Roland

MIDI MIDI PATCHER/MIXER

A-880

Owner's Manual
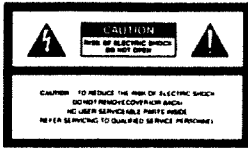
ADVARSEL!

Lithiumbatteri. Eksplosionsfare.

Udskiftning må kun foretages af en sagkyndig, og som beskrevet i servicemanual.

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 manufacture.

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 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. The product should avoid using in 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.

VARNING !

Lithiumbatteri. Explosionsrisk.

Får endast bytas av behörig servicetekniker.

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Må bare skiftes av kvalifisert tekniker som beskrevet i servicemanualen.

SAVE THESE INSTRUCTIONS

GROUNDING INSTRUCTION

This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric shock. This product is equipped with a cord having an equipment-grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER — Improper connection of the equipment-grounding conductor can result in a risk of electric chock. Check with a qualified electrician or servicemen if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product — if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

VAROITUS !

Lithiumparisto. Räjähdysvaara.

Pariston saa vaihtaa ainoastaan alan ammottimies.

WARNING
THIS APPARATUS MUST BE EARTH GROUNDED.

The three conductors of the mains lead attached to this apparatus are identified with color as shown in the table below, together with the matching terminal on the UK type power plug. When connecting the mains lead to a plug, be sure to connect each conductor to the correct terminal, as indicated.
"This instruction applies to the product for United Kingdom."

MAINS LEADS		PLUG
Conductor	Color	Mark on the matching terminal
Live	Brown	Red or letter L
Neutral	Blue	Black or letter N
Grounding	Green-Yellow	Green, Green-Yellow, letter E or symbol

Thank you for purchasing the Roland MIDI Patcher/Mixer A-880.

The A-880 is provided with eight independent MIDI IN's and OUT's. You can select any of those IN and OUT sockets, and also mix MIDI messages from two MIDI IN's and send them from more than one MIDI OUT's. Moreover, the A-880 allows you to select whether or not to send MIDI messages from each MIDI output socket and features some more useful MIDI functions.

To make the best use of this unit, read this owner's manual carefully.

CONTENTS

■ IMPORTANT NOTES

◇ **Power Supply** ◇

● The appropriate power supply for this unit is shown on its name plate. Please make sure that the line voltage in your country meets this requirement.

● Do not use the same socket used for any noise generating device (such as a motor or variable lighting system).

● Make sure that the unit is turned off before connecting the power plug to the AC socket.

● When disconnecting the power plug from the socket, do not pull the cord, but hold the plug to avoid damaging the cord.

● Avoid damaging the power cord.

● If the unit is not to be used for a long period of time, unplug the cord from the socket.

● It is normal for this unit to become hot while being operated.

● Check with your local Roland dealer if you wish to use this unit in a foreign country.

● Disconnect the AC cord immediately in the event of an electrical storm.

◇ **Connections** ◇

● Before setting up this A-880 with other MIDI devices, turn this unit off along with all other units.

◇ **Room Location** ◇

● Avoid using this device in excessive heat or humidity conditions, or where it may be affected by direct sunlight or dust and avoid places subject to high vibration.

● Operating the unit near a neon light, fluorescent lamp, TV or CRT Display may cause noise interference. If so, change the angle or the position of the unit.

● Operating this unit near a TV or radio may cause picture or noise interference. If this happens, move the unit away from these instruments.

● Do not place or drop anything heavy on the main unit or its power cord.

◇Cabinet, Cleaning Care◇

●For cleaning the unit, use a dry and soft cloth.

●If the casing is stained, use a cloth slightly dampened with water.

●To remove stubborn stains, clean the casing with a cloth moistened with a neutral detergent, then wipe it dry with a soft cloth.

●Do not use solvents such as paint thinner.

◇Memory Backup System◇

●This unit features a memory back – up system that retains the data even after switched off. The battery that supports the back – up circuit should be replaced every five years. Call the Roland service station for a battery replacement. (The first replacement may be required before five years, depending on how much time had passed before you purchased the unit.)

●When the battery is exausted, all Indicators flicker when power is turned on, At such times there is a possibility that the backup memory has been lost (See Page 12).

●Although we do our utmost to protect your data during repairs, sometimes, especially when working on the memory itself or on a related area, some of your important data may be lost. Keep a separate record of all the data that you consider important. This can be done by saving it down on a sheet of paper.

◇How To Handle The Unit◇

●Do not allow fluid or foreign matter, such as water, beverages, coins and wires, to enter this unit.

●Do not examine or modify the internal components or circuitry. Electrical shocks or damage may result.

●Do not subject this unit to strong shocks, or move it while the power is on.

●If this unit fails to operate correctly, turn it off immediately and contact your Roland dealer.

① Panel Description
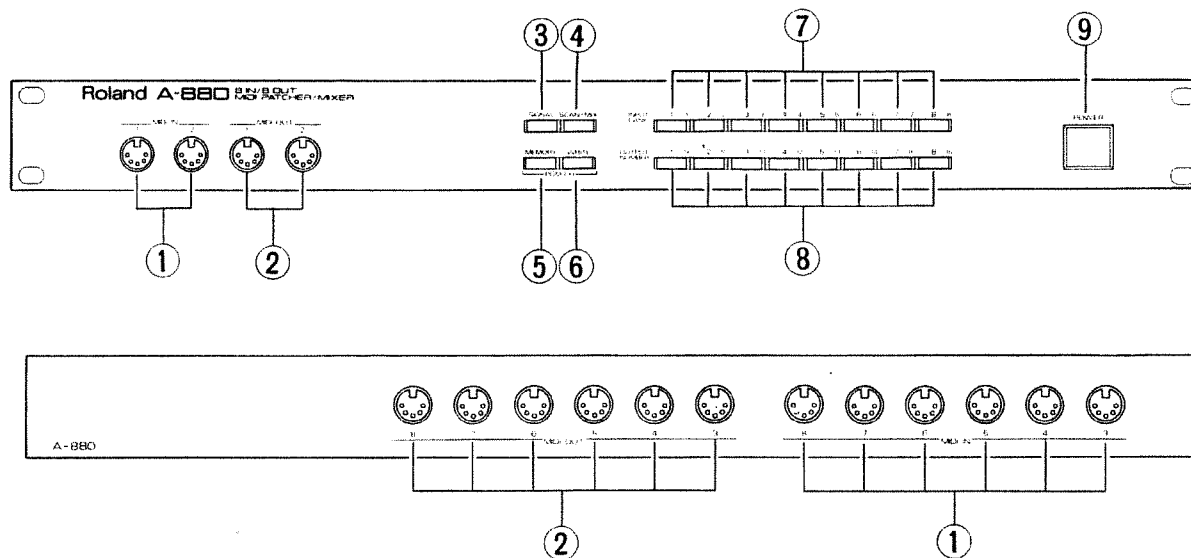
① MIDI IN Sockets (1 – 8)

② MIDI OUT Sockets (1 – 8)

③ Signal Mode Button

Pushing this button will light up the indicator and turn the unit to the Signal mode. In the Signal mode, the relevant Input/Bank Buttons and Output/Number Buttons light up when MIDI messages are being fed into the unit. This fact allows you to check how the inputs and outputs have been currently connected.

④ Scan/Mix Mode Button

Pushing this button will light up the indicator and turn the unit to the Scan mode. In the Scan mode, you can check the current MIDI In and Out settings in sequence (Mix → Input 1 → Input 2 → ....) with the indicators of the Input/Bank and Output/Number Buttons.
This button can also be used for mixing signals.

⑤ Memory Mode Button

This button is used to call any setting written in memory.

⑥ Write Mode Button

This button is used to write a setting you have made into memory.

⑦ Input/Bank Buttons (1 – 8)

These buttons are used for selecting MIDI IN's or a Memory Bank.

⑧ Output/Number Buttons (1 – 8)

These buttons are used for selecting MIDI OUT's or a Memory Number.

⑨ Power Switch

② Changing Connections

The connections of each MIDI IN and MIDI OUT can be changed as follows :

＊More than one MIDI OUT can be assigned to one MIDI IN, but more than one MIDI IN (including Mix Input) cannot be assigned to the same MIDI OUT. If you assign a MIDI IN to a MIDI OUT already used for another MIDI IN, the later MIDI IN will override the previous one.

①Press the Scan／Mix or Signal Button.

The corresponding indicator lights up.

②Press the Input／Bank Button for the MIDI IN to be connected.

All the Mode Buttons go out and the Output／ Number Buttons which correspond to the MIDI OUT's currently used will light up.

③Press the Output／Number Buttons for the MIDI OUT's you wish to use.

The indicators light up, activating the corresponding MIDI OUT's.

＊Be sure to assign MIDI OUT's within 15 seconds after taking step ②. Otherwise, you will go back to step ①.

＊Do not take the above MIDI OUT assignment procedure while MIDI messages are being received or transmitted.

③ Mixing

The mixing function of the A-880 allows you to mix the MIDI messages of the base MIDI IN (Control In) with the messages of another MIDI IN and send the mixed messages.
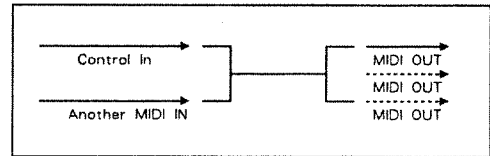
＊If you assign MIDI OUT's already used, the previous assignment will be cancelled.

【Setting a Control IN】

Turn the unit off, then turn it on while holding the Input Button down which corresponds to the MIDI IN which you wish to make a Control IN.

＊The Control In you have set will be retained even after the unit is turned off.

【Connecting the MIX Inputs】

①While holding the Scan／Mix Button down, press the Input／Bank Button for the MIDI IN you wish to mix.

One of the Input／Bank Button lights while the other one flashes.

②Press the Output／Number Buttons for the MIDI OUT's where the mixed messages are to be sent.

The Output／Number Buttons light up, activating the corresponding outputs (MIDI OUT's).
To turn off the MIDI OUT's you have set, press the Output／Number Buttons which are lit.

*The Mixing function does not allow you to input MIDI clock messages from the two MIDI IN's at the same time. The MIDI IN where the MIDI clock messages are input flashes. To select another MIDI IN : press the Input/Bank Button which you have assigned in step ① while holding the Scan/Mix Button.

*You can select any MIDI IN for mixing, but if the selected MIDI IN is the same as the Control In, the function of mixing does not work. The indicator of the Input/Bank Buttons selected here will flash, showing that the MIDI clock messages can be input.

*Be sure to complete step ③ procedure within 15 seconds after taking step ②. Otherwise, the unit will go back to the Signal or Scan mode.

4 Writing the Connections into Memory

If you wish to retain the connection assignment you have made, write it into any of the 64 memory locations . A memory location is represented by a Memory Bank (1 – 8) and Memory Number (1 – 8), such as 2 – 3, 4 – 8, etc.

		1	2	3	4	5	6	7	8
		Number							
Bank	1	11	12	13	14	15	16	17	18
	2	21	22	23	24	25	26	27	28
	3	31	32	33	34	35	36	37	38
	4	41	42	43	44	45	46	47	48
	5	51	52	53	54	55	56	57	58
	6	61	62	63	64	65	66	67	68
	7	71	72	73	74	75	76	77	78
	8	81	82	83	84	85	86	87	88

①Press the Write Button.

The indicator lights up.

②Assign a memory location with the Input/Bank (banks 1 – 8) and Output/Number (numbers 1 – 8) Buttons.

③Press the Write Button.

④Press the Scan/Mix or Signal Button.

*The Control In is not written with each memory number. This means that changing the settings of the Control In at power – up will change the mixing assignment.

5 Calling a Memory and Changing Memories

The connection setting you have written into memory can be recalled as follows.

【Calling a Memory】

①Press the Memory Button.

The indicator lights up.

②Assign the memory you wish to call with the Input/Bank (Banks 1 - 8) and Output/Number (Numbers 1 - 8) Buttons.

If you assign the Bank first, you must assign the Number next even if you do not need to change the Number. However, if you assign the Number first, you can skip bank assignment if you do not need to change the Bank.

③Press the Scan/Mix or Signal Button.

*When the memory you have called has the same Mix In and Control In, the function of Mix does not work.

【Changing Memories from an external MIDI device】

To change memories from an external MIDI device, use the Program Change messages of the MIDI channel (Control Channel) assigned at the Control In (see page 7).

■Setting the Control Channel

①Press the Memory and Write Buttons at the same time.

The two indicators light up.

②Specify the Control Channel using the Input/Bank and Output/Number Buttons.
The Input/Bank Buttons 1 to 8 correspond to Control Channels 1 to 8 and the Output/Number Buttons 1 to 8 correspond to Control Channel 9 to 16.

INPUT/BANK	1	2	3	4	5	6	7	8
OUTPUT/NUMBER	9	10	11	12	13	14	15	16

*If you do not wish to change the memories with Program Change messages, press the Input/Bank and Output/Number Buttons which are lit.(The indicator will go out).

③Press the Scan/Mix or Signal Button.

■Program Change Numbers and Memory Numbers

The Memory Numbers on the A-880 correspond to the Program Change numbers as shown below. Any program change number higher than 65 will have no effect on the memory numbers.

Bank \ Number	1	2	3	4	5	6	7	8
1	1	2	3	4	5	6	7	8
2	9	10	11	12	13	14	15	16
3	17	18	19	20	21	22	23	24
4	25	26	27	28	29	30	31	32
5	33	34	35	36	37	38	39	40
6	41	42	43	44	45	46	47	48
7	49	50	51	52	53	54	55	56
8	57	58	59	60	61	62	63	64

⑥ MIDI Message Filter

You can edit out certain portions of the MIDI messages of the mixed signal by using the MIDI Message Filter.

The MIDI Message Filter also works when the Control In and the MIDI IN for mixing are set to the same number.
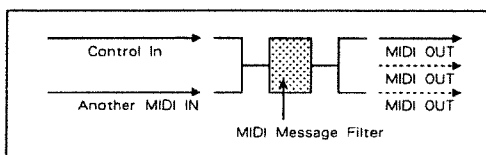
①**Press the Signal and Scan/Mix Buttons at the same time.**

The two indicators light up.

②**By using the Input/Bank Buttons 7 and 8 and Output/Number Buttons 1 to 8, the output On or Off can be selected.**

Each time you press the button, the indicator lights up and goes out alternately. When the indicator is lit, the corresponding MIDI messages are output, and when it goes out, messages are not output.

③**Press the Signal or Scan/Mix Button.**

INPUT 7   Whether or not to output ALL NOTE OFF messages from the MIDI OUT.

INPUT 8   Whether or not to re-trigger the Note message from the MIDI IN and send it through the MIDI OUT. (when a new NOTE ON is assigned to the same note number, NOTE − OFF comes once, then NOTE − ON)

OUTPUT 1   Whether or not to send the Note ON /OFF messages from the MIDI OUT.

OUTPUT 2   Whether or not to send the Polyphonic Pressure messages (aftertouch messages which can be assigned to each Note Number independently) from the MIDI OUT.

OUTPUT 3   Whether or not to send the Control Change messages from the MIDI OUT.

OUTPUT 4   Whether or not to send the Program Change messages from the MIDI OUT.

OUTPUT 5   Whether or not to send the Channel Pressure messages (aftertouch messages which can be independently assigngd to each MIDI channel) from the MIDI OUT.

OUTPUT 6   Whether or not to send the Pitch Bender messages from the MIDI OUT.

OUTPUT 7   Whether or not to send the Exclusive messages from the MIDI OUT.

OUTPUT 8   Whether or not to send the Real Time and Common messages from the MIDI OUT.

7 Other Useful Functions

Four more useful functions, Inputs 1 to 4, are provided.

①Press the Signal and Scan/Mix Buttons at the same time.

The two indicators light up.

②The INPUT 1 to 4 functions are engaged when you press the relevant buttons.

③Press the Signal or Scan/Mix Button.

INPUT 1   The entire connection assignment is cancelled. This function can be used to start setting from scratch.

INPUT 2   The Mixer Inputs are cancelled and the Mixer reset. If the mixed MIDI messages include any NOTE – ON key, NOTE OFF will be sent from the MIDI OUT.

INPUT 3   ALL Note OFF and RESET ALL CONTROLLERS are sent from each MIDI OUT to all the channels. This function can be used to initialize the connected MIDI devices.

INPUT 4   TUNE REQUEST and A4 KEY ON are transmitted intermittently from each MIDI OUT. This can be used for tuning the connected MIDI devices.

8 Setup Examples

1) Setup with a MIDI Keyboard and three MIDI Sound Sources

```
            MIDI Keyboard
               MIDI  OUT
               MIDI  IN
            A-880
       MIDI  OUT   MIDI  OUT   MIDI  OUT
   MIDI  IN        MIDI  IN          MIDI  IN
 Sound Module 1  Sound Module 2   Sound Module 3
```
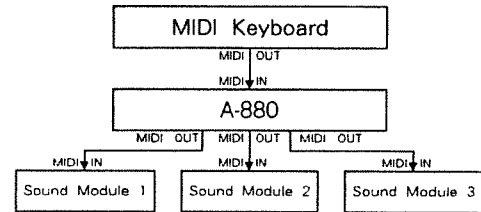
You can play multiple MIDI sound sources with one MIDI keyboard.

2) Setup with a MIDI keyboard, a Sequencer and a MIDI Sound Source

```
   MIDI Keyboard      MIDI Sequencer
      MIDI  OUT          MIDI  OUT
      MIDI  IN           MIDI  IN
            A-880
          MIDI  OUT
          MIDI  IN
      Sound Module 1
```
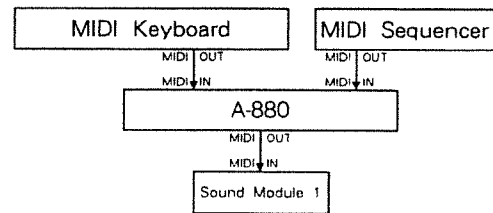
By using the Mixing function of the A-880, MIDI messages from the MIDI keyboard and sequencer are mixed and play the MIDI sound source.

3) Setup with two Sequencers

```
  MIDI Sequencer    MIDI Sequencer
     MIDI  OUT      MIDI  OUT   MIDI  IN
     MIDI  IN       MIDI  IN    MIDI  OUT
            A-880
     MIDI  OUT   MIDI  OUT   MIDI  OUT
  MIDI  IN       MIDI  IN          MIDI  IN
 Sound Module 1  Sound Module 2   Sound Module 3
```
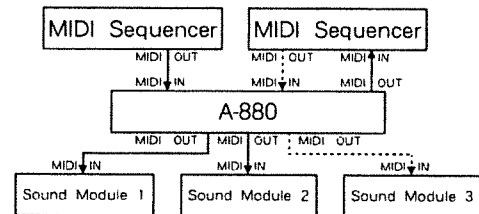
These two sequencers are used as a master and a slave. When they are synchronizing, the master sequencer plays the sound sources 1 and 2, and the slave sequencer plays the sound source 3.

■ A-880 Table

● When the amount of mixed MIDI messages exceeds the maximum capacity of the A-880, the buttons will react as shown below :

```
            1   2   3   4   5   6   7   8
INPUT/     [ ] [▓] [▓] [▓] [▓] [▓] [▓] [▓]
BANK

OUTPUT/    [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
NUMBER
                              [▓] The indicator lights up
                              [ ] The indicator stays dark
```
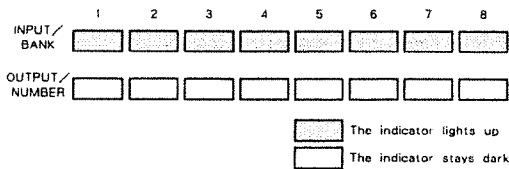
● When the check sum of the received Exclusive messages is incorrect, the indicators react as shown below :

```
            1   2   3   4   5   6   7   8
INPUT/     [ ] [ ] [▓] [ ] [ ] [▓] [ ] [ ]
BANK

OUTPUT/    [▓] [ ] [▓] [ ] [ ] [▓] [ ] [▓]
NUMBER
                              [▓] The indicator lights up
                              [ ] The indicator stays dark
```
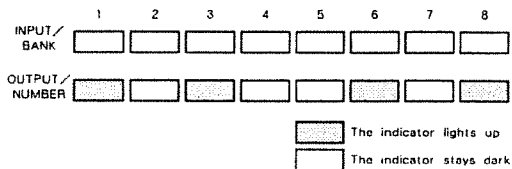
● If the indicators respond as shown below at power up, the battery for memory back-up is exausted. Call your local Roland service center.

```
            1   2   3   4   5   6   7   8
INPUT/     [▓] [▓] [▓] [▓] [ ] [ ] [ ] [ ]
BANK

OUTPUT/    [ ] [ ] [ ] [ ] [▓] [▓] [▓] [▓]
NUMBER
        The indicators of [▓] and [ ] light up alternately.
```
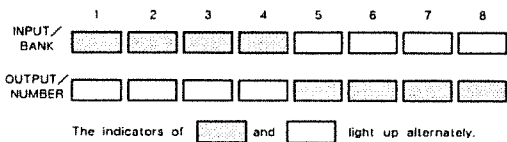
● If the indicators respond as shown below at power up, data in memory may be lost.

```
            1   2   3   4   5   6   7   8
INPUT/     [▓] [▓] [ ] [ ] [ ] [ ] [▓] [▓]
BANK

OUTPUT/    [ ] [ ] [▓] [▓] [▓] [▓] [ ] [ ]
NUMBER
        The indicators of [▓] and [ ] light up alternately.
```
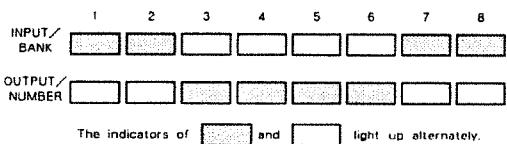
■ Initialization

A-880 can be initialized (returned to the manufacturer's preprogramed condition) by turning it on while holding the Signal Button and the Memory Button down. The indicators react as shown below :

```
            1   2   3   4   5   6   7   8
INPUT/     [ ] [▓] [ ] [▓] [ ] [▓] [ ] [▓]
BANK

OUTPUT/    [▓] [ ] [▓] [ ] [▓] [ ] [▓] [ ]
NUMBER
        The indicators of [▓] and [ ] light up alternately.
```
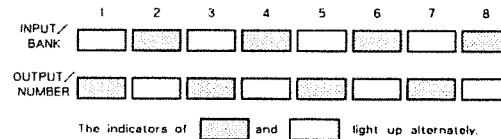
Function ···		Transmitted	Recognized	Remarks
Basic Channel	Default Changed		1 − 16、OFF 1 − 16、OFF	Memorized.
Mode	Default Messages Altered	× × * * * * * * * * *	OMNI OFF × ×	
Note Number	True Voice	○*1 (69) * * * * * * * * *	× ×	
Velocity	Note ON Note OFF	○*1 (9n v = 64) ○*1 (9n v = 0)	× ×	
After Touch	Key's Ch's	× ×	× ×	
Pitch Bender		×	×	
Control Change	0 − 120 121	× *2	× ×	
Prog Change	True #	× * * * * * * * * *	0 − 63 0 − 63	
System Exclusive		○	○	
System Common	Song Pos Song Sel Tune	× × ○	× × ×	
System Real Time	Clock Commands	× ×	× ×	
Aux Message	Local ON／OFF All Notes OFF Active Sense Reset	× *2 (123) × ×	× ○ (123 − 127) × ×	
Notes		*1 In the TUNE MODE. *2 When the internal connection is cut off.		

Mode 1 : OMNI ON, POLY   Mode 2 : OMNI ON, MONO   ○ : Yes
Mode 3 : OMNI OFF, POLY   Mode 4 : OMNI OFF, MONO   × : No

Roland Exclusive Messages

1. Data Format for Exclusive Messages

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

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

MIDI status : F0H, F7H

An exclusive message must be flanked by a pair of status codes, starting with a Manufacturer–ID immediately after F0H (MIDI version1.0).

Manufacturer– ID : 41H

The Manufacturer–ID identifies the manufacturer of a MIDI instrument that triggeres 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 Section3 for details.)

This procedure is suited for the transfer of a small amount of data. It sends out an exclusive message completely independen of a receiving device status.

Connection Diagram
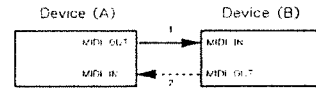
Connectionat point2 is essential for "Request data" procedures. (See Section3.)

Handshake– transfer procedure (See Section4 for details.)

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
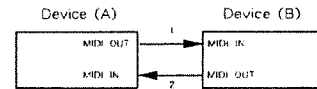
Connectionat points1 and 2 is essential.

Notes on the above two procedures

*There are separate Command–IDs for different transfer procedures.
*DevicesA 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 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 20milliseconds in between.

Types of Messages

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

Request data # 1 : RQ1 (11H)

This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.
On receiving an RQ1 message, the remote device checks its memory for the data address and size that satisfy the request.

If it finds them and is ready for communication, the device will transmit a "Data set 1 (DT1)" message, which contains the requested data. Otherwise, the device will send out nothing.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
11H	Command ID
aaH	Address MSB
⋮	⋮
	LSB
ssH	Size MSB
⋮	⋮
	LSB
sum	Check sum
F7H	End of exclusive

* The size of the requested data does not indicate the number of bytes that will make up a DT1 message, but represents the address fields where the requested data resides.
* Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
* The same number of bytes comprises address and size data, which, however, vary with the Model-ID.
* The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Data set 1 : DT1 (12H)

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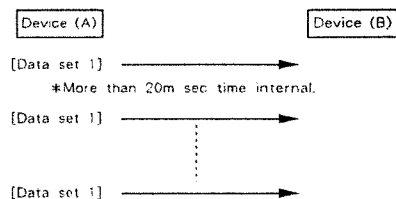
The MIDI standards inhibit non-real time messages from interrupting an exclusive one. This fact is inconvenient for the devices that support a "soft through" mechanism. To maintain compatibility with such devices, Roland has limited the DT1 to 256 bytes so that an excessively long message is sent out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

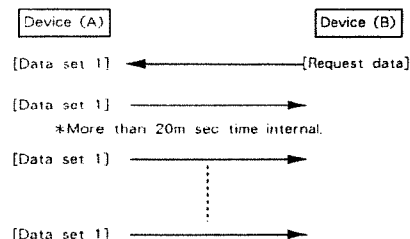| Byte	Description
F0H	Exclusive
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
12H	Command ID
aaH	Address MSB
⋮	⋮
	LSB
ddH	Data
⋮	⋮
⋮	⋮
sum	Check sum
F7H	End of exclusive

* A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.
* Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
* The number of bytes comprising address data varies from one Model-ID to another.
* The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Example of Message Transactions

● Device A sending data to Device B
Transfer of a DT1 message is all that takes place.

Device (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] ─────────────────▶

4. Handshake Transfer Procedure

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

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

Types of Messages

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

Want to send data : WSD (40H)

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

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

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
40H	Command ID
aaH	Address MSB
⋮	⋮
	LSB
ssH	Size MSB
⋮	⋮
	LSB
sum	Check sum
F7H	End of exclusive

* The size of the data to be sent does not indicate the number of bytes that make up a "Data set (DAT)" message, but represents the address fields where the data should reside.
* Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
* The same number of bytes comprises address and size data, which, however, vary with the Model-ID.
* The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Request data : RQD (41H)

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

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

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
41H	Command ID
aaH	Address MSB
⋮	⋮
	LSB
ssH	Size MSB
⋮	⋮
	LSB
sum	Check sum
F7H	End of exclusive

*The size of the requested data does not indicate the number of bytes that make up a "Data set (DAT)" message, but represents the address fields where the requested data resides.
*Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
*The same number of bytes comprises address and size data, which, however, vary with the Model-ID.
*The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Data set : DAT (42H)

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

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

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

*A DAT message is capable of providing only the valid data among those specified by an RQD or WSD message.
*Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermine 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 provic a bit pattern where the least significant 7 bits are zero whe values for an address, size, and that checksum are summed.

Acknowledge : ACK (43H)

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

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

End of data : EOD (45H)

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

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

Communications error : ERR (4EH)

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

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

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

Rejection : RJC (4FH)

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

· a WSD or RQD message has specified an illegal data address or size.

· the device is not ready for communication.

· an illegal number of addresses or data has been detected.

· data transfer has been terminated by an operator.

· a communications error has occurred.

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

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

Example of Message Transactions

● Data transfer from device (A) to device (B).
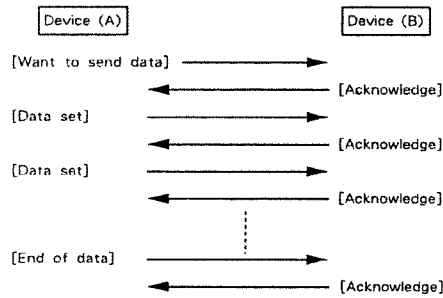
● Device (A) requests and receives data from device (B).
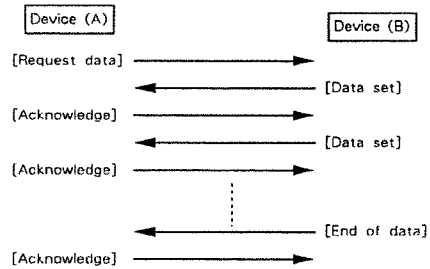
● Error occurs while device (A) is receiving data from device (B).

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

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

3) Device (A) immediately quits data transfer.

1. TRANSMITTED DATA

1.1 Bypassed message

1.1.1 As connected in an ordinary way

All received messages are sent out from MIDI OUT.

1.1.2 Messages mixed by MIXER and sent out from MIDI OUT.

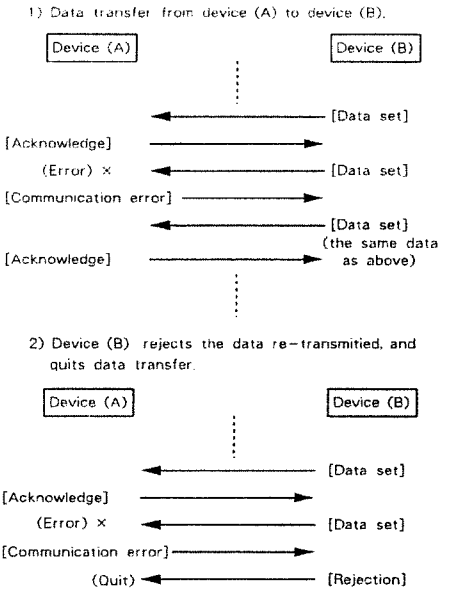The following MIDI IN messages are sent to MIDI OUT if they are received from Mixed MIDI INs and corresponding MIDI MESSAGE THRU SW is on as

● Channel messages.
● System Common messages except System Exclusive message of A-880 received from certain MIDI IN(Control MIDI IN).
● System Realtime messages received from master MIDI IN except $FE(active sensing) and $FF(Reset).

1.2 Message whitch is created and sent out from MIDI OUT.

1.2.1 Message to be sent out from the disconnected MIDI OUT as the internal connection is cut off.

■Reset all contollers

Status	Second	Third
BnH	79H	00H

nH : MIDI channel   0H - Fh (0 - 15)

■All notes off

Status	Second	Third
BnH	7BH	00H

nH : MIDI channel   0H - Fh (0 - 15)

1.2.2 Created message in TUNE MODE

■Tune request

Status
F6H

*A-880 sends the message when into the TUNE MODE.

■Reset all contollers

Status	Second	Third
BnH	79H	00H

nH : MIDI channel   0H - Fh (0 - 15)

*A-880 sends the message when into the TUNE MODE.

■Note on

Status	Second	Third
9nH	45H	64H

nH : MIDI channel   0H - Fh (0 - 15)

*A-880 sends the message for all channels in the TUNE MODE at regular interval.

■Note off

Status	Second	Third
9nH	45H	00H

nH : MIDI channel   0H - Fh (0 - 15)

*A-880 sends the message for all channels in the TUNE MODE at regular interval.

■All notes off

Status	Second	Third
BnH	7BH	00H

nH : MIDI channel   0H - Fh (0 - 15)

*A-880 sends this when out from the TUNE MODE.

1.2.3 Created message by MIDI MESSAGE MIXER

■All notes off

Status	Second	Third
BnH	7BH	00H

nH : MIDI channel   0H - Fh (0 - 15)

*All notes of each channel are offed with both of "All notes off SW" and "Retrigger SW" are on.

1.2.4 System exclusive message

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

*Transmitted to the MIDI OUT assigned as MIX Output.

See "3. EXCLUSIVE COMMUNICATIONS" for details.

2. RECOGNIZED DATA

Recognized if the following data is received from certain MIDI IN(Control MIDI IN).

2.1 Program change

Status	Second
CnH	ppH

ppH : Program number   0H - 3FH (0 - 63)
nH : MIDI channel   0H - Fh (0 - 15)

*A-880 changes its internal connection on receiving this message.

2.2 System exclusive

Status
FOH   :System Exclusive
F7H   :EOX(End of System Exclusive)

See "3.EXCLUSIVE COMMUNICATIONS" for details.

3. EXCLUSIVE COMMUNICATIONS

Model-ID# of A-880 is 20H.
Device-ID# is the program channel#.

3.1 One way communication

3.1.1 Request   RQ1 11H

When the RQ1 received contains addresses listed in "4.Address mapping of parameters",
and address size is 1 or more,
A-880 sends the corresponding data.

A-880 won't transmit RQ1 by itself.

Byte	Description
FOH	Exclusive status
41H	Roland - ID
DEV	Device - ID
20H	Model - ID (A-880)
11H	Command - ID (RQ1)
aaH	Address
ssH	Size
sum	Checksum
F7H	EOX (End of Exclusive)

3.1.2 Data set   DT1 12H

When the DT1 received contains addresses listed in "4.Address mapping of parameters", A-880 stores the data into that memory location.
A-880 sends this message upon receiving RQ1.

Byte	Description
FOH	Exclusive status
41H	Roland - ID
DEV	Device - ID
20H	Model - ID (A-880)
12H	Command - ID (DT1)
aaH	Address
ddH	Data
:	
sum	Checksum
F7H	EOX (End of Exclusive)

4. Address mapping of parameters

Addresses are shown in Hexadecimal, while numbers are given in 7 bits.

Address	
binary	0aaa aaaa
7 bit Hex	AA

address		Description
00H	0000 aaaa	Mixed MIDI IN # 0 - 7 : 1 - 8 Master 8 - 15 : 1 - 8 Slave
01H	0000 aaaa	Connection of MIDI OUT # 1 0 : No connection 1 - 8 : MIDI IN # 3 : Mixed MIDI INs
02H	0000 aaaa	Connection of MIDI OUT # 2
:		:
08H	0000 aaaa	Connection of MIDI OUT # 8
Total size		09H

■ SPECIFICATIONS

● **Indicators**

Input／Bank Indicator x 8

Output／Number Indicator x 8

Signal Indicator

Scan／Mix Indicator

Memory Indicator

Write Indicator

● **Buttons**

Input／Bank Button x 8

Output／Number Button x 8

Signal Button

Scan／Mix Button

Memory Button

Write Button

● **Sockets**

MIDI IN x 8

MIDI OUT x 8

● **Dimensions**

482 (W) x 44 (H) x 286 (D) mm

19" x 1 – 3／4" x 11 – 11／16"
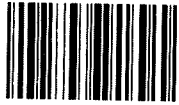
● **Weight**

3kg ／ 6 lb 10 oz

● **Power Consumption**

5W

Roland

Roland