

# 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 version 1.0).

### # Manufacturer-ID: 41H

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

### # Device-ID: DEV

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

### # Model-ID: MDL

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

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

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

### # Command-ID: CMD

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

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

### # Main data: BODY

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

## 2 Address-mapped Data Transfer

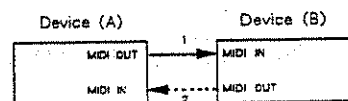
Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory-resident records—waveform and tone data, switch status, and parameters, for example—to specific locations in a machine-dependent address space, thereby allowing access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

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

### # One-way transfer procedure (See Section 3 for details.)

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

#### Connection Diagram

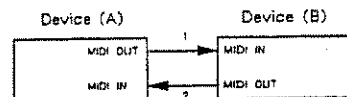


Connectional point 2 is essential for "Request data" procedures. (See Section 3.)

### # Handshake-transfer procedure (See Section 4 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



Connectional 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 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.

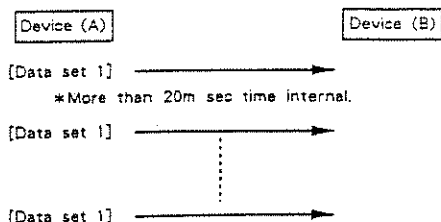
The MIDI standards inhibit non-real time messages from interrupting an exclusive one. This fact is inconvenient for the devices that support a "soft-through" mechanism. To maintain compatibility with such devices, Roland has limited the DT1 to 256 bytes so that an excessively long message is sent out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

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

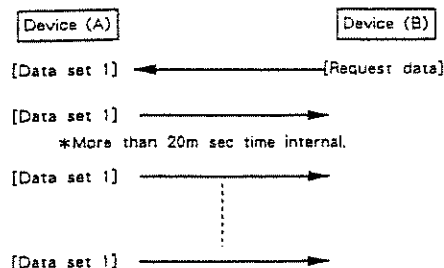
- \*A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.
- \*Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields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

#### Example of Message Transactions

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



- Device B requesting data from Device A  
Device B sends an RQ1 message to Device A. Checking the message, Device A sends a DT1 message back to Device B.



#### 4. Handshake- Transfer Procedure

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

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

#### Types of Messages

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

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

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

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

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

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

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

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

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

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

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

### # Acknowledge : ACK (43H)

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

Byte	Description
FOH	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
FOH	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
FOH	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 :

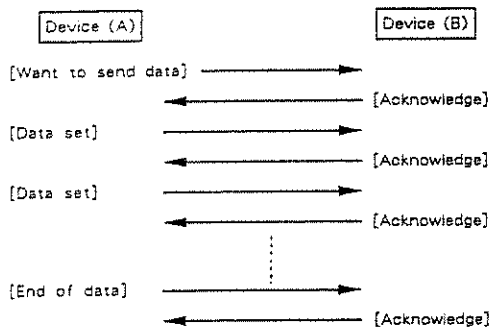
- a WSD or RQD message has specified an illegal data address or size,
- the device is not ready for communication,
- an illegal number of addresses or data has been detected,
- data transfer has been terminated by an operator,
- a communications error has occurred.

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.

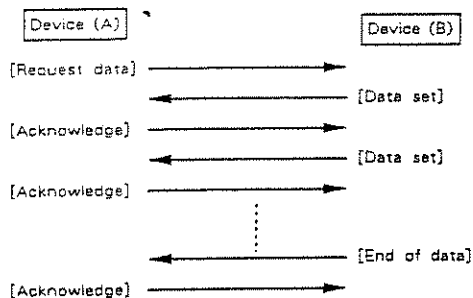
Byte	Description
FOH	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
4FH	Command ID
F7H	End of exclusive

#### \* Example of Message Transactions

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

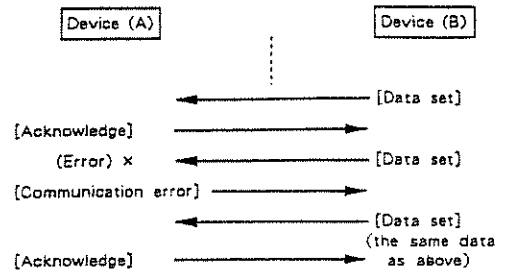


- Device (A) requests and receives data from device (B).

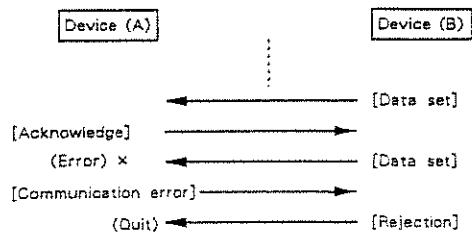


- Error occurs while device (A) is receiving data from device (B).

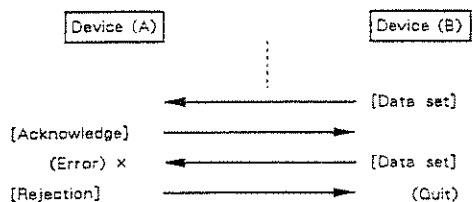
- 1) Data transfer from device (A) to device (B).



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



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



**1. TRANSMITTED DATA (Synthesizer Section)****■ Note event****Note off**

<u>Status</u>	<u>Second</u>	<u>Third</u>
9nH	kkH	00H
kk=note number		
n=MIDI Channel		
		18H-6CH (24-108)
		0H-FH (1-16)

**Note on**

<u>Status</u>	<u>Second</u>	<u>Third</u>
9nH	kkH	vvH
kk=Note number		
vv=Velocity		
n=MIDI channel		
		18H-6CH (24-108)
		01H-7FH (1-127)
		0H-FH (1-16)

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

<u>Status</u>	<u>Second</u>	<u>Third</u>
BnH	01H	vvH
vv=Modulation depth		
n=MIDI Channel		
		00H-7F (0-127)
		0H-F (1-16)

In Performance mode, transmitted when MIDI Modulation function is on.  
In Multi Timbral mode, transmitted on both upper and lower MIDI TX channels of the keyboard.  
D-10 does not transmit this message repeatedly if both channels are the same.

**Hold-1**

<u>Status</u>	<u>Second</u>	<u>Third</u>
BnH	40H	vvH
vv=00H : Off		
vv=7FH : On		
n=MIDI Channel		
		0H-FH (1-16)

In Performance mode, transmitted when MIDI Hold function is on.  
In Multi Timbral mode, transmitted on the MIDI TX channel of upper and lower sides of the keyboard.  
D-10 does not transmit this message repeatedly if both channels are the same.

**Reset All Controllers**

<u>Status</u>	<u>Second</u>	<u>Third</u>
BnH	79H	00H

Transmitted upon changing modes (Performance→Multi timbral) or MIDI channels (on the previous channel).

**■ Program change****Patch/Timbre Change**

<u>Status</u>	<u>Second</u>	<u>Third</u>
CnH	ppH	
pp=Patch Number		
n=MIDI Channel		
		0H-7FH (0-127)
		0H-FH (1-16)

In Performance mode, transmitted when MIDI Prog. Change function is on.  
In Multi Timbral mode and when the LCD is showing the status of either of upper or lower keyboard, transmitted on the MIDI TX channel assigned to the keyboard.

pp	A/B	BANK	NUMBER
00H (00)	A	1	1
:	:	:	:
3FH (63)	A	8	8
40H (64)	B	1	1
7FH (127)	B	8	8

**■ Pitch bender change****Pitch Bender**

<u>Status</u>	<u>Second</u>	<u>Third</u>
EnH	vvH	vvH
vv=Pitch Bender change Value		
n=MIDI Channel		
		0H-FH (1-16)

In Performance mode, transmitted when MIDI Bender function is on.  
In Multi Timbral mode, transmitted on the MIDI TX channel of both upper and lower sides of keyboard.  
Transmitted only once if both TX channels are the same.

**■ Mode message****All Notes Off**

<u>Status</u>	<u>Second</u>	<u>Third</u>
BnH	7BH	00H
n=MIDI Channel		
		0H-FH (1-16)

When MIDI All notes off function is on, will be transmitted upon releasing of all the keys after pressing a key (s).

**OMNI OFF**

<u>Status</u>	<u>Second</u>	<u>Third</u>
BnH	7CH	00H
n=MIDI Channel		
		0H-FH (1-16)

Transmitted upon power-up or when MIDI TX channel is changed to the new channel (always accompanied by "POLY").  
In Multi Timbral mode, transmitted on the MIDI TX channel of both upper side and lower side of keyboard.  
Transmitted only once if both channels are the same.

**POLY**

<u>Status</u>	<u>Second</u>	<u>Third</u>
BnH	7FH	00H
n=MIDI Channel		
		0H-FH (1-16)

Transmitted upon power-up or when MIDI TX channel is changed to the new channel. (Always accompanied by "OMNI OFF").  
In Multi Timbral mode, transmitted on the MIDI TX channel of both upper side and lower side of keyboard.  
Transmitted only once if both channels are the same.

**■ Exclusive**

<u>Status</u>
F0H : System Exclusive
F7H : EOX (End of Exclusive)

A set of Patch/Timbre parameters is transmitted when MIDI Patch dump function is on.  
The contents in Device-ID is either of the following two: unit number and MIDI channel number. The type of the information in the Device-ID can be determined from the display mode:  
When display is showing, (in Multi timbre mode)  
Part --- unit number less 1  
Keyboard status ---- MIDI channel less 1  
(in Performance mode) unit number less 1 (only)

Also used for Bulk dump/load operation. Refer to Section 5 for details.

**■ Active Sensing**

<u>Status</u>
FEH : Active Sensing

Transmitted for checking MIDI connection between D-10 and external equipment.

## 2. TRANSMITTED DATA (Rhythm Section)

### ■ Note event

Will be transmitted when a rhythm track or rhythm pattern is played in internal clock mode. Note events are transmitted on the MIDI channel assigned to rhythm part.

#### Note off

Status	Second	Third
9nH	kkH	00H

kk=note number 18H-6CH (24-108)

#### Note on

Status	Second	Third
9nH	kkH	vvH

kk=note number 18H-6CH (24-108)  
vv=Velocity 01H-7FH (1-127)

### ■ Exclusive

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

Used for Bulk dump/load operation. Refer to Section 5 for details.

### ■ Timing Clock

Status
F8H

Transmitted only when Clock Mode is Internal.

### ■ Start

Status
FAH

Transmitted only when in Internal clock mode.  
Panel operation : Press Start button while holding Stop button.

### ■ Continue

Status
FBH

Transmitted only when in Internal clock mode.  
Panel operation : Press Start button.

### ■ Stop

Status
FCH

Transmitted only when in Internal clock mode.  
Panel operation : Press Stop button.

## 3. RECOGNIZED RECEIVE DATA (SYNTHESIZER SECTION)

### ■ Note event

#### Note off

Status	Second	Third
8nH	kkH	vvH
9nH	kkH	00H

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

#### Note on

Status	Second	Third
9nH	kkH	vvH

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

Note numbers outside of the range 12-108 are transposed to the nearest octave inside the range.

### ■ Control change

#### Modulation Depth

Status	Second	Third
BnH	01H	vvH

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

In Performance mode, recognized when MIDI Modulation function is on.  
In Multi Timbral mode, always recognized.

#### Data Entry

Status	Second	Third
BnH	06H	vvH

vv=Value of RPC 00H-18H (0-24)  
n=MIDI Channel 0H-FH (1-16)

Recognized as a value corresponding to the parameter specified by RPC.  
See RPC MSB section.

#### Main Volume

Status	Second	Third
BnH	07H	vvH

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

In Performance mode, recognized when MIDI Volume function is on.  
In Multi Timbral mode, always recognized.  
Can control the volume of the Part played through the same MIDI channel. The maximum volume is determined by the Volume knob and Expression message.

#### Panpot

Status	Second	Third
BnH	0AH	vvH

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

Ignored when in Performance mode.  
Orientation of sound is as follows.

0=LEFT, 63=CENTER, 127=RIGHT

#### Expression

Status	Second	Third
BnH	0BH	vvH

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

Can control the Volume of the Parts played through the same MIDI channel. The maximum volume is determined by the Volume knob and Main volume message.

#### Hold-1

Status	Second	Third
BnH	40H	vvH

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

In Performance mode, recognized when MIDI Modulation function is on.  
In Multi Timbral mode, always recognized.

#### RPC LSB

Status	Second	Third
BnH	64H	vvH

vv=LSB of the parameter number controlled by RPC 00H-7FH (0-127)  
n=MIDI Channel 0H-FH (1-16)

## RPC MSB

Status	Second	Third
BnH	65H	vvH

vv=MSB of the parameter number controlled by RPC  
00H-7FH (0-127)  
n=MIDI Channel 0H-FH (1-16)

Using MIDI RPC, parameters can be changed by Control change messages. RPC MSB and LSB specify the parameter to be controlled, while Data entry shows the parameter value.

RPC MSB LSB	Data Entry	Description
00H 00H	vvH	Bender Range vv=0-24 (semitone step, max two octaves)

## Reset All Controllers

Status	Second	Third
BnH	79H	00H

When Reset all controllers is recognized, each of the controllers is set as follows.

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

## Program change

### Patch / Timbre Change

Status	Second
CnH	ppH

pp=Patch Number 0H-7FH (0-127)  
n=MIDI Channel 0H-FH (1-16)

In Performance mode, recognized when MIDI Prog. Change function is on and the Patch is changed.  
In Multi Timbral mode, always recognized and the Timbre is changed. Cannot switch between Internal and Card through MIDI Program change message.

pp	A/B	BANK	NUMBER
00H ( 00)	A	1	1
:	:	:	:
3FH ( 63)	A	8	8
40H ( 64)	B	1	1
7FH (127)	B	8	8

## Pitch Bender change

### Pitch Bender

Status	Second	Third
EnH	vvH	vvH

vv vv=Pitch Bender change Value  
n=MIDI Channel 0H-FH (1-16)

In Performance mode, recognized when MIDI Bender function is on.  
In Multi Timbral mode, always recognized.

## Mode message

### Local Control

Status	Second	Third
BnH	7AH	vvH

vv=00H : Off  
vv=7FH : On  
n=MIDI Channel 0H-FH (1-16)

Recognized in performance mode only.

## All notes off

Status	Second	Third
BnH	7BH	00H

n=MIDI Channel 0H-FH (1-16)

When All notes off is recognized, all the notes which have been turned on by Note on message are turned off.

## OMNI OFF

Status	Second	Third
BnH	7CH	00H

n=MIDI Channel 0H-FH (1-16)

Recognized as All Notes Off only.  
The D-10 stays in MODE 3.

## OMNI ON

Status	Second	Third
BnH	7DH	00H

n=MIDI Channel 0H-FH (1-16)

Recognized as All Notes Off only.  
The D-10 stays in MODE 3.

## MONO

Status	Second	Third
BnH	7EH	mmH

mm=MONO channel range ignored  
n=MIDI Channel 0H-FH (1-16)

Recognized as All notes off only.  
The D-10 stays in MODE 3.

## POLY

Status	Second	Third
BnH	7FH	00H

n=MIDI Channel 0H-FH (1-16)

Recognized as All notes off only.  
The D-10 stays in MODE 3.

## Exclusive

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

A set of Patch/Timbre parameters will be received when MIDI Exclusive function is on.

When in Multi timbral mode and if Device-ID contains "MIDI Channel number less 1", the timbre parameters enter into the parts of the same MIDI channel; if Device-ID contains "Unit number less 1", into the parts specified by address in the exclusive message.

In performance mode "Unit number less 1" is effective.

Also used for Bulk dump/load operation. Refer to Section 5 for details.

## Active Sensing

Status
FEH : Active Sensing

Once receiving this message, the D-10 expects to accept status or data in sequence, at least within 300ms intervals. If the unit fails to receive a message 300ms after the previous one, it judges there is a problem somewhere in MIDI path, muting the current sound and stopping 300ms-interval monitoring of incoming signal.

## 4. RECOGNIZED RECEIVE DATA (RHYTHM SECTION)

### Note event

#### Note off

Status	Second	Third
8nH	kkH	vvH
9nH	kkH	00H

kk=note number 18H-6CH (24-108)  
 vv=velocity ignored  
 n=MIDI Channel 0H-FH (1-16)

#### Note on

Status	Second	Third
9nH	kkH	vvH

kk=note number 18H-6CH (24-108)  
 vv=Velocity 01H-7FH (1-127)  
 n=MIDI Channel 0H-FH (1-16)

Note numbers outside of the range 24-108 are ignored.

### Control change

#### Data Entry

Status	Second	Third
BnH	06H	vvH

vv=Value of RPC 00H-18H (0-24)  
 n=MIDI Channel 0H-FH (1-16)

Recognized as a value corresponding to the parameter specified by RPC.

#### Main Volume

Status	Second	Third
BnH	07H	vvH

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

Can control the volume of the Rhythm section.  
 The maximum volume is determined by the Volume knob setting and Expression message.

#### Expression

Status	Second	Third
BnH	0BH	vvH

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

Can control the volume of the Rhythm section.  
 The maximum volume is determined by the volume knob setting and Main volume message.

#### RPC LSB

Status	Second	Third
BnH	64H	vvH

vv=LSB of parameter number controlled by RPC 00H-7FH (0-127)  
 n=MIDI Channel 0H-FH (1-16)

#### RPC MSB

Status	Second	Third
BnH	65H	vvH

vv=MSB of parameter number controlled by RPC 00H-7FH (0-127)  
 n=MIDI Channel 0H-FH (1-16)

Using MIDI RPC, parameters can be changed by Control change messages. RPC MSB and LSB specify the parameter to be controlled, and Data entry shows the parameter value.

RPC	Data Entry	Description
MSB LSB		
00H 00H	vvH	Bender Range vv=0-24 (semitone step, max two octaves)

### Reset All Controllers

Status	Second	Third
BnH	79H	00H

When Reset All Controllers is recognized, each of the following controllers is set as follows.

Controller	setting
Main Volume	MAX (127)
Expression	MAX (127)
Pitch Bender Change	CENTER

### Pitch Bender change

#### Pitch Bender

Status	Second	Third
EnH	vvH	vvH

vv vv=Pitch Bender change Value  
 n=MIDI Channel 0H-FH (1-16)

### Exclusive

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

Used for Bulk dump/load operation. Refer to Section 5 for details.

### Timing Clock

Status  
 F8H

Recognized only when Clock mode is MIDI.

### Start

Status  
 FAH

Recognized only when Clock mode is MIDI.

### Continue

Status  
 FBH

Recognized only when Clock mode is MIDI.

### Stop

Status  
 FCH

Recognized only when Clock mode is MIDI.

## 5. EXCLUSIVE COMMUNICATION

The MODEL-ID # of the D-10 is 16H.  
 Device-ID # is the basic channel number of each part or unit number of D-10.  
 Unit # can be set through MIDI function. Device ID numbers, 16-31 are represented on the display as 17-32, respectively.

### ONE-WAY COMMUNICATION

#### Request Data RQ1 11H

When the RQ1 received contains start address listed in the Parameter base address table; and address size is 1 or more, D-10 sends the data stored in that address location and the subsequent locations, if any.

Byte	Description
F0H	Exclusive status
41H	Manufactures ID (Roland)
DEH	Device ID
16H	Model ID
11H	Command ID
aaH	Address MSB *3-1
aaH	Address
aaH	Address LSB
ssH	Size MSB
ssH	Size
ssH	Size LSB
sum	Check sum
F7H	End of exclusive



**Data set 1 DT1 12H**

When the DT1 contains a start address listed in the Parameter base address table, D-10 stores the data into that memory location and the subsequent locations, if any. D-10 transmits this message on condition that :

\*One way bulk dump is executed in Data transfer mode.  
(Unit # less 1 is put in Device ID # field.)

\*Timbre change is activated while Patch dump (performance mode) or Timbre dump (Multi timbral mode) is turned on through MIDI.

Program change message is sent before timbre data with the Device ID # Set as follows :

a) IN Performance mode ----- Unit # less 1

b) In multi timbral mode --

Unit # less 1 if the LCD is displaying part status

MIDI TX channel # less 1 if the LCD is displaying keyboard status

Byte	Description
F0H	Exclusive status
41H	Manufactures ID (Roland)
DEV	Device ID
16H	Model ID
12H	Command ID
aaH	Address MSB *3-1
aaH	Address
aaH	Address LSB
ddH	Data *3-2
:	:
sum	Check sum
F7H	End of exclusive

**■ HANDSHAKE COMMUNICATION**

Bulk dump/load to and from D-10 through handshaking communication in Data transfer mode starts with the following message.

**Want to send data WSD 40H**

D-10 sends acknowledge upon receiving this message and waits for coming data.

Byte	Description
F0H	Exclusive status
41H	Manufactures ID (Roland)
DEV	Device ID
16H	Model ID
40H	Command ID
aaH	Address MSB *3-1
aaH	Address
aaH	Address LSB
ssH	Size MSB
ssH	Size
ssH	Size LSB
sum	Check sum
F7H	End of exclusive

**Request data RQD 41H**

When the RQD received contains start address listed in the Parameter base address table; and the address size is 1 or more, D-10 sends the data stored in that address location and the subsequent locations, if any.

Byte	Description
F0H	Exclusive status
41H	Manufactures ID (Roland)
DEV	Device ID
16H	Model ID
41H	Command ID
aaH	Address MSB *3-1
aaH	Address
aaH	Address LSB
ssH	Size MSB
ssH	Size
ssH	Size LSB
sum	Check sum
F7H	End of exclusive

**Data set DAT 42H**

When the DAT received contains address listed in the Parameter base address table, D-10 stores the data in that address location.

Byte	Description
F0H	Exclusive status
41H	Manufactures ID (Roland)
DEV	Device ID
16H	Model ID
42H	Command ID
aaH	Address MSB *3-1
aaH	Address
aaH	Address LSB
ddH	Data *3-2
:	:
sum	Check sum
F7H	End of exclusive

**Acknowledge ACK 43H**

When receives this message in reply to DAT, D-10 sends the next data ; when receives in reply to EOD, ceases current handshaking communication. D-10 sends this message upon receipt of WSD or DAT.

Byte	Description
F0H	Exclusive status
41H	Manufactures ID (Roland)
DEV	Device ID
16H	Model ID
43H	Command ID
F7H	End of exclusive

**End of data EOD 45H**

Upon receipt of this message, D-10 sends acknowledge and terminates the current handshaking communication.

Byte	Description
F0H	Exclusive status
41H	Manufactures ID (Roland)
DEV	Device ID
16H	Model ID
45H	Command ID
F7H	End of exclusive

**Communication error ERR 4EH**

Should failure in data reception occur (e.g. disagreement of checksum), D-10 sends this message.

If D-10 receives this message, it sends the last message again.

Byte	Description
F0H	Exclusive status
41H	Manufactures ID (Roland)
DEV	Device ID
16H	Model ID
4EH	Command ID
F7H	End of exclusive

**Rejection RJC 4FH**

D-10 ends communication upon receipt of this message.

Byte	Description
F0H	Exclusive status
41H	Manufactures ID (Roland)
DEV	Device ID
16H	Model ID
4FH	Command ID
F7H	End of exclusive

\*3-1 Address and size must specify the address where data exist.  
\*3-2 If the receiving data are system partial parameters, D-10 recognizes these data only after it has received all the partial reserve parameters. (See \*6-8 System area.)

## 6. PARAMETER ADDRESS MAP

Addresses are shown in 7-bit hexadecimal.

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

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

Parameters marked by \*6-1 have two offset addresses: one in the table in \*6-1 and the other one in the Common parameter table or in the Partial parameter table.

### Parameter base address

#### Temporary area (Accessed on each basic channel)

Start address	Description
00 00 00	Timbre Temporary Area (synth part) *6-3
01 00 00	Setup Temporary Area (rhythm part) *6-2
02 00 00	Tone Temporary Area (synth part) *6-1

Whole part (Accessible on UNIT#)

Start address	Description
03 00 00	Timbre Temporary Area (part 1) *6-3
03 00 10	Timbre Temporary Area (part 2)
:	:
03 00 60	Timbre Temporary Area (part 7)
03 00 70	Timbre Temporary Area (part 8)
03 01 00	Timbre Temporary Area (rhythm part)
03 01 10	Rhythm Setup Temporary Area *6-2
03 04 00	Patch Temporary Area *6-4
:	:
04 00 00	Tone Temporary Area (part 1/upper) *6-1
04 01 76	Tone Temporary Area (part 2/lower)
:	:
04 0B 44	Tone Temporary Area (part 7)
04 0D 3A	Tone Temporary Area (part 8)
:	:
05 00 00	Timbre Memory #1 *6-5
05 00 08	Timbre Memory #2
:	:
05 07 70	Timbre Memory #127
05 07 78	Timbre Memory #128
:	:
07 00 00	Patch Memory #1 *6-4
07 00 26	Patch Memory #2
:	:
07 25 34	Patch Memory #127
07 25 5A	Patch Memory #128
:	:
08 00 00	Tone Memory #1 *6-1
08 02 00	Tone Memory #2
:	:
08 7C 00	Tone Memory #63
08 7E 00	Tone Memory #64
:	:
09 00 00	Rhythm Setup #1 *6-2
09 00 04	Rhythm Setup #2
:	:
09 02 4C	Rhythm Setup #84
09 02 60	Rhythm Setup #85
:	:
0A 00 00	Rhythm Pattern P-51 *6-6
0A 04 4C	Rhythm Pattern P-52
:	:
0B 09 68	Rhythm Pattern P-87
0B 0E 34	Rhythm Pattern P-88
:	:
0C 00 00	Rhythm Track *6-7
10 00 00	System Area *6-8
:	:
20 00 00	Display *6-9
:	:
40 00 00	Write Request *6-10

Notes :

\*6-1 Tone Temporary area / Tone Memory

Offset address	Description
00 00 00	Common parameter *6-1-1
00 00 0E	Partial parameter (for Partial# 1) *6-1-2

00 00 48	Partial parameter (for Partial# 2)
00 01 02	Partial parameter (for Partial# 3)
00 01 3C	Partial parameter (for Partial# 4)

Total size 00 01 76H

\*6-1-1 Common parameter

Offset address	Description
00H 0aaa aaaa	TONE NAME 1 32-127 (ASCII)
:	:
09H 0aaa aaaa	TONE NAME 10
:	:
0AH 0000 aaaa	Structure of Partial# 1&2 0-12 (1-13)
:	:
0BH 0000 aaaa	Structure of Partial# 3&4 0-12 (1-13)
:	:
0CH 0000 aaaa	PARTIAL MUTE 0-15 (0000-1111)
:	:
0DH 0000 000a	ENV MODE 0-1 (Normal, No sustain)

Total size 00 00 0EH

\*6-1-2 Partial parameter

Offset address	Description
00 00H 0aaa aaaa	WG PITCH COARSE 0-96 (C1,C#1, -C9)
00 01H 0aaa aaaa	WG PITCH FINE 0-100 (-50-+50)
:	:
00 02H 000a aaaa	WG PITCH KEYFOLLOW 0-16 (-1,-1/2,-1/4,0, 1/8,1/4,3/8,1/2, 5/8,3/4,7/8,1, 5/4,3/2,2,5/2)
00 03H 0000 000a	WG PITCH BENDER SW 0-1 (OFF, ON)
00 04H 0000 000a	WG WAVEFORM/PCM BANK 0-3 (SQU/1, SAW/1, SQU/2, SAW/2)
00 05H 0aaa aaaa	WG PCM WAVE # 0-127 (1-128)
00 06H 0aaa aaaa	WG PULSE WIDTH 0-100
00 07H 0000 aaaa	WG PW VELO SENS 0-14 (-7-+7)
:	:
00 08H 0000 aaaa	P-ENV DEPTH 0-10
00 09H 0aaa aaaa	P-ENV VELO SENS 0-3
00 0AH 0000 0aaa	P-ENV TIME KEYF 0-4
00 0BH 0aaa aaaa	P-ENV TIME 1 0-100
00 0CH 0aaa aaaa	P-ENV TIME 2 0-100
00 0DH 0aaa aaaa	P-ENV TIME 3 0-100
00 0EH 0aaa aaaa	P-ENV TIME 4 0-100
00 0FH 0aaa aaaa	P-ENV LEVEL 0 0-100 (-50-+50)
:	:
00 10H 0aaa aaaa	P-ENV LEVEL 1 0-100 (-50-+50)
00 11H 0aaa aaaa	P-ENV LEVEL 2 0-100 (-50-+50)
:	:
00 12H 0aaa aaaa	dummy (for MT-32)
00 13H 0aaa aaaa	END LEVEL 0-100 (-50-+50)
:	:
00 14H 0aaa aaaa	P-LFO RATE 0-100
00 15H 0aaa aaaa	P-LFO DEPTH 0-100
00 16H 0aaa aaaa	P-LFO MOD SENS 0-100
00 17H 0aaa aaaa	TVF CUTOFF FREQ 0-100
00 18H 000a aaaa	TVF RESONANCE 0-30
00 19H 0000 aaaa	TVF KEYFOLLOW 0-14 (-1,-1/2,-1/4,0, 1/8,1/4,3/8,1/2, 5/8,3/4,7/8,1, 5/4,3/2,2)
00 1AH 0aaa aaaa	TVF BIAS POINT/DIR 0-127 (<1A-<7C>1A->7C)
00 1BH 0000 aaaa	TVF BIAS LEVEL 0-14 (-7-+7)
:	:
00 1CH 0aaa aaaa	TVF ENV DEPTH 0-100
00 1DH 0aaa aaaa	TVF ENV VELO SENS 0-100
00 1EH 0000 0aaa	TVF ENV DEPTH KEYF 0-4
00 1FH 0000 0aaa	TVF ENV TIME KEYF 0-4
00 20H 0aaa aaaa	TVF ENV TIME 1 0-100
00 21H 0aaa aaaa	TVF ENV TIME 2 0-100
00 22H 0aaa aaaa	TVF ENV TIME 3 0-100

00 23H	0aaa aaaa	dummy (for MT-32)	
00 24H	0aaa aaaa	TVF ENV TIME 4	0-100
00 25H	0aaa aaaa	TVF ENV LEVEL 1	0-100
00 26H	0aaa aaaa	TVF ENV LEVEL 2	0-100
00 27H	0aaa aaaa	dummy (for MT-32)	
00 28H	0aaa aaaa	TVF ENV SUSTAIN LEVEL	0-100
00 29H	0aaa aaaa	TVA LEVEL	0-100
00 2AH	0aaa aaaa	TVA VELO SENS	0-100 (-50-+50)
00 2BH	0aaa aaaa	TVA BIAS POINT 1	0-127 (<1A-<7C>1A->7C)
00 2CH	0000 aaaa	TVA BIAS LEVEL 1	0-12 (-12-0)
00 2DH	0aaa aaaa	TVA BIAS POINT 2	0-127 (<1A-<7C>1A->7C)
00 2EH	0000 aaaa	TVA BIAS LEVEL 2	0-12 (-12-0)
00 2FH	0000 0aaa	TVA ENV TIME KEYF	0-4
00 30H	0000 0aaa	TVA ENV TIME V_FOLLOW	0-4
00 31H	0aaa aaaa	TVA ENV TIME 1	0-100
00 32H	0aaa aaaa	TVA ENV TIME 2	0-100
00 33H	0aaa aaaa	TVA ENV TIME 3	0-100
00 34H	0aaa aaaa	dummy (for MT-32)	
00 35H	0aaa aaaa	TVA ENV TIME 5	0-100
00 36H	0aaa aaaa	TVA ENV LEVEL 1	0-100
00 37H	0aaa aaaa	TVA ENV LEVEL 2	0-100
00 38H	0aaa aaaa	dummy (for MT-32)	
00 39H	0aaa aaaa	TVA ENV SUSTAIN LEVEL	0-100

Total size = 00 00 3AH

Example of RQ1 and DT1 application.... 1

\*This example sets Unit number to 17.

Sending the following data string lets D-10 send Part 2./Lower tone data from the temporary area.

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

\*6-2 Rhythm Setup

Offset address	Description
00 00H	0aaa aaaa TONE 0-127 (i01-i64, r01-r63, OFF)
00 01H	0aaa aaaa OUTPUT LEVEL 0-100
00 02H	0000 aaaa PANPOT 0-14 (L-R)
00 03H	0000 000a REVERB SWITCH 0-1 (OFF, ON)
Total size	00 00 04H

\*6-3 Timbre temporary area

D-10 accepts the data for the area below only in Multi mode.

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

Total size = 00 00 10H

\*6-4 Patch Temporary area / Patch Memory

D-10 accepts the data for Patch temporary area only in Performance mode.

Offset address	Description
00 00H	0000 00aa KEY MODE 0-2 (whole, dual, split)
00 01H	00aa aaaa SPLJT POINT 0-61 (C2-C#7)
00 02H	0000 00aa LOWER TONE GROUP 0-3 (a, b, i, r)
00 03H	00aa aaaa LOWER TONE NUMBER 0-63 (1-64)
00 04H	0000 00aa UPPER TONE GROUP 0-3 (a, b, i, r)
00 05H	00aa aaaa UPPER TONE NUMBER 0-63 (1-64)
00 06H	00aa aaaa LOWER KEY SHIFT 0-48 (-24 - +24)

00 07H	00aa aaaa	UPPER KEY SHIFT	0-48 (-24-+24)
00 08H	0aaa aaaa	LOWER FINE TUNE	0-100 (-50-+50)
00 09H	0aaa aaaa	UPPER FINE TUNE	0-100 (-50-+50)
00 0AH	000a aaaa	LOWER BENDER RANGE	0-24
00 0BH	000a aaaa	UPPER BENDER RANGE	0-24
00 0CH	0000 00aa	LOWER ASSIGN MODE	0-3 (POLY 1,POLY 2, POLY 3,POLY 4)
00 0DH	0000 00aa	UPPER ASSIGN MODE	0-3 (POLY 1,POLY 2, POLY 3,POLY 4)
00 0EH	0000 000a	LOWER REVERB SWITCH	0-1 (OFF, ON)
00 0FH	0000 000a	UPPER REVERB SWITCH	0-1 (OFF, ON)
00 10H	0000 aaaa	REVERB MODE	0-8 (Room1/2, Hall1/2, Plate, Tap delay 1/2/3, OFF)
00 11H	0000 0aaa	REVERB TIME	0-7 (1-8)
00 12H	0000 0aaa	REVERB LEVEL	0-7
00 13H	0aaa aaaa	U/L BALANCE	0-100 (L max-->U max)
00 14H	0aaa aaaa	PATCH LEVEL	0-100
00 15H	0aaa aaaa	PATCH NAME CHAR.1	32-127 (ASCII CODE)
:	:	:	:
00 24H	0aaa aaaa	PATCH NAME CHAR.16	
00 25H	0000 0000	dummy (ignored if received)	

Total size = 00 00 26H

Example of RQ1 and DT1 application .... 2

\*This example sets Unit # to 17.

When D-10 receives the following message in Performance mode, it sends Patch data in the temporary area.

FO 41 10 16 11 03 04 00 00 00 26 53 F7

\*6-5 Timbre memory

Offset address	Description
00 00H	0000 00aa TONE GROUP 0-3 (a, b, i, r)
00 01H	00aa aaaa TONE NUMBER 0-63 (1-64)
00 02H	00aa aaaa KEY SHIFT 0-48 (-24 - +24)
00 03H	0aaa aaaa FINE TUNE 0-100 (-50-+50)
00 04H	000a aaaa BENDER RANGE 0-24
00 05H	0000 00aa ASSIGN MODE 0-3 (POLY 1,POLY 2, POLY 3,POLY 4)
00 06H	0000 000a REVERB SWITCH 0-1 (OFF, ON)
00 07H	0000 0000 dummy (ignored if received)

Total size = 00 00 08H

\*6-6 Rhythm pattern

The data listed below are divided-by-two 8-bit data and sent/received as two 4-bit data. (bbbbaaaa -> 0000aaaa, 0000bbbb)  
Events are listed in an ascending order.

Offset address	Description
00 00H	0000 0aaa TIME 0-7
00 01H	0000 0000 (1/4, 2/4, 3/4, 4/4, 5/4, 6/4, 7/4, 8/4)
00 02H	0000 aaaa TOTAL # OF NOTES 0-96
00 03H	0000 0bbb
00 04H	0000 0000 dummy (ignored if received)
00 05H	0000 0000 dummy
00 06H	EVENT # 1
00 0CH	EVENT # 2
:	:
04 3AH	EVENT #95
04 40H	EVENT #96
04 46H	0000 1111 END MARK
04 47H	0000 1111
04 48H	0000 0000 dummy (ignored if received)
04 49H	0000 0000 dummy
04 4AH	0000 0000 dummy (ignored if received)
04 4BH	0000 0000 dummy

\*6-6-1

Total size = 00 04 4CH

\*6-6-1 Event

Offset address	Description
00 00H	0000 aaaa STEP 0-191
00 01H	0000 bbbb
00 02H	0000 aaaa NOTE NUMBER 24-108
00 03H	0000 0bbb
00 04H	0000 aaaa VELOCITY 1-127
00 05H	0000 0bbb

\*6-7 Rhythm track

Offset address	Description
00 00H	0aaa aaaa TRACK LENGTH LSB 0-500
00 01H	0000 00aa TRACK LENGTH MSB
00 02H	0aaa aaaa Pattern 1 0-63, 64-71 (P-11-P-88, Blank 1-8)
:	:
03 75H	0aaa aaaa Pattern 500

Total size = 00 03 76H

\*6-8 System area

If "All" is selected for data type in Bulk Dump/Load, D-10 transmits data including this system area.  
Partial reserve must be sent as a package of 9 parts, which in total, should contain no more than 32 partials.

Offset address	Description
00 00H	0aaa aaaa MASTER TUNE 0-127 (432.1Hz-457.6Hz)
00 01H	0000 aaaa REVERB MODE 0-8 (Room1/2, Hall1/2, Plate, Tap delay, 1/2/3, OFF)
00 02H	0000 0aaa REVERB TIME 0-7 (1-8)
00 03H	0000 0aaa REVERB LEVEL 0-7
00 04H	00aa aaaa PARTIAL RESERVE (Part 1) 0-32
00 05H	00aa aaaa PARTIAL RESERVE (Part 2) 0-32
00 06H	00aa aaaa PARTIAL RESERVE (Part 3) 0-32
00 07H	00aa aaaa PARTIAL RESERVE (Part 4) 0-32
00 08H	00aa aaaa PARTIAL RESERVE (Part 5) 0-32
00 09H	00aa aaaa PARTIAL RESERVE (Part 6) 0-32
00 0AH	00aa aaaa PARTIAL RESERVE (Part 7) 0-32
00 0BH	00aa aaaa PARTIAL RESERVE (Part 8) 0-32
00 0CH	00aa aaaa PARTIAL RESERVE (Part R) 0-32
00 0DH	0000 0000 dummy (for D-110)
:	:
00 20H	0000 0000
00 21H	0aaa aaaa OUTPUT LEVEL (Part 1) 0-100
00 22H	0aaa aaaa OUTPUT LEVEL (Part 2) 0-100
00 23H	0aaa aaaa OUTPUT LEVEL (Part 3) 0-100
00 24H	0aaa aaaa OUTPUT LEVEL (Part 4) 0-100
00 25H	0aaa aaaa OUTPUT LEVEL (Part 5) 0-100
00 26H	0aaa aaaa OUTPUT LEVEL (Part 6) 0-100
00 27H	0aaa aaaa OUTPUT LEVEL (Part 7) 0-100
00 28H	0aaa aaaa OUTPUT LEVEL (Part 8) 0-100
00 29H	0aaa aaaa OUTPUT LEVEL (Part R) 0-100
00 2AH	0000 00aa PANPOT (Part 1) 0-14
00 2BH	0000 00aa PANPOT (Part 2) 0-14
00 2CH	0000 00aa PANPOT (Part 3) 0-14
00 2DH	0000 00aa PANPOT (Part 4) 0-14
00 2EH	0000 00aa PANPOT (Part 5) 0-14
00 2FH	0000 00aa PANPOT (Part 6) 0-14
00 30H	0000 00aa PANPOT (Part 7) 0-14
00 31H	0000 00aa PANPOT (Part 8) 0-14

Total size = 00 00 32H

Example of RQ1 and DT1 application .... 3

\*This example sets Unit # to 17.

The byte arrangement below will set Partial reserve of each part as follows :

Part 1 .... 8      Part 3 thru 8 .... 0  
Part 2 .... 10      Rhythm part ..... 8

FD 41 10 16 12 10 00 04 00 08 0A 00 00 00 00 00 00 06 52 F7

\*6-9 DISPLAY

D-10 deciphers incoming data and sends them to the LCD as a string of ASCII code characters.

The display data in this area cannot be brought outside D-10 through MIDI message, such as RQ1 and DT1.

Offset address	Description
00H	0aaa aaaa DISPLAYED LETTER 32-127 (ASCII)
:	:
1FH	0aaa aaaa DISPLAYED LETTER

Total size = 00 00 20H

\*6-10 Write Request

This message simulates write switch : D-10 stores the data of each part in the temporary area into individual memory locations specified by two byte data. Timbre write is effective only in Multi timbral mode ; Patch write only in Performance mode.

The data in this area cannot be brought outside D-10 through MIDI message, such as RQ1 and DT1.

D-10 returns the Result.

Offset address	Description
00 00H	00aa aaaa Tone Write 0-63 (part 1/upper) (01-64)
00 01H	0000 000a 0, 1 (Internal,Card)
00 02H	00aa aaaa Tone Write
00 03H	0000 000a (part 2/lower)
:	:
00 0EH	00aa aaaa Tone Write
00 0FH	0000 000a (part 8)
01 00H	0aaa aaaa Timbre Write 0-127 (A11-B88)
01 01H	0000 000a 0, 1 (Internal,Card)
01 02H	0aaa aaaa Timbre Write
01 03H	0000 000a (part 2)
:	:
01 0EH	0aaa aaaa Timbre Write
01 0FH	0000 000a (part 8)
03 00H	0aaa aaaa Patch Write 0-127 (A11-B88)
03 01H	0000 000a 0, 1 (Internal,Card)
10 00H	0000 00aa Result 0-3
	0=Function Completed
	1=Card Not Ready
	2=Write Protected
	3=Incorrect Mode

Example of RQ1 and DT1 application .... 4

\*This example sets Unit # to 17.

Sending the following byte strings will enable D-10 to write data in Part 3 in temporary data into 1-B24.

FD 41 10 16 12 40 01 04 4B 00 7D F7