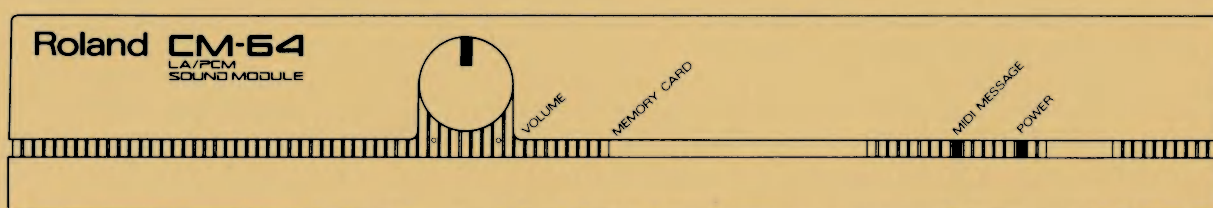


Roland

LA/PCM SOUND MODULE

CM-64

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 West Germany

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das

LA/PCM SOUND MODULE CM-64

(Gerat. 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 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.

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Thank you for purchasing the Roland LA/PCM Sound Module CM-64. To make the best use of the CM-64, please read this owner's manual carefully.

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Please read the separate "Guidebook for MIDI" before reading this owner's manual.

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## ■ *Features of the CM-64*

The following describes the features of the CM-64.

### ● **The CM-64 adopts LA sound synthesis and PCM sound module that create high quality sounds**

The LA synthesis involves a great many technological advances that have been proved in the D-50 and D-20. The PCM sound module similar to the U-110 is also built in the CM-64. You can use either of the sound modules depending what kind of music you wish to create.

### ● **Sound Modules that are ideal for computer music**

The CM-64's LA sound section is a multi timbral sound module that consists of 9 different Parts (including one Rhythm Part) and the PCM sound module consists of 6 different Parts. In other words, one CM-64 works as 15 separate sound modules. The compact and simply designed body may be ideal for computer music.

Also, the CM-64 is almost the same as the MT-32 with PCM sound module built-in, and therefore can use the application software of the MT-32.

### ● **The CM-64 can produce a maximum of 63 voices**

Because the CM-64 can produce a maximum of 63 voices using the LA and PCM sound modules, you can enjoy high level ensemble performance.

### ● **Rhythm Part is provided specifically for rhythm performance**

The Rhythm Part in the LA sound module features various drum and percussive voices, allowing you to enjoy wide variations of rhythm performance. It also includes SE's (sound effects) such as a laughing voice or explosion for you to create unique performance.

### ● **The CM-64 features a great many sounds**

The LA sound section of the CM-64 stores 128 different instrument sounds, 30 rhythm sounds and 33 SE's (sound effects). The PCM section stores 64 different sounds, and another 64 sounds can be available using an optional PCM Card.

### ● **The built-in Digital Reverb creates realistic reverb effect**

The CM-64's digital reverb adds spaciousness and richness to the sounds.

---

## ■ *Important Notes*

When employing an AC adaptor, make certain you use only one that has been supplied by the manufacturer. Use of any other power adaptor could result in malfunction or damage.

### **[Concerning the power supply]**

- Whenever you make any connections with other devices, always turn off the power to all equipment first. This will help in preventing malfunction, and damage to speakers.
- Do not force the unit to share the same power outlet as one used for distortion producing devices (such as motors, variable lighting devices). Be sure to use a separate power outlet.
- Before using the AC adaptor, always make certain the voltage of the available power supply conforms to its rating.
- Do not place heavy objects onto, step on, or otherwise risk causing damage to the power cord.
- Whenever you disconnect the AC adaptor from the outlet, always grasp it by the plug, to prevent internal damage to the cord and the hazard of possible short circuits.
- If the unit is not to be used for a long period of time, unplug the cord from the socket.

### **[Concerning placement]**

- Avoid using or storing the unit in the following places, as damage could result.
  - Places subject to extremes in temperature. (Such as under direct sunlight, near heating units, above equipment generating heat, etc.)
  - Places near water and moisture. (Baths, washrooms, wet floors, etc.) Places otherwise subject to high humidity.
  - Dusty environments.
  - Places where high levels of vibration are produced.

- Placing the unit near power amplifiers or other equipment containing large transformers may induce hum.

- Should the unit be operated nearby television or radio receivers, TV pictures may show signs of interference, and static might be heard on radios. In such cases, move the unit out of proximity with such devices.

### **[Maintenance]**

- For everyday cleaning, wipe the unit with a soft dry cloth, or one that is dampened slightly. To remove dirt that is more stubborn, wipe using a mild, neutral detergent. Afterwards, make sure to wipe thoroughly with a soft cloth.
- Never apply benzene, thinners, alcohol or any like agents, to avoid the risk of discoloration and deformation.

### **[Other Precautions]**

- Protect the unit from strong impact.
- Avoid getting any foreign objects (coins, wire, etc.), or liquids (water, drinks, etc.) into the unit.
- A certain small amount of heat will be radiated from the unit, and thus should not be considered abnormal.
- Before using the unit in a foreign country, check first with your local Roland Service Station.
- At any time that you notice a malfunction, or otherwise suspect there is damage, immediately refrain from using the unit. Then contact the store where bought, or the nearest Roland Service Station.
- Since the unit is equipped with a circuit protection device, it requires a brief interval after power is turned on before it can be operated.

# 1. Panel Description

## (1) 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 counterclockwise will decrease it.

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

### **MEMORY CARD** (PCM Card Slot)

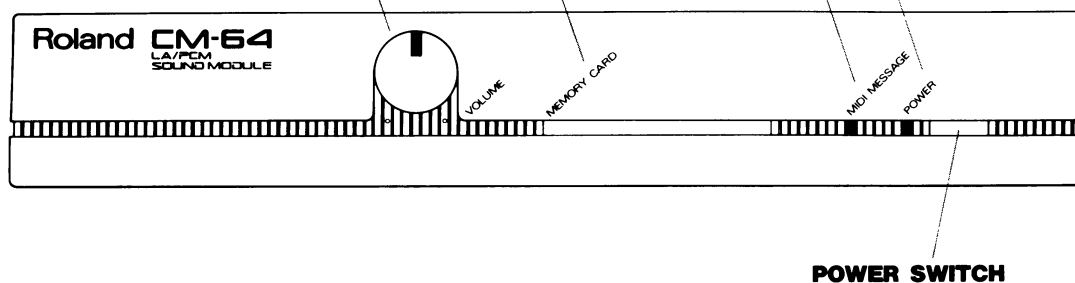
Insert an optional PCM Card (Sound Library: SN-U110 Series) to this slot. Using a PCM Card, you can use another 64 sounds in addition to those in the internal memory.

### **MIDI MESSAGE** (MIDI Message Indicator)

This lights up when the MIDI message is received.

### **POWER** (Power Indicator)

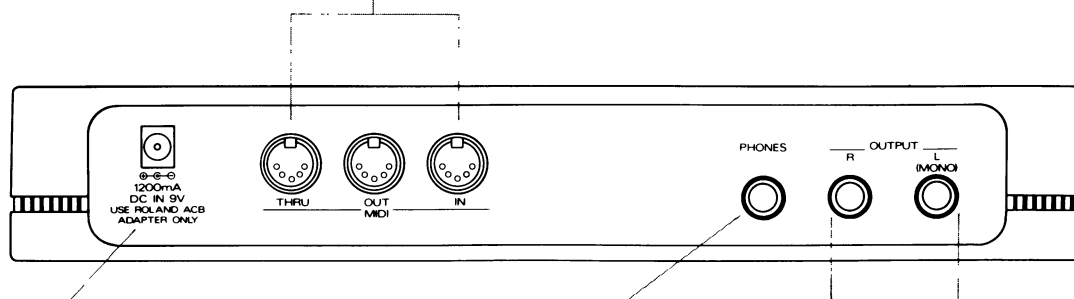
This lights up when the unit is switched on.



## (2) Rear Panel

### **MIDI IN/OUT/THRU** (MIDI Sockets)

Connect MIDI devices to these sockets.



### **DC IN** (AC Adaptor Jack)

Connect the supplied AC adaptor to this jack.

### **PHONES** (Headphone Jack)

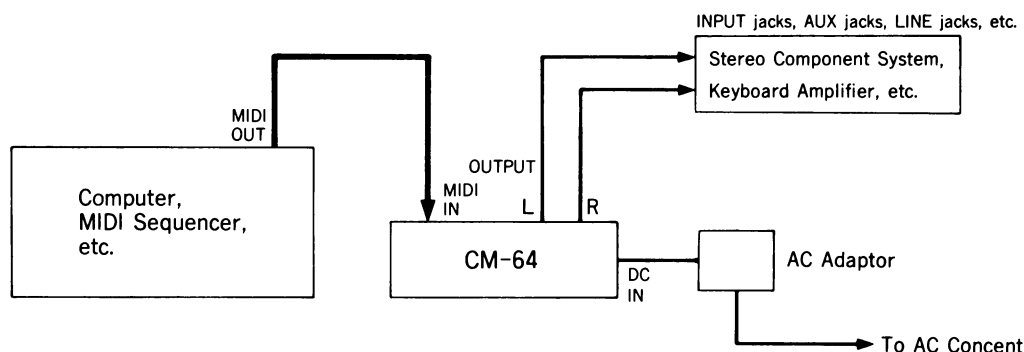
Connect headphones to this jack. Use headphones of 8 to 150 ohm impedance, if possible. Even while the Headphone Jack is connected, the Output Jacks send signals just the same.

### **OUTPUT** (Output Jacks)

Sounds of the CM-64 are output through these Output Jacks. The L and R jacks are provided, so use both of them for stereo output. For mono output, use the L (MONO) jack only.

## 2. Connections

To play the CM-64, connect the devices as shown below.



### ●MIDI Cable Connections

Connect the MIDI IN socket on the CM-64 to the MIDI OUT socket on the MIDI sequencer or a computer using a MIDI cable.

To use another MIDI sound module together with the CM-64, connect it to the MIDI THRU socket. However, do not connect more than three or four MIDI devices through MIDI THRU's. If more number of devices are connected, MIDI signals may not be received correctly causing malfunction of the entire system. If you wish to set up many number of devices through MIDI, use the MIDI Thru Box.

#### MIDI THRU :

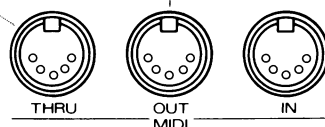
Transmits an exact copy of the messages received at MIDI IN.

#### MIDI OUT :

Transmits MIDI messages to an external MIDI device. (Normally, this socket is not used.)

#### MIDI IN :

Receives MIDI messages sent from an external device.

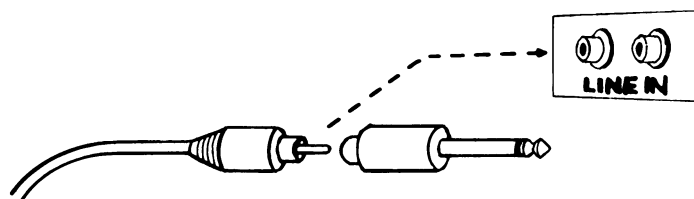


### ●Audio Cable Connections

Connect the Output Jacks of the CM-64 to the input jacks of the keyboard amplifier or stereo component system using an audio cable. The CM-64 features stereo outputs, but use the L(MONO) jack only for mono output.

When connecting the CM-64 to a keyboard amplifier or an electronic piano that features an external input jack: If it features an input level selector switch, set it to "H".

When connecting the CM-64 to a stereo component system: Connect the CM-64 to the LINE IN or AUX IN (input jack). When the input jack is pin jack type, remove the adaptor from the audio cable of accessory.



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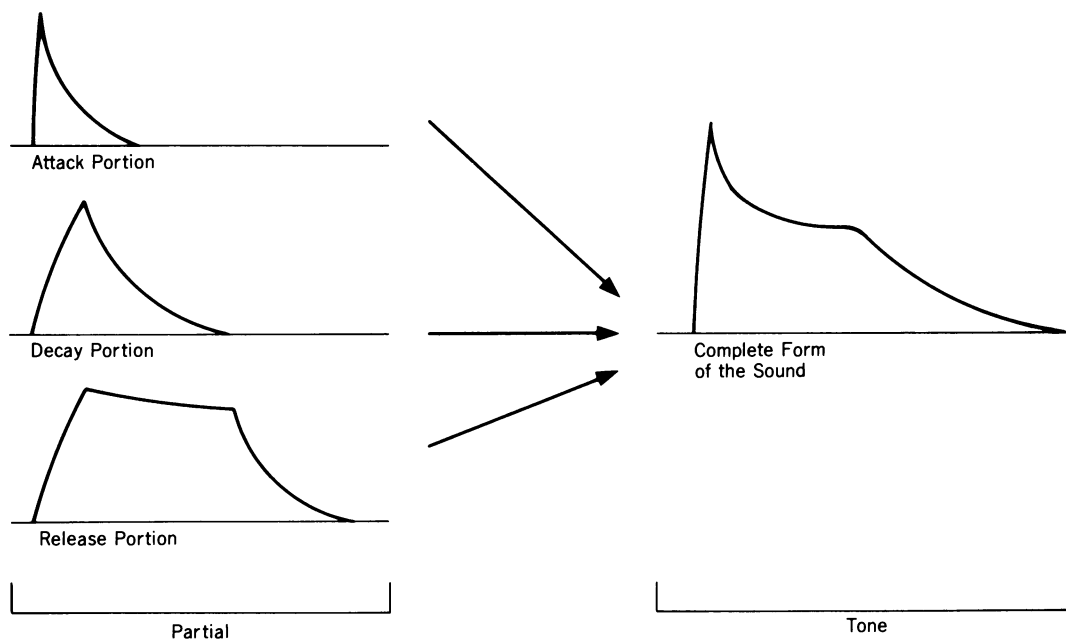
## 3. Structure of the CM-64

The following briefly explains the structure of the CM-64.

### *(1)LA Sound Module*

LA stands for Linear Arithmetic synthesis which is the heart of the new technology. LA synthesis involves a great many technological advances resulting not only in a superior sound quality but also an improved ease of programming.

The LA system uses Partial to create wide varieties of sounds. A Partial may be called the smallest element of a sound. For instance, a sound may be made by three elements (Partials); attack, decay and release.



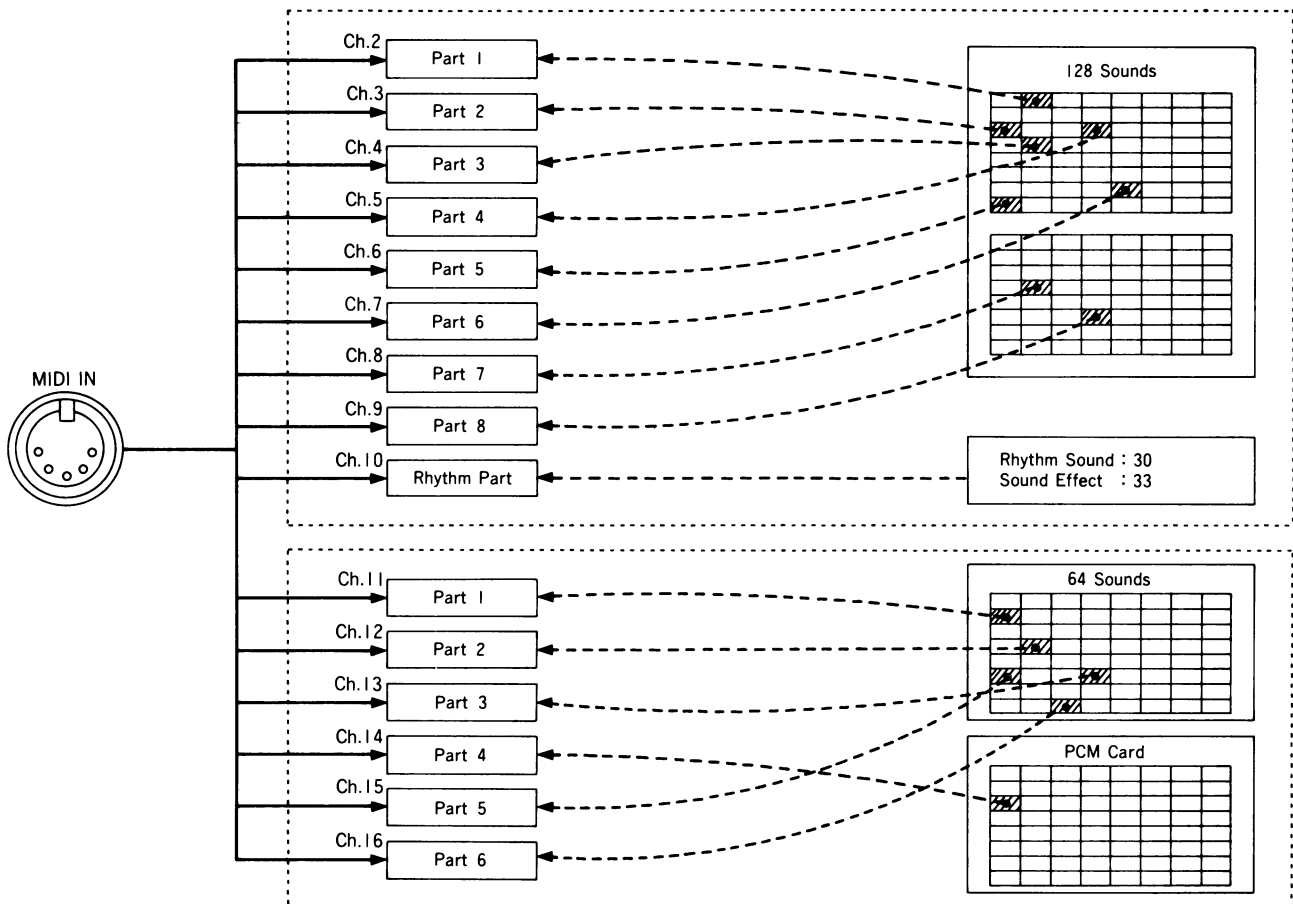
### *(2)PCM Sound Module*

PCM stands for Pulse Code Modulation. PCM sound module records real sounds such as a piano or sax digitally, and play back the recorded sounds. The PCM sound module on the CM-64 modified the recorded sounds so that even more realistic acoustic sounds can be created.



### (3) Structure of the Sound Modules

The CM-64 has two multi timbral sound modules ; LA sound module that consists of 9 Parts (including the Rhythm Part) and PCM sound module that consists of 6 Parts. Each Part is controlled by information received on an individual MIDI channel. So, you must set the receive channel of each Part to the same number as the transmit channel of the external MIDI device. Using a computer or MIDI sequencer that can send more than one MIDI channel messages, you can enjoy ensemble performance with different Parts.



#### ●Part

The CM-64 stores 128 different sounds in the LA sound section and 64 sounds in the PCM sound section. Any of the LA sounds can be assigned to each of 1 - 8 Parts in the LA sound module, while any of the PCM sounds can be assigned to each of 1 - 6 Parts in the PCM sound module. Sounds in each Part can be changed by MIDI Program Change messages.

In the Rhythm Part of the LA sound module, 63 different rhythm sounds and SE's (sound effects) are assigned to the note numbers.

#### ●Partial

The CM-64 can produce a maximum of 63 voices : 32 voices in the LA sound section using 32 Partials, and 31 voices in the PCM sound section using 31 Partials. Each sound uses a different number of Partials, and the maximum number of voices that can be played at the same time will vary depending on the number of Partials used in the sound. For details, see page 19 "8. Maximum Voices".

## 4.Sounds in the LA Sound Module

Part 1 - 8 in the LA sound module can use the following sounds.

### *(1)Sounds of Part 1 - 8*

Part 1 to 8 can use the following sounds :

| PROG#   | TONE        | Ptl# | PROG#   | TONE       | Ptl# |
|---------|-------------|------|---------|------------|------|
| 1/00 H  | AcouPiano 1 | 4    | 33/20 H | Fantasy    | 3    |
| 2/01 H  | AcouPiano 2 | 2    | 34/21 H | Harmo Pan  | 3    |
| 3/02 H  | AcouPiano 3 | 1    | 35/22 H | Chorale    | 3    |
| 4/03 H  | ElecPiano 1 | 3    | 36/23 H | Glasses    | 2    |
| 5/04 H  | ElecPiano 2 | 2    | 37/24 H | Soundtrack | 4    |
| 6/05 H  | ElecPiano 3 | 2    | 38/25 H | Atmosphere | 4    |
| 7/06 H  | ElecPiano 4 | 1    | 39/26 H | Warm Bell  | 4    |
| 8/07 H  | Honkytonk   | 3    | 40/27 H | Funny Vox  | 1    |
| 9/08 H  | Elec Org 1  | 3    | 41/28 H | Echo Bell  | 3    |
| 10/09 H | Elec Org 2  | 3    | 42/29 H | Ice Rain   | 3    |
| 11/0 AH | Elec Org 3  | 2    | 43/2 AH | Oboe 2001  | 2    |
| 12/0 BH | Elec Org 4  | 2    | 44/2 BH | Echo Pan   | 2    |
| 13/0 CH | Pipe Org 1  | 3    | 45/2 CH | DoctorSolo | 2    |
| 14/0 DH | Pipe Org 2  | 3    | 46/2 DH | Schooldaze | 2    |
| 15/0 EH | Pipe Org 3  | 2    | 47/2 EH | Bellsinger | 1    |
| 16/0 FH | Accordion   | 2    | 48/2 FH | SquareWave | 2    |
| 17/10 H | Harpsi 1    | 4    | 49/30 H | Str Sect 1 | 4    |
| 18/11 H | Harpsi 2    | 3    | 50/31 H | Str Sect 2 | 3    |
| 19/12 H | Harpsi 3    | 1    | 51/32 H | Str Sect 3 | 2    |
| 20/13 H | Clavi 1     | 3    | 52/33 H | Pizzicato  | 3    |
| 21/14 H | Clavi 2     | 2    | 53/34 H | Violin 1   | 3    |
| 22/15 H | Clavi 3     | 1    | 54/35 H | Violin 2   | 2    |
| 23/16 H | Celesta 1   | 4    | 55/36 H | Cello 1    | 3    |
| 24/17 H | Celesta 2   | 2    | 56/37 H | Cello 2    | 2    |
| 25/18 H | SynBrass 1  | 2    | 57/38 H | Contrabass | 2    |
| 26/19 H | SynBrass 2  | 3    | 58/39 H | Harp 1     | 3    |
| 27/1 AH | SynBrass 3  | 2    | 59/3 AH | Harp 2     | 2    |
| 28/1 BH | SynBrass 4  | 2    | 60/3 BH | Guitar 1   | 2    |
| 29/1 CH | Syn Bass 1  | 2    | 61/3 CH | Guitar 2   | 2    |
| 30/1 DH | Syn Bass 2  | 2    | 62/3 DH | Elec Gtr 1 | 4    |
| 31/1 EH | Syn Bass 3  | 2    | 63/3 EH | Elec Gtr 2 | 3    |
| 32/1 FH | Syn Bass 4  | 1    | 64/3 FH | Sitar      | 4    |

| PROG#   | TONE       | Ptl# | PROG#    | TONE       | Ptl# |
|---------|------------|------|----------|------------|------|
| 65/40 H | AcouBass 1 | 2    | 97/60 H  | Brs Sect 2 | 3    |
| 66/41 H | AcouBass 2 | 1    | 98/61 H  | Vibe 1     | 3    |
| 67/42 H | ElecBass 1 | 2    | 99/62 H  | Vibe 2     | 2    |
| 68/43 H | ElecBass 2 | 1    | 100/63 H | Syn Mallet | 1    |
| 69/44 H | SlapBass 1 | 3    | 101/64 H | Windbell   | 3    |
| 70/45 H | SlapBass 2 | 2    | 102/65 H | Glock      | 2    |
| 71/46 H | Fretless 1 | 4    | 103/66 H | Tube Bell  | 4    |
| 72/47 H | Fretless 2 | 2    | 104/67 H | Xylophone  | 1    |
| 73/48 H | Flute 1    | 4    | 105/68 H | Marimba    | 3    |
| 74/49 H | Flute 2    | 2    | 106/69 H | Koto       | 2    |
| 75/4 AH | Piccolo 1  | 3    | 107/6 AH | Sho        | 4    |
| 76/4 BH | Piccolo 2  | 2    | 108/6 BH | Shakuhachi | 4    |
| 77/4 CH | Recorder   | 2    | 109/6 CH | Whistle 1  | 2    |
| 78/4 DH | Pan Pipes  | 3    | 110/6 DH | Whistle 2  | 1    |
| 79/4 EH | Sax 1      | 4    | 111/6 EH | Bottleblow | 4    |
| 80/4 FH | Sax 2      | 3    | 112/6 FH | Breathpipe | 3    |
| 81/50 H | Sax 3      | 2    | 113/70 H | Timpani    | 2    |
| 82/51 H | Sax 4      | 1    | 114/71 H | MelodicTom | 1    |
| 83/52 H | Clarinet 1 | 3    | 115/72 H | Deep Snare | 2    |
| 84/53 H | Clarinet 2 | 2    | 116/73 H | ElecPerc 1 | 2    |
| 85/54 H | Oboe       | 2    | 117/74 H | ElecPerc 2 | 2    |
| 86/55 H | Engl Horn  | 2    | 118/75 H | Taiko      | 3    |
| 87/56 H | Bassoon    | 2    | 119/76 H | Taiko Rim  | 1    |
| 88/57 H | Harmonica  | 2    | 120/77 H | Cymbal     | 2    |
| 89/58 H | Trumpet 1  | 3    | 121/78 H | Castanets  | 2    |
| 90/59 H | Trumpet 2  | 2    | 122/79 H | Triangle   | 2    |
| 91/5 AH | Trombone 1 | 3    | 123/7 AH | Orche Hit  | 4    |
| 92/5 BH | Trombone 2 | 2    | 124/7 BH | Telephone  | 1    |
| 93/5 CH | Fr Horn 1  | 3    | 125/7 CH | Bird Tweet | 1    |
| 94/5 DH | Fr Horn 2  | 2    | 126/7 DH | OneNoteJam | 4    |
| 95/5 EH | Tuba       | 2    | 127/7 EH | WaterBells | 3    |
| 96/5 FH | Brs Sect 1 | 4    | 128/7 FH | JungleTune | 4    |

PROG# : MIDI Program Change Number (decimal indication / hexadecimal indication).

Ptl # : The number of partials used for a sound.

\* The number of partials used for a sound means the number of partials needed to play one note of the sound.

## (2) Sounds of the Rhythm Part

The following rhythm sounds and SE's are assigned to note numbers of the Rhythm Part.

|  | Note Name(#) | Tone name             | Ptl# | Pan | Left | Center | Right |
|--|--------------|-----------------------|------|-----|------|--------|-------|
|  | B 1( 35/23H) | Acoustic Bass Drum    | 1    | ><  |      | ●      |       |
|  | C 2( 36/24H) | Acoustic Bass Drum    | 1    | ><  |      | ●      |       |
|  | C#2( 37/25H) | Rim Shot              | 1    | <1  |      | ●      |       |
|  | D 2( 38/26H) | Acoustic Snare Drum   | 1    | ><  |      | ●      |       |
|  | D#2( 39/27H) | Hand Clap             | 1    | 1>  |      | ●      |       |
|  | E 2( 40/28H) | Electronic Snare Drum | 1    | <1  |      | ●      |       |
|  | F 2( 41/29H) | Acoustic Low Tom      | 1    | 4>  | ●    |        |       |
|  | F#2( 42/2AH) | Closed High Hat       | 1    | <1  |      | ●      |       |
|  | G 2( 43/2BH) | Acoustic Low Tom      | 1    | 4>  | ●    |        |       |
|  | G#2( 44/2CH) | Open High Hat 2       | 2    | <1  |      | ●      |       |
|  | A 2( 45/2DH) | Acoustic Middle Tom   | 1    | 1>  | ●    |        |       |
|  | A#2( 46/2EH) | Open High Hat 1       | 2    | <1  |      | ●      |       |
|  | B 2( 47/2FH) | Acoustic Middle Tom   | 1    | 1>  | ●    |        |       |
|  | C 3( 48/30H) | Acoustic High Tom     | 1    | <4  |      |        | ●     |
|  | C#3( 49/31H) | Crash Cymbal          | 2    | <1  |      | ●      |       |
|  | D 3( 50/32H) | Acoustic High Tom     | 1    | <4  |      |        | ●     |
|  | D#3( 51/33H) | Ride Cymbal           | 1    | 1>  |      | ●      |       |
|  | E 3( 52/34H) |                       |      |     |      |        |       |
|  | F 3( 53/35H) |                       |      |     |      |        |       |
|  | F#3( 54/36H) | Tambourine            | 1    | 2>  |      | ●      |       |
|  | G 3( 55/37H) |                       |      |     |      |        |       |
|  | G#3( 56/38H) | Cowbell               | 1    | ><  |      | ●      |       |
|  | A 3( 57/39H) |                       |      |     |      |        |       |
|  | A#3( 58/3AH) |                       |      |     |      |        |       |
|  | B 3( 59/3BH) |                       |      |     |      |        |       |
|  | C 4( 60/3CH) | High Bongo            | 1    | <5  |      |        | ●     |
|  | C#4( 61/3DH) | Low Bongo             | 1    | <3  |      |        | ●     |
|  | D 4( 62/3EH) | Mute High Conga       | 1    | 1>  |      | ●      |       |
|  | D#4( 63/3FH) | High Conga            | 1    | 2>  |      | ●      |       |
|  | E 4( 64/40H) | Low Conga             | 1    | 3>  | ●    |        |       |
|  | F 4( 65/41H) | High Timbale          | 1    | ><  |      | ●      |       |
|  | F#4( 66/42H) | Low Timbale           | 1    | <2  |      |        | ●     |
|  | G 4( 67/43H) | High Agogo            | 1    | <5  |      |        | ●     |
|  | G#4( 68/44H) | Low Agogo             | 1    | <5  |      |        | ●     |
|  | A 4( 69/45H) | Cabasa                | 1    | 2>  |      | ●      |       |
|  | A#4( 70/46H) | Maracas               | 1    | <3  |      |        | ●     |
|  | B 4( 71/47H) | Short Whistle         | 2    | 2>  |      | ●      |       |
|  | C 5( 72/48H) | Long Whistle          | 2    | 2>  |      | ●      |       |
|  | C#5( 73/49H) | Quijada               | 3    | 3>  |      | ●      |       |
|  | D 5( 74/4AH) |                       |      |     |      |        |       |
|  | D#5( 75/4BH) | Claves                | 1    | 5>  | ●    |        |       |

\* Rhythm sounds ignore the Note Off message (No sustain).

|  | Note Name(#) | Tone name   | Ptl# | Pan | Left | Center | Right |
|--|--------------|-------------|------|-----|------|--------|-------|
|  | E 5( 76/4CH) | Laughing    | 1    | ><  |      | ●      |       |
|  | F 5( 77/4DH) | Screaming   | 1    | ><  |      | ●      |       |
|  | F#5( 78/4EH) | Punch       | 1    | ><  |      | ●      |       |
|  | G 5( 79/4FH) | Heartbeat   | 1    | ><  |      | ●      |       |
|  | G#5( 80/50H) | Footsteps 1 | 1    | ><  |      | ●      |       |
|  | A 5( 81/51H) | Footsteps 2 | 1    | ><  |      | ●      |       |
|  | A#5( 82/52H) | Applause    | 3    | ><  |      | ●      |       |
|  | B 5( 83/53H) | Creaking    | 1    | ><  |      | ●      |       |
|  | C 6( 84/54H) | Door        | 1    | ><  |      | ●      |       |
|  | C#6( 85/55H) | Scratch     | 4    | ><  |      | ●      |       |
|  | D 6( 86/56H) | Windchime   | 2    | ><  |      | ●      |       |
|  | D#6( 87/57H) | Engine      | 2    | ><  |      | ●      |       |
|  | E 6( 88/58H) | Car-stop    | 1    | ><  |      | ●      |       |
|  | F 6( 89/59H) | Car-pass    | 4    | ><  |      | ●      |       |
|  | F#6( 90/5AH) | Crash       | 4    | ><  |      | ●      |       |
|  | G 6( 91/5BH) | Siren       | 2    | ><  |      | ●      |       |
|  | G#6( 92/5CH) | Train       | 2    | ><  |      | ●      |       |
|  | A 6( 93/5DH) | Jet         | 4    | ><  |      | ●      |       |
|  | A#6( 94/5EH) | Helicopter  | 4    | ><  |      | ●      |       |
|  | B 6( 95/5FH) | Starship    | 4    | ><  |      | ●      |       |
|  | C 7( 96/60H) | Pistol      | 2    | ><  |      | ●      |       |
|  | C#7( 97/61H) | Machinegun  | 2    | ><  |      | ●      |       |
|  | D 7( 98/62H) | Lasergun    | 2    | ><  |      | ●      |       |
|  | D#7( 99/63H) | Explosion   | 4    | ><  |      | ●      |       |
|  | E 7(100/64H) | Dog         | 1    | ><  |      | ●      |       |
|  | F 7(101/65H) | Horse       | 2    | ><  |      | ●      |       |
|  | F#7(102/66H) | Birds       | 4    | ><  |      | ●      |       |
|  | G 7(103/67H) | Rain        | 4    | ><  |      | ●      |       |
|  | G#7(104/68H) | Thunder     | 3    | ><  |      | ●      |       |
|  | A 7(105/69H) | Wind        | 3    | ><  |      | ●      |       |
|  | A#7(106/6AH) | Waves       | 4    | ><  |      | ●      |       |
|  | B 7(107/6BH) | Stream      | 4    | ><  |      | ●      |       |
|  | C 8(108/6CH) | Bubble      | 3    | ><  |      | ●      |       |

Ptl # : The number of partials used for a sound.

Pan : Pan value.

\* Pan determines the sound positioning of stereo output. SE (after Laughing) sounds are all set to the center panning, but some sounds are played in different pannings.

\* The number of Partial used for a sound means the partials needed to play a note of the sound.

## 5. Sounds in the PCM Sound Module

Part 1 - 6 in the PCM sound module can use the following sounds.

### *(1) Sounds of Part 1 - 6*

The CM-64 stores 64 different PCM sounds. Using an optional PCM Card (Sound Library SN-U110 Series), another 64 sounds are available.

The following are the 64 PCM sounds stored in the internal memory :

| PROG#  | TONE        | Ptl# | Tone Type | Split/Threshold | Contents                                                                              |
|--------|-------------|------|-----------|-----------------|---------------------------------------------------------------------------------------|
| 1/00H  | A. PIANO 1  | 2    | V-MIX     |                 | Mellow tone                                                                           |
| 2/01H  | A. PIANO 2  | 2    | V-MIX     |                 |                                                                                       |
| 3/02H  | A. PIANO 3  | 2    | V-MIX     |                 | Bright tone                                                                           |
| 4/03H  | A. PIANO 4  | 2    | V-MIX     |                 | Honky tonk piano                                                                      |
| 5/04H  | A. PIANO 5  | 1    | SINGLE    |                 | Soft touch                                                                            |
| 6/05H  | A. PIANO 7  | 1    | SINGLE    |                 | Hard touch                                                                            |
| 7/06H  | A. PIANO 9  | 1    | SINGLE    |                 | Hard touch and bright tone                                                            |
| 8/07H  | E. PIANO 1  | 2    | V-MIX     |                 | Soft and hard touch                                                                   |
| 9/08H  | E. PIANO 3  | 2    | DETUNE    |                 | Soft touch                                                                            |
| 10/09H | E. PIANO 5  | 2    | DETUNE    |                 | Hard touch                                                                            |
| 11/0AH | A. GUITAR 1 | 1    | SINGLE    |                 |                                                                                       |
| 12/0BH | A. GUITAR 3 | 2    | DUAL      |                 |                                                                                       |
| 13/0CH | A. GUITAR 4 | 2    | DUAL      |                 | Includes the sound one octave lower                                                   |
| 14/0DH | E. GUITAR 1 | 1    | V-SW      | v=100           | Mute/Non-mute                                                                         |
| 15/0EH | E. GUITAR 2 | 1    | SINGLE    |                 | Mute                                                                                  |
| 16/0FH | SLAP 3      | 1    | SINGLE    | B 2(47)         | Thump/pull * The keys more than F#4(66) contains the harmonics sound.                 |
| 17/10H | SLAP 4      | 2    | DETUNE    | B 2(47)         |                                                                                       |
| 18/11H | SLAP 5      | 1    | V-SW      | v=100           |                                                                                       |
| 19/12H | SLAP 6      | 1    | V-SW      | v=100           | Slow attack/Fast attack<br>* The keys more than F#4(66) contains the harmonics sound. |
| 20/13H | SLAP 9      | 1    | SINGLE    | B 2(47)         | Thump/pull * The keys more than C#4(61) contains the harmonics sound.                 |
| 21/14H | SLAP 10     | 2    | DETUNE    | B 2(47)         |                                                                                       |
| 22/15H | SLAP 11     | 1    | V-SW      | v=100           |                                                                                       |
| 23/16H | SLAP 12     | 1    | V-SW      | v=100           | Slow attack/Fast attack<br>* The keys more than C#4(61) contains the harmonics sound. |
| 24/17H | FINGERED 1  | 1    | SINGLE    |                 | * The keys more than C#5(73) contains the harmonics sound.                            |
| 25/18H | FINGERED 2  | 2    | DETUNE    |                 |                                                                                       |
| 26/19H | PICKED 1    | 1    | SINGLE    |                 |                                                                                       |
| 27/1AH | PICKED 2    | 2    | DETUNE    |                 |                                                                                       |
| 28/1BH | FRETLESS 1  | 1    | SINGLE    |                 | * The keys more than D#6(87) contains the harmonics sound.                            |
| 29/1CH | AC. BASS    | 2    | V-MIX     |                 | Fret-noise is slightly mixed.                                                         |
| 30/1DH | CHOIR 1     | 1    | SINGLE    |                 | Long release                                                                          |
| 31/1EH | CHOIR 2     | 1    | SINGLE    |                 | Short release                                                                         |
| 32/1FH | CHOIR 3     | 2    | DUAL      |                 | Long release (Includes the sound one octave lower)                                    |
| 33/20H | CHOIR 4     | 2    | DUAL      |                 | Short release (Includes the sound one octave lower)                                   |
| 34/21H | STRINGS 1   | 1    | SINGLE    |                 | Long release                                                                          |

| PROG#   | TONE       | Ptl# | Tone Type | Split/Threshold | Contents                                            |
|---------|------------|------|-----------|-----------------|-----------------------------------------------------|
| 35/22H  | STRINGS 2  | 1    | SINGLE    |                 | Short release                                       |
| 36/23H  | STRINGS 3  | 2    | DUAL      |                 | Long release (Includes the sound one octave lower)  |
| 37/24H  | STRINGS 4  | 2    | DUAL      |                 | Short release (Includes the sound one octave lower) |
| 38/25H  | E.ORGAN 2  | 2    | DETUNE    |                 |                                                     |
| 39/26H  | E.ORGAN 4  | 2    | DETUNE    |                 |                                                     |
| 40/27H  | E.ORGAN 6  | 2    | DETUNE    |                 |                                                     |
| 41/28H  | E.ORGAN 8  | 2    | DETUNE    |                 |                                                     |
| 42/29H  | E.ORGAN 9  | 2    | DUAL      |                 |                                                     |
| 43/2AH  | E.ORGAN 10 | 2    | DUAL      |                 |                                                     |
| 44/2BH  | E.ORGAN 11 | 2    | DUAL      |                 |                                                     |
| 45/2CH  | E.ORGAN 12 | 2    | DUAL      |                 |                                                     |
| 46/2DH  | E.ORGAN 13 | 2    | DUAL      |                 |                                                     |
| 47/2EH  | SOFT TP 1  | 1    | SINGLE    |                 |                                                     |
| 48/2FH  | SOFT TP 3  | 1    | SINGLE    |                 | Sforzand piano                                      |
| 49/30H  | TP / TRB 1 | 1    | SINGLE    |                 |                                                     |
| 50/31H  | TP / TRB 2 | 1    | SINGLE    |                 | Mellow tone                                         |
| 51/32H  | TP / TRB 3 | 1    | SINGLE    |                 | Bright tone                                         |
| 52/33H  | TP / TRB 4 | 1    | SINGLE    |                 | Sforzand piano                                      |
| 53/34H  | TP / TRB 5 | 2    | DETUNE    |                 |                                                     |
| 54/35H  | TP / TRB 6 | 2    | DUAL      |                 | Includes the sound one octave lower                 |
| 55/36H  | SAX 1      | 1    | SINGLE    |                 |                                                     |
| 56/37H  | SAX 2      | 1    | SINGLE    |                 | Mellow tone                                         |
| 57/38H  | SAX 3      | 1    | SINGLE    |                 | Bright tone                                         |
| 58/39H  | SAX 5      | 2    | DUAL      |                 | Includes the sound one octave lower                 |
| 59/3AH  | BRASS 1    | 1    | SINGLE    |                 |                                                     |
| 60/3BH  | BRASS 2    | 1    | SINGLE    |                 | Sforzand piano                                      |
| 61/3CH  | BRASS 3    | 2    | DUAL      |                 | Includes the sound one octave lower                 |
| 62/3DH  | BRASS 4    | 2    | DUAL      |                 | BRASS & SAX                                         |
| 63/3EH  | BRASS 5    | 2    | DUAL      |                 | TP / TRB & SAX                                      |
| 64/3FH  | ORCHE HIT  | 1    | SINGLE    |                 |                                                     |
| 65/40H  | : PCM Card |      |           |                 |                                                     |
| 128/7FH |            |      |           |                 |                                                     |

PROG# : MIDI Program Change Number (decimal indication / hexadecimal indication).

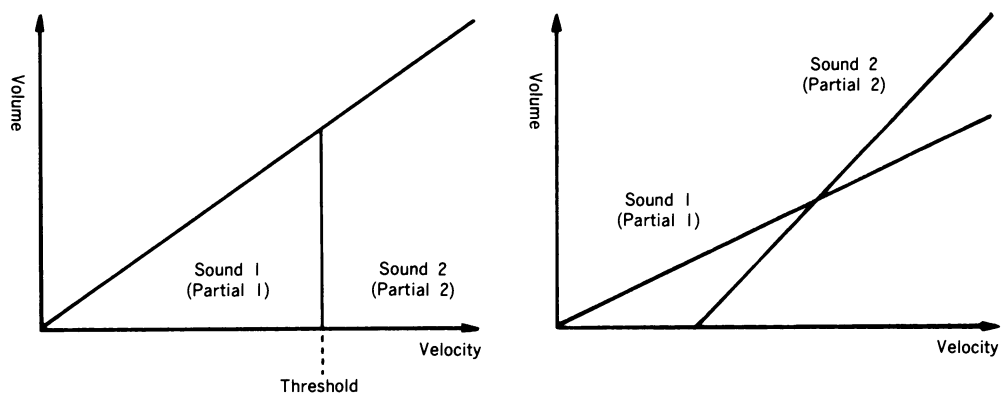
Ptl # : The number of partials used for a sound.

\* The Program Change numbers 65 - 128 can select sounds on a PCM Card.

## (2)Sound Types

There are five sound types depending how the sound uses partials.

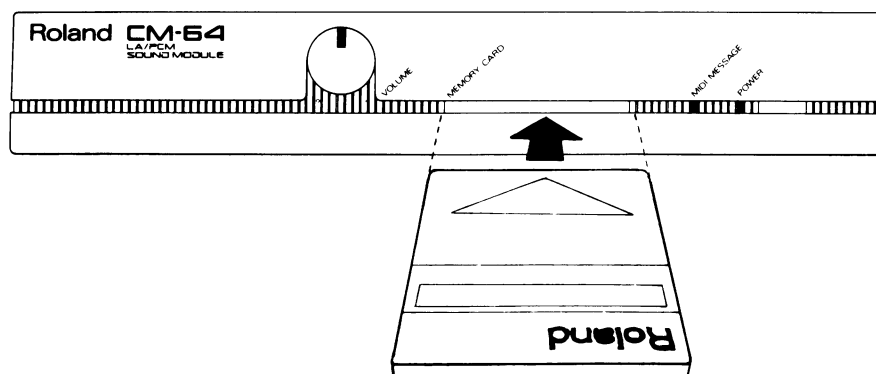
| Tone Type                 | Ptl# | Contents                                                                                                     |
|---------------------------|------|--------------------------------------------------------------------------------------------------------------|
| SINGLE                    | 1    | Sound made of one partial.                                                                                   |
| DETUNE                    | 2    | Sound made of two slightly different pitches.                                                                |
| DUAL                      | 2    | Sound made of two different sounds.                                                                          |
| V-SW<br>(Velocity Switch) | 1    | One of two sounds is played depending on the strength of the keyboard playing (see the picture shown below). |
| V-MIX<br>(Velocity Mix)   | 2    | The volume balance of two sounds is changed depending on the velocity value (see the picture shown below).   |



The level (velocity) where two sounds are switched is called threshold. "v = \* \*" in the Sound List represents the velocity value at the threshold.

## (3)How to use the PCM Cards

When using an optional PCM Card, insert the card securely into the card slot in correct directions.

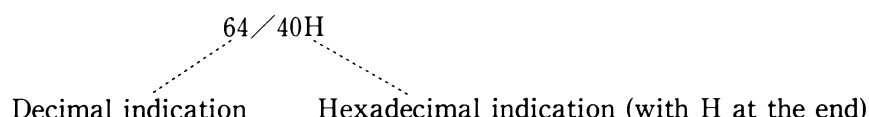




## 6. Control via MIDI

The following explains the MIDI messages that the CM-64 uses and how to use the messages.

\* The following indicates the values of MIDI messages in decimal and hexadecimal. You may use either of them depending on the MIDI device you use.



### *(1)MIDI Channel of each Part*

The MIDI channel of each Part of the CM-64 is set as shown below. You must set the transmit channel of the external MIDI device to the receive channel of the relevant Part.

|              | LA Sound Section |   |   |   |   |   |   |   |        | PCM Sound Section |    |    |    |    |    |
|--------------|------------------|---|---|---|---|---|---|---|--------|-------------------|----|----|----|----|----|
| Part         | 1                | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Rhythm | 1                 | 2  | 3  | 4  | 5  | 6  |
| MIDI Channel | 2                | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10     | 11                | 12 | 13 | 14 | 15 | 16 |

### *(2)MIDI messages that the individual Part can receive*

Each Part can receive the following MIDI messages :

#### ●Note Messages

Note messages are for playing the keyboard. In the Rhythm Part, various different drum voices and SE's can be played.

#### ●Pitch Bender Messages

Pitch Bender messages control the Pitch Bend lever or Pitch Bend wheel, changing the pitch continuously.

#### ●Program Change Messages

These are for changing sounds. The sounds in the Part that receives Program Change messages will change depending the received Program Change numbers. (The Program Change messages are ignored in the Rhythm Part.)

\* Roland uses Program Change numbers 1 to 128, but some softwares or sequencers use 0 to 127 numbers. So please be careful.

#### ●Control Change Messages

These are for controlling various parameters and functions. Each Control number has its own function. The CM-64 can receive the following Control Change messages :

##### **Modulation** (Control Number : 1/01H)

This controls the depth of vibrato effect. This value is set individually for each sound.

---

**Data Entry** (Control Number : 6/06H)

This is used for setting the RPN.

**Volume** (Control Number : 7/07H)

This controls the volume of each Part, adjusting the volume balance between Parts. The actual volume is determined by the value of expression (Control Number 11), volume (Control Number 7) and Master Volume (Exclusive messages) and the position of Volume control knob.

**Pan** (Control Number : 10/0AH)

This controls the sound positioning of stereo output. (This information is ignored in the Rhythm Part.)

In the LA sound module section, 15 levels are normally valid for the pan value, but only 8 levels are valid when you use a certain sound. In the PCM sound module section, the pan value can be changed continuously.

|         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 7 >     | 6 >     | 5 >     | 4 >     | 3 >     | 2 >     | 1 >     | > <     | < 1     | < 2     | < 3     | < 4     | < 5     | < 6     | < 7     |
| 7 >     | 5 >     |         | 3 >     |         | 1 >     |         | < 1     |         | < 3     |         | < 5     |         | < 7     |         |
| 119-127 | 111-118 | 102-110 | 94-101  | 85-93   | 77-84   | 68-76   | 60-67   | 51-59   | 43-50   | 34-42   | 26-33   | 17-25   | 9-16    | 0-8     |
| 77H-7FH | 6FH-76H | 66H-6EH | 5EH-65H | 55H-5DH | 4DH-54H | 44H-4CH | 3CH-43H | 33H-3BH | 2BH-32H | 22H-2AH | 1AH-21H | 11H-19H | 09H-10H | 00H-08H |

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

This controls the volume of each Part. The actual volume is determined by the values of expression (Control Number 11), volume (Control Number 7) and Master Volume (Exclusive messages) and the position of Volume control knob.

**Hold 1** (Control Number : 64/40H)

This sustains the sound currently played, just like a damper pedal of a piano.

**RPN** (Control Number : 100/64H& 101/65H)

RPN stands for Registered Parameter Number. In the CM-64, the bender range of each Part can be controlled with the RPN number 0, Pitch Bend Sensitivity.

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

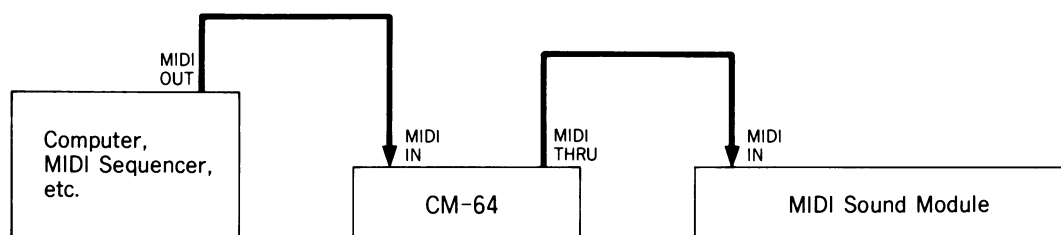
This returns the Modulation, Expression, Hold 1 and Pitch Bender parameters to the default settings. The Part received this message will be set as shown below :

|              |          |        |
|--------------|----------|--------|
| Modulation   | 0/00H    | Min    |
| Expression   | 127/7FH  | Max    |
| Hold 1       | 0/00H    | Off    |
| Pitch Bender | ±0/2000H | Center |

### (3)Advanced Control via MIDI

#### ●Using another MIDI sound module

If you wish to increase the number of sounds using another MIDI sound module, make connections as follows. Set the MIDI receive channel of the connected sound module to 1.



#### ●Bender Range Control with RPN

The CM-64 allows you to control the bender range of each Part using the RPN (Registered Parameter Number). To do that, send Control Change messages from an external MIDI device in the sequence as shown below :

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

\* vv is the value of the bender range to be set. It can be set in semi-tone steps within 2 octaves (0 - 24/00H - 18H) in the LA sound section and in semi-tone steps within 1 octave (0 - 12/00H - 0CH) in the PCM sound section.

<Example> To set the bender range of Part 4 (MIDI channel 5) to 12 (1 octave):

|              | MIDI ch | Control Number | Data    | MIDI Message      |
|--------------|---------|----------------|---------|-------------------|
| ① RPN MSB    | 5       | 100/64 H       | 0/00 H  | B 4 H, 64 H, 00 H |
| ② RPN LSB    | 5       | 101/65 H       | 0/00 H  | B 4 H, 65 H, 00 H |
| ③ Data Entry | 5       | 6/06 H         | 12/0 CH | B 4 H, 06 H, 0 CH |

\* Some types of MIDI sequencer transmits Control Change numbers of the same step (timing) in the sequence of smaller number to a larger number. If you use this type of sequencer, be sure to set it so that the Control Change will be sent in the sequence of RPN MSB - RPN LSB - Data Entry by shifting the position of the RPN forward, etc.

#### ●Control Using the Exclusive Messages

Exclusive messages are messages exclusive to a particular manufacturer, such as sound data and setup data. Various parameters can be controlled using the Exclusive messages. For details, see the MIDI Implementation at the back of this owner's manual.

## 7. Default Settings at Power-on

The CM-64 is default to the following values. (Any programs you have made will be erased when the unit is switched off.)

|                      |                | Sound        | Pan      | Volume   | Expression |
|----------------------|----------------|--------------|----------|----------|------------|
| LA Sound<br>Section  | Part 1         | Slap Bass 1  | 54/36 H  | 100/64 H | 127/7 F H  |
|                      | Part 2         | Str Sect 1   | 54/36 H  | 100/64 H | 127/7 F H  |
|                      | Part 3         | Brs Sect 1   | 54/36 H  | 100/64 H | 127/7 F H  |
|                      | Part 4         | Sax 1        | 54/36 H  | 100/64 H | 127/7 F H  |
|                      | Part 5         | Ice Rain     | 18/12 H  | 100/64 H | 127/7 F H  |
|                      | Part 6         | Elec Piano 1 | 91/5 BH  | 100/64 H | 127/7 F H  |
|                      | Part 7         | Bottleblow   | 0/00 H   | 100/64 H | 127/7 F H  |
|                      | Part 8         | Orche Hit    | 127/7 FH | 100/64 H | 127/7 F H  |
|                      | Rhythm<br>Part | — — — — —    | — —      | 100/64 H | 127/7 F H  |
| PCM Sound<br>Section | Part 1         | FRETLESS 1   | 64/40 H  | 100/64 H | 127/7 F H  |
|                      | Part 2         | CHOIR 1      | 81/51 H  | 100/64 H | 127/7 F H  |
|                      | Part 3         | A. PIANO 1   | 64/40 H  | 100/64 H | 127/7 F H  |
|                      | Part 4         | E. ORGAN 1   | 99/63 H  | 100/64 H | 127/7 F H  |
|                      | Part 5         | E. GUITAR 1  | 27/1 BH  | 100/64 H | 127/7 F H  |
|                      | Part 6         | SOFT TP 1    | 45/2 DH  | 100/64 H | 127/7 F H  |

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## 8. Maximum Voices

As previously explained in "3. Structure of the CM-64", a sound is made of number of Partials and the CM-64 produces sounds using Partials. The maximum voices that it can produce simultaneously will vary depending on the number of Partials used for the sound. The following explains the relation between the Partials and the maximum voices of the CM-64.

### *(1)Partials and the maximum number of voices*

The LA sound section allows you to use 32 Partials and the PCM section allows you to use 31 Partials at the same time.

For example, if you play three sounds which are made of two Partials, six Partials will be used altogether ( $2 \text{ Partials} \times 3$ ). In other words, when the CM-64 is used as a multi timbral sound module, it uses (the number of Partials assigned to Part 1)  $\times$  (the number of voices currently playing in Part 1), that is the total number of Partials used in each Part. However, the LA and PCM sound sections use Partials separately, you should count the number of Partials for each sound section individually. In the Rhythm Part, the number of Partial used in each rhythm sound is different, therefore, count the total number of Partials used for the rhythm sound currently playing.

As long as you are using Partials within the maximum number of each Sound section, there is no inconvenience caused. You may use all the Partials in one Part, if you like.

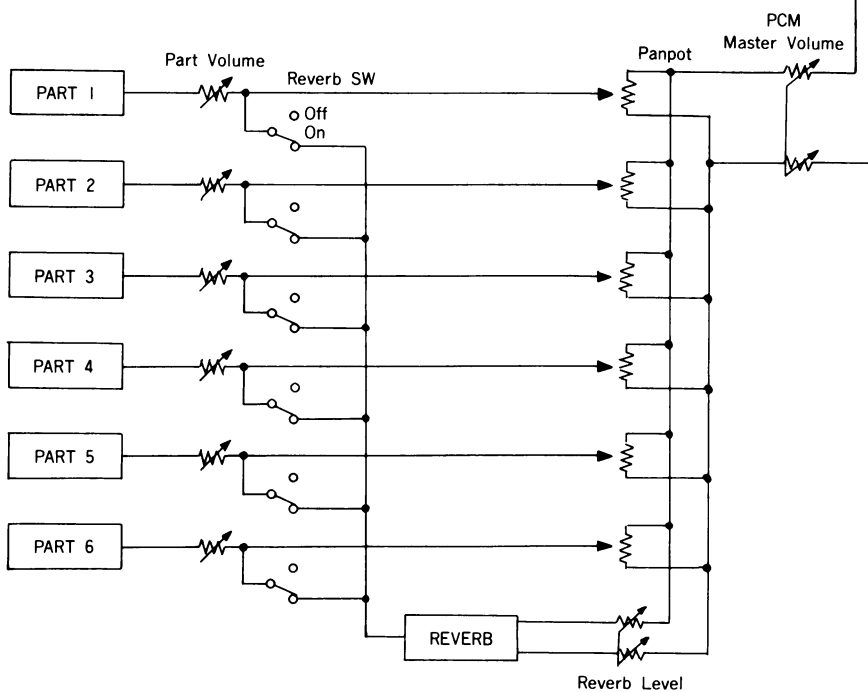
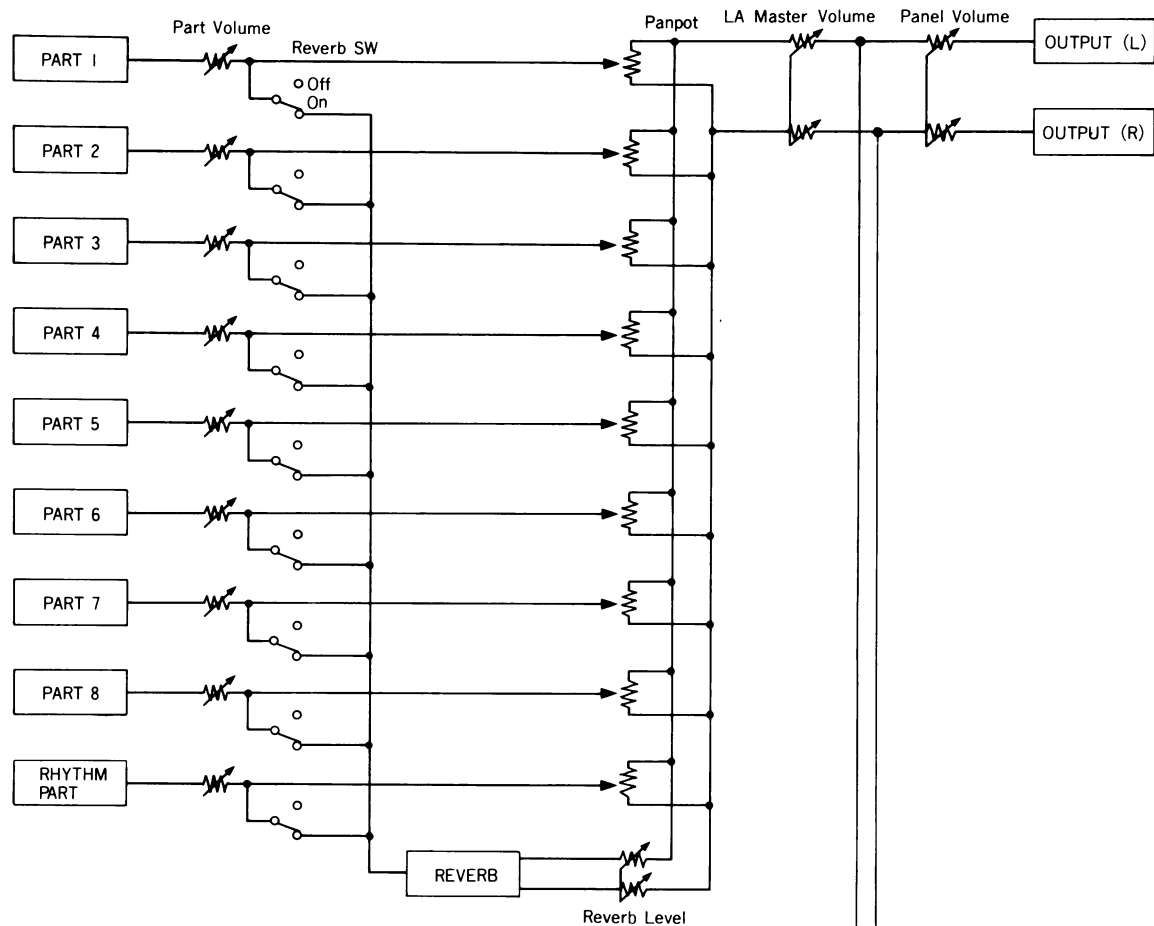
### *(2)Partial Reserve*

The CM-64 can play any sound in any Part within 32 voices (Partials) in the LA sound module and 31 voices (Partials) in the PCM sound module. However, if you try to use more Partials, the Partial Reserve function sets the number of Partials which can be used for a certain Part prior to the other Parts. In other words, even when more key messages than reserved are sent, they will be put to work in the more important Part without being cut.

The Partial Reserve of the CM-64 is preprogrammed as shown below. The number of Partials in each Part represents the number of Partials which can be reserved on top of the maximum number of Partials. You may consider the Partial Reserve first, then determine what phrases should be played in what Part.

|                   | Part   | Partial Reserve |
|-------------------|--------|-----------------|
| LA Sound Section  | 1      | 2               |
|                   | 2      | 10              |
|                   | 3      | 6               |
|                   | 4      | 4               |
|                   | 5      | 3               |
|                   | 6      | 0               |
|                   | 7      | 0               |
|                   | 8      | 0               |
|                   | Rhythm | 6               |
| PCM Sound Section | 1      | 2               |
|                   | 2      | 8               |
|                   | 3      | 21              |
|                   | 4      | 0               |
|                   | 5      | 0               |
|                   | 6      | 0               |

## ■ CM-64 Block Diagram





- \*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.

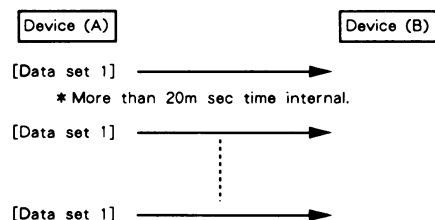
The MIDI standards inhibit non - real time messages from interrupting an exclusive one. This fact is inconvenient for the devices that support a "soft - through" mechanism. To maintain compatibility with such devices, Roland has limited the DT1 to 256 bytes so that an excessively long message is sent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

| Byte | Description              |
|------|--------------------------|
| FOH  | 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         |

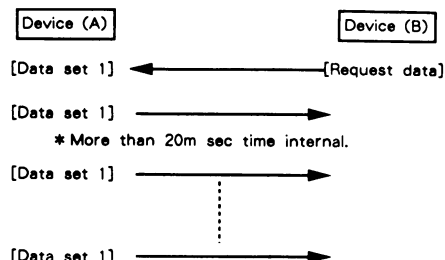
- \*A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.
- \*Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields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



#### 4 Handshake - Transfer Procedure

Handshaking is an interactive process where two devices exchange error checking signals before a message transaction takes place, thereby increasing data reliability. Unlike one - way transfer that inserts a pause between message transactions, handshake transfer allows much speedier transactions because data transfer starts once the receiving device returns a ready signal.

When it comes to handling large amounts of data -- sampler waveforms and synthesizer tones over the entire range, for example -- across a MIDI interface, handshaking transfer is more efficient than one - way transfer.

##### Types of Messages

| Message             | Command ID |
|---------------------|------------|
| Want to send data   | WSD (40H)  |
| Request data        | RQD (41H)  |
| Data set            | DAT (42H)  |
| Acknowledge         | ACK (43H)  |
| End of data         | EOD (45H)  |
| Communication error | ERR (4EH)  |
| Rejection           | RJC (4FH)  |

#### # Want to send data : WSD (40H)

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

On receiving a WSD message, the remote device checks its memory for the specified data address and size which will satisfy the request. If it finds them and is ready for communication, the device will return an "Acknowledge (ACK)" message. Otherwise, it will return a "Rejection (RJC)" message.

| Byte | Description              |
|------|--------------------------|
| FOH  | Exclusive status         |
| 41H  | Manufacturer ID (Roland) |
| DEV  | Device ID                |
| MDL  | Model ID                 |
| 40H  | Command ID               |
| aaH  | Address MSB              |
| ...  | ...                      |
| ...  | LSB                      |
| ssH  | Size MSB                 |
| ...  | ...                      |
| ...  | LSB                      |
| sum  | Check sum                |
| F7H  | End of exclusive         |

- \*The size of the data to be sent does not indicate the number of bytes that make up a "Data set (DAT)" message, but represents the address fields where the data should reside.
- \*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.



#### # Request data : RQD (41H)

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 RQD message, the remote device checks its memory for the data address and size which satisfy the request. If it finds them and is ready for communication, the device will transmit a "Data set (DAT)" message, which contains the requested data. Otherwise, it will return a "Rejection (RJC)" message.

| Byte | Description              |
|------|--------------------------|
| F0H  | Exclusive status         |
| 41H  | Manufacturer ID (Roland) |
| DEV  | Device ID                |
| MDL  | Model ID                 |
| 41H  | 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 make up a "Data set (DAT)" 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 : DAT (42H)

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

Although the MIDI standards inhibit non - real time messages from interrupting an exclusive one, some devices support a "soft - through" mechanism for such interrupts. To maintain compatibility with such devices, Roland has limited the DAT to 256 bytes so that an excessively long message is sent out in separate segments.

| Byte | Description              |
|------|--------------------------|
| F0H  | Exclusive status         |
| 41H  | Manufacturer ID (Roland) |
| DEV  | Device ID                |
| MDL  | Model ID                 |
| 42H  | Command ID               |
| aaH  | Address MSB              |
| ...  | ...                      |
| ...  | LSB                      |
| ddH  | Data                     |
| ...  | ...                      |
| sum  | Check sum                |
| F7H  | End of exclusive         |

\*A DAT message is capable of providing only the valid data among those specified by an RQD or WSD 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.

#### # Acknowledge : ACK (43H)

This message is sent out when no error was detected on reception of a WSD, DAT, "End of data (EOD)", or some other message and a requested setup or action is complete. Unless it receives an ACK message, the device at the other end will not proceed to the next operation.

| Byte | Description              |
|------|--------------------------|
| F0H  | Exclusive status         |
| 41H  | Manufacturer ID (Roland) |
| DEV  | Device ID                |
| MDL  | Model ID                 |
| 43H  | Command ID               |
| F7H  | End of exclusive         |

#### # End of data : EOD (45H)

This message is sent out to inform a remote device of the end of a message. Communication, however, will not come to an end unless the remote device returns an ACK message even though an EOD message was transmitted.

| Byte | Description              |
|------|--------------------------|
| F0H  | Exclusive status         |
| 41H  | Manufacturer ID (Roland) |
| DEV  | Device ID                |
| MDL  | Model ID                 |
| 45H  | Command ID               |
| F7H  | End of exclusive         |

#### # Communications error : ERR (4EH)

This message warns the remote device of a communications fault encountered during message transmission due, for example, to a checksum error. An ERR message may be replaced with a "Rejection (RJC)" one, which terminates the current message transaction in midstream.

When it receives an ERR message, the sending device may either attempt to send out the last message a second time or terminate communication by sending out an RJC message.

| Byte | Description              |
|------|--------------------------|
| F0H  | Exclusive status         |
| 41H  | Manufacturer ID (Roland) |
| DEV  | Device ID                |
| MDL  | Model ID                 |
| 4EH  | Command ID               |
| F7H  | End of exclusive         |

## # Rejection : RJC (4FH)

This message is sent out when there is a need to terminate communication by overriding the current message. An RJC message will be triggered when :

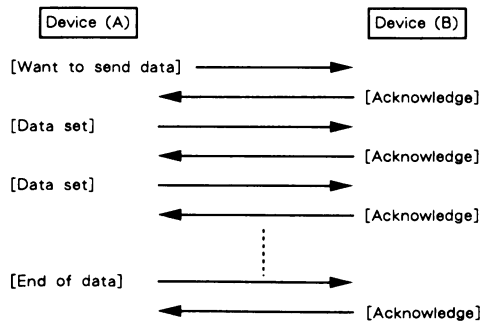
- a WSD or RQD message has specified an illegal data address or size.
- the device is not ready for communication.
- an illegal number of addresses or data has been detected.
- data transfer has been terminated by an operator.
- a communications error has occurred.

An ERR message may be sent out by a device on either side of the interface. Communication must be terminated immediately when either side triggers an ERR message.

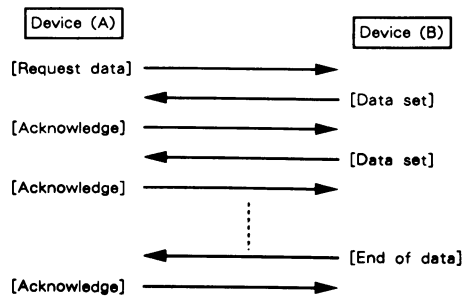
| Byte | Description              |
|------|--------------------------|
| F0H  | Exclusive status         |
| 41H  | Manufacturer ID (Roland) |
| DEV  | Device ID                |
| MDL  | Model ID                 |
| 4FH  | Command ID               |
| F7H  | End of exclusive         |

## # Example of Message Transactions

- Data transfer from device (A) to device (B).

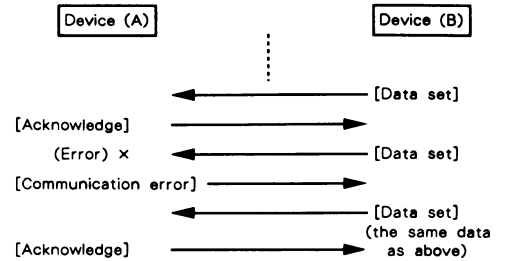


- Device (A) requests and receives data from device (B).

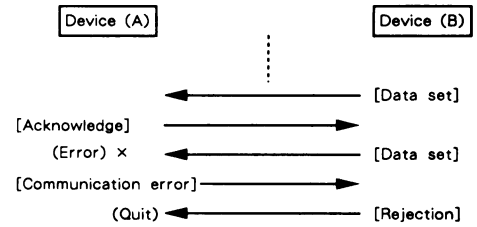


- Error occurs while device (A) is receiving data from device (B).

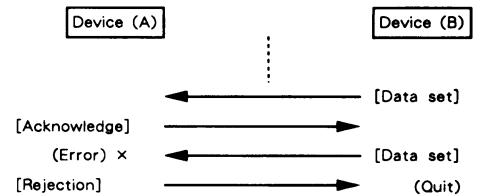
- 1) Data transfer from device (A) to device (B).



- 2) Device (B) rejects the data re-transmitted, and quits data transfer.



- 3) Device (A) immediately quits data transfer.



**1. TRANSMITTED DATA (LA Sound Part only)****■ Exclusive****Status**

F0H : System exclusive

F7H : EOX (End Of Exclusive)

For details, see Sections 3 and 4, and Roland Exclusive Messages.

**2. RECOGNIZED RECEIVE DATA****■ Note event****● Note off**

| <u>Status</u> | <u>Second</u> | <u>Third</u> |
|---------------|---------------|--------------|
| 8nH           | kkH           | vvH          |
| 9nH           | kkH           | 00H          |

kk = note number                      00H - 7FH ( 0 - 127 )  
 vv = velocity                          ignored  
 n = MIDI Channel                      0H - FH ( 1 - 16 )

A tone whose envelope mode is "NO SUS" ignores Note off message.  
 (LA Sound Part only)

**● Note on**

| <u>Status</u> | <u>Second</u> | <u>Third</u> |
|---------------|---------------|--------------|
| 9nH           | kkH           | vvH          |

kk = note number                      00H - 7FH ( 0 - 127 )  
 vv = velocity                          01H - 7FH ( 1 - 127 )  
 n = MIDI Channel                      0H - FH ( 1 - 16 )

LA SOUND PART (PART 1 - 8) : Note numbers outside of the range 12 - 108 are transposed to the nearest octave inside the range.

LA SOUND PART (RHYTHM PART) : Note numbers outside of the range 24 - 108 are ignored.

PCM SOUND PART : Key range depending on the tone. When note numbers are outside of the key range, they are transposed to the nearest octave inside the range.

**■ Control change****● Modulation Depth**

| <u>Status</u> | <u>Second</u> | <u>Third</u> |
|---------------|---------------|--------------|
| BnH           | 01H           | vvH          |

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

**● Data Entry**

| <u>Status</u> | <u>Second</u> | <u>Third</u> |
|---------------|---------------|--------------|
| BnH           | 06H           | vvH          |

vv = Value of a parameter specified by RPN. (See description in RPN MSB.)  
 n = MIDI Channel                          0H - FH ( 1 - 16 )

**● Main Volume**

| <u>Status</u> | <u>Second</u> | <u>Third</u> |
|---------------|---------------|--------------|
| BnH           | 07H           | vvH          |

vv = Volume Value                          00H - 7FH ( 0 - 127 )  
 n = MIDI Channel                          0H - FH ( 1 - 16 )

Controls the volume of a Part accessible through the received MIDI channel.  
 The maximum volume is determined by Master volume and Expression message.

**● Panpot**

| <u>Status</u> | <u>Second</u> | <u>Third</u> |
|---------------|---------------|--------------|
| BnH           | 0AH           | vvH          |

vv = Panpot Value                          00H - 7FH ( 0 - 127 )  
 n = MIDI Channel                          0H - FH ( 1 - 16 )

Orientation of sound is as follows.  
 127 = LEFT, 64 = CENTER, 0 = RIGHT  
 This information is ignored in the Rhythm Part.

**● Expression**

| <u>Status</u> | <u>Second</u> | <u>Third</u> |
|---------------|---------------|--------------|
| BnH           | 0BH           | vvH          |

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

Controls the volume of a Part accessible through the received MIDI channel.  
 The maximum volume is determined by Master volume and Main Volume message.

**● Hold - 1**

| <u>Status</u> | <u>Second</u> | <u>Third</u> |
|---------------|---------------|--------------|
| BnH           | 40H           | vvH          |

vv = 00H - 3FH : off  
 vv = 40H - 7FH : on  
 n = MIDI Channel                          0H - FH ( 1 - 16 )

**● RPN LSB**

| <u>Status</u> | <u>Second</u> | <u>Third</u> |
|---------------|---------------|--------------|
| BnH           | 64H           | vvH          |

vv = The lower byte of a parameter number controlled by RPN. (Refer to RPN MSB.)  
 n = MIDI Channel                          0H - FH ( 1 - 16 )

**● RPN MSB**

| <u>Status</u> | <u>Second</u> | <u>Third</u> |
|---------------|---------------|--------------|
| BnH           | 65H           | vvH          |

vv = The upper byte of a parameter number controlled by RPN.  
 n = MIDI Channel                          0H - FH ( 1 - 16 )

Using MIDI RPN, CM - 64 parameters can be controlled by Control change message.  
 RPN MSB and LSB specify the parameter to be controlled while Data entry sets the parameter value.

Effective RPN to CM - 64 is Bender range.

**\* LA Sound Part**

| RPN | Data Entry   | Description                                                        |
|-----|--------------|--------------------------------------------------------------------|
| MSB | LSB          |                                                                    |
| 00H | 00H      vvH | Bender Range<br>vv = 0 - 24<br>Unit in semitone, 2 octaves maximum |

**\* PCM Sound Part**

| RPN | Data Entry   | Description                                                        |
|-----|--------------|--------------------------------------------------------------------|
| MSB | LSB          |                                                                    |
| 00H | 00H      vvH | Bender Range<br>vv = 0 - 12<br>Unit in semitone, 1 octaves maximum |

## ● Resets All Controllers

| Status                                                   | Second | Third |
|----------------------------------------------------------|--------|-------|
| BnH                                                      | 79H    | 00H   |
| n = MIDI Channel                      0H - FH ( 1 - 16 ) |        |       |

Sets each of the following controls as follows.

| Controller          | setting     |
|---------------------|-------------|
| Modulation Depth    | MIN ( 0 )   |
| Expression          | MAX ( 127 ) |
| Hold 1              | OFF ( 0 )   |
| Pitch Bender Change | CENTER      |

## ■ Program change

| Status                                                      | Second |
|-------------------------------------------------------------|--------|
| CnH                                                         | ppH    |
| pp = Patch Number                      0H - 7FH ( 1 - 128 ) |        |
| n = MIDI Channel                      0H - FH ( 1 - 16 )    |        |

Program change information is used to change Patches.  
This information is ignored in Rhythm Part.

## ■ Pitch Bender change

| Status                                                                   | Second | Third |
|--------------------------------------------------------------------------|--------|-------|
| EnH                                                                      | llH    | mmH   |
| ll = Pitch Bender change value ( Lower byte )      00H - 7FH ( 0 - 127 ) |        |       |
| mm = Pitch Bender change value ( Upper byte )    00H - 7FH ( 0 - 127 )   |        |       |
| n = MIDI Channel                      0H - FH ( 1 - 16 )                 |        |       |

## ■ Mode message

### ● All notes off

| Status                                                   | Second | Third |
|----------------------------------------------------------|--------|-------|
| BnH                                                      | 7BH    | 00H   |
| n = MIDI Channel                      0H - FH ( 1 - 16 ) |        |       |

Turns off all notes that have been turned on by MIDI Note on.

### ● OMNI OFF

| Status                                                   | Second | Third |
|----------------------------------------------------------|--------|-------|
| BnH                                                      | 7CH    | 00H   |
| n = MIDI Channel                      0H - FH ( 1 - 16 ) |        |       |

Recognized as only All notes off.  
CM - 64 remains in mode 3 ( omni off, poly ).

### ● OMNI ON

| Status                                                   | Second | Third |
|----------------------------------------------------------|--------|-------|
| BnH                                                      | 7DH    | 00H   |
| n = MIDI Channel                      0H - FH ( 1 - 16 ) |        |       |

Recognized as only All notes off.  
CM - 64 remains in mode 3 ( omni off, poly ).

### ● MONO

| Status                                                   | Second | Third |
|----------------------------------------------------------|--------|-------|
| BnH                                                      | 7EH    | mmH   |
| mm = MONO Channel range ignore                           |        |       |
| n = MIDI Channel                      0H - FH ( 1 - 16 ) |        |       |

Recognized as only All notes off.  
CM - 64 remains in mode 3 ( omni off, poly ).

## ● POLY

| Status                                                   | Second | Third |
|----------------------------------------------------------|--------|-------|
| BnH                                                      | 7FH    | 00H   |
| n = MIDI Channel                      0H - FH ( 1 - 16 ) |        |       |

Recognized as only All notes off.  
CM - 64 remains in mode 3 ( omni off, poly ).

## ■ Exclusive

| Status |                          |
|--------|--------------------------|
| FOH    | : System Exclusive       |
| F7H    | : EOX (End Of Exclusive) |

Using exclusive message, a set of parameters for a timbre or individual parameters in a patch or timbre can be transferred to CM - 64.  
Refer to Roland Exclusive Messages and Sections 3 - 6.

## ■ Active sensing

| Status |                  |
|--------|------------------|
| FEH    | : Active Sensing |

Once receiving this message, the CM - 64 expects to accept status or data in sequence, at last within 300 msec intervals.  
If the unit fails to receive a message 300 msec after previous one, it judges there is a problem somewhere in MIDI path, muting the current sound and setting each of controllers as below, then stopping 300 msec interval monitoring of incoming signal.

| Controller          | setting     |
|---------------------|-------------|
| Modulation Depth    | MIN ( 0 )   |
| Expression          | MAX ( 127 ) |
| Hold 1              | OFF ( 0 )   |
| Pitch Bender Change | CENTER      |

## 3. EXCLUSIVE COMMUNICATION (LA SOUND PART)

Parameters for patches or timbres can be transferred to/from LA SOUND PART through Exclusive message.  
Model - ID # of CM - 64 is 16H.  
In a system where more than one MIDI channel is assigned to CM - 64, Unit # may be set to the CM - 64 instead of Device - ID # of a basic channel.  
The advantage of Unit # is that a specific part is made accessible independent of MIDI channel of that part.  
Whether to use MIDI channel or Unit # depends on parameter address.  
CM - 64 recognizes MIDI channels 1 thru 16 and Unit # 17 as Device - ID #.  
Note that the actual Device - ID # is the number 1 less MIDI channel number or Unit #.

## ■ One way communication

Request Data 1                      RQ1 11H

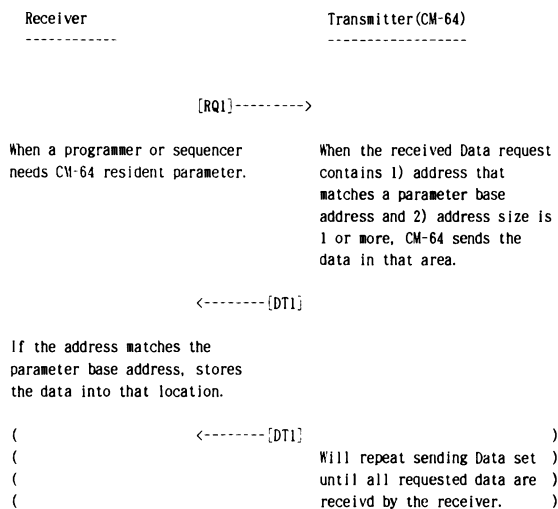
| Byte | Description                              |
|------|------------------------------------------|
| FOH  | Exclusive status                         |
| 41H  | Manufacturer's ID ( Roland )             |
| DEV  | Device ID                                |
| 16H  | Model ID                                 |
| 11H  | Command ID ( RQ1 )                       |
| aaH  | Address MSB                      * 3 - 1 |
| aaH  | Address                                  |
| aaH  | Address LSB                              |
| ssH  | Size MSB                                 |
| ssH  | Size                                     |
| ssH  | Size      LSB                            |
| sum  | Check sum                                |
| F7H  | EOX ( End Of Exclusive )                 |

## Data set 1 DT1 12H

| Byte | Description                  |         |
|------|------------------------------|---------|
| F0H  | Exclusive status             |         |
| 41H  | Manufacturer's ID ( Roland ) |         |
| DEV  | Device ID                    |         |
| 16H  | Model ID                     |         |
| 12H  | Command ID ( DT1 )           |         |
| aaH  | Address MSB                  | * 3 - 1 |
| aaH  | Address                      |         |
| aaH  | Address LSB                  |         |
| ddH  | Data                         | * 3 - 2 |
| :    | :                            |         |
| sum  | Check sum                    |         |
| F7H  | EOX ( End Of Exclusive )     |         |

### ● Communication Sequence

CM - 64 never requests data of the other party.  
The following sequence applies to the other party that wants to get some parameters from CM - 64.



### ■ Handshaking communication

## Want to send data WSD 40H

| Byte | Description                  |         |
|------|------------------------------|---------|
| F0H  | Exclusive status             |         |
| 41H  | Manufacturer's ID ( Roland ) |         |
| DEV  | Device ID                    |         |
| 16H  | Model ID                     |         |
| 40H  | Command ID ( WSD )           |         |
| aaH  | Address MSB                  | * 3 - 1 |
| aaH  | Address                      |         |
| aaH  | Address LSB                  |         |
| ssH  | Size MSB                     |         |
| ssH  | Size                         |         |
| ssH  | Size LSB                     |         |
| sum  | Check sum                    |         |
| F7H  | EOX ( End Of Exclusive )     |         |

## Request data RQD 41H

| Byte | Description                  |         |
|------|------------------------------|---------|
| F0H  | Exclusive status             |         |
| 41H  | Manufacturer's ID ( Roland ) |         |
| DEV  | Device ID                    |         |
| 16H  | Model ID                     |         |
| 41H  | Command ID ( RQD )           |         |
| aaH  | Address MSB                  | * 3 - 1 |
| aaH  | Address                      |         |
| aaH  | Address LSB                  |         |
| ssH  | Size MSB                     |         |
| ssH  | Size                         |         |
| ssH  | Size LSB                     |         |
| sum  | Check sum                    |         |
| F7H  | EOX ( End Of Exclusive )     |         |

## Data set DAT 42H

| Byte | Description                  |         |
|------|------------------------------|---------|
| F0H  | Exclusive status             |         |
| 41H  | Manufacturer's ID ( Roland ) |         |
| DEV  | Device ID                    |         |
| 16H  | Model ID                     |         |
| 42H  | Command ID ( DAT )           |         |
| aaH  | Address MSB                  | * 3 - 1 |
| aaH  | Address                      |         |
| aaH  | Address LSB                  |         |
| ddH  | Data                         | * 3 - 2 |
| :    | :                            |         |
| sum  | Check sum                    |         |
| F7H  | EOX ( End Of Exclusive )     |         |

## Acknowledge ACK 43H

| Byte | Description                  |  |
|------|------------------------------|--|
| F0H  | Exclusive status             |  |
| 41H  | Manufacturer's ID ( Roland ) |  |
| DEV  | Device ID                    |  |
| 16H  | Model ID                     |  |
| 43H  | Command ID ( ACK )           |  |
| F7H  | EOX ( End Of Exclusive )     |  |

## End of data EOD 45H

| Byte | Description                  |  |
|------|------------------------------|--|
| F0H  | Exclusive status             |  |
| 41H  | Manufacturer's ID ( Roland ) |  |
| DEV  | Device ID                    |  |
| 16H  | Model ID                     |  |
| 45H  | Command ID ( EOD )           |  |
| F7H  | EOX ( End Of Exclusive )     |  |

## Communication error ERR 4EH

| Byte | Description                  |  |
|------|------------------------------|--|
| F0H  | Exclusive status             |  |
| 41H  | Manufacturer's ID ( Roland ) |  |
| DEV  | Device ID                    |  |
| 16H  | Model ID                     |  |
| 4EH  | Command ID ( ERR )           |  |
| F7H  | EOX ( End Of Exclusive )     |  |

## Rejection RJC 4FH

| Byte | Description                  |  |
|------|------------------------------|--|
| F0H  | Exclusive status             |  |
| 41H  | Manufacturer's ID ( Roland ) |  |
| DEV  | Device ID                    |  |
| 16H  | Model ID                     |  |
| 4FH  | Command ID ( RJC )           |  |
| F7H  | EOX ( End Of Exclusive )     |  |

## ● Communication Sequence

CM-64 will never require any data of the other party.  
The following sequence can apply to the outside world where a unit wants to get CM-64 resident parameters.

|                                                                                                                                                |                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Receiver                                                                                                                                       | Transmitter(CM-64)                                                                                                                                                                                                                               |
| -----                                                                                                                                          |                                                                                                                                                                                                                                                  |
| [RQD]----->                                                                                                                                    |                                                                                                                                                                                                                                                  |
| Outside unit such as a computer<br>can obtain CM-64 parameters by<br>following the steps below, starting<br>with transmission of Data request. |                                                                                                                                                                                                                                                  |
| (                                                                                                                                              | <-----[RJC] )                                                                                                                                                                                                                                    |
| (Ends current communication upon                                                                                                               | Will send this message when )                                                                                                                                                                                                                    |
| (receipt of this message.                                                                                                                      | Data request comes while it )                                                                                                                                                                                                                    |
| (                                                                                                                                              | is reproducing sound. )                                                                                                                                                                                                                          |
| <-----[DAT]                                                                                                                                    |                                                                                                                                                                                                                                                  |
|                                                                                                                                                | When the Data request comes<br>during no-sound period and<br>contains address listed in the<br>Parameter base address table<br>followed by 1 or more address<br>size, CM-64 will send the data<br>stored in that address area<br>and subsequent. |
| If the address matches the<br>parameter base address, stores<br>the data into that location; then<br>sends Acknowledge.                        |                                                                                                                                                                                                                                                  |
| [ACK]----->                                                                                                                                    |                                                                                                                                                                                                                                                  |
|                                                                                                                                                | Sends the next data in reply<br>to Acknowledge.                                                                                                                                                                                                  |
| <-----[DAT]                                                                                                                                    |                                                                                                                                                                                                                                                  |
| [ACK]----->                                                                                                                                    |                                                                                                                                                                                                                                                  |
| :                                                                                                                                              |                                                                                                                                                                                                                                                  |
| (                                                                                                                                              | [ERR]-----> )                                                                                                                                                                                                                                    |
| (should failure in data reception                                                                                                              | When receiving this message, )                                                                                                                                                                                                                   |
| (occur(e.g. disagreement of checksum),                                                                                                         | sends the previous data )                                                                                                                                                                                                                        |
| (sends this message.                                                                                                                           | again. )                                                                                                                                                                                                                                         |
| (                                                                                                                                              | <-----[DAT] )                                                                                                                                                                                                                                    |
| :                                                                                                                                              |                                                                                                                                                                                                                                                  |
| :                                                                                                                                              |                                                                                                                                                                                                                                                  |
| <-----[EOD]                                                                                                                                    |                                                                                                                                                                                                                                                  |
| sends Acknowledge in response to                                                                                                               | Sends this data when completing                                                                                                                                                                                                                  |
| Data end and terminates handshaking                                                                                                            | required data transfer.                                                                                                                                                                                                                          |
| communication.                                                                                                                                 |                                                                                                                                                                                                                                                  |
| [ACK]----->                                                                                                                                    |                                                                                                                                                                                                                                                  |
|                                                                                                                                                | When this message comes as an<br>answer to the Data end,<br>terminates communication.                                                                                                                                                            |

- \*3-1 Address and Address size must cover the memory location where data exist.
- \*3-2 When coming data are for partial reserve of the system parameter, CM-64 will make these reserves effective only after receiving all the data.

## 4. EXCLUSIVE COMMUNICATION (PCM SOUND PART)

Parameter for patches can be transferred to CM-64 through Exclusive message.  
Model-ID# of CM-64 is 16H.  
Device-ID# of CM-64 is 10H.

### ■ One way communication

Data set 1 DT1 12H

| Byte | Description                  |      |
|------|------------------------------|------|
| FOH  | Exclusive status             |      |
| 41H  | Manufacturer's ID ( Roland ) |      |
| 10H  | Device ID                    |      |
| 16H  | Model ID                     |      |
| 12H  | Command ID ( DT1 )           |      |
| aaH  | Address MSB                  | *4-1 |
| aaH  | Address                      |      |
| aaH  | Address LSB                  |      |
| ddH  | Data                         | *4-2 |
| :    | :                            |      |
| sum  | Check sum                    |      |
| F7H  | EOX ( End Of Exclusive )     |      |

- \*4-1 Address and Address size must cover the memory location where data exist.
- \*4-2 When coming data are for partial reserves of the system parameter, CM-32P will make these reserves effective only after receiving all the data.

## 5. PARAMETER ADDRESS MAP (LA SOUND PART)

Addresses are represented in 7-bit hexadecimal.

| Address           | MSB       | LSB                 |
|-------------------|-----------|---------------------|
| Binary            | 0aaa aaaa | 0bbb bbbb 0ccc cccc |
| 7-bit Hexadecimal | AA        | BB CC               |

The actual address of a parameter is a sum of the start address of each block and one or more offset address.

- \*5-1 Start address plus two offset addresses  
( in tables \*5-1 and \*5-1-1 ( \*5-1-2 ) )
- \*5-2 Start address plus one offset address  
( in tables \*5-2 )
- \*5-3 Start address plus two offset addresses  
( in tables \*5-3 and \*5-3-1 )
- \*5-4 - \*5-7 Start address plus one offset address  
( in tables \*5-4 - \*5-7 )

### ■ Parameter base address

Temporary area ( Accessed through each basic channel )

| Start address | Description                          |      |
|---------------|--------------------------------------|------|
| 02 00 00      | Timbre Temporary Area ( part 1 - 8 ) | *5-1 |

Whole part ( Accessible on UNIT# )

| Start address | Description                         |      |
|---------------|-------------------------------------|------|
| 03 00 00      | Patch Temporary Area( part 1 )      | *5-2 |
| 03 00 10      | Patch Temporary Area( part 2 )      |      |
| :             | :                                   |      |
| 03 00 60      | Patch Temporary Area( part 7 )      |      |
| 03 00 70      | Patch Temporary Area( part 8 )      |      |
| 03 01 00      | Patch Temporary Area( rhythm part ) |      |
| 03 01 10      | Rhythm Setup Temporary Area         | *5-3 |
| 04 00 00      | Timbre Temporary Area( part 1 )     | *5-1 |
| 04 01 76      | Timbre Temporary Area( part 2 )     |      |
| :             | :                                   |      |
| 04 0B 44      | Timbre Temporary Area( part 7 )     |      |
| 04 0D 3A      | Timbre Temporary Area( part 8 )     |      |
| 05 00 00      | Patch Memory #1                     | *5-4 |

|            |                      |      |
|------------|----------------------|------|
| 05 00 08   | Patch Memory #2      |      |
| :          | :                    |      |
| 05 07 70   | Patch Memory #127    |      |
| 05 07 78   | Patch Memory #128    |      |
| <hr/>      |                      |      |
| 08 00 00   | Timbre Memory #1     | *5-1 |
| 08 02 00   | Timbre Memory #2     |      |
| :          | :                    |      |
| 08 7C 00   | Timbre Memory #63    |      |
| 08 7E 00   | Timbre Memory #64    |      |
| <hr/>      |                      |      |
| 10 00 00   | System area          | *5-5 |
| <hr/>      |                      |      |
| 40 00 00   | Write Request        | *5-6 |
| <hr/>      |                      |      |
| 7F × × × × | All parameters Reset | *5-7 |
| <hr/>      |                      |      |

#### \*5-1 Timbre Temporary area / Timbre Memory

| Offset<br>address | Description                        |        |
|-------------------|------------------------------------|--------|
| 00 00 00          | Common parameter                   | *5-1-1 |
| 00 00 0E          | Partial parameter (for Partial# 1) | *5-1-2 |
| 00 00 48          | Partial parameter (for Partial# 2) |        |
| 00 01 02          | Partial parameter (for Partial# 3) |        |
| 00 01 3C          | Partial parameter (for Partial# 4) |        |

#### \*5-1-1 Common Parameter

| Offset<br>address | Description |                                                |
|-------------------|-------------|------------------------------------------------|
| 00                | 0aaa aaaa   | TIMBRE NAME 1 32 - 127<br>(ASCII)              |
| 09                | 0aaa aaaa   | TIMBRE NAME 10                                 |
| 0A                | 0000 aaaa   | Structure of Partial# 1 & 2 0 - 12<br>(1 - 13) |
| 0B                | 0000 aaaa   | Structure of Partial# 3 & 4 0 - 12<br>(1 - 13) |
| 0C                | 0000 aaaa   | PARTIAL MUTE 0 - 15<br>(0000 - 1111)           |
| 0D                | 0000 000a   | ENV MODE 0 - 1<br>(Normal, No sustain)         |
| Total size        | 00 00 0E    |                                                |

#### \*5-1-2 Partial Parameter

| Offset<br>address | Description |                                                                                                             |
|-------------------|-------------|-------------------------------------------------------------------------------------------------------------|
| 00 00             | 0aaa aaaa   | WG PITCH COARSE 0 - 96<br>(C1, C#1, - C9)                                                                   |
| 00 01             | 0aaa aaaa   | WG PITCH FINE 0 - 100<br>(-50 - +50)                                                                        |
| 00 02             | 0000 aaaa   | WG PITCH KEYFOLLOW 0 - 16<br>(-1, -1/2, -1/4, 0, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 5/4, 3/2, 2, s1, s2) |
| 00 03             | 0000 000a   | WG PITCH BENDER SW 0 - 1<br>(OFF, ON)                                                                       |
| 00 04             | 0000 00aa   | WG WAVEFORM/PCM BANK 0 - 3<br>(SQU/1, SAW/1, SQU/2, SAW/2)                                                  |
| 00 05             | 0aaa aaaa   | WG PCM WAVE # 0 - 127<br>(1 - 128)                                                                          |
| 00 06             | 0aaa aaaa   | WG PULSE WIDTH 0 - 100                                                                                      |
| 00 07             | 0000 aaaa   | WG PW VELO SENS 0 - 14<br>(-7 - +7)                                                                         |
| 00 08             | 0000 aaaa   | P-ENV DEPTH 0 - 10                                                                                          |
| 00 09             | 0aaa aaaa   | P-ENV VELO SENS 0 - 100                                                                                     |
| 00 0A             | 0000 0aaa   | P-ENV TIME KEYF 0 - 4                                                                                       |

|            |           |                                                                                                |
|------------|-----------|------------------------------------------------------------------------------------------------|
| 00 0B      | 0aaa aaaa | P-ENV TIME 1 0 - 100                                                                           |
| 00 0C      | 0aaa aaaa | P-ENV TIME 2 0 - 100                                                                           |
| 00 0D      | 0aaa aaaa | P-ENV TIME 3 0 - 100                                                                           |
| 00 0E      | 0aaa aaaa | P-ENV TIME 4 0 - 100                                                                           |
| 00 0F      | 0aaa aaaa | P-ENV LEVEL 0 0 - 100<br>(-50 - +50)                                                           |
| 00 10      | 0aaa aaaa | P-ENV LEVEL 1 0 - 100<br>(-50 - +50)                                                           |
| 00 11      | 0aaa aaaa | P-ENV LEVEL 2 0 - 100<br>(-50 - +50)                                                           |
| 00 12      | 0aaa aaaa | P-ENV SUSTAIN LEVEL 0 - 100<br>(-50 - +50)                                                     |
| 00 13      | 0aaa aaaa | END LEVEL 0 - 100<br>(-50 - +50)                                                               |
| 00 14      | 0aaa aaaa | P-LFO RATE 0 - 100                                                                             |
| 00 15      | 0aaa aaaa | P-LFO DEPTH 0 - 100                                                                            |
| 00 16      | 0aaa aaaa | P-LFO MOD SENS 0 - 100                                                                         |
| 00 17      | 0aaa aaaa | TVF CUTOFF FREQ 0 - 100                                                                        |
| 00 18      | 000a aaaa | TVF RESONANCE 0 - 30                                                                           |
| 00 19      | 0000 aaaa | TVF KEYFOLLOW 0 - 14<br>(-1, -1/2, -1/4, 0, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 5/4, 3/2, 2) |
| 00 1A      | 0aaa aaaa | TVF BIAS POINT/DIR 0 - 127<br>(<1A - <7C >1A - >7C)                                            |
| 00 1B      | 0000 aaaa | TVF BIAS LEVEL 0 - 14<br>(-7 - +7)                                                             |
| 00 1D      | 0aaa aaaa | TVF ENV VELO SENS 0 - 100                                                                      |
| 00 1E      | 0000 0aaa | TVF ENV DEPTH KEYF 0 - 4                                                                       |
| 00 1F      | 0000 0aaa | TVF ENV TIME KEYF 0 - 4                                                                        |
| 00 20      | 0aaa aaaa | TVF ENV TIME 1 0 - 100                                                                         |
| 00 21      | 0aaa aaaa | TVF ENV TIME 2 0 - 100                                                                         |
| 00 22      | 0aaa aaaa | TVF ENV TIME 3 0 - 100                                                                         |
| 00 23      | 0aaa aaaa | TVF ENV TIME 4 0 - 100                                                                         |
| 00 24      | 0aaa aaaa | TVF ENV TIME 5 0 - 100                                                                         |
| 00 25      | 0aaa aaaa | TVF ENV LEVEL 1 0 - 100                                                                        |
| 00 26      | 0aaa aaaa | TVF ENV LEVEL 2 0 - 100                                                                        |
| 00 27      | 0aaa aaaa | TVF ENV LEVEL 3 0 - 100                                                                        |
| 00 28      | 0aaa aaaa | TVF ENV SUSTAIN LEVEL 0 - 100                                                                  |
| 00 29      | 0aaa aaaa | TVA LEVEL 0 - 100                                                                              |
| 00 2A      | 0aaa aaaa | TVA VELO SENS 0 - 100<br>(-50 - +50)                                                           |
| 00 2B      | 0aaa aaaa | TVA BIAS POINT 1 0 - 127<br>(<1A - <7C >1A - >7C)                                              |
| 00 2C      | 0000 aaaa | TVA BIAS LEVEL 1 0 - 12<br>(-12 - 0)                                                           |
| 00 2D      | 0aaa aaaa | TVA BIAS POINT 2 0 - 127<br>(<1A - <7C >1A - >7C)                                              |
| 00 2E      | 0000 aaaa | TVA BIAS LEVEL 2 0 - 12<br>(-12 - 0)                                                           |
| 00 2F      | 0000 0aaa | TVA ENV TIME KEYF 0 - 4                                                                        |
| 00 30      | 0000 0aaa | TVA ENV TIME V_FOLLOW 0 - 4                                                                    |
| 00 31      | 0aaa aaaa | TVA ENV TIME 1 0 - 100                                                                         |
| 00 32      | 0aaa aaaa | TVA ENV TIME 2 0 - 100                                                                         |
| 00 33      | 0aaa aaaa | TVA ENV TIME 3 0 - 100                                                                         |
| 00 34      | 0aaa aaaa | TVA ENV TIME 4 0 - 100                                                                         |
| 00 35      | 0aaa aaaa | TVA ENV TIME 5 0 - 100                                                                         |
| 00 36      | 0aaa aaaa | TVA ENV LEVEL 1 0 - 100                                                                        |
| 00 37      | 0aaa aaaa | TVA ENV LEVEL 2 0 - 100                                                                        |
| 00 38      | 0aaa aaaa | TVA ENV LEVEL 3 0 - 100                                                                        |
| 00 39      | 0aaa aaaa | TVA ENV SUSTAIN LEVEL 0 - 100                                                                  |
| Total size | 00 00 3A  |                                                                                                |

Example of RQ1 and DT1 application --- 1

Obtain Part 2 tone data from the temporary area by sending the following messages.

F0 41 10 16 11 04 01 76 00 01 76 0E F7

**\*5-2 Patch temporary area**  
**\*5-2-1 Patch temporary area (Part 1-8)**

| Offset<br>address | Description                                              |
|-------------------|----------------------------------------------------------|
| 00 00 : 0000 00aa | TIMBRE GROUP 0 - 3<br>(a, b, i, r)                       |
| 00 01 : 00aa aaaa | TIMBRE NUMBER 0 - 63<br>(1 - 64)                         |
| 00 02 : 00aa aaaa | KEY SHIFT 0 - 48<br>(-24 - +24)                          |
| 00 03 : 0aaa aaaa | FINE TUNE 0 - 100<br>(-50 - +50)                         |
| 00 04 : 000a aaaa | BENDER RANGE 0 - 24                                      |
| 00 05 : 0000 00aa | ASSIGN MODE 0 - 3<br>(POLY 1, POLY 2,<br>POLY 3, POLY 4) |
| 00 06 : 0000 000a | REVERB SWITCH 0 - 1<br>(OFF, ON)                         |
| 00 07 : 0xxx xxxx | dummy (ignored if received)                              |
| 00 08 : 0aaa aaaa | OUTPUT LEVEL 0 - 100                                     |
| 00 09 : 0000 aaaa | PANPOT 0 - 14<br>(R - L)                                 |
| 00 0A : 0xxx xxxx | dummy (ignored if received)                              |
| 00 0F : 0xxx xxxx | dummy (ignored if received)                              |
| Total size        | 00 00 10                                                 |

**\*5-2-2 Patch temporary area (Rhythm Part)**

| Offset<br>address | Description                                              |
|-------------------|----------------------------------------------------------|
| 00 00 : 0xxx xxxx | dummy (ignored if received)                              |
| 00 01 : 0xxx xxxx | dummy (ignored if received)                              |
| 00 02 : 0xxx xxxx | dummy (ignored if received)                              |
| 00 03 : 0aaa aaaa | FINE TUNE 0 - 100<br>(-50 - +50)                         |
| 00 04 : 0xxx xxxx | dummy (ignored if received)                              |
| 00 05 : 0000 00aa | ASSIGN MODE 0 - 3<br>(POLY 1, POLY 2,<br>POLY 3, POLY 4) |
| 00 06 : 0xxx xxxx | dummy (ignored if received)                              |
| 00 07 : 0xxx xxxx | dummy (ignored if received)                              |
| 00 08 : 0aaa aaaa | OUTPUT LEVEL 0 - 100                                     |
| 00 09 : 0xxx xxxx | dummy (ignored if received)                              |
| 00 0F : 0xxx xxxx | dummy (ignored if received)                              |
| Total size        | 00 00 10                                                 |

**\*5-3 Rhythm part setup area**

| Offset<br>address | Description                       |
|-------------------|-----------------------------------|
| 00 00 00 :        | Rhythm Setup (for Key# 24) *5-3-1 |
| 00 00 04 :        | Rhythm Setup (for Key# 25)        |
| 00 00 08 :        | Rhythm Setup (for Key# 26)        |
| 00 00 0C :        | Rhythm Setup (for Key# 27)        |
| 00 00 10 :        | Rhythm Setup (for Key# 28)        |
| :                 | :                                 |
| :                 | :                                 |
| 00 02 4C :        | Rhythm Setup (for Key# 107)       |
| 00 02 50 :        | Rhythm Setup (for Key# 108)       |

**\*5-3-1 Rhythm setup (for each Key #)**

| Offset<br>address | Description                          |
|-------------------|--------------------------------------|
| 00 00 : 0aaa aaaa | TIMBRE 0 - 127<br>(101-164, r01-r64) |
| 00 01 : 0aaa aaaa | OUTPUT LEVEL 0 - 100                 |
| 00 02 : 0000 aaaa | PANPOT 0 - 14<br>(R - L)             |
| 00 03 : 0000 000a | REVERB SWITCH 0 - 1<br>(OFF, ON)     |
| Total size        | 00 00 04                             |

**\*5-4 Patch memory**

| Offset<br>address | Description                                              |
|-------------------|----------------------------------------------------------|
| 00 00 : 0000 00aa | TIMBRE GROUP 0 - 3<br>(a, b, i, r)                       |
| 00 01 : 00aa aaaa | TIMBRE NUMBER 0 - 63                                     |
| 00 02 : 00aa aaaa | KEY SHIFT 0 - 48<br>(-24 - +24)                          |
| 00 03 : 0aaa aaaa | FINE TUNE 0 - 100<br>(-50 - +50)                         |
| 00 04 : 000a aaaa | BENDER RANGE 0 - 24                                      |
| 00 05 : 0000 00aa | ASSIGN MODE 0 - 3<br>(POLY 1, POLY 2,<br>POLY 3, POLY 4) |
| 00 06 : 0000 000a | REVERB SWITCH 0 - 1<br>(OFF, ON)                         |
| 00 07 : 0xxx xxxx | dummy                                                    |
| Total size        | 00 00 08                                                 |

**\*5-5 System area**

The total number of Partial reserves for 9 parts must be 32 or less.  
All Partial reserves must be sent as a package of 9 parts.

| Offset<br>address | Description                                            |
|-------------------|--------------------------------------------------------|
| 00 00 : 0aaa aaaa | MASTER TUNE 0 - 127<br>(432.1Hz - 457.6Hz)             |
| 00 01 : 0000 00aa | REVERB MODE 0 - 3<br>(Room, Hall,<br>Plate, Tap delay) |
| 00 02 : 0000 0aaa | REVERB TIME 0 - 7<br>(1 - 8)                           |
| 00 03 : 0000 0aaa | REVERB LEVEL 0 - 7                                     |
| 00 04 : 00aa aaaa | PARTIAL RESERVE (Part 1) 0 - 32                        |
| 00 05 : 00aa aaaa | PARTIAL RESERVE (Part 2) 0 - 32                        |
| 00 06 : 00aa aaaa | PARTIAL RESERVE (Part 3) 0 - 32                        |
| 00 07 : 00aa aaaa | PARTIAL RESERVE (Part 4) 0 - 32                        |
| 00 08 : 00aa aaaa | PARTIAL RESERVE (Part 5) 0 - 32                        |
| 00 09 : 00aa aaaa | PARTIAL RESERVE (Part 6) 0 - 32                        |
| 00 0A : 00aa aaaa | PARTIAL RESERVE (Part 7) 0 - 32                        |
| 00 0B : 00aa aaaa | PARTIAL RESERVE (Part 8) 0 - 32                        |
| 00 0C : 00aa aaaa | PARTIAL RESERVE (Part 9) 0 - 32                        |
| 00 0D : 000a aaaa | MIDI CHANNEL (Part 1) 0 - 16<br>(1 - 16, OFF)          |
| 00 0E : 000a aaaa | MIDI CHANNEL (Part 2) 0 - 16<br>(1 - 16, OFF)          |
| 00 0F : 000a aaaa | MIDI CHANNEL (Part 3) 0 - 16<br>(1 - 16, OFF)          |
| 00 10 : 000a aaaa | MIDI CHANNEL (Part 4) 0 - 16<br>(1 - 16, OFF)          |
| 00 11 : 000a aaaa | MIDI CHANNEL (Part 5) 0 - 16<br>(1 - 16, OFF)          |
| 00 12 : 000a aaaa | MIDI CHANNEL (Part 6) 0 - 16<br>(1 - 16, OFF)          |
| 00 13 : 000a aaaa | MIDI CHANNEL (Part 7) 0 - 16<br>(1 - 16, OFF)          |
| 00 14 : 000a aaaa | MIDI CHANNEL (Part 8) 0 - 16                           |



|            |           |                      |                                          |
|------------|-----------|----------------------|------------------------------------------|
| 00 15      | 000a aaaa | MIDI CHANNEL(Part R) | (1 - 16, OFF)<br>0 - 16<br>(1 - 16, OFF) |
| 00 16      | 0aaa aaaa | MASTER VOLUME        | 0 - 100                                  |
| Total size |           | 00 00 17             |                                          |

When the Receive channel of the part is altered, Reset all controllers and All notes off messages for this part are performed.

Example of RQ1 and DT1 application --- 2

Set Partial reserve of each part as follows by sending the byte string listed below.

Part 1 ..... 8                      Parts 3 thru 8 ..... 0

Part 2 ..... 10                      Rhythm part ..... 8

F0 41 10 16 12 10 00 04 08 0A 00 00 00 00 00 08 52 F7

#### \*5-6 Write Request

This message simulates write switch on CM-64, that is, CM-64 writes data of each part in the temporary area into internal memory.

(Memory must be specified by two bytes addresses.)

CM-64 will inform back of the writing result.

No data in this area can be brought outside world by the use of RQ1 and RQD.

| Offset<br>address | Description                                                                                                        |
|-------------------|--------------------------------------------------------------------------------------------------------------------|
| 00 00             | 00aa aaaa Timbre Write 0 - 63<br>(part 1) (01 - 64)                                                                |
| 00 01             | 0000 0000 0<br>(Internal)                                                                                          |
| 00 02             | 00aa aaaa Timbre Write                                                                                             |
| 00 03             | 0000 0000 (part 2)                                                                                                 |
| :                 | :                                                                                                                  |
| 00 0E             | 00aa aaaa Timbre Write                                                                                             |
| 00 0F             | 0000 0000 (part 8)                                                                                                 |
| 01 00             | 0aaa aaaa Patch Write 0 - 127<br>(part 1) (1 - 128)                                                                |
| 01 01             | 0000 0000 0<br>(Internal)                                                                                          |
| 01 02             | 0aaa aaaa Patch Write                                                                                              |
| 01 03             | 0000 0000 (part 2)                                                                                                 |
| :                 | :                                                                                                                  |
| 01 0E             | 0aaa aaaa Patch Write                                                                                              |
| 01 0F             | 0000 0000 (part 8)                                                                                                 |
| 10 00             | 0000 00aa Result 0 - 3<br>0 = Function Completed<br>1 = Incorrect Mode<br>2 = Incorrect Mode<br>3 = Incorrect Mode |

Example of RQ1 and DT1 application --- 3

Direct CM-64 to write data of Part 3 in the temporary area into #76 by sending the byte string listed below.

F0 41 10 16 12 40 01 04 4B 00 70 F7

#### \*5-7 All Parameters Reset

Tone temporary, Patch temporary, System and Patch memory area will be initialized by sending data to this address.

And sets each of the following controls as follows.

| Controller          | setting     |
|---------------------|-------------|
| Modulation Depth    | MIN ( 0 )   |
| Expression          | MAX ( 127 ) |
| Hold 1              | OFF ( 0 )   |
| Pitch Bender Change | CENTER      |

And turns off all notes that have been turned on.

No data in this area can be brought outside world through MIDI exclusive message such as RQ1 and RQD.

| Address Map |                             |           |           |
|-------------|-----------------------------|-----------|-----------|
| Address     | Block                       | Sub Block | Reference |
| 02 00 00    | Timbre Temp.<br>(Basic Ch)  | Common    | 5-1-1     |
| :           | :                           | Partial 1 | 5-1-2     |
| :           | :                           | Partial 2 |           |
| :           | :                           | Partial 3 |           |
| :           | :                           | Partial 4 |           |
| 03 00 00    | Patch Temp.<br>(Unit#)      | Part 1    | 5-2       |
| :           | :                           | Part 2    |           |
| :           | :                           | :         |           |
| :           | :                           | Part 8    |           |
| :           | :                           | Part R    |           |
| 03 01 10    | Rhythm Setup<br>Temp(Unit#) | Note# 24  | 5-3-1     |
| :           | :                           | Note# 25  |           |
| :           | :                           | Note# 107 |           |
| :           | :                           | Note# 108 |           |
| 04 00 00    | Timbre Temp.<br>(Unit#)     | Part 1    | 5-1       |
| :           | :                           | Part 2    |           |
| :           | :                           | :         |           |
| :           | :                           | Part 7    |           |
| :           | :                           | Part 8    |           |
| 05 00 00    | Patch Memory                | # 1       | 5-4       |
| :           | :                           | # 2       |           |
| :           | :                           | :         |           |
| :           | :                           | #127      |           |
| :           | :                           | #128      |           |
| 08 00 00    | Timbre Memory               | # 1       | 5-1       |
| :           | :                           | # 2       |           |
| :           | :                           | :         |           |
| :           | :                           | # 63      |           |
| :           | :                           | # 64      |           |
| 10 00 00    | System Area                 |           | 5-5       |
| 40 00 00    | Write Request               |           | 5-6       |
| 7F xx xx    | All Parameters<br>Reset     |           | 5-7       |

## 6. PARAMETER ADDRESS MAP (PCM SOUND PART)

Addresses are represented in 7 - bit hexadecimal.

| Address           | MSB       | LSB       |
|-------------------|-----------|-----------|
| Binary            | 0aaa aaaa | 0bbb bbbb |
| 7-bit Hexadecimal | AA        | BB        |

### Parameter base address

| Start address | Description                    |      |
|---------------|--------------------------------|------|
| 50 00 00      | Patch temporary area( part 1 ) | *6-1 |
| 50 00 15      | Patch temporary area( part 2 ) |      |
| 50 00 2A      | Patch temporary area( part 3 ) |      |
| 50 00 3F      | Patch temporary area( part 4 ) |      |
| 50 00 54      | Patch temporary area( part 5 ) |      |
| 50 00 69      | Patch temporary area( part 6 ) |      |
| 51 00 00      | Patch memory #1                | *6-2 |
| 51 00 13      | Patch memory #2                |      |
| 51 12 5A      | Patch memory #127              |      |
| 51 12 6D      | Patch memory #128              |      |
| 52 00 00      | System area                    | *6-3 |
| 7F xx xx      | All parameter reset            | *6-4 |

### \* 6 - 1 Patch temporary area

| Offset address | Description                   |                                           |
|----------------|-------------------------------|-------------------------------------------|
| 00 00          | 0000 000a TONE MEDIA          | 0 - 1<br>(Internal, Card)                 |
| 00 01          | 0aaa aaaa TONE NUMBER         | 0 - 127<br>(1 - 128)                      |
| 00 02          | 000a aaaa KEY SHIFT           | 0 - 24<br>(-12 - +12)                     |
| 00 03          | 0aaa aaaa FINE TUNE           | 0 - 100<br>(-50 - +50)                    |
| 00 04          | 0000 aaaa BENDER RANGE        | 0 - 12                                    |
| 00 05          | 0aaa aaaa KEY RANGE LOWER     | 0 - 127<br>(C -1 - G 9)                   |
| 00 06          | 0aaa aaaa KEY RANGE UPPER     | 0 - 127<br>(C -1 - G 9)                   |
| 00 07          | 0000 00aa ASSIGN MODE         | 0 - 3<br>(POLY 1, POLY 2, POLY 3, POLY 4) |
| 00 08          | 0000 000a REVERB SWITCH       | 0 - 1<br>(OFF, ON)                        |
| 00 09          | 0000 aaaa VELOCITY SENS       | 0 - 15                                    |
| 00 0A          | 0aaa aaaa ENV ATTACK RATE     | 0 - 127                                   |
| 00 0B          | 0aaa aaaa ENV RELEASE RATE    | 0 - 127                                   |
| 00 0C          | 0aaa aaaa LFO RATE            | 0 - 127                                   |
| 00 0D          | 0000 aaaa LFO AUTO DELAY TIME | 0 - 15                                    |
| 00 0E          | 0000 aaaa LFO AUTO RISE TIME  | 0 - 15                                    |
| 00 0F          | 0000 aaaa LFO AUTO DEPTH      | 0 - 15                                    |
| 00 10          | 0000 aaaa LFO MAN RISE TIME   | 0 - 15                                    |
| 00 11          | 0000 aaaa LFO MAN DEPTH       | 0 - 15                                    |
| 00 12          | 00aa aaaa DETUNE DEPTH        | 0 - 50                                    |
| 00 13          | 0aaa aaaa PANPOT              | 0 - 127<br>(R - L)                        |
| 00 14          | 0aaa aaaa OUTPUT LEVEL        | 0 - 100                                   |
| Total size     | 00 00 15                      |                                           |

### \* 6 - 2 Patch memory

| Offset address | Description                   |                                           |
|----------------|-------------------------------|-------------------------------------------|
| 00 00          | 0000 000a TONE MEDIA          | 0 - 1<br>(Internal, Card)                 |
| 00 01          | 0aaa aaaa TONE NUMBER         | 0 - 127<br>(1 - 128)                      |
| 00 02          | 000a aaaa KEY SHIFT           | 0 - 24<br>(-12 - +12)                     |
| 00 03          | 0aaa aaaa FINE TUNE           | 0 - 100<br>(-50 - +50)                    |
| 00 04          | 0000 aaaa BENDER RANGE        | 0 - 12                                    |
| 00 05          | 0aaa aaaa KEY RANGE LOWER     | 0 - 127<br>(C -1 - G 9)                   |
| 00 06          | 0aaa aaaa KEY RANGE UPPER     | 0 - 127<br>(C -1 - G 9)                   |
| 00 07          | 0000 00aa ASSIGN MODE         | 0 - 3<br>(POLY 1, POLY 2, POLY 3, POLY 4) |
| 00 08          | 0000 000a REVERB SWITCH       | 0 - 1<br>(OFF, ON)                        |
| 00 09          | 0000 aaaa VELOCITY SENS       | 0 - 15                                    |
| 00 0A          | 0aaa aaaa ENV ATTACK RATE     | 0 - 127                                   |
| 00 0B          | 0aaa aaaa ENV RELEASE RATE    | 0 - 127                                   |
| 00 0C          | 0aaa aaaa LFO RATE            | 0 - 127                                   |
| 00 0D          | 0000 aaaa LFO AUTO DELAY TIME | 0 - 15                                    |
| 00 0E          | 0000 aaaa LFO AUTO RISE TIME  | 0 - 15                                    |
| 00 0F          | 0000 aaaa LFO AUTO DEPTH      | 0 - 15                                    |
| 00 10          | 0000 aaaa LFO MAN RISE TIME   | 0 - 15                                    |
| 00 11          | 0000 aaaa LFO MAN DEPTH       | 0 - 15                                    |
| 00 12          | 00aa aaaa DETUNE DEPTH        | 0 - 50                                    |
| Total size     | 00 00 13                      |                                           |

### \* Internal Tone list

| No. | TONE        | TYPE   | No. | TONE        | TYPE   |
|-----|-------------|--------|-----|-------------|--------|
| 01  | A. Piano 1  | V-MIX  | 43  | AC. Bass    | V-MIX  |
| 02  | A. Piano 2  | V-MIX  | 44  | Choir 1     | SINGLE |
| 03  | A. Piano 3  | V-MIX  | 45  | Choir 2     | SINGLE |
| 04  | A. Piano 4  | V-MIX  | 46  | Choir 3     | DUAL   |
| 05  | A. Piano 5  | SINGLE | 47  | Choir 4     | DUAL   |
| 06  | A. Piano 6  | DETUNE | 48  | Strings 1   | SINGLE |
| 07  | A. Piano 7  | SINGLE | 49  | Strings 2   | SINGLE |
| 08  | A. Piano 8  | DETUNE | 50  | Strings 3   | DUAL   |
| 09  | A. Piano 9  | SINGLE | 51  | Strings 4   | DUAL   |
| 10  | A. Piano 10 | DETUNE | 52  | E. Organ 1  | SINGLE |
| 11  | E. Piano 1  | V-MIX  | 53  | E. Organ 2  | DETUNE |
| 12  | E. Piano 2  | SINGLE | 54  | E. Organ 3  | SINGLE |
| 13  | E. Piano 3  | DETUNE | 55  | E. Organ 4  | DETUNE |
| 14  | E. Piano 4  | SINGLE | 56  | E. Organ 5  | SINGLE |
| 15  | E. Piano 5  | DETUNE | 57  | E. Organ 6  | DETUNE |
| 16  | A. Guitr 1  | SINGLE | 58  | E. Organ 7  | SINGLE |
| 17  | A. Guitr 2  | DETUNE | 59  | E. Organ 8  | DETUNE |
| 18  | A. Guitr 3  | DUAL   | 60  | E. Organ 9  | DUAL   |
| 19  | A. Guitr 4  | DUAL   | 61  | E. Organ 10 | DUAL   |
| 20  | A. Guitr 5  | V-SW   | 62  | E. Organ 11 | DUAL   |
| 21  | E. Guitr 1  | V-SW   | 63  | E. Organ 12 | DUAL   |
| 22  | E. Guitr 2  | SINGLE | 64  | E. Organ 13 | DUAL   |
| 23  | E. Guitr 3  | SINGLE | 65  | Soft Tp 1   | SINGLE |
| 24  | E. Guitr 4  | DETUNE | 66  | Soft Tp 2   | DETUNE |
| 25  | Slap 1      | SINGLE | 67  | Soft Tp 3   | SINGLE |
| 26  | Slap 2      | DETUNE | 68  | Tp/Trb 1    | SINGLE |
| 27  | Slap 3      | SINGLE | 69  | Tp/Trb 2    | SINGLE |
| 28  | Slap 4      | DETUNE | 70  | Tp/Trb 3    | SINGLE |
| 29  | Slap 5      | V-SW   | 71  | Tp/Trb 4    | SINGLE |
| 30  | Slap 6      | V-SW   | 72  | Tp/Trb 5    | DETUNE |
| 31  | Slap 7      | SINGLE | 73  | Tp/Trb 6    | DUAL   |
| 32  | Slap 8      | DETUNE | 74  | Sax 1       | SINGLE |
| 33  | Slap 9      | SINGLE | 75  | Sax 2       | SINGLE |
| 34  | Slap 10     | DETUNE | 76  | Sax 3       | SINGLE |
| 35  | Slap 11     | V-SW   | 77  | Sax 4       | DETUNE |
| 36  | Slap 12     | V-SW   | 78  | Sax 5       | DUAL   |
| 37  | Fingered 1  | SINGLE | 79  | Brass 1     | SINGLE |
| 38  | Fingered 2  | DETUNE | 80  | Brass 2     | SINGLE |
| 39  | Picked 1    | SINGLE | 81  | Brass 3     | DUAL   |
| 40  | Picked 2    | DETUNE | 82  | Brass 4     | DUAL   |
| 41  | Fretless 1  | SINGLE | 83  | Brass 5     | DUAL   |
| 42  | Fretless 2  | DETUNE | 84  | Orch Hit    | SINGLE |

### \*6-3 System area

The total number of Partial reserves for 6 parts must be 31 or less. All Partial reserves must be sent as a package of 6 parts.

| Offset<br>address | Description                                           |
|-------------------|-------------------------------------------------------|
| 00 00 : 0aaa aaaa | MASTER TUNE 0 - 127<br>(432.1Hz - 457.6Hz)            |
| 00 01 : 0000 00aa | REVERB MODE 0 - 3<br>(ROOM, HALL<br>Plate, Tap delay) |
| 00 02 : 0000 0aaa | REVERB TIME 0 - 7<br>(1 - 8)                          |
| 00 03 : 0000 0aaa | REVERB LEVEL 0 - 7                                    |
| 00 04 : 00aa aaaa | PARTIAL RESERVE (PART 1) 0 - 31                       |
| 00 05 : 00aa aaaa | PARTIAL RESERVE (PART 2) 0 - 31                       |
| 00 06 : 00aa aaaa | PARTIAL RESERVE (PART 3) 0 - 31                       |
| 00 07 : 00aa aaaa | PARTIAL RESERVE (PART 4) 0 - 31                       |
| 00 08 : 00aa aaaa | PARTIAL RESERVE (PART 5) 0 - 31                       |
| 00 09 : 00aa aaaa | PARTIAL RESERVE (PART 6) 0 - 31                       |
| 00 0A : 000a aaaa | MIDI CHANNEL (PART 1) 0 - 16<br>(1 - 16 ,OFF)         |
| 00 0B : 000a aaaa | MIDI CHANNEL (PART 2) 0 - 16<br>(1 - 16 ,OFF)         |
| 00 0C : 000a aaaa | MIDI CHANNEL (PART 3) 0 - 16<br>(1 - 16 ,OFF)         |
| 00 0D : 000a aaaa | MIDI CHANNEL (PART 4) 0 - 16<br>(1 - 16 ,OFF)         |
| 00 0E : 000a aaaa | MIDI CHANNEL (PART 5) 0 - 16<br>(1 - 16 ,OFF)         |
| 00 0F : 000a aaaa | MIDI CHANNEL (PART 6) 0 - 16<br>(1 - 16 ,OFF)         |
| 00 10 : 0aaa aaaa | MASTER VOLUME 0 - 100                                 |
| Total size        | 00 00 11                                              |

When the Receive channel of the part is altered, Reset all controllers and All notes off messages for this part are performed.

### \*6-4 All Parameter Reset

Tone temporary, Patch temporary, System and Patch memory area will be initialized by sending data to this address.

And sets each of the following controls as follows.

| Controller          | setting     |
|---------------------|-------------|
| Modulation Depth    | MIN ( 0 )   |
| Expression          | MAX ( 127 ) |
| Hold 1              | OFF ( 0 )   |
| Pitch Bender Change | CENTER      |

And turns off all notes that have been turned on.

### Address Map

| Address  | Block                   | Sub Block | Reference |
|----------|-------------------------|-----------|-----------|
| 50 00 00 | Patch Temp.             | Part 1    | 6-1       |
|          |                         | Part 2    |           |
|          |                         | Part 5    |           |
|          |                         | Part 6    |           |
| 51 00 00 | Patch Memory            | # 1       | 6-2       |
|          |                         | # 2       |           |
|          |                         | #127      |           |
|          |                         | #128      |           |
| 52 00 00 | System Area             |           | 6-3       |
| 7F xx xx | All Parameters<br>Reset |           | 6-4       |

| Function ***                                                                                                                                     |                                                        | Transmitted | Recognized           | Remarks               |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------|----------------------|-----------------------|
| Basic Channel                                                                                                                                    | Default Changed                                        | ×           | 2 - 10<br>×          |                       |
| Mode                                                                                                                                             | Default Messages Altered                               | ×           | 3<br>×               |                       |
|                                                                                                                                                  |                                                        | ×           | ×                    |                       |
|                                                                                                                                                  |                                                        | *****       | ×                    |                       |
| Note Number                                                                                                                                      | True Voice                                             | ×           | 0 - 127<br>12 - 108  |                       |
|                                                                                                                                                  |                                                        | *****       |                      |                       |
| Velocity                                                                                                                                         | Note ON<br>Note OFF                                    | ×           | ○ v = 1 - 127<br>×   |                       |
|                                                                                                                                                  |                                                        | ×           | ×                    |                       |
| After Touch                                                                                                                                      | Key's<br>Ch's                                          | ×           | ×                    |                       |
|                                                                                                                                                  |                                                        | ×           | ×                    |                       |
| Pitch Bender                                                                                                                                     |                                                        | ×           | ○                    |                       |
| Control Change                                                                                                                                   | 1                                                      | ×           | ○                    | Modulation            |
|                                                                                                                                                  | 2 - 5                                                  | ×           | ×                    |                       |
|                                                                                                                                                  | 6                                                      | ×           | *                    | Data Entry            |
|                                                                                                                                                  | 7                                                      | ×           | ○                    | Volume                |
|                                                                                                                                                  | 8, 9                                                   | ×           | ×                    |                       |
|                                                                                                                                                  | 10                                                     | ×           | ○                    | Pan                   |
|                                                                                                                                                  | 11                                                     | ×           | ○                    | Expression            |
|                                                                                                                                                  | 12 - 63                                                | ×           | ×                    |                       |
|                                                                                                                                                  | 64                                                     | ×           | ○                    | Hold 1                |
|                                                                                                                                                  | 65 - 99                                                | ×           | ×                    |                       |
|                                                                                                                                                  | 100, 101                                               | ×           | * (0)                | RPN LSB, MSB          |
|                                                                                                                                                  | 102 - 120                                              | ×           | ×                    |                       |
|                                                                                                                                                  | 121                                                    | ×           | ○                    | Reset All Controllers |
| Prog Change                                                                                                                                      | True #                                                 | ×           | ○ 0 - 127<br>0 - 127 |                       |
|                                                                                                                                                  |                                                        | *****       |                      |                       |
| System Exclusive                                                                                                                                 |                                                        | ○           | ○                    |                       |
| System Common                                                                                                                                    | Song Pos<br>Song Sel<br>Tune                           | ×           | ×                    |                       |
|                                                                                                                                                  |                                                        | ×           | ×                    |                       |
|                                                                                                                                                  |                                                        | ×           | ×                    |                       |
| System Real Time                                                                                                                                 | Clock<br>Commands                                      | ×           | ×                    |                       |
|                                                                                                                                                  |                                                        | ×           | ×                    |                       |
| Aux Messages                                                                                                                                     | Local ON/OFF<br>All Notes OFF<br>Active Sense<br>Reset | ×           | ×                    |                       |
|                                                                                                                                                  |                                                        | ×           | ○ (123 - 127)        |                       |
|                                                                                                                                                  |                                                        | ×           | ○                    |                       |
|                                                                                                                                                  |                                                        | ×           | ×                    |                       |
| Notes<br>* RPN = Registered Parameter Number<br>RPN # 0 : Pitch Bend Sensitivity<br>The value of parameter is to be determined by entering data. |                                                        |             |                      |                       |

| Function ...                                                                                                                                                                            |                          | Transmitted | Recognized    | Remarks               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------|---------------|-----------------------|
| Basic Channel                                                                                                                                                                           | Default Changed          | ×           | 11 - 16       |                       |
|                                                                                                                                                                                         |                          | ×           | ×             |                       |
| Mode                                                                                                                                                                                    | Default Messages Altered | ×           | 3             |                       |
|                                                                                                                                                                                         |                          | ×           | ×             |                       |
|                                                                                                                                                                                         |                          | *****       | ×             |                       |
| Note Number                                                                                                                                                                             | True Voice               | ×           | 0 - 127       |                       |
|                                                                                                                                                                                         |                          | *****       | * 1           |                       |
| Velocity                                                                                                                                                                                | Note ON                  | ×           | ○ v = 1 - 127 |                       |
|                                                                                                                                                                                         | Note OFF                 | ×           | ×             |                       |
| After Touch                                                                                                                                                                             | Key's                    | ×           | ×             |                       |
|                                                                                                                                                                                         | Ch's                     | ×           | ×             |                       |
| Pitch Bender                                                                                                                                                                            |                          | ×           | ○             |                       |
| Control Change                                                                                                                                                                          | 1                        | ×           | ○             | Modulation            |
|                                                                                                                                                                                         | 2 - 5                    | ×           | ×             |                       |
|                                                                                                                                                                                         | 6                        | ×           | * 2           | Data Entry            |
|                                                                                                                                                                                         | 7                        | ×           | ○             | Volume                |
|                                                                                                                                                                                         | 8, 9                     | ×           | ×             |                       |
|                                                                                                                                                                                         | 10                       | ×           | ○             | Pan                   |
|                                                                                                                                                                                         | 11                       | ×           | ○             | Expression            |
|                                                                                                                                                                                         | 12 - 63                  | ×           | ×             |                       |
|                                                                                                                                                                                         | 64                       | ×           | ○             | Hold 1                |
|                                                                                                                                                                                         | 65 - 99                  | ×           | ×             |                       |
|                                                                                                                                                                                         | 100, 101                 | ×           | * 2 (0)       | RPN LSB, MSB          |
|                                                                                                                                                                                         | 102 - 120                | ×           | ×             |                       |
|                                                                                                                                                                                         | 121                      | ×           | ○             | Reset All Controllers |
| Prog Change                                                                                                                                                                             | True #                   | ×           | ○ 0 - 127     |                       |
|                                                                                                                                                                                         |                          | *****       | 0 - 127       |                       |
| System Exclusive                                                                                                                                                                        |                          | ×           | ○             |                       |
| System Common                                                                                                                                                                           | Song Pos                 | ×           | ×             |                       |
|                                                                                                                                                                                         | Song Sel                 | ×           | ×             |                       |
|                                                                                                                                                                                         | Tune                     | ×           | ×             |                       |
| System Real Time                                                                                                                                                                        | Clock Commands           | ×           | ×             |                       |
|                                                                                                                                                                                         |                          | ×           | ×             |                       |
| Aux Messages                                                                                                                                                                            | Local ON/OFF             | ×           | ×             |                       |
|                                                                                                                                                                                         | All Notes OFF            | ×           | ○ (123 - 127) |                       |
|                                                                                                                                                                                         | Active Sense             | ×           | ○             |                       |
|                                                                                                                                                                                         | Reset                    | ×           | ×             |                       |
| Notes<br>* 1 Varies depending on the tone.<br>* 2 RPN = Registered Parameter Number<br>RPN # 0 : Pitch Bend Sensitivity<br>The value of parameter is to be determined by entering data. |                          |             |               |                       |

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## ■ *Specifications*

### **CM-64 LA/PCM Sound Module**

#### **Sound Modules :**

LA Synthesis system (maximum number of voices : 32)

PCM system (maximum number of voices : 31)

#### **Part :**

LA Sound Module Section : Part 1 - 8, Rhythm Part

PCM Sound Module Section : Part 1 - 6

#### **Power supply :**

9V DC (Supplied by ACB Series AC adaptor)

#### **Current consumption :**

1200mA (at 9V DC)

#### **Dimensions :**

284 (W) × 239 (D) × 46 (H)mm

11-3/16" × 9-1/4" × 1-2/3"

#### **Weight :**

2kg / 4 lb 6 oz

#### **Accessories :**

AC adaptor

MIDI cable (1 pc.)

Connection cord (2 pcs.)

Owner's Manual

Guidebook for MIDI

#### **Options :**

PCM Card (SN-U110 Series)

\* The specifications for this product are subject to change without prior notice, in the interest of improvement.

# Information

- Please use this AC adaptor only with the specified device.
- Please use the AC Adaptor of an appropriate voltage (120, 220 or 240 ) depending on the voltage system in your country.
- When the device is not used for a long period, be sure to disconnect the AC adaptor (Power Supply Unit) from the wall outlet.
- When you need repair service, call your local Roland Service Station as shown below or the authorized Roland distributor in your country.

## U. S. A.

Roland Corp US  
7200 Dominion Circle  
Los Angeles, CA. 90040-3647  
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Quebec H4R 2C1  
CANADA  
☎ (514) 335-2009

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