Roland

MIDI SEPARATOR

A-220

OWNER'S MANUAL

	CAUTION	
⚠	**RISK OF ELECTRIC SHOCK** **DO NOT OPEN**	⚠
ATTENTION : RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR		

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
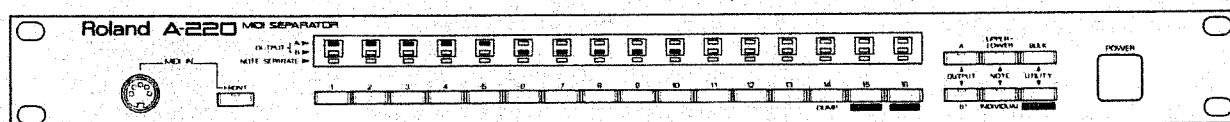DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
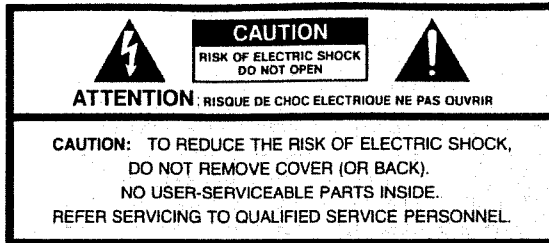
⚠ The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

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

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS.

IMPORTANT SAFETY INSTRUCTIONS

WARNING — When using electric products, basic precautions should always be followed, including the following:

1. Read all the instructions before using the product.
2. Do not use this product near water — for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
3. This product should be used only with a cart or stand that is recommended by the manufacturer.
4. This product, either alone or in combination with an amplifier and headphones or speakers, 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 ears, you should consult an audiologist.
5. The product should be located so that its location or position does not interfere with its proper ventilation.
6. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
7. Avoid using the product where it may be effected by dust.
8. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.

9. The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time.
10. Do not tread on the power-supply cord.
11. Do not pull the cord but hold the plug when unplugging.
12. When setting up with any other instruments, the procedure should be followed in accordance with instruction manual.
13. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
14. The product should be serviced by qualified service personnel when:
    A. The power-supply cord or the plug has been damaged; or
    B. Objects have fallen, or liquid has been spilled into the product; or
    C. The product has been exposed to rain; or
    D. The product does not appear to operate normally or exhibits a marked change in performance; or
    E. The product has been dropped, or the enclosure damaged.
15. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

SAVE THESE INSTRUCTIONS

For the U.K.

WARNING: THIS APPARATUS MUST BE EARTHED

IMPORTANT: THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.
GREEN-AND-YELLOW: EARTH, 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 GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or coloured GREEN or GREEN-AND-YELLOW.
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.

The product which is equipped with a THREE WIRE GROUNDING TYPE AC PLUG must be grounded.

INTRODUCTION

Thank you, and congratulations on your choice of the **Roland A-220 MIDI Separator.**

In order to gain a better understanding of every feature this unit offers, and to ensure continuing satisfaction for years to come, please take the time to read this manual in its entirety.

● Conventions used in this manual

A-220 panel buttons you must press will be indicated in this manual as follows.

(Example)

INDIVIDUAL button	⇨	INDIVIDUAL
BULK button	⇨	BULK
MEMORY button	⇨	MEMORY

■ TABLE OF CONTENTS

■ IMPORTANT NOTES

In addition to the items listed under Safety Precautions on page 2, please read and adhere to the following:

[Power Supply]

● When making any connections with other devices, always turn off the power to all equipment first; this will help prevent damage or malfunction.

● Do not use this unit on the same power circuit with any device that will generate line noise, such as a motor or variable lighting system.

[Placement]

● Do not subject the unit to temperature extremes (eg. direct sunlight in an enclosed vehicle). Avoid using or storing the unit in dusty or humid areas or areas that are subject to high vibration levels.

● Using the unit near power amplifiers (or other equipment containing large transformers) may induce hum.

● This unit may interfere with radio and television reception. Do not use this unit in the vicinity of such receivers.

[Maintenance]

● For everyday cleaning wipe the unit with a soft, dry cloth (or one that has been slightly dampened with water). To remove stubborn dirt, use a mild neutral detergent. Afterwards, be sure to wipe the unit thoroughly with a soft, dry cloth.

● Never use benzene, thinners, alcohol or solvents of any kind, to avoid the risk of discoloration and/or deformation.

[Additional Precautions]

● Protect the unit from strong impact.

● Do not allow objects or liquids of any kind to penetrate the unit. In the event of such an occurrence, discontinue use immediately. Contact qualified service personnel as soon as possible.

● Never strike or apply strong pressure to the display.

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

● Before using the unit in a foreign country, consult with qualified service personnel.

● Should a malfunction occur (or if you suspect there is a problem) discontinue use immediately. Contact qualified service personnel as soon as possible.

[Memory Backup]

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

■ FEATURES OF THE A-220

● Channel Separation

MIDI data, after arriving as input, can be sent out from either MIDI OUT (A/B). The output can be specified on an individual MIDI channel basis. Thanks to this feature, you can have two multi-timbral sound modules respond separately, whenever needed, without having to be concerned about changing MIDI channels. Specification of the MIDI OUT can be made with respect to all channels, from 1 through 16.

● Note Separation

○ UPPER – LOWER

You can split the data flow into separate UPPER and LOWER note ranges on a per-channel basis. You can then have Note and Polyphonic Aftertouch messages sent out from the specified MIDI OUT port (A/B), as chosen for each range.

As a result, you now can have either of two sound modules play (depending on the range (zone) the notes are in), even though the Note data is on the same channel.

Settings for UPPER/LOWER, and specification of the MIDI OUT for each range can be made with respect to all channels, from 1 through 16.

○ INDIVIDUAL

This feature allows you to specify the MIDI OUT (A/B) that you wish to be used for each Note Number. Then, from the specified MIDI OUT port, Note and Polyphonic Aftertouch messages can be output.

This feature allows you, for example, to use two rhythm machines which are set to the same channel, and yet have only one of them play particular percussive sounds (instruments) that you specify.

A maximum of two channels can be selected for INDIVIDUAL.

● Equipped With MIDI IN Connector on Front Panel

Since the A-220 comes equipped with a front panel MIDI IN connector, you can conveniently change input devices (eg., a MIDI keyboard), even after the unit has been mounted in a rack.

■ BLOCK DIAGRAM
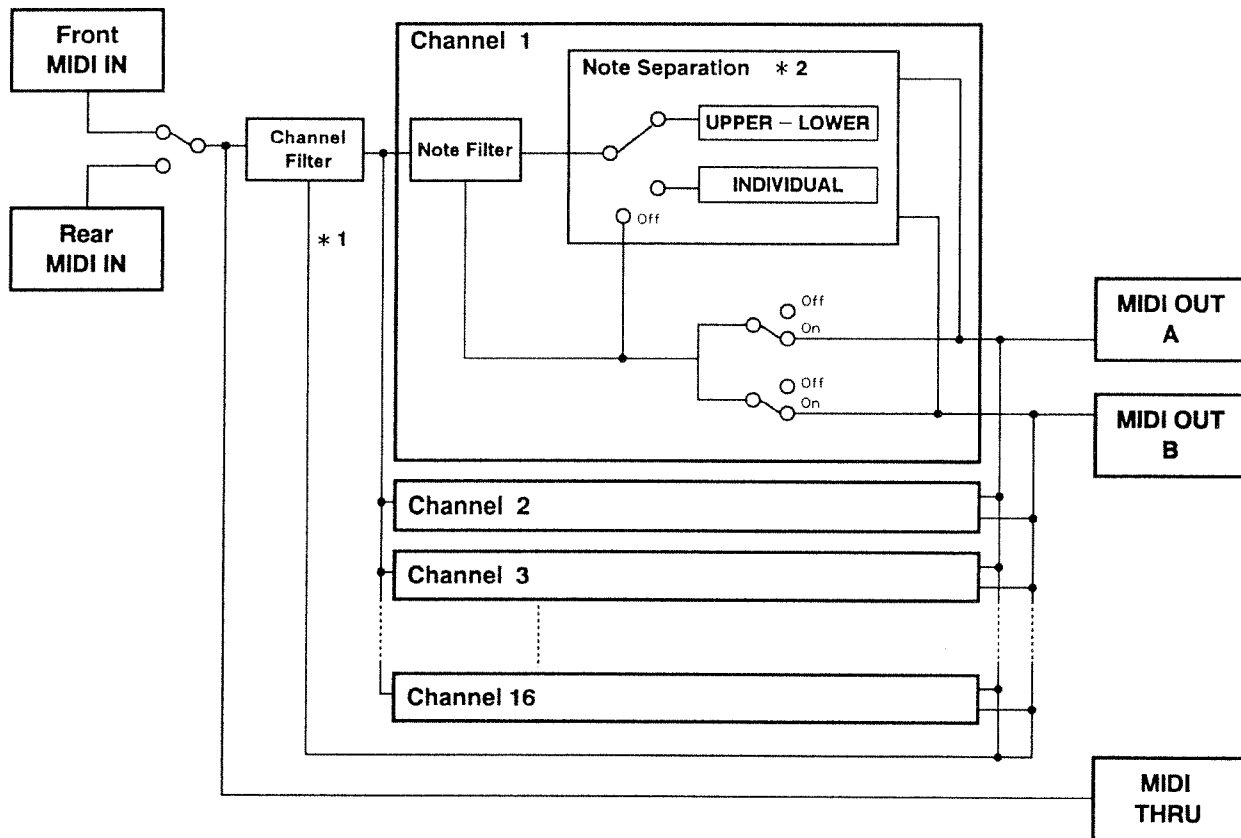
* 1   Real Time, System Common, and Exclusive messages **bypass** the channel filter.

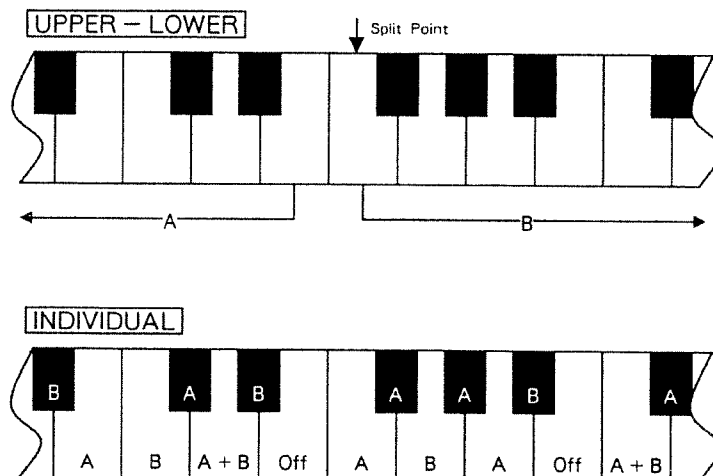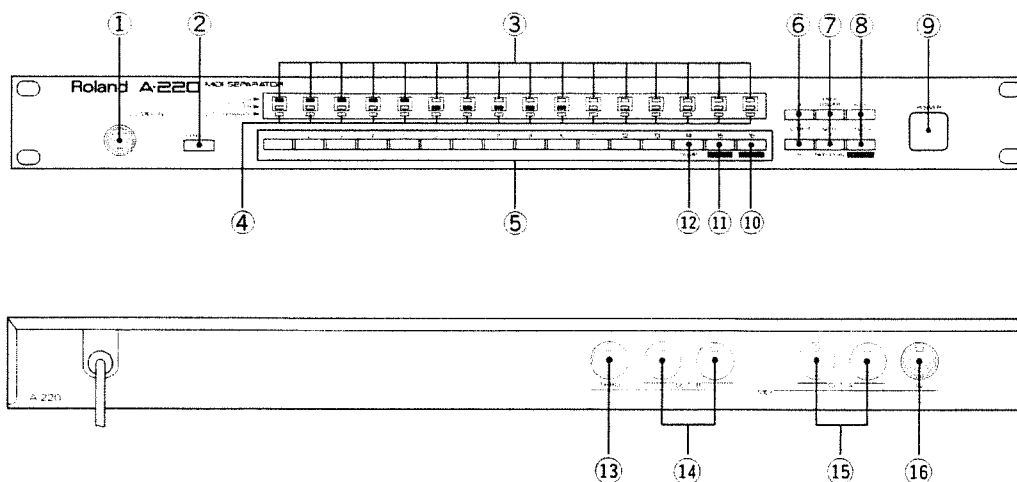* 2   Note Separation   A, B, A+B and Off = MIDI OUT

[1] PANEL DESCRIPTIONS

① **Front MIDI IN Connector**

② **FRONT Button**

Switches between use of either front or rear panel MIDI IN connectors. The front panel MIDI IN connector is active when the indicator is lit. If it is out, the MIDI IN connector on the rear panel is used.

*Do not press this button while transmitting or receiving MIDI messages. Otherwise the MIDI device which is connected will be caused malfunction.

③ **OUTPUT Indicators A/B (1—16)**

Allow you to check the status of MIDI OUT settings for each channel.

④ **NOTE Indicators (1—16)**

Allow you to confirm the channels set for NOTE SEPARATE (UPPER – LOWER, INDIVIDUAL).

⑤ **Channel Buttons 1 — 16**

By pressing these buttons you select the channels for which setting is intended.

⑥ **OUTPUT Buttons: A , B**

These buttons are used to select either MIDI OUT A or B.

⑦ **NOTE Buttons: UPPER-LOWER , INDIVIDUAL**

One of these is pressed to select the type of setting to be made; UPPER – LOWER or INDIVIDUAL.
While UPPER-LOWER is selected, the OUTPUT indicators show the settings in effect for MIDI OUT for the Upper range.
While INDIVIDUAL is selected, the OUTPUT indicators show the channels for which INDIVIDUAL settings have been made.

⑧ **UTILITY Buttons: BULK , MEMORY**

These buttons are used when wishing to transfer data, or to write to, or to read from memory.
While MEMORY is selected, you can view (by means of the OUTPUT and NOTE indicators), the settings in Memory.

⑨ **POWER Switch**

⑩ **READ Button**

The settings stored in memory can be called up by pressing this button while you have the MEMORY held down.

⑪ **WRITE Button**

All your current settings are stored in memory when you press this button while you have MEMORY held down.

⑫ **DUMP Button**

Data describing all your current settings will be transmitted when you press this button while you have the BULK held down.

⑬ **MIDI THRU Connector**

Sends out an exact copy of all data arriving at a MIDI IN.
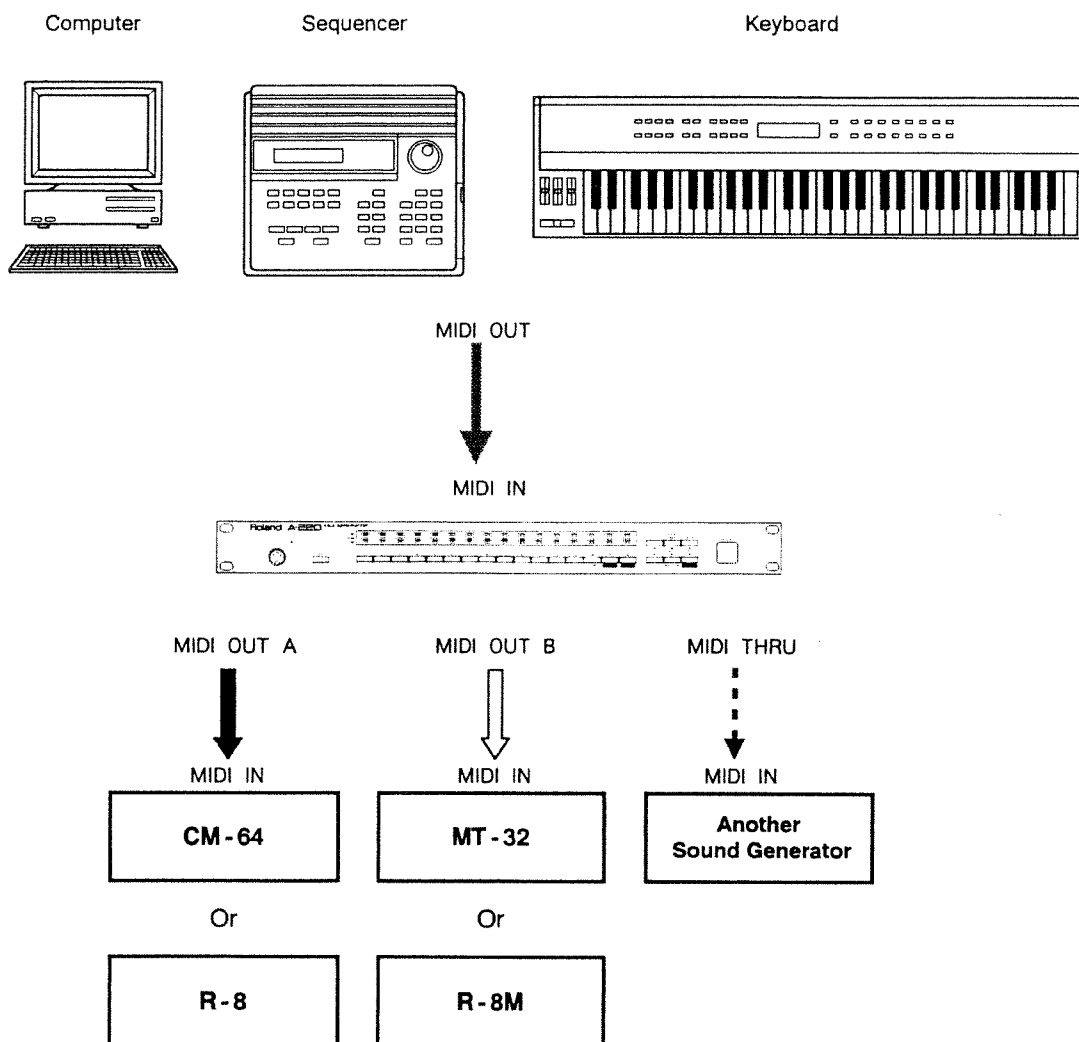
⑭ **MIDI OUT Connector B**

All MIDI data specified for OUTPUT B is sent out from here.

⑮ **MIDI OUT Connector A**

All MIDI data specified for OUTPUT A is sent out from here.

⑯ **Rear MIDI IN Connector**

②MAKING THE CONNECTIONS

Computer   Sequencer   Keyboard

MIDI OUT

MIDI IN

MIDI OUT A   MIDI OUT B   MIDI THRU

MIDI IN   MIDI IN   MIDI IN

| CM-64 | MT-32 | Another Sound Generator |

Or   Or

| R-8 | R-8M |

● MIDI Cable Connections

Connect a MIDI cable so it runs from the MIDI OUT connector on your computer, sequencer, keyboard, etc., to a MIDI IN connector on the A-220.

Then connect MIDI cables so they run from MIDI OUT A and B on the A-220, to the MIDI INs on whatever sequencers, rhythm machines, or other devices you are using.

* The MIDI OUT connectors on the A-220 are comprised of pairs A and B (each of which has two connectors). From both connectors in a pair, exactly the same data is transmitted.

The data which is sent out from the A-220's MIDI THRU connector is never affected by settings on the unit; it is simply an exact copy of what originally arrived at a MIDI IN.

If the indicator on the FRONT button is lit, the front panel MIDI IN connector is active. If it is out, the data arriving at the MIDI IN connector on the rear panel is used.

[3]FUNCTIONS AND THEIR SETTINGS

The various functions offered by your A-220 are introduced in the following, by means of examples. We recommend that you follow the examples, which should help you to learn the steps necessary to achieve the required results.

≪ Modes ≫

● Play Mode
Whenever the indicators of the NOTE buttons (UPPER-LOWER and INDIVIDUAL) are dark (not lit), the A-220 is in the Play mode.
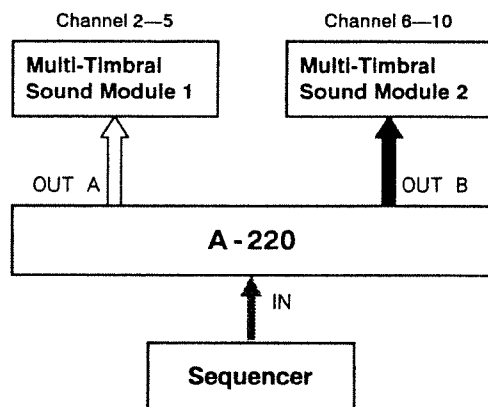
● Edit Mode
Whenever the indicators of the NOTE buttons (UPPER-LOWER and INDIVIDUAL) are lit, the A-220 is in the Edit mode, where setting changes can be made.

1. Channel Separation

Using Two Multi-Timbral Sound Modules

> (Ex.) You wish to play sound module 1 using the MIDI data on channels 2—5, and have the data on channels 6—10 play sound module 2.

**Setup :** Connect sound module 1 to MIDI OUT A, and sound module 2 to MIDI OUT B.

[PROCEDURE]

① **Select MIDI OUT A.**
Press the A and confirm that its indicator lights.

② **Select the channels for output through MIDI OUT A.**
To do this, press the appropriate Channel buttons (the OUTPUT A indicators (top line) will light in red).

(For the above example, you would press 2 through 5.)

③ **Select MIDI OUT B.**
Press the B and confirm that its indicator lights.

④ **Select the channels for output through MIDI OUT B.**
To do this, press the appropriate Channel buttons (the OUTPUT B indicators (middle line) will light in red).

(For the above example, you would press 6 through 10.)

This completes the procedure.

Channels 1 and 11—16	⇒ Do not light
Channels 2—5	⇒ OUTPUT A Indicator Lights
Channels 6—10	⇒ OUTPUT B Indicator Lights
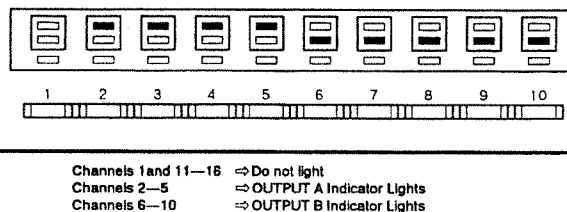
Thereafter, of data that arrives from a sequencer or other device, that which is on channels 2—5 will be output from MIDI OUT A, and data arriving on channels 6—10 will be output from MIDI OUT B.

< Other Types of Output Settings >

To transmit from both MIDI OUT A and B:
Press A and B simultaneously (confirm that both indicators light). Then make your selection by pressing the appropriate Channel buttons. (As a result, both the A and B OUTPUT Indicators will light.)

**When you do not want any data to be output from either MIDI OUT A or B :**
If either OUTPUT button is lit, press it and confirm that the indicator goes out. Then press the desired Channel buttons (the indicators will go out).
If both OUTPUT buttons are lit, press either button twice and both indicators will go out. Then press the desired Channel buttons and both indicators (A and B) will go out.

2. UPPER − LOWER

Using a Keyboard Split Into Two Zones

(Ex.) You have a keyboard transmitting on channel 3. You wish to split the keyboard into upper and lower zones, with the F4 (65) key at the split point. Then, when you play in the upper zone, you want sound module 2 to play, and for the lower zone you want sound module 1 to play.
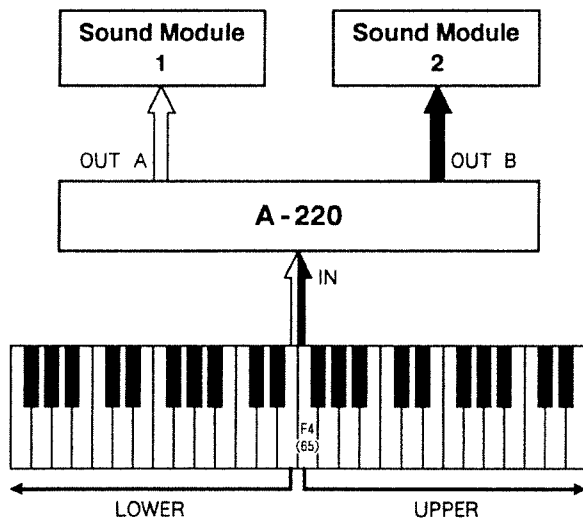
Setup : Connect sound module 1 to MIDI OUT A, and sound module 2 to MIDI OUT B.

[PROCEDURE]

① Select the Edit mode for UPPER − LOWER as follows:

For the above example, press B while holding down the UPPER-LOWER (both indicators will light).

* The MIDI OUT for the Lower zone will automatically be set as the counterpart of the Upper zone.

* Once in the Edit mode, you can still re-select either A or B if you change your mind about the MIDI OUTs you want for the Upper zone.

② Select the MIDI channel for UPPER − LOWER.
Press the relevant Channel button (in the case of the above example, press 3), and confirm that the green NOTE SEPARATE indicator (bottom line) starts blinking.

③ Specify the Split Point by means of a Note message (Note On).

(For the above example, you would press the F4 key on your keyboard.)

The NOTE SEPARATE indicator will light steadily.

* Any MIDI channel can be used when sending the Note message.

* The key (Note Number) which acts as the split point is included as part of the Upper zone.

④ With the setting for the UPPER − LOWER zones now complete, all you need do is return to the Play mode:
Press UPPER-LOWER (its indicator will go out).

Now, with UPPER − LOWER set as explained above, everything played on the keyboard's Upper zone will be routed through MIDI OUT B, and what is played on the Lower zone is output from MIDI OUT A.

By the Way...

In step ② you can set the same Split Point for multiple channels by pressing a number of channel buttons (their NOTE indicators will flash simultaneously).

Whenever you do not intend to use UPPER − LOWER (you wish to use channel separation only), hold down UPPER-LOWER and press the Channel buttons for the channels you will not be using, thus getting their Note Separate indicators to go out.

3. INDIVIDUAL

Routing to Sound Modules Based On Individual Note Numbers

(Ex.) You have two rhythm machines, both using MIDI channel 10. On each of them, Bass Drum and Snare Drum are assigned to Note Numbers 36 (C2) and 38 (D2), respectively. You want to have the Bass and Snare drums play using rhythm machine 2, and have all other instruments play on rhythm machine 1.
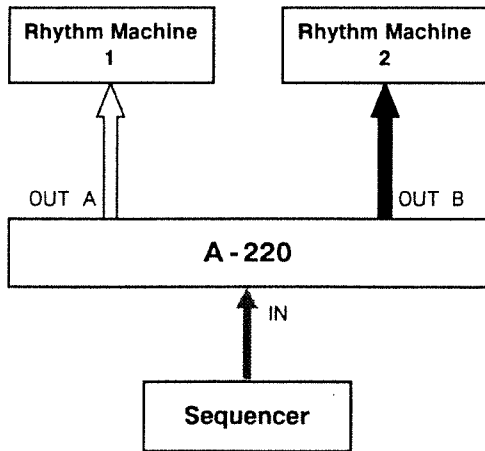
	Name	MIDI OUT
35	— — — —	— — —
36 (C2)	Bass Drum	B
37	Rim Shot	A
38	Snare Drum	B
39	Hand Clap	A
40	— — — —	A
41	Low Tom Tom	A
42	Closed H.H	A
43	— — — —	A
44	Open H.H	A
45	Mid Tom Tom	A
46	— — — —	— — —
47	— — — —	— — —

Setup : Connect rhythm machine 1 to MIDI OUT A, and rhythm machine 2 to MIDI OUT B.

[PROCEDURE]

① Select the Edit mode for INDIVIDUAL as follows:
(For the above example, you would press [B] while holding down [INDIVIDUAL].)

* Once in the Edit mode, you can still reselect either A or B if you change your mind about the MIDI OUTs you want to be used.

② Select the channel for which INDIVIDUAL is to be set.
Press the relevant Channel button, and confirm that the corresponding indicator starts blinking.

(In the case of the above example, press [10].)

③ Specify, on an Individual Note Number basis, the MIDI OUT you wish to be used.

To set for MIDI OUT A, press and light the indicator on the button before sending the note. To set for MIDI OUT B, press the B button before sending the note.

For the above example, press the [B] (its indicator will light). Then press keys C2 and D2 (Note Numbers 36 and 38). Next, press the [A], then play all the keys (note numbers) other than C2 and D2.
* If, when hitting the majority of keys, you should mistakenly press C2 and D2, they also will be set as going to MIDI OUT A.
If this should happen, press the [B] and specify those two keys again.
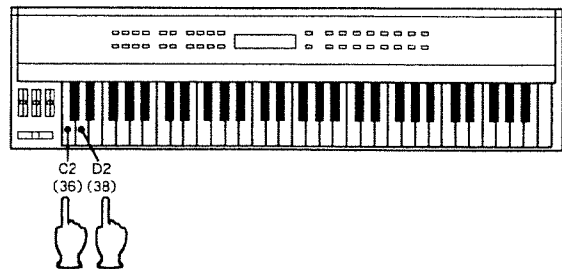
④ With the settings for INDIVIDUAL thus completed, all you need do is return to the Play mode:
Press [INDIVIDUAL] (its indicator will go out).

Now, with INDIVIDUAL set as explained above, Note Numbers 36 and 38 (on channel 10) will be sent out through MIDI OUT B. All other notes on channel 10 will be output from MIDI OUT A.

By the Way...

INDIVIDUAL can only be set for a maximum of two channels.

Whenever you do not intend to use INDIVIDUAL (you wish to use channel separation only), hold down [INDIVIDUAL] and press the Channel buttons for the channels you will not be using, thus getting their Note Separate indicators to go out.

When you enter the Edit mode for a channel for which settings have been made, changes occur only for the Note Numbers which have been set.

When you try to make settings for more than two channels, the OUTPUT indicators for one of the channels you have set will start blinking. This indicates that the settings for that output are going to be negated. **(Refer to the next section for information on how to specify the channel you wish to retain settings for.)**

Once you select a new channel, all previous settings are disregarded and all Note Numbers will be set for MIDI OUT A.

< Other Types of Output Settings >

To transmit from both MIDI OUT A and B:
Press the [A] and [B] simultaneously (both indicators will light). Then make your selection by pressing the appropriate keys on your keyboard (or other input device).

When you do not want any data to be output from either MIDI OUT A or B:
If either OUTPUT button is lit, press it and then confirm that both button indicators are out. Then press the desired keys on your keyboard.

● Alternative Settings
for INDIVIDUAL(I)

The following explains what to do if you wish retain settings already made for a specific channel when you intend to make settings for INDIVIDUAL for a new channel.

> **(Ex.) You have already made settings for INDIVIDUAL for channels 3 and 9.**
> **But now you want to make settings for channel 12, without affecting the settings for channel 9.**

[PROCEDURE]

① **Select the Play mode.**
If you are in the Edit mode, the indicator on one of the NOTE buttons will be lit. Press that button to turn it off; this selects the Play mode.

② **View the current settings.**
To do this, press [INDIVIDUAL]. As long as the button is held, the OUTPUT indicators for the channels (for which settings have been made) will be lit.

③ **Specify the channel for which to retain settings.**

In the case of the above example...

While you have [INDIVIDUAL] pressed, look at the NOTE SEPARATE indicator for channel 9.
If it is dark, press [9] while you continue to hold down [INDIVIDUAL] (confirm that 9's NOTE SEPARATE indicator lights). The settings for channel 9 will be preserved.
If the channel 3 NOTE SEPARATE indicator is lit, it should be turned off. The settings for channel 3 will be erased.

```
UPPER-
A        LOWER    BULK
[  ][||][  ][||][      ]
  ▲        ▲        ▲
OUTPUT   NOTE    UTILITY
  ▼        ▼        ▼
[  ][||][  ][||][      ]
  B     INDIVDUAL  MEMORY
```

3   9

This indicator not lit
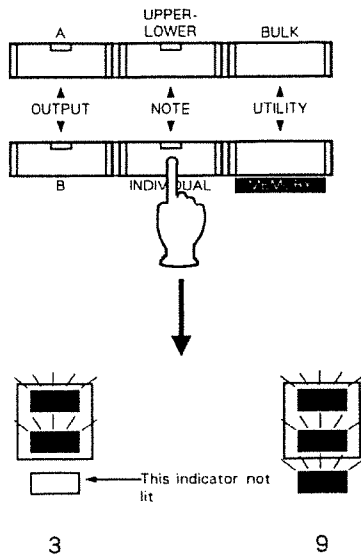
Afterwards, if you go into the Edit mode and start making new settings for a channel 12, channel 3's settings will be erased, while those for channel 9 will be retained.

However, if you continue on and make settings for a different channel, channel 9's settings will also be erased. If you wish to ensure that they are retained, follow the steps outlined above.

● Alternative Settings for INDIVIDUAL(Ⅱ)

(Ex.) You have settings which have been made for channels 3 and 9. You wish to move the settings for channel 3 to channel 2.

[PROCEDURE]

① **Hold down both the** BULK **and** MEMORY **, and then press** 5 **.**
The OUTPUT indicators for the channels for which settings have been made will light. Continue holding the BULK and MEMORY .

② **Select the channel you wish to move.**
With the BULK and MEMORY held down, press the button for the channel you wish to move to a new location (for the above example, press 3). The indicators for that channel will start blinking.

③ **Specify the new location.**
With the BULK and MEMORY still held down, press the button for the channel that is to be the new location (for this example, press 2 . The indicators for channel 2 will begin blinking and the indicators for channel 3 will go out.)

Blink   Lit

2   9

This indicators not lit
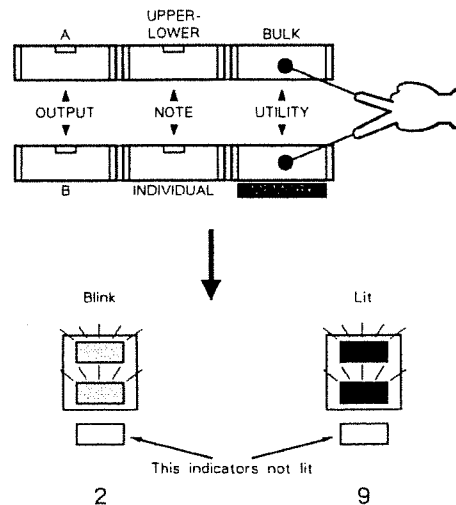
④ **Return to the Play mode:**
Release the BULK and MEMORY .

This completes the procedure required to move the settings for channel 3 to channel 2.

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[4] MEMORY

1. Saving Your Settings In Memory

Carry out the procedure below to store all settings you have made into memory.

* Each time the power to the A-220 is turned on, the last settings stored in memory can be recalled.
* Only one set of settings can be stored in memory.

[PROCEDURE]

While holding down the **MEMORY**, press the **WRITE**.

2. Reading From Memory

By reading from memory, you reset the unit according to the settings stored there.

[PROCEDURE]

While holding down the **MEMORY**, press the **READ**.

3. Transferring Data

When you carry out the following procedure, data which describes all the current settings will be transmitted as Exclusive messages from MIDI OUT A and B.

[PROCEDURE]

While holding down the BULK, press the DUMP.

By the Way...

The above function can be used to transfer all of your current settings to a sequencer (in real time). To do so, start your sequencer after preparing it to record Exclusive messages; then perform the above procedure.

[5] OTHER FUNCTIONS

1. Erasing All Settings

Carry out the following procedure to erase all OUTPUT settings.

[PROCEDURE]

While holding down the **MEMORY** and BULK, press 1.

All indicators for both OUTPUT and NOTE SEPARATE will go out.

* This does not affect Real Time and Common messages which will continue to be output from MIDI OUT A and B.
* Although UPPER – LOWER and INDIVIDUAL will no longer be active, the settings that existed for them will be preserved.

2. Recovering From Operational Error

The function below allows you to recover from error situations: eg., a sound module continues to sound, bender, modulation, or other messages produce undesirable results etc.

[PROCEDURE]

While holding down the **MEMORY** and BULK, press 2.

* When the above procedure is carried out, "All Notes Off" and "Reset All Controllers" messages will be sent out (on all channels) from MIDI OUT A and B.
* Whatever is being played will be momentarily interrupted.

3. Viewing the Channels On Which MIDI Data Is Transmitted

The A-220 can provide a display of the channels on which specific types of MIDI data is being transmitted.

Such display is available for the following 7 types of MIDI data. These 7 types correspond to Channel buttons 1 — 7.
Specify the one type of data you wish to monitor by pressing the corresponding button.

1 : **Note Off**
2 : **Note On**
3 : **Polyphonic Aftertouch**
4 : **Control Change**
5 : **Program Change**
6 : **Channel Aftertouch**
7 : **Pitch Bend**

[PROCEDURE]

① While holding down the **MEMORY** and BULK, press 3.
The OUTPUT indicators corresponding to the type of data being monitored will be blinking.

② Choose the type of data you wish to monitor.
While continuing to hold the **MEMORY** and BULK, press the Channel button which corresponds to the type of data you next wish to monitor. The OUTPUT indicators for that number should then be blinking.

③ Return to the Play mode:
Release the **MEMORY** and BULK.

For example, if you set it to monitor Pitch Bend, whenever the A-220 receives such messages, the OUTPUT indicators will be blinking, indicating the transmission channel.
When no Pitch Bend messages are transmitted, the OUTPUT indicators will keep lighting.

By the Way...

Any monitor selection made will remain in effect only until the power is turned off. Each time the unit is turned on, it is automatically reset to indicate Note On messages.
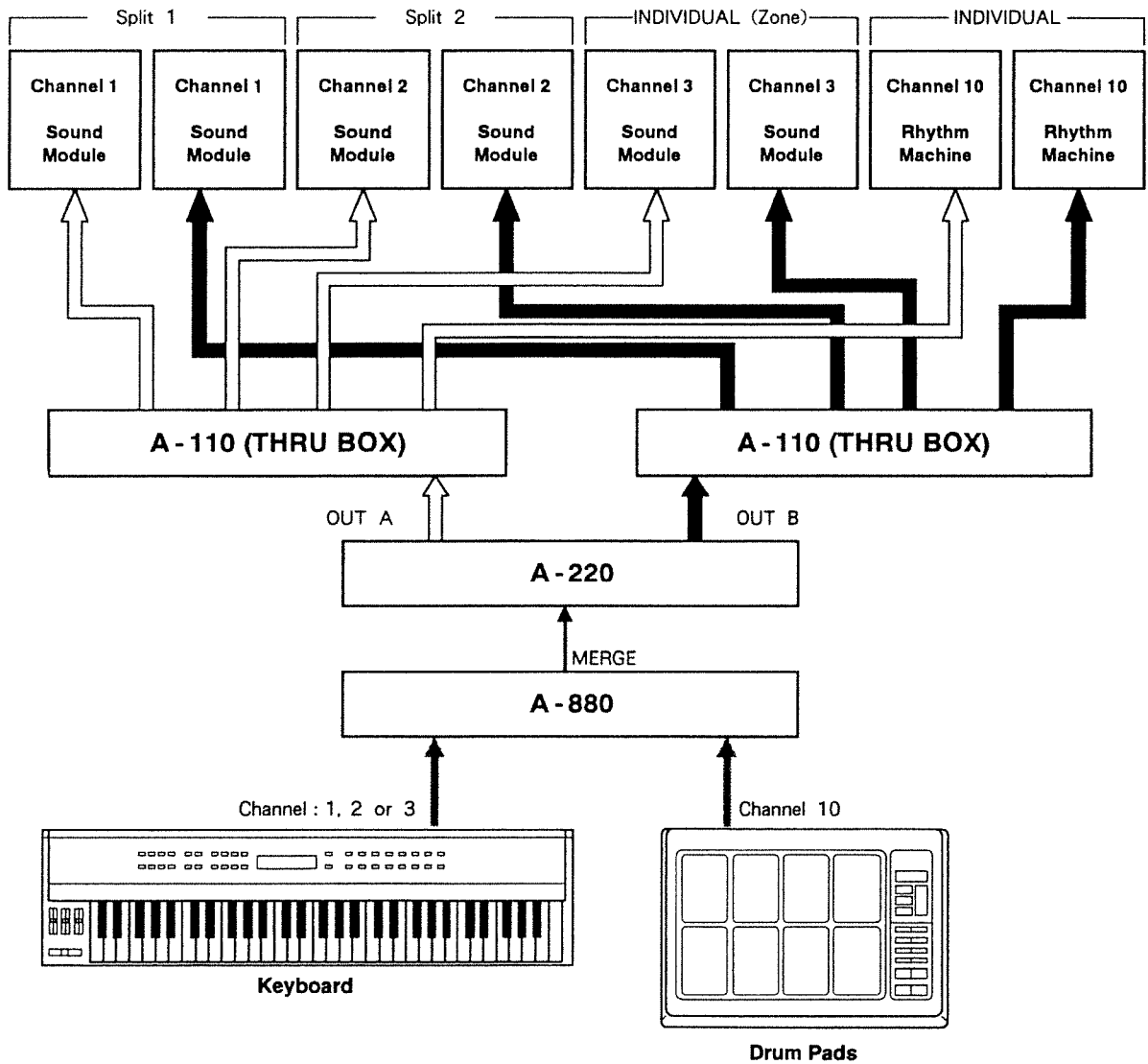
Ex. 3 : Creating Zones
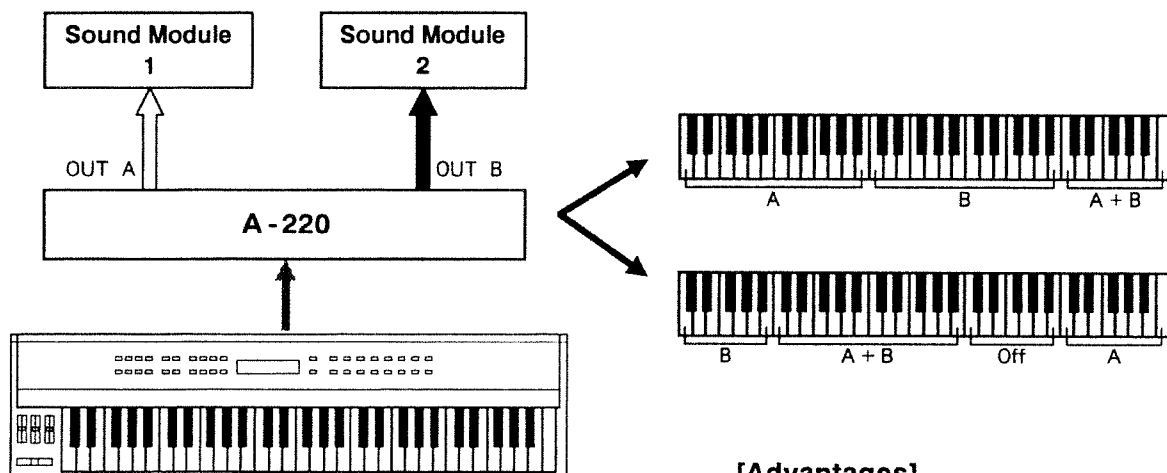
[Advantages]

The INDIVIDUAL function allows you to create numerous convenient zones.

Ex. 4 : When Combined with A-110 and A-880

Split 1		Split 2		INDIVIDUAL (Zone)		INDIVIDUAL	
Channel 1 Sound Module	Channel 1 Sound Module	Channel 2 Sound Module	Channel 2 Sound Module	Channel 3 Sound Module	Channel 3 Sound Module	Channel 10 Rhythm Machine	Channel 10 Rhythm Machine

A-110 (THRU BOX)   **A-110 (THRU BOX)**

OUT A   OUT B

A-220

MERGE

A-880

Channel : 1, 2 or 3   Channel 10

Keyboard   **Drum Pads**

[Advantages]

The examples given in 1, 2, and 3 can also be applied for use with the above setup.

The keyboard and drum pads can be played simultaneously, while routing the music stream and having it played on the selected sound modules.

19

Roland Exclusive Messages

1. Data Format for Exclusive Messages

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

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

≠ MIDI status : FOH, F7H
An exclusive message must be flanked by a pair of status codes, starting with a Manufacturer-ID immediately after FOH (MIDI version1.0).

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

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

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

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

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

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

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

≠ Main data : BODY
This field contains a message to be exchanged across an interface. The exact data size and contents will vary with the Model-ID and Command-ID.

2. Address-mapped Data Transfer

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

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

≠ One-way transfer procedure (See Section 3 for details.)
This procedure is suited for the transfer of a small amount of data. It sends out an exclusive message completely independent of a receiving device status.

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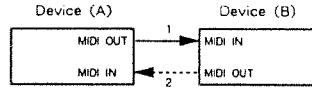
Connection at point 2 is essential for "Request data" procedures. (See Section 3.)

≠ Handshake-transfer procedure
(This device does not cover this procedure)
This procedure initiates a predetermined transfer sequence (handshaking) across the interface before data transfer takes place. Handshaking ensures that reliability and transfer speed are high enough to handle a large amount of data.

Connection Diagram
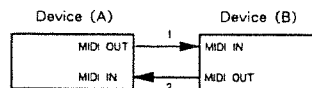
Connection at points 1 and 2 is essential.

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

3. One-way Transfer Procedure

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

Types of Messages

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

≠ Request data ≠ 1 : RQ1 (11H)
This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.
On receiving an RQ1 message, the remote device checks its memory for the data address and size that satisfy the request.
If it finds them and is ready for communication, the device will transmit a "Data set 1 (DT1)" message, which contains the requested data. Otherwise, the device will send out nothing.

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

* The size of the requested data does not indicate the number of bytes that will make up a DT1 message, but represents the address fields where the requested data resides.

* Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.

* The same number of bytes comprises address and size data, which, however, vary with the Model ID.

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

≠Data set 1 : DT1 (12H)

This message corresponds to the actual data transfer process.

Because every byte in the data is assigned a unique address, a DT1 message can convey the starting address of one or more data as well as a series of data formatted in an address dependent order.
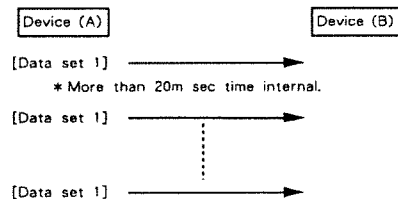
The MIDI standards inhibit non-real time messages from interrupting an exclusive one. This fact is inconvenient for the devices that support a "soft-through" mechanism. To maintain compatibility with such devices, Roland has limited the DT1 to 256 bytes so that an excessively long message is sent out in separate segments.

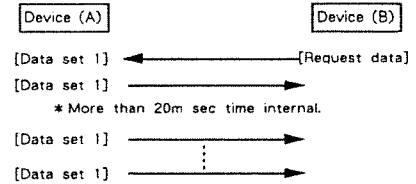| Byte	Description
F0H	Exclusive
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
12H	Command ID
aaH : :	Address MSB : :
	LSB
ddH : : :	Data : : :
sum	Check sum
F7H	End of exclusive

* A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.

* Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.

* The number of bytes comprising address data varies from one Model-ID to another.

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

≠Example of Message Transactions

● Device A sending data to Device B

Transfer of a DT1 message is all that takes place.

Device (A)   Device (B)

[Data set 1] ───────────►
    * More than 20m sec time internal.
[Data set 1] ───────────►
[Data set 1] ───────────►

● Device B requesting data from Device A

Device B sends an RQ1 message to Device A. Checking the message, Device A sends a DT1 message back to Device B.

Device (A)   Device (B)

[Data set 1] ◄───────────[Request data]
[Data set 1] ───────────►
    * More than 20m sec time internal.
[Data set 1] ───────────►
[Data set 1] ───────────►

1. TRANSMITED DATA

1.1 Bypassed message

● Realtime message
All received Realtime messages are sent out from both MIDI OUT A and B without F9H,FDH (undecided) and FEH (active sensing).

● System Common message
All received System Common messages are sent out from MIDI OUT A and B without F4H,F5H (undecided).

● Channel message
All received Channel messages are sent out from optional MIDI OUT.

1.2 Message whitch is created and sent out from MIDI OUT

1.2.1 message whitch is sent out from both MIDI OUT A and B at all time

■ Active sensing

Status
FEH

* This message is sent out every 250ms.

1.2.2 Message to be sent out from both MIDI OUT A and B as the internal connection is changed.

■ Control change

● Hold - 1

Status	Second	Third
BnH	40H	00H

* A - 220 sends this for the modified channel whose Hold - 1 is not off (0).

● Reset All Controllers

Status	Second	Third
BnH	79H	00H

* A - 220 sends this for the modified channel.

■ Channel aftertouch

Status	Second
DnH	00H

* A - 220 sends this for the modified channel whose Channel Aftertouch is not minimum (0).

■ Pitch Bender change

Status	Second	Third
EnH	00H	40H

* A - 220 sends this for the modified channel whose Pitch Bend is not center (± 0).

1.2.3 Message to be send out from both MIDI A and B when A - 220 transmits BULK DUMP or the internal connection is changed,before A - 220 receives any note on messages.

● All Note Off

Status	Second	Third
BnH	7BH	00H

* This message is sent out all channels.

● Reset All Controllers

Status	Second	Third
BnH	79H	00H

* This message is sent out all channels.

1.2.4 Exclusive Message

Status	
F0H	: System Exclusive
F7H	: EOX (End Of Exclusive)

* A - 220 sends this out from both A and B when BULK DUMP is operated or A - 220 receives a RQI.
Refer to Roland Exclusive Messages and Section 3.

2. RECONGNIZED DATA

■ Active sensing

Status
FEH

* Once recieving this message,the A - 220 expects to accept status or data in sequence, at least within 400msec intervals.
If the unit fails to receive a message within 400msec after previous or one, it judges there is a problem somewhere in MIDI path, then it doesn't transmits all messages for 1sec - intervals.

■ Exclusive

Status	
F0H	: System Exclusive
F7H	: EOX (End Of Exclusive)

* Refer to Roland Exclusive Messages and Section 3.

3. EXCLUSIVE COMMUNICATION

Model - ID # of A - 220 is 44H.
Device - ID # of A - 220 use Unit #.
A - 220 uses unit # one of 17H (10H) thru 32 (1FH).

■ One Way Communication

Request Data 1   RQI 11H

Byte	Description
F0H	Exclusive status
41H	Manufacturer's ID (Roland)
DEV	Device ID
44H	Model ID
11H	Command ID
aaH	Address LSB
aaH	Address MSB
ssH	Size LSB
ssH	Size MSB
sum	Check sum
F7H	EOX (End Of Exclusive)

* When the RQI received contains address listed "4.Parameter Address Map", and address size is 1 or more, A - 220 send the corresponding data.
* A - 220 doesn't recognize when it is receiving and transmitting MIDI messages.
* A - 220 never sends RQI data.
* As A - 220 received a RQI, it doesn't transmit DT1 data if one packet consists of more than 33 bytes.

Data set 1   DT1 12H

Byte	Description
F0H	Exclusive status
41H	Manufacturer's ID (Roland)
DEV	Device ID
44H	Model ID
12H	Command ID
aaH	Address LSB
aaH	Address MSB
ddH	Size LSB
:	
:	
sum	Check sum
F7H	EOX (End Of Exclusive)

* When the DT1 received contains address listed in "4.Parameter Adress Map",
  A – 220 stores the data into that memory location.
* A – 220 sends this message upon receiving RQ1.
* A – 220 ignores DT1 data of more than 33 bytes at one time.

4. Parameter Address Map

Addresses are represented in 7 – bit hexadecimal.

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

● Description of Pramater Address Map

```
------------------------------------------------------------------------
address | data       Description
--------|---------------------------------------------------------------
00 00   | 00aa aaaa——Channel Separate OUTPUT A      (0:off,1:on)
        |    |    └──Channel Separate OUTPUT B      (0:off,1:on)
        |    |    ─── The first INDIVIDUAL          (0:off,1:on)
        |    |        The second INDIVIDUAL         (0:off,1:on)
        |    └────────UPPER-LOWEDR                  (0:off,1:on)
        |    └────────UUPPER's OUTPUT        (0:OUTPUT A,1:OUTPUT B)
00 01   | 0aaa aaaa   Split point for UPPER-LOWER        (0-127)
------------------------------------------------------------------------
```

● The first INDIVIDUAL

```
------------------------------------------------------------------------
01 00   | 00(B1)(A1)      00(B0)(A0)
   01   | 00(B3)(A3)      00(B2)(A2)
   :    |      |              :
   :    |      |              :
   3E   | 00(B125)(A125)  00(B124)(A124)
   3F   | 00(B127)(A127)  00(B126)(A126)
------------------------------------------------------------------------
```

● The second INDIVIDUAL

```
------------------------------------------------------------------------
01 00   | 00(B1)(A1)      00(B0)(A0)
   41   | 00(B3)(A3)      00(B2)(A2)
   :    |     |               :
   :    |     |               :
   7E   | 00(B125)(A125)  00(B124)(A124)
   7F   | 00(B127)(A127)  00(B126)(A126)
------------------------------------------------------------------------
```

* A0 – A127 : They show whether or not A – 220 transmits note messages corresponding to the note number for MIDI OUT A.(0 : off,1 : on)
* B0 – B127 : They show whether or not A – 220 transmits note messages corresponding to the note number for MIDI OUT B.(0 : off,1 : on)
* INDIVIDUAL1 can be set to the one channel only.
* INDIVIDUAL2 can be set to the one channel only.
* Both INDIVIDUALs (1 and 2) can't be set to the one channel at a time.
* A – 220 can not set INDIVIDUAL2 to the channel which is set for INDIVIDUAL1.
* And A – 220 can not set INDIVIDUAL1 to the channel which is set for INDIVIDUAL2.
* Both UPPER – LOWER and INDIVIDUAL can't be set to the one channel at a time.
  As you specify it at a time,INDIVIDUAL is took priority.

■ Parameter address map

```
---------------------------------------
adress | data         discription
-------|-------------------------------
00 00  | 00aa aaaa    Channel  1
   01  | 0aaa aaaa
   02  | 00aa aaaa    Channel  2
   03  | 0aaa aaaa
   :   |     :
   :   |     :
   1C  | 00aa aaaa    Channel 15
   1D  | 0aaa aaaa
   1E  | 00aa aaaa    Channel 16
   1F  | 0aaa aaaa
---------------------------------------
```

● The first INDIVIDUAL

```
---------------------------------------
adress | data
-------|-------------------------------
01 00  | 00aa 00aa
   01  | 00aa 00aa
   :   |    :
   :   |    :
   3E  | 00aa 00aa
   3F  | 00aa 00aa
---------------------------------------
```

● The second INDIVIDUAL

```
---------------------------------------
adress | data
-------|-------------------------------
01 40  | 00aa 00aa
   41  | 00aa 00aa
   :   |    :
   :   |    :
   7E  | 00aa 00aa
   7F  | 00aa 00aa
---------------------------------------
```

MIDI Implementation Chart

Function ···		Transmitted	Recognized	Remarks
Basic Channel	Default Changed	× ×	× ×	
Mode	Default Messages Altered	× × ********	× ×	
Note Number	True Voice	× ********	× ×	
Velocity	Note ON Note OFF	× ×	× ×	
After Touch	Key's Ch's	× ○ *1	× ×	
Pitch Bender		○ *1	×	
Control Change	64 121	○ *1 ○ *1 *2	× ×	Hold 1 Reset All Controllers
Prog Change	True #	×******** *	×	
System Exclusive		○	○	
System Common	Song Pos Song Sel Tune	× × ×	× × ×	
System Real Time	Clock Commands	× ×	× ×	
Aux Messages	Local ON/OFF All Notes OFF Active Sense Reset	× ○ (123) × ×	× × ○ ×	
Notes		*1 Message to be sent out from both MIDI OUT A and B as the internal connection is changed. *2 Message to be send out from both MIDI OUT A and B when A-220 transmits BULK DUMP or the internal connection is changed, before A-220 receives any Note on messages.		

Mode 1 : OMNI ON, POLY   Mode 2 : OMNI ON, MONO   ○ : Yes

Mode 3 : OMNI OFF, POLY   Mode 4 : OMNI OFF, MONO   × : No

■ SPECIFICATIONS

A-220 : MIDI SEPARATOR

● Main Functions

Channel Separation
Note Separation: Upper – Lower, Individual

● Buttons

Channel Buttons (1 – 16)
OUTPUT Buttons (A/B)
NOTE Buttons (UPPER – LOWER, INDIVIDUAL)
UTILITY Buttons (BULK, MEMORY)
FRONT Button

● Indicators

LEDs: 53 (OUTPUT A/B, NOTE SEPARATE; OUTPUT
Buttons, NOTE Buttons, FRONT Button)

● Connectors

MIDI Connectors (Rear IN, Front IN; OUT A: 2, OUT B:
2, THRU)

● Power Supply

AC 117/230/240V

● Power Consumption

6W

● Dimensions

482 (W) x 286 (D) x 44 (H) mm
19 – 1/4 (W) x 11 – 7/16 (D) x 1 – 3/4 (H) inches

● Weight

3 kg/6.6 lbs

● Supplied Accessories

Owner's Manual

● Options

MIDI/SYNC Cable: MSC Series

* In the interest of product refinement, the specifi-
cations and/or external appearance of this unit are
subject to change without prior notice. .

Information

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

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

CANADA
Roland Canada Music Ltd.
(Head Office)
13880 Mayfield Place
Richmond B. C., V6V 2E4
CANADA
☎ (604)270 - 6626

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

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

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

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

NEW ZEALAND
Roland Corporation (NZ)Ltd.
97 Mt. Eden Road, Mt. Eden,
Auckland 3
NEW ZEALAND
☎ (09)398 - 715

UNITED KINGDOM
Roland(UK)Ltd.
Amalgamated Drive
West Cross Centre, Brentford,
Middlesex TW8 9EZ,
UNITED KINGDOM
☎ (81)568 - 4578

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Oststrasse 96,
2000 Norderstedt
GERMANY
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DENMARK
☎ 31 - 95 31 11

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S - 131 30 Nacka,
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N - 0216 Oslo 2
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20020 ARESE MILANO
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08020 Barcelona
SPAIN
☎ 93 - 308 - 1000

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

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Hauptstrasse 21/Postfach
CH - 4456 Tenniken
SWITZERLAND
☎ 061/98 60 55
Repair Service by Musitronic AG

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

Musikengro
(Paris Office)
Centre Region Parisienne
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94400 Vitry s/Seine
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☎ (1)4680 86 62

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☎ (1)1868905

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Foresight Corporation
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