

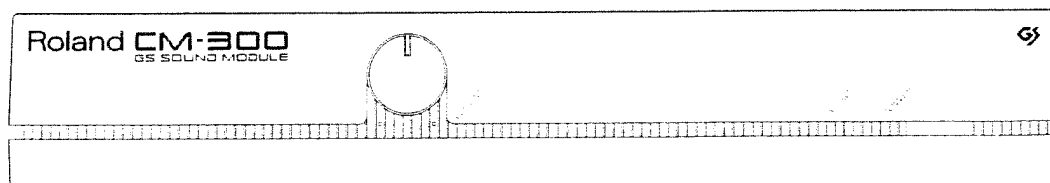
Roland



GS SOUND MODULE

CM-300

OWNER'S MANUAL



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

GS SOUND MODULE CM-300

(Gerat. Typ. Bezeichnung)

in Übereinstimmung mit den Bestimmungen der

Amtsbl. Vfg 1046/1984

(Amtsblattverfugung)

funk-entstört ist.

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

Roland Corporation Osaka/Japan

Name des Herstellers/Importeurs

For the USA

RADIO AND TELEVISION INTERFERENCE

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

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

- Disconnect other devices and their input/output cables one at a time. If the interference stops, it is caused by either the other device or its I/O cable. These devices usually require Roland designated shielded I/O cables. For Roland devices, you can obtain the proper shielded cable from your dealer. For non-Roland devices, contact the manufacturer or dealer for assistance.
- If your equipment does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:
 - Turn the TV or radio antenna until the interference stops.
 - Move the equipment to one side or the other of the TV or radio.
 - Move the equipment farther away from the TV or radio.
 - Plug the equipment into an outlet that is on a different circuit than the TV or radio. (That is, make certain the equipment and the radio or television set are on circuits controlled by different circuit breakers or fuses.)
 - Consider installing a rooftop television antenna with coaxial cable lead-in between the antenna and TV. If necessary, you should consult your dealer or an experienced radio-television technician for additional suggestions. You may find helpful the following booklet prepared by the Federal Communications Commission: How to Identify and Resolve Radio — TV Interference Problems.

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

For Canada

CLASS B

NOTICE

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

CLASSE B

AVIS

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

■ *Before You Begin*

Thank you for purchasing the Roland CM-300 Sound Module. The CM-300 contains a variety of quality GS sounds which can be used to enhance any MIDI music system. In order to realize the full potential of the CM-300, and to ensure years of trouble-free service, please read this manual in its entirety.

■ *Main Features*

- ◆ The CM-300 contains a GS sound source, Roland's newly implemented sound-arrangement format.
The GS Format was created so that sound modules would respond in a somewhat uniform manner to incoming MIDI message. Song data written specifically for a GS-compatible sound module should play back in roughly the same way on any other GS-compatible sound module.
- ◆ The CM-300 is capable of producing up to 24 voices at any one time. With the availability of such a variety of sounds, it is very easy to achieve any number of unique ensemble textures.
- ◆ The CM-300 also comes equipped with reverb and chorus effects that can further enhance any sound.

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■ *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.
- 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.

- 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.

1. Part Names

● Front Panel

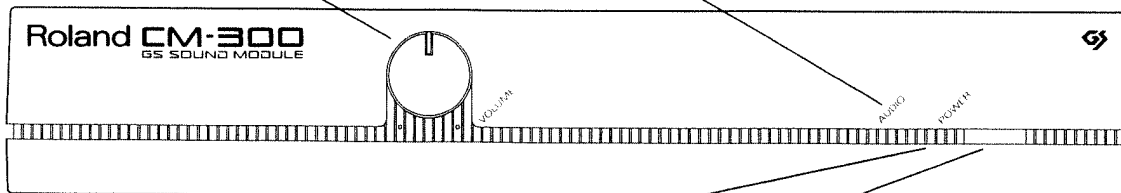
◆ VOLUME (Volume Control Knob)

This adjusts the overall volume which is the output from the Output Jacks or Headphone Jack. Rotating the knob clockwise will increase the volume, and rotating it counter-clockwise will decrease it.

* The volume balance of the individual Part can be controlled with the MIDI Volume (Control Change) messages.

◆ AUDIO (Audio Signal Indicator Light)

Regardless of where the volume knob is set, this lights to indicate that a signal (above the threshold level) is being output.



◆ POWER SWITCH

Turns the power on and off.

* This unit is equipped with a circuit protection device. A brief interval after power up is required before the unit will operate.

◆ POWER (Power Indicator Light)

Indicates that the power is on.

● Rear Panel

◆ INPUT (Audio Ins)

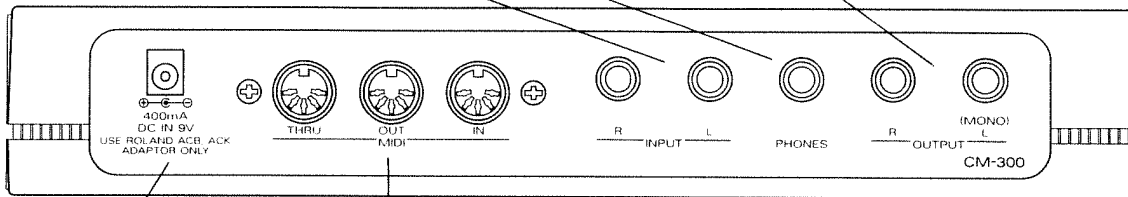
Connect these inputs to the OUTPUT jacks of an MT-32 or CM-series sound module.

◆ PHONES (Headphone Jack)

Connect headphones here. Signals will still be output from the Audio Outs even though headphones are connected.

◆ OUTPUT (Audio Outs)

The CM-300's audio signals are output in stereo (L/R). Mono is also possible by using the L (MONO) jack only.



◆ MIDI IN/OUT/THRU (MIDI Connectors)

MIDI data is exchanged with other MIDI devices through these ports. For more information about MIDI, see the explanation on page 18.

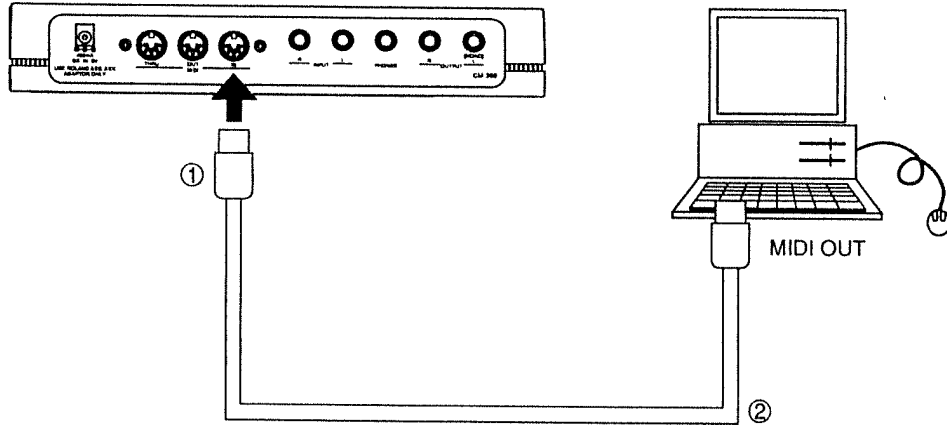
◆ DC IN (AC Adaptor Jack)

Connect the AC adaptor to this inlet.

2. Making The Connection

● MIDI Cable Connections

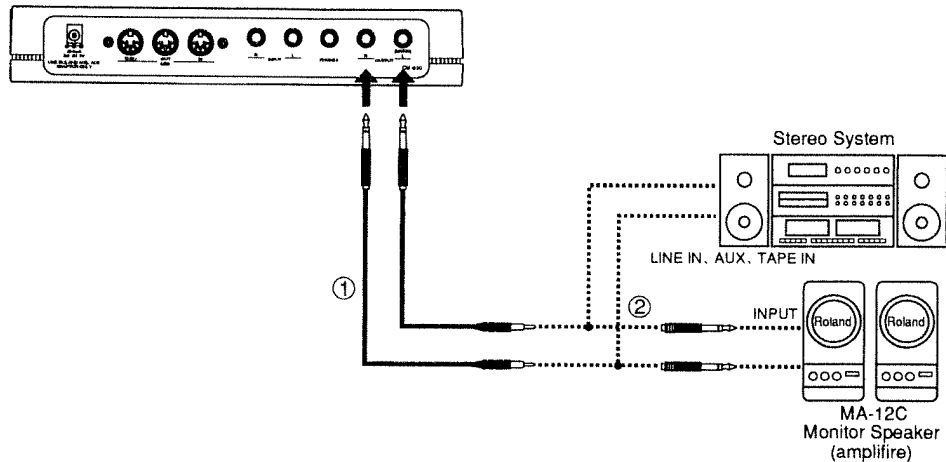
Connect your CM-300 to computers and MIDI sequencers using the included MIDI cable.



- ① Plug one end of the cable into the MIDI IN port of the CM-300.
- ② Plug the other end of the cable into the MIDI OUT port of your computer or sequencer.

● Audio Cable Connections

Connect keyboard amplifiers, stereos, portable radio/cassette players, etc., to the CM-300's Audio Outs using standard audio cables.



- ① Plug the cables into the CM-300's Audio Outs.
Connect the quarter-inch plugs to the CM-300's Audio Out jacks.

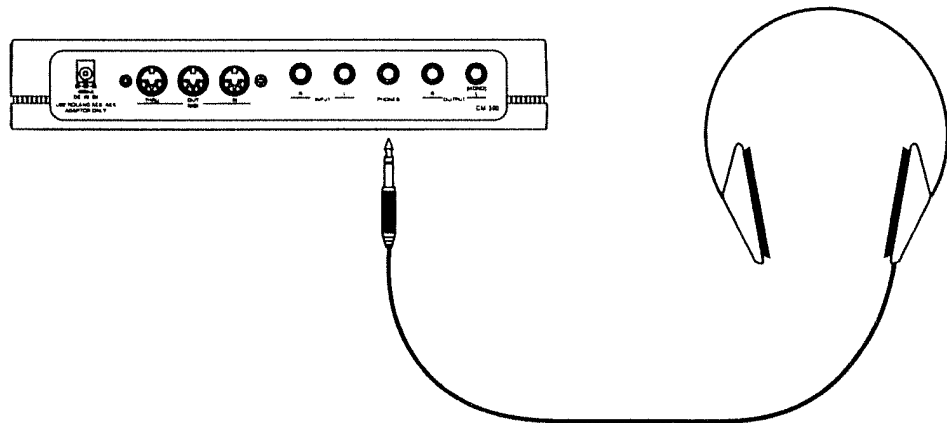
-
- ② Plug the other ends of the cables into the external input jacks (AUX IN or LINE IN) of the audio device you're using. If the audio device inputs use RCA connectors, remove the quarter-inch adaptors from the ends of the cables.

Be sure to match the L and R outputs of the CM-300 with the L and R inputs of the audio device.

Under no circumstances should you connect the cables to the MIC IN or PHONES jack of your audio equipment damage could result to the equipment or speaker systems.

● Using Headphones

Use headphones that have an impedance between 8 and 150 ohms. Connecting headphones will have no effect on the signal output from the CM-300's Audio Outs.



3. Turning On The Power

① Before turning on the CM-300, check the following:

Is the CM-300 correctly connected to all peripheral devices?
Is the amp volume turned down to minimum?

② Press the power switch.

Adjust the volume level on the amp.

Note: Setting the volume too high can damage your speakers. This is because general audio speakers are not as rugged as those designed for use with instruments and the higher signal levels they output.

◆ Turning The Power Off

Make sure that the amp volume is turned down before turning the CM-300 off.

● Default Settings (Preset When The CM-300 Is First Turned On)

Any changes that you make to the settings are in effect only while the CM-300 is on.

◀ Part Settings ▶

MIDI Channel/Part	1-9, 11-16	10(Drum Part)
Tone	Piano 1 (# 1)	Standard Set
Part Volume	100	100
Pan	64	64
Reverb Send	40	40
Chorus Send	0	0
Bend Sens.	2	2
Voice Reserve	2 (* 1)	6

* 1 : Voice Reserve is set to 0 for Part 11 through 16.

◀ Overall Part Settings ▶

Master Volume	Reverb			Chorus			Key Shift
	Type	Level	Time	Type	Depth	Rate	
127	Hall 2	64	64	Chorus 3	64	64	0

4. About The GS Format

The primary advantage of the GS Format is that song data written for one GS Format sound source can be reproduced almost exactly on any other GS Format sound source. We'll be explaining more about the GS Format and MIDI later, but even if you're not familiar with these things, it's still possible to use the GS Format sound source to create your own music.

A sound module (or sound source) that can handle GS Format data will have the GS trademark on it. We'll call them "GS sound sources" from now on.

(1) Parts

The GS Sound Source can play 16 "parts". Part number 10 is for playing the rhythm instrument. A part is something like an orchestral part; think of it as a group of musicians all playing a particular instrument. The big difference from a regular orchestra is that you are completely free to decide what kind of instrument they will be playing. In addition, you can change that instrument midway through a song (as many times as you want) for every different part. You could think of this group as being made up of incredible multi-instrumentalists who can play any instrument you give them.

There are many different kinds of performance data in MIDI, but probably the most basic is the note message determining which key to play, how hard, for how long, and when to start. Every part has its own MIDI "channel" over which it receives performance data and, unless you reset it for some reason, the channel number is the same as the part number. Each part plays by following the instructions in the performance data on its own channel, and pays no attention to the data in other channels intended for other parts. So thanks to this MIDI channel scheme, you can play each part completely independently of the others, like on multitrack recorder.

(2) Number of Sounds That Can Be Played At The Same Time (Maximum Polyphony)

Just as there are limits to the number of people in an orchestra, there are limits to the number of sounds that can be played at the same time on a GS sound source. If note message is received asking for more notes than are possible, some parts are going to lose their note.

With the GS Format, you can count on a certain minimum number of voices always being available. These should be used for the most important parts in your music (like the melody line) so that they don't accidentally lose their note when some less important part comes in later. If you rank your parts ahead of time in "Part Sounding Priority" order, the GS sound source will know what the most important parts are. Then, if you try to send data for more notes than can be played at one time, the lower priority parts will be the first to lose their note.

Part Sounding Priority is set up as follows:

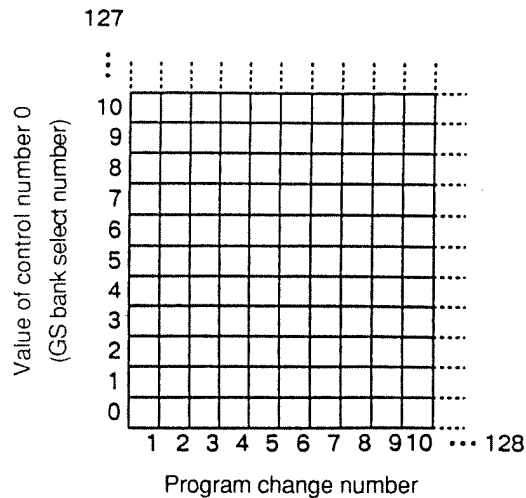
Part Priority ranking	Part No.
1	10(Drum Set)
2	1
3	2
4	3
5	4
6	5
7	6
8	7
9	8
10	9
11	11
12	12
13	13
14	14
15	15
16	16

(3) How to Change Tones

The basic design of a GS sound source lets you select among a maximum of 16,384 different sounds (“tones”) upon command of an external MIDI device (actually, right now there is no sound source that has all of 16,384 different tones).

In conventional MIDI devices, tones are identified by a “Program Change” number between 1 and 128, which means that you have a maximum of only 128 different tones to choose from. This is hardly enough for the wide variety of sounds you would want to have in a library for even the most basic uses.

The GS Format, however, combines the Program Change number with what is called the “Bank Select” numbers* (of which there are 128) in MIDI, greatly increasing the range of selectable tones.



* Tone numbering is a combination of Bank Select and Program Change message. Although Bank Select messages in MIDI standard consist of Control Change message addresses 0 (MSB) and 32 (LSB), in the GS format it was decided that only the number of 0 (GS Bank Select number) would be used. When a tone is to be changed, the GS Bank Select number is sent first, followed by the Program Change message, when this message is received the tone is changed.

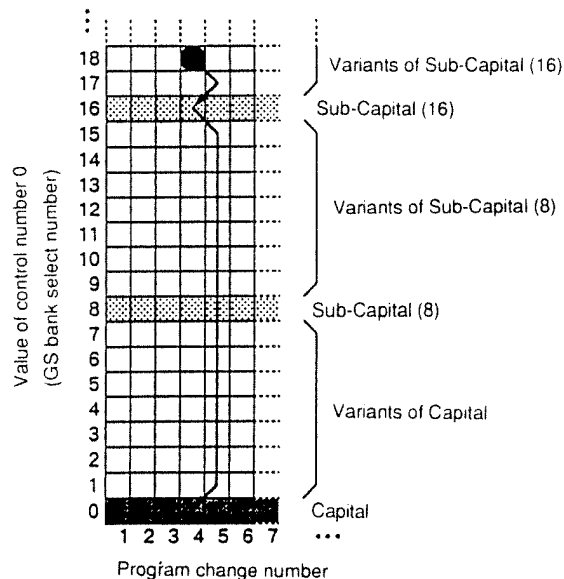
(4) Alternate Voicings—No Matter What GS Sound Source You Use, The Song Remains The Same

In the GS Format, tones are organized (roughly by what kind of sound they are) into something called a “tone map”. By arranging the tones this way, a song written for one GS sound source will also playback with the same kind of sounds on a different GS sound source.

However, this does not mean that all the spots in the tone map have tones allocated to them; it depends on the sound source. Imagine a situation in which a GS sound source, call it B, is used to play song data that was written for a different GS sound source, A. Suddenly the song data tells B to change to a spot in the tone map that in A was assigned to some neat tone, but where it so happens B has nothing. No sound.

Here is where the GS Format steps in to say “if that particular tone can’t make the performance, give us something that is as close as possible”.

Let’s Meet the Alternate for the Part.



Similar instruments are arranged in the columns of the tone map, and similar kinds of tones are arranged in the horizontal rows. Meanwhile, you’ll find the most basic kind of tones are located at GS Bank Select number 0: these are called “Capitals”. Whatever the GS sound source, some kind of tone will be assigned to every Capital.

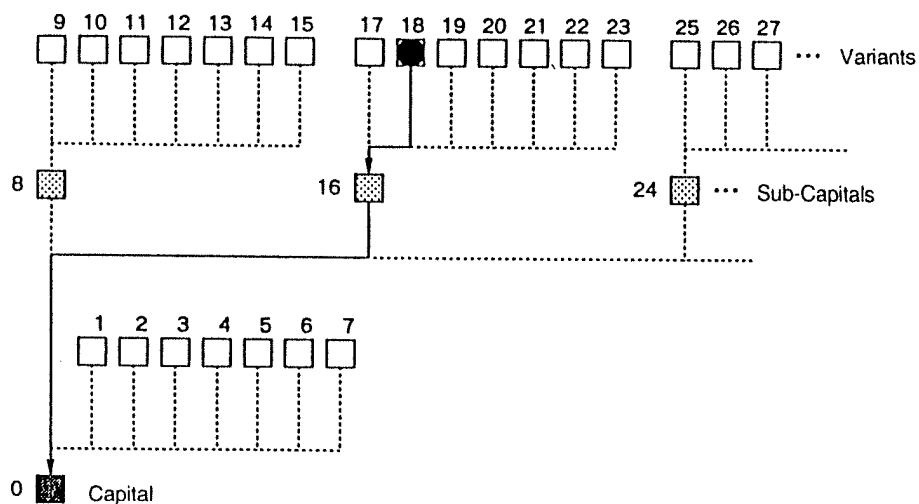
Capitals, similar instruments and similar kinds of tones, can be further subdivided into groups based on “nuance”. The representative sounds for this group are found starting at

GS Bank Select number 8, and then at every eighth spot in the map. These are called "Sub-Capitals". Any other sounds are placed on the map above the nuance closest to the Sub-Capital or a Capital as variants of these.

So what happens if we run into the situation described above where tone changing message (GS Bank Select number plus Program Change number) calls for a spot on the tone map that has no tone assigned to it?

For example, let's send GS Bank Select 18/Program Change 4. If there is a tone at 18/4 in the receiving sound module, of course it plays that sound. But if there is no tone assigned there already, the module goes to the next-in-line Sub-Capital at 16/4 and plays using that sound. Or, if there is no tone assigned there either, it moves all the way down to the Capital at 0/4 and plays that sound (remember, all GS sound sources have tones at the Capitals). Using this rule, no matter what tone number gets sent, you will always get something that, like an alternate for a part, at least sounds similar. The problem we had with disappearing tones between the A and B sources is solved.

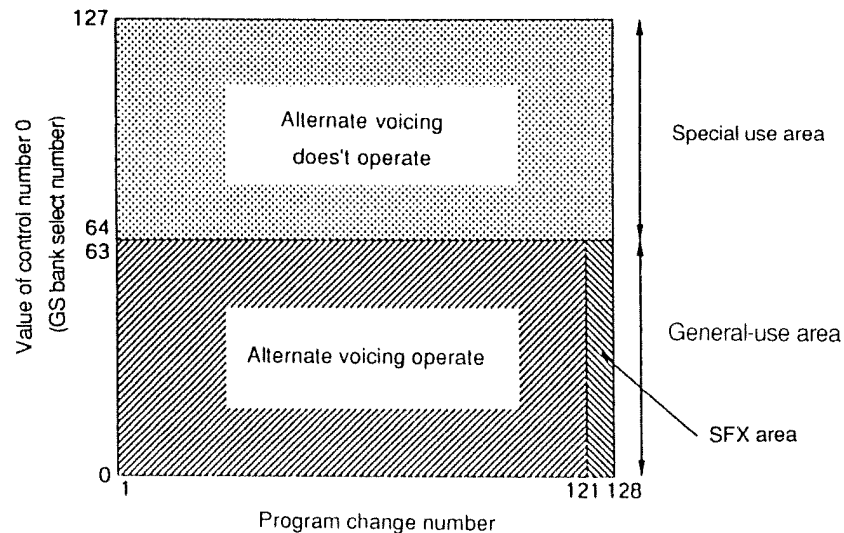
Check out the diagram below to see how this scheme is related to the GS Bank Select number.



If there is no tone assigned at the indicated location, run down the chart through the Sub-Capitals to the Capitals until you find one that will play. So even if the very same tone is not on the sound source, it will use Alternate Voicing to play the part using a tone with a similar instrument and same kind of sound.

(5) General Use Areas and Special Use Areas

The lower half of the tone map (GS Bank Select numbers 0-63) is a general use area, and the upper half (GS Bank Select numbers 64-127) is a special use area. The special use area is for entering sounds that you concoct yourself, or for special tones on a particular device. A variety of special-effects sounds are also assigned to the general use area, in the range of Program Change numbers from 121 to 128.



Since the contents of the special use area can be so different from one device to the next, even among GS sound sources, the Alternate Voicing rules we talked about don't apply here. That is, if the indicated tone location happens to be empty, no sound is played. The GS Format also includes a place in the general use area for special effects sounds (SFX). From one spot to another in the tone map there is an incredible variety of sounds. This means of course that, if we tried to use Alternate Voicing here, we might get a dog barking where we asked for a cat meowing - not at all similar sounds! And so Alternate Voicing doesn't operate here either.

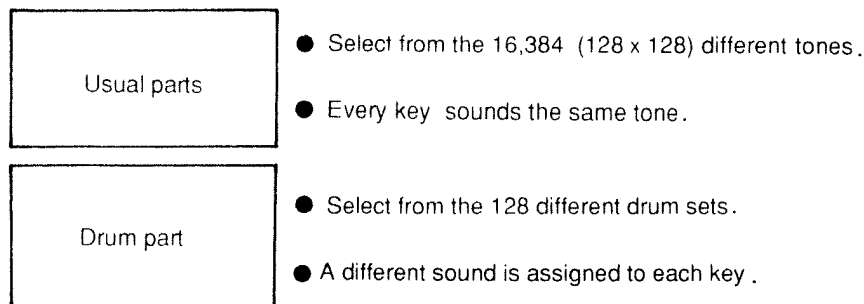
(6) Chorus and Reverb

Every part in a GS sound source can have chorus and reverb effects added to it, and the depth of effects can be controlled in real time using Control Change message*. The Control Change number used for this is standardized in the GS Format, so that no matter what GS sound source you're using, the right kind of effect will turn on or off.

* Control Change 91 controls the depth of Reverb, and 93 controls the depth of Chorus.

(7) A Part for Drums

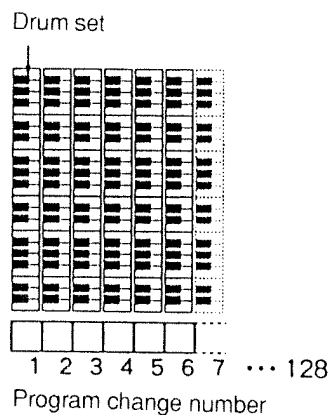
Part 10 is for playing drums. In the drum part, you use the tones of a drum set. Drum sets are not like ordinary tones in that a different sound is assigned to each key. That is, no matter what key you press in a violin tone, you get a violin sound; it may be a different pitch but it's still a violin sound. However, each key in a drum set tone plays a different instrumental sound: kick, snare, hi-hat, etc. Since percussion instruments don't generally carry the melody and so have little variation in pitch, we can handle them all on just one channel.



Roland drum machines and percussion sound modules all send and receive MIDI data on MIDI channel 10 as a standard. Likewise, GS sound sources power up with MIDI channel 10 as the default channel for drum parts.

(8) Changing Between Drum Sets

The GS Format has been designed to allow changing between 128 different drum sets for playing drum (actually, there are no modules yet that have 128 different drum sets). Drum sets can be changed using program change numbers.



In the GS Format, drum sets are ranked by Program Change numbers roughly the same way as in tone maps. In addition, the kind of sound assigned to a particular key has also been standardized. With the sounds arranged this way, a song will play back pretty much the same every time, no matter what GS sound source you're using.

5. Parts and Voices

(1) Relationship Between The Number of Voices and Parts

There are 24 tone-generating circuits, called oscillators or voices, in the CM-300. That means 24 notes are available at any one time.

But since there are tones that use two voices, the actual number of notes that you can play at any one time is going to be less than that. Which means, for tones that require exactly two voices, you can play a maximum of 12 notes. And when it comes to rhythm parts, the number of voices depends on what rhythm sounds are being played at any one instant, so the total number of voices used will vary widely from one moment to the next.

It is the total number of voices in all parts which is important, so you could conceivably use all the available voices in just one part if you wanted. That means one part could use up to 24 voices. Check with the Tone Table (page 23) or Drum Set Table (page 28) to find out exactly how many voices are used by each tone.

(2) What Happens When You Try To Play Too Many Notes

If you try to play more than 24 voices, some parts are going to lose their voice; and if these are important parts like the melody, things are going to sound funny. To prevent the occurrence of such a situation, the CM-300 provides the Part Sounding Priority and Voice Reserve functions.

◆ Assign A Higher Priority To The Most Important Parts ... Part Sounding Priority

If you try to play more than 24 GS voices at once, the new notes will be played by taking away voices from notes that are already playing the ones which are lowest on the GS Format's Part Sounding Priority numerical ranking system.

So when writing a song, give some thought to what the most important parts are.

◆ Make Sure The Most Important Parts Have The Voices They Need ... Voice Reserve

The Voice Reserve function guarantees each part a certain number of voices in advance. For example, Part 10 is assigned a Voice Reserve of 6, meaning that, even if the 24-voice limit is exceeded, Part 10 is assured of getting 6 of the remaining voices. In other words, if Part 10 uses 6 voices or less, there is no way that voices can be "stolen" from it, regardless of how Part Sounding Priority is set.

Part 1-9	: 2
Part 10(Drum Part)	: 6
Part 11-16	: 0

■ *Problems? Please Check A Few Things First*

If the CM-300 is not working as expected, go through this checklist first; the trouble may be something quite simple. If you can't solve the problem, however, contact your dealer or nearest Roland Service Station.

◆ **No Sound**

- * Are all connected devices turned on?
- * Are all devices connected properly?
- * If there is an input selector on your audio device, is it set for the AUX IN or LINE IN that you're plugged into?
- * Is the volume turned up on the audio device?
- * Is there a volume setting on any software you might be using? Is it turned down or set to zero?

◆ **Sounds Don't Sound Right**

- * Have you changed MIDI cable connections? If the cables are changed in the middle of play-back, it can cause parts to play with the wrong sounds.

■ *About MIDI*

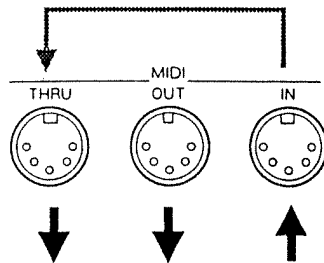
MIDI stands for Musical Instrument Digital Interface, a world-wide standard for exchanging performance data among computers and electronic musical instruments. An instrument conforming to the MIDI standard, no matter what kind or who made it, can send and receive performance data. This MIDI data is not music itself, but rather a way of handling a variety of digitally-encoded messages telling the instrument what to do.

● MIDI data Exchange

MIDI data exchange is not that difficult to understand.

◆ MIDI Connections

MIDI data exchange is achieved through three connectors. MIDI cables are used to connect these connectors in whatever arrangement you need for a particular job.



MIDI IN: MIDI data is received from other devices.

MIDI OUT: Data is sent to other devices.

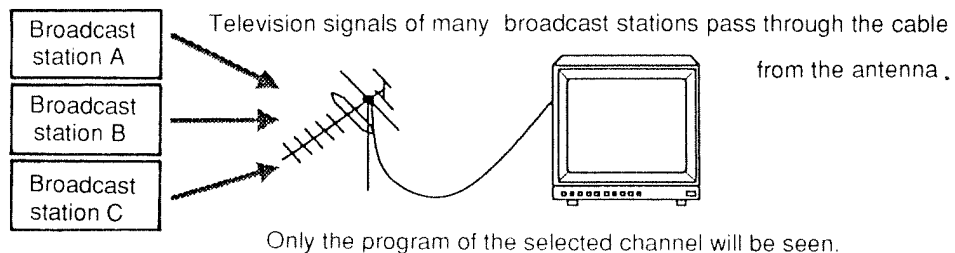
MIDI THRU: The data sent to MIDI IN is sent back out, unchanged.

* You can use the MIDI THRU connector to “daisy chain” several MIDI devices together so that they all receive the same MIDI data stream. However, four or five devices connected this way is about the limit. Time delays and signal degradation increase with the addition of more devices, causing “glitches” and data transmission errors.

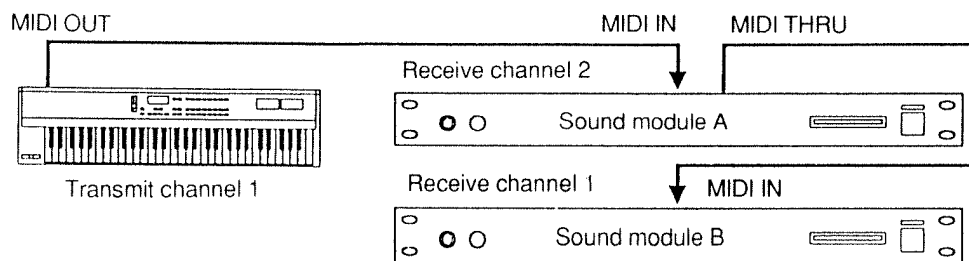
◆ MIDI Channels

Data for a number of different MIDI devices can be sent over the same MIDI cable. This is the result of the MIDI Channel concept.

A MIDI Channel is a lot like a TV Channel. As you switch channels, you see completely different programs; but this information is only received when the channel on your TV is set to the same channel that the TV station is broadcasting on.



MIDI has channels numbered 1-16, and MIDI data on any one channel is sent to all instruments set to receive on that same channel. For example, playing a keyboard with the MIDI channel set like the following will play only sound source B.



● Important Operating Information

Each part on the CM-300 is capable of receiving the following kinds of MIDI data:

The MIDI data is displayed in decimal/hexadecimal form. Please read your manual to find out which is used with your MIDI device.

64 / 40H

↑ ↑

Decimal Format Hexadecimal Format (the H is part of the number)

◆ Note Message

Note message is used to transmit data describing a keyboard performance. It contains the following kinds of information:

Note Number: Indicates where the key is on the keyboard.

Note on: Indicates the key has been pressed.

Note off: Indicates that the key has been released.

Velocity: Indicates the force (velocity) with which the key is pressed.

Note Number uses integers from 0 to 127 to indicate the position of a key, with Middle C (C4) being 60. In drum parts, a note number has been assigned to each of the various rhythm and effect sounds.

◆ Pitch Bend Message

This is used to transmit data about the operation of the pitch bend wheel or lever usually found on synthesizers. Pitch benders are used to change the pitch of a note.

◆ Aftertouch Message

This is used to transmit aftertouch data, that is, finger pressure on a key after it has been played. Aftertouch adds expressiveness to a performance. There are two kinds: channel aftertouch and polyphonic aftertouch.

Channel aftertouch data affects all Tones on the same MIDI channel in the same way, no matter what key is pressed. Polyphonic aftertouch is specific to the key (note number) which is being played in a given channel.

◆ Program Change Message

This transmits data about switching Tones.

A Tone is switched by a combination of Program Change number and a value of Control Change number 0/00H and 32/20H.

◆ **Control Change Message**

This transmits data about vibrato, hold, volume, pan, and other features that allow more expressiveness to be added to performances. Each kind of expression is measured in terms of a control number between 0/00H and 127/7FH. However, not all MIDI devices are capable of vibrato, or panning, etc.; so it depends on the device whether or not it can respond to these control numbers (and performance expressions).

⊙ **Bank Select (Control Numbers 0/00H and 32/20H)**

Bank Select and Program Change numbers have been combined to give you a wider range of Tones from which to choose. The Bank Select number lets you switch between various banks of Tones, and the Program Change number selects the Tone itself. If you send Bank Select message and don't follow up with a Program Change number, nothing will happen.

This is a problem for some MIDI sequencers that send identical-step (timing) Control Change message. Message is sent from smallest to largest Control numbers, so that Program Change is sent before Bank Select. If you have this kind of sequencer, find out how to advance Bank Select so that it is sent before the Program Change number.

⊙ **Modulation (Control Number 1/01H)**

This adjusts vibrato depth. The effect this will have in terms of actual pitch variation will vary, depending on the Tone selected.

⊙ **Portamento Time (Control Number 5/05H)**

This adjusts the speed of the Portamento effect.

⊙ **Data Entry (Control Number 6/06H and 38/26H)**

Use this to set parameter values selected by RPN or NRPN.

⊙ **Volume (Control Number 7/07H)**

This adjusts the mix volume for each part.

The actual volume level output to your audio device is determined by a combination of the Volume (Control Change 7/07H), Expression (Control Change 11/0BH) and Master Volume (Exclusive Message) settings, plus the setting of the VOLUME knob.

⊙ **Pan (Control Number 10/0AH)**

This adjusts the stereo position of the output (the apparent location of the sound between the left and right speakers).

Pan is continuously variable.

Position	Left	Right
Pan	0	127
Value	00H	7FH

⊙ **Expression (Control Number 11/0BH)**

This adjusts the mix volume for each part.

The actual volume level that goes to your audio device is determined by a combination of Volume (Control Change 7/07H), Expression (Control Change 11/0BH) and Master Volume (Exclusive Message) settings, plus the setting of the VOLUME knob.

⊙ **Hold 1 (Control Number 64/40H)**

This sustains a note, similar to the action of a piano damper pedal.

⊙ **Portamento (Control Number 65/41H)**

This turns the Portamento effect on and off.

⊙ **Sostenuto (Control Number 66/42H)**

This turns the Chord Hold feature on and off.

⊙ **Soft (Control Number 67/43H)**

This applies the Soft Pedal effect.

⊙ **Legato Control (Control Number 84/54H)**

This applies the same kind of effect as Portamento, but to each note number individually.

⊙ **Effect 1 Depth (Control Number 91/5BH)**

This adjusts reverb parameters individually for each part.

⊙ **Effect 3 Depth (Control Number 93/5DH)**

This adjusts chorus parameters individually for each part.

⊙ **NRPN LSB, MSB (Control Number 98/62H, 99/63H)**

These control sound source parameters. After identifying the parameters you want to change with NRPN MSB and NRPN LSB, use data entry to set the values.

* Check the MIDI Implementation for a list of the Parameters that you can control in this manner.

⊙ **RPN LSB, MSB (Control Number 100/64H, 101/65H)**

These control sound source parameters. After identifying the parameters you want to change with RPN MSB and RPN LSB, use data entry to set the values.

* Check the MIDI Implementation for a list of the Parameters that you can control in this manner.

⊙ **All Note Off (Control Number 120/78H)**

Sends a Note Off command to all voices.

⊙ **Reset All Controllers (Control Number 121/79H)**

If this message is received, it resets all controllers to match the values given in the following table.

Controller	Setting
Pitch Bend	±0 (midpoint)
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)
RPN	No settings in this state
NRPN	No settings in this state

● **An Example Of Using MIDI Controllers**

◆ **Controlling Pitch Bend Range Using RPN**

The Pitch Bend Range of each part can be modified using the RPN (Register Parameter Number) for that part. To effect this in an external MIDI device, the following MIDI data must be sent to it (in this order):

- ① RPN MSB (Control Number 100/64H) 0/00H
- ② RPN LSB (Control Number 101/65H) 0/00H
- ③ Data Entry (Control Change 6/06H) vv

Steps 1 and 2 select Pitch Bend Sensitivity as the parameter to be changed by the data entry in Step 3. vv then is the value of the Pitch Bend Range you want to set, and it can be changed in semitone intervals all the way up to two octaves (0/00H to 24/18H).

Example: Set the Part 5 (MIDI Channel 5) Pitch Bend Range to a full octave (12 semitones; a parameter value of 12).

	MIDI ch	Control Number	Data	Actual MIDI Data
① RPN MSB	5	100/64H	0/00H	B4H, 64H, 00H
② RPN LSB	5	101/65H	0/00H	B4H, 65H, 00H
③ Data Entry	5	6/06H	12/0CH	B4H, 06H, 0CH

* As was mentioned, the data has to be sent to external MIDI devices in the specified order. This is a problem for some MIDI sequencers that send identical-step (timing) Control Change message. Message is sent from smallest to largest Control numbers, so that Data Entry is sent before LSB and MSB. If you have this kind of sequencer, check your manual to find out how to advance RPN MSB, LSB, etc., so that the data is sent in the correct order.

TONE TABLE (GS SOUND SOURCE)

	PC #	CC0 #	Tone name	V	Recommended sound range
Piano	1	0	Piano 1	1	A0 (21) — C8 (108)
	2	0	Piano 2	1	
	3	0	Piano 3	1	
	4	0	Honky-tonk	2	
	5	0	E. Piano 1	1	E1 (28) — G7 (103)
		8	Detuned EP 1	2	
	6	0	E. Piano 2	1	E1 (28) — G7 (103)
		8	Detuned EP 2	2	
7	0	Harpichord	1	F2 (41) — F6 (89)	
	8	Coupled Hps.	2		
8	0	Clav.	1	C2 (36) — C7 (96)	
Chromatic Percussion	9	0	Celesta	1	C4 (60) — C8 (108)
	10	0	Glockenspiel	1	C5 (72) — C8 (108)
	11	0	Music Box	1	C4 (60) — C6 (84)
	12	0	Vibraphone	1	F3 (53) — F6 (89)
	13	0	Marimba	1	C3 (48) — C6 (84)
	14	0	Xylophone	1	F4 (65) — C7 (96)
	15	0	Tubular-bell	1	C4 (60) — F5 (77)
		8	Church Bell	1	
16	0	Santur	1	C4 (60) — C6 (84)	
Organ	17	0	Organ 1	1	C2 (36) — C7 (96)
		8	Detuned Or. 1	2	
	18	0	Organ 2	1	C2 (36) — C7 (96)
		8	Detuned Or. 2	2	
	19	0	Organ 3	2	A0 (21) — C8 (108)
	0	Church Org. 1	1		
	20	8	Church Org. 2	2	
		0	Reed Organ	1	C2 (36) — C7 (96)
	22	0	Accordion Fr	2	F3 (53) — F6 (89)
		8	Accordion It	2	
23	0	Harmonica	1	C4 (60) — C6 (84)	
24	0	Bandneon	2	F3 (53) — F6 (89)	

	PC #	CC0 #	Tone name	V	Recommended sound range	
Guitar	25	0	Nylon-str. Gt.	1	E2 (40) — C6 (84)	
		8	Ukulele	1	A3 (57) — B5 (83)	
	26	0	Steel-str. Gt.	1	E2 (40) — C6 (84)	
		8	12-str. Gt.	2		
		16	Mandolin	1	G3 (55) — E6 (88)	
	27	0	Jazz Gt.	1	E2 (40) — D6 (86)	
		8	Hawaiian Gt.	1		
	28	0	Clean Gt.	1		
		8	Chorus Gt.	2		
	29	0	Muted Gt.	1		
		8	Funk Gt.	1		
	30	0	Overdrive Gt.	1		
	31	0	Distortion Gt.	1		
		8	Feedback Gt.	2		
	32	0	Gt. Harmonics	1		
		8	Gt. Feedback	1		
Bass	33	0	Acoustic Bs.	1		E1 (28) — G3 (55)
	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		
		8	Synth Bass 3	1		
40	0	Synth Bass 2	2			
	8	Synth Bass 4	2			

PC # : Program number
 CC0 # : Value of control number 0
 (GS bank select number)
 V : Number of voices
 Recommended sound range : The recommended sound range does not indicate the limit of sound production. The actual playable range extends beyond the recommended sound range.

	PC #	CCO #	Tone name	V	Recommended sound range
Strings/orchestra	41	0	Violin	1	G3 (55) — C7 (96)
	42	0	Viola	1	G3 (48) — C6 (84)
	43	0	Cello	1	C2 (36) — C5 (72)
	44	0	Contrabass	1	E1 (28) — G3 (55)
	45	0	Tremolo Str	1	E1 (28) — C7 (96)
	46	0	PizzicatoStr	1	
	47	0	Harp	1	B0 (23) — G7 (103)
	48	0	Timpani	1	C2 (36) — A3 (57)
Ensemble	49	0	Strings	1	E1 (28) — C7 (96)
		8	Orchestra	2	C1 (24) — C7 (96)
	50	0	Slow Strings	1	E1 (28) — C7 (96)
	51	0	Syn. Strings1	1	C2 (36) — C7 (96)
		8	Syn. Strings3	2	C1 (24) — C7 (96)
	52	0	Syn. Strings2	2	C2 (36) — C7 (96)
	53	0	Choir Aahs	1	C3 (48) — G5 (79)
	54	0	Voice Oohs	1	
	55	0	SynVox	1	C3 (48) — C6 (84)
	56	0	OrchestraHit	2	C3 (48) — C5 (72)
Brass	57	0	Trumpet	1	A # 3 (58) — A # 6 (94)
	58	0	Trombone	1	A # 1 (34) — D # 5 (75)
	59	0	Tuba	1	F1 (29) — G3 (55)
	60	0	MutedTrumpet	1	A # 3 (58) — A # 5 (82)
	61	0	French Horn	2	F2 (41) — F5 (77)
	62	0	Brass 1	1	C2 (36) — C7 (96)
		8	Brass 2	2	
	63	0	Synth Brass1	2	
		8	Synth Brass3	2	
	64	0	Synth Brass2	2	
8		Synth Brass4	1		

PC # : Program number
 CCO # : Value of control number 0
 (GS bank select number)
 V : Number of voices

Recommended sound range : The recommended sound range does not indicate the limit of sound production. The actual playable range extends beyond the recommended sound range.

	PC #	CCO #	Tone name	V	Recommended sound range	
Reed	65	0	Soprano Sax	1	F # 3 (54) — D # 6 (87)	
	66	0	Alto Sax	1	C # 3 (49) — G # 5 (80)	
	67	0	Tenor Sax	1	F # 2 (42) — D # 5 (75)	
	68	0	Baritone Sax	1	C # 2 (37) — G # 4 (68)	
	69	0	Oboe	1	A # 3 (58) — G6 (91)	
	70	0	English Horn	1	E3 (52) — A5 (81)	
	71	0	Bassoon	1	A # 1 (34) — C5 (72)	
	72	0	Clarinet	1	D3 (50) — G6 (91)	
	Pipe	73	0	Piccolo	1	D5 (74) — C8 (108)
		74	0	Flute	1	C4 (60) — C7 (96)
		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		
		8	Sine Wave	1		
	82	0	Saw Wave	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		
Synth pad etc.	88	0	Bass & Lead	2		
	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 #	CCO #	Tone name	V
Synth SFX	97	0	Ice Rain	2
	98	0	Soundtrack	2
	99	0	Crystal	2
	100	0	Atmosphere	2
	101	0	Brightness	2
	102	0	Goblin	2
	103	0	Echo Drops	1
	104	0	Star Theme	2
Ethnic	105	0	Sitar	1
	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	Shannai	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	
120	0	Reverse Cym.	* 2	

PC # : Program number

CCO # : Value of control number 0
(GS bank select 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.

	PC #	CCO #	Tone name	V
121	0		Gt. FretNoise	* 1
	1		Gt. Cut Noise	* 1
	2		String Slap	* 1
122	0		Breath Noise	2
	1		Fl. Key Click	* 1
123	0		Seashore	* 1
	1		Rain	* 2
	2		Thunder	* 1
	3		Wind	* 1
	4		Stream	* 2
124	5		Bubble	* 2
	0		Bird	* 2
	1		Dog	* 1
	2		Horse-Gallop	* 1
	0		Telephone 1	* 1
125	1		Telephone 2	* 1
	2		Door Creaking	* 1
	3		Door	* 1
	4		Scratch	* 1
	5		Windchime	* 2
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
	1		Laughing	* 1
	2		Screaming	* 1
	3		Punch	* 1
	4		Heart Beat	* 1
128	5		Footsteps	* 1
	0		Gun Shot	* 1
	1		Machine Gun	* 1
	2		Lasergun	* 1
	3		Explosion	* 2

● CC0 # : 126

PC #	Tone name	V
1	A. Piano 1	2
2	A. Piano 2	2
3	A. Piano 3	2
4	A. Piano 4	2
5	A. Piano 5	1
6	A. Piano 7	1
7	A. Piano 9	1
8	E. Piano 1	2
9	E. Piano 3	2
10	E. Piano 5	2
11	A. Guitar 1	1
12	A. Guitar 3	2
13	A. Guitar 4	2
14	E. Guitar 1	1
15	E. Guitar 2	1
16	Slap 3	1
17	Slap 4	2
18	Slap 5	1
19	Slap 6	1
20	Slap 9	1
21	Slap 10	2
22	Slap 11	1
23	Slap 12	1
24	Fingered 1	1
25	Fingered 2	2
26	Picked 1	1
27	Picked 2	2
28	Fretless 1	1
29	AC Bass 1	2
30	Choir 1	1
31	Choir 2	1
32	Choir 3	2

PC #	Tone name	V
33	Choir 4	2
34	Strings 1	1
35	Strings 2	1
36	Strings 3	2
37	Strings 4	2
38	E. Organ 2	2
39	E. Organ 4	2
40	E. Organ 6	2
41	E. Organ 8	2
42	E. Organ 9	2
43	E. Organ 10	2
44	E. Organ 11	2
45	E. Organ 12	2
46	E. Organ 13	2
47	Soft TP 1	1
48	Soft TP 3	1
49	TP/TRB 1	1
50	TP/TRB 2	1
51	TP/TRB 3	1
52	TP/TRB 4	1
53	TP/TRB 5	2
54	TP/TRB 6	2
55	Sax 1	1
56	Sax 2	1
57	Sax 3	1
58	Sax 5	2
59	Brass 1	1
60	Brass 2	1
61	Brass 3	2
62	Brass 4	2
63	Brass 5	2
64	Orche Hit	1

CC0 # : Value of control number 0
(GS bank select number)

PC # : Program number

V : Number of voices

※ 126 of control number 0 is set to the same sound arrangement of the CM-32P (Roland PCM Sound Module). But the setting of the pitch bend range, modulation depth, etc., are different from that of CM-32P. Pan directions are reversed from an actual CM-32P, so to rectify this, reverse the L/R connections of the Audio Output jacks.

※ If exclusive messages of the CM-32P are received by the CM-300, the settings of the latter will not be changed.

● CC0 # : 127

PC #	Tone name	V	PC #	Tone name	V	PC #	Tone name	V	PC #	Tone name	V
1	Acou Piano 1	1	33	Fantasy	2	65	Acou Bass 1	1	97	Brs Sect 2	2
2	Acou Piano 2	1	34	Harmo Pan	2	66	Acou Bass 2	1	98	Vibe 1	1
3	Acou Piano 3	1	35	Chorale	1	67	Elec Bass 1	1	99	Vibe 2	1
4	Elec Piano 1	1	36	Glasses	2	68	Elec Bass 2	1	100	Syn Mallet	1
5	Elec Piano 2	1	37	Soundtrack	2	69	Slap Bass 1	1	101	Windbell	2
6	Elec Piano 3	1	38	Atmosphere	2	70	Slap Bass 2	1	102	Glock	1
7	Elec Piano 4	1	39	Warm Bell	2	71	Fretless 1	1	103	Tube Bell	1
8	Honkytonk	2	40	Funny Vox	1	72	Fretless 2	1	104	Xylophone	1
9	Elec Org 1	1	41	Echo Bell	2	73	Flute 1	1	105	Marimba	1
10	Elec Org 2	2	42	Ice Rain	2	74	Flute 2	1	106	Koto	1
11	Elec Org 3	1	43	Oboe 2001	2	75	Piccolo 1	1	107	Sho	2
12	Elec Org 4	1	44	Echo Pan	2	76	Piccolo 2	2	108	Shakuhachi	2
13	Pipe Org 1	2	45	Doctor Solo	2	77	Recorder	1	109	Whistle 1	2
14	Pipe Org 2	2	46	Schooldaze	1	78	Pan Pipes	1	110	Whistle 2	1
15	Pipe Org 3	2	47	Bellsinger	1	79	Sax 1	1	111	Bottleblow	2
16	Accordion	2	48	Square Wave	2	80	Sax 2	1	112	Breathpipe	1
17	Harpsi 1	1	49	Str Sect 1	1	81	Sax 3	1	113	Timpani	1
18	Harpsi 2	2	50	Str Sect 2	1	82	Sax 4	1	114	Melodic Tom	1
19	Harpsi 3	1	51	Str Sect 3	1	83	Clarinet 1	1	115	Deep Snare	1
20	Clavi 1	1	52	Pizzicato	1	84	Clarinet 2	1	116	Elec Perc 1	1
21	Clavi 2	1	53	Violin 1	1	85	Oboe	1	117	Elec Perc 2	1
22	Clavi 3	1	54	Violin 2	1	86	Engl Horn	1	118	Taiko	1
23	Celesta 1	1	55	Cello 1	1	87	Bassoon	1	119	Taiko Rim	1
24	Celesta 2	1	56	Cello 2	1	88	Harmonica	1	120	Cymbal	1
25	Syn Brass 1	2	57	Contrabass	1	89	Trumpet 1	1	121	Castanets	1
26	Syn Brass 2	2	58	Harp 1	1	90	Trumpet 2	1	122	Triangle	1
27	Syn Brass 3	2	59	Harp 2	1	91	Trombone 1	2	123	Orche Hit	1
28	Syn Brass 4	2	60	Guitar 1	1	92	Trombone 2	2	124	Telephone	1
29	Syn Bass 1	1	61	Guitar 2	1	93	Fr Horn 1	2	125	Bird Tweet	1
30	Syn Bass 2	2	62	Elec Gtr 1	1	94	Fr Horn 2	2	126	One Note Jam	1
31	Syn Bass 3	2	63	Elec Gtr 2	1	95	Tuba	1	127	Water Bells	2
32	Syn Bass 4	1	64	Sitar	2	96	Brs Sect 1	1	128	Jungle Tune	2

CC0 # : Value of control number 0
(GS bank select number)

PC # : Program number

V : Number of voices

※ 127 of control number 0 is set to the same sound arrangement of the MT-32 (Roland Multi Timbre Sound Module). But the setting of the pitch bend range, modulation depth, etc., are different from that of MT-32. Pan directions are reversed from an actual MT-32, so to rectify this, reverse the L/R connections of the Audio Output jacks.

※ If exclusive messages of the MT-32 are received by the CM-300, the settings of the latter will not be changed.

DRUM SET TABLE (GS SOUND SOURCE)

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]
	Slap						Pedal Hi-Hat [EXC1]
29	Scratch Push						Open Hi-Hat [EXC1]
30	Scratch Pull						Hide Cymbal
31	Sticks						
32	Square Click						
33	Metronome Click						
34	Metronome Bell						
35	Kick Drum 2						Concert BD 2
36	Kick Drum 1		MONDO Kick	Elec BC	808 Bass Drum		Concert BD 1
37	Slide 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
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
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]						
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 Culca [EXC4]						
79	Open Culca [EXC4]						
80	Mute Triangle [EXC5]						
81	Open Triangle [EXC5]						
82	Shaker						
83	Jingle Bell						
84	Belltree						
85	Castanets						
86	Mute Surdo [EXC6]						
87	Open Surdo [EXC6]						
88							Applause ★

PC # : Program 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)

● CM-64/32L set (Program number 128)

Note number	PC#57:SFX Set
39	High O
40	Slap
41	Scratch Push
42	Scratch Pull
43	Sticks
44	Square Click
45	Metronome Click
46	Metronome Bell
47	Guitar sliding finger
48	Guitar cutting noise (down)
49	Guitar cutting noise (up)
50	String slap of double bass
51	Fl. Key Click
52	Laughing
53	Screaming
54	Punch
55	Heart Beat
56	Footsteps1
57	Footsteps2
58	Applause ★
59	Door Creaking
60	Door
61	Scratch
62	Windchime ★
63	Car-Engine
64	Car-Stop
65	Car-Pass
66	Car-Crash ★
67	Siren
68	Train
69	Jetplane ★
70	Helicopter ★
71	Starship ★
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	Stream ★
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.

※ The CM-64/32L set is the MT-32 drum set with SFX sounds added to it.

Note number	PC#128:CM-64/32L Set
34	-----
35	Acoustic Bass Drum
36	Acoustic Bass Drum
37	Rim Shot
38	Acoustic Snare Drum
39	Hand Clap
40	Electronic Snare Drum
41	Acoustic Low Tom
42	Closed High Hat [EXC1]
43	Acoustic Low Tom
44	Open High Hat 2
45	Acoustic Middle Tom
46	Open High Hat 1 [EXC1]
47	Acoustic Middle Tom
48	Acoustic High Tom
49	Crash Cymbal
50	Acoustic High Tom
51	Ride Cymbal
52	-----
53	-----
54	Tambourine
55	-----
56	Cowbell
57	-----
58	-----
59	-----
60	High Bongo
61	Low Bongo
62	Mule High Conga
63	High Conga
64	Low Conga
65	High Timbale
66	Low Timbale
67	High Agogo
68	Low Agogo
69	Cabasa
70	Maracas
71	Short Whistle
72	Long Whistle
73	Ouljada
74	-----
75	Claves
76	Laughing
77	Screaming
78	Punch
79	Heartbeat
80	Footsteps 1
81	Footsteps 2
82	Applause ★
83	Creaking
84	Door
85	Scratch
86	Windchime ★
87	Engine
88	Car-Stop
89	Car-Pass
90	Crash ★
91	Siren
92	Train
93	Jet ★
94	Helicopter ★
95	Starship ★
96	Platol
97	Machine Gun
98	Lasergun
99	Explosion ★
100	Dog
101	Horse-Gallop
102	Birds ★
103	Rain ★
104	Thunder
105	Wind
106	Waves
107	Stream ★
108	Bubble ★

Roland Exclusive Messages

1. Data Format for Exclusive Messages

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

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

MIDI status: F0H, F7H

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

Manufacturer ID: 41H

The Manufacturer-ID identifies the manufacturer of a MIDI instrument that 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

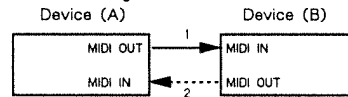
Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory-resident records--waveform and tone data, switch status, and parameters, for example--to specific locations in a machine-dependent address space, thereby allowing access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

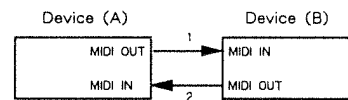


Connection at point 2 is essential for "Request data" procedures. (See Section 3.)

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.

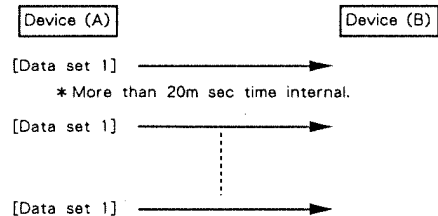
The MIDI standards inhibit non-real time messages from interrupting an exclusive one. This fact is inconvenient for the devices that support a "soft-through" mechanism. To maintain compatibility with such devices, Roland has limited the DT1 to 256 bytes so that an excessively long message is sent out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

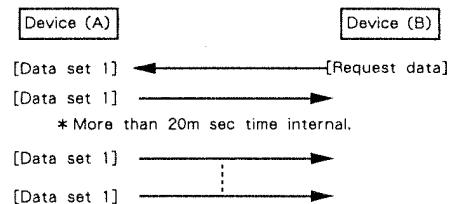
- * A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.
- * Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields 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.



1. Transmitted data**■ System Realtime Message****● Active sensing**

status
FEH

* Transmit at about 250 milli - seconds interval.

■ System Exclusive Message

F0H : System exclusive
F7H : EOX (End of exclusive)

* Refer to section 3 and Roland Exclusive Messages.

2. Received data**■ Channel voice message****● NOTE OFF**

status second third
8nH kkH vvH

or

status second third
9nH kkH 00H

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

* These messages are ignored when "RX.NOTE MESSAGE = OFF".
* On drum part, these messages are ignored when "RX.NOTE OFF = OFF" at each instrument.
* Velocity is ignored.

● NOTE ON

status second third
9nH kkH vvH

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

* This message is ignored when "RX.NOTE MESSAGE = OFF".
* On drum part, this message is ignored when "RX.NOTE ON = OFF" at each instrument.

● POLYPHONIC KEY PRESSURE

status second third
AnH kkH vvH

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

* This message is ignored when "RX.POLY PRESSURE (PAF) = OFF".

● CONTROL CHANGE

* This message is ignored when "RX.CONTROL CHANGE = OFF".

○ BANK SELECT

status second third
BnH 00H mmH
Bn 20H llH

n = MIDI channel number : 0H - FH (1 - 16)
mm, ll = Bank number : 00 00H - 7F 7FH (1 - 16384)

* "Bank select" is suspended until receiving "Program change".
* llH is ignored. (value = 00H)

○ MODULATION

status second third
BnH 01H vvH

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

* This message is ignored when "RX.MODULATION = OFF".
* Default setting is pitch modulation.

○ PORTAMENTO TIME

status second third
BnH 05H vvH

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

○ DATA ENTRY

status second third
BnH 06H mmH
BnH 26H llH

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

○ VOLUME

status second third
BnH 07H vvH

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

* You can adjust the volume of specified channel (part).
The maximum volume is determined by EXPRESSION and MASTER VOLUME message.
* This message is ignored when "RX.VOLUME = OFF".

○ PANPOT

status second third
BnH 0AH vvH

n = MIDI channel number : 0H - FH (1 - 16)
vv = Panpot : 00H - 40H - 7FH
(0 - 64 - 127)

* Resolution of panpot is approx. 7-bit (127 steps).
* This message is ignored when "RX.PANPOT = OFF".

○ EXPRESSION

status second third
 BnH 0BH vvH

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

*You can adjust the volume of specified channel (part).
 The maximum volume is determined by VOLUME and MASTER VOLUME message.
 *This message is ignored when "RX.EXPRESSION = OFF".

○ HOLD1

status second third
 BnH 40H vvH

n = MIDI channel number : 0H - FH (1 - 16)
 vv = control value : 00H - 3FH (0 - 63) <OFF >
 40H - 7FH (64 - 127) <ON >

*This message is ignored when "RX.HOLD1 = OFF".

○ PORTAMENTO

status second third
 BnH 41H vvH

n = MIDI channel number : 0H - FH (1 - 16)
 vv = control value : 00H - 3FH (0 - 63) <OFF >
 40H - 7FH (64 - 127) <ON >

*This message is ignored when "RX.PORTAMENTO = OFF".
 *In poly mode, you cannot specify the portamento source pitch.
 If you wish to specify the source pitch, you may use LGC (Legato Control).

○ SOSTENUTO

status second third
 BnH 42H vvH

n = MIDI channel number : 0H - FH (1 - 16)
 vv = control value : 00H - 3FH (0 - 63) <OFF >
 40H - 7FH (64 - 127) <ON >

*This message is ignored when "RX.SOSTENUTE = OFF".

○ SOFT

status second third
 BnH 43H vvH

n = MIDI channel number : 0H - FH (1 - 16)
 vv = control value : 00H - 3FH (0 - 63) <OFF >
 40H - 7FH (64 - 127) <ON >

*This message is ignored when "RX.SOFT = OFF".

○ LGC (Legato Control)

status second third
 BnH 54H kkH

n = MIDI channel number : 0H - FH (1 - 16)
 kk = Legato source key number : 00H - 7FH (0 - 127)

*When a note on is just come after LGC logically, the voice is tuned re-tuning on from the pitch of legato source key according to the portamento time (no need to use portamento on/off).
 If a voice turned on before LGC and the key number is equal to the legato source key number of LGC and other note on come after LGC, the pitch of previous is re-tuned.

for example :

on MIDI	description	result
90 3C 40	Note on C4	C4 on
80 54 3C	LGC 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

○ EFFECT1 DEPTH (reverb send depth)

status second third
 BnH 5BH vvH

n = MIDI channel number : 0H - FH (1 - 16)
 vv = reverb send depth : 00H - 7FH (0 - 127)

○ EFFECT3 DEPTH (chorus send depth)

status second third
 BnH 5DH vvH

n = MIDI channel number : 0H - FH (1 - 16)
 vv = chorus send depth : 00H - 7FH (0 - 127)

○ NRPN MSB/LSB

status second third
 BnH 63H mmH
 BnH 62H llH

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

*This message is ignored when "RX.NRPN = OFF".(default : OFF)

NRPN
 NRPN (Non Registered Parameter Number) is an expanded message of the control change.
 Each function of NRPN is described by manufacture.
 You can change the value of several CM - 300 parameters.
 Set first NRPN MSB/LSB before send data entry.

CM - 300 can receive parameters as shown below ;

NRPN	DATA ENTRY	description
MSB LSB	MSB LSB	
01H 08H	mmH llH	VIBRATE RATE mm = 0EH - 40H - 72H (-50 - 0 - +50) ll = Ignored
01H 09H	mmH llH	VIBRATE DEPTH mm = 0EH - 40H - 72H (-50 - 0 - +50) ll = Ignored
01H 0AH	mmH llH	VIBRATE DELAY mm = 0EH - 40H - 72H (-50 - 0 - +50) ll = Ignored
01H 20H	mmH llH	TVF CUTOFF FREQUENCY mm = 0EH - 40H - 72H (-50 - 0 - +50) ll = Ignored
01H 21H	mmH llH	TVF RESONANCE mm = 0EH - 40H - 72H (-50 - 0 - +50) ll = Ignored
01H 63H	mmH llH	TVF&TVA ENV. ATTACK TIME mm = 0EH - 40H - 72H (-50 - 0 - +50) ll = Ignored
01H 64H	mmH llH	TVF&TVA ENV. DECAY TIME mm = 0EH - 40H - 72H (-50 - 0 - +50) ll = Ignored
01H 66H	mmH llH	TVF&TVA ENV. RELEASE TIME mm = 0EH - 40H - 72H (-50 - 0 - +50) ll = Ignored
18H rrH	mmH llH	PITCH COARSE OF DRUM TONE rr = key number of drum tone

				mm = 00H - 40H - 7FH (-64 - 0 - +63 semitone) ll = ignored
1AH	rrH	mmH	llH	TVA LEVEL OF DRUM TONE rr = key number of drum tone mm = 00H - 7FH <zero - maximum> ll = ignored
1CH	rrH	mmH	llH	PANPOT OF DRUM TONE rr = key number of drum tone mm = 00H, 01H - 40H - 7FH <Random, Left - Center - Right> ll = ignored
1DH	rrH	mmH	llH	REVERB SEND DEPTH OF DRUM TONE rr = key number of drum tone mm = 00H - 7FH <zero - maximum> ll = ignored
1EH	rrH	mmH	llH	CHORUS SEND DEPTH OF DRUM TONE rr = key number of drum tone mm = 00H - 7FH <zero - maximum> ll = ignored

○ RPN MSB/LSB

<u>status</u>	<u>second</u>	<u>third</u>
BnH	65H	mmH
BnH	64H	llH

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

* This message is ignored when "RX.RPN = OFF".

** RPN **

RPN (Registered Parameter Number) is the expand message of control change.

Each function of RPN is described by MIDI.
You can change the value of RPN parameters.
First, set RPN MSB/LSB before send data entry.

CM-300 can receive Pitch bend sensitivity (RPN # 0), Master fine turning (RPN # 1), Master coarse tuning (RPN # 2) and RPN reset (RPN # 16383).

RPN	DATA ENTRY	description
MSB LSB	MSB LSB	
00H 00H	mmH llH	PITCH BEND SENSITIVITY mm = 00H - 18H (0 - 24 semitone) ll = ignored (Up to 2 octaves, power on default is two semitones)
00H 01H	mmH llH	MASTER FINE TUNING mm, ll = 00H, 00H - 40H, 00H - 7FH, 7FH (-8192x100/8192 - 0 - +8191x100/8192 cent)
00H 02H	mmH llH	MASTER COARSE TUNING mm = 28H - 40H - 58H (-24 - 0 - +24 semitone) ll = ignored
7FH 7FH	mmH llH	RPN RESET Return to no specified parameter of RPN and NRPN. Current setting value is no change. mm, ll = ignored

● PROGRAM CHANGE

<u>status</u>	<u>second</u>
CnH	ppH

n = MIDI channel number : 0H - FH (1 - 16)
pp = program number : 00H - 7FH (1 - 128)

* This message is ignored when "RX.PROGRAM CHANGE = OFF".

● CHANNEL PRESSURE

<u>status</u>	<u>second</u>
DnH	vvH

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

* This message is ignored when "RX.CH PRESSURE = OFF".

● PITCH BEND

<u>status</u>	<u>second</u>	<u>third</u>
EnH	llH	mmH

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

* This message is ignored when "RX.PITCH BEND = OFF".

■ CHANNEL MODE MESSAGE

● ALL SOUNDS OFF

<u>status</u>	<u>second</u>	<u>third</u>
BnH	78H	00H

n = MIDI CHANNEL NUMBER: 0H - FH (1 - 16)

* When "ALL SOUNDS OFF" is received, all sounds of specified channel turn off immediately.
However, the state of channel message is no change.

● RESET ALL CONTROLLERS

<u>status</u>	<u>second</u>	<u>third</u>
BnH	79H	00H

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

* When "RESET ALL CONTROLLERS" is received, controller value of specified channel return to default at power on.

controller	value
PITCH BEND CHANGE	± 0 (center)
POLYPHONIC KEY PRESSURE	0 (minimum)
CHANNEL PRESSURE	0 (minimum)
MODULATION	0 (minimum)
EXPRESSION	127 (maximum)
HOLD1	0 (off)
PORTAMENTO	0 (off)
SOFT	0 (off)
SOSTENUTO	0 (off)
RPN	No specified parameter, value is no change
NRPN	No specified parameter, value is no change

● ALL NOTES OFF

<u>status</u>	<u>second</u>	<u>third</u>
BnH	7BH	00H

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

* When "ALL NOTES OFF" is received, all on states turn to off in the specified channel.
However, sound remains when hold1 and/or sostenuto is on.

● OMNI OFF

<u>status</u>	<u>second</u>	<u>third</u>
BnH	7CH	00H

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

* OMNI OFF is only recognized as "ALL NOTES OFF".
Mode doesn't change.

● OMNI ON

<u>status</u>	<u>second</u>	<u>third</u>
BnH	7DH	00H

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

*OMNI ON is only recognized as "ALL NOTES OFF".
Mode doesn't change, still OMNI OFF.

● MONO

<u>status</u>	<u>second</u>	<u>third</u>
BnH	7EH	mmH

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

*MONO is recognized as "ALL SOUNDS OFF".
And the specified channel turns to Mode4 (m = 1), even if mmH is not equal to 1 (mmH is ignored).

● POLY

<u>status</u>	<u>second</u>	<u>third</u>
BnH	7FH	mmH

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

*POLY is recognized as "ALL SOUNDS OFF".
And the specified channel turns to Mode3.

■ SYSTEM REALTIME MESSAGE

● ACTIVE SENSING

<u>status</u>
FEH

*Having received "ACTIVE SENSING", CM - 300 expects the interval of any data occur up to 300ms.
If the interval is over 420ms, CM - 300 does "ALL SOUNDS OFF", "ALL NOTES OFF" AND "RESET ALL CONTROLLERS" and turns on normal operation (will not check interval time).

■ SYSTEM EXCLUSIVE MESSAGE

FOH : system exclusive message
F7H : EOX (end of exclusive)

* Refer to section 3 and Roland Exclusive Messages.

3. EXCLUSIVE COMMUNICATIONS

CM - 300 can transmit and receive the patch parameters using system exclusive message.
Model ID of CM - 300 is 42H and device ID is 10H.

■ ONE WAY COMMUNICATION

● REQUEST DATA 1 RQ1 (11H)

byte	description
F0H	exclusive status
41H	manufacture's ID (Roland)
10H	device ID
42H	model ID (GS format)
11H	command ID (RQ1)
aaH	address MSB
bbH	address
ccH	address LSB
ssH	size MSB
ttH	size
uuH	size LSB
sum	checksum
F7H	EOX (end of exclusive)

● DATA SET 1 DT1 (12H)

byte	description
F0H	exclusive status
41H	manufacture's ID (Roland)
10H	device ID
42H	model ID (GS format)
12H	command ID (DT1)
aaH	address MSB
bbH	address
ccH	address MSB
ddH	data MSB
:	:
ddH	data LSB
sum	checksum
F7H	EOX (end of exclusive)

4. PARAMETER ADDRESS MAP

* The address and size are described with 7-bit Hexadecimal.
This means that the next 00 00 7F is 00 01 00.

address	MSB	LSB
binary	0aaa aaaa	0bbb bbbb 0ccc cccc
hexadecimal	AA	BB CC

size	MSB	LSB
binary	0sss ssss 0ttt tttt 0uuu uuuu	
hexadecimal	SS	TT UU

■ PARAMETER ADDRESS MAP

There are two types of the CM - 300 exclusive message.
One is an individual parameter communication, another is a bulk dump communication.

Coarse address map of the exclusive communication is shown below ;

● INDIVIDUAL

address	block	sub block	notes
40 00 00	SYSTEM PARAMETERS		*4-1
40 01 00	PATCH PARAMETERS	PATCH COMMON	*4-2
40 10 00		PATCH BLOCK 0	
:		:	
40 1F 00		PATCH BLOCK F	
40 20 00		PATCH BLOCK 0	
:		:	
40 2F 00		PATCH BLOCK F	
41 00 00	DRUM SETUP PARAMETERS		*4-3

● BULK DUMP

address	block	sub block	notes
48 00 00	SYSTEM PARAMETERS		*4-4
48 00 10	PATCH PARAMETERS	PATCH COMMON	*4-5
48 01 10		PATCH BLOCK 0	
:		:	
48 1B 30		PATCH BLOCK F	
49 00 00	DRUM SETUP PARAMETERS		*4-6

*One system exclusive message [F0..... F7] can only have one parameter.
 *You cannot use any address having " #" for the top address in a system exclusive message.

● 4 - 1 SYSTEM PARAMETERS

address	data	description
40 00 00	0018 - 0400 - 07E8	MASTER TUNE (-100.0 - 0 - +100.0 cent) *use nibblized data : 00 00 01 08H - 00 04 00 00H - 00 07 0E 08H *size 00 00 04H
40 00 04	00 - 7F	MASTER VOLUME (0 - 127)
40 00 05	28 - 40 - 58	MASTER KEY-SHIFT (-24 - 0 - +24 semitones)
40 00 06	01 - 40 - 7F	MASTER PAN <Left - Center - Right>
40 00 7F	00	*RESET 00H = GS reset

MASTER TUNE

tune (Hz)	data (H)
436	00 03 06 02
437	00 03 08 0A
438	00 03 0B 01
439	00 03 0D 09
440	00 04 00 00
441	00 04 02 07
442	00 04 04 0F
443	00 04 07 06
444	00 04 09 0D
445	00 04 0C 04

for example:
 As you set 442Hz for master tune, you should send the message as follow.

F0 41 10 42 12 40 00 00 00 04 04 0F 29 F7
 └─address └─data └─checksum

for example:
 As you set 100 (64H) for master volume you should send the message as follow.

F0 41 10 42 12 40 00 04 64 58 F7
 └─address └─checksum
 └─data

*The error checking process uses a checksum that provides a bit pattern where the least significant 7 bit are zero when values for an address, size and that checksum are summed.

● PATCH PARAMETERS

4 - 2 - 1 PATCH COMMON

address	data	description
	00 - 18	VOICE RESERVE (0 - 24)
40 01 10		Part 10(Drums)
40 01 11#		Part 1
40 01 12#		Part 2
40 01 13#		Part 3
40 01 14#		Part 4
40 01 15#		Part 5
40 01 16#		Part 6
40 01 17#		Part 7
40 01 18#		Part 8
40 01 19#		Part 9
40 01 1A#		Part 11
:		:
40 01 1F#		Part 16
40 01 30	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
40 01 31	00 - 07	REVERB CHARACTER
40 01 32	00 - 07	REVERB PRE-LPF
40 01 33	00 - 7F	REVERB LEVEL
40 01 34	00 - 7F	REVERB TIME
40 01 35	00 - 7F	REVERB DELAY FEEDBACK
40 01 36	00 - 7F	REVERB SEND LEVEL TO CHORUS
40 01 38	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 (Feedback)
40 01 39	00 - 07	CHORUS PRE-LPF
40 01 3A	00 - 7F	CHORUS LEVEL
40 01 3B	00 - 7F	CHORUS FEEDBACK
40 01 3C	00 - 7F	CHORUS DELAY
40 01 3D	00 - 7F	CHORUS RATE
40 01 3E	00 - 7F	CHORUS DEPTH
40 01 3F	00 - 7F	CHORUS SEND LEVEL TO REVERB

*All voice reserves must be sent as a package of 16 parts.
 The total number of voice reserves for parts must be 24 or less.

4 - 2 - 2 PATCH BLOCK

*n = part number : 0,1 - 9,A - F (10,1 - 9,11 - 16)
 *x = MIDI channel number : 0 - F (1 - 16)

address	data	description
40 1n 00	00 - 7F	TONE NUMBER bank select
40 1n 01#	00 - 7F	program change
40 1n 02	00 - 0F, 10	RX.CHANNEL (00:1 - 0F:16, 10:OFF) (00:OFF, 01:ON)
40 1n 03	00, 01	RX.PITCH BEND default = 01
40 1n 04	00, 01	RX.CH PRESSURE (CAF) 01
40 1n 05	00, 01	RX.PROGRAM CHANGE 01
40 1n 06	00, 01	RX.CONTROL CHANGE 01
40 1n 07	00, 01	RX.POLY PRESSURE (PAF) 01
40 1n 08	00, 01	RX.NOTE MESSAGE 01
40 1n 09	00, 01	RX.RPN 01
40 1n 0A	00, 01	RX.NRPN 00
40 1n 0B	00, 01	RX.MODURATION 01
40 1n 0C	00, 01	RX.VOLUME 01
40 1n 0D	00, 01	RX.PANPOT 01
40 1n 0E	00, 01	RX.EXPRESSION 01
40 1n 0F	00, 01	RX.HOLD1 01
40 1n 10	00, 01	RX.PORTAMENTO 01
40 1n 11	00, 01	RX.SOSTENUTO 01
40 1n 12	00, 01	RX.SOFT 01
40 1n 13	00, 01	MONO/POLY MODE (00:MONO, 01:POLY) default = 01

40 In 14	00, 01, 02	ASSIGN MODE	00 = single (default at n= 0) 01 = limited-multi (default at n≠0) 02 = full-multi	40 2n 20	28 - 40 - 58	CAF PITCH CONTROL (-24 - 0 - +24 semitone)
40 In 15	00, 01, 02	USE FOR RHYTHM PART	00 = off (default at n≠0) 01 = map1 (default at n= 0) 02 = map2	40 2n 21	00 - 40 - 7F	CAF TVF CUTOFF CONTROL (-9600 - 0 - +9600 cent)
40 In 16	28 - 40 - 58	PITCH KEY SHIFT	(-24 - 0 - +24 semitone)	40 2n 22	00 - 40 - 7F	CAF AMPLITUDE CONTROL (-100.0 - 0 - +100.0 %)
40 In 17	08 - 40 - 78	PITCH OFFSET FINE	(-12.0 - 0 - +12.0 Hz) use nibblized data : 00 08H - 04 00H - 0F 08H *size 00 00 02H	40 2n 23	00 - 40 - 7F	CAF LFO1 RATE CONTROL (-10.0 - 0 - +10.0 Hz)
40 In 19	00 - 7F	PART LEVEL		40 2n 24	00 - 7F	CAF LFO1 PITCH DEPTH (0 - 600 cent)
40 In 1A	00 - 7F	VELOCITY SENSE DEPTH		40 2n 25	00 - 7F	CAF LFO1 TVF DEPTH (0 - 2400 cent)
40 In 1B	00 - 7F	VELOCITY SENSE OFFSET		40 2n 26	00 - 7F	CAF LFO1 TVA DEPTH (0 - 100.0 %)
40 In 1C	00, 01-40-7F	PART PANPOT (Random, Left-Center-Right)		40 2n 27	00 - 40 - 7F	CAF LFO2 RATE CONTROL (-10.0 - 0 - +10.0 Hz)
40 In 1D	00 - 7F	KEY RANGE LOW (C-1 - G9)		40 2n 28	00 - 7F	CAF LFO2 PITCH DEPTH (0 - 600 cent)
40 In 1E	00 - 7F	KEY RANGE HIGH (C-1 - G9)		40 2n 29	00 - 7F	CAF LFO2 TVF DEPTH (0 - 2400 cent)
40 In 1F	00 - 7F	CC1 CONTROLLER NUMBER		40 2n 2A	00 - 7F	CAF LFO2 TVA DEPTH (0 - 100.0 %)
40 In 20	00 - 7F	CC2 CONTROLLER NUMBER		40 2n 30	28 - 40 - 58	PAF PITCH CONTROL (-24 - 0 - +24 semitone)
40 In 21	00 - 7F	CHORUS SEND DEPTH		40 2n 31	00 - 40 - 7F	PAF TVF CUTOFF CONTROL (-9600 - 0 - +9600 cent)
40 In 22	00 - 7F	REVERB SEND DEPTH		40 2n 32	00 - 40 - 7F	PAF AMPLITUDE CONTROL (-100.0 - 0 - +100.0 %)
40 In 30	0E - 40 - 72	VIBRATE RATE (-50 - 0 - +50)		40 2n 33	00 - 40 - 7F	PAF LFO1 RATE CONTROL (-10.0 - 0 - +10.0 Hz)
40 In 31	0E - 40 - 72	VIBRATE DEPTH (-50 - 0 - +50)		40 2n 34	00 - 7F	PAF LFO1 PITCH DEPTH (0 - 600 cent)
40 In 32	0E - 40 - 72	TVF CUTOFF FREQUENCY (-50 - 0 - +50)		40 2n 35	00 - 7F	PAF LFO1 TVF DEPTH (0 - 2400 cent)
40 In 33	0E - 40 - 72	TVF RESONANCE (-50 - 0 - +50)		40 2n 36	00 - 7F	PAF LFO1 TVA DEPTH (0 - 100.0 %)
40 In 34	0E - 40 - 72	TVF&TVA ENV. ATTACK TIME (-50 - 0 - +50)		40 2n 37	00 - 40 - 7F	PAF LFO2 RATE CONTROL (-10.0 - 0 - +10.0 Hz)
40 In 35	0E - 40 - 72	TVF&TVA ENV. DECAY TIME (-50 - 0 - +50)		40 2n 38	00 - 7F	PAF LFO2 PITCH DEPTH (0 - 600 cent)
40 In 36	0E - 40 - 72	TVF&TVA ENV. RELEASE TIME (-50 - 0 - +50)		40 2n 39	00 - 7F	PAF LFO2 TVF DEPTH (0 - 2400 cent)
40 In 37	0E - 40 - 72	VIBRATE DELAY (-50 - 0 - +50)		40 2n 3A	00 - 7F	PAF LFO2 TVA DEPTH (0 - 100.0 %)
40 In 40	00 - 40 - 7F	SCALE TUNING	C, C#, D, D#, E, F, F#, G, G#, A, A#, B (-64 - 0 - +63 cent)	40 2n 40	28 - 40 - 58	CC1 PITCH CONTROL (-24 - 0 - +24 semitone)
40 In 4B		*size 00 00 OCH		40 2n 41	00 - 40 - 7F	CC1 TVF CUTOFF CONTROL (-9600 - 0 - +9600 cent)
40 2n 00	28 - 40 - 58	MOD PITCH CONTROL	(-24 - 0 - +24 semitone)	40 2n 42	00 - 40 - 7F	CC1 AMPLITUDE CONTROL (-100.0 - 0 - +100.0 %)
40 2n 01	00 - 40 - 7F	MOD TVF CUTOFF CONTROL	(-9600 - 0 - +9600 cent)	40 2n 43	00 - 40 - 7F	CC1 LFO1 RATE CONTROL (-10.0 - 0 - +10.0 Hz)
40 2n 02	00 - 40 - 7F	MOD AMPLITUDE CONTROL	(-100.0 - 0 - +100.0 %)	40 2n 44	00 - 7F	CC1 LFO1 PITCH DEPTH (0 - 600 cent)
40 2n 03	00 - 40 - 7F	MOD LFO1 RATE CONTROL	(-10.0 - 0 - +10.0 Hz)	40 2n 45	00 - 7F	CC1 LFO1 TVF DEPTH (0 - 2400 cent)
40 2n 04	00 - 7F	MOD LFO1 PITCH DEPTH (0 - 600 cent)		40 2n 46	00 - 7F	CC1 LFO1 TVA DEPTH (0 - 100.0 %)
40 2n 05	00 - 7F	MOD LFO1 TVF DEPTH (0 - 2400 cent)		40 2n 47	00 - 40 - 7F	CC1 LFO2 RATE CONTROL (-10.0 - 0 - +10.0 Hz)
40 2n 06	00 - 7F	MOD LFO1 TVA DEPTH (0 - 100.0 %)		40 2n 48	00 - 7F	CC1 LFO2 PITCH DEPTH (0 - 600 cent)
40 2n 07	00 - 40 - 7F	MOD LFO2 RATE CONTROL	(-10.0 - 0 - +10.0 Hz)	40 2n 49	00 - 7F	CC1 LFO2 TVF DEPTH (0 - 2400 cent)
40 2n 08	00 - 7F	MOD LFO2 PITCH DEPTH (0 - 600 cent)		40 2n 4A	00 - 7F	CC1 LFO2 TVA DEPTH (0 - 100.0 %)
40 2n 09	00 - 7F	MOD LFO2 TVF DEPTH (0 - 2400 cent)		40 2n 50	28 - 40 - 58	CC2 PITCH CONTROL (-24 - 0 - +24 semitone)
40 2n 0A	00 - 7F	MOD LFO2 TVA DEPTH (0 - 100.0 %)		40 2n 51	00 - 40 - 7F	CC2 TVF CUTOFF CONTROL (-9600 - 0 - +9600 cent)
40 2n 10	40 - 58	BEND PITCH CONTROL	(0 - 24 semitone)	40 2n 52	00 - 40 - 7F	CC2 AMPLITUDE CONTROL (-100.0 - 0 - +100.0 %)
40 2n 11	00 - 40 - 7F	BEND TVF CUTOFF CONTROL	(-9600 - 0 - +9600 cent)	40 2n 53	00 - 40 - 7F	CC2 LFO1 RATE CONTROL (-10.0 - 0 - +10.0 Hz)
40 2n 12	00 - 40 - 7F	BEND AMPLITUDE CONTROL	(-100.0 - 0 - +100.0 %)	40 2n 54	00 - 7F	CC2 LFO1 PITCH DEPTH (0 - 600 cent)
40 2n 13	00 - 40 - 7F	BEND LFO1 RATE CONTROL	(-10.0 - 0 - +10.0 Hz)	40 2n 55	00 - 7F	CC2 LFO1 TVF DEPTH (0 - 2400 cent)
40 2n 14	00 - 7F	BEND LFO1 PITCH DEPTH (0 - 600 cent)		40 2n 56	00 - 7F	CC2 LFO1 TVA DEPTH (0 - 100.0 %)
40 2n 15	00 - 7F	BEND LFO1 TVF DEPTH (0 - 2400 cent)		40 2n 57	00 - 40 - 7F	CC2 LFO2 RATE CONTROL (-10.0 - 0 - +10.0 Hz)
40 2n 16	00 - 7F	BEND LFO1 TVA DEPTH (0 - 100.0 %)		40 2n 58	00 - 7F	CC2 LFO2 PITCH DEPTH (0 - 600 cent)
40 2n 17	00 - 40 - 7F	BEND LFO2 RATE CONTROL	(-10.0 - 0 - +10.0 Hz)	40 2n 59	00 - 7F	CC2 LFO2 TVF DEPTH (0 - 2400 cent)
40 2n 18	00 - 7F	BEND LFO2 PITCH DEPTH (0 - 600 cent)		40 2n 5A	00 - 7F	CC2 LFO2 TVA DEPTH (0 - 100.0 %)
40 2n 19	00 - 7F	BEND LFO2 TVF DEPTH (0 - 2400 cent)				
40 2n 1A	00 - 7F	BEND LFO2 TVA DEPTH (0 - 100.0 %)				

● DRUM SETUP PARAMETER

* m = map number : 0H - 1H
(0 = map1, 1 = map2)
* rr = drums part key number : 00H - 7FH (0 - 127)

address	data	description
41 m0 00	20 - 7F	DRUMS MAP NAME (12 ASCII character)
:	:	*SIZE 00 00 0CH
41 m0 0B	:	:
41 m1 rr	00 - 7F	PLAY KEY NUMBER pitch coarse
41 m2 rr	00 - 7F	LEVEL
41 m3 rr	00 - 7F	ASSIGN GROUP NUMBER (non, 1 - 127)
41 m4 rr	00, 01-40-7F	PANPOT <random, Left-Center-Right>
41 m5 rr	00 - 7F	REVERB DEPTH
:	:	multiplicand of the part reverb depth
41 m6 rr	00 - 7F	CHORUS DEPTH
:	:	multiplicand of the part chorus depth
41 m7 rr	00 - 01	RX.NOTE OFF (OFF / ON)
41 m8 rr	00 - 01	RX.NOTE ON (OFF / ON)

● BULK DUMP

1 - packet = 128 byte (MIDI)

ALL

address	size	description
48 00 00	00 1D 10	ALL (30 packets)

SYSTEM PARAMETER

address	size	description
48 00 00	00 00 10	SYSTEM PARAMETER (1 packet)

PATCH COMMON

address	size	description
48 00 10	00 01 00	PATCH COMMON (1 packet)

PATCH PART

address	size	description
48 01 10	00 01 60	PATCH BLOCK 0 (2 packets)
48 02 70	00 01 60	PATCH BLOCK 1 (2 packets)
48 04 50	00 01 60	PATCH BLOCK 2 (2 packets)
48 06 30	00 01 60	PATCH BLOCK 3 (2 packets)
48 08 10	00 01 60	PATCH BLOCK 4 (2 packets)
48 09 70	00 01 60	PATCH BLOCK 5 (2 packets)
48 0B 50	00 01 60	PATCH BLOCK 6 (2 packets)
48 0D 30	00 01 60	PATCH BLOCK 7 (2 packets)
48 0F 10	00 01 60	PATCH BLOCK 8 (2 packets)
48 10 70	00 01 60	PATCH BLOCK 9 (2 packets)
48 12 50	00 01 60	PATCH BLOCK A (2 packets)
48 14 30	00 01 60	PATCH BLOCK B (2 packets)
48 16 10	00 01 60	PATCH BLOCK C (2 packets)
48 17 70	00 01 60	PATCH BLOCK D (2 packets)
48 19 50	00 01 60	PATCH BLOCK E (2 packets)
48 1B 30	00 01 60	PATCH BLOCK F (2 packets)

DRUM MAP PARAMETER

* m = map number (0, 1)

address	size	description
49 m0 00	00 02 00	PLAY KEY NUMBER (2 packets)
49 m2 00	00 02 00	LEVEL (2 packets)
49 m4 00	00 02 00	ASSIGN GROUP NUMBER (2 packets)
49 m6 00	00 02 00	PANPOT (2 packets)
49 m8 00	00 02 00	REVERB DEPTH (2 packets)
49 mA 00	00 02 00	CHORUS DEPTH (2 packets)
49 mC 00	00 02 00	RX.NOTE ON/OFF (2 packets)
49 mE 00	00 00 18	DRUM MAP NAME (1 packet)

● Checksum of Exclusive Message

There is a Checksum in front of End of Exclusive.
Checksum check of Exclusive Message.
Checksum results from address and data (or size).

◆ How to calculate Checksum ◆
(There is an "H" indication end of hexadecimal.)

Checksum is a value of address (aah + ddh + ssh) and data (ddh + aah + tth + ...) (or size) reduced from xx 00H.

$$xx \ 00H - (aah + ddh + ssh + ddh + aah + tth + \dots) = yy \ ??H$$

↑
This value is a checksum.

*xx and yy are any value.
xx 00H is not a negative value if values of address and data (or size) are reduced from it.

for example 1:
How to calculate Checksum as you send the follow Exclusive Message.

F0 41 10 16 12 52 00 10 32	??	F7	①status
-----	-----	---	②manufacture's ID
① ② ③ ④ ⑤	↳address	↳data	③device ID
		⑥	④model ID
		↳checksum	⑤command ID
			⑥End of exclusive

values of address and data add up
52H + 00H + 10H + 32H = 01 14H

* NOTE ! *
The address and size are described with 7-bit Hexadecimal.
This means that the next 00 00 7F is not 00 00 80.
The next 00 00 7F is 00 01 00.

● Sample of calculation

• 00 7FH + 00 01H = 01 00H
• 00 09H + 00 01H = 00 0AH
• 02 00H + 01 00H = 01 00H

reduce from xx 00H ...
xx 00H - 01 14H = yy 6CH

therefore Checksum value is 6CH.

for example 2:
How to calculate Checksum as you send the follow Exclusive Message.

F0 41 10 16 11 04 01 76	00 01 76	??	F7(E0X)	①status
-----	-----	---	---	②manufacture's ID
① ② ③ ④ ⑤	↳address	↳size	⑥	③device ID
			↳checksum	④model ID
				⑤command ID
				⑥End of exclusive

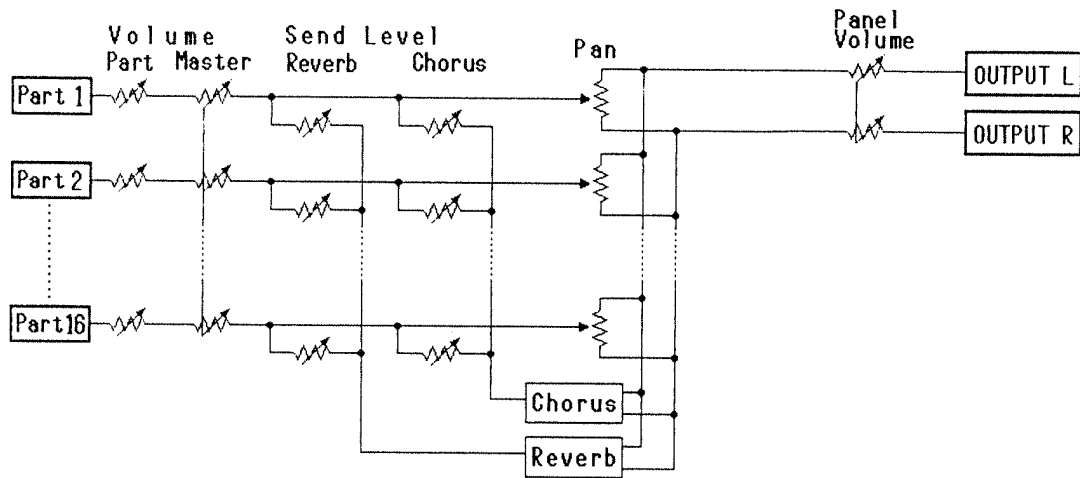
$$yy \ ??H = xx \ 00H - (04H + 01H + 76H + 00H + 01 + 76H)$$

$$= xx \ 00H - 01 72H$$

??H = 0EH

therefore, Checksum value is 0EH.

■ Block Diagram



■ *Specifications*

Sound Source : Compatible with GS format

Number of Parts : 16

Maximum Polyphony : 24(Voices)

Effects : Reverb/Delay
Chorus

Connectors : MIDI IN/OUT/THRU
Audio Outs (L, R)
Headphone Jack

Power Supply : 9 V DC (AC Adaptor)

Current Draw : 400mA

External Dimensions : 284(W) × 249(D) × 48(H) mm
11-3/16(W) × 9-13/16(D) × 1-15/16(H) inches

Weight : 1.65 kg
3 lbs 11 oz

Accessories : AC Adaptor
MIDI Cable (1)
Audio Cables (2)
Owner's Manual

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

MIDI Implementation Chart

Function ...		Transmitted	Recognized	Remarks
Basic Channel	Default Changed	×	1 - 16 1 - 16 each	
Mode	Default Messages Altered	× × *****	Mode 3 Mode 3, 4 (m = 1)	* 1
Note Number	True Voice	× *****	0 - 127 0 - 127	
Velocity	Note ON Note OFF	× ×	○ ×	
After Touch	Key's Ch's	× ×	* 2 * 2	
Pitch Bender		×	○/× * 2	Resolution : 12 bit
Control Change	0/32	×	○/× * 3	Bank select
	1	×	○/× * 2	Modulation
	5	×	○/× * 3	Portamento time
	6,38	×	○/× * 3	Data entry
	7	×	○/× * 2	Volume
	10	×	○/× * 2	Panpot
	11	×	○/× * 2	Expression
	64	×	○/× * 2	Hold 1
	65	×	○/× * 2	Portamento
	66	×	○/× * 2	Sostenuto
	67	×	○/× * 2	Soft
	84	×	○/× * 3	LGC
	91	×	○/× * 3 (reverb)	Effect1 depth
	93	×	○/× * 3 (chorus)	Effect3 depth
	98,99	×	○/× * 2	NRPN LSB, MSB
100, 101	×	○/× * 2	RPN LSB, MSB	
120	×	○	All sounds off	
121	×	○	Reset all controllers	
Prog Change	True #	× *****	○/× * 2 0 - 127	
System Exclusive		○	○	
System Common	Song Pos Song Sel Tune	× × ×	× × ×	
System Real Time	Clock Commands	× ×	× ×	
Aux Messages	Local ON/OFF All Notes OFF Active Sense Reset	× × ○ ×	× ○ (123 - 127) ○ ×	
Notes		* 1 Recognize as m = 1 even if m ≠ 1. * 2 ○ × can be selectable. * 3 ○ × can be selectable, only using the receive switch of control change (all).		

Mode 1 : OMNI ON, POLY
Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON, MONO
Mode 4 : OMNI OFF, MONO

○ : Yes
× : No

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 Corp 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)932 - 3266

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

NEW ZEALAND

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

UNITED KINGDOM

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

GERMANY

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

BELGIUM/HOLLAND/ LUXEMBOURG

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

DENMARK

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

SWEDEN

Roland Scandinavia as
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

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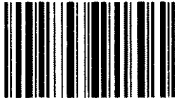
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