YAMAHA

RHYTHM SOUND MODULE

RM50

OWNER'S MANUAL

FCC INFORMATION (U.S.A.)

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!
   This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.
2. IMPORTANT: When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.
3. NOTE: This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

   Relocate either this product or the device that is being affected by the interference.

   Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

   In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable.

   If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Corporation of America, Electronic Service Division, 6600 Orangethorpe Ave, Buena Park, CA 90620

* This applies only to products distributed by YAMAHA CORPORATION OF AMERICA.

Dette apparat overholder det gaeldende EF-direktiv vedrørende radiostøj.

Cet appareil est conforme aux prescriptions de la directive communautaire 87/308/CEE.

Diese Geräte entsprechen der EG-Richtlinie 82/499/EWG und/oder 87/308/EWG.

This product complies with the radio frequency interference requirements of the Council Directive 82/499/EEC and/or 87/308/EEC.

Questo apparecchio è conforme al D.M.13 aprile 1989 (Direttiva CEE/87/308) sulla soppressione dei radiodisturbi.

Este producto está de acuerdo con los requisitos sobre interferencias de radio frequencia fijados por el Consejo Directivo 87/308/CEE.

YAMAHA CORPORATION

IMPORTANT NOTICE FOR THE UNITED KINGDOM

Connecting the Plug and Cord

IMPORTANT
THE WIRES IN 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.
Making sure that neither core is connected to the earth terminal of the three pin plug.

CANADA

THIS DIGITAL APPARATUS DOES NOT EXCEED THE "CLASS B" LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS SET OUT IN THE RADIO INTERFERENCE REGULATION OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

LE PRESENT APPAREIL NUMERIQUE N'EMET PAS DE BRUITS RADIOELECTRIQUES DEPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMERIQUES DE LA "CLASSE B" PRESCRITES DANS LE REGLEMENT SUR LE BROUILLAGE RADIOELECTRIQUE EDICTE PAR LE MINISTERE DES COMMUNICATIONS DU CANADA.

* This applies only to products distributed by YAMAHA CANADA MUSIC LTD.

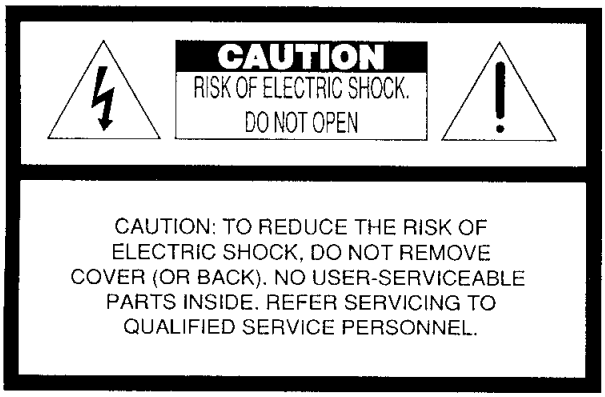
Litiumbatteri!
Bör endast bytas av servicepersonal.
Explosionsfara vid felaktig hantering.

VAROITUS!
Lithiumparisto, Räjähdysvaara.
Pariston saa vaihtaa ainoastaan alan ammattimies.

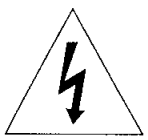
ADVARSEL!
Lithiumbatteri!
Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig, – og som beskrevet i servicemanualen.

SPECIAL MESSAGE SECTION

PRODUCT SAFETY MARKINGS: Yamaha electronic products may have either labels similar to the graphics shown below or molded/stamped facsimiles of these graphics on the enclosure. The explanation of these graphics appears on this page. Please observe all cautions indicated on this page and those indicated in the safety instruction section.



The exclamation point within the equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.



The lightning flash with arrowhead symbol within the equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock.

IMPORTANT NOTICE: All Yamaha electronic products are tested and approved by an independent safety testing laboratory in order that you may be sure that when it is properly installed and used in its normal and customary manner, all forceeable risks have been eliminated. DO NOT modify this unit or commission others to do so unless specifically authorized by Yamaha. Product performance and/or safety standards may be diminished. Claims filed under the expressed warranty may be denied if the unit is/has been modified. Implied warranties may also be affected.

SPECIFICATIONS SUBJECT TO CHANGE: The information contained in this manual is believed to be correct at the time of printing. However, Yamaha reserves the right to change or modify any of the specifications without notice or obligation to update existing units.

ENVIRONMENTAL ISSUES: Yamaha strives to produce products that are both user safe and environmentally friendly. We sincerely believe that our products and the production methods used to produce them, meet these goals. In keeping with both the letter and the spirit of the law, we want you to be aware of the following:

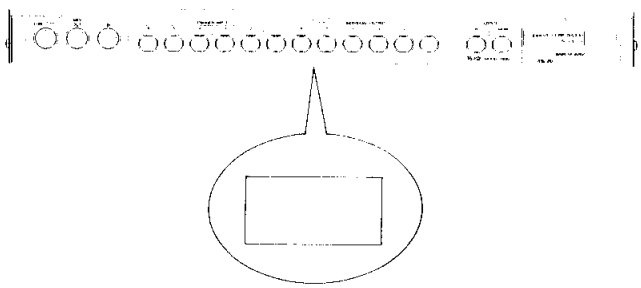
Battery Notice: This product MAY contain a small non-rechargeable battery which (if applicable) is soldered in place. The average life span of this type of battery is approximately five years. When replacement becomes necessary, contact a qualified service representative to perform the replacement.

Warning: Do not attempt to recharge, disassemble, or incinerate this type of battery. Keep all batteries away from children. Dispose of used batteries promptly and as regulated by applicable laws. Note: In some areas, the servicer is required by law to return the defective parts. However, you do have the option of having the servicer dispose of these parts for you.

Disposal Notice: Should this product become damaged beyond repair, or for some reason its useful life is considered to be at an end, please observe all local, state, and federal regulations that relate to the disposal of products that contain lead, batteries, plastics, etc.

NOTICE: Service charges incurred due to lack of knowledge relating to how a function or effect works (when the unit is operating as designed), are not covered by the manufacturer's warranty, and are therefore the owners responsibility. Please study this manual carefully and consult your dealer before requesting service.

NAME PLATE LOCATION: The graphic below indicates the location of the name plate. The model number, serial number, power requirements, etc., are located on this plate. You should record the model number, serial number, and the date of purchase in the spaces provided below and retain this manual as a permanent record of your purchase.



Model _____

Serial No. _____

Purchase Date _____

IMPORTANT
SAFETY AND INSTALLATION INSTRUCTIONS

INFORMATION RELATING TO POSSIBLE PERSONAL INJURY, ELECTRIC SHOCK, AND FIRE HAZARD POSSIBILITIES HAS BEEN INCLUDED IN THIS LIST.

WARNING — When using any electrical or electronic product, basic precautions should always be followed. These precautions include, but are not limited to, the following:

1. Read all Safety Instructions, Installation Instructions, Special Message Section items, and any Assembly Instructions found in this manual BEFORE making any connections, including connection to the main supply.
2. Main Power Supply Verification: Yamaha products are manufactured specifically for the supply voltage in the area where they are to be sold. If you should move, or if any doubt exists about the supply voltage in your area, please contact your dealer for supply voltage verification and (if applicable) instructions. The required supply voltage is printed on the name plate. For name plate location, please refer to the graphic found in the Special Message Section of this manual.
3. This product may be equipped with a polarized plug (one blade wider than the other). If you are unable to insert the plug into the outlet, turn the plug over and try again. If the problem persists, contact an electrician to have the obsolete outlet replaced. Do NOT defeat the safety purpose of the plug.
4. Some electronic products utilize external power supplies or adapters. DO NOT connect this type of product to any power supply or adapter other than one described in the owners manual, on the name plate, or specifically recommended by Yamaha.
5. **WARNING:** Do not place this product or any other objects on the power cord or place it in a position where anyone could walk on, trip over, or roll anything over power or connecting cords of any kind. The use of an extension cord is not recommended! If you must use an extension cord, the minimum wire size for a 25' cord (or less) is 18 AWG. NOTE: The smaller the AWG number, the larger the current handling capacity. For longer extension cords, consult a local electrician.
6. Ventilation: Electronic products, unless specifically designed for enclosed installations, should be placed in locations that do not interfere with proper ventilation. If instructions for enclosed installations are not provided, it must be assumed that unobstructed ventilation is required.
7. Temperature considerations: Electronic products should be installed in locations that do not significantly contribute to their operating temperature. Placement of this product close to heat sources such as; radiators, heat registers and other devices that produce heat should be avoided.
8. This product was NOT designed for use in wet/damp locations and should not be used near water or exposed to rain. Examples of wet/damp locations are; near a swimming pool, spa, tub, sink, or wet basement.
9. This product should be used only with the components supplied or; a cart, rack, or stand that is recommended by the manufacturer. If a cart, rack, or stand is used, please observe all safety markings and instructions that accompany the accessory product.
10. The power supply cord (plug) should be disconnected from the outlet when electronic products are to be left unused for extended periods of time. Cords should also be disconnected when there is a high probability of lightening and/or electrical storm activity.
11. Care should be taken that objects do not fall and liquids are not spilled into the enclosure through any openings that may exist.
12. Electrical/electronic products should be serviced by a qualified service person when:
    a. The power supply cord has been damaged; or
    b. Objects have fallen, been inserted, or liquids have been spilled into the enclosure through openings; or
    c. The product has been exposed to rain; or
    d. The product does not operate, exhibits a marked change in performance; or
    e. The product has been dropped, or the enclosure of the product has been damaged.
13. Do not attempt to service this product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.
14. This product, either alone or in combination with an amplifier and headphones or speaker/s, may be capable of producing sound levels that could cause permanent hearing loss. DO NOT operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the cars, you should consult an audiologist. IMPORTANT: The louder the sound, the shorter the time period before damage occurs.
15. Some Yamaha products may have benches and/or accessory mounting fixtures that are either supplied as a part of the product or as optional accessories. Some of these items are designed to be dealer assembled or installed. Please make sure that benches are stable and any optional fixtures (where applicable) are well secured BEFORE using Benches supplied by Yamaha are designed for seating only No other uses are recommended.

PLEASE KEEP THIS MANUAL

CONTENTS

TUTORIAL SECTION

REFERENCE SECTION

APPENDICES

Congratulations!

On your purchase of the YAMAHA RM50 Rhythm Sound Module. You are now the owner of one of the best-sounding, most versatile rhythm sound modules ever created for the professional musician.

Features

The main attribute of the RM50 is stunning sound quality. Thanks to its combination of Yamaha's exclusive 16-bit AWM2 tone generation technology with a 22-bit D/A converter, the RM50 provides accurate audio reproduction of some of the highest-caliber sampled waveforms available.

To this foundation of high sound quality, the RM50 adds programmable digital filters and wave layering capability, plus an unprecedentedly broad range of editable voice parameters. The RM50 thus gives you total control over even the most subtle nuances of the sounds it produces. You can refine its voices as needed, or even create completely new voices to fit your specific musical requirements.

Another advantage of the RM50 is its huge capacity for sound variety. Its internal memory holds 500 preset voices, 500 partially-editable variations, and 128 user voices, as well as 64 preset and 64 user rhythm kits that help you put all of these sounds to work.

This tremendous internal sound capacity is augmented by full expandability. Three wave card slots let you use the large selection of waveforms and voices available on the optional wave cards released for the RY30, SY77 voice, and SY55. A fourth slot accepts a data card that will store an additional 500 variations, 128 user voices, and 64 rhythm kits. And an internal memory board slot allows you to add an optional 0.5 Mbyte expansion memory board that you can use as a sample RAM area. With this memory, you can copy waveforms or dump samples into the RM50 and use them to create your own original rhythm voices.

The RM50 also features a click function that you can use as a handy practice metronome, plus a built-in audio-to-MIDI converter and six audio trigger inputs that let you control the RM50 with analog controllers such as drum pads, pick-ups, or audio tape recorders. These features make the RM50 as useful to the acoustic drummer as it is to the MIDI system programmer.

About this manual

This operation manual is divided into two main sections. The first, a Tutorial Section, is intended to acquaint you with the main features and operation procedures of the RM50. It is followed by a Reference Section that describes each of the RM50's many functions in full detail. Lists of internal voice names, waveform names, and other tabular information are provided in an Appendix following these two sections.

We recommend that you begin by reading through the Tutorial Section, and try performing the procedures it describes with your RM50. Once you've mastered the contents of this section, you should be familiar enough with the RM50 to start making music with it.

Once you have begun using the RM50, you may still want to check the manual now and then for details on a particular function or parameter. The Reference Section is designed to give you fast access to the information you need. It is divided into four chapters, each describing the functions available in one of the RM50's operation modes. Since each chapter has its own table of contents, you should be able to locate any given function quickly and easily. (Functions and other references can also be located using the index at the back of the manual.)

Precautions

Your RM50 is a fine digital musical instrument containing delicate circuitry. To ensure a long lifetime of reliable service, observe these precautions when installing, moving, handling, and using the RM50.

Power supply

Be sure to power the RM50 using AC power of the specified voltage. Other voltages can damage the unit.

Electrical interference

The RM50 contains digital circuitry that may produce noise or interference and noise if placed too close to television sets, radios, or similar equipment. If such a problem occurs, move the RM50 away from the affected equipment.

Location

Keep the RM50 away from locations where it is likely to be exposed to high temperatures or humidity, such as near radiators, stoves, etc. Also avoid locations which are subject to excessive dust or vibration which could cause mechanical damage.

Handling

Strong physical shocks can damage the RM50; handle it with care.

Cleaning

Never use solvents such as benzine or thinner to clean the RM50. Wipe it clean with a soft, dry cloth.

Repairs

Aside from the optional SYEMB06 Expansion Memory Board, whose installation is explained briefly on page 120, the RM50 contains no user-serviceable parts. Do not open the case or attempt repairs or modifications yourself. Refer all maintenance to qualified Yamaha service personnel. Opening the case or tampering with the internal circuitry will void the warranty.

Connections

Always turn the power off before connecting or disconnecting audio or MIDI cables. Grip the connector, not the cord, when plugging or unplugging cables.

MIDI cables

Be sure to use high-quality cables made especially for MIDI data transmission. Also avoid cables longer than about 15 meters, as long cables may pick up electrical noise that can cause data errors.

Backup battery

The RM50 contains a lithium backup battery that maintains the contents of the internal memory even when the power is turned off. This battery should have a lifetime of about five years (or less, depending on the date of purchase).

When the battery fails, the contents of the RM50's memory will be lost. Have the battery replaced by qualified Yamaha service personnel. Do not attempt to replace the backup battery yourself!

Data backup

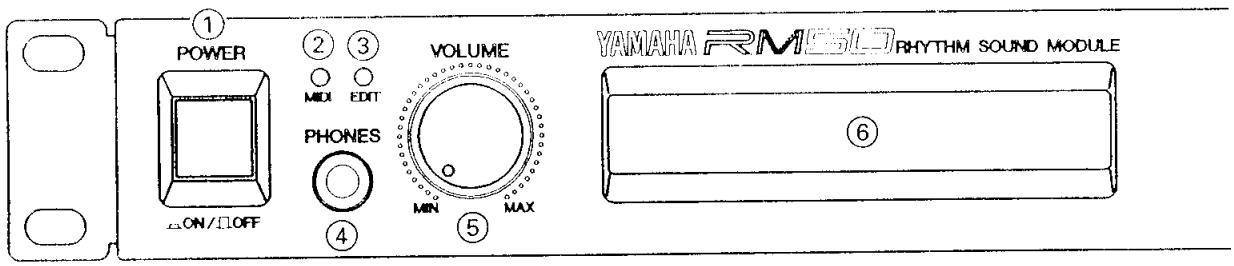
We recommend that you use the bulk transmit function to send important data to a MIDI data recorder (such as the Yamaha MDF2 Data Filer) or other storage device for safe long-term storage. Yamaha cannot be held responsible for data loss caused by battery failure or improper operation of the RM50!

Third-party software

Yamaha cannot accept responsibility for software produced for the RM50 by third-party manufacturers. Please direct any questions or comments about such software to the manufacturer or their agents.

TUTORIAL SECTION

■ Front Panel



① **POWER switch**

② **MIDI lamp**
Lights when the RM50 receives MIDI data (other than system realtime messages) at the MIDI IN terminal.

③ **EDIT lamp**
Lights when the RM50 is in an edit mode.

④ **PHONES jack**
Accepts a standard pair of stereo headphones (1/4" stereo phone plug) to allow headphone monitoring of the RM50's sound.

⑤ **VOLUME control**
Adjusts the volume of the sound delivered from the OUTPUT (L/MONO and R) jacks on the rear panel and the PHONES jack described above.

⑥ **Liquid crystal display panel (LCD)**
This two-line, 48-character backlit liquid crystal display panel shows the titles, parameters, and prompts you need to operate the RM50. Each screenful of information is known as a display **page**. The various display pages in each mode are accessed using the [PAGE–] and [PAGE+] keys described below.

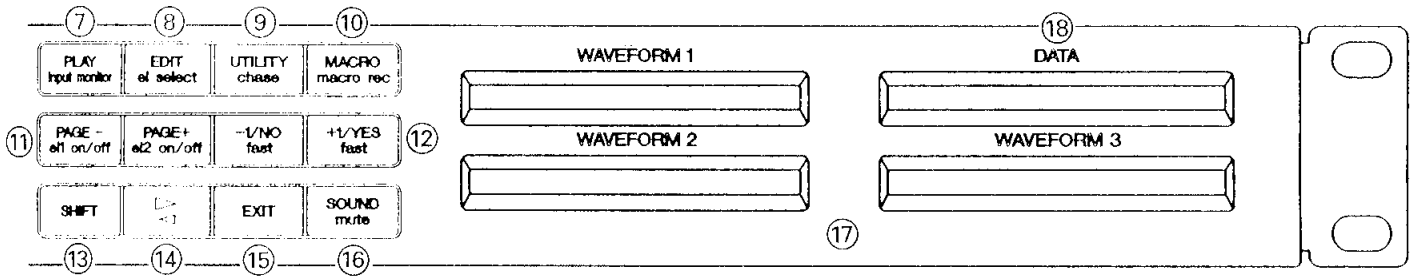
⑦ **[PLAY] key**
Switches the RM50 to Play mode. This mode allows you to assign different rhythm kits or pitched voices to each MIDI channel (page 51). The [PLAY] key is also used with the [SHIFT] key to switch to an Input Monitor display that lets you monitor MIDI and audio trigger input to the RM50 (page 52).

⑧ **[EDIT] key**
Selects the RM50 edit modes. When the RM50 is in Play mode, this key shifts it into Setup Edit mode (page 57), letting you change rhythm kit and pitched voice parameters. From the first page of this mode, the [EDIT] key selects the Voice Edit mode (page 67), which lets you edit the parameters of individual voices. You can also use this key in combination with the [SHIFT] key to switch between two voices assigned to a rhythm kit note in Setup Edit mode, or between the two elements of a voice you are editing in Voice Edit mode.

⑨ **[UTILITY] key**
Selects the RM50 Utility mode (page 87). This mode provides you with access to all system, MIDI, data card, and wave RAM utility functions, as well as to the Demo Utility function. The [UTILITY] key is also used with the [SHIFT] key to activate the Display Chase function (page 51).

⑩ **[MACRO] key**
Executes key macro sequences, which speed your access to functions and parameters that you use frequently (page 52). Also, you can record, view, and name macros by pressing the [MACRO] key while holding the [SHIFT] key.

⑪ **[PAGE–] and [PAGE+] keys**
Select the various display pages available in the Setup Edit, Voice Edit, and Utility modes. They are also used with the [SHIFT] key to switch on or off the elements of a voice being edited.



⑫ **[+1/YES] and [–1/NO] keys**
Raise and lower numerical parameter values, or select from among the various settings available in each of the RM50's operation modes. Either key can be pressed briefly and then released to change a setting by a single step, or held down for continuous scrolling. In many cases, you can use these keys with the [SHIFT] key to scroll at high speed. You can also use the [+1/YES] key in combination with the [SHIFT] key to execute functions, such as the Copy, Recall, and Initialize operations available in the edit modes, whose names are followed by a question mark in the LCD display.

⑬ **[SHIFT] key**
Used in combination with other keys to access the additional functions assigned to those keys. These additional functions are indicated by the lower-case function name printed below the names of the keys. To select these functions, you must press the desired key while holding down the [SHIFT] key.

⑭ **[▷] key**
Moves the screen pointer from parameter to parameter in many of the RM50's display pages. To move the pointer in the reverse direction, use this key together with the [SHIFT] key.

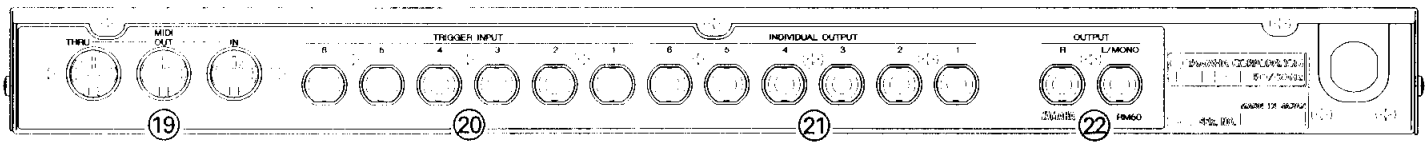
⑮ **[EXIT] key**
Allows you to abort operations that may irrevocably change data, and to exit from functions and operation modes.

⑯ **[SOUND] key**
Plays the currently selected sound so you can hear what it sounds like. This key can also be used with the [SHIFT] key to mute continuous sounds that will play on endlessly in the absence of a MIDI note off message.

⑰ **WAVEFORM slots 1–3**
These data card slots accept the wave cards released for the RY30, SY77, and SY55. The RM50 can select and play these waveforms in place of its own preset waveforms. Wave cards released for the RY30 also contain editable voices which the RM50 loads automatically. The RM50 creates voice data for cards released for the other instruments. Finally, the RM50 can play the demo songs on data cards released for the RY30.

⑱ **DATA slot**
This data card slot accepts a data card that will store additional voices, voice variations, and rhythm kits, effectively doubling your RM50's user memory capacity.

■ Rear Panel



⑲ MIDI terminals

The MIDI IN terminal receives MIDI messages from a sequencer or other MIDI keyboard controlling the RM50. The MIDI THRU terminal passes this data on unchanged for use by another MIDI device connected in series to the RM50. The MIDI OUT terminal transmits note messages generated in response to signals received by the TRIGGER INPUT jacks, as well as bulk data describing the RM50's internal settings when the MIDI bulk transmission function (page 100) is executed.

⑳ TRIGGER INPUT jacks

These six jacks accept signals from analog controllers such as drum pads, drum pickups, and audio tape recorders, which are then fed into the RM50 tone generator by a built-in audio/MIDI converter. The parameters controlling the input from these jacks are set using the audio trigger utility functions (pages 92 through 94). Actual control of the RM50 by audio input is enabled by the Display Chase function (page 51).

㉑ INDIVIDUAL OUTPUT jacks

Each RM50 instrument can be assigned to one of the six individual output jacks instead of the stereo OUTPUT jacks described below. The volume of signals output from these jacks are not affected by the VOLUME control.

㉒ OUTPUT jacks

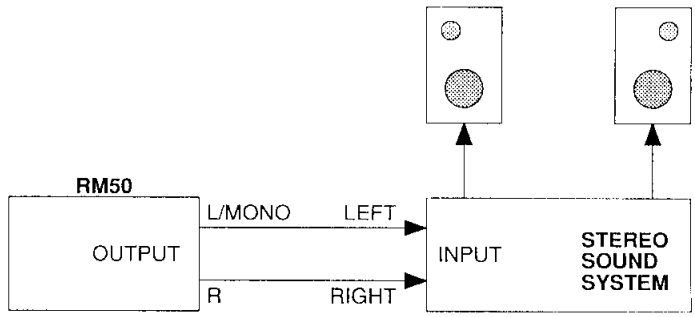
These are the RM50's main stereo output jacks. The panning of voice elements assigned to stereo output are determined individually for each element. If no plug is inserted in the R jack, the left- and right-channel signals are combined and delivered as a monaural signal from the L/MONO jack.

SETTING UP YOUR SYSTEM

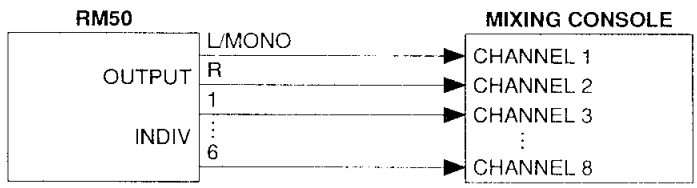
The process of setting up the RM50 is mainly a matter of connecting it to the other audio equipment and MIDI devices in your system. Of course, the configuration of your system depends entirely on your individual requirements. It would be impossible to cover all the possibilities in this manual; but here are a few examples to help you get started.

Audio Connections

If you will be connecting your RM50 to a stereo sound system only, use the OUTPUT jacks. These are the RM50's main stereo outputs: they are controlled by the VOLUME control on the front panel. If you have a monaural sound system, use only the L/MONO jack.



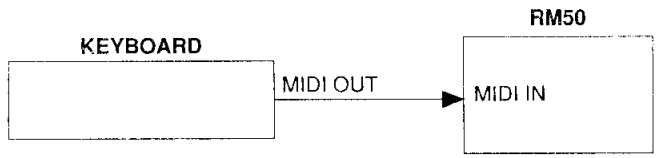
If you plan to use the RM50 with a mixing console or an integrated multi-track recorder/mixer, you might want to take advantage of the INDIVIDUAL OUTPUT jacks in addition to the OUTPUT jacks. You can thus connect a total of eight outputs to separate input channels of the mixer, and assign voice elements to different output channels in order to process them separately. Elements assigned to the OUTPUT jacks will be delivered in premixed stereo, using the specified level and panning settings. The levels and panning of elements output via the INDIVIDUAL OUTPUT jacks, on the other hand, will be determined entirely by your mixer settings.



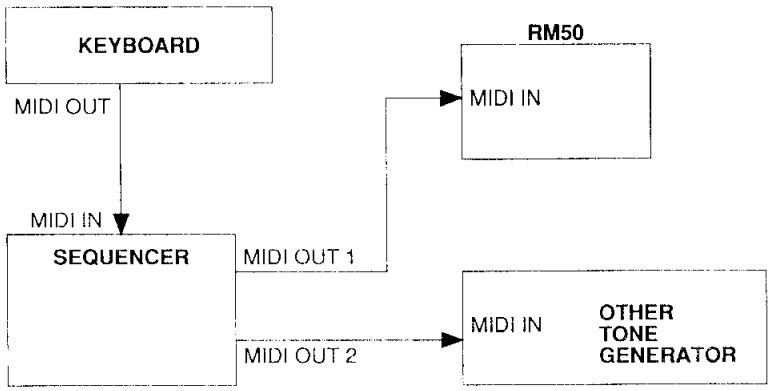
***CAUTION:** Make sure that both the RM50 and your sound system are turned OFF when making connections.*

MIDI Connections

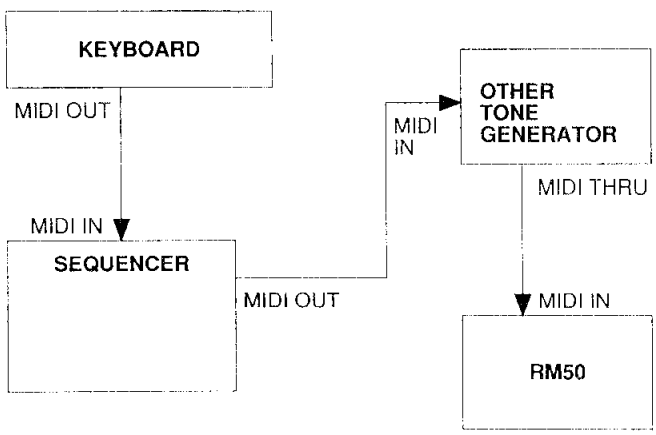
There may be times when you will want to use a MIDI keyboard to control the RM50. This can be accomplished by connecting the MIDI OUT terminal of the keyboard to the RM50's MIDI IN terminal. You'll also have to make sure that the keyboard's transmit channel setting matches the RM50 receive channel corresponding to the voice or rhythm kit you want to play.



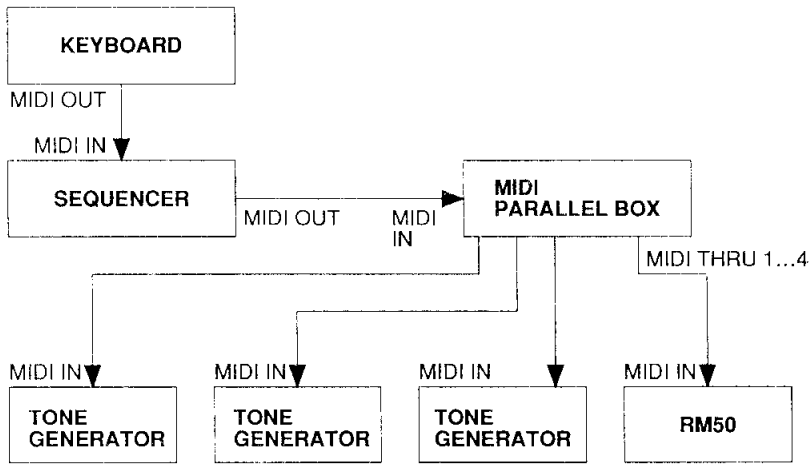
More complex MIDI systems may require that the RM50 be interfaced to a sequencer (or personal computer) as well as a master keyboard. If your sequencer has multiple MIDI OUTs, the RM50 can simply be connected to one while your other tone generating devices are connected to the others.



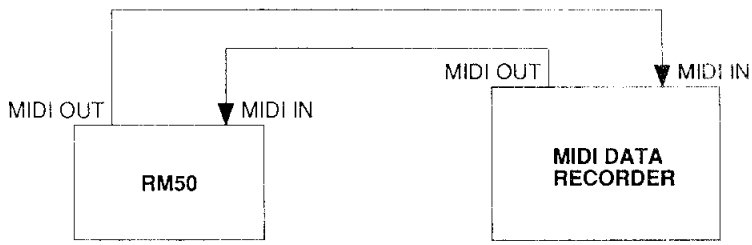
If your sequencer only has a single MIDI OUT, however, the RM50 and other tone generators will have to be connected in series. The first instrument in the chain will of course be connected to the sequencer's MIDI OUT. All subsequent devices will be connected to the previous device's MIDI THRU terminal.



If there will be more than about three or four devices in the chain, however, it is a good idea to use a MIDI parallel box to minimize the possibility of delayed notes.

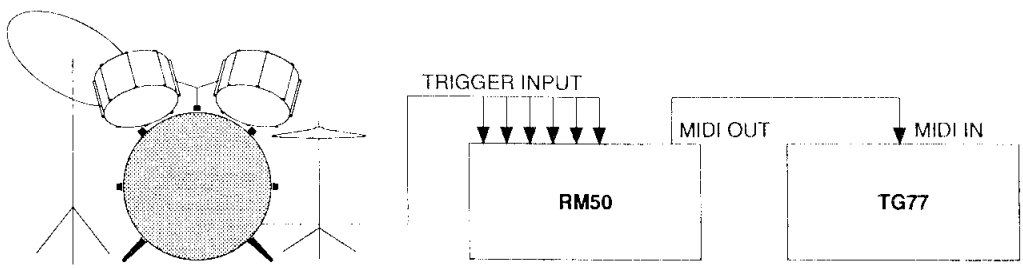


You may want to use the RM50's Bulk Transmit function to store its data in your sequencer, a MIDI data filer such as Yamaha's MDF2, or another device with MIDI data recorder (MDR) capability. To do so, you will need to connect the MIDI OUT terminal of each device to the MIDI IN terminal of the other.

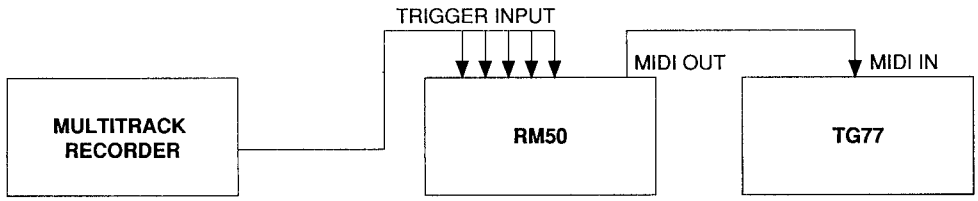


Audio Trigger Connections

To control the RM50 using triggers such as acoustic drum pickups or non-MIDI electric drum pads, connect each pickup or pad directly to one of the RM50's TRIGGER INPUT jacks. There is no need to connect a trigger control unit between the triggers and the RM50, since the RM50 possesses its own built-in A/D converter which converts the trigger signals to MIDI note information which the RM50 can play or pass on to other tone generators.



The audio trigger function is also useful for remixing. To control the RM50 with signals from a multitrack tape recorder, connect each TRIGGER INPUT jack to the output jack for a different track. You can connect the RM50 to the recorder either directly or by way of a mixing console.



Powering Up the System

Believe it or not, there's a right way and a wrong way to turn on the components in any music system.

In general, instruments and preamps or mixers should always be turned on before subsequent power amplifiers. Also, the master volume controls on preamps or mixers should be turned all the way down while the system is being powered up. Failure to follow these rules can result in damage to your power amplifiers and speakers.

Also, MIDI transmitting devices should be turned on before their associated receiving devices. We recommend that you use the following procedure when powering up your system:

1. Make sure your sound system's volume controls are turned all the way down before you turn the power on.
2. Turn on the master keyboard (if any).
3. Turn on the sequencer (if any).
4. Turn on the RM50.
5. Turn on the sound system.
6. Raise the sound system's volume to a reasonable level.

Playing the Demo Songs

The RM50 is programmed with two demonstration songs that you might want to listen to after setting up your system. Before you continue reading the manual, take a short break and enjoy the sound of your RM50!

1. Press the [UTILITY] key to enter Utility mode, then press the [PAGE+] key a few times until the display below appears.

```
UTL/Demo
Press "+1/YES" to enter
```

2. Press the [+1/YES] key.

```
UTL/Demo
stop Pre<Song1:SKINBIT
```

3. If the blinking pointer is not pointing to the word "stop" in the second line of the LCD, press the [▷] key once or twice to move it there.

4. Press the [+1/YES] key to start the demo playing. The demo songs will play in sequence repeatedly until you press the [–1/NO] key.

5. Press the [–1/NO] key when you're done listening to the demo songs, then press [PLAY] to return to Play mode.

If at some later time you want to listen to a particular demo song, or to the demos that come on a wave card, you can do so using the Demo utility function described briefly above. Detailed instructions for this function are given on page 109.

Playing the RM50

The RM50 contains a great deal of sound variety: 500 preset voices, 500 partially-editable preset voice variations, and 128 user voices, as well as 64 preset and 64 user rhythm kits. The first thing you'll want to know to put all this variety to work is how you can get at the sounds.

Before we can explain the procedures used to select and play the RM50's sounds, however, you will need to understand the difference between the two methods the RM50 uses to assign voices to a MIDI channel. The two methods, or channel modes, are referred to using descriptive names: "rhythm kit" and "pitched voice".

What Is a Rhythm Kit?

You will normally play the RM50's voices by selecting groups of different sounds known as **rhythm kits**. The rhythm kit collects rhythm-related voices in the manner of many recent synthesizers: different voices are assigned to each MIDI note number, allowing you to play a broad range of rhythm sounds within a single keyboard range.

In addition to voice assignments, a rhythm kit lets you specify, for each note, the volume at which it plays the assigned voice, whether it will accept or ignore key off messages, how it will respond to pitch bend messages, and which other control change messages it will acknowledge. This entire assembly of voice assignments and settings can be given a name and stored in an internal rhythm kit memory bank (or in a card memory bank, if you insert a data card in the DATA slot).

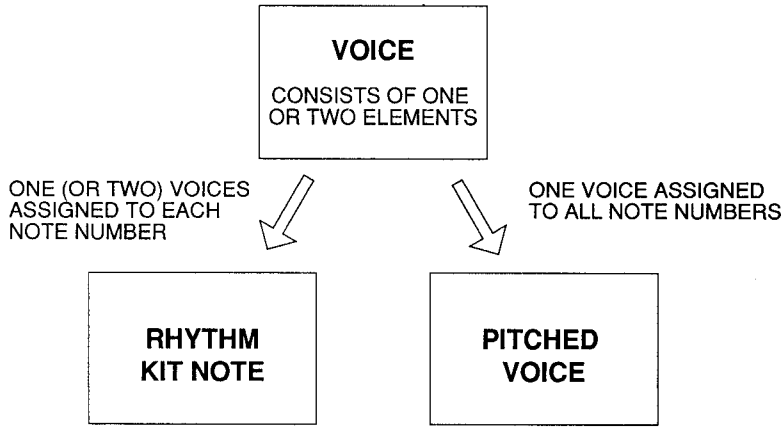
The rhythm kit is thus equivalent in many ways to the "drum voices" of the SY77, the SY99, and related tone generators. (We have used term "rhythm kit" for the RM50 to underscore the fact that this rhythm sound module does more than just drums!) One advantage of the RM50's rhythm kits is the fact that notes B0 through A#1 have two voice **slots** which allow you to assign two voices, rather than just one, to each of the note numbers in this range.

What Is a Pitched Voice?

In addition to rhythm kits, the RM50 gives you another way to select and play its voices. You can assign a single voice to play all notes, through the entire range from C-2 to C8, received on a specified channel. Voices selected for playing in this manner are known as **pitched voices**. The pitched voice setup, which corresponds roughly to the normal voices of most synthesizers, is handy for playing bass voices, orchestra hits, and other melodic sound effects.

A pitched voice consists of a voice selection plus a handful of other parameters, corresponding to those made for the individual notes of a rhythm kit, which specify how the RM50 will respond to key off, pitch bend, and control change messages received on the channel in question. Unlike the rhythm kit settings, however, the channel settings are not permanently saved in memory banks, since a pitched voice requires only one setting of each type.

The important point to understand here is that the word "voice" indicates two different things at different levels. At the most basic level, a **voice** is a discrete sound unit produced by one or two waveform elements. Voices can be assigned to either a single note number (as part of a rhythm kit), or across a channel's entire note number range. A **pitched voice** is what you get when you use a voice in the latter manner.



You will find the RM50's functions much easier to use if you keep this distinction in mind.

Selecting a MIDI Channel

The RM50 can play a different rhythm kit or pitched voice in response to note information received on each of the sixteen MIDI channels. When selecting a rhythm kit or pitched voice to play, therefore, you will have to first determine which channel the keyboard or sequencer will be transmitting on.

Say, for example, you will be transmitting notes for a drum set part on channel 10. You want the RM50 to respond to these notes with drum kit I-5, "Studio 2". Before you can select this rhythm kit, you will have to select the Play mode display for channel 10.

Begin by pressing the Play key to return the RM50 to Play mode, if you have not done so already.

```
C01<Mode=rhythm kit
Kit  :P- 1 Rock 1
```

The "C01" in the upper corner of this display page tells you that the current rhythm kit selection for channel 1 is being displayed. Use the [▷] key to move the pointer to this number (if it is not there already), then press the [+1/YES] key nine times to select channel 10.

```
C10<Mode= off
```

Changing the Channel Mode

As you can see, the RM50 **channel mode** selected for channel 10 is set to "off". This means that the RM50 will ignore any notes received on this channel. If you want it to play a drum part on this channel, you will have to change this setting to "rhythm kit".

To do so, press the [▷] key once to move the pointer to the word "off". Then press the [–1/NO] key.

```
C10>Mode=pitched voice<
Vce  :P-SE  49 BA Kill8
```

This changes the program mode to "pitched voice". You would use this setting to play a bass part, for example. For the moment, however, press the [–1/NO] key once more to display the "rhythm kit" setting.

Selecting a Rhythm Kit

After you have selected the correct channel mode, you can begin choosing a rhythm kit. First you must select the bank. The RM50 gives you three rhythm kit banks to choose from – the preset bank, the internal bank, and the data card bank – each of which holds 64 kits. These banks are represented by the letters "P", "I", and "C" in the display.

To change the bank selection from the preset bank to the internal bank, use the [▷] key to move the pointer to the letter "P" in the display, then press the [+1/YES] key.

Now all you have to do is change the rhythm kit number. Press the [▷] key again to move the pointer to the rhythm kit name in the LCD, then press the [+1/YES] key four times to select kit I-5. The name and number of the kit will appear in the LCD.

That's all there is to it. The RM50 is ready to play the drums for you.

Playing a Pitched Voice

The procedure for choosing a voice to play as a pitched voice is the same as that for selecting a rhythm kit, except that you must set "pitched voice" instead of "rhythm kit" as the channel mode. When you select this mode, the RM50 will give you 23 voice banks to choose from. This may seem like a lot of voice banks ... but it makes a lot of sense when you consider that the RM50 can hold 1,128 voices in its internal memory alone!

The number of voices in each bank varies with the bank type. A table describing the type and number of voices in each bank is presented on page 59.

Using Multiple MIDI Channels

We mentioned earlier that the RM50 can respond to note messages received on each of the sixteen MIDI channels. To use the MIDI terminology, the RM50 is a **multitimbral tone generator** capable of playing sixteen timbres simultaneously (within the limits of its sixteen-note polyphonic voicing capacity). Because it is a rhythm sound module, it differs from other multitimbral tone generators in that its timbres normally consist of groups of different voices – rhythm kits – rather than single voices.

The RM50 is in fact capable of remembering 32 different channel setups -- one rhythm kit selection and one pitched voice setup for each channel -- at once. Of course, it can only use sixteen of these setups at any given time, as the channel mode of each channel must be set to either "rhythm kit" or "pitched voice". Still, it keeps the sixteen unused setups in its memory as alternate selections.

CHANNEL	RHYTHM KIT SETUP	PITCHED VOICE SETUP	OFF
1	Kit Selection P 1 "Rock 1"	Voice Selection P-SE 49 plus channel parameters	—
2	Kit Selection P 1 "Rock 1"	Voice Selection P-SE 49 plus channel parameters	—
3–16	Kit Selection P 1 "Rock 1"	Voice Selection P-SE 49 plus channel parameters	—

(Shaded areas indicate factory preset channel modes.)

In addition to the manual methods described above, it is possible to select a different rhythm kit or voice for a channel by sending the RM50 a program change message on the channel in question. To switch the channel mode between the "rhythm kit" and "pitched voice" settings via MIDI, you can either use the Program Change Table function described on page 98, or bank select messages calling the bank numbers listed on page 97.

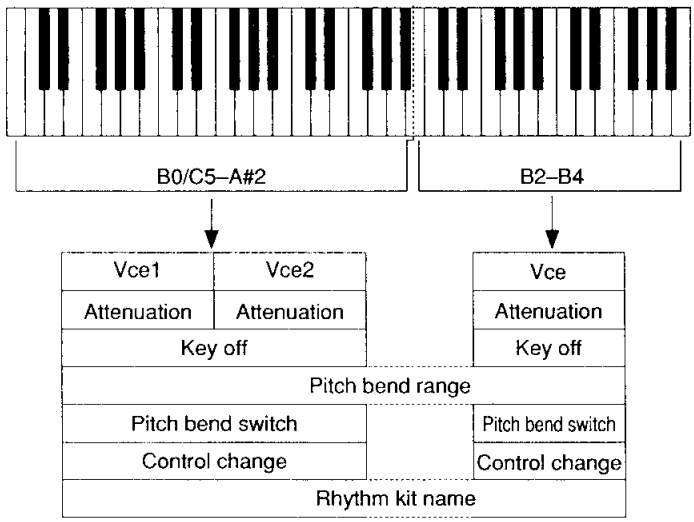
Editing Rhythm Kits

The RM50 comes programmed with an assortment of 64 preset rhythm kits designed to cover a variety of musical styles and genres. (A complete listing of these rhythm kits is included in the Appendix.) These kits should meet most of your needs for rhythm sound variety. Eventually, however, you may find that you will want to create your own rhythm kits in order to rearrange voice assignments to suit your tastes, as well as to incorporate the voices you create in Voice Edit mode.

The RM50's capacity of 64 internal user rhythm kits gives you plenty of room to set up your own new kits. These user kits are initially programmed with copies of the preset kits. To create a new kit, you may find it easiest to choose an arrangement similar to the one you are planning, then edit it as needed to bring it closer to your ideal. This tutorial describes briefly the method for accomplishing this.

RM50 Rhythm Kit Structure

Each RM50 rhythm kit consists of a series of voice assignments – one or two voices to each note number – plus associated settings which determine how these voices perform as part of the kit.



As the illustration above shows, notes B0 through A#2 have two voice slots (Vce1 and Vce2), each of which can be assigned a different voice. ("B0/C5" is displayed when B0 is selected because the RM50 treats these two as the same note.) This arrangement allows the RM50 to play two voices, simultaneously, in response to a single MIDI key on message. The remaining notes, B2 through B4, have only one slot (Vce).

Each voice is accompanied by an attenuation parameter which adjusts its volume level. This allows you to balance the voices in the kit with respect to each other. Both voice slots for the notes between B0/C5 and A#2 have their own attenuation values, so you can adjust the level of layered voices played by these notes independently.

Every note has a several other parameters which specify how it will respond to MIDI key off, pitch bend, and control change messages. Each note has only one setting for of each of these parameters, regardless of the number of voice slots available. When two layered voices are played by one of the notes between B0/C5 and A#2, therefore, both will react in the same manner to these MIDI messages.

There is one setting which affects all of the notes in the kit rather than individual notes: the pitch bend range parameter. It is possible to turn the pitch bend function on or off for each note using the pitch bend switch parameter. However, all notes that are switched to "on" will be bent by the same amount in response to pitch bend messages, since the pitch bend range setting operates at the channel level.

Entering Setup Edit Mode

To get an idea how you can go about modifying these settings, let's try editing rhythm kit I-5, "Studio 2", which we selected in the preceding tutorial. Check to make sure the name of this kit is still displayed.

```
C10/Mode=rhythm kit   <
Kit  :I- 5 Studio 2
```

Now press the [EDIT] key. The red EDIT lamp to the left of the VOLUME control will light up, and a display like the following will appear in the LCD. (If the word "KIT" in the upper left corner of the display is followed by a parameter name, press the [PAGE–] key and hold it until the display stops changing.)

```
KIT       Note=B 0/C 5
Vce1 :P-BD  42 RM Lizrd<
```

Selecting a Note

This is the display for the Note Assign function, which lets you assign voices to notes. You must begin by selecting the note you wish to change. Let's try changing C1, one of the notes in the range with two voice slots.

First, use the [▷] key to move the blinking pointer to the note number in the upper right corner of the LCD, if it is not there already. Then, press the [+1/YES] key to change the note number in the upper right corner to "C1 (36)". (If a higher note number is displayed, you will have to press the [–1/NO] key rather than the [+1/YES] key to lower it.)

```
KIT       Note=C 1( 36)<
Vce1 :P-BD   5 DR Danc2
```

Assigning Voices

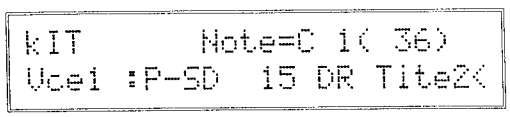
Next, press the [▷] key to move the pointer to the name of the currently selected voice slot. This should be set to Vce1; if it isn't, press the [–1/NO] key.

```
KIT       Note=C 1( 36)
Vce1<:P-BD   5 DR Danc2
```

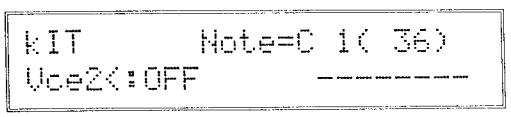
The lower line of this display tells us that preset bass drum voice P-BD 5, "DR Danc2", has been assigned to voice slot 1 of note C1. (The letters DR beginning the name of this voice indicate that it is a "dry" voice – that is, it lacks reverb.)

Let's change the voice selection to a snare drum. Press the [▷] key again to move the pointer to the bank name, and press the [+1/YES] key once to select the preset snare drum bank, P-SD. (As soon as you make this change, the letter "K" beginning the word "KIT" in the upper left corner of the display will change to a small letter, indicating that the voice has been edited. We will explain the reason for this in our description of the Setup Recall function at the end of this tutorial.)

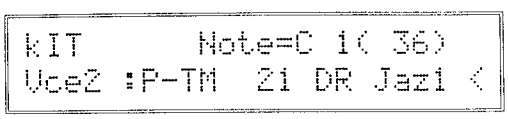
Next, press the [▷] key one last time to move the pointer to the voice selection. Press the [+1/YES] key ten times to select voice 15, "DR Tite2".



That takes care of one voice slot. Now for the other: press the [▷] key twice while holding down the [SHIFT] key to move the pointer back to the voice slot name. (You can use the shifted [▷] key when moving the pointer backwards will get it where you want it faster in displays containing a large number of parameters.) Then press the [+1/YES] key to change the slot to Vce2.



As you can see, this slot has been turned off. Try changing it to a high tom sound using the method described above. You will have to use the [–1/NO] key to change the bank setting to P-TM, and the [+1/YES] key to select the new voice. Let's go with voice 21, "DR Jaz1". (You might want to try pressing and holding the [+1/YES] and [–1/NO] keys to scroll through the bank and voice options rapidly.)



This completes the setting. Note C1 of the drum kit now plays a snare drum sound layered with a high tom. To see how this sounds, press the [SOUND] key. You may want to use this key while editing a rhythm kit note – or a voice, in Voice Edit Mode – in order to check how the changes you make affect the sound produced.

Attenuating Voices

Now, press the [PAGE+] key. The Voice Assign display will be replaced by the Voice Attenuation display, indicated by the letters "ATT" following the word "kIT" in the upper left corner of the LCD. This display allows you to adjust the balance of the voices assigned to notes by lowering the level of certain voices from their standard level.

Let's say we want the layered snare drum/tom note we are creating to be mostly snare, with just a hint of tom for flavor. To accomplish this, we must lower the level of the tom voice. Try using the [+1/YES] key to raise the Vce2 attenuation setting to 5.

Next, let's check the setting for Vce1. We could move the pointer back to the voice slot name and change it as we did before – but wait! There's an easier way. Try pressing [EDIT] while holding down the [SHIFT] key. This will switch the display between Vce1 and Vce2.

You can use the shifted [EDIT] key to make fast changes to the Voice Assign and Voice Attenuate settings for both voice slots of notes between B0/C5 and A#2. It does nothing, however, when a note outside this range is selected.

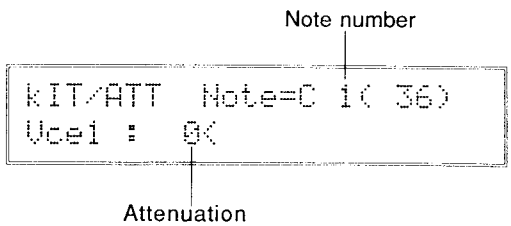
The attenuation setting for the snare drum voice will probably be set to a value of 1. Lower it to 0, to increase the snare drum volume to maximum.

Now try pressing the [SOUND] key. The note C1 should produce the sound we described: a tight snare with a touch of tom.

Using the Display Chase Function

The Voice Attenuate function is useful for balancing the two voices of a two-slot note against each other, as we have done here. It is mainly used, however, to balance the level of each note in the rhythm kit, so that every note will produce a predictable amount of volume when played.

To balance a rhythm set, you must check the sound of every note by playing each note with the same velocity, then lower the volume of notes which sound too loud. Since the [SOUND] key plays notes at a fixed velocity, it is useful for doing this; but then balancing a rhythm kit becomes an arduous process of moving the pointer back and forth between the note number and the attenuation parameter.



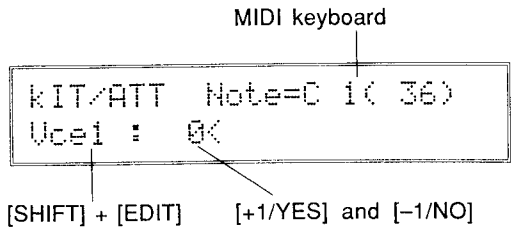
Adjusting all of the notes in a rhythm kit could take some time if you use this method. To speed the task, you will want to connect your RM50 to a MIDI keyboard as shown on page 6. Make sure that the keyboard is transmitting on the RM50 channel you have selected – we have chosen channel 10 for this example – and set it so that it plays every note with a fixed velocity. Finally, turn down the volume for the keyboard's internal tone generator so that you will hear the RM50 alone.

Next, press [UTILITY] while holding down the [SHIFT] key. A display like the following should appear:

The setting to the left of the pointer should read "on". If it doesn't, press the [+1/YES] key to correct it. Then press the [EXIT] key to return to the Voice Attenuation function.

Now try playing a few notes on your keyboard. Each time you press a key, you should hear the sound of the RM50 voice (or voices) assigned to the note. At the same time, the RM50 display will change to show the Voice Attenuation setting for the note you play. The Display Chase function thus lets you control the RM50's display, as well as its sound, from an external keyboard.

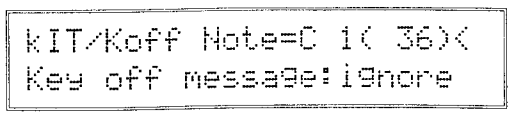
You can now balance your rhythm kit quickly and easily. Leaving the pointer at the attenuation parameter, use the MIDI keyboard to select notes, and the [+1/YES] and [–1/NO] keys to change their attenuation. You will still have to switch between the two voice slots for notes between B0/C5 and A#2; but this, too, can be done without moving the pointer by pressing the [SHIFT] and [EDIT] keys.



The Display Chase function can help to simplify other rhythm kit editing tasks, such as the Note Assign process explained above, or the adjustment of the other settings described in the following paragraphs. Try using it as you read through the remainder of this tutorial to check the settings for a variety of notes.

Key Off Messages

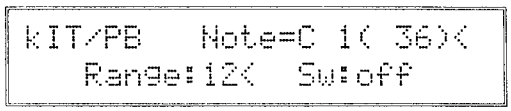
Press the [PAGE+] key again. The next display, that for the Key Off function, allows you to specify whether the RM50 should accept or ignore key off messages for the selected note.



The "accept" setting is used to control the length of notes played by pitched voices such as bass guitars and other melodic instruments. Since we have set C1 to play two drum sounds which naturally have fixed, relatively short note lengths, you will want to leave it set to "ignore".

Pitch Bend Messages

If you press the [PAGE+] key a third time, you will see the Pitch Bend display shown below.



This function lets you set how the rhythm kit you're editing will respond to pitch bend messages. (If desired, you can assign pitch control to a control change number instead using the Control Change Assign function described on page 98).The range parameter determines how far, in half steps, any note in the kit can be bent by such a message. A setting of 12 thus allows notes to be bent up or down one full octave.

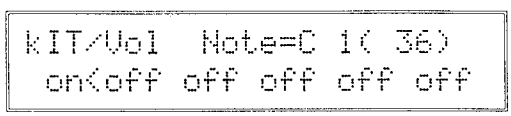
As we mentioned above, this parameter sets the pitch bend range for the entire channel rather than for individual notes. If you change this setting for one note, therefore, it will change for all notes.

The switch parameter (indicated by the letters "Sw" in the display) specifies whether the note you're editing will respond to pitch bend messages at all. Any notes for which this parameter is set to on will be bent by received pitch bend messages; other notes will simply ignore such messages. All notes which respond to pitch bend messages will be bent by an equal amount within the specified range.

You can create some interesting effects by bending the pitch of drum sounds, such as the snare and tom voices we've selected for note C1. For the time being, however, let's stick with the more orthodox arrangement. Make sure that the switch parameter is set to "off" for this note before moving on to the next item.

Other Control Change Messages

Another press of the [PAGE+] key will show you the last display containing MIDI-related rhythm kit parameters.



This function specifies which parameters of the voice or voices played by the note you're editing will respond to control change messages. Since the display contains six parameters, there is no room for the RM50 to show the name of each parameter next to its setting, as it did for the Key Off and Pitch Bend functions. Instead, the parameter names are displayed in the top row next to the function name.

Try moving the pointer among the parameters in the bottom row, and checking the name of each against the following table:

DISPLAY	PARAMETER	DESCRIPTION
kIT/Vol Note=C 1(36) on<off off off off off	Volume	Sets the voice's overall output level.
kIT/Dcy Note=C 1(36) on off<off off off off	Decay	Adjusts the decay time of both voice elements.
kIT/Pan Note=C 1(36) on off off<off off off	Pan	Adjusts the stereo position of both voice elements.
kIT/Fil Note=C 1(36) on off off off<off off	Filter	Adjusts the cutoff frequencies of the filters applied to both voice elements.
kIT/Bal Note=C 1(36) on off off off off<off	Balance	Adjusts the balance between the voice's two elements.
kIT/Mod Note=C 1(36) on off off off off off<	Modulation	Adjusts the depth of LFO modulation being applied to the voice's elements.

These settings all affect the note in a manner similar to the pitch bend switch parameter: the note will respond to control change messages corresponding to parameters set to "on", and ignore those corresponding to parameters which are turned off. You can assign control change numbers to these voice parameters using the Control Change Assign function described on page 98.

Feel free to change the control change message settings for note C1 before you move on to the next function.

Naming Your Rhythm Kit

Now that you've made a few changes to rhythm kit I-5, you may want to give it a name so that it will be easy to find the next time you try to select it. The next function, displayed by two more presses of the [PAGE+] key, allows you to do just that. (We will skip the Trigger Note Assign function for the moment, as it is explained in detail on page 38.)

```
kIT/Name
        I  5[Studio 2  ]
```

The name field in the bottom row of the screen allows you to change the name of the rhythm kit. A list of the characters you can use to name the kit is given on page 55.

Let's try renaming the rhythm kit to "Test Kit". Use the [▷] key to select a letter to change, and then use the [+1/YES] and [–1/NO] keys to change it. Repeat this process for each letter, until the display appears as shown below:

```
kIT/Name
        I  5[Test Kit  ]
```

While you're changing letters, you may find that it takes quite a while to scroll through all the options. You can speed this process up by holding down the [SHIFT] key when you press the [+1/YES] or [–1/NO] keys.

This high-speed scrolling technique works for nearly all of the RM50's parameters; remember, however, that you cannot use it for operations which are executed by the combination of the [SHIFT] and [+1/YES] keys, such as the Initialize, Recall, and Copy operations which are described in the following paragraphs.

Additional Editing Functions

The remaining Setup Edit mode functions facilitate the rhythm kit editing process by allowing you to initialize, restore, or copy all of the kit's parameters at once. Each of these operations is accessed by an additional press of the [PAGE+] key, and executed by pressing [+1/YES] while holding down the [SHIFT] key.

```
kIT/Init?
        I  5 Test Kit
```

The Setup Initialize operation leaves the name of the rhythm kit unchanged, but sets all of its other parameters to their default values (which are listed on page 64). This function comes in handy when you want to create a rhythm kit from scratch rather than edit an existing kit.

```
kIT/Recall?
        I  5 Test Kit
```

The Setup Recall operation restores all the parameters of the rhythm kit to the values they had before you began editing. You will remember that as soon as you started editing kit I-5, the first letter of the word "KIT" in the upper left corner of the screen changed to a small letter, to remind you that the kit had been edited.

Unedited kit

```
KIT      Note=C 1( 36)
Vce1 :P-BD   5 DR Danc2(
```

Edited kit

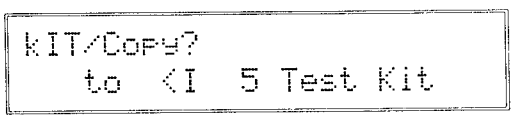
```
kIT      Note=C 1( 36)
Vce1 :P-SD  15 DR Tite2(
```

At the same time, the RM50 stored the unedited data in a memory area known as the "recall buffer". This original data will be retained in this buffer even if you turn the RM50's power off. If you decide you don't like the changes you've made, you can use the Recall function to restore the kit to its original state.

When you use the Recall function to recall the old data for a rhythm kit, the edited data will take its place in the recall buffer. This means you can use the recall buffer to switch back and forth between the new and old settings, to compare the sounds they produce.

Once you start editing a different rhythm kit, however, all data will be cleared from the recall buffer, and the currently recalled settings for the previous kit will become permanent. If, for example, you exit Setup Edit mode right now (without recalling the original data for kit I-5), then begin editing a new kit, the original data for kit I-5 will be cleared from the buffer, and the edited data – including the name "Test Kit" – will become permanent. If, on the other hand, you recall the original data before editing the new kit, the original data will become permanent and all the time you spent editing this kit will be wasted.

In either case, the first letter of the channel mode indicator will return to normal the next time you select rhythm kit I-5, indicating that it is no longer possible to restore the data from the recall buffer.



The Rhythm Kit Copy function copies rhythm kit settings from one bank and kit number to another. You will find this operation helpful when creating an edited version of an existing rhythm kit. To copy a rhythm kit, you must specify whether you want to copy data to or from the currently selected rhythm kit bank and number. Detailed instructions for using this function are given on page 65.

Exiting Setup Edit Mode

When you're done editing a rhythm kit and want to return to Play mode, press either the [EXIT] key or the [PLAY] key. The RM50 will return to the display we started with at the beginning of this tutorial. The next time you enter Setup Edit mode to edit a rhythm kit or pitched voice, the LCD will display the Setup Edit page you last selected in this mode.

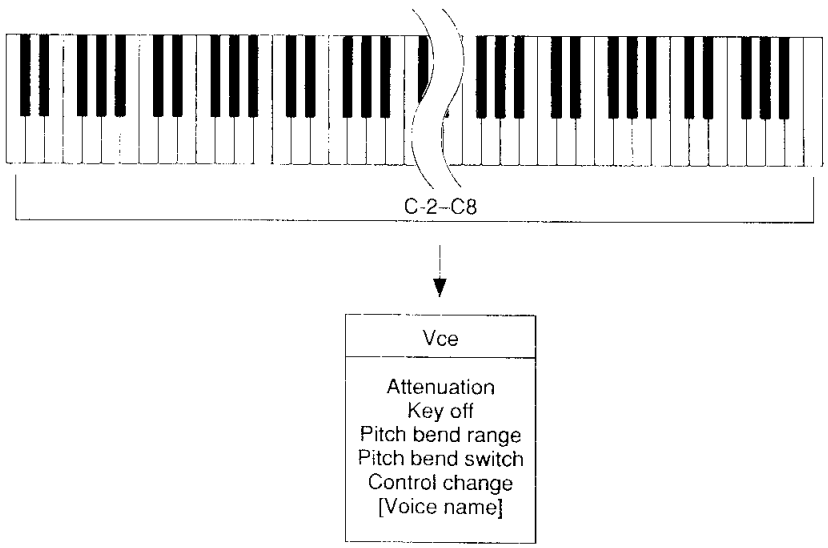
Editing Pitched Voices

The RM50's pitched voice channel mode gives you the option of assigning a single voice to a channel's entire note range in order to accommodate parts for bass guitars, melody percussion instruments, and melodic sound effects. You will want to use this mode particularly when you use the RM50's playing the waveforms available on sound cards released for the SY55 and SY77.

You can edit a pitched voice's parameters using the Setup Edit mode. The method for editing a pitched voice setup is thus much the same as that described for rhythm kits in the preceding tutorial. However, the structure of the pitched voice setup is different, and the selection of available parameters is somewhat more limited. These differences are described in detail below.

RM50 Pitched Voice Structure

A pitched voice consists of a single voice selection plus a handful of settings which determine how the voice reacts to control messages received on the MIDI channel playing the voice. You can compare the illustration below with the one on page 14 to get a clear idea of how the structure of the pitched voice setup differs from that of a rhythm kit.



First, a pitched voice cannot be named, as rhythm kits can. When a channel is switched to pitched voice mode, it automatically displays the name of the voice which has been selected for playing as a pitched voice.

All the other rhythm kit parameters – those specifying how the voice will respond to MIDI key off, pitch bend, and control change messages – are available with pitched voices as well. However, these settings affect the entire channel rather than individual notes, and are therefore comparable to the rhythm kit's pitch bend range setting.

The most important difference between the pitched voice and rhythm kit structures is that the RM50 does not provide any memory banks for the storage of pitched voices, as it does for rhythm kits. As the above description shows, the pitched voice is composed of a mere handful of parameters. These may be best viewed as belonging to the channel rather than to the pitched voice. The RM50 is thus able to remember only sixteen sets of pitched voice parameters: one for each of the sixteen MIDI channels.

Entering Setup Edit Mode

Let's take a look at the pitched voice parameters which have been set for one of your RM50's channels. On page 11 we brushed passed the pitched voice setup for channel 10. Let's go back and take a closer look at that setup now. If you've been following along with the preceding tutorials, your LCD should show the Play mode display for channel 10.

```
C10/Mode=rhythm kit
Kit  :I- 5 Test Kit <
```

Move the pointer to the channel mode in the upper left corner of the LCD, and change it to "pitched voice". You will see a display telling you that voice 49, "BA KillB", from the preset sound effects bank (P-SE), has already been selected for channel 10. This is a bass voice suitable for playing with the pitched voice channel mode.

```
C10/Mode=Pitched voice<
Vce  :P-SE  49 BA KillB
```

To edit the pitched voice setup for channel 10, press the [EDIT] key. The red EDIT lamp to the left of the VOLUME control will light up, and a display like the following will appear in the LCD. (If the letters "VCE" in the upper left corner of the display are followed by a parameter name, press the [PAGE–] key and hold it until the display stops changing.)

```
VCE       Note=C-2~C 8
Vce  :P-SE< 49 BA KillB
```

Selecting a Voice

Now that we're in Setup Edit mode, let's select a different voice as the pitched voice for channel 10. Move the pointer to the bank name, then press the [+1/YES] key repeatedly to select the internal sound effects bank, I-SE.

```
vCE       Note=C-2~C 8
Vce  :I-SE< 49 BA KillB
```

Next, move the pointer to the voice number and select voice 50, "BA Softa". This, like the preset voice which appeared as the default selection, is a bass guitar voice.

```
vCE       Note=C-2~C 8
Vce  :I-SE< 50 BA Softa
```

Channel Settings

You may recall that it is not necessary to enter Setup Edit mode to change the voice selection. You can produce the same results using the Play mode display, as described on page 12.

You will have to enter this mode, however, to change a channel's other pitched voice settings. We have described these settings in detail for rhythm kits in the preceding tutorial. Here, for thoroughness' sake, is a brief listing of the parameters available with the pitched voice channel mode.

Display	Function	Parameters
vCE/ATT Note=C-2~C 8 Vce : 0<	Attenuation	Attenuation (1...15)
vCE/Koff Note=C-2~C 8 Key off message:accept<	Key Off	Key off (accept, ignore)
vCE/PB Note=C-2~C 8 Range: 2< Sw: on	Pitch Bend	Range (0...12) Switch (on, off)
vCE/Vol Note=C-2~C 8 on<off off off off off	Control Change	Volume (on, off) Decay (on, off) Pan (on, off) Filter (on, off) Balance (on, off) Modulation (on, off)

Try locating each of these parameters, and change some of their values if you want. The methods for displaying, selecting, and changing the values of these parameters are the same as those described for rhythm kits. If you have trouble finding a parameter, refer back to the preceding tutorial.

As you move through the display pages, you will find that a row of dashes appears in the bottom row of the LCD for the Trigger Note Assign and Rhythm Kit Name functions. These functions are not available with the pitched voice channel mode.

Editing Functions

Two of the final three Setup Edit mode functions – the Setup Initialize and Setup Recall operations – facilitate the process of editing a pitched voice setup. The procedures for accessing and using these functions are the same as described for rhythm kits.

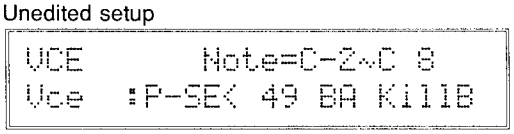
```
vCE/Init?
      I-SE  50 BA Softa
```

The Setup Initialize operation sets all pitched voice channel parameters to the default values listed on page 64.

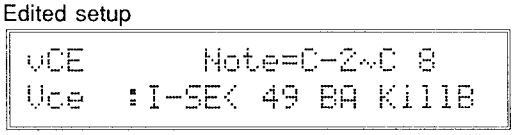
```
vCE/Recall?
      I-SE  50 BA Softa
```

The Setup Recall operation restores all pitched voice parameters to the values they had before you began editing. You've probably noticed that the pitched voice channel mode is represented by the letters "VCE" appearing in the upper left corner of the LCD. If you've changed any of the parameters for channel 10, the letter "V" will have changed to a small letter to indicate that the setup has been edited.

Unedited setup



Edited setup



You can use the Recall function to switch between the unedited and edited settings as long as the "v" is small. Once you begin editing the pitched voice setup for another channel, however, the setup data you last selected will become permanent, and further recall will be impossible.

You cannot use the Rhythm Kit Copy function when editing a pitched voice setup. As its name implies, this operation is only available with the rhythm kit channel mode. For this reason, a line of dashes will appear in the bottom row of the display when you select the Rhythm Kit Copy function while editing a pitched voice.

Exiting Setup Edit Mode

To return to Play mode when you're finished editing a pitched voice setup, press either the [EXIT] key or the [PLAY] key. The RM50 will return to the Play mode display pictured at the beginning of this tutorial. The next time you enter Setup Edit mode to edit a rhythm kit or pitched voice, the LCD will display the Setup Edit page you last selected in this mode.

Editing Voices

Your RM50 has six preset voice banks containing a total of 500 voices. The banks group these voices according to type: there are banks for bass drums, snare drums, toms, cymbals and hihats, percussion, and effect sounds. Each bank contains a wide selection of voices that should come close to meeting your needs for rhythm sound variety. (A complete listing of the RM50's preset voices is presented in the Appendix.)

You will doubtless want to edit the RM50's voices to suit them to your taste. Although you cannot change the preset voices, the RM50 also contains 500 voice variations and 128 user voices which you can. These voices offer a combination of sound capacity and architectural flexibility not matched by previous rhythm modules or drum machines. And if the RM50's huge internal voice capacity is still not enough for you, it is always possible to double it using a data card!

RM50 Voice Types

As we mentioned in the preceding paragraph, the RM50 has two types of editable voices. Its **voice variations** let you create your own versions of the presets by changing a few simple parameters. These voices – which occupy the six of the seven internal voice banks (I-BD, I-SD, I-TM, I-CY, I-PC, and I-SE) – are useful when a slight modification or two will give you just the sound you need.

If you want to create a new voice totally unlike those we included as presets, then you must edit a **user voice** instead of a voice variation. Every user voice consists of one or two elements, each controlled by a wide variety of parameters which allow you to make either radical or subtle changes to the sounds they produce. You can also set these voices to be played alternately with each other – which is useful for voices such as open and closed hi-hat sounds which would normally not sound simultaneously – and assign their output to the RM50's INDIVIDUAL OUTPUT jacks.

One major difference between the RM50's variations and user voices, besides the number of parameters available, is the way in which they are managed within the RM50's memory. The variations have strict one-to-one relationships with the preset voices: every preset voice has an internal variation which bears the same voice number and name. Voice I-SD 15, "DR Tite2" is thus a variation of voice P-SD 15, "DR Tite2". The user voices, on the other hand, have no fixed order or relationship to the presets. The 128 internal user voices come initially programmed with exact copies of the first 128 presets – all of the 102 voices in bank P-BD, followed by voices 1 through 26 from bank P-SD – but you can feel free to copy voices from any bank to the user bank in order to edit their more detailed parameters.

The user voices also give you the option of creating entirely new sounds using the waveform data available on optional wave cards. This is something you cannot do with variations, which are limited to the RM50 preset waveforms used by the preset voices.

Entering Voice Edit Mode

Now that you know about the difference between voice variations and user voices, let's start editing.

To edit a voice, you must first either assign it to a note in a rhythm kit, or select it for playing as a pitched voice. If you've been following along with these tutorials, you will recall that we selected voice I-SE 50, "BA Softa", as the pitched voice for channel 10 in the preceding tutorial..

```
C10/Mode=Pitched Voice
Vce  :I-SE  50 BA Softa<
```

It was not, strictly speaking, necessary to select an internal voice in order to edit the pitched voice setup for channel 10. However, that choice will now allow us to edit the voice itself.

The RM50 enters its Voice Edit mode by way of the Setup Edit mode we have studied in the last two tutorials. Press the [EDIT] key to enter this mode, and return the display to the first page of this mode, if necessary, by pressing and holding the [PAGE–] key.

```
vCE       Note=C-2~C 8
Vce  :I-SE< 50 BA Softa
```

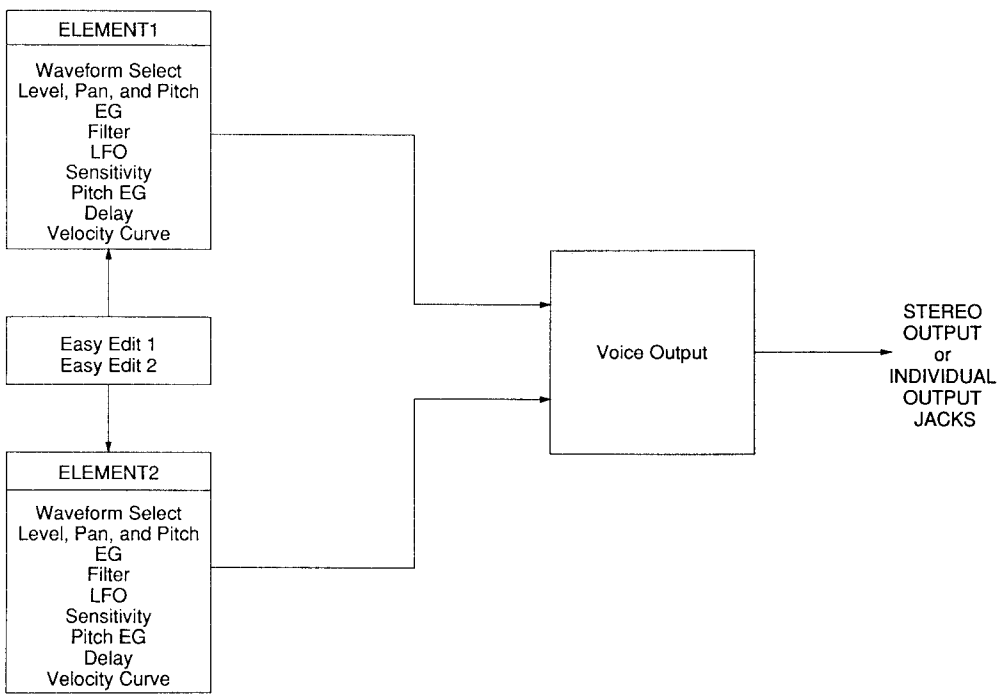
This page must be displayed in order for the RM50 to enter Voice Edit mode. Once you have displayed it, press the [EDIT] key a second time to enter that mode.

```
V/Easy/Vol [BA Softa]1>
   127<    +0     +0
```

A display like the one shown above should appear in the LCD. If the display is different, press the [PAGE–] key and hold it until the display stops changing.

Basic Voice Structure

Before we begin discussing the meanings of the various parameters available in Voice Edit mode, let's take a quick look at the basic structure of an RM50 voice.



As this illustration shows, an RM50 voice consists of parameter settings for two different elements, each of which outputs a sound complete with a stereo position. Elements can be turned off to create a single-element voice. (A voice will produce no sound when both elements are turned off, of course.)

The signals output by the voice's one or two elements are adjusted as a whole by a group of settings known as the Easy Edit parameters. These parameters are so named because they allow you to make quick, simple adjustments to the overall character of a voice. You can edit these parameters for voice variations as well as user voices.

Easy Edit Parameters

There are six Easy Edit parameters, occupying the first two pages of the Voice Edit mode display. Try locating these parameters using the methods described for the Setup Edit mode. As you will recall, you can use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the settings, and the [PAGE+] key to display a different page.

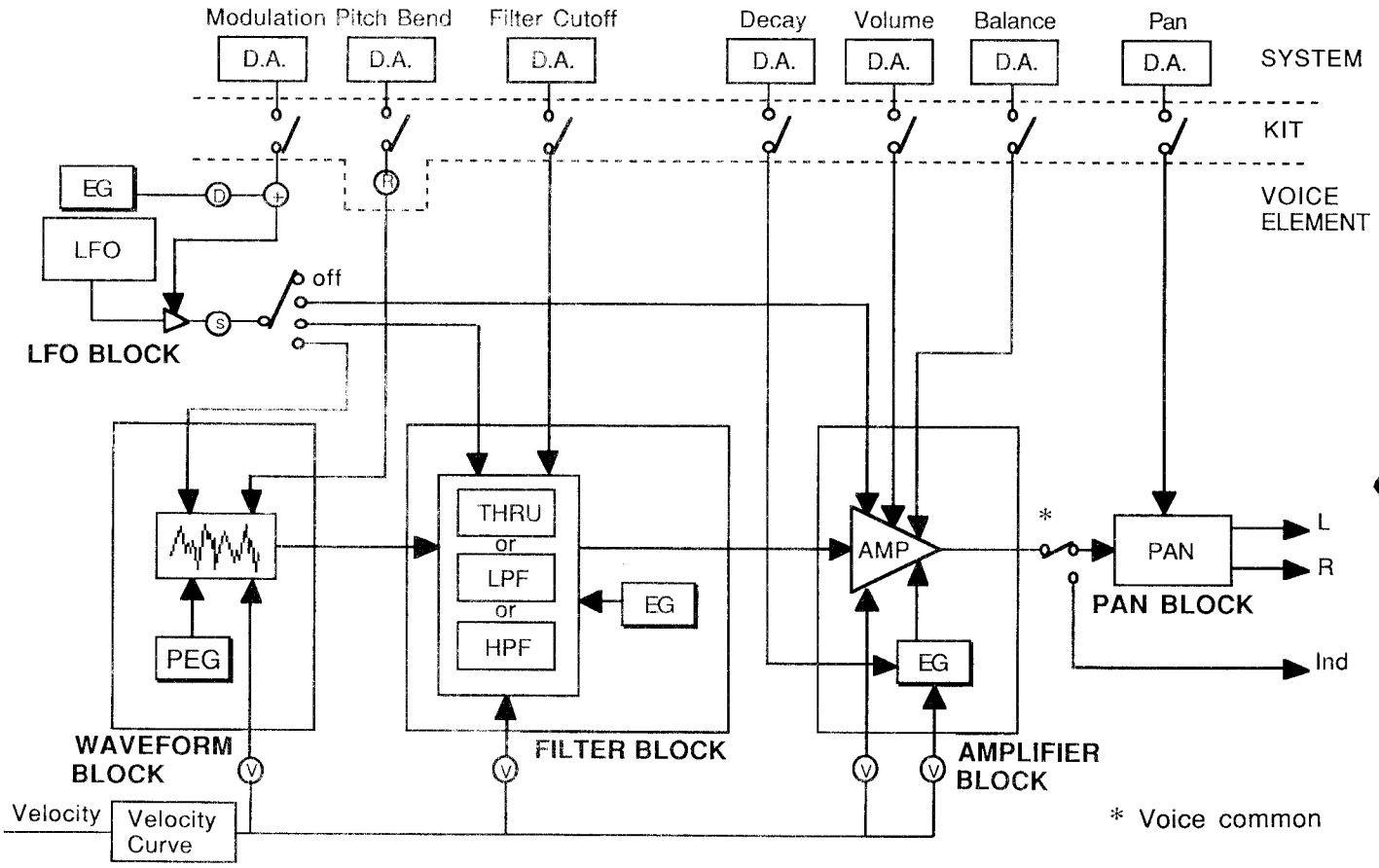
	DISPLAY	PARAMETER	DESCRIPTION
EASY EDIT 1	V/Easy/Vol [BA Softa] 127< +0 +0	Volume	Sets the voice's overall volume.
	V/Easy/Bal [BA Softa] 127 +0< +0	Balance	Adjusts the balance between the voice's two elements.
	V/Easy/Pan [BA Softa] 127 +0 +0<	Pan	Adjusts the stereo position of both voice elements.
EASY EDIT 2	V/Easy/Pch [BA Softa] +0< +0 +0	Pitch	Adjusts the pitch of both voice elements.
	V/Easy/Dcy [BA Softa] +0 +0< +0	Decay	Adjusts the decay time of both voice elements.
	V/Easy/Fil [BA Softa] +0 +0 +0<	Filter	Adjusts the cutoff frequencies of the filters applied to both voice elements.

As you can see, five of these parameters – volume, balance, pan, decay, and filter – are the same as those which can be changed by control messages turned on for the rhythm kit notes or pitched voice channels that play the voice. The remaining parameter is an offset which allows you to adjust the voice's overall pitch. (For more details on these parameters, see the descriptions of the Easy Edit functions on pages 72 and 73.)

Go ahead and try changing the values for each of these parameters and see how they affect the sound of the bass voice we've selected before moving on.

Element Structure

Next, let's look at how a voice element is configured. The figure below depicts the basic element structure as a block diagram.



Every element begins with a **waveform block** consisting of a waveform selection plus a sub-block which controls its pitch. The RM50 gives you a wide selection of 133 preset waveforms to choose from. You can also create elements based on waveforms on wave cards you insert in the RM50's WAVEFORM slots. And if you have elected to add the optional wave RAM area to your RM50, you can use this area as a third source of waveforms.

The pitch at which the waveform plays is set by the element pitch parameter and modified by the Easy Edit pitch offset. Its basic pitch can be adjusted by many factors, such as the note number (when the voice is played as a pitched voice); a pitch envelope generator (PEG), which determines how the element's pitch changes over time; pitch modulation added by the LFO block; and MIDI pitch bend messages.

The output of the waveform block is modified by a **filter block**, which changes the **tone** of the element by removing frequencies from the upper or lower end of the output signal. The cutoff frequency – the frequency level at which filtering begins – is set by an Element Filter function and modified by the Easy Edit filter offset. It can be changed by factors such as control change messages and filter modulation added by the LFO block.

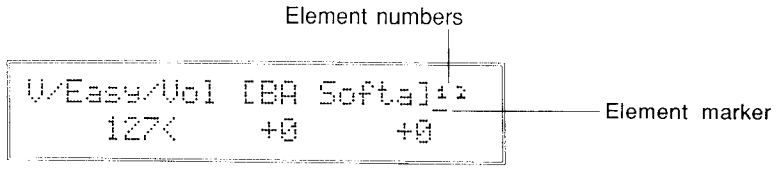
The filtered signal is input to an **amplifier block** which sets the volume of the output signal. The basic volume is set by an element volume parameter, and modified by the Easy Edit balance offset and volume parameters. It, too, can be adjusted by a variety of factors, including an amplifier EG which determines how the volume changes over time; volume modulation by the LFO block; and, perhaps most commonly, MIDI note velocity.

Connected to these three blocks is an **LFO block** which modulates the element's pitch, filter cutoff frequency, or volume using low frequency oscillation. The LFO can only be applied to one of these three blocks for any single element. The way in which it affects the other blocks is determined by a group of element LFO parameters. The modulation depth is adjusted by the Easy Edit modulation depth offset, as well as by modulation messages.

The final block in the element structure is a **pan block** which determines the element's stereo position. As with the other blocks, an element's pan can be affected by the Easy Edit pan offset and control change messages. Of course, the pan setting has no effect whatsoever when the element is output via the INDIVIDUAL OUTPUT jacks, represented by the letters "Ind" in the diagram.

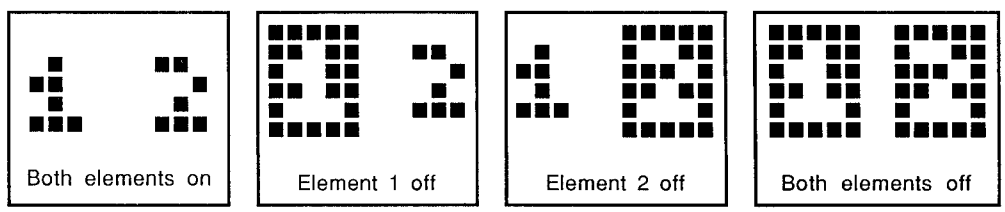
Selecting an Element to Edit

When you entered Voice Edit mode, you may have noticed a pair of small numerals in the upper right corner of the LCD. These numerals represent the voice's two elements. One of them will be underlined.



The underline marker tells you which element has been selected for editing. You can move the marker to the other element number, and thus display the parameter values for that element, by pressing the [SHIFT] and [EDIT] keys.

You can also turn an element off temporarily while editing by pressing either the [PAGE+] or the [PAGE–] key while holding down the [SHIFT] key. Muting an element in this fashion allows you to hear the sound produced by the other element alone. The number of element which is turned off will be displayed in reverse, as shown below:

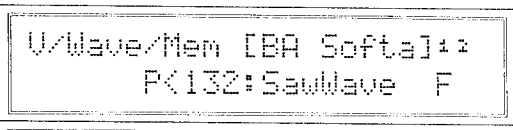
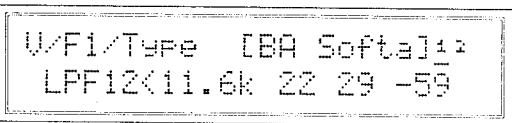
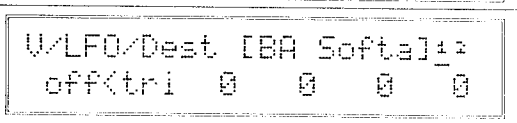
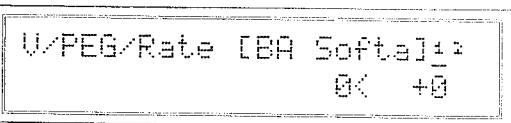
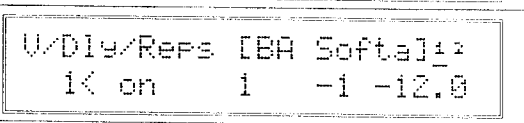
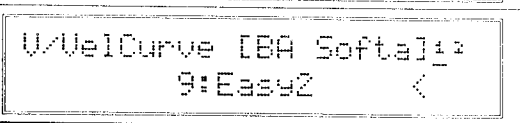


This muting is only temporary, however. If you want to turn an element off permanently, you must select "off" as the waveform for that element using the Waveform Select function, described below.

Element Parameters

The RM50 offers a variety of element parameters so great that it fairly defies comparison with previous rhythm programmers and modules. We cannot hope to explain all of these parameters in this short tutorial; however, we present a brief list of the parameters, with notes indicating where each belongs on the element configuration diagram presented above.

Try locating each of these parameters in the RM50 display. (If you want to change them, you will first have to copy the voice to the internal user voice bank, I-MX, using the Voice Copy function described below.) As with Setup Edit mode, you can select display pages using the [PAGE+] and [PAGE–] keys, and move the pointer among the settings and parameters in each function using the [▷] key (or the [SHIFT] and [▷] keys).

DISPLAY	FUNCTION	PARAMETERS
	Waveform Select	Memory Number Direction
	Element Level, Pan, and Pitch	Level Pan Pitch
	Element EG	Attack Decay Release Punch
	Element Filter	Type Cutoff Resonance Rate Level
	Element LFO	Destination Wave Speed Delay Phase Depth
	Element Sensitivity	Level Pitch EG Filter Modulation
	Element Pitch EG	Rate Level
	Element Delay	Repetition First note Time Level offset Pitch offset
	Element Velocity Curve	Velocity curve

Other Parameters

The twelfth and thirteenth pages of the Voice Edit mode display contain additional parameters which pertain to the entire voice rather than individual parameters.

The Voice Output function contains four parameters which determine how the voice being edited is finally output from the RM50. Beginning at the left end of the display, the assign parameter specifies whether the voice is to be played as a monophonic or polyphonic voice. It includes "mono/alt" and "poly/alt" settings, which causes the two elements of a voice to play alternately rather than in unison. These two settings are useful, for example, when using a single voice consisting of two slightly different snare drum elements to simulate a drum roll.

The alternate group setting lets you assign the voice to one of seven alternate groups which identify sounds which should not be played at the same time. This parameter is used to prevent two voices from played simultaneously. It is typically used with open and closed hi-hat sounds, for example.

The output parameter determines whether the voice will be sent to the RM50's stereo OUTPUT jacks or its INDIVIDUAL OUTPUT jacks. Finally, the individual level parameter sets the output level of voices assigned to the INDIVIDUAL OUTPUT jacks by the output parameter.

The Voice Name function assigns a name to the voice being edited. The procedure for assigning a name is the same as that described for rhythm kits on page 20.

Editing Functions

The Voice Edit mode contains editing functions like those you saw in Setup Edit mode, to facilitate the voice editing process. The procedures for accessing and using these functions are the same as described on page 21 for rhythm kits. When editing voice variations, these functions only affect the Easy Edit parameters.

The Voice Initialize operation sets all of a voice's parameters, other than its name and waveform assignments, to their default values. These values are listed on page 84.

The Voice Recall operation restores all parameters to the values they had before editing. Whereas the rhythm kit and pitched voice channel modes are indicated in Setup Edit mode by the letters "KIT" or "VCE" appearing in the upper left corner of the LCD, the Voice Edit mode is indicated by a single letter "V". If you change any of the parameters for a voice, this "V" will change to a small letter to indicate that the voice has been edited.

Unedited voice

Edited voice

You can use the Voice Recall function to switch between the edited and unedited parameter values as long as the "v" is small. Once you start editing another voice, however, the voice data you last selected will become permanent, and further recall will be impossible.

The Voice Copy operation copies a voice's parameter values to the user voice bank. You will find this function useful when creating your own edited version of an existing voice. To copy a voice, you must specify whether you want to copy data to or from the currently selected voice bank and number. Because of the close relationship between the preset voices and the variations, you cannot use the copy function to copy data to a voice variation bank. You must therefore select "to" as the copy direction when editing a variation (or a preset voice, for that matter). You can use "from" as the direction when editing a user voice (bank I-MX or C-MX), as long as the destination you specify is another user voice. Detailed instructions for using this function are given on page 85.

Exiting Voice Edit Mode

Press the [EXIT] key to return to the Setup Edit mode when you're done editing a voice. To return to Play mode, press the [PLAY] key (or press the [EXIT] key twice). The next time you enter Voice Edit mode, the LCD will show the Voice Edit page you last selected in this mode.

Using the Wave RAM Option

The RM50's wave RAM option lets you create a third source of waveform data, in addition to the RM50's preset waveforms and those on the wave cards you insert in its three WAVEFORM slots. If you have elected to install the SYEMB06 Expansion Memory Board in your RM50, you can copy waveforms from wave cards to the wave RAM area, or dump them from another device as MIDI sample dumps, and then use them to create completely new voices.

What Is Wave RAM?

The SYEMB06 Expansion Memory Board is a 0.5 megabyte memory module which is installed beneath the hatch on the RM50's upper surface. The installation procedure is simple: you remove the two screws securing the hatch cover, insert the SYEMB06 in the revealed slot, and then replace the cover. (Be sure to read the instructions provided with the SYEMB06 before you attempt to install it, as they include some important cautions which you should observe in order to avoid damaging the SYEMB06 or your RM50.)

Once you have installed the SYEMB06, your RM50 will possess an internal wave RAM area capable of holding as many as 64 waveforms. The precise number of waveforms it can hold at any given time will depend on the size of the waveforms you load to it. These waveforms are selected during the voice editing process by choosing the internal (I) memory area in the Waveform Select function.

Do not forget that before you can use the wave RAM area, you must prepare it to hold data using the Wave RAM Initialize function included in the Wave RAM Utility group. This Initialize function is described briefly in the last paragraph of this tutorial.

Copying Waveforms From a Card

To copy waveforms into the wave RAM area, you must first insert a wave card in one of the WAVEFORM slots on the RM50's front panel. Press the [UTILITY] key to enter Utility mode. You will see a display showing the name of a Utility mode function group, such as the one below.

```
UTL/System
Press "+1/YES" to enter
```

You must use the [PAGE+] or [PAGE–] keys to scroll through the names of the five function groups. You want to select the Wave RAM Utility group display shown below. (It is the fourth page of the Utility mode display.)

```
UTL/WaveRAM
Press "+1/YES" to enter
```

Press the [+1/YES] key to enter this utility group, then use the [PAGE+] or [PAGE–] keys to select the second display page for this group. (Utility mode display pages, like the Edit mode pages we have seen in previous tutorials, are always selected using the [PAGE+] or [PAGE–] keys. Also, as usual, any parameters in the display may be selected using the [▷] key or the [SHIFT] and [▷] keys.)

This display lets you specify one of the three WAVEFORM slots as a source for waveform data, and select a waveform from the card in that slot. The name of the waveform will appear after its number. You can also choose one of 64 wave RAM waveform numbers as the destination for the waveform you are copying. Three asterisks will appear after the number of destinations that are empty: destinations containing data will show the first three letters of the waveform name.

When you are satisfied with your settings, press the [SHIFT] and [+1/YES] keys to copy the waveform. The RM50 will ask you if you're sure you want to copy the data.

You can press the [+1/YES] key at this point to go through with the copy operation, or the [–1/NO] or [EXIT] keys if you change your mind. If you copy the data, the RM50 will display a "completed" message to let you know when it's done. Press the [EXIT] key to clear this message, and go on to the next operation.

Using Sample Dumps

You can load waveform data into the wave RAM area using MIDI sample dumps as well. The RM50 is capable of receiving sample dumps at any time, as long as the Demo Play function is not displayed. (Refer to the manual that came with the transmitting device for full instructions on the sample dump procedure.) Keep in mind, when dumping sample data to the RM50, that the sending device and the RM50 must be using the same device number.

Incoming samples are always assigned to the first available waveform number. Since a waveform name is not sent as part of the sample dump, the word "MIDI" followed by the sample number will be displayed as the waveform name. You may want to change this name to something more appropriate using the Waveform Name function described below.

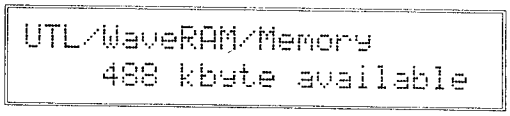
The RM50 can receive sample dumps in two formats: the Yamaha TX16W format, and the standard sample dump format. Be sure to select the correct Sample Dump Mode setting, which appears as the last page of the Wave RAM Utility group, when transmitting sample dumps to your RM50.

Other Wave RAM Utilities

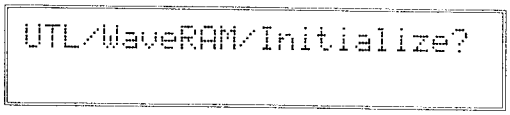
The Wave RAM Utility group includes a few other functions which help you to organize the contents of your RM50's wave RAM area.

The Waveform Name function, which appears as the first page of the group, lets you name the waveforms you copy or dump to the wave RAM area. The procedure for naming a waveform is much the same as that described previously for rhythm kits and voices.

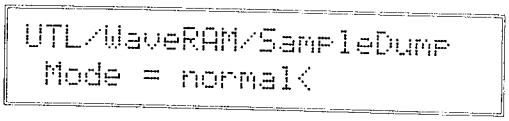
The Waveform Delete function is displayed as the third page of the Wave RAM Utility group. You can use it to delete waveforms which you no longer need from the wave RAM area, should you need to open some space to hold a new waveform. Like the RM50's other executable functions, you can execute the Waveform Delete operation by pressing the [SHIFT] and [+1/YES] keys after selecting the waveform you want to delete.



You can find out how much of the wave RAM's capacity is open, and thus whether you need to clear some space by deleting waveforms, using the Wave RAM Memory function. This function simply displays, in kilobytes, the amount of wave RAM capacity available for waveform storage.



The Wave RAM Initialize function, as we mentioned above, is used to initialize the wave RAM area after you install the SYEMB06 expansion memory board in the RM50. You can also use this function to clear all waveforms from the wave RAM at once, should you wish to do so.



Finally, the Sample Dump Mode function selects between the two sample dump formats handled by the RM50. Use the "TX16W" setting when dumping Yamaha TX16W samples, and the "normal" setting when dumping samples from any other device.

Exiting the Wave RAM Utility Group

When you are done using the Wave RAM Utility functions, you can press the [EXIT] key once to return to the Utility mode function group display if you wish to use a different Utility function group, or twice to return to Play mode.

Using Audio Triggers

If you will use the RM50's audio trigger input function, you should be forewarned that it is not enough just to plug your triggers into the jacks on the RM50's rear panel. Before you can use the RM50 as an electronic drum module, you will have to select the rhythm kit notes played by each trigger.

You will also have to fine-tune the RM50's Trigger function settings to make sure that the signals are being received with adequate efficiency. The precise settings you must use will depend, among other things, on the trigger and drum equipment you use, the conditions you will be playing under, and your playing style.

Assigning Notes to Triggers

Every RM50 rhythm kit contains a set of six parameters, each of which assign a rhythm kit note to one of the trigger inputs. These parameters are found on the sixth page of the Setup Edit mode display, a page which we skipped past when we discussed the rhythm kit editing process earlier.

Let's try selecting this display. First, return to the Play mode display – if you have not done so already – and select the setup MIDI channel 1. (The trigger inputs are set by default to use this channel.)

Next press the [EDIT] key, and then use the [PAGE+] or [PAGE–] keys to select the display shown below.

The number at the left end of the LCD's lower row is the number of the currently selected trigger. The note to its right is the rhythm kit note which will be played by that trigger. The RM50's preset rhythm kits all assign notes to triggers in the following manner:

TRIGGER	#1	#2	#3	#4	#5	#6
NOTE	C1 (36)	D1 (38)	D2 (50)	B1 (47)	G1 (43)	F1 (41)

Since each rhythm kit assigns different voices to every note, it is difficult to say exactly what sort of voice will be played by a trigger. You will probably want to adjust the note assignments for every rhythm kit you use.

You can do so by selecting each trigger in turn, then selecting the note you want it to play. Normally, you will do this by pressing the [▷] key to move the pointer back and forth between the trigger number and the note parameter, and using the [+1/YES] and [–1/NO] keys to raise or lower their settings. However, you can speed the process by using the Display Chase function, which we described above on page 17.

When the Display Chase function is activated, the RM50 display will automatically shift in response to the signals received by the trigger inputs, just as it changed to show the settings for notes received at the MIDI IN terminal. Using this function, you can eliminate the need to move the cursor back and forth between the trigger and note settings in the Trigger Note Assign display page. (The Display Chase function also works with the Utility mode Trigger Input functions described below.)

Adjusting the Gain

Now that you have assigned a rhythm kit note to each of the trigger inputs, you should check to make sure that the RM50 is properly converting the received signals into MIDI data. The procedure for doing this is outlined here briefly.

1. Turn the Display Chase function on, if you have not done so already. The procedure for turning this function on has already been described on page 17.

2. Press the [UTILITY] key to enter Utility mode, and then use the [PAGE–] key (if necessary) to select the System Utility function group.

```
UTL/System
Press "+1/YES" to enter
```

   Press the [+1/YES] key to enter this group, and then press the [PAGE–] key repeatedly, if necessary, to display the Trigger Input 1 function, shown below.

```
UTL/Sys/Trig/Trig No.
#1<:    99    on  fast
```

3. Press the [SHIFT] and [PLAY] keys to show the Input Monitor display.

```
InputMoni    Ch Note Vel
              1   36  80
```

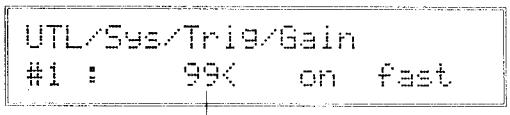
   This display shows the note played by trigger input signals, and the number of the audio trigger which played the note. It also shows the velocity of the note as both a number and a horizontal bar graph. You will want to keep your eye on the bar graph during the next two steps.

4. Tap a connected drum or drum pad. The bar graph should show low velocities when you tap lightly, and peak when you are playing your hardest.

```
InputMoni    Ch Note Vel
              1   36  32
```

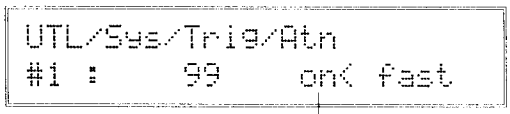
```
InputMoni    Ch Note Vel
              1   36 127
```

If the displayed velocities are too low or too high, you must adjust the trigger's gain. To do so, press the [EXIT] key once to return to the Trigger Input 1 display. The gain parameter is the first parameter after the trigger number in the lower row of this display. Raise its value to increase the gain for higher velocities, or lower it to decrease the gain.



Raise to increase gain, or lower to decrease.

Then press the [SHIFT] and [PLAY] keys again to return to the Input Monitor display and check the result of your adjustment. If you find that the trigger does not produce sufficient velocity even when the gain parameter is set to its maximum value of 99, you should set the gain attenuation parameter (the second parameter in the Utility mode display) to "off" and then readjust the gain.

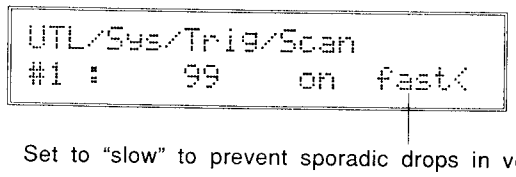


Turn off if velocity is insufficient.

Continue switching between the Trigger Input 1 and Input Monitor displays until you are satisfied with the gain setting.

5. Next, tap the drum or pad several times with roughly the same amount of force. Each tap should produce roughly the same velocity.

If the velocity varies widely from tap to tap, or if the velocity tends to drop to a level much lower than force actually used from time to time, then the RM50 is scanning too fast. If this happens, set the scan speed – the last parameter in the Trigger Input 1 display – to "slow". (You will also want to use the slow scan speed when the RM50 is receiving trigger input from audio equipment, such as a multitrack recorder, rather than drum pads.)



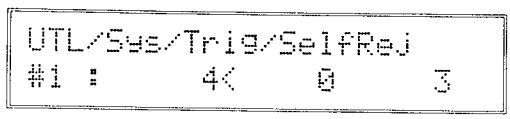
Set to "slow" to prevent sporadic drops in velocity.

If you find you need a faster response and can put up with some minor fluctuations in level, however, you should probably use the "fast" setting.

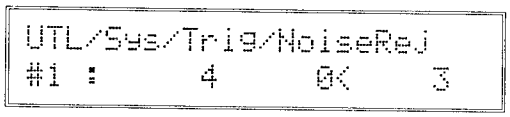
Once you are satisfied with the velocity information produced by the first trigger, repeat this procedure for each of the remaining triggers.

Reducing Interference

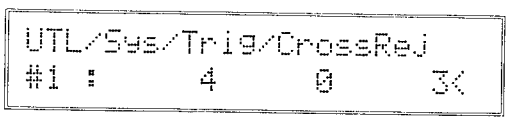
The Trigger Input 2 function, found on the second page of the System Utility function group, contains parameters which help to compensate for interference to the trigger signals.



The self reject parameter helps to eliminate spurious triggering caused by vibrations of the drum head. When set too high, however, it can reduce the trigger's sensitivity to flams and other fast techniques. Raise the value of this parameter if a single strike of the drum produces two notes. Lower it if the RM50 does not play enough notes in response to fast techniques.



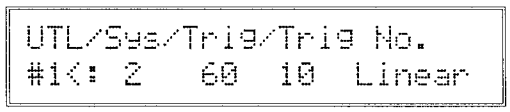
The noise reject parameter reduces spurious triggering caused by background noise. When set too high, however, it can reduce the trigger's sensitivity to soft notes. Raise its value if the RM50 seems to play notes for no reason at all. Lower it if the RM50 does not play in response to soft notes.



The crosstalk reject parameter sets the level at which the RM50 filters out crosstalk from drums transmitting on the other triggers. Raise this setting if a trigger causes the RM50 to play notes assigned to other triggers. When raised too high, however, this parameter can cause the RM50 to ignore techniques such as two-drum flams.

MIDI Data Settings

The last Trigger Input function, accessed by another press of the [PAGE+] key, contains settings which determine how the RM50 generates MIDI data in response to received trigger signals.



The first parameter following the trigger number in the lower row of the display selects the MIDI channel on which the trigger will transmit its MIDI data. As we mentioned above, all six of the triggers are set to use channel 1 as their default channel. If you wish, however, you can change this setting so that each of the triggers will transmit on a different channel. (This will cause the RM50 to play notes in different rhythm kits in response to signals received from different triggers.) The RM50 will also transmit MIDI note information on the specified channels from its MIDI OUT terminal in response to trigger input.

If a trigger is set to play on a channel using the pitched voice channel mode, the RM50 will play the voice using the note specified by the second parameter in this display. If the trigger is set to a channel whose channel mode is set to "off", the RM50 will not play any notes; it willmerely transmit the note specified by the second parameter from its MIDI OUT terminal for use by receiving MIDI devices.

The remaining two parameters in this display set the gate time and velocity curve which the trigger uses to generate note off messages and note velocity information. These settings are described in detail on pages 93 and 94.

Exiting the System Utility Group

The procedure for exiting the System Utility function group is the same as that described above for the Wave RAM Utility group. Press the [EXIT] key once to return to the Utility mode function group display, or twice to return to the Play mode display.

Using Macros

As you become more familiar with the RM50 and learn to use its many features, you may find that you need to access some functions more frequently than others. The RM50's key macro feature lets you record up to ten macros that help you to get to the functions you use most often by simply pressing a couple of keys.

Playing a Macro

As an example of how macros can speed your access to the RM50's functions, let's look back at the first procedure you used when you began reading these tutorials: that we described on pages 8 and 9, for accessing the Demo Play function. If you tried this procedure immediately after purchasing your RM50, you must have made seven keystrokes to start the demo song playing:

[UTILITY]	to enter Utility Mode
[PAGE+] ×4	to display the Demo Utility
[+1/YES]	to enter the Demo Utility
[+1/YES]	to start playback

Seven keystrokes may not seem like a lot. But there's an easier way to start the RM50's demo songs playing, one which we have kept secret until now. First, press the [MACRO] key.

```
MACRO: PLAY=[Demo Play ]
Push panel switch
```

A display like this will appear whenever you press the [MACRO] key. The display is prompting you to execute a macro by pressing one of the RM50's keys. Try pressing the [PLAY] key at this point.

```
UTL/Demo
Play<Pre Song1:SKINBIT
```

All of a sudden, the RM50 demo songs are playing! You have just executed with two keystrokes a function that previously required seven!

This may seem only moderately convenient, but it is, after all, a mild example. Depending on which functions and parameters you last accessed in each mode, you may find you have to make twenty-five keystrokes to get from Play mode to a certain desired parameter in a Voice Edit mode function. If you have to do this with any frequency, it may begin to seem as though you are spending too much of your editing time pressing keys needlessly.

The RM50 comes programmed with ten macros that should give you an idea of the sorts of things you can do with this function. Take a few moments to try each of the macros in the list below, then try duplicating their action manually. This little exercise should give you a good idea just how handy they can be.

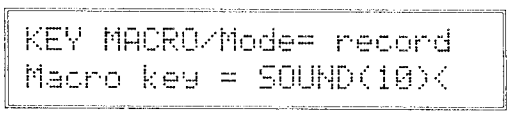
Number	Key	MacroName
1	PLAY	Demo Play
2	EDIT	Kit Copy
3	UTILITY	Voice Copy
4	PAGE–	Easy Pitch
5	PAGE+	Level Sens
6	–1/NO	Card Save
7	+1/YES	Trans Bulk
8	CURSOR	Click on
9	EXIT	Click off
10	SOUND	Sound Vel

Recording a Macro

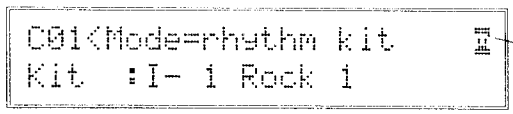
Of course, you may decide that you won't be using the functions selected by these preset macros all that much. If this is the case, feel free to record your own macros. By putting this feature to work, you can customize your RM50 to make routine programming tasks a little smoother, so you can direct more of your attention to the musical tasks at hand.

It's easy to record macros. Start by pressing the [MACRO] key while holding down the [SHIFT] key. You should see a display like the one below. (If you don't, press the [SHIFT] and [–1/NO] keys once or twice).

The pointer has appeared next to a key name and number representing the RM50 key that you will use to play the macro you are about to record. Use the [+1/YES] or [–1/NO] keys to select a different macro key, if you wish. (We'll pick the [SOUND] key here, for the purpose of our example.)



Next, press the [SHIFT] and [MACRO] keys once again to begin recording. The LCD will shift to the familiar Play mode display.



This display has a reversed "m" in the upper right corner, indicating that a macro is now being recorded. Execute the macro operation exactly as you want it to be played back, then press the [MACRO] key to end the recording.

There are a few things you should keep in mind when recording a macro. First, RM50 macros always begin in Play mode. Also, whenever you enter a mode (or a function group, in Utility mode), the RM50 will always display the first page of that mode. Likewise, the pointer will always appear at the first setting parameter in any display. This is a little different from the RM50's normal operation mode, which normally leaves all of the mode displays and pointer positions sent to the pages and parameters you edited last.

A macro can record up to 50 keystrokes. (Combination keystrokes using the [SHIFT] key are counted as a single keystroke.) You cannot press the [SHIFT] and [MACRO] keys, as part of a macro. Pressing the [MACRO] key will of course end the macro and cause the RM50 to leave the record mode. The macro will also end automatically if you start a demo song using the Demo Play function.

Other Macro Functions

In addition to the Macro Record function, the RM50 lets you view the contents of the macros you have recorded, and assign them names that will help you to remember what they do. You can access both of these functions in the same way as the Macro Record function, by pressing the [SHIFT] and [MACRO] keys simultaneously.

From the Macro Record display shown above, press the [SHIFT] and [+1/YES] keys once to select Macro View, or twice to select the Macro Name. Then, in the same manner as the Macro Record function, select the key corresponding to the macro that you want to view. Use the [+1/YES] or [–1/NO] keys to select different macro, if you wish, then press the [SHIFT] and [MACRO] keys to view or name it. Press the [MACRO] key to exit when you're done using either of these functions.

```
KEY MACRO/Mode= view
 1:step 1=[UTILITY   ]
```

The Macro View display above shows the first step of the Demo Play macro we played at the start of this tutorial. The step number is followed in the display by the name of the key that was pressed as the first step of the macro. You can use the [+1/YES] or [–1/NO] keys to scroll through the steps of the macro.

```
KEY MACRO/Mode= name
    PLAY= [Click off ]
```

The Macro Name display allows you to input a name that the RM50 will display when you are selecting a macro to play back. The method used to input the name is exactly the same as that used to name rhythm kits, voices, and waveforms.

If you forget which key a macro is assigned to, you can display the names of the macros before you play them back. Press the [MACRO] key to enter the macro playback mode, then press the [+/YES] or [–1/NO] keys while holding down the [SHIFT] key to find the name of the desired macro.

REFERENCE SECTION

PLAY MODE

You will normally use the RM50 in Play mode when performing. This mode allows you to make only basic changes to the RM50 setup: you can assign a rhythm kit or pitched voice to each of the sixteen MIDI channels. To modify rhythm kit settings or voice parameters, you will need to use the functions of the Setup Edit and Voice Edit modes.

This chapter explains the settings that you can make in Play mode, plus a number of special utility functions that are available in other modes as well.

Contents of this chapter

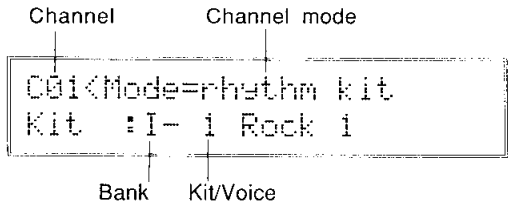
Functions in Play Mode

The functions available in Play mode are listed below, together with the key operations used to access them. All of these functions are available in the RM50's other modes as well.

DISPLAY	DISPLAY NAME	DESCRIPTION	OPERATION
C01<Mode=rhythm kit Kit :I- 1 Rock 1	Play Mode	Allows selection of a channel mode and assignment of a rhythm kit or pitched voice for each MIDI channel.	[PLAY]
Display chase : off<	Display Chase	Switches the RM50's display chase function on and off.	[SHIFT] + [UTILITY]
InputMoni Ch Note Vel ▓▓▓▓▓▓▓▓ 1 32 80	Input Monitor	Displays note information input via the MIDI IN terminal or the audio trigger jacks.	[SHIFT] + [PLAY]
MACRO: PLAY=[Demo Play] Push panel switch	Macro Play	Executes a previously recorded key macro.	[MACRO]
KEY MACRO/Mode= record Macro key = PLAY(1)<	Macro Record	Records a series of key operations as a key macro assigned to one of the RM50's keys.	[SHIFT] + [MACRO] → [SHIFT] + [+1/YES] or [–/NO]
KEY MACRO/Mode= view Macro key = PLAY(1)<	Macro View	Displays the contents of a previously recorded key macro.	[SHIFT] + [MACRO] → [SHIFT] + [+1/YES] or [–1/NO]
KEY MACRO/Mode= name Macro key = PLAY(1)<	Macro Name	Assigns a name to a key macro.	[SHIFT] + [+1/YES] or [–1/NO]

Play Mode

Summary: Allows selection of a channel mode and assignment of a rhythm kit or pitched voice for each MIDI channel.



Procedure: Press [PLAY] switch to enter PLAY mode from Setup Edit, Voice Edit, or Utility mode. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer to among the channel, channel mode, bank, and kit or voice settings. Use the [+1/YES] or [–1/NO] key to change the channel or channel mode, or to select a different bank, kit, or voice.

- *Channel (C01...C16):* Selects one of the sixteen MIDI channels.
- *Channel mode (rhythm kit, pitched voice, off):* Determines whether the RM50 will play a rhythm kit or a pitched voice in response to messages received on the selected MIDI channel. When "off" is set as the channel mode, the RM50 will ignore note information received on the channel in question.
- *Bank:* Selects one of three rhythm kit banks, or one of 23 voice banks. It is also possible to set the bank selection to "off".
- *Kit/Voice:* Selects a rhythm kit or voice from the specified bank. The name of the selected kit or voice appears after its number. (A row of dashes is displayed in place of the kit/voice number and name when "off" is selected as the bank.)

Notes: *When you use the rhythm kit channel mode, you can select one of three banks: the preset (P), internal (I), or data card (C) banks. Each of these banks contains 64 rhythm kits.*

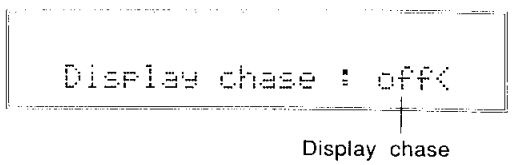
If you select the pitched voice channel mode, the RM50 will give you a choice of 23 different voice banks. You can also select "off" instead of a voice bank; however, you may find it preferable to set the channel mode to "off" instead.

The procedure for selecting a voice from the Play mode display is exactly the same as that described for the Voice Assign function on page 59.

The RM50 must be in Play mode to accept program change messages; it will ignore all program changes received while in any other mode.

Display Chase

Summary: Switches the RM50's display chase function on and off.



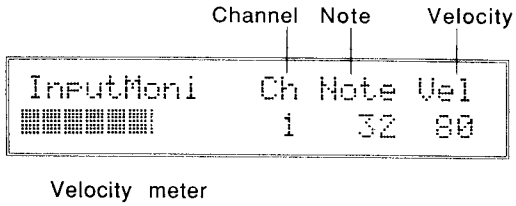
Procedure: Press the [SHIFT] and [UTILITY] keys to change the display chase setting.

- *Display chase (on, off):* Switches the RM50 display chase function on and off. When set to "on", the RM50's display will automatically shift in response to received MIDI note messages or audio trigger input. In Setup Edit mode, it will show the voice assignment and other settings for the received note or trigger. In Voice Edit mode, it will show the parameters for the voice assigned to that note or trigger. When set to "off", the RM50's display will not change in response to received note messages or trigger input.

Note: *The display chase function can be turned on or off while the RM50 is in any mode. However, it will cause the display to change only when the RM50 is in one of the Edit modes (except when the Voice Edit mode is entered via the Click 1 function described on page 95), or when adjusting the trigger input parameters using the System Utility functions.*

Input Monitor

Summary: Displays note information input via the MIDI IN terminal or the audio trigger jacks.



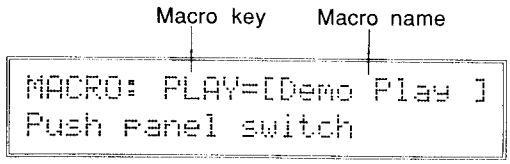
Procedure: Press the [SHIFT] and [PLAY] keys to switch to the input monitor display. Use the [EXIT] key to return to the previous display.

- *Channel:* Indicates the MIDI or audio trigger channel from which the displayed note was received.
- *Note:* Shows the note number of the received note.
- *Velocity:* Shows the velocity of the received note.
- *Velocity meter:* Displays the velocity graphically. Higher velocities are represented by longer arrows.

Note: *This function will also display the note number and velocity of notes played using the [SOUND] key.*

Key Macro Playback

Summary: Executes a previously recorded key macro.



Procedure: Press the [MACRO] key. The RM50 will prompt you to select the macro to be executed. Press the key corresponding to the desired macro to play it back. If you're not sure which key the macro is assigned to, press the [+1/YES] or [–1/NO] key while holding down the [SHIFT] key to display the numbers and names of other macros. (If you decide that you don't want to execute a macro at this point, press the [MACRO] key to return to the previous display.)

- *Macro key:* Shows the name of the key corresponding to the macro which was played back or recorded last.
- *Name field:* Shows the name of the macro which was last played back or recorded. The name displayed here is entered using the Macro Name function described below.

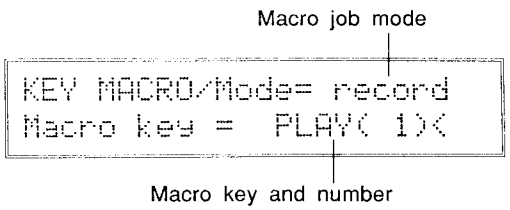
Note: *The keys on the RM50's front panel correspond to macro numbers as shown in the table below.*

KEY	MACRO	KEY	MACRO
[PLAY]	1	[–1/NO]	6
[EDIT]	2	[+1/YES]	7
[UTILITY]	3	[+1/YES]	7
[PAGE+]	4	EXIT]	9
[PAGE–]	5	[SOUND]	10

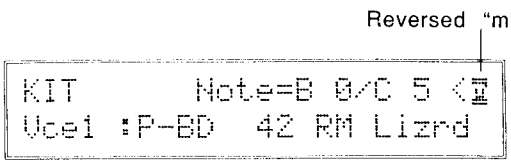
A list of the RM50's factory preset macros is presented on page 44.

Key Macro Record

Summary: Records a series of key operations as a key macro assigned to one of the RM50's keys.



Procedure: Press the [SHIFT] and [MACRO] keys to enter the macro utility mode. Press [SHIFT] and [–1/NO] keys to change the macro job type to "record". Use the [+1/YES] or [–1/NO] key to select the macro to be recorded. Press the [SHIFT] and [MACRO] keys again to begin recording. (If you decide you don't want to record a macro, press the [MACRO] key alone at this point to return to the previous display.)



As soon as you begin recording a macro, the RM50 will shift to the Play mode display, displaying a reversed "m" in the upper right corner of the LCD to indicate that a macro is being recorded. Perform the operation exactly as you wish it to be played back by the macro, then press the [MACRO] key to complete the recording . The reversed "m" will disappear.

- *Macro job mode:* Selects the macro job to be performed. The word "record" must be displayed here in order to record a macro.
- *Macro key:* Shows the name of the key used to play back the macro to be recorded, and the macro's number.
- *Reversed "m":* Indicates that a macro is currently being recorded.

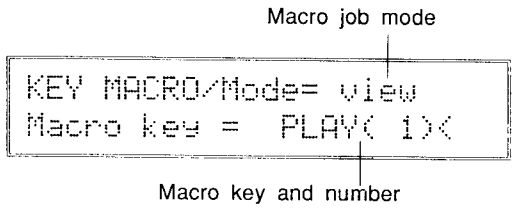
Note: *The RM50's display function operates in an unusual manner when a macro is being recorded. Normally, when you enter a mode, the RM50 will display the page which you selected when you last entered that mode. Also, if that page contains a pointer, it will usually appear next to the setting or parameter you last selected for editing. Since these "shortcuts" would make recording a macro impossible, however, a few special conventions are invoked whenever you use this function.*

First, all key macros begin in Play mode. Also, the RM50 will always show the first display page for any mode you enter: you will see the Voice Assign function in Setup Edit mode, the Easy Edit 1 function in Voice Edit mode, and the name of the System Utility group in Utility mode. You will also see the first display page of any Utility mode function group you enter. In the same manner, the pointer will always appear next to the very first setting or parameter in any display.

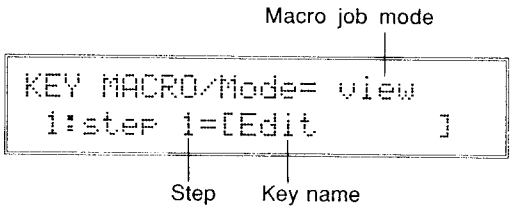
You can press any of the RM50's twelve keys, except for the [MACRO] and [SOUND] keys, as part of a macro. Each macro can include up to 50 steps. (Keystrokes combining the [SHIFT] key with another key are counted as a single step.) Pressing the [MACRO] key ends the macro and causes the RM50 to exit the record mode. The macro will also end automatically when the maximum of 50 steps have been recorded, or if you start a demo song using the Demo Play function.

Key Macro View

Summary: Displays the contents of a previously recorded key macro.



Procedure: Press the [SHIFT] and [MACRO] keys to enter the macro utility mode. Press the [+1/YES] or [–1/NO] key while holding down the [SHIFT] key to switch the macro job type to "view". Use the [+1/YES] or [–1/NO] keys to select the macro whose contents you wish to view, then press the [SHIFT] and [MACRO] keys to view the macro.



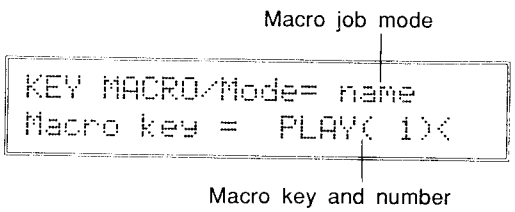
The first step of the macro will appear in the LCD. Press the [+1/YES] or [–1/NO] key to view the contents of other steps. Press the [MACRO] key once to return to the macro utility mode, or twice to return to the previous display, when you're done viewing the macro.

- *Macro job mode:* Selects the macro job to be performed. The word "view" must be displayed here in order to view the contents of a macro.
- *Macro key:* Shows the name of the key used to play back the macro to be viewed, and the macro's number.
- *Step number:* Selects a macro step for viewing.
- *Key name:* Shows the name of the key operation to be performed as the current step of the macro.

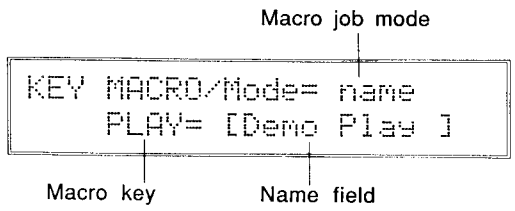
Note: *This function will come in handy if you forget what macro you assigned to a key. To avoid this problem in the first place, you should assign a name to each macro as a reminder of its contents. The procedure for naming a macro is described next.*

Key Macro Name

Summary: Assigns a name to a key macro.



Procedure: Press the [SHIFT] and [MACRO] keys to enter the macro utility mode. Press [SHIFT] and [+1/YES] keys to switch the macro job type to "name". Use the [+1/YES] or [–1/NO] key to select a macro to name, then press the [SHIFT] and [MACRO] keys to begin naming it.



Use the [▷] key (or the [SHIFT] and [▷] keys) to select the character you wish to change (the selected character will blink). Then use the [+1/YES] or [–1/NO] key to change the selected character. Press the [MACRO] key once to return to the macro utility mode, or twice to return to the previous display, when you've finished naming the macro.

- *Macro job mode:* Selects the macro job to be performed. The word "name" must be displayed here in order to name a macro.
- *Macro key:* Shows the name of the key used to play back the macro to be named, and the macro's number.
- *Name field:* Allows you to assign the selected macro a name of up to ten characters. A list of available characters is presented in the following note.

Note: *The table below lists the characters you can use to name a macro. The same set of characters is also used when naming rhythm kits and user voices.*

```
[space]!"#$%&'()*+,-./0123456789:;<=>?@
ABCDEFGHIJKLMNOPQRSTUVWXYZ[¥]^_`
abcdefghijklmnopqrstuvwxyz{|}→←
```

SETUP EDIT MODE

The functions in Setup Edit mode allow you to change voice assignments and other rhythm kit settings. Some of these functions can be used to change pitched voice settings as well.

To edit the currently selected rhythm kit or pitched voice setup, press the [EDIT] key from Play Mode.

The RM50 will enter Setup Edit mode even if a preset rhythm kit or voice is selected, in order to let you view the settings of the preset selections. If you attempt to change these settings, however, it will display an error message stating that you have selected a protected memory bank. Should this happen, press the [EXIT] key to clear the error message. To edit the settings of a preset rhythm kit, you must first copy the kit to the internal (I) or card (C) bank, then edit the copy.

The RM50 will not enter Setup Edit mode at all when the channel mode of the currently selected MIDI channel is set to "off".

To return to Play mode from Setup Edit mode, press either the [EXIT] key or the [PLAY] key.

Contents of this chapter

Functions in Setup Edit Mode

The functions available in Setup Edit mode are listed below. Once you have entered this mode, you can select any of these functions using the [PAGE+] or [PAGE–] key.

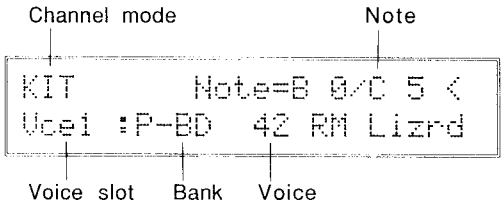
Some of the functions in this mode are not available with the pitched voice channel mode. The availability of each function is noted in the rightmost column of the table.

DISPLAY	DISPLAY NAME	DESCRIPTION	AVAILABILITY
KIT Note=B 0/C 5 < Vce1 :P-BD 42 RM Lizrd	1. Voice Assign	Assigns voices to each note of a rhythm kit, or to the entire note range if the pitched voice channel mode has been selected.	RHYTHM KITS & PITCHED VOICES
KIT/ATT Note=B 0/C 5 < Vce1 : 0	2. Voice Attenuation	Adjusts the volume either of individual notes in a rhythm kit, or of an entire pitched voice.	RHYTHM KITS & PITCHED VOICES
KIT/Koff Note=B 0/C 5 < Key off message:ignore	3. Key Off	Determines whether the RM50 will recognize received key off messages for the selected rhythm kit note or pitched voice.	RHYTHM KITS & PITCHED VOICES
KIT/PB Note=B 0/C 5 < Range: 0 Sw:off	4. Pitch Bend	Sets the pitch bend range for the selected channel, and enables or disables pitch bend control of the selected rhythm kit note or pitched voice.	RHYTHM KITS & PITCHED VOICES
KIT/Vol Note=B 0/C 5 < off off off off off off	5. Control Change	Specifies which parameters of the voice played by the selected rhythm kit note or pitched voice can be affected by control change, pitch bend, or aftertouch messages.	RHYTHM KITS & PITCHED VOICES
KIT/TriggerNote #1<: Note=A#3(70)	6. Trigger Note Assign	Assigns a rhythm kit note to each of the RM50's six audio trigger inputs.	RHYTHM KITS ONLY
KIT/Name I 1[Rock 1]	7. Rhythm Kit Name	Assigns a name to the selected rhythm kit.	RHYTHM KITS ONLY
KIT/Init ? I 1 Rock 1	8. Setup Initialize	Initializes all settings of the selected rhythm kit or pitched voice.	RHYTHM KITS & PITCHED VOICES
KIT/Recall ? I 1 Rock 1	9. Setup Recall	Restores the settings of the selected rhythm kit or pitched voice to the values they had prior to editing.	RHYTHM KITS & PITCHED VOICES
KIT/Copy ? to <I 1 Rock 1	10. Rhythm Kit Copy	Copies rhythm kit settings from one bank and kit number to another.	RHYTHM KITS ONLY

1. Voice Assign

RHYTHM KITS & PITCHED VOICES

Summary: Assigns voices to each note of a rhythm kit, or to the entire note range if the pitched voice channel mode has been selected.



Procedure: Use the [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the cursor to the note, voice slot, bank, and voice settings. Use the [+1/YES] or [–1/NO] key to select a different note, voice slot, bank, or voice. (The note and voice slot settings are not available when editing a pitched voice setup.)

- *Channel mode (KIT, VCE):* Indicates which channel mode has been selected. This setting can only be changed from the Play mode display (page 51).
- *Note (B0/C5...B4):* Selects a note from the current rhythm kit. "B0/C5" is displayed when B0 is selected, since the RM50 treats these two as the same note. The note range C-2–C8 is displayed when "VCE" appears as the channel mode; individual notes cannot be selected when the pitched voice channel mode is used.
- *Voice slot (Vce1, Vce2, Vce):* Selects between the two voice slots (Vce1 and Vce2) available for notes from B0/C5 to A#2. When other notes are selected, or when the pitched voice channel mode is used, only one voice slot (Vce) will be available.
- *Bank:* Selects one of 23 voice banks, or "off".
- *Voice:* Selects a voice from the specified bank. The name of the selected voice appears after the voice number.

Notes: *When you have selected a rhythm kit note to which more than one voice can be assigned (B0 through A#2), you can switch between the two voice slots (Vce1 and Vce2) by pressing the [SHIFT] and [EDIT] keys. This allows you to make quick changes to the settings for both slots. If you don't want to assign two voices to one of the notes in this range, select "off" as the voice bank for one of the voice slots (Vce1 or Vce2). If you don't want a note to produce any sound at all, turn off all available slots.*

When using the pitched voice channel mode, you can change the current voice selection either from this display or from the Play mode display. The results are the same in either case.

The type and number of voices in each bank varies as shown in the following table:

Banks			Description	Voices/bank
Preset	Internal	Card		
	I-MX	C-MX	User voices	128
P-BD	I-BD	C-BD	Bass drums	102
P-SD	II-SD	C-SD	Snare drums	108
P-TM	I-TM	C-TM	Toms	107
P-CY	I-CY	C-CY	Cymbals	65
P-PC	II-PC	C-PC	Percussion	67
P-SE	I-SE	C-SE	Sound effects	51
		W-S1	Wave card 1	32
		W-S2	Wave card 2	32
		W-S3	Wave card 3	32
		off	No selection	–

As this table shows, banks beginning with a "P" contain preset voices. Those beginning with the letters "I" and "C" are internal and data card banks, respectively. The I-MX and C-MX banks contain fully-editable user voices; all other internal and data card banks contain voice variations. Banks beginning with the letter "W" contain wave card voices.

If you continue to press the [+1/YES] or [–1/NO] key when you come to the end of a bank, the display will continue on into the following or preceding bank. The banks are ordered as listed in the columns of the table above.

The message "No Card!" will appear instead of a rhythm kit or voice name if you attempt to select a data card or wave card bank without first inserting a card in the appropriate slot.

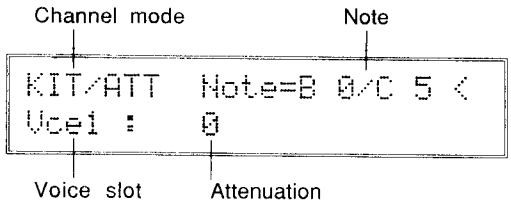
A complete listing of all the RM50's preset voices is presented in the Appendix on page 114.

You can press the [EDIT] key from this display to enter Voice Edit mode and edit the currently selected voice.

2. Voice Attenuation

RHYTHM KITS & PITCHED VOICES

Summary: Adjusts the volume either of individual notes in a rhythm kit, or of an entire pitched voice.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer to the note or voice slot settings or the attenuation parameter. Use the [+1/YES] or [–1/NO] key to select a different note or voice slot, or to change the attenuation value for the selected note. (The note and voice slot settings are not available when editing a pitched voice setup.)

- *Channel mode (KIT, VCE):* Indicates which channel mode has been selected. This setting can only be changed from the Play mode display (page 51).
- *Note (B0/C5...B4):* Selects a note from the current rhythm kit. "B0/C5" is displayed when B0 is selected, since the RM50 treats these two as the same note. The note range C-2–C8 is displayed when "VCE" appears as the channel mode.
- *Voice slot (Vce1, Vce2, Vce):* Selects between the two voice slots (Vce1 and Vce2) available with notes from B0/C5 to A#2. When other notes are selected, or when the pitched voice channel mode is used, only one voice slot (Vce) is available.
- *Attenuation (0...15):* Sets the amount by which the volume of the voice is reduced from its standard level.

Note: *The adjustment of the balance between the various instruments in a rhythm kit should be done using this setting rather than the volume parameter described on page 72. This is because there may be instances in which you want a particular instrument to play loudly in one rhythm kit, and more quietly in another.*

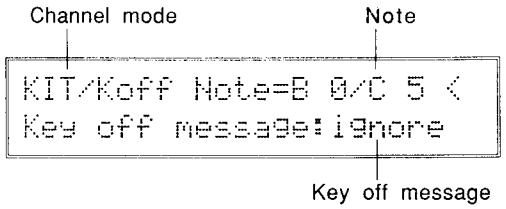
When you have selected a note to which more than one voice can be assigned (B0 through A#2), you can switch between the two voice slots (Vce1 and Vce2) by pressing the [SHIFT] and [EDIT] keys. This feature allows you to make quick changes to the attenuation settings for both voice slots.

You can also use the Attenuation function to balance the volume of a pitched voice against the rhythm sets and voices played by other channels.

3. Key Off

RHYTHM KITS & PITCHED VOICES

Summary: Determines whether the RM50 will recognize received key off messages for the selected rhythm kit note or pitched voice.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer between the note and key off message settings. Use the [+1/YES] or [–1/NO] key to select a different note, or to change the key off message setting. (The note setting is not available when editing a pitched voice setup.)

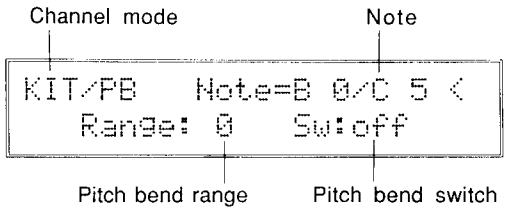
- *Channel mode (KIT, VCE):* Indicates which channel mode has been selected. This setting can only be changed from the Play mode display (page 51).
- *Note (B0/C5...B4):* Selects a note from the current rhythm kit. "B0/C5" is displayed when B0 is selected, since the RM50 treats these two as the same note. The note range C-2–C8 is displayed when "VCE" appears as the channel mode.
- *Key off message (accept, ignore):* Determines whether the RM50 will comply with or ignore any key off messages it receives for the selected note. (When the pitched voice channel mode is used, this setting applies to the entire note range.)

Note: *The "accept" setting enables a voice's release rate setting. Generally, you should use this setting to control the length of notes played by pitched voices such as bass guitars and other melodic instruments. The "ignore" setting, which disables the voice's release rate setting and causes key off messages to be ignored, is appropriate for most percussion instruments, which have fixed note lengths.*

4. Pitch Bend

RHYTHM KITS & PITCHED VOICES

Summary: Sets the pitch bend range for the selected channel, and enables or disables pitch bend control of the selected rhythm kit note or pitched voice.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the note, pitch bend range, and pitch bend switch settings. Use the [+1/YES] or [–1/NO] key to select a different note, or to change the pitch bend range and switch settings. (The note setting is not available when editing a pitched voice setup.)

- *Channel mode (KIT, VCE):* Indicates which channel mode has been selected. This setting can only be changed from the Play mode display (page 51).
- *Note (B0/C5...B4):* Selects a note from the current rhythm kit. (The note range C-2–C8 is displayed when "VCE" appears as the channel mode.)
- *Pitch bend range (0...12):* Sets the range, in half steps, over which received pitch bend messages can control the pitch of notes on the current channel. When this parameter is set to 12, the pitch can be bent up or down as much as one octave. When it is sent to 0, received pitch bend messages will have no effect.

- *Pitch bend switch (on, off):* Determines whether the RM50 will respond to pitch bend information for the selected note. (When the pitched voice channel mode is used, this setting applies to the entire note range.)

Note: *It is important to note with respect to this function that while the pitch bend switch enables or disables the reception of pitch bend information for individual notes in a rhythm kit, the pitch bend range setting applies to all of the notes in the kit. The pitch bend range setting is the only setting which applies to all the notes in a rhythm kit.*

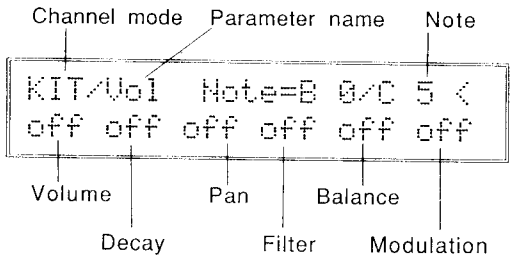
You can assign pitch to be controlled by control change or aftertouch messages rather than pitch bend messages using the Control Change Assign function of the MIDI Utility group (see page 99).

The RM50 will respond to no control change, pitch bend, or aftertouch messages if the Control Change function, also found in the MIDI Utility group, is turned off (see page 98).

5. Control Change

RHYTHM KITS & PITCHED VOICES

Summary: Specifies which parameters of the voice played by the selected rhythm kit note or pitched voice can be affected by control change, pitch bend, or aftertouch messages.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer to the note setting or among the parameter settings in the lower row of the LCD. Use the [+1/YES] or [–1/NO] key to select a different note or change the voice parameter settings. (The note setting is not available when editing a pitched voice setup.)

- *Channel mode (KIT, VCE):* Ind51icates which channel mode has been selected. This setting can only be changed from the Play mode display (page 51).
- *Parameter name (Vol, Dcy, Pan, Fil, Bal, Mod):* Shows the name of the voice parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Note (B0/C5...B4):* Selects a note from the current rhythm kit. (The note range C-2–C8 is displayed when "VCE" appears as the channel mode.)
- *Volume (off, on):* Determines whether the volume of the voice played by the selected rhythm kit note or pitched voice can be affected by control change messages.
- *Decay (off, on):* Determines whether the decay of the voice played by the selected rhythm kit note or pitched voice can be affected by control change messages.
- *Pan (off, on):* Determines whether the panning of the voice played by the selected rhythm kit note or pitched voice can be affected by control change messages.
- *Filter (off, on):* Determines whether the filter cutoff frequency of the voice played by the selected rhythm kit note or pitched voice can be affected by control change messages.
- *Balance (off, on):* Determines whether the balance of the voice played by the selected rhythm kit note or pitched voice can be affected by control change messages.
- *Modulation (off, on):* Determines whether the LFO modulation depth of the voice played by the selected rhythm kit note or pitched voice can be affected by control change messages.

Note: The control change parameters can be enabled and disabled individually for each of the notes in a rhythm kit. When the pitched voice channel mode is used, the settings apply to the entire note range.

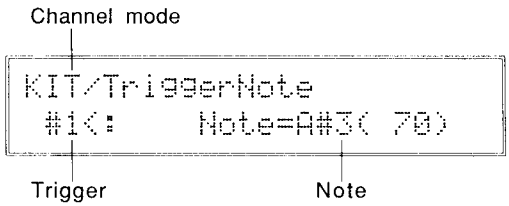
You can alter the control change number assignments for these six parameters, or assign them to be controlled by pitch bend or aftertouch messages instead, using the Control Change Assign function of the MIDI Utility group (see page 99).

The RM50 will respond to no control change, pitch bend, or aftertouch messages if the Control Change function, also found in the MIDI Utility group, is turned off (see page 98).

6. Trigger Note Assign

RHYTHM KITS ONLY

Summary: Assigns a rhythm kit note to each of the RM50's six audio trigger inputs.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer between the trigger and note settings. Use the [+1/YES] or [–1/NO] key to select a different trigger, or to assign a different note to the selected trigger.

- *Channel mode (KIT, VCE):* Indicates which channel mode has been selected. This setting can only be changed from the Play mode display (page 51).
- *Trigger (#1...#6):* Selects one of the RM50's six audio trigger inputs.
- *Note (B0/C5...B4):* Selects a note from the current rhythm kit.

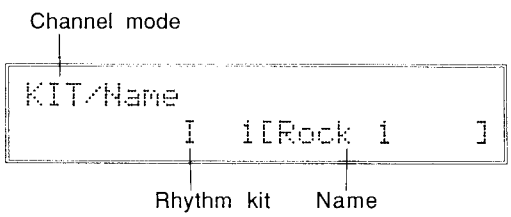
Notes: *This function simply assigns a rhythm kit note to each of the RM50's audio trigger input jacks. Detailed parameters controlling the audio-to-MIDI converter are available as Utility mode functions (pages 92 to 94).*

A line of dashes is displayed in the lower row of the LCD when "VCE" appears as the channel mode. When the channel mode is set to "pitched voice" or "off" in Play mode, the trigger inputs will play the notes assigned to them by the Trigger Input 3 function in the System Utility group (see page 93).

7. Rhythm Kit Name

RHYTHM KITS ONLY

Summary: Assigns a name to the selected rhythm kit.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to select the character you wish to change (the selected character will blink). Then use the [+1/YES] or [–1/NO] key to change the selected character.

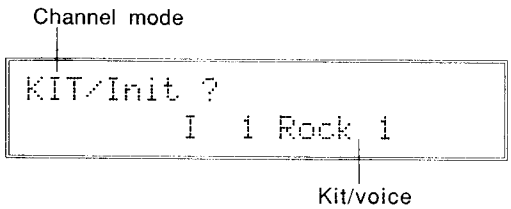
- *Channel mode (KIT, VCE):* Indicates which channel mode has been selected. This setting can only be changed from the Play mode display (page 51).
- *Rhythm kit:* Indicates the bank and number of the rhythm kit to be named. The rhythm kit selection cannot be changed using this display.
- *Name:* Allows you to assign the selected rhythm kit a name of up to ten characters. The available characters are the same as those listed for the Macro Name function on page 54.

Note: *A line of dashes is displayed in the lower row of the LCD when "VCE" appears as the channel mode. It is not possible to name a pitched voice in Setup Edit mode, since pitched voices automatically use the name of the voice assigned to them using the Voice Assign function (see page 59).*

8. Setup Initialize

RHYTHM KITS & PITCHED VOICES

Summary: Initializes all settings of the selected rhythm kit or pitched voice.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Press the [SHIFT] and [+1/YES] keys to initialize all note and channel settings for the selected rhythm kit or pitched voice. The message "Sure?" will appear in the upper row of the LCD. Press either the [+1/YES] key to confirm your decision, or the [–1/NO] or [EXIT] key to cancel the initialize operation.

- *Channel mode (KIT, VCE):* Indicates which channel mode has been selected. This setting can only be changed from the Play mode display (page 51).
- *Kit/voice:* Indicates the bank, number, and name of the rhythm kit or pitched voice to be initialized. The rhythm kit or pitched voice selection cannot be changed using this display.

Notes: *When you initialize a rhythm kit, the name of the kit will remain unchanged. The kit's other settings will be given the default values listed below.*

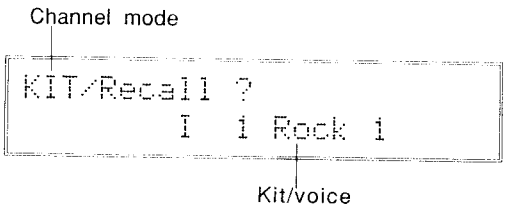
FUNCTION	SETTINGS
Voice Assign	off
Voice Attenuation	0
Key Off	ignore
Pitch Bend	Range: 0, Sw: off
Control Change	off off off off off off
Trigger Note Assign	B0/C5

When you initialize a pitched voice, the Voice Assign selection will remain unchanged. All other Setup Mode settings available with pitched voices (i.e., the Key Off, Pitch Bend, and Control Change settings) will be set to the same values as those listed above for rhythm kits.

9. Setup Recall

RHYTHM KITS & PITCHED VOICES

Summary: Restores the settings of the selected rhythm kit or pitched voice to the values they had prior to editing.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Press the [SHIFT] and [+1/YES] keys to restore all channel and note settings for the selected rhythm kit or pitched voice to the condition they had prior to editing. The message "Sure?" will appear in the upper row of the LCD. Press either the [+1/YES] key to confirm your decision, or the [–1/NO] or [EXIT] key to cancel the recall operation. Repeat the last two steps, if desired, to return to the edited settings.

- *Channel mode (KIT, VCE):* Indicates which channel mode has been selected. This setting can only be changed from the Play mode display (page 51).
- *Kit/voice:* Indicates the bank, number, and name of the rhythm kit or pitched voice to be recalled. The rhythm kit or pitched voice selection cannot be changed using this display.

Notes: *Whenever you edit a rhythm kit or pitched voice, the first letter of the channel mode indicator will change to a small letter (i.e., "kIT" or "vCE") to remind you that the data has been edited. The RM50 will save the unedited data in a memory area known as the "recall buffer" even if you turn the power off. If you decide you don't like the changes you've made, you can use the Recall function to restore the original data.*

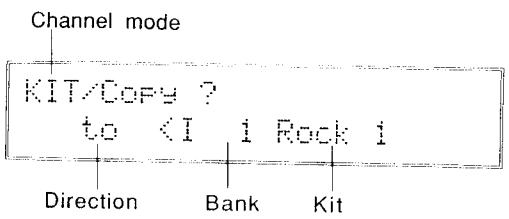
When you use the Recall function to recall the old data for a rhythm kit or pitched voice, the edited data will take its place in the recall buffer. This means you can use the recall buffer to switch back and forth between the new and old settings, to compare the sounds they produce.

Once you begin editing another rhythm kit or pitched voice, however, all data for the previous kit or pitched voice will be cleared from the buffer, and the currently recalled settings will become permanent. The channel mode indicator will again begin with a capital letter ("KIT" or "VCE") the next time you select that rhythm kit or pitched voice, indicating that it is no longer possible to recall the old data.

10. Rhythm Kit Copy

RHYTHM KITS ONLY

Summary: Copies rhythm kit settings from one bank and kit number to another.



Procedure: Use the [PAGE+] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the direction, bank, and kit settings. Use the [+1/YES] or [–1/NO] key to change these settings. Press the [SHIFT] and [+1/YES] keys to copy the rhythm kit. The message "Sure?" will appear in the upper row of the LCD. Press either the [+1/YES] key to confirm your decision, or the [–1/NO] or [EXIT] key to cancel the copy operation.

- *Channel mode (KIT, VCE):* Indicates which channel mode has been selected. This setting can only be changed from the Play mode display (page 51).
- *Direction (to, from):* Determines whether the RM50 will copy the currently selected rhythm kit to another bank and kit number, or whether it will copy the data from another kit to the currently selected bank and kit number.
- *Bank (P, I, C):* Selects one of three rhythm kit banks.
- *Kit (1...64):* Selects a rhythm kit number from the specified bank. The name of the selected kit appears after the kit number.

Notes: *This function is useful when you want to create a slightly edited version of an existing rhythm kit. Do not select the preset bank (P) if you have selected "to" as the direction, or an error message will appear when you attempt to copy the data.*

When you use the "from" setting to copy kit data to the current bank and kit numbers, all of the current kit settings will be replaced by the copied data. However, you can still restore the original settings using the Setup Recall function described on page 65.

If you use the "to" setting to copy rhythm kit data, recall of the replaced data will be impossible.

A line of dashes will be displayed in the lower row of the LCD when "VCE" appears as the channel mode. The rhythm kit copy function is not available when the pitched voice channel mode is used.

VOICE EDIT MODE

The Voice Edit mode functions let you modify the voices which have been assigned to rhythm kit notes or selected as pitched voices in Setup Edit mode. The changes you make to a voice in this mode will affect all rhythm kits or pitched voice setups which use the voice.

Any voice that you wish to edit must first be assigned to a rhythm kit note or select as a pitched voice by the Voice Assign display in Setup Edit mode (see page 59). Select the note or pitched voice in this display, then press the [EDIT] key to shift to Voice Edit mode.

The RM50 will enter Voice Edit mode while a preset voice is selected, in order to let you observe the contents of the preset selections. If you try to change any of the parameter values, however, it will display an error message stating that you have selected a protected memory bank. Should this happen, press the [EXIT] key to clear the error message.

If a few simple edits will suffice, you may want to try editing a corresponding voice variation from the appropriate internal (I) or card (C) bank. If you wish make more drastic changes to a preset voice, first copy the desired voice to the internal or card user memory bank (I-MX or C-MX), then edit the copy.

The RM50 will not enter Voice Edit mode at all if the voice assignment for the current rhythm kit note is set to "off".

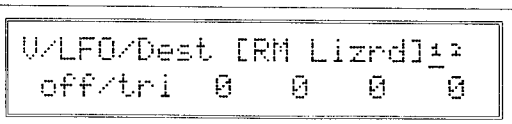
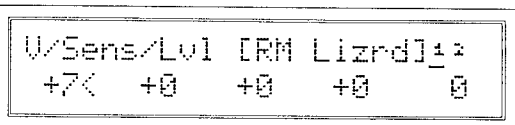
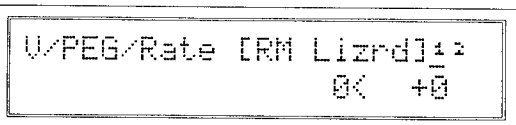
To return to Setup Edit mode from Voice Edit mode, press the [EXIT] key. To return directly to Play mode, either press the [EXIT] key twice, or press the [PLAY] key.

Contents of this chapter

Functions in Voice Edit Mode

The functions available in Voice Edit mode are listed below. Once you have entered this mode, you can select any of these functions using the [PAGE+] or [PAGE–] keys.

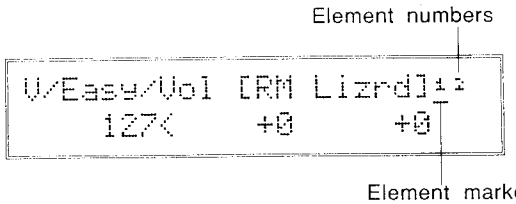
None of the functions in this mode can be used to edit preset voices. (You can use the Voice Copy function to copy preset voice data to a user voice.) Many of the functions listed below are only available when editing user voices (those in the I-MX and C-MX banks). The availability of each function is noted in the rightmost column of the table.

DISPLAY	DISPLAY NAME	DESCRIPTION	AVAILABILITY
	1. Easy Edit 1	Sets the voice's overall volume, balance, and panning.	VOICE VARIATIONS & USER VOICES
	2. Easy Edit 2	Sets a voice's overall pitch, decay, and filter offsets.	VOICE VARIATIONS & USER VOICES
	3. Waveform Select	Selects an AWM2 waveform to be played by the selected voice element, and the direction in which it waveform is to be played.	USER VOICES ONLY
	4. Element Level, Pan, and Pitch	Sets the basic level, panning, and pitch of the selected voice element.	USER VOICES ONLY
	5. Element EG	Determines the shape of the level envelope generator for the selected voice element.	USER VOICES ONLY
	6. Element Filter	Sets the filter response type, cutoff frequency, resonance, and EG parameters for the selected voice element.	USER VOICES ONLY
	7. Element LFO	Specifies how the LFO (low frequency oscillator) modulates the selected voice element.	USER VOICES ONLY
	8. Element Sensitivity	Determines how deeply the output level, pitch, EG, and filter cutoff frequency of the selected voice element change in response to changes in note velocity, and how deeply the LFO changes in response changes in note modulation.	USER VOICES ONLY
	9. Element Pitch EG	Determines the shape of the pitch EG (envelope generator) for the selected voice element.	USER VOICES ONLY

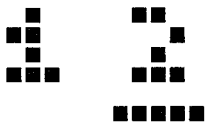
DISPLAY	DISPLAY NAME	DESCRIPTION	AVAILABILITY
V/Dly/Reps [RM Lizrd]1:2 off<off 1 +0 +00.0	10. Element Delay	Specifies whether and how the repeated delay effect will be applied to the selected voice element.	
V/VelCurve [RM Lizrd]1:2 1:Linear <	11. Element Velocity Curve	Specifies how the element will interpret received note velocity information.	USER VOICES ONLY
V/Assign [RM Lizrd]1:2 poly<off stereo 63	12. Voice Output	Determines whether the selected voice is to be played as a monophonic or polyphonic voice, specifies whether it is to be alternated with any other voices, and assigns it to the RM50's stereo or individual output jacks.	USER VOICES ONLY
V/Name [RM Lizrd]1:2 Voice Name =[RM Lizrd]	13. Voice Name	Assigns a name to the selected voice.	USER VOICES ONLY
V/Init? I-MX 42 RM Lizrd	14. Voice Initialize	Initializes all parameter settings of the selected voice.	USER VOICES ONLY
V/Recall? I-MX 42 RM Lizrd	15. Voice Recall	Restores the parameters of the selected voice pitched voice to the values they had prior to editing.	VOICE VARIATIONS & USER VOICES
V/Copy? to <I-MX 42 RM Lizrd	16. Voice Copy	Copies voice parameters from one bank and voice number to another.	ALL VOICES

Element Select

When you edit a voice, a pair of small numerals (1 and 2) representing the voice's two elements will appear in the upper right corner of the LCD, after the voice's name. One of the numerals will be underlined by an element marker, as shown in the LCD below.

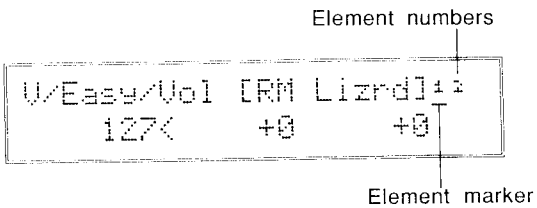


This marker indicates which of the two elements is currently selected for editing. You can move the marker to the other element number, and thus display the parameter values for that element, by pressing the [SHIFT] and [EDIT] keys. (The display will not change when the displayed parameters affect the voice as a whole rather than individual elements.) This handy feature allows you to make quick changes to both of a voice's elements.

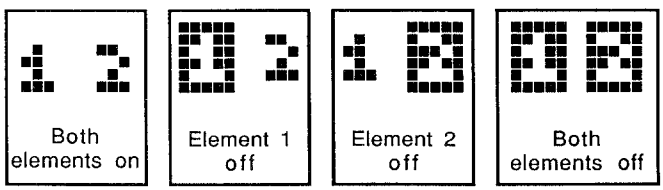


Element On/Off

It is possible to turn either or both of a voice's elements off when editing the voice's parameters. The element numbers described for the Element Select function above are normally displayed as dark characters on a light background, like the rest of the characters in the display, when the element is turned on.



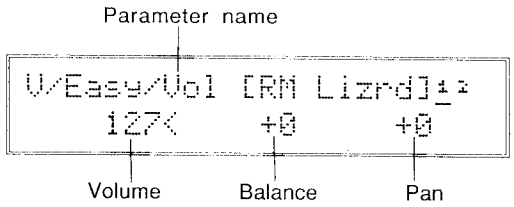
You can switch Element 1 on or off by pressing the [SHIFT] and [PAGE–] keys. To switch Element 2 on or off, use the [SHIFT] and [PAGE+] keys. When you turn an element off, the element number will be reversed, appearing as a light number on a dark background.



You can use this function to temporarily switch one element off when editing a two-element voice in order to get an idea how the changes you make are affecting the sound produced by an element. If you turn both elements off, the voice will of course produce no sound at all.

1. Easy Edit 1

Summary: Sets the voice's overall volume, balance, and panning.



Procedure: Use the [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the volume, balance, and pan parameters. Use the [+1/YES] or [–1/NO] key to change the values of these parameters.

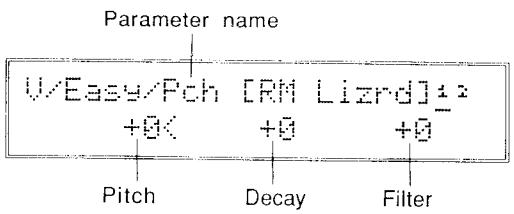
- *Parameter name (Vol, Bal, Pan):* Shows the name of the voice parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Volume (0...127):* Sets the voice's overall volume. The voice becomes louder as this value is increased. It produces no sound whatsoever with a value of 0.
- *Balance (–64...+64):* Adjusts the balance between the voice's two elements. Negative values raise the volume of Element 1; positive values raise the volume of Element 2. Changes to this setting will not affect voices that use only one element.
- *Pan (–32...+32):* Adjusts the voice's panning. Negative values move the voice's stereo position to the left; positive values move it to the right.

Notes: *The balance and pan parameters are offsets which adjust the level and pan values set for individual elements using parameters available with the Element Level, Pan, and Pitch function described on page 74.*

The pan setting will have no effect if you assign the voice to one of the INDIVIDUAL OUTPUT jacks using the Voice Output function described on page 82.

2. Easy Edit 2

Summary: Sets a voice's overall pitch, decay, and filter offsets.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the pitch, decay, and filter parameters. Use the [+1/YES] or [–1/NO] key to change the values of these parameters.

- *Parameter name (Pch, Dcy, Fil):* Shows the name of the voice parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Pitch (–64...+64):* Adjusts the voice's pitch. Positive values raise the voice's pitch; negative values lower it. The maximum and minimum settings of +64 and –64 raise or lower the pitch voice by one full octave.
- *Decay (–64...+64):* Adjusts the voice's decay. Positive values lengthen the decay time; negative values shorten it.

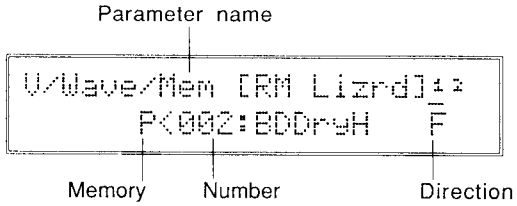
- *Filter (–64...+64):* Adjusts the filter cutoff frequency. Positive values raise the cutoff frequency, making the voice brighter; negative values lower it, making the voice darker. This setting will have no effect on voices which do not have filtered elements.

Note: *These parameters are offsets which adjust the pitch, decay, and pan values set individually for the voice's elements using parameters available with the Element Level, Pan, and Pitch function (page 74), the Element EG function (page 75), and the Element Filter function (page 76).*

3. Waveform Select

USER VOICES ONLY

Summary: Selects an AWM2 waveform to be played by the selected voice element, and the direction in which it waveform is to be played.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the memory, number, and direction parameters. Use the [+1/YES] or [–1/NO] key to change the values of these parameters.

- *Parameter name (Mem, Num, Dir):* Shows the name of the element parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Memory (P, W1, W2, W3, I):* Selects a waveform memory location. Select "P" to use one of the RM50's preset waveforms, "I" to use a waveform which you have copied into the optional wave RAM, and "W1", "W2" or "W3" to use a waveform from a wave card in the corresponding WAVEFORM slot. You can also set the memory parameter for Element 2 to "off" when creating a voice that uses only one element.
- *Number:* Selects a waveform from the selected waveform memory area. The name of the waveform will be displayed after the number.
- *Direction (F, R):* Specifies the direction in which the selected waveform is to be played. Select "F" to play the waveform normally, or "R" to play it in reverse.

Notes: *If you select a card memory location (W1, W2, or W3) corresponding to a WAVEFORM slot in which no card is inserted, a row of asterisks will appear in the place of the waveform name. The same row of asterisks will appear if you select the internal memory location (I) while the wave RAM is empty.*

The message "Not Asgn!" will be displayed instead of a waveform name if you insert a wave card in one of the WAVEFORM slots while a card memory is selected. Should this happen, press the [+1/YES] or the [–1/NO] key to clear the error message, then select the appropriate memory location.

If, after selecting a waveform from a wave card, you remove the wave card from its WAVEFORM slot – or if you display the Waveform Select function while editing a voice using such a waveform without inserting the right wave card in one of the WAVEFORM slots – the name of the wave card (i.e., "RSC3071") will appear in place of the waveform name. Insert the specified card in one of the WAVEFORM slots to use the previously selected waveform, or press the [+1/YES] or the [–1/NO] key to clear the error message and select a new memory area and waveform.

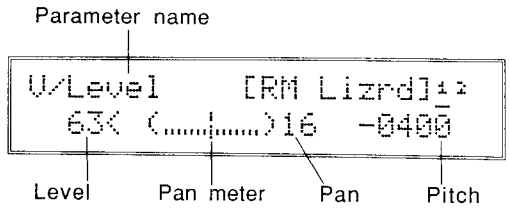
Once you have created a voice using a waveform from a wave card (memory locations W1, W2, or W3), the wave card in question must be inserted in the one of the RM50's three WAVEFORM slots in order for the voice to produce any sound. Likewise, a voice which has been set to use a waveform from the internal (I) memory will fail to produce any sound if the waveform in question is subsequently erased from the wave RAM using the Waveform Delete function (see page 106).

For details on the use of the internal waveform memory, please refer to the description of the wave RAM option on pages 35 through 37.

4. Element Level, Pan, and Pitch

USER VOICES ONLY

Summary: Sets the basic level, panning, and pitch of the selected voice element.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the level, pan, and pitch parameters. Use the [+1/YES] or [–1/NO] key to change the values of these parameters.

- *Parameter name (Level, Pan, Pitch):* Shows the name of the element parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Level (0...63):* Sets the element level. The element becomes louder as this value is raised. It produces no sound whatsoever with a value of 0.
- *Pan meter:* Displays the element panning graphically. The stereo position of the element, indicated by the location of the mark above the meter, changes as you adjust the value of the pan parameter.
- *Pan (0...32):* Sets the element's panning. Lower values move the voice's stereo position to the left; higher values move it to the right. The element will be centered with a value of 16.
- *Pitch (–3600...+3600):* Sets the element's pitch, in units of one cent. Positive values raise the waveform's basic pitch; negative values lower it.

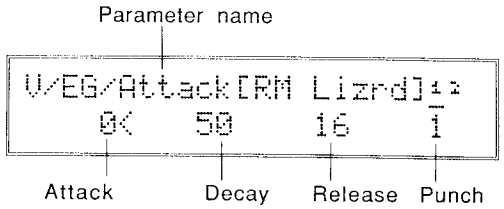
Notes: *When you use the [+1/YES] or [–1/NO] key to adjust the pitch, the value will change in one-cent units. You can also raise or lower the pitch in units of 100 cents by pressing the [+1/YES] or [–1/NO] key while holding down the [SHIFT] key.*

The pan setting will have no effect if you assign the voice to one of the INDIVIDUAL OUTPUT jacks using the Voice Output function described on page 82.

5. Element EG

USER VOICES ONLY

Summary: Determines the shape of the level EG (envelope generator) for the selected voice element.

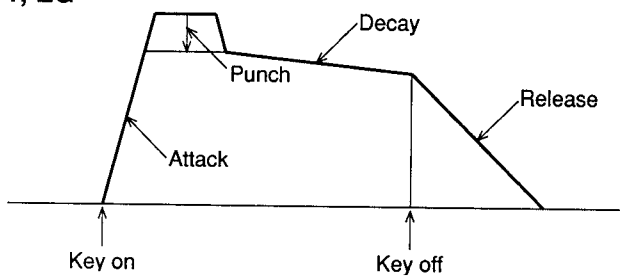


Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the attack, decay, release, and punch parameters. Use the [+1/YES] or [–1/NO] key to change the values of these parameters.

- *Parameter name (Attack, Decay, Release, Punch):* Shows the name of the element EG parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Attack (0...63):* Sets the speed at which the element's output rises from 0 to its maximum level after a note on message is received. The attack time increases as this value is raised.
- *Decay (0...63):* Sets the speed at which the element's output falls from its maximum level. The decay time increases as this value is raised.
- *Release (0...63):* Sets the speed at which the element's output drops to 0 after a key off message is received. The release time increases as this value is raised. (This setting has no effect on voices played by rhythm kit notes or pitched voices for which the RM50 has been set to ignore key off messages.)
- *Punch (0...7):* Sets an amount of time for which the element's attack level is held at the onset of a note. The attack of the element becomes more emphatic as this value is raised.

Notes: The Element EG parameters affect the output of the selected element as shown in the illustration below.

1, EG



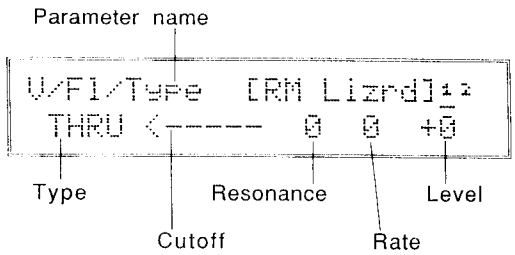
When a note message is received, the element's output will rise at the rate (R1) set by the attack parameter to the maximum output level specified using the Element Level, Pan, and Pitch function described on the preceding page. If a punch value has been set, the maximum output level will be increased by this value for a fixed time at the onset of the note. The level will then drop at the rate (R2) set by the decay parameter until a key message is received, from which point it will drop at the release rate (R3) to 0.

The release time setting has no effect on a voice when the RM50 is set to ignore key off messages for a note (or channel) playing that voice. In such an instance, the level of the note will continue to fall at the rate (R2) set by the decay parameter, until it reaches 0.

6. Element Filter

USER VOICES ONLY

Summary: Sets the filter response type, cutoff frequency, resonance, and EG parameters for the selected voice element.

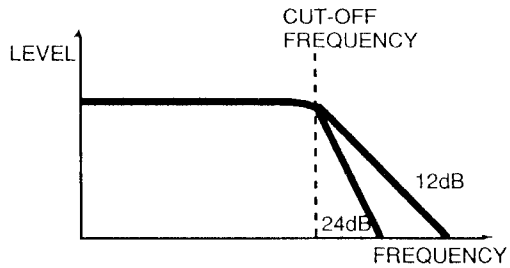


Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the type, cutoff, resonance, rate, and level parameters. Use the [+1/YES] or [–1/NO] key to change the values of these parameters.

- *Parameter name (Type, Cutoff, Reso, Rate, Level):* Shows the name of the element filter parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Type (THRU, LPF12, LPF24, HPF12, HPF24):* Specifies the type of filter response applied to the element. The "THRU" setting turns the filter off. The different filter response types are described in detail in the notes below.
- *Cutoff:* Sets the point at which the filter begins to reduce frequencies passed. This parameter can be set to a value from 0.00 to 22.4 kHz when an LPF response is selected, or from 0.00 to 11.7 kHz when an HPF response is used.
- *Resonance (0...99):* Sets the degree of filter resonance produced when filtering the element with a low pass filter. Higher settings result in greater resonance. This parameter has no effect when the "THRU", "HPF12", or "HPF24" filter types are selected.
- *Rate (0...63):* Sets the rate of the change created by the filter EG. The speed of the filter sweep increases as this value is raised.
- *Level (–63...63):* Sets an amount by which the filter EG alters the cutoff frequency. Positive values raise the cutoff value; negative values lower it.

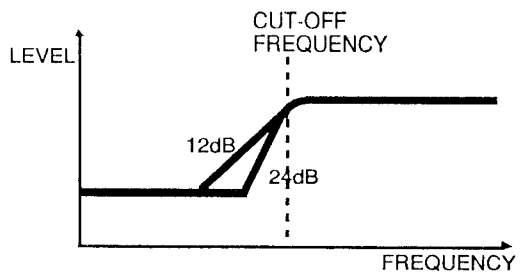
Notes: *The LPF type settings produce a filter response that allows only frequencies below the cutoff frequency to pass. The "LPF12" setting has a 12dB per octave cutoff slope; the "LPF24" setting has a steeper 24dB per octave slope. With this response type, a lower cutoff frequency reduces the range of high frequencies passed, making the sound "darker" or "rounder."*

Low Pass Filter Response



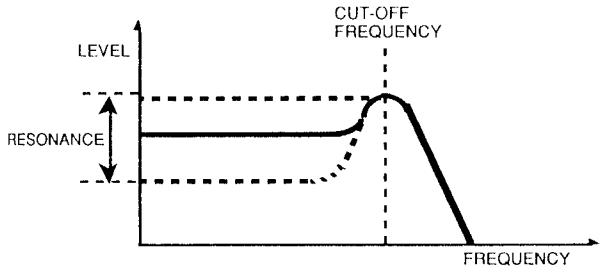
The HPF type settings produce a filter response that allows only frequencies above the cutoff frequency to pass. The "HPF12" setting has a 12dB per octave cutoff slope, and the "HPF24" setting has a steeper 24dB per octave slope. With this response type, a higher cutoff frequency reduces the range of low frequencies passed, making the sound "thinner" or "sharper."

High Pass Filter Response



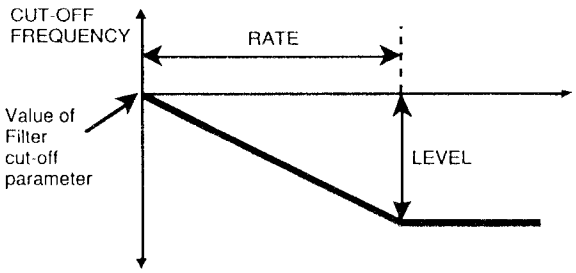
The resonance parameter has a similar effect to the "resonance" settings on traditional analog synthesizer filters: it determines the height of a peak in the filter response at the cutoff frequency. Higher values produce a higher resonant peak, emphasizing a narrow band of frequencies at the filter cutoff.

RESONANCE



The level and rate parameters define the shape of the filter EG which alters the filter response at the onset of a note. The level parameter determines how far the filter EG will raise or lower the cutoff frequency. The "rate" parameter determines how fast the filter will sweep from the normal cutoff frequency to the frequency determined by the level parameter. A rate setting of 63 produces an almost instantaneous sweep; the minimum setting of 0 produces the slowest change.

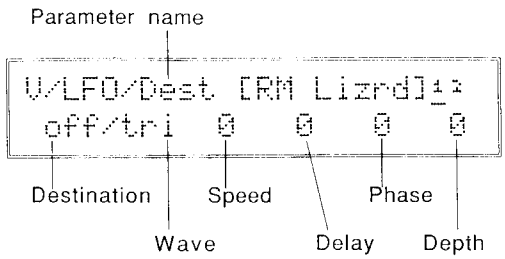
Filter EG



7. Element LFO

USER VOICES ONLY

Summary: Specifies how the LFO (low frequency oscillator) modulates the selected voice element.

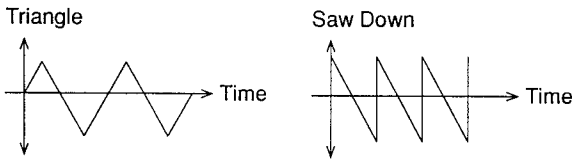


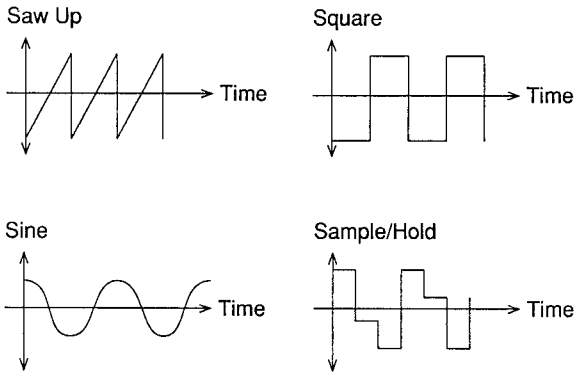
Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the destination, wave, speed, delay, phase, and depth parameters. Use the [+1/YES] or [–1/NO] key to change the values of these parameters.

- *Parameter name (Dest, Wave, Speed, Delay, Phase, Depth):* Shows the name of the element LFO parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Destination (off, amp, pch, fil):* Selects the element component which the LFO is to modulate. Apply the LFO to the element amplifier (amp) for a tremolo effect, or to pitch (pch) to produce vibrato. Selecting the filter cutoff frequency (fil) as the destination will only produce an effect on elements which are filtered using the Element Filter function described above. Setting "off" as the destination will disable LFO modulation, in which case all of the following parameters will be ignored.
- *Wave (tri, dwn, up, squ, sin, S/H):* Selects the shape of the waveform produced by the LFO. The shape of each waveform type is shown in the note below.
- *Speed (0...99):* Sets the speed of LFO modulation. Higher settings result in faster modulation.
- *Delay (0...99):* Sets the delay time before modulation begins. The delay time becomes longer as this value is raised.

- Phase (0...63): Sets the point of the LFO wave from which the LFO will begin modulating at the onset of a note.
- Depth (0...127): Sets the LFO modulation depth, which determines how greatly the LFO will affect the element level, pitch, or filter cutoff frequency.

***Note:** The RM50 allows you to select from the six LFO waveform shapes depicted below:*

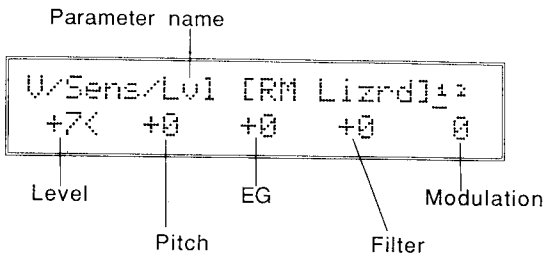




8. Element Sensitivity

USER VOICES ONLY

Summary: Determines how deeply the output level, pitch, EG, and filter cutoff frequency of the selected voice element change in response to changes in note velocity, and how deeply the LFO changes in response changes in note modulation.



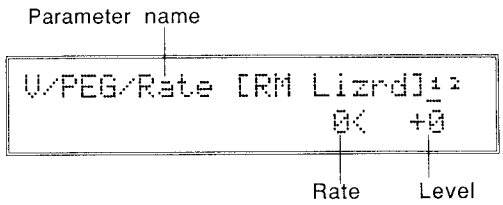
Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the level, pitch, EG, filter, and modulation parameters. Use the [+1/YES] or [–1/NO] key to change the values of these parameters.

- *Parameter name (Lvl, Pch, EG, Fil, Mod):* Shows the name of the element sensitivity parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Level (–7...+7):* Specifies how the element's output level changes in response to changes in note velocity. Positive values increase the output volume; negative values lower it. A setting of +0 results in no output level variation.
- *Pitch (–7...+7):* Specifies how the element's pitch changes in response to changes in note velocity. Positive values raise the pitch; negative values lower it. A setting of +0 results in no pitch variation.
- *EG (–7...+7):* Specifies how the element's EG changes in response to changes in note velocity. Positive values produce a faster attack and a slower decay; negative values produce slower attack and a faster decay. A setting of +0 results in no EG variation.
- *Filter (–7...+7):* Specifies how the element's filter cutoff frequency changes in response to changes in note velocity. Positive values raise the cutoff frequency; negative values lower it. A setting of +0 results in no cutoff frequency variation.
- *Modulation (0...+7):* Specifies how deeply the element's LFO modulation will change in response to changes in note modulation. The depth of the modulation response increases as this value is raised.

9. Element Pitch EG

USER VOICES ONLY

Summary: Determines the shape of the pitch EG (envelope generator) for the selected voice element.

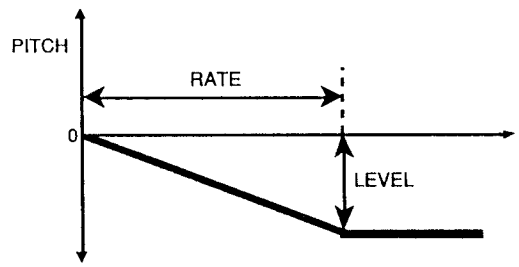


Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer between the rate and level parameters. Use the [+1/YES] or [–1/NO] key to change the values of these parameters.

- *Parameter name (Rate, Level):* Shows the name of the element pitch EG parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Rate (0...63):* Sets the rate of the change created by the pitch EG. The speed of the pitch change increases as this value is raised.
- *Level (–72...72):* Sets an amount by which the pitch EG alters the element pitch. Positive values raise the pitch; negative values lower it.

Note: *The pitch EG alters the element's pitch at the onset of a note. The level parameter determines how far the pitch EG will raise or lower the pitch. The "rate" parameter determines how fast the pitch will sweep from the normal value to the value determined by the level parameter. A rate setting of 63 produces an almost instantaneous sweep; the minimum setting of 0 results in no change.*

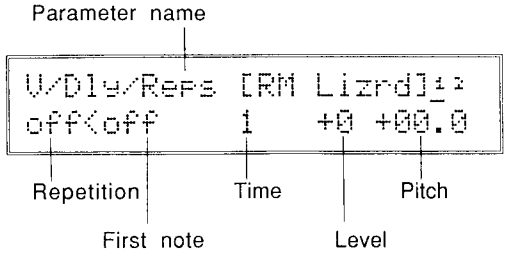
Pitch EG



10. Element Delay

USER VOICES ONLY

Summary: Specifies whether and how the repeated delay effect will be applied to the selected voice element.



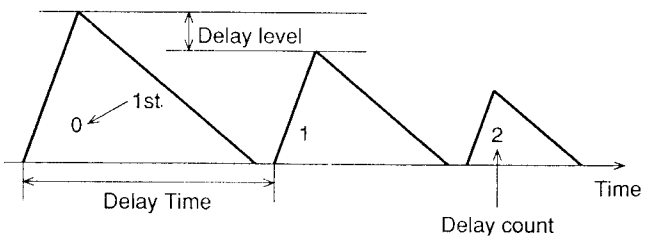
Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the repetition, first note, time, level, and pitch parameters. Use the [+1/YES] or [–1/NO] key to change the values of these parameters.

- *Parameter name (Reps, 1st, Time, Level, Pitch):* Shows the name of the element delay parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.

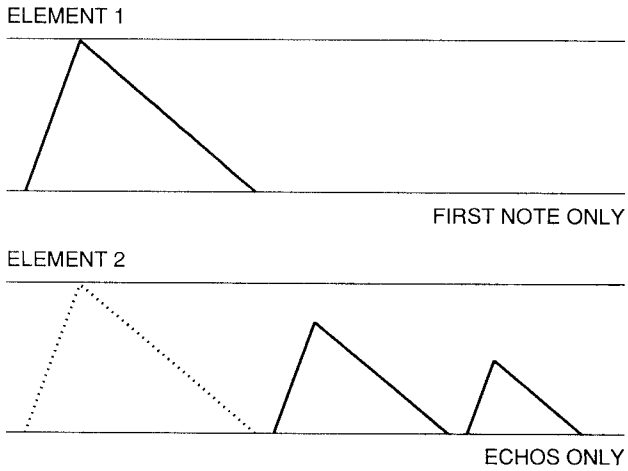
- *Repetition (off, 1...7):* Sets the number of delay repetitions to follow the first note. Up to seven repetitions can be specified. If you set this parameter to "off", the settings of all other parameters in this display will be ignored.
- *First note (off, on):* Switches the initial note (the note which is actually received as a note on message) on or off. When this parameter is set to "off", the RM50 will play the delayed echoes of the note, but not the note they are echoing. Some applications of this function are described in the notes below.
- *Time (1...128):* Sets the delay time between delay repetitions, in units of 10 msec.
- *Level offset (–7...+7):* Sets the amount by which the element output level changes with each repetition. Positive values increase the level cumulatively; negative values decrease it cumulatively. The output level will remain constant when a value of +0 is set.
- *Pitch offset (–12.0...+12.0):* Sets the amount by which the element pitch changes with each repetition. Positive values raise the pitch of each repetition; negative levels decrease it. The maximum and minimum settings of +12.0 and –12.0 raise or lower the pitch voice by one full octave. The pitch remains constant when a value of +0.00 is set.

Notes: *When using this function, you will usually want to set a negative value for the level offset parameter to create a series of diminishing echoes similar to those commonly produced by digital delay units.*

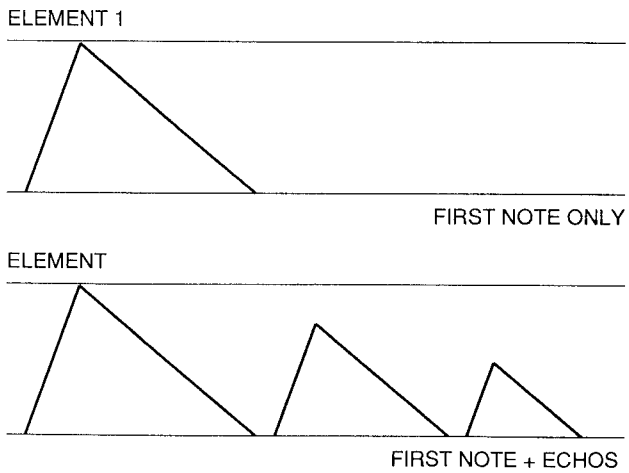
2, Delay



The first note setting lets you turn off the initial note, to produce a series of disconnected echoes. When editing a voice with two elements, you can create an interesting effect by playing the initial note with one element, and the delay echoes with the other.



As a variation on this idea, you can have both elements play the initial note, but only one of them play the echoes.

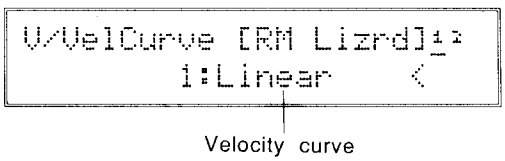


By adjusting the value of the pitch offset parameter, you can create some very interesting effects.

11. Element Velocity Curve

USER VOICES ONLY

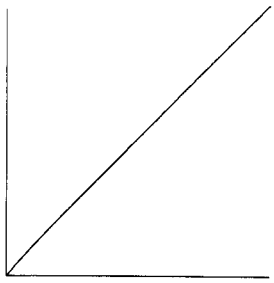
Summary: Specifies how the element will interpret received note velocity information.

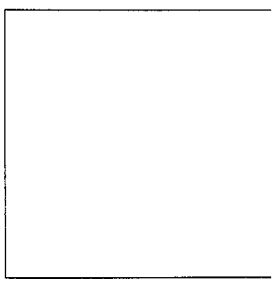


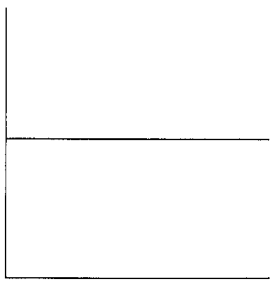
Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [+1/YES] or [–1/NO] key to select a velocity curve.

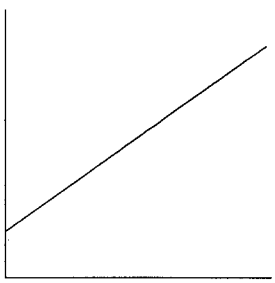
- *Velocity curve (1...12):* Selects the velocity curve used to interpret note velocity data for the element. The available velocity curve settings are detailed in the note below.

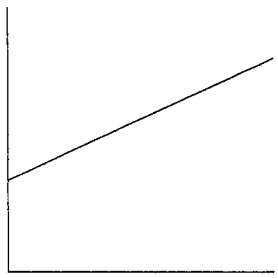
Note: *The RM50 allows you to select one of twelve velocity curves for each voice element. Each velocity curve interprets received velocity information in a different manner, as shown by the illustrations below.*

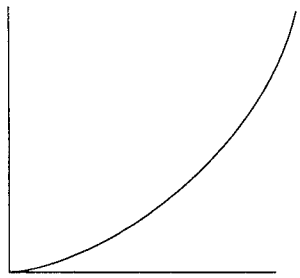

1: Linear

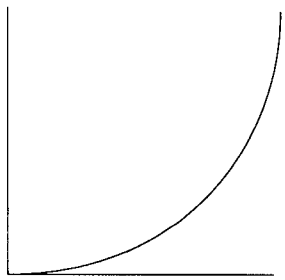

2: Constant1

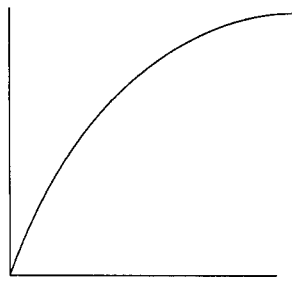

3: Constant2

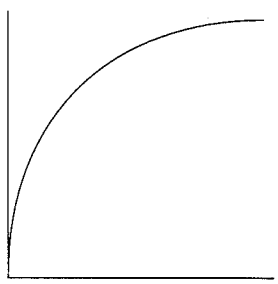

4: Offset1

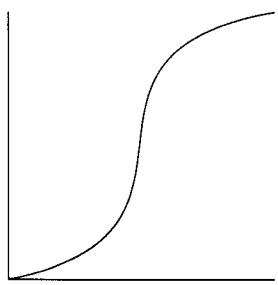

5: Offset2

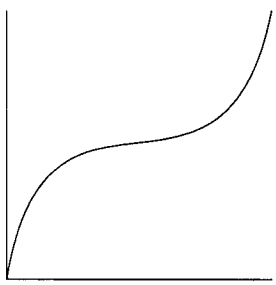

6: Hard1

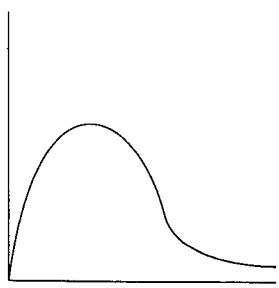

7: Hard2


8: Easy1


9: Easy2


10: Crossfade1

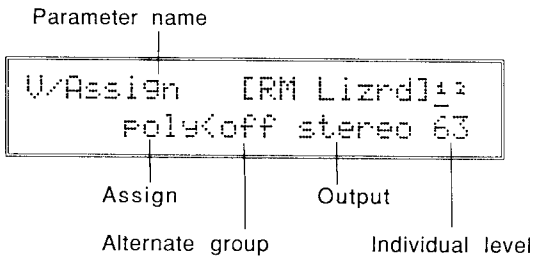

11: Crossfade2


12: Crossfade3

12. Voice Output

USER VOICES ONLY

Summary: Determines whether the selected voice is to be played as a monophonic or polyphonic voice, specifies whether it is to be alternated with any other voices, and assigns it to the RM50's stereo or individual output jacks.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the assign, alternate group, output, and individual level parameters. Use the [+1/YES] or [–1/NO] key to change the values of these parameters.

- *Parameter name (Assign, AltGroup, Output, IndLevel):* Shows the name of the element output parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Assign (mono, poly, mono/alt, poly/alt):* Determines whether the voice is to be played monophonically or polyphonically. When "mono" is selected, each note played using the voice in question will take priority over any previous notes played using the same note. When the "poly" setting is used, all notes played with the voice will sound simultaneously, within the limits of the RM50's polyphonic note capacity. The "mono/alt" and "poly/alt" settings produce the same results, save that the voice's two elements are played alternately rather than in unison. These settings are useful, for example, when using a single voice consisting of two slightly different snare drum elements to simulate a drum roll.
- *Alternate group (off, 1...7):* Allows you to assign the voice to one of seven alternate groups which specify drum sounds which will not be played at the same time. The use of this setting is explained in the note below.
- *Output (stereo, ind1...ind6):* Selects the RM50 output jacks to which output from the voice is to be sent. Select "stereo" to output the voice as a mixed stereo signal, complete with pan settings. Select one of the "ind" settings to output the voice to the corresponding INDIVIDUAL OUTPUT jack.
- *Individual level (0...63):* Sets the output level of voices assigned to the INDIVIDUAL OUTPUT jacks.

Notes: *In a real drum set, you would never hear the sound of a closed hi-hat at the same time as the open hi-hat. To more realistically reproduce the sound of a hi-hat, you will therefore want to assign both the open and closed hi-hat voices to one of the seven alternate groups, so that the RM50 will never play both of the sounds at the same time.*

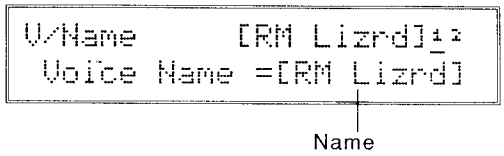
If you try this, you will find that you can play the open hi-hat voice, then "close" the hi-hat by playing the closed hi-hat voice before the open sound ends. Doing so will cut off the open hi-hat sound sharply, just as it would in real life.

You can use the AltGroup setting to realistically reproduce the long-and-short or open-and-muted sounds produced by other instruments such as maracas, guiros, triangles, bongos, and congas.

13. Voice Name

USER VOICES ONLY

Summary: Assigns a name to the selected voice.



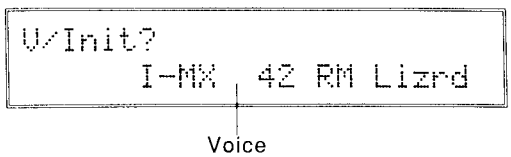
Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to select the character you wish to change (the selected character will blink). Then use the [+1/YES] or [–1/NO] key to change the selected character.

- *Name:* Allows you to assign the selected voice a name of up to eight characters. The available characters are the same as those listed for the Macro Name function on page 54.

14. Voice Initialize

USER VOICES ONLY

Summary: Initializes all parameter settings of the selected voice.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Press the [SHIFT] and [+1/YES] keys to initialize all parameters for the selected voice. The message "Sure?" will appear in the upper row of the LCD. Press either the [+1/YES] key to confirm your decision, or the [–1/NO] or [EXIT] key to cancel the initialize operation.

- *Voice:* Indicates the bank, number, and name of the voice to be initialized. The voice selection cannot be changed using this display.

Notes: *When you initialize a voice, its name and waveform selection will remain unchanged. All other parameter settings will be given the default values listed on the following page.*

RM50 Voice Init Data

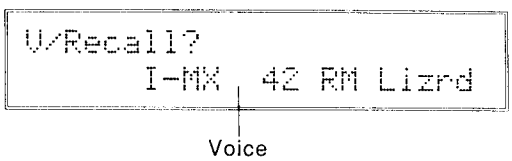
Common	Easy	Volume	127
		Balance	0
		Pan	0
		Pitch	0
		Decay	0
		Filter	0
Element	Wave	Memory	No change
		Number	No change
		Direction	No change
	Level		63
	Pan		16
	Pitch		0
	EG	Attack	0
		Decay	63
		Release	63
		Punch	1
	Filter	Type	off
		Cutoff	Max
		Resonance	0
		EG Rate	0
		EG Level	0
	LFO	Destination	off
		Wave	triangle

Element (cont'd)	LFO	Speed	0
		Delay	0
		Initial phase	0
		Depth	0
	Sensitivity	Level	0
		Pitch	0
		EG	0
		Filter	0
		Modulation	0
	Pitch EG	Rate	off
		Level	0
	Delay	Reps	off
		1st	off
		Time	0
		Level	0
		Pitch	0
	Velocity curve		1:Linear
Common	Assign		mono
	Alternate group		off
	Output		stereo
	Individual output level		63
	Voice Name		No change

15. Voice Recall

VOICE VARIATIONS & USER VOICES

Summary: Restores the parameters of the selected voice pitched voice to the values they had prior to editing.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Press the [SHIFT] and [+1/YES] keys to restore all channel and note settings for the selected voice to the condition they had prior to editing. The message "Sure?" will appear in the upper row of the LCD. Press either the [+1/YES] key to confirm your decision, or the [–1/NO] or [EXIT] key to cancel the recall operation.

- *Voice:* Indicates the bank, number, and name of the voice to be recalled. The voice selection cannot be changed using this display.

Notes: *Whenever you edit a voice, the letter "V" which appears in the upper left corner of all Voice Edit mode displays will change to a small letter "v" to remind you that the sound has been edited. The RM50 will save the unedited data in a memory area known as the "recall buffer" even if you turn the power off. If you decide you don't like the changes you've made, you can use the Recall function to restore the original data.*

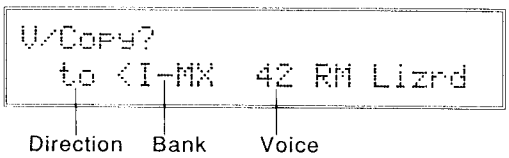
When you use the Recall function to recall the old data for a voice, the edited data will take its place in the recall buffer. This means you can use the recall buffer to switch back and forth between the new and old settings, to compare the sounds they produce.

Once you begin editing another voice, however, all data for previous voice will be cleared from the buffer, and the currently recalled settings will become permanent. Also, the letter "V" will again appear as a capital letter the next time you select that voice, indicating that it is no longer possible to recall the old data.

16. Voice Copy

ALL VOICES

Summary: Copies voice parameters from one bank and voice number to another.



Procedure: Use the [PAGE+] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the direction, bank, and voice settings. Use the [+1/YES] or [–1/NO] key to change these settings. Press the [SHIFT] and [+1/YES] keys to copy the voice. The message "Sure?" will appear in the upper row of the LCD. Press the [+1/YES] key to confirm your decision, or the [–1/NO] or [EXIT] key to cancel the copy operation.

- *Direction (to, from):* Determines whether the RM50 will copy the currently selected voice to another bank and voice number, or whether it will copy the data for another voice to the currently selected bank and voice number.
- *Bank:* Selects one of 23 voice banks.
- *Voice:* Selects a voice from the specified bank. The name of the selected voice appears after the voice number.

Note: *This function is useful when creating an edited version of an existing voice. Do not select a preset or variation voice bank (i.e., one beginning with the letter "P" or "I") if you have selected "to" as the direction, or an error message will appear when you attempt to copy the data.*

You can use the "from" setting to copy voice data to the current voice number if you are editing a user voice (bank I-MX or C-MX). When you do so, all of the current voice settings will be replaced by the copied data. However, you can still restore the original settings using the Voice Recall function described above.

If you use the "to" setting to copy a voice, recall of the replaced data will be impossible.

UTILITY MODE

The RM50's Utility mode collects a variety of functions which let you specify how the RM50's system operates and how it handles MIDI messages, as well as other functions which let you use data cards and the internal wave RAM option. The Demo Play function is also included in this mode.

To enter Utility mode, simply press the [UTILITY] key. The RM50 will display the name of the utility function group you last accessed. Use the [PAGE+] or [PAGE–] key to select the desired function group, then press the [+1/YES] key to enter that group.

To return to Play mode from Utility mode, press the [PLAY] key. You can also press the [EXIT] key while in this mode to return to the Utility mode function group display and select a different Utility mode function group. Press the [EXIT] key a second time while this display is showing will return you to Play mode.

Contents of this chapter

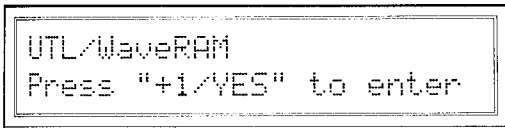
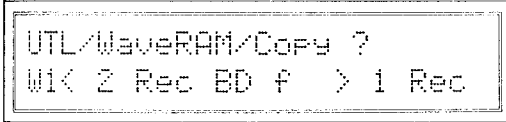
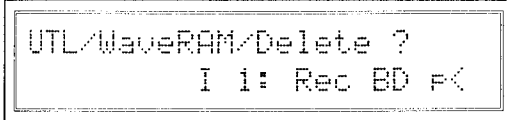
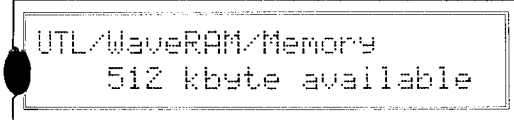
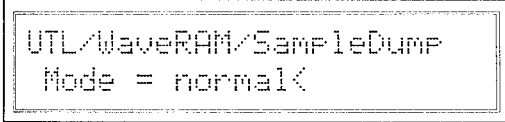
Functions in Utility Mode

The functions available in Utility mode are listed below. Once you have entered this mode and selected one of the function groups, you can select any of the functions within the group using the [PAGE+] or [PAGE–] keys.

UTL/System Press "+1/YES" to enter	**System Utilities**	Allows you to set parameters controlling the RM50's trigger input and click functions, and to adjust the note on velocity used by the [SOUND] key.
UTL/Sys/Trig/Trig No. #1<: 99 off fast	1. Trigger Input 1	Sets the gain, attenuation, and scan speeds used to process signals input to the selected TRIGGER INPUT jack.
UTL/Sys/Trig/Trig No. #1<: 4 0 3	2. Trigger Input 2	Sets the reject values used to limit interference to input to the selected TRIGGER INPUT jack.
UTL/Sys/Trig/Trig No. #1<: 1 60 10 Linear	3. Trigger Input 3	Specifies the note data transmitted from the MIDI OUT terminal in response to signals received by the selected TRIGGER INPUT jack.
UTL/Sys/Click/Sw off<:P-SD 108 SS Count	4. Click 1	Turns the RM50's click function on and off, and selects the voice used by this function.
UTL/Sys/Click/Level 127< 120 4/4	5. Click 2	Sets the voice level, tempo, and time signature used by the click function.
UTL/Sys/Sound Velocity = 127<	6. SOUND Key Velocity	Sets the velocity to be used when the SOUND key is pressed to check the sound produced by a voice.

UTL/MIDI Press "+1/YES" to enter	**MIDI Utility Group**	Allows you to specify how MIDI program change and control change messages are received, set remote switch assignments, change the device number, and execute bulk dumps.
UTL/MIDI/Program change C01<= normal	1. Program Change Mode	Determines how the RM50 will respond to received program change messages.
UTL/MIDI/P.C.Table 001< Kit :I- 1 Rock 1	2. Program Change Table	Specifies the rhythm kit or voice selected by program numbers received on channels using the "table" program change mode setting.
UTL/MIDI/Controller sw on<	3. Control Change	Determines whether the RM50 will respond to received control change, pitch bend, and aftertouch messages.
UTL/MIDI/Control assign Pitch <=121:Pitch Bend	4. Control Change Assign	Assigns a control change number to each of the RM50's seven control change parameters.
UTL/MIDI/Remote switch C16< PLAY =C -2(000)	5. Remote Switch	Selects a channel for remote switch message reception, and assigns a MIDI note to each of the twelve keys on the RM50's front panel.
UTL/MIDI/Device number off<	6. Device Number	Sets the device number used by the RM50 when transmitting and receiving system exclusive data.
UTL/MIDI/Transmit bulk Type = all <	7. Bulk Transmit	Transmits RM50 data of a selected type to another device as a system exclusive bulk dump.

UTL/DataCard Press "+1/YES" to enter	**Data Card Utility Group**	Allows the transfer of data to and from data cards, and the formatting of data cards to accept RM50 data.
UTL/DataCard/Save ? Card bank = 1<[RM50]	1. Save to Card	Saves all RM50 data to a RAM card inserted in the RM50's DATA slot.
UTL/DataCard/Load ? Card bank = 1<[RM50]	2. Load from Card	Loads all RM50 data from a RAM card inserted in the RM50's DATA slot.
UTL/DataCard/Format ? Card bank = 1<[RM50]	3. Format Card	Prepares a RAM card for RM50 data storage.

	**Wave RAM Utility Group**	Allows you to make use of the RM50 wave RAM option. (The functions in this group can only be accessed if a wave RAM module has been installed in the RM50.)
	1. Waveform Name	Assigns a name to a waveform number in the wave RAM area.
	2. Card Waveform Copy	Copies a waveform from a wave card into the wave RAM area.
	3. Waveform Delete	Deletes individual waveforms from the wave RAM area.
	4. Wave RAM Memory	Displays the amount of wave RAM capacity that is available for use.
	5. Wave RAM Initialize	Clears all waveform data from the wave RAM area.
	6. Sample Dump Mode	Selects the sample dump format used by incoming sample dumps.

	**Demo Utility**	Contains the Demo Play function.
	1. Demo Play	Plays the RM50 demonstration songs, as well as demos contained on waveform cards.

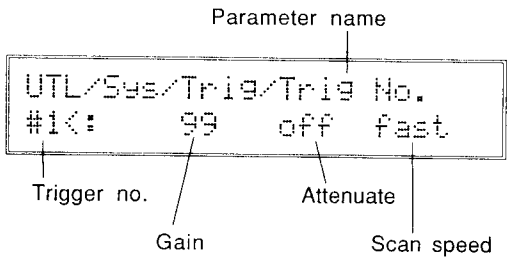
System Utility Group

Summary: Allows you to set parameters controlling the RM50's trigger input and click functions, and to adjust the note on velocity used by the [SOUND] key.

Procedure: Use the [PAGE–] key to select the display above, then press the [+1/YES] key to enter the System Utility function group.

1. Trigger Input 1

Summary: Sets the gain, attenuation, and scan speeds used to process signals input to the selected TRIGGER INPUT jack.



Procedure: Use the [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer to the trigger number setting or the gain, attenuate, and scan speed parameters. Use the [+1/YES] or [–1/NO] key to select a different trigger, or to change the parameter values.

- *Parameter name (Trig No., Gain, Atn, Scan):* Shows the name of the input trigger parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Trigger no. (#1...#6):* Selects one of the six TRIGGER INPUT jacks. The settings made using the remaining three parameters displayed by this function affect the TRIGGER INPUT jack selected using this parameter.
- *Gain (0...99):* Adjusts the level of signals input to the selected TRIGGER INPUT jack. Higher values increase the input level.
- *Attenuation (off, on):* Determines whether signals input to the selected TRIGGER INPUT jack will be attenuated. This should be set to "on" for audio equipment and other triggering devices with particularly high output levels.
- *Scan speed (fast, slow):* Sets the rate with which the selected TRIGGER INPUT jack is scanned for input signals. The "fast" setting provides faster scanning; the "slow" setting provides somewhat slower scanning, but higher scan precision.

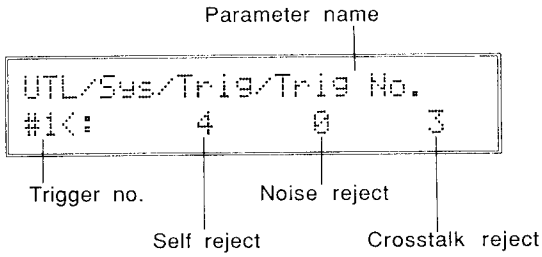
Notes: *Whenever you select a different TRIGGER INPUT jack using the "trigger no." parameter, the jack selection displayed by the Trigger Input 2 and Trigger Input 3 functions will reflect this change. This feature makes it easy to adjust all the settings for a single TRIGGER INPUT jack.*

You can also use the Display Chase function (see page 51) to switch between triggers when adjusting the parameters in this display.

2. Trigger Input 2

SYSTEM UTILITY

Summary: Sets the reject values used to limit interference to input to the selected TRIGGER INPUT jack.



Procedure: Use the [PAGE–] or [PAGE+] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer to the trigger number setting or the self reject, noise reject, or crosstalk reject parameters. Use the [+1/YES] or [–1/NO] key to select a different trigger, or to change the parameter values.

- *Parameter name (Trig No., SelfRej, NoiseRej, CrossRej):* Shows the name of the input trigger parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Trigger no. (#1...#6):* Selects one of the six TRIGGER INPUT jacks. The settings made using the remaining three parameters displayed by this function affect the TRIGGER INPUT jack selected using this parameter.
- *Self reject (1...99):* Sets the time, in 10 msec units, during which the RM50 will ignore signals input to the selected TRIGGER INPUT jack after a signal is received. This setting prevents double triggering.
- *Noise reject (0...9):* Sets the level at which the RM50 distinguishes between background noise and trigger signals received by the selected TRIGGER INPUT jack. Higher values eliminate more noise, but also reduce the RM50's sensitivity to small trigger signals.
- *Crosstalk reject (0...9):* Sets the level at which the RM50 filters out crosstalk to the other triggers. Higher values reduce the degree to which the signals received by the selected TRIGGER INPUT jack will be duplicated by signals received by other jacks (due to sympathetic vibrations, etc.). However, this function may also reduce the RM50's sensitivity to two-drum flams.

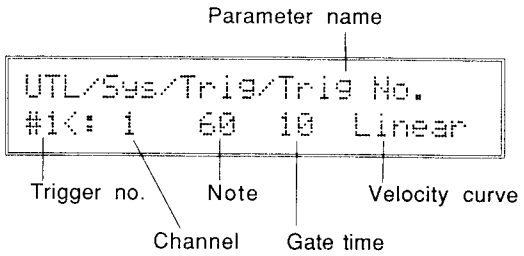
Notes: *Whenever you select a different TRIGGER INPUT jack using the "trigger no." parameter, the jack selection displayed by the Trigger Input 1 and Trigger Input 3 functions will reflect this change. This feature makes it easy to adjust all the settings for a single TRIGGER INPUT jack.*

You can also use the Display Chase function (see page 51) to switch between triggers when adjusting the parameters in this display.

3. Trigger Input 3

SYSTEM UTILITY

Summary: Specifies how the RM50's audio-to-MIDI converter generates note information in response to signals received by the selected TRIGGER INPUT jack.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer to the parameter number setting, or the channel, note, gate time, and velocity curve parameters. Use the [+1/YES] or [–1/NO] key to select a different trigger, or to change the parameter values.

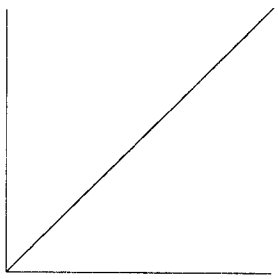
- *Parameter name (Trig No., Channel, Note, GateTime, VelCurve):* Shows the name of the trigger input parameter that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Trigger no. (#1...#6):* Selects one of the six TRIGGER INPUT jacks. The settings made using the remaining four parameters displayed by this function affect the TRIGGER INPUT jack selected using this parameter.
- *Channel (1...16):* Sets the channel on which MIDI output for the selected TRIGGER INPUT jack is to transmitted. The RM50 will play all notes received from the TRIGGER INPUT jack using the setup for this channel, and at the same time output MIDI note information via the MIDI OUT jack using this channel.
- *Note (0...127):* Sets the note number to be generated in response to input received by the selected TRIGGER INPUT jack when channel mode of the channel selected by the preceding parameter is set to "pitched voice" or "off". If the channel mode is set to "rhythm kit", the RM50 will play (and output) the note number assigned to the jack in the rhythm kit selected for the channel in question. (See the description of the Trigger Note Assign function on page 63.)
- *Gate time (1...99):* Specifies the interval, in 10 msec units, between note on and note off messages generated in response to input received by the selected TRIGGER INPUT jack.
- *Velocity curve (Linear, Hard1, Hard2, Soft1, Soft2):* Selects the velocity curve used to create velocity information for notes generated in response to input received by the selected TRIGGER INPUT jack.

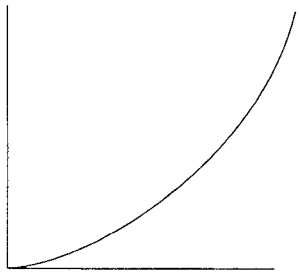
Notes: *Whenever you select a different TRIGGER INPUT jack using the "trigger no." parameter, the jack selection displayed by the Trigger Input 1 and Trigger Input 2 functions will reflect this change. This feature makes it easy to adjust all the settings for a single TRIGGER INPUT jack.*

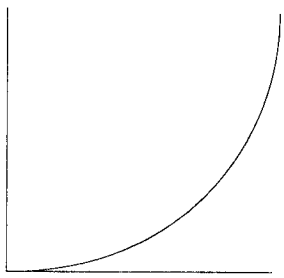
You can use the Display Chase function (see page 51) to switch between triggers when adjusting the parameters in this display.

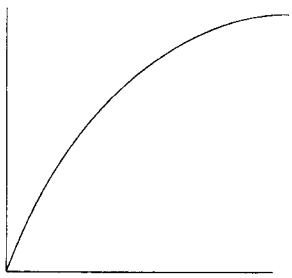
You can also press the [EDIT] key to enter Setup Edit mode from this function should you wish to edit or check the settings for the selected rhythm kit note.

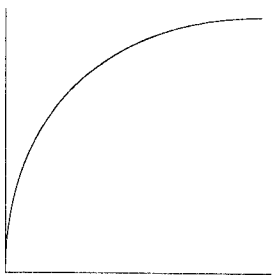
The RM50 allows you to select one of five velocity curves for each TRIGGER INPUT jack. Each velocity curve generates velocity information in a different manner, as shown by the illustrations below.


Linear


Hard1


Hard2

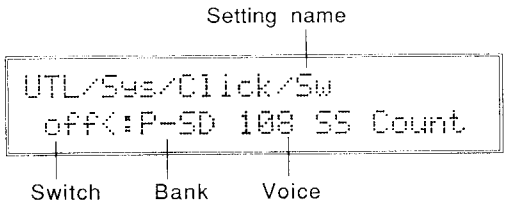

Soft1


Soft2

4. Click 1

SYSTEM UTILITY

Summary: Turns the RM50's click function on and off, and selects the voice used by this function.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the switch, bank, and voice settings. Use the [+1/YES] or [–1/NO] key to change these settings.

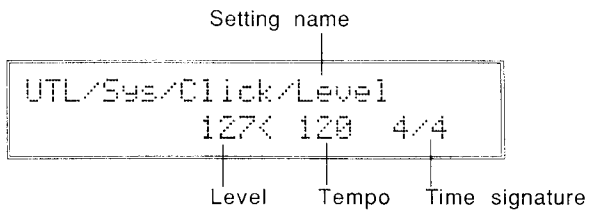
- *Setting name (Sw, Bank, Voice):* Shows the name of the click setting that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Switch (off, on, midi):* Switches the click function on and off. When set to "on", the RM50 will play a steady beat using the voice selected this function, and the level, tempo, and time signature specified by the Click 2 function described below. When it is set to "midi", the click function will turn on and off in response to system realtime control (start, stop, and continue) messages received at the MIDI IN terminal. The "midi" setting also causes the click function to synchronize to MIDI clock data received at the MIDI IN terminal, ignoring the tempo setting of the Click 2 function below.
- *Bank:* Selects one of 23 voice banks, or "off".
- *Voice:* Selects a voice from the specified bank. The name of the selected voice appears after the voice number.

Note: *You can enter Voice Edit mode to edit the voice you select by pressing the [EDIT] key while this display is showing.*

5. Click 2

SYSTEM UTILITY

Summary: Sets the voice level, tempo, and time signature used by the click function.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the level, tempo, and time signature settings. Use the [+1/YES] or [–1/NO] key to change these settings.

- *Setting name (Level, Tempo, TimeSig):* Shows the name of the click setting that has been selected. This display changes each time you move the pointer in the lower row of the LCD.
- *Level (0...127):* Sets the voice level used by the click function. This setting is used in place of the voice's own volume parameter.
- *Tempo (40...250):* Sets the tempo used by the RM50 click function, in beats per minute.If you select "midi" as the switch setting of the Click 1 function described above, the click function will synchronize to MIDI clock data received at the MIDI IN terminal, ignoring this tempo setting.
- *Time signature (1/4 ...8 /4, 1/8 ... 16/8 ... 1/16 ... 32/16):* Specifies the time signature used by the RM50 click function.

6. SOUND Key Velocity

SYSTEM UTILITY

Summary: Sets the velocity to be used when the [SOUND] key is pressed to check the sound produced by a voice.

Procedure: Use the [PAGE+] key to select the display shown above. Use the [+1/YES] or [–1/NO] key to change the value of the velocity setting.

- *Velocity (1...127):* Sets the velocity used when a note is played by pressing the [SOUND] key.

Notes: *You can press the [SOUND] key at any time while a voice is selected to hear the sound produced by that voice. (As an exception, this function will not work while the Demo Play function described on page 109 is displayed, as the RM50 not accept any MIDI data while this function is displayed.) The [SOUND] key allows you to check your voice selection or test the effects of edits without having to connect the RM50 to an external keyboard or other MIDI controller.*

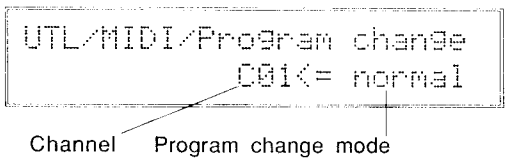
MIDI Utility Group

Summary: Allows you to specify how MIDI program change and control change messages are received, set remote switch assignments, change the device number, and execute bulk dumps.

Procedure: Use the [PAGE+] or [PAGE–] key to select the display above, then press the [+1/YES] key to enter the MIDI Utility function group.

1. Program Change Mode

Summary: Determines how the RM50 will respond to received program change messages.



Procedure: Use the [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer between the channel and program change mode settings. Use the [+1/YES] or [–1/NO] key to select a different channel, or to change the program change mode setting for the selected channel.

- *Channel (C01...C16):* Selects one of the sixteen MIDI channels.
- *Program change mode (off, normal, table):* Determines which of three program change modes the selected MIDI channel will use.

Notes: *When the program change mode is set to "off", the RM50 will ignore any program change messages received on the channel in question.*

When "normal" is selected, the RM50 will switch to the rhythm kit or voice normally selected by the received program change number. Whether a rhythm kit or voice is selected depends on the channel's current channel mode setting at the time is received.

You can also use bank select messages in this mode to switch the channel between the rhythm kit and pitched voice channel modes and to select a rhythm kit or voice bank. Program change messages following the bank select message will then select a rhythm kit or voice from the new bank. The bank select numbers received by the RM50 are listed in the following table.

BANK SELECT NUMBER	RM50 BANK		
	CHANNEL MODE	BANK TYPE	CATEGORY
81	Rhythm kit	Internal	
82	Rhythm kit	Card	
83	Rhythm kit	Preset	
84	Pitched voice	Internal	MX (Mix)
85	Pitched voice	Card	MX (Mix)
86	Pitched voice	—	
87	Pitched voice	Internal	BD (Kick)
88	Pitched voice	Card	BD (Kick)
89	Pitched voice	Preset	BD (Kick)
90	Pitched voice	Internal	SD (Snare)
91	Pitched voice	Card	SD (Snare)
92	Pitched voice	Preset	SD (Snare)
93	Pitched voice	Internal	TM (Tom)
94	Pitched voice	Card	TM (Tom)
95	Pitched voice	Preset	TM (Tom)
96	Pitched voice	Internal	CY (Cymbal)
97	Pitched voice	Card	CY (Cymbal)
98	Pitched voice	Preset	CY (Cymbal)
99	Pitched voice	Internal	PC (Perc)
100	Pitched voice	Card	PC (Perc)
101	Pitched voice	Preset	PC (Perc)
102	Pitched voice	Internal	SE (Effect)
103	Pitched voice	Card	SE (Effect)
104	Pitched voice	Preset	SE (Effect)
105	Pitched voice	Internal	Slot 1
106	Pitched voice	Card	Slot 2
107	Pitched voice	Preset	Slot 3

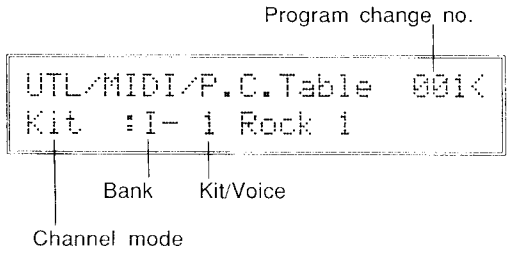
When "table" is selected, the RM50 will switch to the rhythm kit or voice specified for the received program change number in its program change table. This program change mode allows the RM50 to change the channel mode of a channel in response to a received program change message. (It can also be used to set the channel mode to "off".)

The contents of the program change table are set using the Program Change Table function, described below.

2. Program Change Table

MIDI UTILITY

Summary: Specifies the rhythm kit or voice selected by program numbers received on channels using the "table" program change mode setting.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer to the program change number or the channel mode, bank, and kit or voice settings. Use the [+1/YES] or [–1/NO] key to select a different program change number, or to change the settings for the selected program change number.

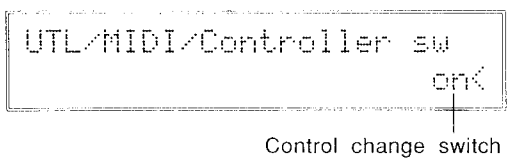
- *Program change no. (001...128):* Selects one of 128 program change numbers.
- *Channel mode (Kit, Vce, Off):* Sets the channel mode specified by the selected program change number.
- *Bank:* Sets one of three rhythm kit banks or 23 voice banks to be specified by the selected program change number.
- *Kit/Voice:* Sets a rhythm kit or voice to be selected by the selected program change number. The name of the kit or voice appears after its number. (A row of dashes is displayed in place of the kit/voice number and name when "OFF" is selected as the bank.)

Notes: *The program change table settings made using this function are only valid for channels using the "table" program change mode, which is set using the Program Change Mode function described above.*

3. Control Change

MIDI UTILITY

Summary: Determines whether the RM50 will respond to received control change, pitch bend, and aftertouch messages.



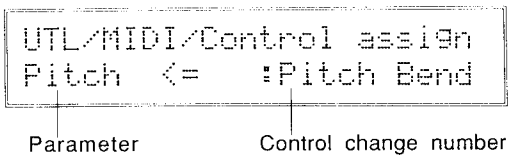
Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above, and the [+1/YES] or [–1/NO] key to change the control change switch setting.

- *Control change switch (off, on):* Determines whether the RM50 will respond to received control change, pitch bend, and aftertouch messages. When this setting is switched to "off", the RM50 will ignore all such messages. When set to "on", the RM50 will respond to the control change messages enabled for each rhythm kit note or channel by the Control Change function available in Setup Edit mode (see page 62). The actual control change numbers used to affect controllable parameters are assigned using the Control Change Assign function described below.

4. Control Change Assign

MIDI UTILITY

Summary: Assigns a control change number to each of the RM50's seven control change parameters.



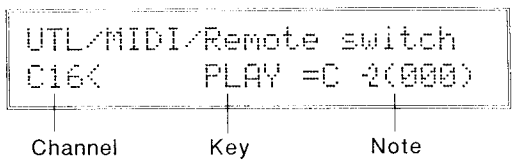
Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer between the parameter and control change number settings. Use the [+1/YES] or [–1/NO] key to select a different voice parameter, or to change the change these settings.

- *Parameter (Pitch, Decay, Pan, Filter, Balance, Mod, Volume):* Selects one of the seven voice parameters which can be adjusted by MIDI control change messages. The precise nature of each of these parameters is detailed in the Control Change function available in Setup Edit mode (see page 62).
- *Control change number (001...031, 033...120, Pitch Bend, After Touch):* Assigns the selected parameter to be controlled by a control change number, or by pitch bend or aftertouch messages. The name of the controller normally associated with the control change number, if any, is displayed after the number.

5. Remote Switch

MIDI UTILITY

Summary: Selects a channel for remote switch message reception, and assigns a MIDI note to each of the twelve keys on the RM50's front panel.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the channel, key, and note settings. Use the [+1/YES] or [–1/NO] key to change the channel setting, to select a different key, or to assign a different note to the selected key.

- *Channel (C01...C16):* Selects the MIDI channel on which the RM50 will receive remote switch messages.
- *Key:* Selects one of the RM50's twelve front panel switches.
- *Note (C-2...G8):* Assigns a MIDI note to the selected panel switch. The note number is displayed after the note name. When the RM50 receives a note on message specifying an assigned note number on the channel selected for this function, it will respond as if the corresponding panel switch had been pressed.

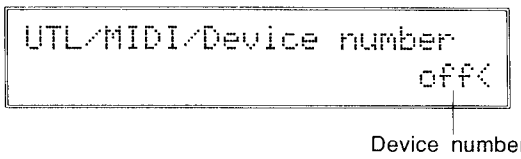
Notes: *This function allows the RM50 to be programmed from a MIDI keyboard or other device capable of sending note information. In most cases, the RM50 will respond to note messages specifying assigned notes just as if the corresponding front panel key had been pressed. The RM50's display will not scroll continuously in response to such note messages, however, as it will when the [PAGE+], [PAGE–], [+1/YES], or [–1/NO] key are pressed and held.*

Please note that the RM50 will not receive any MIDI data when the Demo Play function (described on page 109) is displayed. Therefore, although it is possible to select the Demo Play display using the remote switch function, you cannot use it to start demo playback or exit the display.

6. Device Number

MIDI UTILITY

Summary: Sets the device number used by the RM50 when transmitting and receiving system exclusive data.



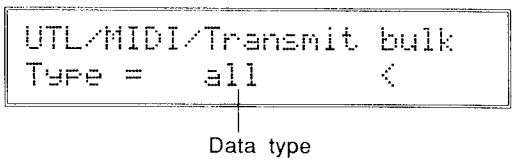
Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above, and the [+1/YES] or [–1/NO] key to change the device number setting.

- *Device number (off, 1...16, all):* Selects the channel used to transmit and receive system exclusive messages. When "off" is selected, the RM50 will neither transmit nor receive system exclusive messages. When "all" is selected, it will transmit system exclusive messages on channel 1, and receive system exclusive messages sent on any channel.

7. Bulk Transmit

MIDI UTILITY

Summary: Transmits RM50 data of a selected type to another device as a system exclusive bulk dump.



Procedure: Use the [PAGE+] key to select the display shown above. Use the [+1/YES] or [–1/NO] key to select a data type. If you select "kit" or "vce" as the data type, use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer to bank, kit or voice, and destination settings. Use the [+1/YES] or [–1/NO] key to change these settings. Then press the [SHIFT] and [+1/YES] keys to transmit the selected bulk data. The message "Sure?" will appear in the upper row of the LCD. Press either the [+1/YES] key to confirm your decision, or the [–1/NO] or [EXIT] key to cancel the bulk dump.

- *Data type:* Selects the type of data to be transmitted. The following types of data may be dumped:

Data Type	Explanation
all	All system setup data, rhythm kits, and user voices
system	All system setup data
all kit	All rhythm kits
all voice	All user voices and voice variations
kit	One rhythm kit
vce	One user voice

- *Bank:* Selects one of three rhythm kit banks or 23 voice banks. This setting is only displayed when "kit" or "vce" is selected as the data type.
- *Kit/Voice:* Selects a rhythm kit or voice from the specified bank to be transmitted. This setting is only displayed when "kit" or "vce" is selected as the data type.
- *Destination:* Designates the program number to which the rhythm kit or voice is to be transmitted. Kits are dumped to the internal bank; voices are dumped to the internal user bank (I-MX). This setting is displayed only when "kit" or "vce" is selected as the data type.

Notes: When you use this function to transmit data from one RM50 to another, the device number settings of both units must be the same. The device number is set using the Device number function described above.

The message "Transmitting bulk..." will appear in the lower row of the LCD while data is being transmitted. The display will return to normal as soon as the bulk dump is ended.

The RM50 is capable of receiving bulk data transmitted by another device at any time as long as it is not playing a note or performing some other operation. (It will also not receive MIDI data while the Demo Play function described on page 109 is displayed.) The words "Receiving bulk..." will appear in the lower row of the LCD while data is being received. If a problem occurs during the dump, an error message will take the place of this message. If this should happen, press the [EXIT] key to clear the error and retry the dump after solving the cause of the problem. (See the list of error messages on page 122.)

Data Card Utility Group

Summary: Allows the transfer of data to and from data cards, and the formatting of data cards to accept RM50 data.

Procedure: Use the [PAGE+] or [PAGE–] key to select the display above, then press the [+1/YES] key to enter the Data Card Utility function group.

1. Save to Card

Summary: Saves all RM50 data to a RAM card inserted in the RM50's DATA slot.

Procedure: Use the [PAGE–] key to select the display shown above. Use the [+1/YES] or [–1/NO] key to select a card bank. Then press the [SHIFT] and [+1/YES] keys to save the RM50's data to the selected bank. The message "Sure?" will appear in the upper row of the LCD. Press either the [+1/YES] key to confirm your decision, or the [–1/NO] or [EXIT] key to cancel the save operation.

- *Card bank (1, 2):* Selects one of the two data banks possessed by an MCD64 data card. The device type for which the selected bank has been formatted appears in the brackets after this number.

Notes: *The RM50 can use either an MCD32 or an MCD64 data card to store its data. The MCD64 data card possesses two card banks, each of which can be used to store a full set of system setup, rhythm kit, user voice, and voice variation data. The card bank last selected using one of the Data Card Utility functions is the one that will be referred to whenever you select a rhythm kit or voice from a bank beginning with the letter "C".*

The name "RM50" must be displayed as the format type for the selected card bank in order for the RM50 to use that bank to save data. If the "unfmtd" message or another format type appears after the bank number, use the Format Card function described on page 103 to ready the bank before attempting to save data.

The "unfmtd" message will appear as the format type of card bank 2 when an MCD32 data card is inserted in the DATA slot. This is because the MCD32 has only one card bank. It is never possible to save data to card bank 2 when using an MCD32 data card.

If a problem occurs during the save operation, an error message will appear in the LCD. Should this happen, press the [EXIT] key to clear the error and retry the operation after solving the cause of the problem. (See the list of error messages on pages 121 and 122.)

2. Load from Card

DATA CARD UTILITY

Summary: Loads all RM50 data from a RAM card inserted in the RM50's DATA slot.

Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [+1/YES] or [–1/NO] key to select a card bank. Then press the [SHIFT] and [+1/YES] keys to load the data from the selected bank into the RM50. The message "Sure?" will appear in the upper row of the LCD. Press either the [+1/YES] key to confirm your decision, or the [–1/NO] or [EXIT] key to cancel the load operation.

- *Card bank (1, 2):* Selects one of the two data banks possessed by an MCD64 data card. The device type for which the selected bank has been formatted appears in the brackets after this number.

Notes: *The RM50 can load data which it (or another RM50) has stored to an MCD32 or an MCD64 data card. The MCD64 data card possesses two card banks, each of which can store a full set of system setup, rhythm kit, user voice, and voice variation data. The card bank last selected using one of the Data Card Utility functions is the one that will be referred to whenever you select a rhythm kit or voice from a bank beginning with the letter "C".*

The name "RM50" must be displayed as the format type for the selected card bank in order for the RM50 to load data from that bank. If the letters "unfmtd" or another format type appear after a bank number, that bank must be prepared using the Format Card function, described below, before it can store RM50 data.

The "unfmtd" message will appear as the format type of card bank 2 when an MCD32 data card is inserted in the DATA slot. This is because the MCD32 has only one card bank. It is never possible to load data from card bank 2 when using an MCD32 data card.

Of course, the bank you select must contain previously saved data in order for the load operation to work. If you try to load from a bank which does not contain any data, an error will occur.

If a problem occurs during the load operation, an error message will appear in the LCD. Should this happen, press the [EXIT] key to clear the error and retry the operation after solving the cause of the problem. (See the list of error messages on pages 121 and 122.)

3. Format Card

DATA CARD UTILITY

Summary: Prepares a RAM card for RM50 data storage.

Procedure: Use the [PAGE+] key to select the display shown above. Use the [+1/YES] or [–1/NO] key to select a card bank. Then press the [SHIFT] and [+1/YES] keys to format the selected bank. The message "Sure?" will appear in the upper row of the LCD. Press either the [+1/YES] key to confirm your decision, or the [–1/NO] or [EXIT] key to cancel the format operation.

- *Card bank (1, 2):* Selects one of the two data banks possessed by an MCD64 data card. The device type for which the selected bank has been formatted appears in the brackets after this number.

Notes: *The RM50 can use either an MCD32 or an MCD64 data card to store data. The MCD64 data card possesses two card banks, each of which can be used to store a full set of system setup, rhythm kit, user voice, and voice variation data. The card bank last selected using one of the Data Card Utility functions is the one that will be referred to whenever you select a rhythm kit or voice from a bank beginning with the letter "C".*

The name "RM50" must be displayed as the format type for the selected card bank in order for the RM50 to save data to that bank. If the letters "unfmtd" or another format type appear after a bank number, the bank must be formatted using this operation.

The "unfmtd" message will appear as the format type of card bank 2 when an MCD32 data card is inserted in the DATA slot. This is because the MCD32 has only one card bank. It is never possible to format card bank 2 when using an MCD32 data card.

If a problem occurs during the format operation, an error message will appear in the LCD. Should this happen, press the [EXIT] key to clear the error and retry the operation after solving the cause of the problem. (See the list of error messages on pages 121 and 122.)

After formatting a card bank, you must store data in it using the Save to Card function, described on page 102, before you can load data from it using the Load from Card function described above.

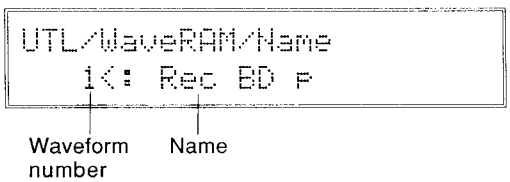
Wave RAM Utility Group

Summary: Allows you to make use of the RM50 wave RAM option. (The functions in this group can only be accessed if a wave RAM module has been installed in the RM50.)

Procedure: Use the [PAGE+] or [PAGE–] key to select the display above, then press the [+1/YES] key to enter the Wave RAM Utility function group.

1. Waveform Name

Summary: Assigns a name to a waveform number in the wave RAM area.



Procedure: Use the [PAGE–] key to select the display shown above. Use the [+1/YES] or [–1/NO] key to move the cursor between the waveform number and the name. Use the [+1/YES] or [–1/NO] key to select a waveform. When the pointer is located at the waveform name, use the [▷] key (or the [SHIFT] and [▷] keys) to select the character you wish to change (the selected character will blink), then use the [+1/YES] or [–1/NO] key to change the selected character. Press the [EXIT] key to return to the previous display when you've finished naming the waveform.

- *Waveform number:* Selects one of the waveforms that have been loaded into the RM50's wave RAM area.
- *Name:* Allows you to input a name for the selected waveform. The available characters are the same as those listed for the Macro Name function on page 54.

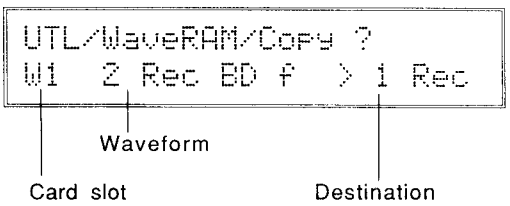
Notes: *A row of asterisks will appear in place of a waveform name for waveform numbers which do not contain any data. Before you can name a waveform, you must first load data to the wave RAM area. You can do so either with the Waveform Copy function described below, or by transmitting the data to the RM50 as a sample dump. (For details on sample dumps, see the description of the Sample Dump Mode function on page 108.)*

If you attempt to change the name following a waveform number that does not contain any data, an error message will appear. Should this happen, press the [EXIT] key to clear the error, then select a different waveform number or exit the function.

2. Card Waveform Copy

WAVE RAM UTILITY

Summary: Copies a waveform from a wave card into the wave RAM area.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer among the card number, waveform number, and destination settings, and the [+1/YES] or [–1/NO] key to change these settings. Then press the [SHIFT] and [+1/YES] keys to copy the selected waveform to the wave RAM area. The message "Sure?" will appear in the upper row of the LCD. Press either the [+1/YES] key to confirm your decision, or the [–1/NO] or [EXIT] key to cancel the copy operation.

- *Card slot (W1, W2, W3):* Selects one of the three WAVEFORM slots.
- *Waveform:* Specifies a waveform from the card in the selected WAVEFORM slot. The name of the selected waveform will appear after its number.
- *Destination:* Specifies the wave RAM waveform number to which the selected card waveform is to be copied. The first three characters of the name currently assigned to this waveform appear after its number.

Notes: *Three asterisks will appear after destination numbers which do not yet contain any waveform data. If you copy data to a destination which already contains waveform data, the old data will be replaced by the new data. Therefore, make sure that you do not need the old data before you excecute the copy operation.*

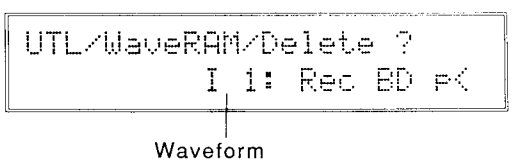
The RM50 optional wave RAM area can hold a maximum of 64 waveforms. However, the actual number of waveforms it can hold depends upon the size of the waveforms loaded.

If a problem occurs during the copy operation, an error message will appear in the LCD. Should this happen, press the [EXIT] key to clear the error and retry the operation after solving the cause of the problem. (See the list of error messages on page 122.)

3. Waveform Delete

WAVE RAM UTILITY

Summary: Deletes individual waveforms from the wave RAM area.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Use the [+1/YES] or [–1/NO] key to select a waveform number. Then press the [SHIFT] and [+1/YES] keys to delete the selected waveform. The message "Sure?" will appear in the upper row of the LCD. Press either the [+1/YES] key to confirm your decision, or the [–1/NO] or [EXIT] key to cancel the delete operation.

- *Waveform:* Selects a waveform from the wave RAM area. The name of the selected waveform will appear after its number.

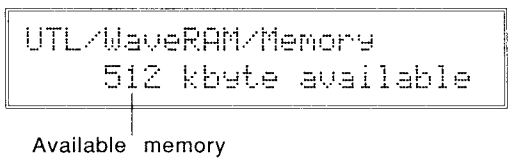
Notes: A row of asterisks will appear in place of a waveform name for waveform numbers which do not contain any data. Before you can delete waveforms, you must first load data to the wave RAM area. You can do so either with the Waveform Copy function described below, or by transmitting the data to the RM50 as a sample dump. (For details on sample dumps, see the description of the Sample Dump Mode function on the following page.)

If you attempt to use the Waveform Delete function with a waveform number that does not contain any data, an error message will appear. Should this happen, press the [EXIT] key to clear the error, then select a different waveform number or exit the function.

4. Wave RAM Memory

WAVE RAM UTILITY

Summary: Displays the amount of wave RAM capacity that is available for use.



Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. The amount of available wave RAM will appear in the display.

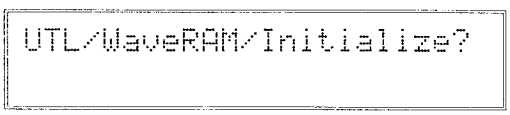
- *Available memory:* Displays the amount of wave RAM capacity that is currently available for use. This value changes as waveforms are copied to or deleted from the wave RAM area.

Notes: *The optional wave RAM area has a total capacity of 512 kilobytes. The number of waveforms that this area can hold depends upon the amount of memory occupied by the waveforms loaded.*

5. Wave RAM Initialize

WAVE RAM UTILITY

Summary: Clears all waveform data from the wave RAM area.



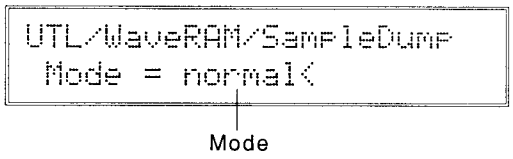
Procedure: Use the [PAGE+] or [PAGE–] key to select the display shown above. Press the [SHIFT] and [+1/YES] keys to clear all waveform data from the wave RAM area. The message "Sure?" will appear in the upper row of the LCD. Press either the [+1/YES] key to confirm your decision, or the [–1/NO] key to cancel the initialize operation.

Notes: *You should use this operation to initialize the wave RAM area after installing a wave RAM module in your RM50. You can also use it to clear all waveform data from the wave RAM area at once. To clear individual waveforms from the wave RAM area, use the Waveform Delete function described above.*

6. Sample Dump Mode

WAVE RAM UTILITY

Summary: Selects the sample dump format used by incoming sample dumps.



Procedure: Use the [PAGE+] key to select the display shown above, and the [+1/YES] or [–1/NO] key to change the device number setting.

- *Mode (normal, TX16W):* Switches between the normal and TX16W sample dump formats. The selected data format will be used when receiving incoming sample dumps.

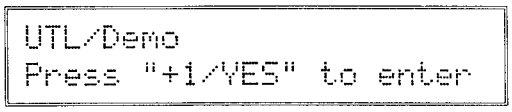
Note: *The RM50 is capable of receiving sample dumps sent using the Yamaha TX16W format, as well as those using the standard sample dump data format. It will always accept sample dumps in either format, regardless of the Sample Dump Mode setting. If it receives a sample dump using the wrong format, however, the sample data may sound noisy when played back. We therefore recommend that you use the correct Sample Dump Mode setting when transmitting sample dumps to your RM50.*

The RM50 is capable of receiving sample dumps at any time. (There is one exception: the RM50 will not accept any incoming MIDI data when the Demo Play function is displayed.) Bear in mind, however, that the sending device and the RM50 must be set to use the same device number. Incoming samples are always assigned to the first available waveform number.

An error message will appear in the LCD if a problem occurs when the RM50 is receiving a sample dump. Should this happen, press the [EXIT] key to clear the error and retry the operation after solving the cause of the problem. (See the list of error messages on page 122.)

Demo Utility

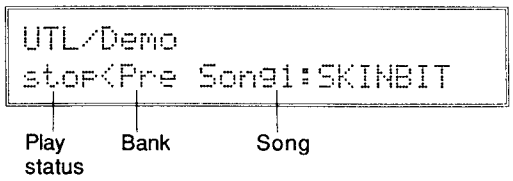
Summary: Contains the Demo Play function.



Procedure: Use the [PAGE+] key to select the display above, then press the [+1/YES] key to display the Demo Play function.

1. Demo Play

Summary: Plays the RM50 demonstration songs, as well as demos contained on waveform cards.



Procedure: Use the [▷] key (or the [SHIFT] and [▷] keys) to move the pointer to the play status indicator or the bank and song settings. Use the [+1/YES] or [–1/NO] key to change the bank or song selection. Then, with the pointer located at the play status indicator, press the [+1/YES] key to start playback. Press the [–1/NO] key once to stop playback.

- *Play status (play, stop):* Indicates when the RM50 is playing a demo song. The word "play" appears here when a song is playing; "stop" appears before playback is started, or after it has been stopped.
- *Bank (Pre, W-1...W-3):* Switches between the internal demo song bank (Pre) and the demo song data banks on cards inserted in the wavecard slots (W-1 to W-3).
- *Song:* Selects a demo song for playback. The name of the selected song appears after its number.

Notes: *The RM50 is programmed with two demo songs which display its capabilities. In addition to these songs, the Demo Play function can be used to play back the demo songs contained on certain wave cards.*

The RM50 will accept no MIDI data or input from the audio trigger inputs while this function is displayed.

APPENDICES

RM50 Preset Rhythm Kits

NUMBER	KIT NAME	NUMBER	KIT NAME	NUMBER	KIT NAME	NUMBER	KIT NAME
1	Rock 1	17	JazzSmall	33	Reggae 2	49	RevZone 2
2	Rock 2	18	JazzBrush	34	Techno 1	50	Kicks 1
3	Rock 3	19	Dance 1	35	Techno 2	51	Kicks 2
4	Studio 1	20	Dance 2	36	Analog 1	52	Kicks 3
5	Studio 2	21	House 1	37	Analog 2	53	Snares 1
6	Metal	22	House 2	38	Reverb	54	Snares 2
7	Pop 1	23	Rap	39	Stadium	55	Snares 3
8	Pop 2	24	MouthKit	40	SfxKit 1	56	Toms 1
9	Country	25	Hip Hop	41	SfxKit 2	57	Toms 2
10	LatinRock	26	World 1	42	G MIDI	58	Toms 3
11	LatinPerc	27	World 2	43	YAMAHA RX	59	Cymbals 1
12	Brazil	28	Gated 1	44	Dry Zone 1	60	Cymbals 2
13	Funk	29	Gated 2	45	Dry Zone 2	61	Perc 1
14	R&B 1	30	Fusion 1	46	RoomZone 1	62	Perc 2
15	R&B 2	31	Fusion 2	47	RoomZone 2	63	SpecialFX1
16	JazzBig	32	Reggae 1	48	RevZone 1	64	FX/ Stacks

RM50 Preset Voices

Voice List-1

NUMBER	BD	SD	TM	CY	PC	SE
1	DR Kikin	DR HiPop	DR Nice1	HH RYCl1	LP AgoHi	FX 7-11
2	DR Hard	DR Digit	DR Nice2	HH RYQt1	LP AgoLo	FX B-Ben
3	DR Boom	DR Rim1	DR Nice3	HH RYHf1	LP BngHi	FX Joker
4	DR Danc1	DR Damn	DR Nice4	HH RYOp1	LP BngLo	FX Tubey
5	DR Danc2	DR Custr	DR Slap1	HH RYPd1	LP Caba1	FX Daiko
6	DR Danc3	DR Basic	DR Slap2	HH RYCl2	LP Caba2	FX Mello
7	DR Danc4	DR Kindl	DR Slap3	HH RYOp2	LP Caba3	FX Door
8	DR Jazz1	DR Smack	DR Slap4	HH RkClR	LP Caba4	FX Zero
9	DR Maple	DR M.O.R	DR Mapl1	HH RkkCl	LP Clave	FX Blip
10	DR Pop1	DR Metl1	DR Mapl2	HH RkQrt	LP Qnto1	FX Bubbl
11	DR Byter	DR Brass	DR Mapl3	HH RkHlf	LP Cong1	FX Canes
12	DR LoCal	DR Steel	DR Mapl4	HH RkOpn	LP Tumb1	FX OilDr
13	DR Beef	DR Rim2	DR Powr1	HH RkPed	LP Slap1	FX Sheet
14	DR Clean	DR Tite1	DR Powr2	HH AmCls	LP Low1	FX Sword
15	DR Click	DR Tite2	DR Powr3	HH AmOpn	LP Mute1	FX Stab
16	DR Fuzzy	DR Maple	DR Powr4	HH AmPed	LP Heel1	FX Gongy
17	DR Kinta	DR Real1	DR Danc1	HH VxCls	LP CgHi2	FX Robot
18	DR Punch	DR Norm	DR Danc2	HH VxOpn	LP CgLo2	FX R2D2
19	DR Round	DR 400	DR Danc3	HH TecC1	LP Slap2	FX RvCrs
20	DR Slap1	DR Marly	DR Danc4	HH TecC2	LP Mute2	FX Scene
21	DR Slap2	DR Danc1	DR Jaz1	HH TecC3	LP Heel2	FX Scrat
22	DR Solid	DR Danc2	DR Jaz2	HH TecO1	LP Cow1	FX Shui
23	DR Stud1	DR Danc3	DR Jaz3	HH TecO2	LP Cow2	FX Snark
24	DR Stud2	DR Arid1	DR Jaz4	HH Pitch	LP Cow3	FX Spark
25	DR Thump	DR Arid2	RM Bop1	HH Stand	LP Guiro	FX Alien
26	DR Woof	DR Arid3	RM Bop2	HH AnCl1	LP Shak1	FX Steps
27	DR Arid	DR Arid4	RM Bop3	HH AnOp1	LP Shak2	FX Stix
28	DR Huge	DR Rim3	RM Bop4	HH AnCl2	LP Tamb1	FX Wiggy
29	DR Live	DR Rim4	RM Metl1	HH AnOp2	LP Tamb2	FX Falic
30	JZ Lite	JZ Lite	JZ Lite	JZ Lite	JZ Lite	JZ Lite
31	JZ DbHd1	DR Wood	RM Metl3	RD EdgCp	LP Tmpl1	FX Blow
32	JZ DbHd2	DR Real2	RM Metl4	RD Bell	LP Tmpl2	FX Log
33	JZ Loose	DR Krack	RM Metl5	RD Flat	LP Tmpl3	FX Metal
34	JZ Hard	JZ Playr	RM Metl6	RD Rock	LP Tmpl4	FX Pip

NUMBER	BD	SD	TM	CY	PC	SE
35	JZ Swing	JZ Cool	RM Klip1	RD RckBl	LP TimH1	FX Revrs
36	JZ Swang	JZ Brsa1	RM Klip2	RD Jazz1	LP TimL1	FX Rezzo
37	JZ Smith	JZ Swpa1	RM Klip3	RD Jazz2	LP TimH2	FX Wet
38	RM Big	JZ Brsb1	RM Klip4	RD Long	LP TimL2	FX BDMth
39	RM Pow	JZ Swpb1	RM Wet1	RD Medi2	LP Casc1	FX S1Mth
40	RM Boo	JZ Swsh1	RM Wet2	RD Sizzl	LP Casc2	FX S2Mth
41	RM Def	JZ Brsa2	RM Wet3	RD FxBel	LP Trian	FX S3Mth
42	RM Lizrd	JZ Swpa2	RM Wet4	RD FxRid	LP Whist	FX CYMth
43	RM Crnch	JZ Brsb2	RM Hard1	CR Crsh1	PC Log1	FX HCMth
44	RM Piles	JZ Swpb2	RM Hard2	CR Crsh2	PC Log2	FX HOMth
45	RM Open	JZ Swsh2	RM Hard3	CR Dark1	PC Log3	FX Type
46	RM AirHd	RM Burnn	RM Hard4	CR High1	PC Log4	FX Heart
47	RM Tight	RM Crank	RV Atom1	CR Dark2	PC Talk1	FX Tape
48	RM Soft	RM Karim	RV Atom2	CR High2	PC Talk2	BA Nasti
49	RM Jazz	RM Obese	RV Atom3	CR Rock1	PC Yoru1	BA KillB
50	RM Nuke	RM Diet	RV Atom4	CR Rock2	PC Yoru2	BA Softa
51	RM March	RM Tubby	RV Huge1	CR Choke	PC Yoru3	BA 30
52	RV Bambi	RM No FC	RV Huge2	CS Spls1	PC Yoru4	
53	RV Kick	RM 9volt	RV Huge3	CS Spls2	PC Bott1	
54	RV Mondo	RV Gospl	RV Huge4	CS Spls3	PC Bott2	
55	RV Balad	RV TheDB	RV Stik1	CH Chin1	PC Bott3	

Voice Category

FIRST 2LETTERS	SUB-CATEGORY	FIRST 2LETTERS	SUB-CATEGORY	FIRST 2LETTERS	SUB-CATEGORY
DR	Dry	EL	Electric	CS	Splash cymbal
JZ	Jazz	FX	Sound effects	CH	China cymbal
RM	Room	SS	Side stick	LP	Latin percussion
RV	Reverb	HH	HiHat	PC	Other percussion
GT	Gated	RD	Ride cymbal	BA	Bass
AN	Analog	CR	Crash cymbal		

Voice List-2

NUMBER	BD	SD	TM	CY	PC	SE
56	RV LoHz	RV Spike	RV Stik2	CH Ride	PC Bott4	—
57	RV Orch	RV Atom	RV Stik3	CH Short	PC Clap1	—
58	RV Arena	RV Sizzl	RV Stik4	CH Chin2	PC Clap2	—
59	GT Tyron	RV Head	RV Stad1	CH Gong	PC AnaMu	—
60	GT Mutha	RV Biznz	RV Stad2	CH Strok	PC Snap	—
61	GT Tight	RV Wham	RV Stad3	FX Big1	PC MeloB	—
62	GT Noizy	RV Bam	RV Stad4	FX Gong	PC Metal	—
63	GT Homer	RV Thanx	RV Ambi1	FX Elekt	PC PopM1	—
64	GT Aero	RV Canon	RV Ambi2	FX Revrs	PC PopM2	—
65	GT Fist	RV Bryte	RV Ambi3	FX Tecko	PC PopM3	—
66	GT Stuff	RV Ghost	RV Ambi4	PC PopM4	—	—
67	GT Blanc	RV IYF	GT Tite1	PC TekD	—	—
68	GT Snack	GT Shock	GT Tite2	—	—	—
69	GT Rattl	GT HiFab	GT Tite3	—	—	—
70	GT Klass	GT Short	GT Tite4	—	—	—
71	GT 5 Bar	GT LoFab	AN Sine1	—	—	—
72	GT Grind	GT Sucks	AN Sine2	—	—	—
73	AN Antek	GT Thump	AN Sine3	—	—	—
74	AN 919	GT Eatlt	AN Sine4	—	—	—
75	AN 929	GT Whip	EL Simm1	—	—	—
76	AN 939	GT Tasty	EL Simm2	—	—	—
77	AN 818	GT Anvil	EL Simm3	—	—	—
78	AN Sinus	GT Stape	EL Simm4	—	—	—
79	AN Booom	GT Erake	EL Phew1	—	—	—
80	EL Kirk	GT Fable	EL Phew2	—	—	—
81	EL Simm	GT Wacko	EL Phew3	—	—	—
82	EL Paso	AN Orexk	EL Phew4	—	—	—
83	EL Prinz	AN 919	FX Hurt1	—	—	—
84	EL Rap	AN 818	FX Hurt2	—	—	—
85	EL Efant	AN 929	FX Hurt3	—	—	—
86	EL Ectro	AN 828	FX Hurt4	—	—	—
87	EL Ouise	EL Down	FX Cyn1	—	—	—
88	EL Ektrn	EL Power	FX Cyn2	—	—	—
89	EL Sid	EL Simm	FX Cyn3	—	—	—

NUMBER	BD	SD	TM	CY	PC	SE
90	EL Tech1	FX Tech	FX Cyn4	—	—	—
91	EL Tech2	FX 9Roll	ET Buru1	—	—	—
92	FX Klam	FX Ugly	ET Buru2	—	—	—
93	FX Klang	FX Pain	ET Buru3	—	—	—
94	FX Hell	FX Undys	ET BStik	—	—	—
95	FX IYF	FX Igor	FX Wack1	—	—	—
96	FX Trash	FX Spit	FX Wack2	—	—	—
97	FX Zilla	FX Sneez	FX Wack3	—	—	—
98	FX Atom	FX Cough	FX Wack4	—	—	—
99	FX Futur	FX Bakup	FX Rvrs1	—	—	—
100	FX TNT	FX Ruff	FX Rvrs2	—	—	—
101	FX Cicad	FX Jam	FX Rvrs3	—	—	—
102	FX Delay	FX Spew	FX Rvrs4	—	—	—
103		FX Hack	FX Fing1	—	—	—
104		SS Ambi1	FX Fing2	—	—	—
105		SS Ambi2	FX Fing3	—	—	—
106		SS Dryer	FX Fing4	—	—	—
107		SS Dry	FX Solo	—	—	—
108		SS Count	—	—	—	—

Voice Category

FIRST 2LETTERS	SUB-CATEGORY	FIRST 2LETTERS	SUB-CATEGORY	FIRST 2LETTERS	SUB-CATEGORY
DR	Dry	EL	Electric	CS	Splash cymbal
JZ	Jazz	FX	Sound effects	CH	China cymbal
RM	Room	SS	Side stick	LP	Latin percussion
RV	Reverb	HH	HiHat	PC	Other percussion
GT	Gated	RD	Ride cymbal	BA	Bass
AN	Analog	CR	Crash cymbal		

RM50 Waveforms

NUMBER	NAME	NUMBER	NAME	NUMBER	NAME	NUMBER	NAME
1	BDAnlg	35	SDRoom2	69	AnlgCow	103	Stick
2	BDDryH	36	SDRoom3	70	Bongo	104	Typist
3	BDDryT1	37	SDRoom4	71	Cabasa	105	Metal 1
4	BDDryT2	38	SDRoom5	72	Claves	106	PotTap
5	BDDryT3	39	SDSide	73	CongaHi	107	ShorTom
6	BDJazHi	40	SDTekno	74	CongaLo	108	WudSlap
7	BDJazLo	41	SDBshTp	75	CongaMu	109	MuteDrm
8	BDGate1	42	SDBshSw	76	CongaSl	110	PotMute
9	BDGate2	43	HHAnlg	77	CongaHl	111	Metal 2
10	BDProc1	44	HHCls1a	78	Cowbell	112	Metal 3
11	BDProc2	45	HHCls1b	79	Guiro	113	CupHit
12	BDProc3	46	HHCls2	80	Shaker	114	MetlWeb
13	BDRoom	47	HHOpn1	81	Tambrin	115	OpenLo
14	BDSFX	48	HHOpn2	82	TimblHi	116	GateMtl
15	BDTekno	49	HHPedal	83	TimblLo	117	Factory
16	SDAnlg1	50	HHQtr	84	TimCasc	118	Shakey
17	SDAnlg2	51	CYChina	85	Triangl	119	BuzStix
18	SDDryH	52	CYCrash	86	Whistle	120	OilDrum
19	SDDryT1	53	CYCrsh2	87	WoodBlk	121	Whup
20	SDDryT2	54	CYCup	88	Ambient	122	MouthBD
21	SDDryT3	55	CYCup2	89	BDAmb	123	TomMute
22	SDDryT4	56	CYRide1	90	SDAmb	124	MouthS1
23	SDWdRim	57	CYRide2	91	SideAmb	125	MouthCY
24	SDDrMtl	58	TMDry1	92	HatAmb	126	WoodHit
25	SDDry5H	59	TMDry2	93	TomAmb	127	MouthS2
26	SDDry5S	60	TMJazz	94	BDAttak	128	DigWave
27	SDFab	61	TMPwr1	95	BDBody	129	P10Wave
28	SDGate1	62	TMPwr2	96	Bottle	130	P25Wave
29	SDGate2	63	TMPwr3	97	FingSnp	131	P50Wave
30	SDGate3	64	TMRoom1	98	Noise	132	SawWave
31	SDProcs	65	TMRoom2	99	RimTrn1	133	TriWave
32	SDRevrb	66	TMTekno	100	RimTrn2	—	—
33	SDRim	67	Agogo	101	Scratch	—	—
34	SDRoom1	68	AnlgClp	102	Tube	—	—

Resetting the RM50

It is possible to restore all of the RM50's parameters to their factory settings. Be absolutely sure, before you use this operation, that the RM50 does not contain any data you want to save. (We recommend that you save your settings to a data card, or dump them to a device with MIDI data recorder capability, before you use this procedure.)

To reset the RM50 to its factory condition, turn on the POWER switch while holding down the [PLAY] and [UTILITY] keys. After a few moments, the following message will appear in the LCD:

Press the [+1/YES] key if are sure you want to reset the RM50's data. After a few moments, the RM50 will display a message telling you that it has finished initializing its settings.

If you don't want to initialize the settings, press the [–1/NO] key and the RM50 will power up normally.

Installation of the SYEMB06 Expansion Memory Board

① Turn the RM50 power switch off and disconnect the AC power cord from the main outlet.

② Locate the small cover on the top of the RM50 and remove the two screws that hold it in place (Figure 1).

③ Below the cover you will see a recessed panel (Figure 2). Install the SYEMB06 in slot.

④ Replace the cover and secure it with the screws you removed in step 2.

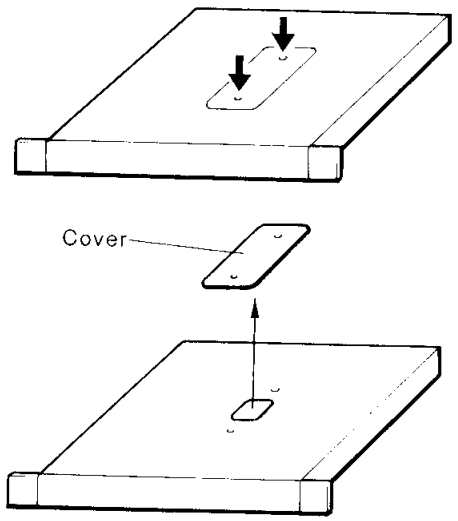


Figure 1

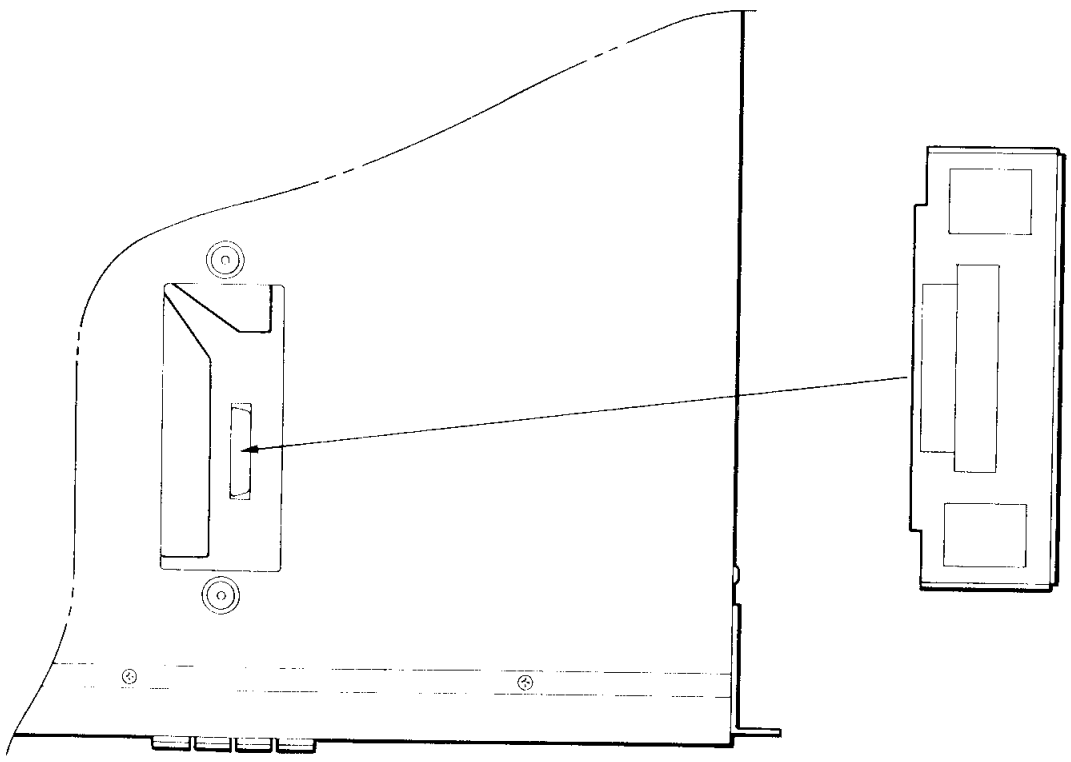


Figure 2

Error Messages

MIDI

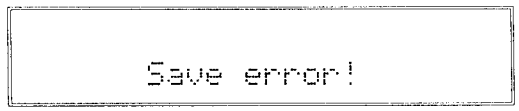
An error occurred while the RM50 was receiving a bulk data block. Check your connections and retry the bulk transmission operation.

The RM50 attempted to receive or transmit a quantity of MIDI data exceeding its handling capacity. Take steps to reduce the amount of data being communicated.

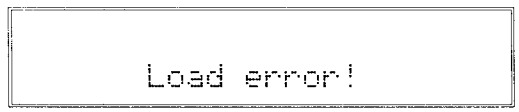
The RM50 could not receive a bulk dump transmission because its device number does not match that of the transmitting device; or it attempted to send a dump while its own device number was set to "off". Check the device number settings of both devices, and retry the bulk dump operation.

The RM50 received a MIDI sample dump using a format it is not capable of accepting.

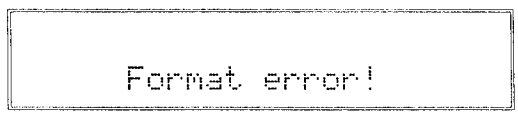
Data Card



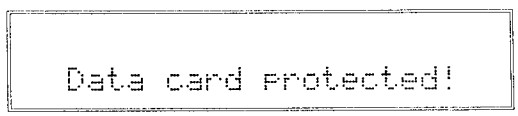
The RM50 was unable to save data to the card in the DATA slot. Retry the save operation.



The RM50 was unable to load data to the card in the DATA slot. Retry the load operation.



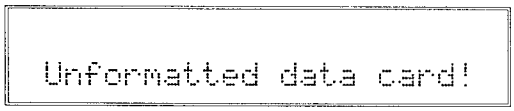
The RM50 was unable to format the card in the DATA slot. Retry the Card Format operation.



The RM50 could not write data to the card in the DATA slot, or perform a save or format operation, because the card is protected. Slide the write protect switch on the top edge of the card to the right and retry the operation.

The RM50 could not access the Data Card Utility Group functions because there is no card in the DATA slot. Insert a card in the DATA slot before attempting to use these functions.

The RM50 has attempted to load data from a data card bank which has been formatted but which contains no data. Select a different card bank or insert another card in the DATA slot, then retry the operation.



The RM50 attempted to write data to an unformatted card bank. Use the Data Card Format operation (page 103) to format the bank in question.

The lithium cell maintaining the contents of the card in the DATA slot is nearing the end of its lifetime. Store the contents of the card in the RM50, then change the battery.

Wave RAM

The RM50 could not copy a waveform into the wave RAM area because the selected WAVEFORM slot does not contain a waveform card. Insert a waveform card in the slot, or change your slot selection.

The RM50 could not copy data into the wave RAM area because the available capacity is not sufficient to hold the selected waveform. Delete unneeded data from the wave RAM area to make room for the new waveform.

The RM50 could not copy data into the wave RAM area because the maximum waveform capacity of 64 waveforms has already been reached. (The maximum capacity may be less than 64 waveforms when multi-sample waveforms are loaded.) Delete unneeded data from the wave RAM area to make room for the new waveform.

The RM50 could not access the Waveform Name or Waveform Delete functions because the wave RAM area does not contain any waveforms. You must copy waveforms into the wave RAM area before attempting to use these functions.

The RM50 could not access the Wave RAM Utility Group functions because no expansion memory has been installed for use as a wave RAM area. Install an optional SYEMB06 Expansion Memory Board in your RM50 before attempting to use these functions.

Edit Mode

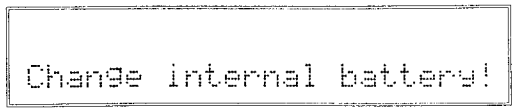
The RM50 could not perform a recall operation because the selected data has not yet been edited. The recall operations are used to restore the original data for rhythm sets, pitched voices, or voices which have been edited. The unedited data is stored in a recall buffer until a new rhythm set, pitched voice, or voice is selected for editing. When a new selection is edited, however, the contents of the recall buffer are replaced by the original data for the new selection. The edited data for the previous selection becomes permanent and cannot be recalled. The recall functions can therefore be used to recall only the rhythm set, pitched voice, or voice which was edited last.

The RM50 could not copy a voice to the specified voice bank. Select either I-MX or C-MX as the destination bank.

The RM50 could not copy a rhythm kit to the specified kit bank. Select either I or C as the destination bank.

The RM50 could not edit the selected rhythm kit, voice, or a voice variation. You cannot edit the parameters of preset rhythm kits or voices. You can change the Easy Edit parameters of voice variations; however, the other parameters cannot be edited. Select a rhythm kit or a user voice from either an internal or card bank for editing.

Miscellaneous



The RM50's internal lithium cell is nearing the end of its useful lifetime. You should take the following steps immediately: (1) Save the contents of its memory either by saving them to a data card or dumping them to a device capable of storing them. (2) Take the RM50 to a qualified Yamaha service representative and have the battery replaced. By no means attempt to replace the battery yourself.

Specifications

Tone generator:
AWM2: 16 bit linear waveform data, 48 kHz maximum sampling frequency
Filter: Time variant IIR (infinite impulse response) digital filter, one filter per element
Maximum simultaneous notes: 16
Maximum simultaneous timbres: 16
Note layering: 2 elements per voice, 2 voices per note

Memory:
Rhythm kits: 64 preset, 64 internal
Voices: 500 preset, 500 variation, 128 internal
Waveforms: 133 waveforms

Expansion slots:
Waveform cards: 3 slots
Data cards: 1 slot
Wave RAM: SYEMB06 512 kbyte Expansion Memory Board (optional)

Controls:
Rotary volume knob
Panel switches: PLAY, EDIT, UTILITY, PAGE+, PAGE–, +1/YES, –1/NO, SHIFT, ▷, EXIT, SOUND

Displays:
LCD: 24-character × 2 line (with backlight)
LED: red × 2 LED (EDIT, MIDI)

Terminals:
Audio output: STEREO OUT (L/MONO, R), INDIVIDUAL OUT × 6, PHONES
Controller: TRIGGER INPUT × 6
MIDI: IN, OUT, THRU

Power requirements:
US & Canadian models: 120V
General model: 220–240V

Power consumption:
All models: 14W

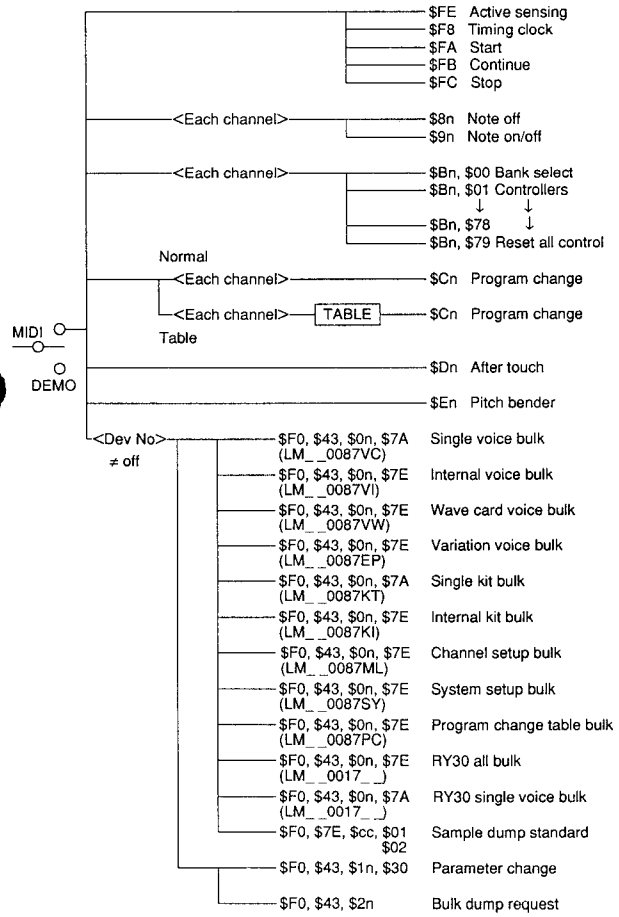
Dimensions (W × D × H):
480 × 44 × 346.7 mm
(18-7/8" × 1-3/4" × 13-5/8")

Weight:
Approx. 5 kg (Approx. 11 lbs)

MIDI Data Format

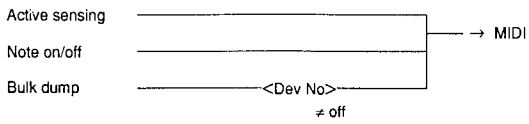
1. MIDI Message Flow Diagrams

1.1 Reception Conditions



Dev No = Device number

1.2 Transmission Conditions



2. Reception

2.1 Note On/Off

Received note range: C-2 – G8
Velocity range: 1 – 127 (note on messages only)

- When more than one panel switch is assigned to a single note number using the system setup remote switch function, the leftmost or uppermost switch is given precedence when that note number is received. All other switch assignments for the note number are ignored.

2.2 Program Change

The RM50's response to a received program change message depends on the system setup program change mode setting for the channel on which the message was received. Each channel can be set to one of three program change modes:

Off: Program change messages are ignored.
Normal: A program change message selects the corresponding voice or rhythm kit within the currently selected voice bank (when the pitched voice channel mode is used) or rhythm kit bank (when the rhythm kit channel mode is used). Bank select messages (control change messages 0 and 32) can be used in combination with program change messages to change the bank and channel mode selections as well as the program.
Table: Each program change message selects the channel mode, voice or rhythm kit bank, and program specified for its program change number in the program change table.

2.3 Pitch Bend

Pitch bend messages are received; however, only the most significant data byte is valid. Pitch bend messages can be assigned to control any of a variety of voice parameters, in the same manner as control change messages.

2.4 Aftertouch

The RM50 receives channel after touch messages; it does not receive individual aftertouch messages. Channel aftertouch messages can be assigned to control any of a variety of voice parameters, in the same manner as control change messages.

2.5 Control Change

The following voice parameters can be controlled by MIDI control change messages:

CONTROL CHANGE NO.	PARAMETER	DATA RANGE
1...31, 33...120	Volume	0...127
1...31, 33...120	Pitch	0...127
1...31, 33...120	Decay	0...127
1...31, 33...120	Pan	0...127
1...31, 33...120	Filter	0...127
1...31, 33...120	Balance	0...127
1...31, 33...120	Modulation	0...127

Control change numbers 0 and 32 are used by the bank select message. The following bank select data values can be used to select RM50 banks:

BANK SELECT		RM50 BANK		
MSB	LSB	CHANNEL MODE	BANK TYPE	CATEGORY
00	81	Rhythm kit	Internal	
00	82	Rhythm kit	Card	
00	83	Rhythm kit	Preset	
00	84	Pitched voice	Internal	MX (Mix)
00	85	Pitched voice	Card	MX (Mix)
00	86	Pitched voice	—	
00	87	Pitched voice	Internal	BD (Kick)
00	88	Pitched voice	Card	BD (Kick)
00	89	Pitched voice	Preset	BD (Kick)
00	90	Pitched voice	Internal	SD (Snare)
00	91	Pitched voice	Card	SD (Snare)
00	92	Pitched voice	Preset	SD (Snare)
00	93	Pitched voice	Internal	TM (Tom)
00	94	Pitched voice	Card	TM (Tom)
00	95	Pitched voice	Preset	TM (Tom)
00	96	Pitched voice	Internal	CY (Cymbal)
00	97	Pitched voice	Card	CY (Cymbal)
00	98	Pitched voice	Preset	CY (Cymbal)
00	99	Pitched voice	Internal	PC (Perc)
00	100	Pitched voice	Card	PC (Perc)
00	101	Pitched voice	Preset	PC (Perc)
00	102	Pitched voice	Internal	SE (Effect)
00	103	Pitched voice	Card	SE (Effect)
00	104	Pitched voice	Preset	SE (Effect)
00	105	Pitched voice	Wave card	Slot 1
00	106	Pitched voice	Wave card	Slot 2
00	107	Pitched voice	Wave card	Slot 3

2.6 Channel Mode Messages

The Reset All Controllers message, when received, causes all voice parameters which had been affected by received control change messages to be reset to their initial values.

2.7 Parameter Change Messages

The reception of parameter change messages is disabled by setting the RM50's device number to "off". When they are enabled, the RM50 receives parameter change messages using the following format:

```
11110000  F0
01000011  43
0001nnnn  nnnn     - Device Number
00110000  30       - Rhythm ID
0ttttttt  ttttttt  - Parameter Group
0mmmmmmm  mmmmmmm  - Memory
0nnnnnnn  nnnnnnn  - Number
0ppppppp  ppppppp  - Parameter number 1
0qqqqqqq  qqqqqqq  - Parameter number 2
0vvvvvvv  vvvvvvv  - Parameter value (high)
0uuuuuuu  uuuuuuu  - Parameter value (low)
11110111  F7
```

There are five parameter groups which can be specified using the fifth byte of this message.

1 = Channel setup parameter change
2 = Rhythm kit parameter change
3 = Voice parameter change
4 = System setup parameter change
5 = Program change table parameter change

2.7.1 Channel Setup Parameter Change

Parameter group = 1

PARAMETER 1	PARAMETER 2	VALUE (HIGH)	VALUE (LOW)
0 Channel 1	0 Channel mode		0: kit, 1: voice, 2: off
	1 Kit	Bank 0–2	Number 0–63
	2 Voice 1	Bank 0–23	Number
	3 Attenuator 1		0–15
	4 Key off		0: off, 1: on
	5 Pitch bend		Same as above
	6 Volume		Same as above
	7 Decay		Same as above
	8 Pan		Same as above
	9 Filter		Same as above
	10 Balance		Same as above
	11 Modulation		Same as above
	12 P.B range		0–12
1 Channel 2	Same as above		
:	:	:	:
15 Channel 16	Same as above		

2.7.2 Rhythm Kit Parameter Change

Parameter group = 2
Kit memory 0 = preset
1 = internal
2 = card

PARAMETER 1	PARAMETER 2	VALUE (HIGH)	VALUE (LOW)
0 Common	0 Name1		h'20–h'7f
	1 Name2		Same as above
	2 Name3		Same as above
	3 Name4		Same as above
	4 Name5		Same as above
	5 Name6		Same as above
	6 Name7		Same as above
	7 Name8		Same as above
	8 Name9		Same as above
	9 Name10		Same as above
	10 P.B. range		0–12
	11 trg note1		0–48
	12 trg note2		Same as above
	13 trg note3		Same as above
	14 trg note5		Same as above
	15 trg note6		Same as above
	16 trg note6		Same as above
1 Element 1	0 Voice1	Bank 0–23	Number
	1 Attenuator 1		0–15
	2 Key off		0: off, 1: on
	3 Pitch bend		Same as above
	4 Volume		Same as above
	5 Decay		Same as above
	6 Pan		Same as above
	7 Filter		Same as above
	8 Balance		Same as above
	9 Modulation		Same as above
(Element 1–24)	10 Voice 2	Bank 0–23	Number
(Element 1–24)	11 Attenuator 2		0–15
2 Element 2	Same as above		
:	:	:	:
49 Element 49	Same as above		

2.7.3 Voice Parameter Change

Parameter group = 3
Voice memory 0 = P-BD preset kick
1 = P-SD preset snare
2 = P-TM preset tom
3 = P-CY preset cymbal
4 = P-PC preset percussion
5 = P-SE preset special effects
6 = I-MX internal mix
7 = I-BD internal kick variation
8 = I-SD internal snare variation

9 = I-TM internal tom variation
10 = I-CY internal cymbal variation
11 = I-PC internal percussion variation
12 = I-SE internal SE variation
13 = C-MX card mix
14 = C-BD card kick variation
15 = C-SD card snare variation
16 = C-TM card tom variation
17 = C-CY card cymbal variation
18 = C-PC card percussion variation
19 = C-SE card SE variation
20 = W-S1 wave card slot 1
21 = W-S2 wave card slot 2
22 = W-S3 wave card slot 3
23 = off not assigned

PARAMETER 1	PARAMETER 2	VALUE (HIGH)	VALUE (LOW)
0 Easy voice	0 Volume		0–127
	1 Pan		0–64
	2 Pitch	0–1 high 1bit	0–127 low 7 bit
	3 Decay	0–1 high 1bit	0–127 low 7 bit
	4 Cutoff frq	0–1 high 1bit	0–127 low 7 bit
	5 Balance	0–1 high 1bit	0–127 low 7 bit
1 Voice com	0 Name1		h'20–h'7f
	1 Name2		Same as above
	2 Name3		Same as above
	3 Name4		Same as above
	4 Name5		Same as above
	5 Name6		Same as above
	6 Name7		Same as above
	7 Name8		Same as above
	8 Alternate		0–7
	9 Output		0–6
	10 Assign		0–3
	11 Indiv level		0–63
2 Element 1	0 Wave	bit 6–5 mem 00 = preset 01 = wave card 10 = internal bit 4–3 card num 00 = 1, 01 = 1, 10 = 2 bit 0 num high	bit7–0 num low 7bit
	1 PEG level	bit 0 high 1 bit	bit7–0 low 7bit (0–144)
	2 Delay pitch	bit 0 high 1 bit	bit7–0 –120–+120 2' comp
	3 Volume		0–63
	4 Pan		0–32
	5 Pitch		0–72
	6 Tune		0–99
	7 Reverse		0–1
	8 Attack rate		0–63
	9 Decay rate		0–63
	10 Release		0–63
	11 Punch rate		0–7
	12 Filter type		0–4
	13 Cutoff frq		0–127
	14 Resonance		0–99
	15 Fltr EG level		0–126
	16 Fltr EG rate		0–63
	17 Level sens		0–15 } bit3 = sign bit
	18 Pitch sens		0–15 } 1 = (–)
	19 EG sens		0–15 } 0 = (+)
	20 Filter sens		0–15 }
	21 LFO wave		0–5
	22 LFO sens		0–7
	23 LFO speed		0–99
	24 LFO delay		0–99
	25 LFO select		0–3
	26 LFO init phase		0–63
	27 LFO mode dep		0–127
	28 PEG rate		0–63
	29 1st note sw		0–1
	30 Delay time		0–127
	31 Delay count		0–7
	32 Delay level		low 7bit –15–+15 2' comp
	33 Velocity curve	high 1bit	0–11
3 element 2	Same as above		

2.7.4 System Setup Parameter Change

Parameter group = 4

PARAMETER 1	PARAMETER 2	VALUE (HIGH)	VALUE (LOW)
0 Trigger 1	0 Gain		0–99
	1 Self reject		0–98
	2 Noise reject		0–9
	3 Cross reject		0–9
	4 Velocity curve		0–4
	5 MIDI channel		0–15
	6 MIDI note		0–127
	7 MIDI gate		1–99
	8 Attenuate		0: off, 1: on
	9 Speed		0: fast, 1: slow
1 Trigger 2	Same as above		
:	:	:	:
5 Trigger 6	Same as above		
6 System	0 Click voice	0–22 bank	Number
	1 Level		0–127
	2 Tempo	high 1 bit	low 6–0 bit (0–210)
	3 Click switch		0–2
	4 TS		0–55
	5 Monitor velocity		1–126
	6 Trg chase		0–1
	7 Card bank		0–1
7 MIDI	0–15 PC mode		0–2
	16 Ctrl switch		0–1
	17 Pitch		1–31, 33–122
	18 Decay		1–31, 33–122
	19 Pan		1–31, 33–122
	20 Filter		1–31, 33–122
	21 Balance		1–31, 33–122
	22 LFO		1–31, 33–122
	23 Volume		1–31, 33–122
	24–35 Remote		0–127
	36 Remote ch		0–15
	37 Device No.		0–17

2.7.5 Program Change Table Parameter Change

Parameter group = 5

PARAMETER 1	PARAMETER 2	VALUE (HIGH)	VALUE (LOW)
0 Program 0	0 Type		0: kit, 1: voice
	1 Switch		0: on, 1: off
	2 Kit	0–2 bank	Number
	3 Voice	0–22 bank	Number
1 Program 1	Same as above		
:	:	:	:
127 Program 127	Same as above		

See the table at the end of this section for details.

3. Transmission

The RM50 transmits note on and note off messages generated in response to signals received by the trigger inputs. The note number generated by each trigger is designated by the rhythm kit selected for the MIDI channel specified for that trigger by the Trigger Input 3 function. If the channel in question is not set to Rhythm Kit channel mode, then the RM50 outputs the note number specified for the trigger by the Trigger Input 3 function.

4. Bulk Dumps

The RM50 can receive bulk dumps at any time except while in Demo Play mode. It transmits bulk dumps when the Utility mode Bulk Transmit function is executed, as well as in response to received dump requests.

The following bulk dumps are transmitted when the Bulk Transmit function is executed.

DATA TYPE SELECTED	DUMPS TRANSMITTED
all	Channel setup bulk dump System setup bulk dump Program change table bulk dump Rhythm kit bulk dump Internal voice bulk dump Variation voice bulk dump Wave card voice bulk dump
system	Channel setup bulk dump System setup bulk dump Program change table bulk dump
all kit	Rhythm kit bulk dump
all voice	Internal voice bulk dump Variation voice bulk dump Wave card voice bulk dump
1 kit	Single kit bulk dump
1 voice	Single voice bulk dump

4.1 Voice Data Bulk Dumps

The following four types of bulk dump messages are used to transmit voice data:

1 Single Voice bulk dump
2 Internal Voice bulk dump
3 Wave Card Voice bulk dump
4 Variation Voice bulk dump

4.1.1 Single Voice Bulk Dump

This messages transmits data for a single voice. Only I-MX can be specified as the destination bank.

```
 0   11110000   F0
 1   01000011   43
 2   0000nnnn   nnnn    - Device Number
 3   01111010   7A
 4   0bbbbbbb   ] -No. of bytes
 5   0bbbbbbb   ]
 6   01001100   4C (ascii "L")
 7   01001101   4D (ascii "M")
 8   00100000   20 (ascii " ")
 9   00100000   20 (ascii " ")
10   00110000   30 (ascii "0")
11   00110000   30 (ascii "0")
12   00111000   38 (ascii "8")
13   00110111   37 (ascii "7")
14   01010110   56 (ascii "V")
15   01000011   43 (ascii "C")
16   00000000   00
 ↓     ↓          ↓
30   00000000   00
31   0mmmmmmm   mmmmmmm  - Destination Voice number
32   0ddddddd   ddddddd  - data
 ↓     ↓          ↓
     0sssssss   sssssss - checksum
     11110111   F7
```

4.1.2 Internal Voice Bulk Dump

This message transmits data for all 128 voices in voice bank I-MX.

```
 0   11110000   F0
 1   01000011   43
 2   0000nnnn   nnnn    - Device number
 3   01111110   7E
 4   0bbbbbbb   ] No. of bytes
 5   0bbbbbbb   ]
 6   01001100   4C (ascii "L")
 7   01001101   4D (ascii "M")
 8   00100000   20 (ascii " ")
 9   00100000   20 (ascii " ")
10   00110000   30 (ascii "0")
11   00110000   30 (ascii "0")
12   00111000   38 (ascii "8")
13   00110111   37 (ascii "7")
14   01010110   56 (ascii "V")
15   01001001   49 (ascii "I")
16   0ddddddd   ddddddd - data
 ↓     ↓          ↓
     0sssssss   sssssss - checksum
     11110111   F7
```

4.1.3 Wave Card Voice Bulk Dump

This message transmits data for 96 voices, 32 voices from cards in each of the three WAVEFORM slots.

```
 0   11110000   F0
 1   01000011   43
 2   0000nnnn   nnnn    - Device number
 3   01111110   7E
 4   0bbbbbbb   ] No. of bytes
 5   0bbbbbbb   ]
 6   01001100   4C (ascii "L")
 7   01001101   4D (ascii "M")
 8   00100000   20 (ascii " ")
 9   00100000   20 (ascii " ")
10   00110000   30 (ascii "0")
11   00110000   30 (ascii "0")
12   00111000   38 (ascii "8")
13   00110111   37 (ascii "7")
14   01010110   56 (ascii "V")
15   01010111   57 (ascii "I")
16   0ddddddd   ddddddd - data
 ↓     ↓          ↓
     0sssssss   sssssss - checksum
     11110111   F7
```

4.1.4 Variation Voice Bulk Dump

This message transmits data for all 500 voice variations in the RM50's memory.

```
 0   11110000   F0
 1   01000011   43
 2   0000nnnn   nnnn    - Device number
 3   01111110   7E
 4   0bbbbbbb   ] No. of bytes
 5   0bbbbbbb   ]
 6   01001100   4C (ascii "L")
 7   01001101   4D (ascii "M")
 8   00100000   20 (ascii " ")
 9   00100000   20 (ascii " ")
10   00110000   30 (ascii "0")
11   00110000   30 (ascii "0")
12   00111000   38 (ascii "8")
13   00110111   37 (ascii "7")
14   01000101   45 (ascii "E")
15   01010000   50 (ascii "P")
16   0ddddddd   ddddddd - data
 ↓     ↓          ↓
     0sssssss   sssssss - checksum
     11110111   F7
```

4.2 Rhythm Kit Data Bulk Dumps

The following two types of bulk dump messages are used to transmit rhythm kit data:

1 Single Kit bulk dump
2 Internal Kit bulk dump

4.2.1 Single Kit Bulk Dump

This messages transmits data for a single rhythm kit.

0	11110000	F0
1	01000011	43
2	0000nnnn	nnnn - Device number
3	01111010	7A
4	0bbbbbbb	] No. of bytes
5	0bbbbbbb	
6	01001100	4C (ascii "L")
7	01001101	4D (ascii "M")
8	00100000	20 (ascii " ")
9	00100000	20 (ascii " ")
10	00110000	30 (ascii "0")
11	00110000	30 (ascii "0")
12	00111000	38 (ascii "8")
13	00110111	37 (ascii "7")
14	01001011	4B (ascii "K")
15	01010100	54 (ascii "T")
16	00000000	00
↓	↓	↓
30	00000000	00
31	00mmmmmm	mmmmmm - Kit number
32	0ddddddd	ddddddd - data
	0sssssss	sssssss - checksum
	11110111	F7

4.2.2 Internal Kit Bulk Dump

This message transmits data for all 64 rhythm kits in the internal rhythm kit bank.

0	11110000	F0
1	01000011	43
2	0000nnnn	nnnn - Device number
3	01111110	7E
4	0bbbbbbb	] No. of bytes
5	0bbbbbbb	
6	01001100	4C (ascii "L")
7	01001101	4D (ascii "M")
8	00100000	20 (ascii " ")
9	00100000	20 (ascii " ")
10	00110000	30 (ascii "0")
11	00110000	30 (ascii "0")
12	00111000	38 (ascii "8")
13	00110111	37 (ascii "7")
14	01001011	4B (ascii "K")
15	01001001	49 (ascii "I")
16	0ddddddd	ddddddd - data
↓	↓	↓
	0sssssss	sssssss - checksum
	11110111	F7

4.3 System Data Bulk Dumps

The following three types of bulk dump messages are used to transmit system data:

1 Channel Setup bulk dump
2 System Setup bulk dump
3 Program Change Table bulk dump

4.3.1 Channel Setup bulk dump

This messages transmits the current channel settings for all 16 MIDI channels.

0	11110000	F0
1	01000011	43
2	0000nnnn	nnnn - Device number
3	01111110	7E
4	0bbbbbbb	] No. of bytes
5	0bbbbbbb	
6	01001100	4C (ascii "L")
7	01001101	4D (ascii "M")
8	00100000	20 (ascii " ")
9	00100000	20 (ascii " ")
10	00110000	30 (ascii "0")
11	00110000	30 (ascii "0")
12	00111000	38 (ascii "8")
13	00110111	37 (ascii "7")
14	01001101	4D (ascii "M")
15	01001100	4C (ascii "L")
16	0ddddddd	ddddddd - data
↓	↓	↓
	0sssssss	sssssss - checksum
	11110111	F7

4.3.2 System Setup bulk dump

This message transmits the system settings made using the Trigger Input and Click functions, and some of the MIDI Utility group functions.

0	11110000	F0
1	01000011	43
2	0000nnnn	nnnn - Device number
3	01111010	7E
4	0bbbbbbb	] No. of bytes
5	0bbbbbbb	
6	01001100	4C (ascii "L")
7	01001101	4D (ascii "M")
8	00100000	20 (ascii " ")
9	00100000	20 (ascii " ")
10	00110000	30 (ascii "0")
11	00110000	30 (ascii "0")
12	00111000	38 (ascii "8")
13	00110111	37 (ascii "7")
14	01010011	53 (ascii "S")
15	01011001	59 (ascii "Y")
16	0ddddddd	ddddddd - data
↓	↓	↓
	0sssssss	sssssss - checksum
	11110111	F7

4.3.3 Program Change Table bulk dump

This message transmits the entire contents of the program change table.

0	11110000	F0
1	01000011	43
2	0000nnnn	nnnn - Device number
3	01111110	7E
4	0bbbbbbb	] No. of bytes
5	0bbbbbbb	
6	01001100	4C (ascii "L")
7	01001101	4D (ascii "M")
8	00100000	20 (ascii " ")
9	00100000	20 (ascii " ")
10	00110000	30 (ascii "0")
11	00110000	30 (ascii "0")
12	00111000	38 (ascii "8")
13	00110111	37 (ascii "7")
14	01010011	50 (ascii "P")
15	01011001	43 (ascii "C")
16	0ddddddd	ddddddd - data
↓	↓	↓
	0sssssss	sssssss - checksum
	11110111	F7

5. Bulk Dump Requests

The RM50 can receive bulk dump requests at any time except while in Demo Play mode.

5.1 Voice Data Bulk Dump Request

The following four types of bulk dump request messages are used to request transmission of voice data:

1) Single Voice bulk dump request
2) Internal voice bulk dump request
3) Wave card voice bulk dump request
4) Variation voice bulk dump request

5.1.1 Single Voice Bulk Dump Request

0	11110000	F0
1	01000011	43
2	0010nnnn	nnnn = Device Number
3	01111010	7A
4	01001100	4C (ascii "L")
5	01001101	4D (ascii "M")
6	00100000	20 (ascii " ")
7	00100000	20 (ascii " ")
8	00110000	30 (ascii "0")
9	00110000	30 (ascii "0")
10	00118000	38 (ascii "8")
11	00110111	37 (ascii "7")
12	01010110	56 (ascii "V")
13	01000011	43 (ascii "C")
14	00000000	00
↓	↓	↓
25	00000000	00
26	0ttttttt	ttttttt = Source voice bank
27	0mmmmmmm	mmmmmmm = Source voice number
28	00000000	
29	0mmmmmmm	mmmmmmm = Destination Voice number
30	11110111	F7

This message requests transmission of data for a single voice. I-MX is automatically selected as the destination bank.

5.1.2 Internal Voice Bulk Dump Request

0	11110000	F0
1	01000011	43
2	0010nnnn	nnnn = Device Number
3	01111110	7E
4	01001100	4C (ascii "L")
5	01001101	4D (ascii "M")
6	00100000	20 (ascii " ")
7	00100000	20 (ascii " ")
8	00110000	30 (ascii "0")
9	00110000	30 (ascii "0")
10	00111000	38 (ascii "8")
11	00110111	37 (ascii "7")
12	01010110	56 (ascii "V")
13	01001001	49 (ascii "I")
14	11110111	F7

This message requests transmission of data for all 128 voices in voice bank I-MX.

5.1.3 Wave Card Voice Bulk Dump Request

0	11110000	F0
1	01000011	43
2	0010nnnn	nnnn = Device Number
3	01111110	7E
4	01001100	4C (ascii "L")
5	01001101	4D (ascii "M")
6	00100000	20 (ascii " ")
7	00100000	20 (ascii " ")
8	00110000	30 (ascii "0")
9	00110000	30 (ascii "0")
10	00118000	38 (ascii "8")
11	00110111	37 (ascii "7")
12	01010110	56 (ascii "V")
13	01010111	57 (ascii "W")
14	11110111	F7

This message requests transmission of data for 96 voices, 32 voices from cards in each of the three WAVEFORM slots.

5.1.4 Variation Voice Bulk Dump Request

0	11110000	F0
1	01000011	43
2	0010nnnn	nnnn = Device Number
3	01111110	7E
4	01001100	4C (ascii "L")
5	01001101	4D (ascii "M")
6	00100000	20 (ascii " ")
7	00100000	20 (ascii " ")
8	00110000	30 (ascii "0")
9	00110000	30 (ascii "0")
10	00111000	38 (ascii "8")
11	00110111	37 (ascii "7")
12	01000101	45 (ascii "E")
13	01010000	50 (ascii "P")
14	11110111	F7

This message requests transmission of data for all 500 voice variations in the RM50's memory.

5.2 Rhythm Kit Data Bulk Dump Request

The following two types of bulk dump request messages are used to request transmission of rhythm kit data:

5.2.1 Single rhythm Kit Bulk Dump Request

This message requests transmission of data for a single rhythm kit.

1) Single Rhythm kit bulk dump request
2) All internal rhythm kit bulk dump request

0	11110000	F0
1	01000011	43
2	0010nnnn	nnnn = Device Number
3	01111010	7A
4	01001100	4C (ascii "L")
5	01001101	4D (ascii "M")
6	00100000	20 (ascii " ")
7	00100000	20 (ascii " ")
8	00110000	30 (ascii "0")
9	00110000	30 (ascii "0")
10	00111000	38 (ascii "8")
11	00110111	37 (ascii "7")
12	01001011	4B (ascii "K")
13	01010100	54 (ascii "T")
14	00000000	00
↓	↓	↓
25	00000000	00
26	0ttttttt	ttttttt = Source rhythm kit bank
27	00mmmmmm	mmmmmm = Source rhythm kit number
28	00000000	
29	00mmmmmm	mmmmmm = Dest. rhythm kit number
30	11110111	F7

Data will be received in the Internal Dest. rhythm kit number.

5.2.2 All Internal Rhythm Kit Bulk Dump Request

0	11110000	F0
1	01000011	43
2	0010nnnn	nnnn = Device Number
3	01111110	7E
4	01001100	4C (ascii "L")
5	01001101	4D (ascii "M")
6	00100000	20 (ascii " ")
7	00100000	20 (ascii " ")
8	00110000	30 (ascii "0")
9	00110000	30 (ascii "0")
10	00111000	38 (ascii "8")
11	00110111	37 (ascii "7")
12	01001011	4B (ascii "K")
13	01001001	49 (ascii "I")
14	11110111	F7

This message requests transmission of data for all 64 rhythm kits in the RM50's memory.

5.3 System Data Bulk Dump Request

The following three types of bulk dump request messages are used to request transmission of system data:

1) Channel setup bulk dump request
2) System setup bulk dump request
3) Program change table bulk dump request

5.3.1 Channel Setup Bulk Dump Request

0	11110000	F0
1	01000011	43
2	0010nnnn	nnnn = Device Number
3	01111110	7E
4	01001100	4C (ascii "L")
5	01001101	4D (ascii "M")
6	00100000	20 (ascii " ")
7	00100000	20 (ascii " ")
8	00110000	30 (ascii "0")
9	00110000	30 (ascii "0")
10	00111000	38 (ascii "8")
11	00110111	37 (ascii "7")
12	01001101	4D (ascii "M")
13	01001100	4C (ascii "L")
14	11110111	F7

This message requests transmission of the current channel settings for all 16 MIDI channels.

5.3.2 System Setup Bulk Dump Request

0	11110000	F0
1	01000011	43
2	0010nnnn	nnnn = Device Number
3	01111010	7E
4	01001100	4C (ascii "L")
5	01001101	4D (ascii "M")
6	00100000	20 (ascii " ")
7	00100000	20 (ascii " ")
8	00110000	30 (ascii "0")
9	00110000	30 (ascii "0")
10	00111000	38 (ascii "8")
11	00110111	37 (ascii "7")
12	01010011	53 (ascii "S")
13	01011001	59 (ascii "Y")
14	11110111	F7

This message requests transmission of the system settings made using the Trigger Input and Click functions, and some of the MIDI Utility group functions.

5.3.3 Program Change Table Bulk Dump Request

0	11110000	F0
1	01000011	43
2	0010nnnn	nnnn = Device Number
3	01111110	7E
4	01001100	4C (ascii "L")
5	01001101	4D (ascii "M")
6	00100000	20 (ascii " ")
7	00100000	20 (ascii " ")
8	00110000	30 (ascii "0")
9	00110000	30 (ascii "0")
10	00111000	38 (ascii "8")
11	00110111	37 (ascii "7")
12	01010011	50 (ascii "P")
13	01011001	43 (ascii "C")
14	11110111	F7

6. System Realtime Messages

6.1 Active Sensing

The RM50 sends active sensing messages (FEH) approximately every 170 milliseconds.
If the RM50 does not receive an active sensing message within approximately 300 milliseconds of the last active sensing message, it will assume that the connection has been broken, clear its MIDI receive buffer, and stop all notes currently being played.

6.2 Timing Clock

The RM50 will play click notes in sync with the received MIDI timing clock signal when its click switch is set to "midi" using the Click 1 function.

6.3 Start, Stop, Continue

The RM50 click function will start, stop, and continue in response to received MIDI start, stop, and continue messages when its click switch is set to "midi" using the Click 1 function.

YAMAHA [Rhythm Sound Module] Date:26-MAY-1992
Model RM50 MIDI Implementation Chart Version : 1.0

Function ...		Transmitted	Recognized	Remarks
Basic	Default	1 - 16	1 - 16	memorized
Channel	Changed	1 - 16	1 - 16	
Mode	Default	3	3	
	Messages	x	x	
	Altered	**********	x	
Note Number		0 - 127	35-84/0-120 *1	
	True voice	**********	x	
Velocity	Note ON	o 9nH, v=1-127	o v=1-127	
	Note OFF	x 9nH, v=0	x	
After Touch	Key's	x	x	
	Ch's	x	o	Assignable
Pitch Bender		x	o 0-12 semi *2	Assignable
Control Change	0	x	o	Bank select
	32	x	o	Bank select
	1 - 31	x	o	Assignable
	33 - 120	x	o	Assignable
Prog Change		x	o 0 - 127	normal/table
	True #	**********		
System Exclusive		o	o	voice etc.
System Common	Song Pos	x	o	
	Song Sel	x	x	
	Tune	x	x	
System Real Time	Clock	x	o *3	for click
	Commands	x	o *3	for click
Aux Mes- sages	Local ON/OFF	x	x	
	All Notes OFF	x	x	
	Active Sense	o	o	
	Reset	x	x	

Notes: *1 ; RHYTHM KIT=a different voice sounds by each note.
PITCHED VOICE=single selected voice sounds over a 0-120 range.
*2 ; 7 bit resolution
*3 ; receive if click sw is "midi".

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO o : Yes
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO x : No

INDEX

G

I

K

L

M

N

O

P

R

S

T

U

V

W

Other

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