is selected will depend on the receiving device. Refer to the manual for that device to see how it receives Program Change messages.

Control Change messages

Control Change messages allow you to make a musical performance more expressive by controlling vibrato, hold, volume, pan, and other parameters of the sound source. Control Change messages carry a control number to indicate the function they are intended to control. The parameters that can be controlled will depend on the receiving MIDI device.

○Bank select (Control number 0/32)

The tone is changed when used with Program change message.

The tone is selected with a Program change message after selecting the bank with a Bank Select message.

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

* The Program Bank Select Function (function to select a tone with a combination of a Control number 0/32 and Program number) was added to the MIDI Standard in 1990. The SD-35 has increased the number of tones that can be selected with a this function. (However, the drum channel does not respond to Bank Select messages.)

○Modulation (Control number : 1) ☆

The depth of the vibrato is adjusted.

The actual effect can be set for each part.

○Portamento time (Control number : 5) ☆

The speed of the portamento effect is adjusted.

○Data entry (Control number : 6, 38) ☆

The values of the parameters set in RPN and NRPN are set.

○Volume (Control number : 7) ☆

The volume of each Part is adjusted to balance the volume.

The actual volume is determined with the volume (Control number 7), expression (Control number 11), master volume (Exclusive) settings and the volume knob.

○Pan (Control number : 10) ☆

The pan position (where sounds can be heard) when outputting in stereo is adjusted. The pan will change continuously according to the value.

Set position	Left		Right
Pan	0	←→	127

○ Expression (Control number : 11) ☆

This function adjusts the sound volume of each Part.

The actual volume is determined with the volume (Control number 7), expression (Control number 11), master volume (Exclusive) settings and the volume knob.

○ Hold 1 (Control number : 64) ☆

The sound is sustained. This functions in the same manner as the damper pedal on a piano.

○ Portamento (Control number : 65)

The portamento function is turned on or off.

○ Sostenuto (Control number : 66)

This function validates/invalidates the chord hold function that holds only the sound played when pressing the sostenuto pedal.

○ Soft (Control number : 67)

This function adds the effect that makes the sound softer.

○ Portamento control (Control number : 84)

The same effect as portamento is applied to each note.

○ Effect 1 Depth (Control number : 91)

The state of the reverb effect on each Part is adjusted in the SD-35.

○ Effect 3 Depth (Control number : 93)

The state of the chorus effect on each Part is adjusted in the SD-35.

○ NRPN LSN, MSB (Control number : 98, 99)

The NRPN (non registered parameter numbers) is the extended range of the Control Change that can set the parameters characteristic to the device.

Set the parameter to be controlled with NRPN MSB and NRPN LSB, and then, set the value of the parameter set in data entry.

* The SD-35 handles the NRPN common to GS sound sources set for the GS format. The fine settings of the sound sources can be changed with applications or external controllers that are compatible with the GS format. Refer to MIDI implementation for the parameters that can be controlled.

* The values set with NRPN will not be reset even when a Program Change is received and the tone is changed.

* The SD-35 will recognize the NRPN when the GS reset is received (or when Rx.NRPN is turned ON after the Exclusive message set with the GS format).

○RPN LSB, MSB (Control number : 100, 101) ☆

RPN (registered parameter number) is the extended range of the Control Change which has a function defined with in the MIDI Standards. Pitch bend sensitivity, master coarse tune, master fine tune are included in RPN.
Set the parameters to be controlled with RPN MSB and RPN LSB, and then, set the value of the parameter.

* The values set with RPN will not be reset even when a Program Change is received and the tone is changed.

○All sound off (Control number : 120)

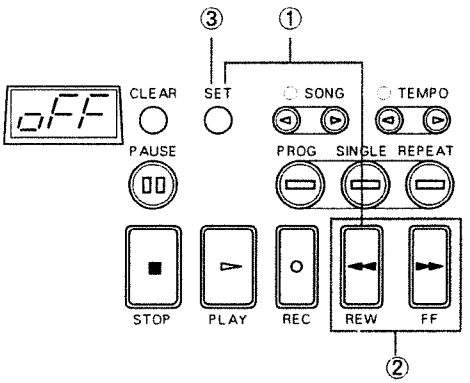
This turns off all sounds being played.

○All note off (Control number : 123) ☆

This turns off the sounds being played in the desired channel (the fading sounds will remain). However, if Hold 1 or Sostenuto are turned on, the sound will not stop until these functions are turned off.

< Auto Transmission of the On/Off status of All Notes Off messages >

When the notes of a particular MIDI channel go off completely (all notes are Note Off), the following procedure will turn "on" or "off" the transmission of All Notes Off messages to that MIDI channel. Usually this function is set to "off". However, if you set the function to "on", you can prevent such problems as "stuck notes" or notes that continue to sound longer than was intended, from an external MIDI sound source.



① While holding [SET], press [REW].
The display will show the current setting.

② Press [FF] to turn the function on.
To return to "off", press [REW].

③ Press [SET] to complete the operation.

○Reset all controllers (Control number : 121) ☆

The following controllers will change as shown in the table when this message is received.

Controller	Setting value
Pitch bend change	±0 (middle point)
Polyphonic key pressure	0 (minimum)
Channel pressure	0 (minimum)
Modulation	0 (minimum)
Expression	127 (maximum)
Hold 1	0 (off)
Portamento	0 (off)
Soft	0 (off)
Sostenuto	0 (off)
PRN	State with no number set
NRPN	State with no number set

●System messages

This category of messages includes Exclusive messages, and various types of message used in synchronization.

Common messages

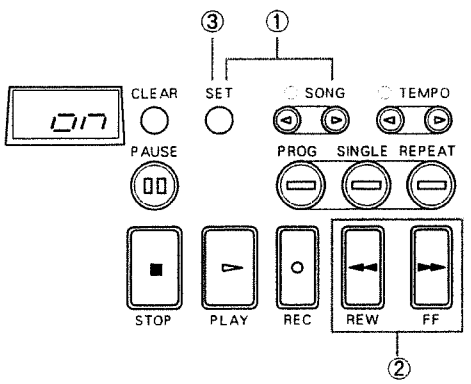
These messages include Song Select messages that select a song, and Song Position Pointer messages that specify the location within a song.

Realtime messages

These messages are used for synchronized playback. They include MIDI Clock messages to determine the tempo, and messages to Start, Stop, and Continue playback (i.e., resume from the stopped location).

Active Sensing message

These messages are transmitted at regular intervals, to allow the receiving device to check the integrity of the MIDI connection. Some MIDI devices are not able to correctly handle Active Sensing messages. In this case, use the following procedure to turn off Active Sensing transmission from the SD-35.



①While holding [SET], press SONG [▶].

The display will indicate the current setting.

②Press [REW] to turn Active Sensing transmission "oFF".

To turn transmission on again, press [FF].

③Press [SET] to complete the operation.

Exclusive messages

The SD-35 can receive Exclusive messages to store sound data from a MIDI sound module, etc. To store such data, put the SD-35 in the recording mode, and perform the Bulk Dump operation to transmit the data.

○General MIDI system on

General MIDI system on is Exclusive information to initialize the GM sound source settings that are common to GM sound sources (except Master tune).

When you create song data for GM sound sources, set "GM system on" at the beginning of the data to initialize the settings of GM sound sources for correct playback.

When receiving "GM system on", the SD-35 cannot receive NRPNs and Bank Select messages.

○GS reset

GS reset is Exclusive information to initialize the GS sound source settings that are common to GS sound sources (except Master tune).

When you create song data for GS sound sources, set "GS reset" at the beginning of the data to initialize the settings of GS sound sources for correct playback.

When receiving "GS reset", the SD-35 can receive NRPNs and Bank Select messages defined by the GS format.

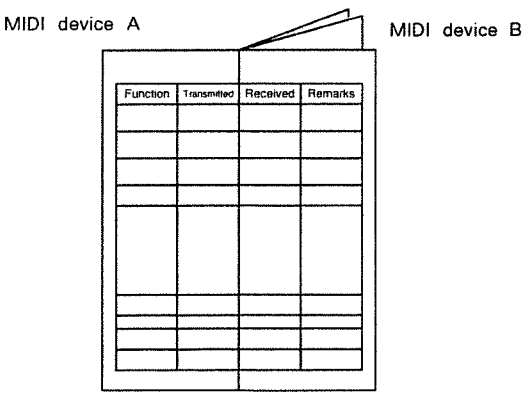
○Other Exclusive information

The SD-35 is compatible with the Exclusive information that is common to GS sound sources defined by the GS format. You can modify the sound source settings in details by using external controllers or application software that is GS format compatible.

< About MIDI implementation charts >

MIDI allows a wide variety of devices to exchange information, but it is not necessarily the case that all types of messages can be transmitted or received by every device.

For example, if a keyboard that is able to transmit Aftertouch messages is connected to a sound module that is not able to receive Aftertouch messages, the Aftertouch messages transmitted by the keyboard will have no effect. For MIDI messages to be meaningful. they must be transmitted by one device and received by the other. For this reason, a "MIDI Implementation Chart" (☞P.App.36) is included with every MIDI device, usually in the operation manual. By comparing the charts of two devices, you can determine which messages can be exchanged. Since the charts are a standard size, you can fold the charts of the two devices and put them together as shown below. This makes comparsion much easier.



THE GENERAL MIDI SYSTEM AND GS FORMAT

What is the General MIDI System?

The General MIDI System is a universal set of specifications for sound generating devices 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 not limited to equipment by a particular manufacturer or to specific models.

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

What is the GS Format?

The GS Format is a standardized set of specifications for Roland's sound sources which defines the manner in which multi-timbral sound generating units will respond to MIDI messages. The GS Format also complies with the General MIDI System.

The GS Format also defines a number of other details. These include unique specifications for sounds and the functions available for Tone editing and effects (chorus and reverb), and other specifications concerning the manner in which sound sources will respond to MIDI messages.
Any device that is equipped with GS Format sound sources can faithfully reproduce GS Music Data (music data created under the GS Format).

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

■ TABLE OF OPERATIONS

●Playback

Begin		[PLAY] ([STOP]+[PLAY]: with a blank bar)	P.12
Stop		[STOP]	P.12
Pause		[PAUSE]	P.13
Fast-forward		[FF] ([FF]+[REW]: faster)	P.13
Rewind		[REW] ([REW]+[FF]: faster)	P.13
Jump to beginning of song		[STOP]+[REW]	P.12
Jump to end of song		[STOP]+[FF]	P.12
Select a song		SONG[◀][▶] (SONG[◀]+[▶] or SONG[▶]+[◀]: faster)	P.14
Tempo	Adjust	TEMPO[◀][▶] (TEMPO[◀]+[▶] or TEMPO[▶]+[◀]: faster)	P.13
	Restore the standard	[CLEAR]+TEMPO[◀] ([CLEAR]+TEMPO[▶])	P.13
Preview Note		[SET]+K SHIFT[◀]➡[REW][FF]➡[SET]: Finish	P.25
Preview Velocity		[SET]+K SHIFT[▶]➡[REW][FF]➡[SET]: Finish	P.25

●Playback functions

Program playback	oFF, on	[PROG]	P.15
	Set program	[SET]+[PROG]➡《SONG[◀][▶]: Select songs➡[SET]》➡[STOP] ([PLAY]) : Finish	P.15
	Cancel program	[CLEAR]+[PROG]	P.16
Single playback	oFF, on	[SINGLE]	P.17
Repeat playback	oFF, on	[REPEAT]	P.18
Block Repeat playback	oFF, on	[REPEAT] and [SINGLE]	P.19
	Set repeated area	[SET]+[REPEAT]➡[REW][FF]: Move to beginning of area➡[SET]➡ [REW][FF]: Move to end of area➡[SET]: Finish	P.20
	Cancel	[CLEAR]+[REPEAT]	P.19
	Move to specified area	[STOP]+[REPEAT]: Move between beginning/end of area each time you press	P.20

●Recording

Recording		[PAUSE]+[REC]: Ready to record➡ Play the keyboard ([PLAY] or [PAUSE]) : recording begins➡[STOP] ([PAUSE]) : Finish	P.43
Setup save recording		[PAUSE]+[SET]+[REC]: Ready to record➡Press a key ([PLAY] or [PAUSE]) : recording bigins➡[STOP] ([PAUSE]) : Finish	P.43
Delete		SONG[◀][▶]: Select a song➡[REC]+[CLEAR]➡[REC]: Execute	P.43
Copy	One song	Insert the copy source disk➡SONG[◀][▶]: Select a song➡[REC]+[SET]➡ 《[REC]➡Insert the copy destination disk➡[REC]: Execute copying➡Insert the copy source disk》	P.49
	All songs	Insert the copy source disk➡[REC]+[REPEAT]➡ 《[REC]➡Insert the copy destination disk➡[REC]: Execute copying➡Insert the copy source disk》	P.50
Recording sound source settings		[REC]+[FF]➡[REC]	P.45

➡ : Advance to the next step

[A]+[B] : While holding [A], press [B]

[A]+[B]+[C] : While holding [A], press and hold [B], and then press [C]

[A]*[B] : Press [A] and [B] simultaneously

([A]/[B]) : Press either [A] or [B]

« » : Repeat the steps

●System functions

Display selection	Song number	SONG◀ * SONG▶	P.46
	Tempo	TEMPO◀ * TEMPO▶	P.46
	Measure number	REW * FF	P.46
	Part number	PART◀ * PART▶	P.47
	Inst number	INST◀ * INST▶	P.47
	Reverb type	REVERB TYPE◀ * REVERB TYPE▶	P.47
	Key shift	K SHIFT◀ * K SHIFT▶	P.47
MIDI Clock Select	Auto, Internal, MIDI 1, MIDI 2, Remote	SET + TEMPO◀➡REW FF: Set ➡SET: Finish	P.53
MIDI Clock Out	oFF, on	SET + TEMPO▶➡REW FF: Set ➡SET: Finish	P.53
Soft Thru	oFF, MIDI 1, MIDI 2, All	SET + SONG◀➡REW FF: Set ➡SET: Finish	P.59
Active Sensing transmission	oFF, on	SET + SONG▶➡REW FF: Set ➡SET: Finish	P.App.10
All Notes Off transmission	oFF, on	SET + REW➡REW FF: Set ➡SET: Finish	P.App. 9
Auto Rewind	oFF, on	SET + STOP➡REW FF: Set ➡SET: Finish	P.48
Auto Play	oFF, on	SET + PLAY➡REW FF: Set ➡SET: Finish	P.48
Time Base	96/120/192/240	SET + REC➡REW FF: Set ➡SET: Finish	P.42
Song Interval Time	0—99 seconds	SET + PAUSE➡REW FF: Set ➡SET: Finish	P.48
MIDI Update	oFF, on	SET + FF➡REW FF: Set ➡SET: Finish	P.57
Single Play Mode	Increment, Repeat	SET + SINGLE➡REW FF: Set ➡SET: Finish	P.17
MIDI OUT Selection	Out 1 Out 2	SET + PART◀➡REW FF: Set ➡SET: Finish	P.58
Back Up	oFF, on	SET + REVERB TYPE▶➡REW FF: Set ➡SET: Finish	P.30
Pedal selection	S—P, —1	SET + PEDAL ➡REW FF: Set ➡SET: Finish	P.35
Tempo keep	t(on), space(oFF)	SET + PAUSE➡TEMPO ◀▶: Set ➡SET: Finish	P.48

●Part functions

Key Shift	—24—+24	KEY SHIFT◀▶	P.32
Master Tune	415.3—466.2Hz	SET + REVERB TYPE◀➡REW FF: Set ➡SET: Finish	P.38
Reverb Type	Room1, 2, 3 Hall1, 2 Plate Delay Panning Delay	REVERB TYPE◀▶	P.31
Inst Selection	1—128	PART◀▶: Part selection ➡ INST◀▶	P.23
Drum Set	———	PART◀▶: Drum part selection ➡ INST◀▶	P.29
Mute	oFF, on	PART◀▶: Part Selection ➡MUTE	P.33
Solo		PART◀▶: Part Selection ➡SOLO	P.37
Minus-one Play		PART◀▶: Part Selection ➡MINUS ONE	P.34
Minus-one setup Level	oFF, 0—127	SET + PART▶ ➡REW FF ➡SET	P.35

●Other functions

Initialize a disk	New disk	Insert the disk ➡ [REC]: Execute	P.41
	A used disk	[CLEAR] + Insert the disk ➡ [REC]: Execute	P.41
Conversion Processing for High-speed Fast Forward/Rewind	One song	Insert the disk ➡ SONG [◀][▶]: Song select ➡ [REC] + [STOP] + [SET] ➡ [REC]: Execute	P.55
	All songs	Insert the disk ➡ [REC] + [STOP] + [REPEAT] ➡ [REC]: Execute	P.56
Transmitting all MIDI messages that are necessary for MIDI Update		[CLEAR] + [STOP]	P.57
Restore to factory settngs		[CLEAR] + Turn the power on	P.60
User inst		[USER INST] ➡ INST [◀][▶]	P.36
Making the GS setting		[STOP] + [CLEAR] ➡ [REC]	P.39
Making the GM setting		[STOP] + [SET] ➡ [REC]	P.39

➡	: Advance to the next step
[A] + [B]	: While holding [A], press [B]
[A] + [B] + [C]	: While holding [A], press and hold [B], and then press [C]
[A] * [B]	: Press [A] and [B] simultaneously
([A]/[B])	: Press either [A] or [B]
« »	: Repeat the steps

INST TABLE

	PC#	CC0	Inst Name	V
Piano	1	0	Piano 1	1
		8	Piano 1w	1
		16	Piano 1d	1
	2	0	Piano 2	1
		8	Piano 2w	1
	3	0	Piano 3	1
		8	Piano 3w	1
	4	0	Honky-tonk	2
		8	Honky-tonk w	1
	5	0	E.Piano 1	1
		8	Detuned EP 1	2
		16	E.Piano 1v	2
		24	60's E.Piano	1
	6	0	E.Piano 2	1
		8	Detuned EP 2	2
		16	E.Piano 2v	2
	7	0	Harpsichord	1
		8	Coupled Hps.	2
		16	Harpsi.w	1
		24	Harpsi.o	2
	8	0	Clav.	1
Chromatic Percussion	9	0	Celesta	1
	10	0	Glockenspiel	1
	11	0	Music Box	1
	12	0	Vibraphone	1
		8	Vib.w	1
	13	0	Marimba	1
		8	Marimba w	1
	14	0	Xylophone	1
	15	0	Tubular-bell	1
		8	Church Bell	1
		9	Carillon	1
	16	0	Santur	1
Organ	17	0	Organ 1	1
		8	Detuned Or.1	2
		16	60's Organ 1	1
		32	Organ 4	2
	18	0	Organ 2	1
		8	Detuned Or.2	2
		32	Organ 5	2
	19	0	Organ 3	2
	20	0	Church Org.1	1
		8	Church Org.2	2
		16	Church Org.3	2
	21	0	Reed Organ	1
	22	0	Accordion Fr	2
		8	Accordion It	2
	23	0	Harmonica	1
	24	0	Bandoneon	2

	PC#	CC0	Inst Name	V
Guitar	25	0	Nylon-str.Gt	1
		8	Ukulele	1
		16	Nylon Gt.o	2
		32	Nylon.Gt.2	1
	26	0	Steel-str.Gt	1
		8	12-str.Gt	2
		16	Mandolin	1
	27	0	Jazz Gt.	1
		8	Hawaiian Gt.	1
	28	0	Clean Gt.	1
		8	Chorus Gt.	2
	29	0	Muted Gt.	1
		8	Funk Gt.	1
		16	Funk Gt.2	1
	30	0	Overdrive Gt	1
	31	0	DistortionGt	1
		8	Feedback Gt.	2
	32	0	Gt.Harmonics	1
		8	Gt. Feedback	1
Bass	33	0	Acoustic Bs.	1
	34	0	Fingered Bs.	1
	35	0	Picked Bs.	1
	36	0	Fretless Bs.	1
	37	0	Slap Bass 1	1
	38	0	Slap Bass 2	1
	39	0	Synth Bass 1	1
		1	SynthBass101	1
		8	Synth Bass 3	1
	40	0	Synth Bass 2	2
		8	Synth Bass 4	2
		16	Rubber Bass	2

PC# : Program number (Inst number)
CC0 : Value of control number 0
(Variation number)
V : Number of Voices

	PC#	CC0	Inst Name	V
Strings/Orchestra	41	0	Violin	1
		8	Slow Violin	1
	42	0	Viola	1
	43	0	Cello	1
	44	0	Contrabass	1
	45	0	Tremolo Str	1
	46	0	PizzicatoStr	1
	47	0	Harp	1
	48	0	Timpani	1
Ensemble	49	0	Strings	1
		8	Orchestra	2
	50	0	Slow Strings	1
	51	0	Syn.Strings1	1
		8	Syn.Strings3	2
	52	0	Syn.Strings2	2
	53	0	Choir Aahs	1
		32	Choir Aahs 2	1
	54	0	Voice Oohs	1
	55	0	SynVox	1
	56	0	OrchestraHit	2
Brass	57	0	Trumpet	1
	58	0	Trombone	1
		1	Trombone 2	2
	59	0	Tuba	1
	60	0	MutedTrumpet	1
	61	0	French Horn	2
		1	French Horn 2	2
	62	0	Brass 1	1
		8	Brass 2	2
	63	0	Synth Brass1	2
		8	Synth Brass3	2
		16	AnalogBrass1	2
	64	0	Synth Brass2	2
		8	Synth Brass4	1
		16	AnalogBrass2	2

	PC#	CC0	Inst Name	V
Reed	65	0	Soprano Sax	1
	66	0	Alto Sax	1
	67	0	Tenor Sax	1
	68	0	Baritone Sax	1
	69	0	Oboe	1
	70	0	English Horn	1
	71	0	Bassoon	1
	72	0	Clarinet	1
Pipe	73	0	Piccolo	1
	74	0	Flute	1
	75	0	Recorder	1
	76	0	Pan Flute	1
	77	0	Bottle Blow	2
	78	0	Shakuhachi	2
	79	0	Whistle	1
	80	0	Ocarina	1
Synth Lead	81	0	Square Wave	2
		1	Square	1
		8	Sine Wave	1
	82	0	Saw Wave	2
		1	Saw	1
		8	Doctor Solo	2
	83	0	Syn.Calliope	2
	84	0	Chiffer Lead	2
	85	0	Charang	2
	86	0	Solo Vox	2
	87	0	5th Saw Wave	2
	88	0	Bass & Lead	2
Synth Pad	89	0	Fantasia	2
	90	0	Warm Pad	1
	91	0	Polysynth	2
	92	0	Space Voice	1
	93	0	Bowed Glass	2
	94	0	Metal Pad	2
	95	0	Halo Pad	2
	96	0	Sweep Pad	1

PC# : Program number (Inst number)
CC0 : Value of control number 0
(Variation number)
V : Number of Voices

	PC#	CC0	Inst Name	V
Synth SFX	97	0	Ice Rain	2
	98	0	Soundtrack	2
	99	0	Crystal	2
		1	Syn Mallet	1
	100	0	Atmosphere	2
	101	0	Brightness	2
	102	0	Goblin	2
	103	0	Echo Drops	1
		1	Echo Bell	2
		2	Echo Pan	2
	104	0	Star Theme	2
Ethnic Misc	105	0	Sitar	1
		1	Sitar 2	2
	106	0	Banjo	1
	107	0	Shamisen	1
	108	0	Koto	1
		8	Taisho Koto	2
	109	0	Kalimba	1
	110	0	Bag Pipe	1
	111	0	Fiddle	1
	112	0	Shanai	1
Percussive	113	0	Tinkle Bell	1
	114	0	Agogo	1
	115	0	Steel Drums	1
	116	0	Woodblock •	1
		8	Castanets •	1
	117	0	Taiko •	1
		8	Concert BD •	1
	118	0	Melo. Tom 1 •	1
		8	Melo. Tom 2 •	1
	119	0	Synth Drum •	1
		8	808 Tom •	1
		16	Elec Perc •	1
	120	0	Reverse Cym. •	1

	PC#	CC0	Inst Name	V
SFX	121	0	Gt.FretNoise •	1
		1	Gt.Cut Noise •	1
		2	String Slap •	1
	122	0	Breath Noise	1
		1	Fl.Key Click •	1
	123	0	Seashore •	1
		1	Rain •	1
		2	Thunder •	1
		3	Wind •	1
		5	Bubble •	2
	124	0	Bird •	2
		1	Dog •	1
		2	Horse-Gallop •	1
		3	Bird 2 •	1
	125	0	Telephone 1 •	1
		1	Telephone 2 •	1
		2	DoorCreaking •	1
		3	Door •	1
		4	Scratch •	1
	126	0	Helicopter •	1
		1	Car-Engine •	1
		2	Car-Stop •	1
		3	Car-Pass •	1
		4	Car-Crash •	2
		5	Siren •	1
		6	Train •	1
		7	Jetplane •	2
		8	Starship •	2
		9	Burst Noise •	2
	127	0	Applause •	2
		2	Screaming •	1
		3	Punch •	1
		4	Heart Beat •	1
		5	Footsteps •	1
	128	0	Gun Shot •	1
		1	Machine Gun •	1
		2	Lasergun •	1
		3	Explosion •	2

PC# : Program number (Inst number)
CC0 : Value of control number 0
(Variation number)
V : Number of Voices
• : All tones marked by an • have an unreliable pitch. Please use a key around C4 (Key # 60).
The unmarked tones use temperament and pitch of A4 (Key # 59) is 440Hz.

DRUM SET TABLE

	Note number	PC#1:STANDARD Set PC#33:JAZZ Set	PC#9:ROOM Set	PC#17:POWER Set	PC#25: ELECTRONIC Set	PC#26:TR-808 Set	PC#41: BRUSH Set	PC#49:ORCHESTRA Set
	27	High Q						Closed Hi-Hat [EXC1]
	28	Slap						Pedal Hi-Hat [EXC1]
	29	Scratch Push						Open Hi-Hat [EXC1]
	30	Scratch Pull						Ride Cymbal
	31	Sticks						
	32	Square Click						
	33	Metronome Click						
	34	Metronome Bell						
	35	Kick Drum 2						Concert BD 2
C2	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 Tap	Concert SD
	39	Hand Clap					Brush Slap	Castanets
	40	Snare Drum 2			Gated SD		Brush Swirl	Concert SD
	41	Low Tom 2	Room Low Tom 2	Room Low Tom 2	Elec Low Tom 2	808 Low Tom 2		Timpani F
	42	Closed Hi — hat [EXC1]				808 CHH [EXC1]		Timpani F#
	43	Low Tom 1	Room Low Tom 1	Room Low Tom 1	Elec Low Tom 1	808 Low Tom 1		Timpani G
	44	Pedal Hi — hat [EXC1]				808 CHH [EXC1]		Timpani G#
	45	Mid Tom 2	Room Mid Tom 2	Room Mid Tom 2	Elec Mid Tom 2	808 Mid Tom 2		Timpani A
	46	Open Hi — hat [EXC1]				808 OHH [EXC1]		Timpani A#
	47	Mid Tom 1	Room Mid Tom 1	Room Mid Tom 1	Elec Mid Tom 1	808 Mid Tom 1		Timpani B
C3	48	High Tom 2	Room Hi Tom 2	Room Hi Tom 2	Elec Hi Tom 2	808 Hi Tom 2		Timpani c
	49	Crash Cymbal 1				808 Cymbal		Timpani c#
	50	High Tom 1	Room Hi Tom 1	Room Hi 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 Cymbal 2
	58	Vibra — slap						
	59	Ride Cymbal 2						Concert Cymbal 1
C4	60	High Bongo						
	61	Low Bongo						
	62	Mute High Conga				808 High 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]						
C5	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						
C6	84							
	85	Castanets						
	86	Mute Surdo [EXC6]						
	87	Open Surdo [EXC6]						
	88			-----				Applause ★

PC # : Program number (drum set number)

★ : Tones which are created by using two voices. (All other tones are created by one voice.)

Blank : Same as the percussion sound of "STANDARD"

------ : No sound

[EXC] : Percussion sound of the same number will not be heard at the same time.

● SFX set (Program number 57)

	Note number	PC#57:SFX Set	
	39	High Q	
	40	Slap	
	41	Scratch Push	
	42	Scratch Pull	
	43	Sticks	
	44	Square Click	
	45	Metronome Click	
	46	Metronome Bell	
	47	Guitar sliding finger	
C3	48	Guitar cutting noise (down)	
	49	Guitar cutting noise (up)	
	50	String slap of double bass	
	51	Fl. Key Click	
	52		
	53	Screaming	
	54	Punch	
	55	Heart Beat	
	56	Footsteps1	
	57	Footsteps2	
	58	Applause	★
	59	Door Creaking	
C4	60	Door	
	61	Scratch	
	62		★
	63	Car-Engine	
	64	Car-Stop	
	65	Car-Pass	
	66	Car-Crash	★
	67	Siren	
	68	Train	
	69	Jetplane	★
	70	Helicopter	
	71	Starship	★
C5	72	Gun Shot	
	73	Machine Gun	
	74	Lasergun	
	75	Explosion	★
	76	Dog	
	77	Horse-Gallop	
	78	Birds	★
	79	Rain	★
	80	Thunder	
	81	Wind	
	82	Seashore	
	83		★
C6	84	Bubble	★

★ : Tones which are created by using two voices.
(All other tones are created by one voice.)

------ : No sound

[EXC] : Percussion sounds of the same number cannot be heard at the same time.

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 version1.0).

#Manufacturer-ID: 41H

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

#Device-ID: DEV

The Device-ID contains a unique value that identifies the individual device in the multiple implementation of 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 multiple basic channels.

#Model-ID: MDL

The Model-ID contains a value that uniquely 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 contents will vary with the Model-ID and Command-ID.

2. Address-mapped Data Transfer

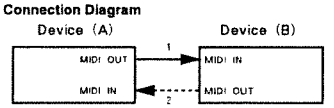
Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory-resident records--waveform and tone data, switch status, and parameters, for example--to specific locations in a machine-dependent address space, thereby allowing access 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 for the transfer of a small amount of data. It sends out an exclusive message completely independent of a receiving device status.

Connection Diagram

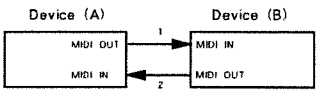


Connection at point 2 is essential for "Request data" procedures. (See Section 3.)

#Handshake-transfer procedure (This device does not cover 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 two 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 all the way until it stops and is used when the messages are so short that answerbacks need not be checked.
For long messages, however, the receiving device must acquire each message in time with the transfer sequence, which inserts intervals of at least 20 milliseconds in between.

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 will send out nothing.

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 least significant 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 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 the devices that support a "soft-through" mechanism. 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.

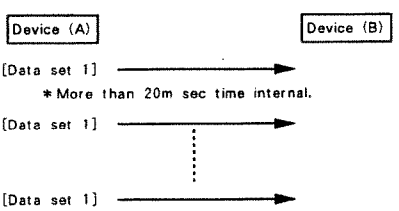
Byte	Description
F0H	Exclusive
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
12H	Command ID
aaH	Address MSB
:	:
	LSB
ddH	Data
:	:
sum	Check sum
F7H	End of exclusive

* 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 least significant 7 bits are zero when values for an address, size, and that checksum are summed.

#Example of Message Transactions

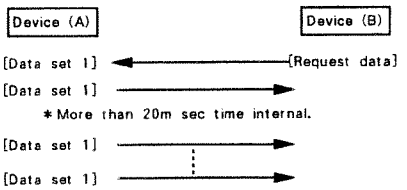
● **Device A sending data to Device B**

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. RECOGNIZED RECEIVE DATA(Sequencer section)

1.1 Messages stored in RECORD mode

When the MINUS ONE is set to ON, MIDI channel number of the message from MIDI IN 1/2 is converted to that of the selected part.

■Channel Voice Messages

● Note off

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

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
kk = Note number : 00H – 7FH (0 – 127)
vv = Velocity : 00H – 7FH (0 – 127)

● Note on

Status	Second	Third
9nH	kkH	vvH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
kk = Note number : 00H – 7FH (0 – 127)
vv = Velocity : 01H – 7FH (1 – 127)

● Polyphonic key pressure(Polyphonic Aftertouch)

Status	Second	Third
AnH	kkH	vvH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
kk = Note number : 00H – 7FH (0 – 127)
vv = Value : 00H – 7FH (0 – 127)

● Control change

Status	Second	Third
BnH	kkH	vvH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
kk = Control number : 00H – 78H (0 – 120)
vv = Value : 00H – 7FH (0 – 127)

● Program change

Status	Second
CnH	ppH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
pp = Program number : 00H – 7FH (0 – 127)

● Channel pressure(Channel Aftertouch)

Status	Second
DnH	vvH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
vv = Value : 00H – 7FH (0 – 127)

● Pitch bend change

Status	Second	Third
EnH	llH	mmH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
mm,ll = Value : 00H,00H – 7FH,7FH (–8192 – +8191)

■Channel Mode Messages

When the MINUS ONE is set to ON, MIDI channel number of the message from MIDI IN 1/2 is converted to that of the selected part.

● Reset All Controllers

Status	Second	Third
BnH	79H	00H

n = MIDI channel number : 0H – FH (ch.1 – ch.16)

● Local ON/OFF

Status	Second	Third
BnH	7AH	00H

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
vv = Value : 00H – 7FH (0 – 127)

● MONO

Status	Second	Third
BnH	7EH	mmH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
mm = Mono number : 00H – 10H (0 – 16)

* Recognizes only ALL Notes Off.

● POLY

Status	Second	Third
BnH	7FH	00H

n = MIDI channel number : 0H – FH (ch.1 – ch.16)

* Recognizes only ALL Notes Off.

■System Exclusive Messages

Status	data
F0H	iiH,ddH.....eeH
F7H	

F0H : System exclusive
ii = ID number : 00H – 7FH (0 – 127)
dd.....ee = data : 00H – 7FH (0 – 127)
F7H : EOX (End of Exclusive/System common)

■System Common Messages

● Tune request

Status
F6H

1.2 Messages not stored in RECORD mode

■Channel mode messages

When the MINUS ONE is set to ON, MIDI channel number of the message from MIDI IN 1/2 is converted to that of the selected part.

● All Notes Off

Status	Second	Third
BnH	7BH	00H

n = MIDI channel number : 0H – FH (ch.1 – ch.16)

*When SD-35 receives this message, it produces and stores Note off messages for notes still on.

● OMNI OFF

Status	Second	Third
BnH	7CH	00H

n = MIDI channel number : 0H – FH (ch.1 – ch.16)

* Recognizes only ALL Notes Off.

● OMNI ON

Status	Second	Third
BnH	7DH	00H

n = MIDI channel number : 0H – FH (ch.1 – ch.16)

* Recognizes only ALL Notes Off.

1.3 Recognized Sync Messages

Recognized when Clock Select (in the System Function) is set to MIDI1, MIDI2, or AUTO. If Clock Select is set to AUTO, and no system realtime messages (ie., start or continue commands) are received from an external device, pressing the SD-35's PLAY button will allow the unit to function as a Master (as if Clock Select was set to INTERNAL).
If, however, the SD-35 receives a Start or Continue command at either MIDI IN 1 or MIDI IN 2, it will function as a Slave device (responding to the incoming timing clocks).

■ System Common Messages

● Song Position Pointer

Status	Second	Third
F2H	mmH	llH

mm,ll = Value : 00H, 00H – 7FH, 7FH (0 – 16383)

* Recognized when SD-35 is in STOP or PAUSE mode.
* When the SD-35 receives a Song Position message, it will require a few seconds to locate the specified song position. Therefore, please wait a few seconds before sending a Continue message (by pressing PAUSE or PLAY).

● Song select

Status	Second
F3H	ssH

ss = Value : 00H – 62H (0 – 98)

* Recognized when SD-35 is in STOP or PAUSE mode.

■ System Realtime Messages

● Timing clock

Status
F8H

● Start

Status
FAH

* Recognized when SD-35 is in STOP or PAUSE mode.

● Continue

Status
FBH

* Recognized when SD-35 is in STOP or PAUSE mode.
* When Auto Rewind in System function is ON, playback will begin from the beginning of the song.

● Stop

Status
FCH

* Recognized when SD-35 is in PLAY or RECORD mode.
* When Auto Rewind in System function is ON, the playback will stop. Song position automatically resets to the beginning of the song.

1.4 Recognized messages from remote controller

Recognized when Clock select is set to REMOTE.

■ System Common Messages

● Song position pointer

Status	Second	Third
F2H	mmH	llH

mm,ll = Value : 00H, 00H – 7FH, 7FH (0 – 16383)

* Recognized when SD-35 is in STOP or PAUSE mode.
* When the SD-35 receives a Song Position message, it will require a few seconds to locate the specified song position. Therefore, please wait a few seconds before sending a Continue message (by pressing PAUSE or PLAY).

● Song select

Status	Second
F3H	ssH

ss = Value : 00H – 62H (0 – 98)

* Recognized when SD-35 is in STOP or PAUSE mode.

■ System Realtime Messages

● Start

Status
FAH

* Recognized when SD-35 is in STOP or PAUSE mode.

● Continue

Status
FBH

* Recognized when SD-35 is in STOP or PAUSE mode.
* When Auto Rewind in System function is ON, playback will begin from the beginning of the song.

● Stop

Status
FCH

* Recognized when SD-35 is in PLAY or RECORD mode.
* When Auto Rewind in System function is ON, the playback will stop. Song position automatically resets to the beginning of the song.

1.5 Messages received for detecting trouble in MIDI connection

■ System Realtime Message

● Active sensing

Status
FEH

* Active sensing messages, monitor the integrity of MIDI connections.
After the first Active sensing message has been received, the SD-35 expects to continue receiving these messages within 300 msec intervals. If the interval between messages exceeds 300 msec, the SD-35 will judge that there is a problem in the MIDI path (eg., a disconnected cable) and will transmit a Note Off message for all notes currently on. If the problem occurs while recoding, the Note Off messages will be recorded.
In the event of such an occurence, monitoring of incoming messages will cease.

2.TRANSMITTED DATA(Sequencer section)

2.1 Transmitted messages in playback mode

The stored messages are transmitted when song data is played back.
Transmitted when MIDI OUT select switch is set to OUT1.
When MIMUS ONE is set to ON, the controller value of a specified channel returns to the default value.

controller	value
Pitch bend change	± 0 (center)
Hold1	0 (off)
Soft	0 (off)
Channel pressure	0 (off)
Modulation	0 (off)
Expression	127 (maximum)

When MINUS ONE is set to ON or MUTE is set to ON, the part that is selected do not transmit NOTE ON/OFF.

When SOLO is set to ON, except the part that is selected do not transmit NOTE ON/OFF.

2.2 Transmitted messages which are received

In System function, when THRU (Soft THRU) is set to ALL, MIDI1 or MIDI2, transmits received message (except All Note Off : Channel Mode message).

■System Common Messages

● Song Position Pointer

Status	Second	Third
F2H	mmH	llH

mm,ll = Value : 00H, 00H – 7FH, 7FH (0 – 16383)

*Transmitted when Clock Select is MIDI1 or MIDI2, and Clock Out is ON in System function.

● Song select

Status	Second
F3H	ssH

ss = Value : 00H – 7FH (0 – 128)

*Transmitted when Clock Select is MIDI1 or MIDI2, and Clock Out is ON in System function.

■System Realtime Messages

● Timing clock

Status
F8H

*Transmitted when Clock Select is MIDI1, MIDI2 or AUTO (synchronize to other devices), and Clock Out is ON in System function.

● Start

Status
FAH

*Transmitted when Clock Select is MIDI1, MIDI2 or AUTO, and Clock Out is ON in System function.

● Continue

Status
FBH

*Transmitted when Clock Select is MIDI1, MIDI2 or AUTO, and Clock Out is ON in System function.

● Stop

Status
FCH

*Transmitted when Clock Select is MIDI1, MIDI2 or AUTO (synchronize to other devices), and Clock Out is ON in System function.

2.3 Created message

■Channel Mode Messages

● All Notes off

Status	Second	Third
BnH	7BH	00H

n = MIDI channel number : 0H – FH (ch.1 – ch.16)

*Transmitted when all notes are turned off in a specific channel and all note off transmit switch is set to ON.

● OMNI OFF

Status	Second	Third
BnH	7CH	vvH

vv = Value : 00H – 7FH (0 – 127)
n = MIDI channel number : 0H – FH (ch.1 – ch.16)

*When SD – 35 is turned on, these messages are transmitted on all channels (1 – 16).

● POLY

Status	Second	Third
BnH	7FH	vvH

vv = Value : 00H – 7FH (0 – 127)
n = MIDI channel number : 0H – FH (ch.1 – ch.16)

*When SD – 35 is turnd on, these messages are transmitted on all channels (1 – 16).

■System Realtime Message

● Active sensing

Status
FEH

* Transmitted when Active Sensing in System function is ON.

■System Exclusive Message

Status	data
F0H	iiH,ddH,.....eeH
F7H	

F0H : System exclusive
ii = ID number : 00H – 7FH (0 – 127)
dd.....ee = data : 00H – 7FH (0 – 127)
F7H : EOX (End of Exclusive/System common)

2.4 Created messages for sync

■System Common Messages

● Song position pointer

Status	Second	Third
F2H	mmH	llH

mm,ll = Value : 00H, 00H – 7FH, 7FH 0 – 16383

*Transmitted when Clock Select is INTERNAL, REMOTE or AUTO (as INTERNAL), and Clock Out is ON in System function.

● Song select

Status	Second
F3H	ssH

ss = Value : 00H – 62H (0 – 98)

*Transmitted when Clock Select is INTERNAL, REMOTE or AUTO (as INTERNAL), and Clock Out is ON in System function.

■ System Realtime Messages

● Timing clock

Status
F8H

*Transmitted when Clock Select is INTERNAL, REMOTE or AUTO (as INTERNAL), and Clock Out is ON in System function.

● Start

Status
FAH

*Transmitted when Clock Select is INTERNAL, REMOTE or AUTO (as INTERNAL), and Clock Out is ON in System function.

● Continue

Status
FBH

*Transmitted when Clock Select is INTERNAL, REMOTE or AUTO (as INTERNAL), and Clock Out is ON in System function.

● Stop

Status
FCH

*Transmitted when Clock Select is INTERNAL, REMOTE or AUTO (as INTERNAL), and Clock Out is ON in System function.

3.Receive data(Sound modele section)

■ Channel Voice Messages

● Note off

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

n = MIDI channel number : 0H - FH (ch.1 - ch.16)
kk = Note number : 00H - 7FH (0 - 127)
vv = Velocity : 00H - 7FH (0 - 127)

* Ignored when "Rx.Note message = OFF".
* In the drum part, recognized when "Rx.Note off = ON" for each instrument.
* Velocity is ignored.

● Note on

Status	Second	Third
9nH	kkH	vvH

n = MIDI channel number : 0H - FH (ch.1 - ch.16)
kk = Note number : 00H - 7FH (0 - 127)
vv = Velocity : 01H - 7FH (1 - 127)

* Ignored when "Rx.Note message = OFF".
* In the drum part, ignored when "Rx.Note on = OFF" for each instrument.

● Polyphonic key pressure

Status	Second	Third
AnH	kkH	vvH

n = MIDI channel number : 0H - FH (ch.1 - ch.16)
kk = Note number : 00H - 7FH (0 - 127)
vv = Value : 00H - 7FH (0 - 127)

* Ignored by models which don't have the polyphonic key pressure function.
* Ignored when "Rx.Polyphonic key pressure = OFF".
*Effect to the parameter set on "PAf controller function".
The default setting has no effect.

● Control change

*Ignore all control change messages except channel mode messages when "Rx. Control change = OFF".
*The values set by Control change messages won't reset by receiving new Program change messages.

○ Bank select

Status	Second	Third
BnH	00H	mmH
BnH	20H	llH

n = MIDI channel number : 0H - FH (ch.1 - ch.16)
mm,ll = Bank number : 00H,00H - 7FH,7FH (bank1 - bank16384)

*Ignored when "Rx.Bank Select = OFF". "Rx.Bank Select" is set to OFF by "Turn General MIDI On", and set to ON by "GS RESET".(Power - on default value is ON.)
* The LSB 7 - bit is ignored (value = 00).
*"Bank select" is suspended until receiving "Program change".
To select a timbre of another bank, you have to send Bank select (mm,ll) before sending the Program change.
*The "Variation number" of SD - 35 is defined as the decimal expression of the value of MSB (Control change number 00H) of the Bank select.

○ Modulation

Status	Second	Third
BnH	01H	vvH

n = MIDI channel number : 0H - FH (ch.1 - ch.16)
vv = Modulation depth : 00H - 7FH (0 - 127)

* Ignored when "Rx.Modulation = OFF".
*Effect to the parameter set on "MOD controller function".
The default setting is pitch modulation.

○ Portamento time

Status	Second	Third
BnH	05H	vvH

n = MIDI channel number : 0H - FH (ch.1 - ch.16)
vv = Portamento time : 00H - 7FH (0 - 127)

*The Portament time value changes the rate of pitch change at portamento on or when using portamento control messages.

○ Data entry

Status	Second	Third
BnH	06H	mmH
BnH	26H	llH

n = MIDI channel number : 0H - FH (ch.1 - ch.16)
mm,ll = Value of the parameter specified with RPN or NRPN

○ Volume

Status	Second	Third
BnH	07H	vvH

n = MIDI channel number : 0H - FH (ch.1 - ch.16)
vv = Volume : 00H - 7FH (0 - 127)

* Ignored when "Rx.Volume = OFF".

○ Panpot

Status	Second	Third
BnH	0AH	vvH

n = MIDI channel number : 0H - FH (ch.1 - ch.16)
vv = Panpot : 00H - 40H - 7FH (Left - Center - Right)

* Resolution of panpot is approx. 7 - bit (127 steps).
*Within the Drum Part, the panpot provides overall control of instrument placement.
This control is in addition to individual settings made for each drum instrument (ie. the effects are cumulative).
* Ignored when "Rx.Panpot = OFF".

○ Expression

Status	Second	Third
BnH	0BH	vvH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
vv = Expression : 00H – 7FH (0 – 127)

* Expression messages control the amplitude level of the specified channel (part). Volume messages also control the level, however they work individually.
* Ignored when "Rx.Expression = OFF".

○ Hold1

Status	Second	Third
BnH	40H	vvH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
vv = Control Value : 00H – 7FH (0 – 127)

* Ignored when "Rx.Hold1 = OFF".

○ Portamento

Status	Second	Third
BnH	41H	vvH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
vv = Control Value : 00H – 7FH (0 – 127) 0 – 63 = OFF 64 – 127 = ON

* Ignored when "Rx.Portamento = OFF".
* In poly mode, you cannot specify the portamento source pitch.

○ Sostenuto

Status	Second	Third
BnH	42H	vvH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
vv = Control Value : 00H – 7FH (0 – 127)
0 – 63 = OFF 64 – 127 = ON

* Ignored when "Rx.Sostenuto = OFF".

○ Soft

Status	Second	Third
BnH	43H	vvH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
vv = Control Value : 00H – 7FH (0 – 127)

* The resolution is 2 – steps (0 – 63 = OFF, 64 – 127 = ON).
* Ignored when "Rx.Soft = OFF".

○ Portamento Control

Status	Second	Third
BnH	54H	kkH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
kk = source note number for pitch reference : 00H – 7FH (0 – 127)

* When a Note On message is received after a Portamento Control message, the voice's pitch will glide from the pitch specified by the source note number of the Portamento Control message at the rate set by the portamento time controller (ignoring portament on/off.)
If there is a currently sounding voice whose note number is coincident with the source note number, the voice's pitch will glide to the new Note On's pitch according to the portamento time without re – triggering. Then no new voice should be assigned.

Example 1.

On MIDI	Description	Result
90 3C 40	Note on C4	C4 on
B0 54 3C	Portamento Control from C4	no change
90 40 40	Note on E4	Re-tuning from C4 to E4
80 3C 40	Note off C4	no change
80 40 40	Note off E4	E4 off

Example 2.

On MIDI	Description	Result
B0 54 3C	Portamento Control from C4	no change
90 40 40	Note on E4	E4 on with glide from C4
80 40 40	Note off E4	E4 off

○ Effect1 depth(Reverb send level)

Status	Second	Third
BnH	5BH	vvH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
vv = Reverb send level : 00H – 7FH (0 – 127)

* Effect1 depth messages control the Send Level of the specified channel (part) to the internal Reverb unit.

○ Effect3 depth(Chorus send level)

Status	Second	Third
BnH	5DH	vvH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
vv = Chorus send level : 00H – 7FH (0 – 127)

* Effect3 depth messages control the Send Level of the specified channel (part) to the internal Chorus unit.

○ NRPN MSB/LSB

Status	Second	Third
BnH	63H	mmH
BnH	62H	llH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
mm = MSB of the specified parameter by NRPN
ll = LSB of the specified parameter by NRPN

* Recognized when "Rx.NRPN = ON". "Rx.RPN" is set to OFF by power – on reset or receiving "Turn General MIDI System On". and it is set to ON by "GS RESET".
* The values set by NRPN won't reset by receiving new Program Change messages.

** NRPN **
An NRPN (Non Registered Parameter Number) is an expanded control change message.
Each function of an NRPN is described by the individual manufacturer.

Set NRPN MSB/LSB before sending data entry message. After the data, it is recommended to send RPN reset (MSB/LSB = 7FH/7FH) to prevent from the senseless data set. e.g. If you want to set several NRPN (or RPN) parameters one by one and an error is occure while sending 2nd NRPN, the 2nd value will be set to the 1st RPN parameter by mistake! Because once a NRPN was set, every Data entry messages sent in the MIDI channel is recognized as a new data which should re – write until re – set NRPN or RPN.

You can change the value of several sound parameters.
There are relative change (from preset) parameters and absolute change parameters.
The relative change parameters may have limits on the effect (depending upon the timbres or models) even if the value is between 0EH – 72H.

The NRPN parameters which SD – 35 recognize are as follows :

NRPN MSB	NRPN LSB	Data entry MSB	Description
01H	08H	mmH	Vibrate rate relative change on specified channel mm: 0EH – 40H – 72H (–50 – 0 – +50)
01H	09H	mmH	Vibrate depth relative change on specified channel mm: 0EH – 40H – 72H (–50 – 0 – +50)
01H	0AH	mmH	Vibrate delay relative change on specified channel mm: 0EH – 40H – 72H (–50 – 0 – +50)
01H	20H	mmH	TVF cutoff frequency relative change on specified channel mm: 0EH – 40H – 72H (–50 – 0 – +50)

01H 21H mmH TVF resonance
relative change on specified channel
mm: 0EH - 40H - 72H (-50 - 0 - +50)

01H 63H mmH TVF&TVA Env. Attack time
relative change on specified channel
mm: 0EH - 40H - 72H (-50 - 0 - +50)

01H 64H mmH TVF&TVA Env. Decay time
relative change on specified channel
mm: 0EH - 40H - 72H (-50 - 0 - +50)

01H 66H mmH TVF&TVA Env. Release time
relative change on specified channel
mm: 0EH - 40H - 72H (-50 - 0 - +50)

18H rrH mmH Pitch coarse of drum instrument
relative change on specified drum instrument
rr: key number of drum instrument
mm: 00H - 40H - 7FH (-64 - 0 - +63 semitone)

1AH rrH mmH TVA level of drum instrument
absolute change on specified drum instrument
rr: key number of drum instrument
mm: 00H - 7FH (zero - maximum)

1CH rrH mmH Panpot of drum instrument
absolute change on specified drum instrument
rr: key number of drum instrument
mm: 00H, 01H - 40H - 7FH (Random , Left-Center-Right)

1DH rrH mmH Reverb send level of drum instrument
absolute change on specified drum instrument
rr: key number of drum instrument
mm: 00H - 7FH (zero - maximum)

1EH rrH mmH Chorus send level of drum instrument
absolute change on specified drum instrument
rr: key number of drum instrument
mm: 00H - 7FH (zero - maximum)

*Data entry LSB (11H) is ignored.
*The relative change means that the parameter value (e.g. -50 - 0 - +50) will be added to the preset value.
*The absolute change means that the parameter value will be replaced by the received value.

○ RPN MSB/LSB

Status	Second	Third
BnH	65H	mmH
BnH	64H	llH

n = MIDI channel number : 0H - FH (ch.1 - ch.16)
mm = MSB of the specified parameter by RPN
ll = MSB of the specified parameter by RPN

*Ignored when "Rx.RPN = OFF".
*The values set by an RPN won't reset by receiving new Program Change messages.

RPN
An RPN (Registered Parameter Number) is an expanded control change message. Each function of an RPN is described by MIDI.

Set RPN MSB/LSB before sending data entry message. After sending the data, it is recommended to send RPN reset (MSB/LSB=7FH/7FH). Refer explanation in NRPN for the reason.

The NRPN parameters which SD-35 recognize are as follows :

RPN MSB	RPN LSB	Data entry MSB	Description
00H	00H	mmH	Pitch bend sensitivity mm: 00H - 18H (0 - 24 semitone) Default value = 02H (two semitones) ll: ignored (value=00H) (Up to 2 octaves)
00H	01H	mmH llH	Master fine tuning mm, ll: 00H, 00H - 40 00H - 7F 7FH (-8192 x 100/8192 - 0 - +8191 x 100/8192 cent)
00H	02H	mmH	Master coarse tuning mm: 28H - 40H - 58H (-24 - 0 - +24 semitone)
			ll: ignored (value=00H)
7FH	7FH	---	RPN reset Return to no specified parameter of RPN and NRPN. Current setting value is not changed. mm, ll: ignored

● Program change

Status	Second
CnH	ppH

n = MIDI channel number : 0H - FH (ch.1 - ch.16)
pp = Program number : 00H - 7FH (prog.1 - prog.128)

*The voices already on before receiving a program change message aren't affected.
The tone will change to the new voice after the program change is received.

*Ignored when "Rx.Program change = OFF".
*In the drum part, some models may not receive Program change messages when the Bank is 129 - 16384 (the value of the control change number 0 is not 00H).

● Channel pressure

Status	Second
DnH	vvH

n = MIDI channel number : 0H - FH (ch.1 - ch.16)
vv = Value : 00H - 7FH (0 - 127)

*Ignored when "Rx.Channel pressure = OFF".
*Effect to the parameter set on "MOD controller function".
The default setting has no effect.

● Pitch bend change

Status	Second	Third
EnH	llH	mmH

n = MIDI channel number : 0H - FH (ch.1 - ch.16)
mm,ll = Value : 00 00H - 40 00H - 7F 7FH
(-8192 - 0 - +8191)

*Ignored when "Rx.Pitch bend change = OFF"
*Effect to the parameter set on "MOD controller function".
The default setting is pitch bend.

■ Channel Mode Messages

● All sounds off

Status	Second	Third
BnH	78H	00H

n = MIDI channel number : 0H - FH (ch.1 - ch.16)

*When "All sounds off" is received, all sounds on a specified channel turn off immediately.
However, the state of channel messages does not change.

● Reset all controllers

Status	Second	Third
BnH	79H	00H

n = MIDI channel number : 0H - FH (ch.1 - ch.16)

*When "reset all controllers" is received, the controller value of a specified channel returns to the default value.

Controller	Value
Pitch bend change	±0 (Center)
Polyphonic key pressure	0 (off)
Channel pressure	0 (off)
Modulation	0 (off)
Expression	127 (maximum)
Hold1	0 (off)
Portamento	0 (off)
Sostenuto	0 (off)
Soft	0 (off)
RPN	No specified parameter, value is not changed.
NRPN	No specified parameter, value is not changed.

● All notes off

Status	Second	Third
BnH	7BH	00H

n = MIDI channel number : 0H – FH (ch.1 – ch.16)

*When "All notes off" is received, all notes are turned off in the specified channel. However, sound continues when hold1 or sostenuto is on.

● MONO

Status	Second	Third
BnH	7EH	mmH

n = MIDI channel number : 0H – FH (ch.1 – ch.16)
mm = number of mono : 00H – 10H (0 – 16)

*MONO is recognized as "all sounds off". The specified channel turns to Mode4 (M = 1), even if mm is not equal to 1 (mm is ignored).

● POLY

Status	Second	Third
BnH	7FH	00H

n = MIDI channel number : 0H – FH (ch.1 – ch.16)

*POLY is recognized as "all sounds off". The specified channel turns to Mode3.

■ System Exclusive Message

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

F0H : System exclusive
ii = ID number : The ID number identifies the manufacturer of a MIDI device that triggers an exclusive message. Value 7EH and 7FH are reserved to use as universal messages which are used for extension of the MIDI Standard.
41H : Roland's Manufacturer – ID.
7EH : Universal Non – Realtime Message
7FH : Universal Realtime Message
dd,....ee = data : 00H – 7FH (0 – 127)
F7H : EOX (End of Exclusive/System common)

● System Exclusive Messages of Mode Change

System Exclusive Messages of Mode Change are the messages used to initialize the internal parameters of the devices to the GS default mode or to General MIDI mode, or change mode from GS or General MIDI to another mode.
"GS reset" and "Exit GS mode" use a form of Roland Exclusive Message.
"Turn General MIDI System On" and "Turn General MIDI System Off" use a form of Universal Non – realtime Message.

○ GS reset

Status	Data Byte	Status
F0H	41H, 10H, 42H, 12H, 40H, 00H, 7FH, 00H, 41H	F7H

Byte	Description	
F0H	Exclusive status	
41H	ID number	(Roland)
10H	Device ID	(Device ID number = 17)
42H	Model ID	(GS)
12H	Command ID	(DT1)
40H	Address MSB	
00H	:	
7FH	Address LSB	
00H	Data	(GS reset)
41H	Checksum	
F7H	EOX	(End of exclusive)

*Upon receiving this message, all the internal parameters are set to the default settings of the GS Format (except Master tune). Rx.NRPN SW and Rx.Bank select SW will turn ON by this message.
* It takes about 50ms to execute this message.

○ Turn General MIDI System On

Status	Data Byte	Status
F0H	7EH, 7FH, 09H, 01H	F7H

Byte	Description	
F0H	Exclusive status	
7EH	ID number	(Universal non – real time message)
7FH	ID of target device	(Broadcast)
09H	sub – ID # 1	(General MIDI message)
01H	sub – ID # 2	(General MIDI On)
F7H	EOX	(End of exclusive)

*Upon receiving this message, all the internal parameters are set to the default settings of General MIDI Level 1 (except Master tune). Rx.NRPN SW and Rx. Bank select SW will turn OFF by this message.
* It takes about 50ms to execute this message.
*Some of the earliest GS devices (which don't have GM logo on the panel) may not recognize this message.

● Universal Realtime System Exclusive Message

○ Master Volume

Status	Data Byte	Status
F0H	7FH, 7FH, 04H, 01H, llH, mmH	F7H

Byte	Description	
F0H	Exclusive status	
7FH	ID number	(Universal Realtime message)
7FH	ID of target device	(Broadcast)
04H	sub – ID # 1	(Device Control Message)
02H	sub – ID # 2	(Master Volume)
mm,ll	Master Volume	00H,00H – 7FH,7FH (0 – 16383)
F7H	EOX	(End of exclusive)

* The LSB (llH) is ignored (value = 0).

● Data Transfer

SD – 35 source can transmit and receive the various parameters using System Exclusive messages of the following data format.

SD – 35 Common Exclusive messages use Model ID = 42H and Device ID = 17 (10H).

Each model may have a unique Exclusive communication function which has different Model IDs (in addition to the GS Common Exclusive messages). Refer to the MIDI implementation of the device.

○ Request data 1 RQ1

This message is sent out to request the remote device to send back the required data.
Models which don't have a Transmit function ignore the exclusive requests.
It contains data for the address and size that specify designation and length, respectively, of the data.
On receiving an RQ1 message, the remote device checks its memory for the data address and size that satisfy the request. If it find them and is ready for communication, the device will transmit a "Data set 1 (DT1)" message, which contains the requested data. Otherwise, the device will not send anything.

Status	Data Byte	Status
F0H	41H, iiH, 42H, 11H, aaH, bbH, ccH, ssH, ttH, uuH, sum	F7H

Byte	Description	
F0H	Exclusive status	
41H	Manufacturer's ID	(Roland)
iiH	Device ID	default Device ID number = 17 (10H)
42H	Model ID	(GS)
11H	Command ID	(RQ1)
aaH	Address MSB	
bbH	:	
ccH	Address LSB	
ssH	Size MSB	
ttH	:	
uuH	Size LSB	
sum	Checksum	
F7H	EOX	(End of exclusive)

* SD – 35 only recognize the RQ1 messages whose address and size match the Parameter Address Map (Section 5).

○ **Data set 1** **DT1**

This message corresponds to the actual data transfer process.
It contains an address which indicates the address of the top byte of the actual data and the actual data.
A DT1 message can convey the starting address of one or more (up to 128 bytes) data as well as a series of data formatted in an address-dependent order. Therefore, it contains starting addresses
which indicate the address of the top byte of the data and the actual data.
On receiving a DT1 message, the device writes the data to internal memory according to the address.

Status	Data Byte		Status
F0H	41H, iiH, 42H, 12H, aaH, bbH, ccH, ddH, ... eeH, sum		F7H

Byte	Description	
F0H	Exclusive status	
41H	Manufacturer's ID	(Roland)
iiH	Device ID	default Device ID number = 17 (10H)
42H	Model ID	(GS)
12H	Command ID	(DT1)
aaH	Address MSB	
bbH	Address	
ccH	Address LSB	
ddH	Data	
:	:	
eeH	Data	
sum	Checksum	
F7H	EOX	(End of exclusive)

*SD-35 only recognize the DT1 messages whose address and size match the Parameter Address Map (Section 5).
*To send several long DT1 messages at a time, insert intervals of at least 40ms. in between each packet.

4.Transmit data(Sound module section)

■ System Realtime Message

● Active sensing

Status
FEH

* Transmits at about 250 milli-second intervals.

■ System Exclusive Message

● Data Transfer

SD-35 transmits "Data set 1 (DT1)" message when receiving a proper "Request Data 1 (RQ1)" message. Refer to section 5 (System Exclusive Message)

○ **Data set 1** **DT1 (12H)**

Status	Data Byte		Status
F0H	41H, iiH, 42H, 12H, aaH, bbH, ccH, ddH, ... eeH, sum		F7H

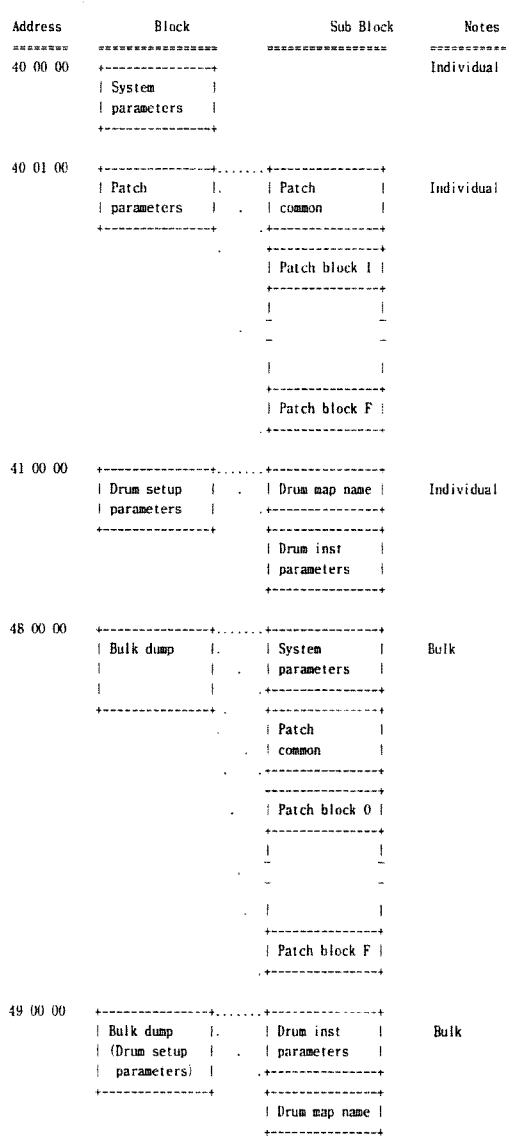
Byte	Description	
F0H	Exclusive status	
41H	Manufacturer's ID	(Roland)
iiH	Device ID	default Device ID number = 17 (10H)
42H	Model ID	(GS)
12H	Command ID	(DT1)
aaH	Address MSB	
bbH	Address	
ccH	Address LSB	
ddH	Data	
:	:	
eeH	Data	
sum	Checksum	
F7H	EOX	(End of exclusive)

5.Parameter address map (Model ID=42H)

This map indicates address, size, Data (range), Parameter, Description, and Default Value of parameters which can be transfered using "Request data 1 (DT1)" and "Data set 1 (DT1)".
All the numbers of address, size, Data, and Default Value are indicated in 7-bit Hexadecimal-form.

■ Address Block map

Coarse address map of the Exclusive Communication is shown below ;



There are two types of SD-35 Exclusive message. One is an individual parameter communication, the other is a bulk dump communication.

■ Individual parameter

You can use individual parameter communication to send or receive an individual parameter value.
One packet of System Exclusive messages "F0 ..... F7" can only have one parameter (which may contain several bytes).
You cannot use any address having " # " for the top address in a System Exclusive message.

● System Parameters

Address(H)	SIZE(H)	Data(H)	Parameter	Description	Default Value (H)
40 00 00 40 00 01# 40 00 02# 40 00 03#	00 00 04	0018 - 07E8	MASTER TUNE	-100.0 - +100.0 [cent] Use nibblized data.	00 04 00 00
40 00 04	00 00 01	00 - 7F	MASTER VOLUME	0 - 127	7F
40 00 05	00 00 01	28 - 58	MASTER KEY-SHIFT	-24 - +24 semitones	40
40 00 06	00 00 01	01 - 7F	MASTER PAN		40
40 00 7F	00 00 01	00, 7F	MODE SET (Rx Only)		00 = GS Reset

Refer to "System Exclusive Messages of Mode Change"

● Patch Parameters

SD-35 have 16 parts. The parameters of each part are called PATCH PARAMETERS.
To send or request a PATCH PARAMETER, use not the part number (which is usually same as the MIDI channel number) but the BLOCK NUMBER in the message.

* x...BLOCK NUMBER (0 - F).

Part 1	(default MIDIch = 1)	x = 1
Part 2	(default MIDIch = 2)	x = 2
:	:	:
Part 9	(default MIDIch = 9)	x = 9
Part10	(default MIDIch = 10)	x = 0
Part11	(default MIDIch = 11)	x = A
Part12	(default MIDIch = 12)	x = B
:	:	:
Part16	(default MIDIch = 16)	x = F

* n...MIDI channel number (0 - F) of the BLOCK.

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)
40 01 10	00 00 10	00 - 18	VOICE RESERVE	Part 10(Drum Part)	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 :#				:	
40 01 1F#				Part 16	00

The total number of voices in the voice reserve function must be equal or less than 28.
The default value may be different by some models.

40 01 30	00 00 01	00 - 07	REVERB MACRO	00: Room 1 01: Room 2 02: Room 3 03: Hall 1 04: Hall 2 05: Plate 06: Delay 07: Panning Delay	04
40 01 31	00 00 01	00 - 07	REVERB CHARACTER		04
40 01 32	00 00 01	00 - 07	REVERB PRE-LPF		00
40 01 33	00 00 01	00 - 7F	REVERB LEVEL		40
40 01 34	00 00 01	00 - 7F	REVERB TIME		40
40 01 35	00 00 01	00 - 7F	REVERB DELAY FEEDBACK		00
40 01 36	00 00 01	00 - 7F	REVERB SEND LEVEL TO CHORUS		00

REVERB MACRO is a parameter used to select the preset type of the effect.
When set to another REVERB MACRO, all other reverb parameters will reset to the preset value.
REVERB CHARACTER is a parameter used to select the algorithm of the signal processing.
All the parameter values are absolute changes and the effect when changing the value may be different from model to model (except for REVERB MACRO).
So, it is recommended to change only REVERB MACRO (and TIME/FEEDBACK for Delay effect(Macro 06 or 07)) to maintain the compatibility.

40 01 38	00 00 01	00 - 07	CHORUS MACRO	00: Chorus 1 01: Chorus 2 02: Chorus 3 03: Chorus 4 04: Feedback Chorus 05: Flanger 06: Short Delay 07: Short Delay(FB)	02

40 01 39	00 00 01	00 - 07	CHORUS PRE-LPF		00
40 01 3A	00 00 01	00 - 7F	CHORUS LEVEL		40
40 01 3B	00 00 01	00 - 7F	CHORUS FEEDBACK		08
40 01 3C	00 00 01	00 - 7F	CHORUS DELAY		50
40 01 3D	00 00 01	00 - 7F	CHORUS RATE		03
40 01 3E	00 00 01	00 - 7F	CHORUS DEPTH		13
40 01 3F	00 00 01	00 - 7F	CHORUS SEND LEVEL TO REVERB		00

CHORUS MACRO is a parameter used to select the effect preset type.
When set to another CHORUS MACRO, then all other chorus parameters will reset to the preset values.
All the parameter values are absolute changes and the effect when changing the values may differ from model to model (except for CHORUS MACRO).
So, it is recommended to change only CHORUS MACRO to maintain compatibility.

40 1x 00	00 00 02	00 - 7F	TONE NUMBER	CC#00 VALUE	00
40 1x 01#		00 - 7F		P.C. VALUE	00
40 1x 02	00 00 01	00 - 10	Rx. CHANNEL	1 - 16, OFF	same as the Part#
40 1x 03	00 00 01	00 - 01	Rx. PITCH BEND	OFF / ON	01
40 1x 04	00 00 01	00 - 01	Rx. CH PRESSURE(CAf)	OFF / ON	01
40 1x 05	00 00 01	00 - 01	Rx. PROGRAM CHANGE	OFF / ON	01
40 1x 06	00 00 01	00 - 01	Rx. CONTROL CHANGE	OFF / ON	01
40 1x 07	00 00 01	00 - 01	Rx. POLY PRESSURE(PAf)	OFF / ON	01
40 1x 08	00 00 01	00 - 01	Rx. NOTE MESSAGE	OFF / ON	01
40 1x 09	00 00 01	00 - 01	Rx. RPN	OFF / ON	01
40 1x 0A	00 00 01	00 - 01	Rx. NRPN	OFF / ON	00(01*)
40 1x 0B	00 00 01	00 - 01	Rx. MODULATION	OFF / ON	01
40 1x 0C	00 00 01	00 - 01	Rx. VOLUME	OFF / ON	01
40 1x 0D	00 00 01	00 - 01	Rx. PANPOT	OFF / ON	01
40 1x 0E	00 00 01	00 - 01	Rx. EXPRESSION	OFF / ON	01
40 1x 0F	00 00 01	00 - 01	Rx. HOLD1	OFF / ON	01
40 1x 10	00 00 01	00 - 01	Rx. PORTAMENTO	OFF / ON	01
40 1x 11	00 00 01	00 - 01	Rx. SOSTENUTO	OFF / ON	01
40 1x 12	00 00 01	00 - 01	Rx. SOFT	OFF / ON	01
40 1x 13	00 00 01	00 - 01	MONO/POLY MODE	Mono / Poly (=Bn 7E 01 / Bn 7F 00)	01
40 1x 14	00 00 01	00 - 02	ASSIGN MODE	0 = SINGLE 1 =LIMITED-MULTI 2 = FULL-MULTI	00 at x=0 01 at x≠0

ASSIGN MODE is a parameter used to select the voice assign manner when "multiple Note Ons" occur(the same note number on the same channel at the same time).
The best assign modes (SINGLE(0) for Drum part and LIMITED-MULTI(1) for the other parts) are selected automatically, so you need not reset this parameter.

SINGLE(0)
If a new Note On message is received (whose note number is the same as the current sounding voice), then the current sounding voice will be muted and assigned a new voice for the new Note On message. This prevents the use of many voices by multiple Note Ons. You can cut the sounds (like a cymbal mute) any time you want by sending a low velocity multiple Note On.
LIMITED-MULTI(1)
LIMITED-MULTI is a special implementation which is an improvement over FULL-MULTI.
It maintains the 'multiple sound feeling' when receiving new Note On messages whose note number is the same as the current sounding voice. This prevents the use of many voices by multiple Note Ons.
FULL-MULTI(2)
When receive a new Note On message, the voice assigner will always assign a new voice, regardless of the note number. This is useful for the 'multiple sound feeling', but uses up many voices by multiple Note Ons.

40 1x 15	00 00 01	00 - 02	USE FOR RHYTHM PART	0 = OFF 1 = MAP1 2 = MAP2	00 at x≠0 01 at x=0

USE FOR RHYTHM PART is a parameter used to define the part is an ordinaly part (0), a drum part which uses DRUM MAP1(1), or a drum part which uses DRUM MAP2(2).DRUM MAP2(2) is an optional specification for GS, however all current GS models (before June, 1992) support it.
The default is MAP1(1) for Part10 (MIDI CH=10, x=0), and all other parts are set to ordinaly parts (OFF(0)).
Up to two drum sets may be used simultaneously in GS format.
When you must use two individual drum part in your song data, set DRUM2(2) to "USE FOR RHYTHM PART" of Part11 (MIDI CH=11, x=A) and use channnel 11 as a sub-drum set. In this case, MAP1 may be selected additionaly to part10 if the models do not have MAP2, then program change messages or the drum modify messages using NRPN of either channel will effect to both drum parts.(The last message in both channel have the priority).

40 1x 16	00 00 01	28 - 58	PITCH KEY SHIFT	-24 - +24 [semitone]	40
40 1x 17 40 1x 18#	00 00 02	08 - F8	PITCH OFFSET FINE	-12.0 - +12.0 [Hz] Use nibblized data.	08 00
40 1x 19	00 00 01	00 - 7F	PART LEVEL	0 - 127 (=Bn 07 vv)	64
40 1x 1A	00 00 01	00 - 7F	VELOCITY SENSE DEPTH	0 - 127	40
40 1x 1B	00 00 01	00 - 7F	VELOCITY SENSE OFFSET	0 - 127	40
40 1x 1C	00 00 01	00 - 7F	PART PANPOT	Random, -63(LEFT) - +63(RIGHT) (=Bn 0A vv, except random)	40
40 1x 1D	00 00 01	00 - 7F	KEY RANGE LOW	C-1 - G9	00
40 1x 1E	00 00 01	00 - 7F	KEY RANGE HIGH	C-1 - G9	7F
40 1x 1F	00 00 01	00 - 5F	CC1 CONTROLLER NUMBER	0 - 95	10
40 1x 20	00 00 01	00 - 5F	CC2 CONTROLLER NUMBER	0 - 95	11
40 1x 21	00 00 01	00 - 7F	CHORUS SEND LEVEL	0 - 127 (=Bn 5D vv)	00

40 1x 22	00 00 01	00 - 7F	REVERB SEND LEVEL	0 - 127 (=Bn 5B vv)	28
40 1x 23	00 00 01	00 - 01	Rx. Bank Select	OFF / ON	01
40 1x 30	00 00 01	0E - 72	TONE MODIFY 1 Vibrato rate	-50 - +50 (=Bn 63 01 62 08 06 vv)	40
40 1x 31	00 00 01	0E - 72	TONE MODIFY 2 Vibrato depth	-50 - +50 (=Bn 63 01 62 09 06 vv)	40
40 1x 32	00 00 01	0E - 72	TONE MODIFY 3 TVF cutoff freq.	-50 - -50 (=Bn 63 01 62 20 06 vv)	40
40 1x 33	00 00 01	0E - 72	TONE MODIFY 4 TVF resonance	-50 - -50 (=Bn 63 01 62 21 06 vv)	40
40 1x 34	00 00 01	0E - 72	TONE MODIFY 5 TVF&TVA Env. attack	-50 - +50 (=Bn 63 01 62 63 06 vv)	40
40 1x 35	00 00 01	0E - 72	TONE MODIFY 6 TVF&TVA Env. decay	-50 - +50 (=Bn 63 01 62 64 06 vv)	40
40 1x 36	00 00 01	0E - 72	TONE MODIFY 7 TVF&TVA Env. release	-50 - +50 (=Bn 63 01 62 66 06 vv)	40
40 1x 37	00 00 01	0E - 72	TONE MODIFY 8 Vibrato delay(=Bn 63 01 62 0A 06 vv)	-50 - +50	40
40 1x 40	00 00 0C	00 - 7F	SCALE TUNING C	-64 - +63 [cent]	40
40 1x 41#		00 - 7F	SCALE TUNING C#	-64 - +63 [cent]	40
40 1x 42#		00 - 7F	SCALE TUNING D	-64 - +63 [cent]	40
40 1x 43#		00 - 7F	SCALE TUNING D#	-64 - +63 [cent]	40
40 1x 44#		00 - 7F	SCALE TUNING E	-64 - +63 [cent]	40
40 1x 45#		00 - 7F	SCALE TUNING F	-64 - +63 [cent]	40
40 1x 46#		00 - 7F	SCALE TUNING F#	-64 - +63 [cent]	40
40 1x 47#		00 - 7F	SCALE TUNING G	-64 - +63 [cent]	40
40 1x 48#		00 - 7F	SCALE TUNING G#	-64 - +63 [cent]	40
40 1x 49#		00 - 7F	SCALE TUNING A	-64 - +63 [cent]	40
40 1x 4A#		00 - 7F	SCALE TUNING A#	-64 - +63 [cent]	40
40 1x 4B#		00 - 7F	SCALE TUNING B	-64 - +63 [cent]	40
40 2x 00	00 00 01	28 - 58	MOD PITCH CONTROL	-24 - +24 [semitone]	40
40 2x 01	00 00 01	00 - 7F	MOD TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40
40 2x 02	00 00 01	00 - 7F	MOD AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40
40 2x 03	00 00 01	00 - 7F	MOD LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40
40 2x 04	00 00 01	00 - 7F	MOD LFO1 PITCH DEPTH	0 - 600 [cent]	0A
40 2x 05	00 00 01	00 - 7F	MOD LFO1 TVF DEPTH	0 - 2400 [cent]	00
40 2x 06	00 00 01	00 - 7F	MOD LFO1 TVA DEPTH	0 - 100.0 [%]	00
40 2x 07	00 00 01	00 - 7F	MOD LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40
40 2x 08	00 00 01	00 - 7F	MOD LFO2 PITCH DEPTH	0 - 600 [cent]	00
40 2x 09	00 00 01	00 - 7F	MOD LFO2 TVF DEPTH	0 - 2400 [cent]	00
40 2x 0A	00 00 01	00 - 7F	MOD LFO2 TVA DEPTH	0 - 100.0 [%]	00
40 2x 10	00 00 01	40 - 58	BEND PITCH CONTROL	0 - 24 [semitone]	42
40 2x 11	00 00 01	00 - 7F	BEND TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40
40 2x 12	00 00 01	00 - 7F	BEND AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40
40 2x 13	00 00 01	00 - 7F	BEND LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40
40 2x 14	00 00 01	00 - 7F	BEND LFO1 PITCH DEPTH	0 - 600 [cent]	00
40 2x 15	00 00 01	00 - 7F	BEND LFO1 TVF DEPTH	0 - 2400 [cent]	00
40 2x 16	00 00 01	00 - 7F	BEND LFO1 TVA DEPTH	0 - 100.0 [%]	00
40 2x 17	00 00 01	00 - 7F	BEND LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40
40 2x 18	00 00 01	00 - 7F	BEND LFO2 PITCH DEPTH	0 - 600 [cent]	00
40 2x 19	00 00 01	00 - 7F	BEND LFO2 TVF DEPTH	0 - 2400 [cent]	00
40 2x 1A	00 00 01	00 - 7F	BEND LFO2 TVA DEPTH	0 - 100.0 [%]	00
40 2x 20	00 00 01	28 - 58	CAf PITCH CONTROL	-24 - +24 [semitone]	40
40 2x 21	00 00 01	00 - 7F	CAf TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40
40 2x 22	00 00 01	00 - 7F	CAf AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40
40 2x 23	00 00 01	00 - 7F	CAf LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40
40 2x 24	00 00 01	00 - 7F	CAf LFO1 PITCH DEPTH	0 - 600 [cent]	00
40 2x 25	00 00 01	00 - 7F	CAf LFO1 TVF DEPTH	0 - 2400 [cent]	00
40 2x 26	00 00 01	00 - 7F	CAf LFO1 TVA DEPTH	0 - 100.0 [%]	00
40 2x 27	00 00 01	00 - 7F	CAf LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40
40 2x 28	00 00 01	00 - 7F	CAf LFO2 PITCH DEPTH	0 - 600 [cent]	00
40 2x 29	00 00 01	00 - 7F	CAf LFO2 TVF DEPTH	0 - 2400 [cent]	00
40 2x 2A	00 00 01	00 - 7F	CAf LFO2 TVA DEPTH	0 - 100.0 [%]	00
40 2x 30	00 00 01	28 - 58	PAf PITCH CONTROL	-24 - +24 [semitone]	40
40 2x 31	00 00 01	00 - 7F	PAf TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40
40 2x 32	00 00 01	00 - 7F	PAf AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40
40 2x 33	00 00 01	00 - 7F	PAf LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40
40 2x 34	00 00 01	00 - 7F	PAf LFO1 PITCH DEPTH	0 - 600 [cent]	00
40 2x 35	00 00 01	00 - 7F	PAf LFO1 TVF DEPTH	0 - 2400 [cent]	00
40 2x 36	00 00 01	00 - 7F	PAf LFO1 TVA DEPTH	0 - 100.0 [%]	00
40 2x 37	00 00 01	00 - 7F	PAf LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40
40 2x 38	00 00 01	00 - 7F	PAf LFO2 PITCH DEPTH	0 - 600 [cent]	00
40 2x 39	00 00 01	00 - 7F	PAf LFO2 TVF DEPTH	0 - 2400 [cent]	00
40 2x 3A	00 00 01	00 - 7F	PAf LFO2 TVA DEPTH	0 - 100.0 [%]	00
40 2x 40	00 00 01	28 - 58	CC1 PITCH CONTROL	-24 - +24 [semitone]	40
40 2x 41	00 00 01	00 - 7F	CC1 TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40
40 2x 42	00 00 01	00 - 7F	CC1 AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40
40 2x 43	00 00 01	00 - 7F	CC1 LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40
40 2x 44	00 00 01	00 - 7F	CC1 LFO1 PITCH DEPTH	0 - 600 [cent]	00
40 2x 45	00 00 01	00 - 7F	CC1 LFO1 TVF DEPTH	0 - 2400 [cent]	00

40 2x 46	00 00 01	00 - 7F	CC1 LFO1 TVA DEPTH	0 - 100.0 [%]	00
40 2x 47	00 00 01	00 - 7F	CC1 LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40
40 2x 48	00 00 01	00 - 7F	CC1 LFO2 PITCH DEPTH	0 - 600 [cent]	00
40 2x 49	00 00 01	00 - 7F	CC1 LFO2 TVF DEPTH	0 - 2400 [cent]	00
40 2x 4A	00 00 01	00 - 7F	CC1 LFO2 TVA DEPTH	0 - 100.0 [%]	00
40 2x 50	00 00 01	28 - 58	CC2 PITCH CONTROL	-24 - +24 [semitone]	40
40 2x 51	00 00 01	00 - 7F	CC2 TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40
40 2x 52	00 00 01	00 - 7F	CC2 AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40
40 2x 53	00 00 01	00 - 7F	CC2 LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40
40 2x 54	00 00 01	00 - 7F	CC2 LFO1 PITCH DEPTH	0 - 600 [cent]	00
40 2x 55	00 00 01	00 - 7F	CC2 LFO1 TVF DEPTH	0 - 2400 [cent]	00
40 2x 56	00 00 01	00 - 7F	CC2 LFO1 TVA DEPTH	0 - 100.0 [%]	00
40 2x 57	00 00 01	00 - 7F	CC2 LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40
40 2x 58	00 00 01	00 - 7F	CC2 LFO2 PITCH DEPTH	0 - 600 [cent]	00
40 2x 59	00 00 01	00 - 7F	CC2 LFO2 TVF DEPTH	0 - 2400 [cent]	00
40 2x 5A	00 00 01	00 - 7F	CC2 LFO2 TVA DEPTH	0 - 100.0 [%]	00

As the LFO is used for creating the internal sounds.
In some cases, changing the parameters of LFO1 and LFO2 may not affect the sound.

● DRUM SETUP PARAMETERS

* m : Map number (0 = MAP1, 1 = MAP2)
* rr : drum part note number (00H - 7FH)

Address(H)	SIZE(H)	Data(H)	Parameter	Description
41 m0 00 | # 41 m0 0B#	00 00 0C	20 - 7F	DRUM MAP NAME	ASCII Character
41 m1 rr	00 00 01	00 - 7F	PLAY NOTE NUMBER	Pitch coarse
41 m2 rr	00 00 01	00 - 7F	LEVEL	TVA level (=Bn 63 1A 62 rr 06 vv)
41 m3 rr	00 00 01	00 - 7F	ASSIGN GROUP NUMBER	Non, 1 - 127
41 m4 rr	00 00 01	00 - 7F	PANPOT	Random, -63(LEFT) - +63(RIGHT) (=Bn 63 1C 62 rr 06 vv)
41 m5 rr	00 00 01	00 - 7F	REVERB SEND LEVEL	0.0 - 1.0 Multiplicand of the part reverb depth (=Bn 63 1D 62 rr 06 vv)
41 m6 rr	00 00 01	00 - 7F	CHORUS SEND LEVEL	0.0 - 1.0 Multiplicand of the part chorus depth (=Bn 63 1E 62 rr 06 vv)
41 m7 rr	00 00 01	00 - 01	Rx. NOTE OFF	OFF / ON
41 m8 rr	00 00 01	00 - 01	Rx. NOTE ON	OFF / ON

When you change Drum Sets, all values of the DRUM SETUP PARAMETERS will be initialized.

■ Bulk Dump

You can send or request bulk data which contains large quantities of parameter data by using Bulk Dump communication. It is used for storing bulk data in a sequencer or computer.
To send or request bulk data, use the Address and Size indicated in the following map.
You cannot use any address having " # " for the top address in a System Exclusive message.
Messages which include long data (more than 128 bytes) are sent out in separate packets. Then, the top address of the following messages will be the address marked " # ".
To send several packets of long DT1 messages at a time, insert intervals of at least 40ms.in between packets.

● All Parameters

Address(H)	Size(H)	Description	Number of packets
48 00 00 | # 48 1D 0F#	00 1D 10	ALL	30 packets

● System Parameters

Address(H)	Size(H)	Description	Number of packets
48 00 00 | # 48 00 0F#	00 00 10	SYSTEM PARAMETERS	1 packet

● Patch Parameters

Address(H)	Size(H)	Description	Number of packets
48 00 10 | # 48 01 0F#	00 01 00	PATCH COMMON	1 packet
48 01 10 | # 48 02 6F#	00 01 60	BLOCK 0	2 packets

```
48 02 70    00 01 60
   |  #              BLOCK 1              2 packets
48 04 4F#

48 04 50    00 01 60
   |  #              BLOCK 2              2 packets
48 06 2F#

48 06 30    00 01 60
   |  #              BLOCK 3              2 packets
48 08 0F#

48 08 10    00 01 60
   |  #              BLOCK 4              2 packets
48 09 6F#

48 09 70    00 01 60
   |  #              BLOCK 5              2 packets
48 0B 4F#

48 0B 50    00 01 60
   |  #              BLOCK 6              2 packets
48 0D 2F#

48 0D 30    00 01 60
   |  #              BLOCK 7              2 packets
48 0F 0F#

48 0F 10    00 01 60
   |  #              BLOCK 8              2 packets
48 10 6F#

48 10 70    00 01 60
   |  #              BLOCK 9              2 packets
48 12 4F#

48 12 50    00 01 60
   |  #              BLOCK A              2 packets
48 14 2F#

48 14 30    00 01 60
   |  #              BLOCK B              2 packets
48 16 0F#

48 16 10    00 01 60
   |  #              BLOCK C              2 packets
48 17 6F#

48 17 70    00 01 60
   |  #              BLOCK D              2 packets
48 19 4F#

48 19 50    00 01 60
   |  #              BLOCK E              2 packets
48 1B 2F#

48 1B 30    00 01 60
   |  #              BLOCK F              2 packets
48 1D 0F#
```

● DRUM SETUP PARAMETERS

* m : map number (0 = MAP1, 1 = MAP2)

```
Address(H)  Size(H)   Description          Number of packets
================================================================================
49 m0 00    00 02 00
   |                  PLAY NOTE NUMBER     2 packets
49 m1 7F

49 m2 00    00 02 00
   |                  LEVEL                2 packets
49 m3 7F

49 m4 00    00 02 00
   |                  ASSIGN GROUP NUMBER  2 packets
49 m5 7F

49 m6 00    00 02 00
   |                  PANPOT               2 packets
49 m7 7F

49 m8 00    00 02 00
   |                  REVERB SEND LEVEL    2 packets
49 m9 7F

49 mA 00    00 02 00
   |                  CHORUS SEND LEVEL    2 packets
49 mB 7F

49 mC 00    00 02 00
   |                  Rx. NOTE ON/OFF      2 packets
49 mD 7F

49 mE 00    00 00 18
   |                  DRUM MAP NAME        1 packet
49 mE 17
```

6.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	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	69	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

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* To indicate a decimal number for the MIDI channel, Bank number, 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 x 128 + 52 = 2356

< Example 3 > Convert "0A 03 09 0D" in nibblized 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

MIDI PLAYER (Sequencer section) Date : Nov. 6 1992

Model SD-35

MIDI Implementation Chart

Version : 1.00

Function ...		Transmitted	Recognized	Remarks
Basic Channel	Default	ALL Ch	ALL Ch	not Basic Ch
	Changed	×	×	
Mode	Default	Mode 3	×	
	Messages	OMNI OFF, POLY	×	*2
	Altered	*********		
Note Number	True Voice	0 — 127	0 — 127	
		*********	0 — 127	
Velocity	Note ON	○	○	
	Note OFF	○	○	
After Touch	Key's	○	○	
	Ch's	○	○	
Pitch Bender		○	○	
Control Change	0 — 120	○	○	
	121	○	○	Reset All Controllers
Prog Change		○	○	
	True #	*********	0 — 127	
System Exclusive		○	○	
System Common	Song Pos	*1	*3	
	Song Sel	*1	*3	
	Tune	*1	○	
System Real Time	Clock	*1	*4	
	Commands	*1	*3	
Aux Messages	Local ON/OFF	○	○	
	All Notes OFF	○ (123)	○ (123 — 127)	
	Active Sense	*1	○	
	Reset	×	×	
Notes		*1 Can be set and stored as ○ or ×. *2 When booted up, OMNI OFF and POLY ON are sent on all channels (1 — 16). *3 When Clock Select is AUTO, MIDI1, MIDI2 or REMOTE, it can receive data. *4 When Clock Select is AUTO, MIDI1 or MIDI2, it can receive data. value		

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO ○ : Yes

Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO × : No

MIDI PLAYER (Sound module section) Date : Nov. 6 1992

Model SD-35

MIDI Implementation Chart

Version : 1.00

Function ...		Transmitted	Recognized	Remarks
Basic Channel	Default	1－16	1－16	Memorized
	Changed	1－16	1－16 each	
Mode	Default	×	Mode 3	
	Messages	×	Mode 3, 4 (M＝1)	＊2
	Altered	＊＊＊＊＊＊＊＊＊		
Note Number		×	0－127	
	True Voice	＊＊＊＊＊＊＊＊＊	0－127	
Velocity	Note ON	×	○	
	Note OFF	×	×	
After Touch	Key's	×	＊1	
	Ch's	×	＊1	
Pitch Bender		×	＊1	
Control Change	0,32	×	＊1 (MSB only)	Bank select
	1	×	＊1	Modulation
	5	×	＊3	Portamento tome
	6,38	×	＊3	Data entry
	7	×	＊1	Volume
	10	×	＊1	Panpot
	11	×	＊1	Expression
	64	×	＊1	Hold 1
	65	×	＊1	Portamento
	66	×	＊1	Sostenuto
	67	×	＊1	Soft
	84	×	＊3	Portamento control
	91	×	＊3 (Reverb)	Effect1 depth
	93	×	＊3 (Chorus)	Effect3 depth
	98,99	×	＊1	NRPN LSB, MSB
	100, 101	×	＊1	RPN LSB, MSB
	120	×	○	All sound off
	121	×	○	Reset All Controllers
Prog Change		×	＊1	
	True #	＊＊＊＊＊＊＊＊＊	0－127	Prog. number 1－128
System Exclusive		＊1	＊1	
System Common	Song Pos	×	×	
	Song Sel	×	×	
	Tune	×	×	
System Real Time	Clock	×	×	
	Commands	×	×	
Aux Messages	Local ON/OFF	×	×	
	All Notes OFF	×	○ (123－125)	
	Active Sense	＊1	○	
	Reset	×	×	
Notes		＊1 ○× is selectable. ＊2 Recognize as M＝1 even if M≠1. ＊3 ○× is selectable, only when using the receive switch control change (all).		

Mode 1 : OMNI ON, POLY　　Mode 2 : OMNI ON, MONO　　○ : Yes

Mode 3 : OMNI OFF, POLY　　Mode 4 : OMNI OFF, MONO　　× : No

■How to read the MIDI Implementation chart

○ : MIDI messages that can be transmitted or received
× : MIDI messages that cannot be transmitted or received

● Basic Channel
The MIDI channel for transmitting (receiving) MIDI messages can be specified over this range. The MIDI channel setting is remembered even when the power is turned off.

● Mode
Most recent keyboards use mode 3 (omni off, poly).
Reception : MIDI messages are received only on the specified channels, and played polyphonically.
Transmission : All musical data is transmitted on the specified MIDI channel.
* "Mode" refers to MIDI Mode messages.

● Note Number
This is the range of note numbers that can be transmitted (received. Note number 60 is middle C (C4))

● Velocity
This is the range over which velocity can be transmitted (received) by Note On and Note Off messages.

● Aftertouch
Key's : polyphonic aftertouch
Ch's : channel aftertouch

● Pitch Bender
Set the receiving range of Pitch Bender messages by using Bend Range of each part.

● Control Change
This indicates the control numbers that can be transmitted (received), and what they will control. For details, refer to the MIDI Implementation.

● Program Change
The program change numbers in the chart indicate the actual data. (This is one less than the inst numbers.)

● Exclusive
Exclusive message reception can be turned on/off by the exclusive message receiving switch.

● Common, Realtime
These MIDI messages are used to synchronize sequencers and rhythm machines.
The SD-35 does not use these messages.

● Other
These messages are mainly used to keep a MIDI system running correctly.
Active sensing transmission can be turned on/off.

■ SPECIFICATIONS

SD-35 : Sequencer with built-in sound module GM, GS compatible

☐ Sound source section

● Number of Parts
16

● Maximum Polyphony
28 (voices)

● Effects
Reverb
Chorus

☐ Sequencer section

● Number of tracks
Format 0: 1 (16 channels)
Format 1:17 (16 channels per track)

● Time base
96, 120, 192, 240 (when recording)

● Data format
Playback: Standard MIDI File (format 0 or 1)
Recording: Standard MIDI File (format 0)

● Tempo
5—260 (beats per minute)

● Time signature (when recording)
4/4

● Maximum simultaneous output notes
Unlimited/track

● Disk drive
3.5 inch, 2DD micro floppy disks only

● Display
LED (3-digit)

● Connectors
MIDI connectors (IN × 2, OUT)
Play/stop jack
Headphone jack
Audio input jack × 2 (L, R)
Audio output jack × 2 (L, R)
Input select switch

● Power supply
DC9V (AC adaptor)

● Power consumption
1000mA

● Dimensions
217 (W) × 233 (D) × 57 (H) mm
$8\text{-}9/16$ (W) × $9\text{-}1/8$ (D) × $2\text{-}3/16$ (H) inches

● Weight
1.6kg
3lbs 8oz

☐ Disk

Disk capacity (formatted) ·····720k bytes
maximum number of songs (Standard MIDI File) ····· 99 songs
Maximum number of notes ····· Approximately 90,000 notes

☐ Accessories

Owner's manual
AC adaptor
Demo disk
Audio cable (standard ←→ pin <standard>)

☐ Optional items

SMF Music Data

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

For Nordic Countries

Apparatus containing Lithium batteries

ADVARSEL!

Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

VARNING!

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL!

Lithiumbatteri – Eksplosjonsfare.
Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten.
Brukt batteri returneres apparatleverandøren.

VAROITUS!

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

SD-35 INSTRUMENT TABLE

Program number
(Number of voices)
Instrument name

Piano	1 (1) Piano 1	2 (1) Piano 2	3 (1) Piano 3	4 (2) Honky-Tonk Piano	5 (1) E. Piano 1	6 (1) E. Piano 2	7 (1) Harpsichord	8 (1) Clav
Chromatic Percussion	9 (1) Celesta	10 (1) Glockenspiel	11 (1) Music Box	12 (1) Vibraphone	13 (1) Marimba	14 (1) Xylophone	15 (1) Tubular-bell	16 (1) Santur
Organ	17 (1) Organ 1	18 (1) Organ 2	19 (2) Organ 3	20 (1) Church Org. 1	21 (1) Reed Organ	22 (2) Accordion Fr	23 (1) Harmonica	24 (2) Bandoneon
Guitar	25 (1) Nylon-str. Gt	26 (1) Steel-str. Gt	27 (1) Jazz Gt.	28 (1) Clean Gt.	29 (1) Muted Gt.	30 (1) Overdrive Gt	31 (1) DistortionGt	32 (1) Gt. Harmonics
Bass	33 (1) Acoustic Bs.	34 (1) Fingered Bs.	35 (1) Picked Bs.	36 (1) Fretless Bs.	37 (1) Slap Bass 1	38 (1) Slap Bass 2	39 (1) Synth Bass 1	40 (2) Synth Bass 2
Strings/orchestra	41 (1) Violin	42 (1) Viola	43 (1) Cello	44 (1) Contrabass	45 (1) Tremolo Str	46 (1) PizzicatoStr	47 (1) Harp	48 (1) Timpani
Ensemble	49 (1) Strings	50 (1) Slow Strings	51 (1) Syn. Strings1	52 (2) Syn. Strings2	53 (1) Choir Aahs	54 (1) Voice Oohs	55 (1) SynVox	56 (2) OrchestraHit
Brass	57 (1) Trumpet	58 (1) Trombone	59 (1) Tuba	60 (1) MutedTrumpet	61 (2) French Horn	62 (1) Brass 1	63 (2) Synth Brass1	64 (2) Synth Brass 2
Reed	65 (1) Soprano Sax	66 (1) Alto Sax	67 (1) Tenor Sax	68 (1) Baritone Sax	69 (1) Oboe	70 (1) English Horn	71 (1) Bassoon	72 (1) Clarinet
Pipe	73 (1) Piccolo	74 (1) Flute	75 (1) Recorder	76 (1) Pan Flute	77 (2) Bottle Blow	78 (2) Shakuhachi	79 (1) Whistle	80 (1) Ocarina
Synth lead	81 (2) Square Wave	82 (2) Saw Wave	83 (2) Syn. Calliope	84 (2) Chiffer Lead	85 (2) Charang	86 (2) Solo Vox	87 (2) 5th Saw Wave	88 (2) Bass&Lead
Synth pad etc.	89 (2) Fantasia	90 (1) Warm Pad	91 (2) Polysynth	92 (1) Space Voice	93 (2) Bowed Glass	94 (2) Metal Pad	95 (2) Halo Pad	96 (1) Sweep Pad
Synth SFX	97 (2) Ice Rain	98 (2) Soundtrack	99 (2) Crystal	100 (2) Atmosphere	101 (2) Brightness	102 (2) Goblin	103 (1) Echo Drops	104 (2) Star Theme
Ethnic	105 (1) Sitar	106 (1) Banjo	107 (1) Shamisen	108 (1) Koto	109 (1) Kalimba	110 (1) Bag Pipe	111 (1) Fiddle	112 (1) Shanai
Percussive	113 (1) Tinkle Bell	114 (1) Agogo	115 (1) Steel Drums	116 (1) Woodblock	117 (1) Taiko	118 (1) Melo. Tom 1	119 (1) Synth Drum	120 (2) Reverse Cym.
SFX	121 (1) Gt. FretNoise	122 (2) Breath Noise	123 (1) Seashore	124 (2) Bird	125 (1) Telephone 1	126 (1) Helicopter	127 (2) Applause	128 (1) Gun Shot

The above items are capital instruments. For variation instruments see P.App.16.

SD-35 DRUM SET TABLE

	Note number	PC#1:STANDARD Set PC#33:JAZZ Set	PC#9:ROOM Set	PC#17:POWER Set	PC#25: ELECTRONIC Set	PC#26:TR-808 Set	PC#41: BRUSH Set	PC#49:ORCHESTRA Set
	27	High Q						Closed Hi-Hat [EXC1]
	28	Slap						Pedal Hi-Hat [EXC1]
	29	Scratch Push						Open Hi-Hat [EXC1]
	30	Scratch Pull						Ride Cymbal
	31	Sticks						
	32	Square Click						
	33	Metronome Click						
	34	Metronome Bell						
	35	Kick Drum 2						Concert BD 2
C2	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 Tap	Concert SD
	39	Hand Clap					Brush Slap	Castanets
	40	Snare Drum 2			Gated SD		Brush Swirl	Concert SD
	41	Low Tom 2	Room Low Tom 2	Room Low Tom 2	Elec Low Tom 2	808 Low Tom 2		Timpani F
	42	Closed Hi – hat [EXC1]				808 CHH [EXC1]		Timpani F#
	43	Low Tom 1	Room Low Tom 1	Room Low Tom 1	Elec Low Tom 1	808 Low Tom 1		Timpani G
	44	Pedal Hi – hat [EXC1]				808 CHH [EXC1]		Timpani G#
	45	Mid Tom 2	Room Mid Tom 2	Room Mid Tom 2	Elec Mid Tom 2	808 Mid Tom 2		Timpani A
	46	Open Hi – hat [EXC1]				808 OHH [EXC1]		Timpani A#
	47	Mid Tom 1	Room Mid Tom 1	Room Mid Tom 1	Elec Mid Tom 1	808 Mid Tom 1		Timpani B
C3	48	High Tom 2	Room Hi Tom 2	Room Hi Tom 2	Elec Hi Tom 2	808 Hi Tom 2		Timpani c
	49	Crash Cymbal 1				808 Cymbal		Timpani c#
	50	High Tom 1	Room Hi Tom 1	Room Hi 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 Cymbal 2
	58	Vibra – slap						
	59	Ride Cymbal 2						Concert Cymbal 1
C4	60	High Bongo						
	61	Low Bongo						
	62	Mute High Conga				808 High 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]						
C5	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						
C6	84							
	85	Castanets						
	86	Mute Surdo [EXC6]						
	87	Open Surdo [EXC6]						
	88			-----				Applause ★

PC# : Program number (drum set number)

★ : Tones which are created by using two voices. (All other tones are created by one voice.)

Blank : Same as the percussion sound of "STANDARD"

----- : No sound

[EXC] : Percussion sound of the same number will not be heard at the same time.

*In addition to the above, the SFX set is also available (☞ P.App.20).

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

Roland MIDI PLAYER SD-35

(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 a interference in a rasidential 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 Réglement des signaux parasites par le ministère canadien des Communications.

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