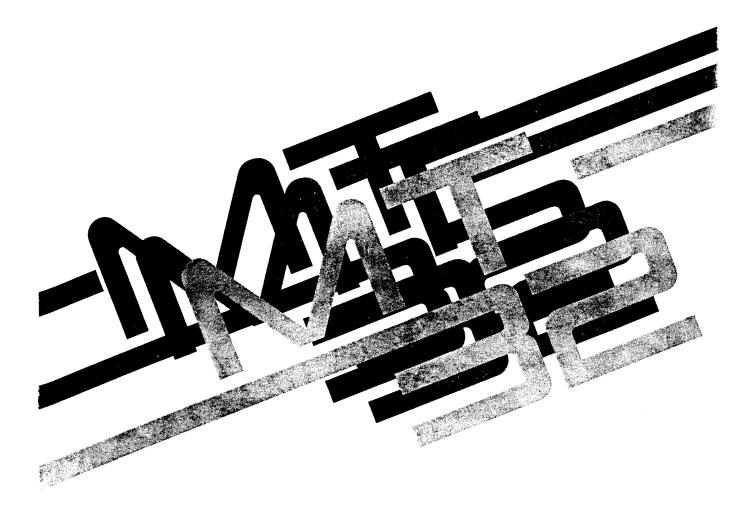


# MT-32

MULTI TIMBRE SOUND MODULE

Owner's Manual



### Bescheinigung des Herstellers /Importeurs

Hiermit wird bescheinigt, daß der/die/das

ROLAND MULTI - TIMBRE SOUND MODULE MT-32

in Übereinstimmung mit den Bestimmungen der

Amtsbl. Vfg 1046 / 1984

funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Roland Corporation Osaka / Japan

### RADIO AND TELEVISION INTERFERENCE

"Warning - This equipment has been verified to comply with the limits for a Class 8 computing device, pursuant to Subpert J, of Part 15, of FCC rules, Operation with non-certified or non-verified equip-ment is likely to result in interference to radia and TV reception."

pursuant to Subpart J. of Part 15, of Purc ruses, operation with innovertines or innovertines sequences in the second of Viception.

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The sequences discribed in this manual generates and uses radio-frequency energy. If it is not more with radio and television reception.

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The sociations are selected from the U.S. Government Printing Office, Washington, D.C., 20402, Took Modern and the room to the social than the TV or radio. Than is, make carfain the equipment and the radio or television set are on circuits controlled by different circuit breakers or fuses).

Consider installing a rooftop television antenna with coasial cable lead-in between the antenna and If necessary, you should consult your dealer or an expanenced radioteties insorting to a support of the television to the t

Please read the separate volume "MIDI", before reading this owner's manual.

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## **CONTENTS**

Thank you for purchasing the Roland MT-32 Multi-Timbre Sound Module.

The MT-32 fully conforms to Musical Instrument Digital Interface (MIDI) standards, which define data exchange between electronic musical instruments and devices.

The MT-32 operates in conjunction with the Roland Piano, piano recorder, digital sequencer, and other MIDI-compatible sound sources.

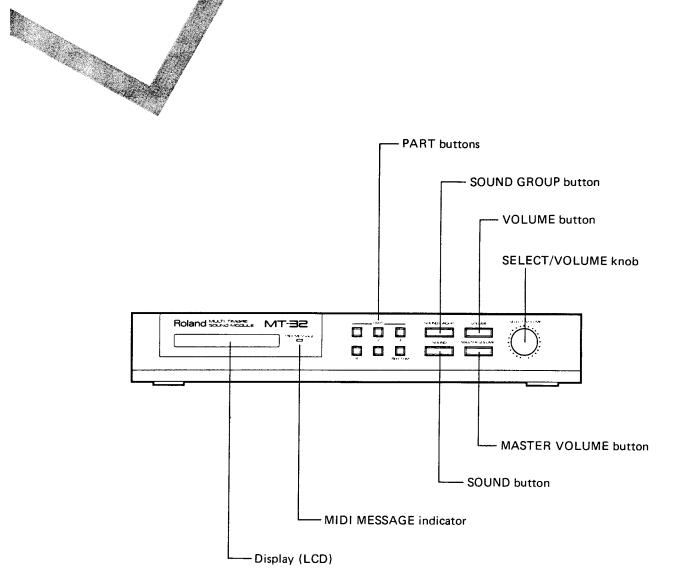
Study this Owner's Manual and keep it handy so that the MT-32 can provide you with many years of musical enjoyment.

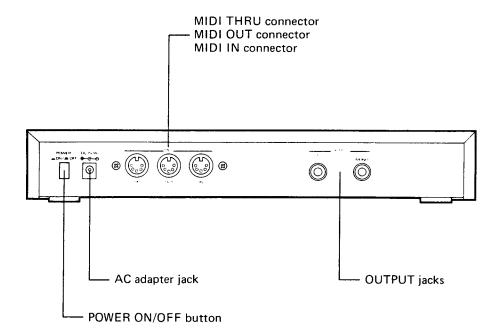
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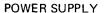
# PANEL DESCRIPTION

### Grand Panel





# CARE AND MAINTENANCE



- Be sure to use the AC adapter that comes with the MT-32. Use of a non-standard adapter could lead to errors and breakdowns.
- For use in a region where voltage requirements are different, consult with your nearest Roland sales representative about the ACB-100, ACB-120, ACB-220, or ACB-240 AC adapter.
- Do not use the MT-32 on the same power outlet as a motor, dimmer, or any other equipment that generates noise or consumes a large amount of power.
- Connect the AC adapter to the MT-32's DC IN jack before inserting the power plug in the power outlet.
- Make sure that the MT-32 is turned off before connecting the AC adapter to the power outlet.
- When disconnecting the AC adapter from the power outlet, be sure to pull the power plug itself and not the power cord, to avoid damaged and short-circuiting.
- Avoid damaging the power cord.
- If the MT-32 is not being used for a prolonged period, disconnect the AC adapter from the power outlet.

### CONNECTION

 Make sure that all switches are off before setting up or changing equipment connections.

### POWER-ON PROCEDURE

- O The MT-32 may not operate correctly if you turn it on immediately after a shutdown or connect it to a power outlet with the POWER switch on. If this happens, turn the POWER switch off, then turn it back on several seconds later.
- Set amplifier volume to 0 when turning the power on and off.
   Too high a volume level will result in an overload, which can damage the speakers.

### **INSTALLATION**

- To prevent adverse effects, protect your MT-32 from:
  - · Direct sunlight
  - Temperature and humidity extremes (heaters, etc.)
  - Dust
  - Vibration
- Do not place the MT-32 near a neon tube, fluorescent lamp, television set, cathode-ray tube, or other such equipment that could cause noise interference or errors.

### **CLEANING**

- O For daily care, wipe the casing with a dry, soft cloth.
- If the casing is stained, use a cloth slightly dampened with water.
- To remove stubborn stains, clean the casing with a cloth coated with a neutral detergent, then wipe it dry with a soft cloth.
- Never use paint thinners, benzine, or other organic solvents which could damage the casing.

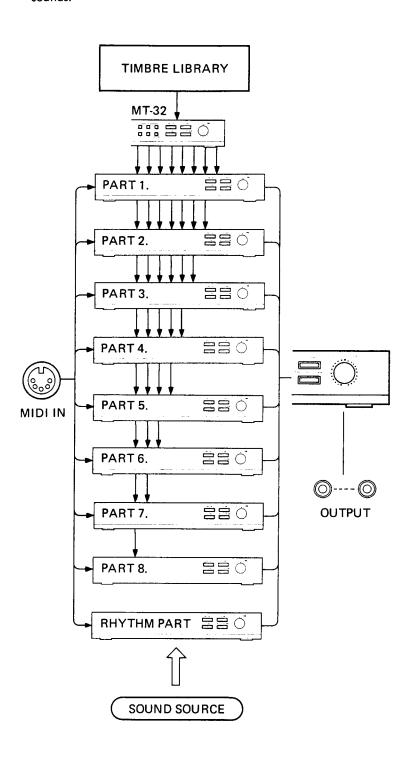
### **CAUTIONS**

- Adjust volume control to a level that will not disturb the neighborhood, especially at night when sounds can travel over a long distance.
- Do not allow fluid or foreign matter, such as water, beverages, coins, and wires, to enter the MT-32.
- Do not examine or modify the internal components or circuitry.
   Electrical shocks or damage may result.
- Do not subject the MT-32 to a severe impact, nor move it while the power is on.
- If the MT-32 fails to operate correctly, turn off immediately and contact your nearest Roland service representative.

# HOW TO USE MT-32 FEATURES

# 1 FEATURES AND USE

The MT-32 multi-timbre sound module contains a sound source capable of supplying eight independent parts and thirty rhythm sounds.



The MT-32 incorporates a 128-timbre sound library that lets you select sounds for any of the non-rhythm parts.

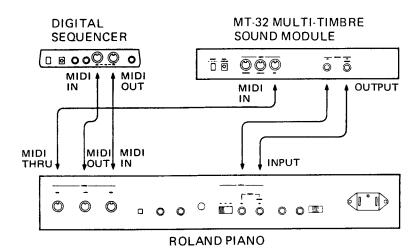
The sound source block allows you to play up to thirty-two notes for the eight parts simultaneously, each of which may consist of any number of notes within the upper limit. (The exact voicing capacity allowed, however, varies with the timbres you select. See page 22 for details.)

The MT-32 works in conjunction with a MIDI keyboard, sequencer (a device that stores musical data for playback at the desired timing), and other instruments that generate MIDI data.

The MT-32 applications are roughly broken down into the following two categories. See the corresponding section for a full explanation.

- (1) Using the MT-32 with the Roland Piano, the Roland PR-100 Digital Sequencer, and Roland PR-100 Pre-Recorded Software
  - → See Section [2] "USING THE MT-32 WITH ROLAND PR-100 PRE-RECORDED SOFTWARE" (page 8).
- (2) Using the MT-32 with a sequencer loaded with your own data
  - → See Section [3] "USING THE MT-32 WITH ORIGINAL DATA" (page 10).

When using the MT-32 with the Roland Piano, Roland PR-100 Digital Sequencer, and Roland PR-100 Software, connect the instruments as shown below:



When connections are complete, turn on the piano, MT-32, then the PR-100. Follow the instructions given in the PR-100 and software manuals.

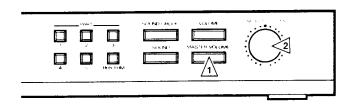
<sup>\*</sup>Set SOFT THRU ON on the sequencer, and set LOCAL OFF (— ":" position) on the Roland Piano.

<sup>\*</sup>To send MT-32 output to the built-in speaker of the Roland Piano, set the Roland Piano input level switch to the high position.

The following two steps are all that is required to set up the MT-32:

### MASTER VOLUME

Set the overall volume level of the MT-32.



(1) Press the MASTER VOLUME button, (2) then adjust with the SELECT/VOLUME control.

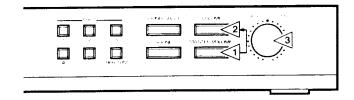


\*If the reading on the display remains unchanged when the SELECT/VOLUME knob is turned, turn the knob counterclockwise until the volume number in the display begins to change, then readjust.

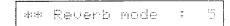
(To prevent any sudden change in output level, the SELECT/VOLUME control must be turned to the position of output level as shown in the display before any adjustment can be made.)

### • REVERB MODE

Select the reverb mode as necessary for the master output from the MT-32.



(1) While holding down the MASTER VOLUME button and (2) press the VOLUME button, then (3) turn the SELECT/VOLUME control to adjust the reverb depth mode.

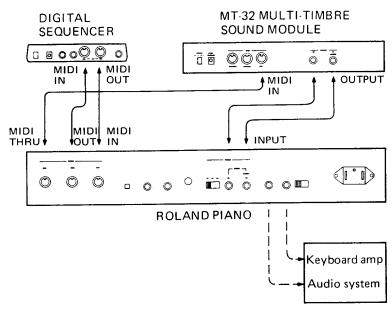


\*The reverb mode will not effect any part which the Reverb has been disabled by software.

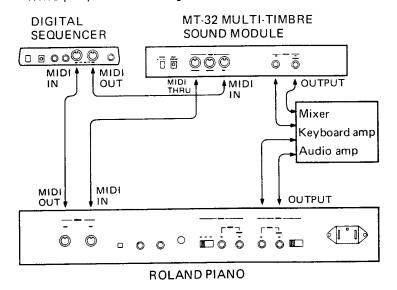
More functions are available to the user, but they may not provide noticeable effects if the MT-32 is controlled by software. The software overrides user-defined settings when there is a parameter conflict.

Working knowledge of MIDI implementation is necessary if you intend to compile your own sequencer data to play on the MT-32. Study the separate volume "What Is MIDI" before starting.

Connect the equipment as shown below:



\*If the keyboard does not have a MIDI THRU port, use the following connection:



<sup>\*</sup>Always turn on the piano, MT-32 before turning on the sequencer.

Not all of the MT-32 features are available unless the sequencer used is capable of generating data that allows access to such functions. Essential requirements are that either (1) the keyboard for compiling data or (2) the sequencer alone allows you to produce data compatible with the MT-32.

In short, the exact functions that the MT-32 provides vary with the performance of the sequencer and the keyboard you are going to use.

The sections that follow explain how the MT-32 responds to data from a MIDI source. For the data specifications and data exchange procedures, refer to the manuals for the sequencer and keyboard.

<sup>\*</sup>Set SOFT THRU ON on the sequencer, and set LOCAL OFF (—":" position) on the Roland Piano.

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### 1. BUILT-IN FUNCTIONS

This section explains the MT-32's built-in functions.

### MIDI CHANNELS

The following is the default channel configuration for the nine parts. The MT-32 checks the channels used to compile data when determining the parts it will play.

Part	1	2	3	4	5	6	7	8	Rhythm
Channel	2	3	4	5	6	7	8	9	10

The channel configuration can be switched to the following:

Part	1	2	3	4	5	6	7	8	Rhythm
Channel	1	2	3	4	5	6	7	8	10

### **PROCEDURE**

Press PART button 5 while holding down the MASTER VOLUME button, then press PART button 1.

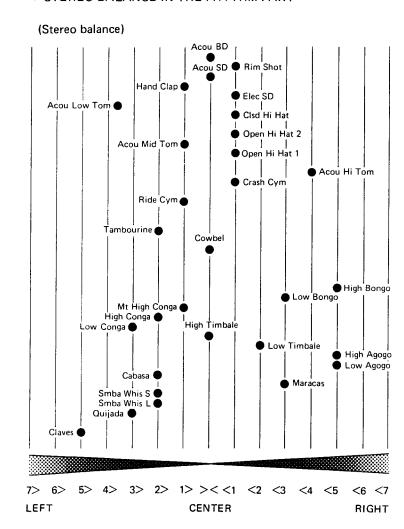
<sup>\*</sup>The rhythm setting (Channel 10) remains unchanged.

Following is a list of Rhythm instrument voices contained in the MT-32 with the note number assigned to each voice.

(75) Claves       (76)         (73) Quijada       (72) Smba Whis L         (70) Maracas       (69) Cabasa         (68) Low Agogo       (67) High Agogo         (66) Low Timbale       (65) High Timbale         (63) High Conga       (62) Mt High Conga         (61) Low Bongo       (60) High Bongo         (58)       (57)         (58)       (57)         (54) Tambourine       (55)         (51) Ride Cym       (52)         (49) Crash Cym       (50) Acou Hi Tom         (46) Open Hi Hat 1       (47) Acou Mid Tom         (44) Open Hi Hat 2       (43) Acou Low Tom         (42) Clsd Hi Hat       (41) Acou Low Tom         (39) Hand Clap       (38) Acou SD         (37) Rim Shot       (36) Acou BD				
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			(35)	Acou BD

The numbers in ( ) are the Key numbers.

### • STEREO BALANCE IN THE PHYTHM PART



### 2. USER-ACCESSIBLE FUNCTIONS

This section explains the functions that are accessible to the player using the MT-32's control panel.

OVERALL FUNCTIONS

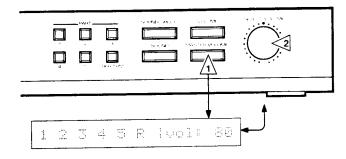
### MASTER VOLUME

This function determines the overall output level from the MT-32.

### **PROCEDURE**

Press the MASTER VOLUME button, then adjust with the SELECT/VOLUME control.

Adjustable range: 0 (min volume) to 100 (max volume)



The part currently played continues flashing.

\* If the reading on the display remains unchanged when the SELECT/VOLUME control is turned, turn the control counter-clockwise until the volume number in the display begins to change, then readjust.

(To prevent any sudden change in output level, the SELECT/VOLUME control must be turned to the position of output level as shown in the display before any adjustment can be made.)

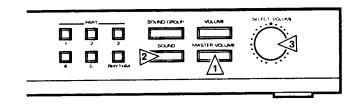
### • UNIT NUMBER

This function changes the unit number, which identifies the MT-32 receiving a System Exclusive message. The unit number should not be changed in regular MT-32 applications.

### **PROCEDURE**

Press the SOUND button while holding down the MASTER VOLUME button, then turn the SELECT/VOLUME control to change the unit number.

Adjustable range: 1 to 32



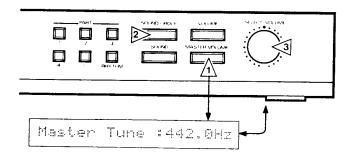
### MASTER TUNING

This function adjusts the pitch of the overall output from the MT-32. It is used to tune the MT-32 to the other instruments.

### **PROCEDURE**

Press the SOUND GROUP button while holding down the MASTER VOLUME button, then turn the SELECT/VOLUME control to adjust the master tuning. Adjustable range:

427.5 to 452.6 Hz (Standard pitch: A = 442 Hz)

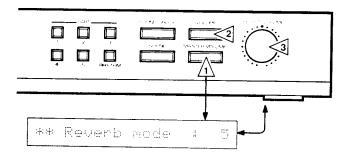


### REVERB MODE

Select the reverb mode as necessary for the overall output from the MT-32.

### **PROCEDURE**

Press the SOUND GROUP button while holding down the MASTER VOLUME button, then turn the SELECT/VOLUME control to adjust the reverb mode. Adjustable range: 0-10

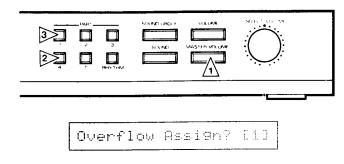


### OVERFLOW ASSIGN

This function allows the MT-32 to generate MIDI notes beyond its capacity and send the excess out of the MIDI OUT port to the input of an additional external MIDI instrument.

### **PROCEDURE**

Press PART button 4 while holding down the MASTER VOLUME button, then press PART button 1.



\* This function remains in effect until you turn off the MT-32.

# MIDI IN MT-32 MIDI IN MT-32 MIDI IN MT-32, etc.

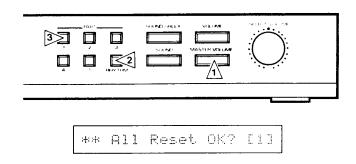
Module (A) sends excess data from its MIDI OUT port to module (B) for remote output.

### ALL RESET

This function resets all the current settings and initialized the MT-32 to the power-on defaults. It is useful when a sound remains on after you have stopped playing MIDI data part way through.

### **PROCEDURE**

Press PART button RHYTHM while holding down the MASTER VOLUME button, then press PART button 1.



<sup>\*</sup>If you press one of PART buttons between 2 and 5 instead of PART button 1, the MT-32 will reset all settings except for the patch memory and rhythm setup functions.

	PA	RT	FU	INC.	TIO	NS	
--	----	----	----	------	-----	----	--

### TIMBRE SETUP

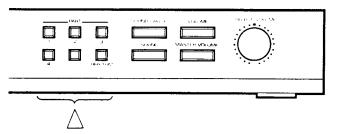
The MT-32 comes with an internal 128-timbre data library that lets you select sounds for any of the non-rhythm parts.

→ Refer to the separate volume "Sound List" for a full description of the timbres.

The 128 timbres are classified into separate sound groups, each containing from four to eleven timbres.

### **PROCEDURE**

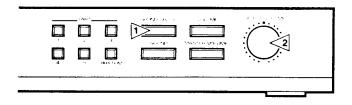
(1) Press the PART button that corresponds to the part for which you wish to select the timbre. (You can select parts 6, 7, 8, by pressing part switches 1, 2, 3 while pressing MASTER VOLUME switch.)



(2) Press the SOUND GROUP button, then select the sound group you desire with the SELECT/VOLUME control.

1>Piano {AcouPiano1

### FLASHING





(3) Press the SOUND button, then select the sound you desire with the SELECT/VOLUME control.

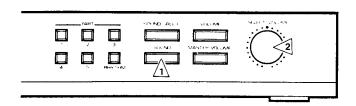
1:Piano >AcouPiano1

### FLASHING



11Piano >\*\*\*\*\*\*\*\*

NAME OF TIMBRE

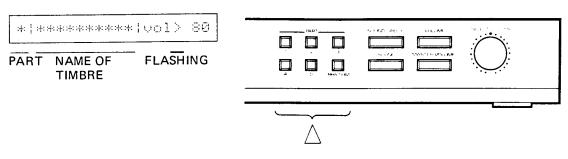


### VOLUME FOR EACH PART

This function allows independent volume control for each part, including the rhythm part.

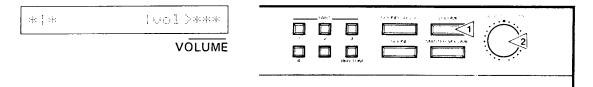
### **PROCEDURE**

(1) Press the PART button that corresponds to the part for which you wish to adjust the volume.





(2) Press the VOLUME button, then set the volume with the SELECT/VOLUME control. Adjustable range: 0 — 100



(To prevent any sudden change in output level, the SELECT/ VOLUME control must be turned to the position of output level as shown in the display before any adjustment can be made.)

<sup>\*</sup>If the reading on the display remains unchanged when the SELECT/VOLUME control is turned, turn the knob counter-clockwise until the volume number in the display begins to change, then readjust.

# 3. FUNCTIONS ACCESSIBLE WITH AN EXTERNAL MIDI MESSAGE

### a. Program Change and Control Change

The MT-32 accepts external MIDI messages (Program Change and Control Change) which redefine the MT-32 settings. These messages provide independent control over any of the non-rhythm parts.

### ● TIMBRE SETUP (PROGRAM CHANGE)

This function allows the MT-32 to select the timbre as specified by an external Program Change number (a superscript appearing to the left of the timbres in the "Sound List").

- \*The timbre setup procedure using a Program Change number differs from the one using the MT-32 control panel. See page 23 for details.
- ◆ MODULATION DEPTH (CONTROL CHANGE [1])

This function changes the vibrato effect.

### VOLUME LEVEL FOR EACH PART (CONTROL CHANGE [7])

This function sets the volume level for each part.

### ● PAN-POT (CONTROL CHANGE [10])

This function changes the stereo balance of the MT-32 output.

### EXPRESSION (CONTROL CHANGE [11])

This function controls sound dynamics.

### ● HOLD (CONTROL CHANGE [64])

This function causes the MT-32 to suspend control so that continuous notes maintain the sustain level and attenuating notes simulate the effect of a piano damper pedal.

<sup>\*</sup>The sound dynamics can be controlled by the Expression and the volume level settings (as determined by the MT-32 control panel setting or Control Changes [7] and [11]).

### b. MIDI System Exclusive Messages

The MT-32 accepts MIDI System Exclusive messages from an external controller (Keyboard, Computer, Sequencer etc.)

Because the data format for MIDI System Exclusive messages varies from one manufacturer to another, this data format must comply with the specifications designated by Roland when sent to the MT-32

The MT-32 therefore does not accept System Exclusive messages unless the sequencer — whether it is manufactured by Roland or not — allows the user to compile messages from keypad, as with the Roland MC-500.

For details on the MIDI System Exclusive message and data input procedures, refer to MIDI implementation reference.

<sup>\*</sup> For functions that allow access from the MT-32's control panel as well as Program Change and Control Change messages, the MT-32 retains the settings specified by the data last received.

### 1) OVERALL CONTROL FOR THE MT-32 FUNCTIONS

FUNCTION	DESCRIPTION	ADJUSTABLE RANGE
Master tuning	Changes the overall pitch of the MT-32.	432.1 to 457.6 Hz
Reverb mode	Selects the reverb type.	Room, Hall, Plate and Tap-delay
Reverb time	Sets the reverb duration.	1 to 8
Reverb level	Sets the reverb intensity.	0 to 7
Partial reserve (Parts 1 to 8 and rhythm)	(See below.)	0 to 32
MIDI channel (Parts 1 to 8 and rhythm)	Selects a MIDI channel for each part.	OFF or 1 to 16
Master volume	Sets the overall volume level for the MT-32.	0 to 100

### **PARTIAL**

The smallest unit that defines a timbre is called a "partial". While a single partial is enough to produce a simple tone, multiple partials are required to generate complex sounds.

Because the MT-32 is capable of generating up to thirty-two notes at a time, it requires exactly thirty-two partials to use its maximum capacity. The maximum capacity for generating notes simultaneously, therefore, reduces as the number of notes consisting of multiple partials increases.

### **OPARTIAL RESERVE**

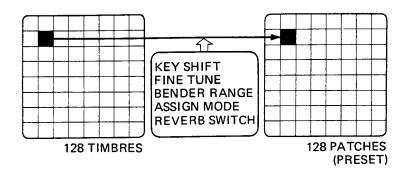
Partial Reserve is a function that allows the MT-32 to selectively define the number of partials that each part can use.

If a note requires partials beyond the upper limit of a part, the MT-32 will check the other parts for unused partials and allocate them, if available, to that part. If a part runs short of partials due to the Partial Reserve function, the MT-32 will terminate the part and send the partials back to the original part.

The Partial Reserve function thus ensures that every part has at least the number of partials assigned to it.

### 2) CONTROL OVER PARTS 1 TO 8

The Figure below shows musical data stored in memory together with the corresponding timbre data. A group of such data is called a "patch". A patch comes in 128 variations on the MT-32.



Unlike the "Timbre Setup" function (see page 18) that merely switches between different timbres, an externally supplied Program Change message causes the MT-32 to switch to the new patch and use the settings stored in that specified patch memory.

FUNCTION	DESCRIPTION	ADJUSTABLE RANGE
Sound group	Selects the sound group of timbres.	A, B, M, or R (1-30)
Sound number	Selects the timbre number.	1 to 64
Key shift	Indicates the actual shift relative to the note data.	-24 to +24 in semitones
Fine tune	Allows fine tuning.	-50 to 50 cents
Bender range	Sets the maximum effect of the Bender.	0 to 24
Assign mode	(See below.)	POLY 1, 2, 3, or 4
Reverb switch	Turns the reverb effect on and off.	ON or OFF

System Exclusive messages allow the user to freely edit the settings in such patch memories.

### O ASSIGN MODE

The assign mode determines how the MT-32 generates sounds in response to the note-on data it will receive:

- POLY 1: Polyphonic mode, single assign, priority given to data last received.
- POLY 2: Polyphonic mode, single assign, priority given to data first received.
- POLY 3: Polyphonic mode, multiple assign, priority given to data last received.
- POLY 4: Polyphonic mode, multiple assign, priority given to data first received.

### SINGLE ASSIGN

This function causes the MT-32 to stop playing a note, then restart on the same note when it receives note-on data that has the same note number as the current one.

### **MULTIPLE ASSIGN**

This function causes the MT-32 to switch to another voice and continue playing a note when it receives note-on data that has the same note number as the current one.

### PRIORITY TO LAST DATA [First in, First out]

If the new note-on messages exceed the number of notes played simultaneously, the MT-32 will stop playing notes one after another in the order in which it started playing them.

### PRIORITY TO FIRST DATA [First in, Last out]

If the new note-on messages exceed the number of notes played simultaneously, the MT-32 will stop playing notes one after another in the order opposite to that in which it started playing them.

### 3) WRITING USER PATCHES TO MEMORY

The MT-32 allows a System Exclusive patch to replace any of the 128 built-in patches.

### 4) TIMBRE CONTROL

This function allows the user to compile and edit timbre data.

COMMON PARAMETER	ADJUSTABLE RANGE
Name	Alphanumerics and symbols
Structure 1, 2 (3, 4)	1 to 13
Partial Mute	OFF, ON
ENV Mode	Normal, NO Sustain

PA	ARTIAL PARAMETER	ADJUSTABLE RANGE
WG Pitch	6	C1 C#1 C0
WGPItch	Coarse	C1, C#1 C9
		-50 0 +50
	Keyfollow	-1, -1/2, -1/4, 0, 1/8, 1/4, 3/8 1/2 5/8 3/4 7/8 1
		3/8, 1/2, 5/8, 3/4, 7/8, 1, 5/4, 3/2, 2 s1, s2
	Bender Switch	Off/On
WG	Waveform	Square/Sawtooth
	PCM Wave No.	1 128
	Pulse Width	0 100
	PW Velocity Sense	-7 0 +7
P-ENV	Depth	0 10
	Velocity Sens	0 100
İ	Time Keyfollow	0 4
	Time 1/2/3/4	0 100
i	Level 0/1/2	-50 0 +50
	Sustain level	-50 0 +50
	End level	-50 0 +50
P-LFO	Rate	0 100
	Depth	0 100
	Modulation Sense	0 100
TVF	Cutoff Frequency	0 100
	Resonance	0 30
	Keyfollow	-1, -1/2, -1/4, 0, 1/8,
		1/4, 3/8, 1/2, 5/8, 3/4,
	Bias Point/Direction	7/8, 1, 5/4, 3/2, 2 <a1<c7,>A1&gt;C7</a1<c7,>
	Bias Level	-7 0 +7
TVFENV	Depth	0 100
TOP EIVO	Velocity Sense	0 100
	Depth Keyfollow	0 4
	Time keyfollow	0 4
	Time 1/2/3/4/5	0 100
	Level 1/2/3	0 100
	Sustain Level	0 100
TVA	Level	0 100
	Velocity Sense	-50 0 +50
	Bias Point 1/2	<a1<c7,>A1&gt;C7</a1<c7,>
	Bias level 1/2	-12 0
TVA ENV	Time Keyfollow	0 4
	Time 1 Velocity Follow	0 4
	Time 1/2/3/4/5	0 100
ŀ		
	Level 1/2/3	0 100

### 4) TIMBRE CONTROL

This function allows the user to compile and edit timbre data.

COMMON PARAMETER	ADJUSTABLE RANGE
Name	Alphanumerics and symbols
Structure 1, 2 (3, 4)	1 to 13
Partial Mute	OFF, ON
ENV Mode	Normal, NO Sustain

PA	ARTIAL PARAMETER	ADJUSTABLE RANGE
WG Pitch	6	C1 C#1 C0
WGPItch	Coarse	C1, C#1 C9
		-50 0 +50
	Keyfollow	-1, -1/2, -1/4, 0, 1/8, 1/4, 3/8 1/2 5/8 3/4 7/8 1
		3/8, 1/2, 5/8, 3/4, 7/8, 1, 5/4, 3/2, 2 s1, s2
	Bender Switch	Off/On
WG	Waveform	Square/Sawtooth
	PCM Wave No.	1 128
	Pulse Width	0 100
	PW Velocity Sense	-7 0 +7
P-ENV	Depth	0 10
	Velocity Sens	0 100
İ	Time Keyfollow	0 4
	Time 1/2/3/4	0 100
i	Level 0/1/2	-50 0 +50
	Sustain level	-50 0 +50
	End level	-50 0 +50
P-LFO	Rate	0 100
	Depth	0 100
	Modulation Sense	0 100
TVF	Cutoff Frequency	0 100
	Resonance	0 30
	Keyfollow	-1, -1/2, -1/4, 0, 1/8,
		1/4, 3/8, 1/2, 5/8, 3/4,
	Bias Point/Direction	7/8, 1, 5/4, 3/2, 2 <a1<c7,>A1&gt;C7</a1<c7,>
	Bias Level	-7 0 +7
TVFENV	Depth	0 100
TOP EIVO	Velocity Sense	0 100
	Depth Keyfollow	0 4
	Time keyfollow	0 4
	Time 1/2/3/4/5	0 100
	Level 1/2/3	0 100
	Sustain Level	0 100
TVA	Level	0 100
	Velocity Sense	-50 0 +50
	Bias Point 1/2	<a1<c7,>A1&gt;C7</a1<c7,>
	Bias level 1/2	-12 0
TVA ENV	Time Keyfollow	0 4
	Time 1 Velocity Follow	0 4
	Time 1/2/3/4/5	0 100
ŀ		
	Level 1/2/3	0 100

### 5) WRITING TIMBRE DATA TO MEMORY

The MT-32 is capable of storing up to 64 different timbres at memory locations that are not used by the built-in timbres.

### 6) RHYTHM PART CONTROL

Any key number between 24 and 87 is accessible to the user for the following functions:

FUNCTION	DESCRIPTION	ADJUSTABLE RANGE
Timbre	Selects the timbre.	R: 01 to 30 M: 01 to 64
Output level	Adjust the output volume.	0 to 100
Pan-pot	Adjust the stereo balance.	15-steps between L and R
Reverb switch	Turns the reverb effect on and off	ON or OFF

### 7) DATA TRANSFER

The MT-32 allows bulk dump or load of all memory-resident data.

<sup>\*</sup>The MT-32 does not allow bulk dump (data transfer) unless it receives a request-to-send message from a remote instrument. Therefore, data transfer is not possible between MT-32 units.

### **MAJOR SPECIFICATIONS**

MT-32 Multi-timbre Sound Module

Sound source:

LA [Linear Arithmetic synthesis]

Number of notes:

Up to 32 simultaneously

Number of timbres:

Up to 8 and one Rhythm Part simultaneously

Preset timbres:

128 for Sound Parts and 30 for Rhythm Part

Control panel buttons:

PART buttons 1 through 5 and one RHYTHM button (Parts 6 to 8 also accessible)
SOUND GROUP button
SOUND button
VOLUME button

MASTER VOLUME button SELECT/VOLUME control

Display:

20-character backlit liquid crystal display

Connectors:

OUTPUT jacks — L (mono) and R MIDI connectors — IN, OUT, and THRU DC IN jack

Power supply:

9V DC (supplied by ACB-Series AC adapter)

Current consumption:

650 mA (at 9V DC)

External dimensions:

305 mm(width) x 220 mm(depth) x 45 mm(height) 12" x 8-\%" x 1-\%"

(except for the protruding sections)

Weight:

1.5 kg/3 lb 5 oz

### ACCESSORIES (Supplied):

AC adapter (ACB-Series)
MIDI cable (1 pc.)
Connecting cord (2 pcs.)
Owner's Manual
"Sound List"
"What Is MIDI"

<sup>\*</sup> The specifications of this product are subject to change without prior notice for improvement.

### Information

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

### U.S.A.

Roland Corp US 7200 Dominion Circle Los Angeles, CA.90040--3647 U.S.A.

☎ (213) 685 - 5141

### CANADA

Roland Canada Music Ltd. (Head Office) 13880 Mayfield Place, Richmond
British Columbia
Canada V6V 2E4

5 (604) 270-6626

Roland Canada Music Ltd. 3469-rue Ashby St-Laurent, Quebec H4R 2C1 (514) 335-2009

Roland Canada Music 1.td. Unit B12-1515 Matheson Blvd Mississauga, Ontario 1.4W 2P5 (416) 625-4880

### AUSTRALIA

Roland Corporation (Australia) Pty. Ltd. (Head Office) 38 Campbell Avenue
Dee Why West, NSW 2099
Australia

© (02) 982-8286

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

### **NEW ZEALAND**

Roland Corporation (NZ) Ltd. 9 Nugent Street, Grafton Auckland 3 New Zealand 2 (09) 398-715

### UNITED KINGDOM

Roland (UK) Ltd. Great West Trading Estate 983 Great West Road Brentford, TW8 9DN, Middlesex, England 5 (01) 568 4578

### WEST GERMANY

Roland Elektronische Musikinstrumente Handelsgesellschaft mbH. Oststrasse 96, 2000 Norderstedt West Germany 25040, 526 0090

## BELUGIUM/HOLLAND LUXEMBOURG

Roland Benelux N.V. Houtstraat 1 B-2431 Oevel-Westerlo Belgium 2014-58 45 35

### DENMARK

Roland Scandinavia A/S Norre Sogade 49, 1370 Copenhagen K. Denmark 75 (01) 11 31 11

### **SWEDEN**

Roland Scandinavia A/S Storskarsgatan 4 115 29 Stockholm ₱ 08-65 32 40/65 32 50

### NORWAY

Benum Music A/S Haakon den godes Vei 14 N-0319 Oslo 3, Norway (Box 145 Vinderen, N-0319 Oslo 3 Norway) ☎02 141266

### **FINLAND**

OY Musiikki Fazer Musik AB Takomotie 3 00380 Helsinki 38, Finland ☎05 56551

### ITALY

Roland Italy S.p.A. Via Gallarate 58 20151 Milano Italy 202-3086849

### **SWITZERLAND**

Musitronic AG Gerberstrasse 5, CH-4410 Switzerland ☎061/91 16 15

### FRANCE

Musikengro 102, Avenue Jean-Jaures 69007 Lyon Cedex 07 7 (7) 858-54 60

Musikengro (Paris Office)
Centre Region Parisienne 41 rue Charles—Fourier, 94400 Vitry s∕Seine ☎ (1) 680 86 62

### SPAIN

Vietronic S.A. Bolivia 239 08020 Barcelona ☎93-307 47 12

### **AUSTRIA**

E. Dematte & Co. Nue-Rum Siemens -Strasse 4 A-6021 Innsbruck box 591 ☎ (05222) 63 451

### GREECE

A. ANDREADES & Co. L.T.D. 2 Phidiou street, GR 10026B Athens





# **Sound List**



Prog-No. [HP-Prog] Use Partial Timbre name

### PRESET TIMBRE MAP

<b>(</b> 0)	1					À.			4 1		17 1 C 1			4								
[A11]	4	002	[A12]	2	003	[A13]	1	004	[A14]	3	005	[A15]	2	006	[A16]	2	007	[A17]	1	008	[A18]	3
Piano 1		Acou	Piano 2		Acou	Piano 3		Elec P	iano 1		Elec F	Piano 2		Elec P	iano 3		Elec F	iano 4		Honk	ytonk	
					1999				病。	A.	1	147.4	and the	CLUI-	ret or sure	1						
[A21]	3	010	[A22]	3	011	[A23]	2	012	[A24]	2	013	[A25]	3	014	[A26]	3	015	[A27]	2	016	[A28]	2
rg 1		Elec C	Org 2		Elec (	Org 3		Elec (	Org 4		Pipe (	Org 1		Pipe (	Org 2		Pipe (	Org 3		Accor	dion	
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[A31]	4	018	[A32]	2	019	[A33]	1	020	[A34]	3	021	[A35]	2	022	[A36]	1	023	[A37]	4	024	[A38]	2
i 1		Harps	i 2		Harps	i 3		Clavi	1		Clavi	2		Clavi	3		Celes	ta 1		Celest	a 2	
			ta Ala	123			- 5 Ka				GW	BASS:				G al			ار د خی تین			
[A41]	2	026	[A42]	3	027	[A43]	2	028	[A44]	2	029	[A45]	2	030	[A46]	2	031	[A47]	2	032	[A48]	1
rass 1		Syn B	rass 2		Syn E	Brass 3		Syn B	rass 4		Syn E	Bass 1		Syn E	Bass 2		Syn E	Bass 3			Bass 4	
4. 1	- 34			SAL SAL				*							de (late) Late						A Section 1	1,19
[A51]	3	034	[A52]	3	035	[A53]	3	036	[A54]	2	037	[A55]	4	038	[A56]	4	039	[A57]	4	040	[A58]	1
sy		Harm	o Pan		Chora	ile		Glasse	<b>)</b> !		Soun	dtrack		Atmo	sphare		Warm	Bell		Funn	y Vox	
III (A.)								Č.											Ya Yel Walio			
[A61]	3	042	[A62]	3	043	[A63]	2	044	[A64]	2	045	[A65]	2	046	[A 16]	2	047	[A67]	2	048	[A68]	2
Bell		Ice Ra	ain		Oboe	2001		Echo	P∈n		Docto	or Solo		Schoo	oldaz ə		Bellsi	nger		Squar		-
[](e[3]				Ž,				15%														
[A71]	4	050	[A72]	3	051	[A73]	2	052	A74]	3	053	[A75]	3	054	[A/6]	2	055	[A77]	3	056	[A78]	2
ct 1		Str Se	ct 2		Str Se	ct 3		Pizzic	ato		Violir	n 1	:	Violir	1 2		Cello		į			
								(e)Nh	۸R													
[A81]	2	058	[A82]	3	059	[A83]	2	060	[A84]	2	061	[ A85]	2	062	[A86]	4	063	[A87]	3	064	[A88]	4
abass		Harp	1		Harp	2		Guita	r 1		Guita	r 2		Elec (	3tr 1		Elec	Gtr 2		Sitar	- · · •	
	[A11] Piano 1  [A21] Org 1  [A31] 1  [A41] rass 1  [A51] sy  [A61] Bell NGS [A71] ct 1	[A11] 4 Piano 1  [A21] 3 Org 1  [A31] 4 1  [A41] 2 rass 1  [A51] 3 Sy  [A61] 3 Bell  [CS [A71] 4 ct 1	[A11] 4 002 Piano 1 Acou  AN  [A21] 3 010 Elec C  Elec C  [A31] 4 018 1 Harps  [A41] 2 026 Frass 1 Syn B  [A51] 3 034 Harm  [A61] 3 042 Ice Ra  [A71] 4 050 Str Se  [A81] 2 058	[A11] 4 002 [A12] Piano 1 Acou Piano 2  AN  [A21] 3 010 [A22] Elec Org 2  Elec Org 2  [A31] 4 018 [A32] Harpsi 2  [A41] 2 026 [A42] Syn Brass 2  [A51] 3 034 [A52] Harmo Pan  [A61] 3 042 [A62] Ice Rain  [A71] 4 050 [A72] Str Sect 2	[A11] 4 002 [A12] 2 Acou Piano 2  AN  [A21] 3 010 [A22] 3 Elec Org 2  [A31] 4 018 [A32] 2 Harpsi 2  [A41] 2 026 [A42] 3 rass 1 Syn Brass 2  [A51] 3 034 [A52] 3 Harmo Pan  [A61] 3 042 [A62] 3 Bell Ice Rain  [A71] 4 050 [A72] 3 Str Sect 2	[A11] 4 002 [A12] 2 003 Piano 1 Acou Piano 2 Acou  AN  [A21] 3 010 [A22] 3 011 Elec Org 2 Elec Org 2  [A31] 4 018 [A32] 2 019 Harpsi 2 Harps  [A41] 2 026 [A42] 3 027 rass 1 Syn Brass 2 Syn Brass 1 Syn Brass 2 S	[A11] 4 002 [A12] 2 003 [A13] Acou Piano 2 Acou Piano 3  AN  [A21] 3 010 [A22] 3 011 [A23] Elec Org 2 Elec Org 3  Elec Org 2 019 [A33] Harpsi 2 Harpsi 3  [A41] 2 026 [A42] 3 027 [A43] Frass 1 Syn Brass 2 Syn Brass 3  [A51] 3 034 [A52] 3 035 [A53] Frass 1 Syn Brass 2 Syn Brass 3  [A61] 3 042 [A62] 3 043 [A63] Frass 1 Syn Brass 2 Syn Brass 3  [A61] 3 042 [A62] 3 043 [A63] Frass 1 Syn Brass 3  [A61] 3 042 [A62] 3 043 [A63] Frass 1 Syn Brass 3  [A61] 3 042 [A62] 3 051 [A73] Frass 1 Syn Brass 3  [A61] 3 042 [A62] 3 051 [A73] Frass 1 Syn Brass 3  [A61] 3 042 [A62] 3 051 [A73] Frass 1 Syn Brass 3  [A61] 3 042 [A62] 3 051 [A73] Frass 1 Syn Brass 3  [A61] 3 042 [A62] 3 051 [A73] Frass 1 Syn Brass 3	[A11] 4 002 [A12] 2 003 [A13] 1 Acou Piano 3  AN  [A21] 3 010 [A22] 3 011 [A23] 2 Elec Org 2 Elec Org 3  [A31] 4 018 [A32] 2 019 [A33] 1 Harpsi 3  [A41] 2 026 [A42] 3 027 [A43] 2 Syn Brass 2 Syn Brass 3  [A51] 3 034 [A52] 3 035 [A53] 3 Acy Harmo Pan Chorale  [A61] 3 042 [A62] 3 043 [A63] 2 Oboe 2001  [A71] 4 050 [A72] 3 051 [A73] 2 Str Sect 3	[A11] 4 002 [A12] 2 003 [A13] 1 004 Piano 1 Acou Piano 2 Acou Piano 3 Elec P  [A21] 3 010 [A22] 3 011 [A23] 2 012 Pig 1 Elec Org 2 Elec Org 3 Elec Org 3  [A31] 4 018 [A32] 2 019 [A33] 1 020 Piano 1 Harpsi 2 Harpsi 3 Clavi  [A41] 2 026 [A42] 3 027 [A43] 2 028 Piano Pan Chorale Glasse  [A61] 3 042 [A62] 3 043 [A63] 2 044 Piano Pan Chorale Glasse  [A71] 4 050 [A72] 3 051 [A73] 2 052 Pizzio  [A71] 4 050 [A72] 3 051 [A73] 2 052 Pizzio  [A81] 2 058 [A82] 3 059 [A83] 2 060	[A11] 4 002 [A12] 2 003 [A13] 1 004 [A14] Elec Piano 1  Acou Piano 2 Acou Piano 3 Elec Piano 1  [A21] 3 010 [A22] 3 011 [A23] 2 012 [A24] Elec Org 4  [A31] 4 018 [A32] 2 019 [A33] 1 020 [A34] 1 Harpsi 2 Harpsi 3 Clavi 1  [A41] 2 026 [A42] 3 027 [A43] 2 028 [A44] Syn Brass 4  [A51] 3 034 [A52] 3 035 [A53] 3 036 [A54] Syn Brass 4  [A61] 3 042 [A62] 3 043 [A63] 2 044 [A64] Elec Piano 1  [A61] 3 042 [A62] 3 043 [A63] 2 044 [A64] Elec 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Acou Piano 3 Elec Piano 1 Elec Piano 2 Elec Piano 2  ANN  [A21] 3 010 [A22] 3 011 [A23] 2 012 [A24] 2 013 [A25] 3 014 Pipe Org 1 Pipe Org 1 Pipe Org 1  [A31] 4 018 [A32] 2 019 [A33] 1 020 [A34] 3 021 [A35] 2 022 Clavi 2 Clavi 2  [A41] 2 026 [A42] 3 027 [A43] 2 028 [A44] 2 029 [A45] 2 030 Syn Brass 1 Syn Brass 2 Syn Brass 3 Syn Brass 4 Syn Bass 1 Syn Brass 1  [A51] 3 034 [A52] 3 035 [A53] 3 036 [A54] 2 037 [A55] 4 038 Pipe Org 1 Pipe Org 1  [A51] 3 042 [A62] 3 043 [A63] 2 044 [A64] 2 045 [A65] 2 046 Pipe Org 1 Pipe Org 1  [A51] 3 042 [A62] 3 043 [A63] 2 044 [A64] 2 045 [A65] 2 046 Pipe Org 1 Pipe Org 1  [A51] 3 042 [A62] 3 043 [A63] 2 044 [A64] 2 045 [A65] 2 046 Pipe Org 1 Pipe Org 1  [A51] 3 042 [A62] 3 043 [A63] 2 044 [A64] 2 045 [A65] 2 046 Pipe Org 1 Pipe Org 1  [A51] 3 042 [A62] 3 043 [A63] 2 044 [A64] 2 045 [A65] 2 046 Pipe Org 1 Pipe Org 1  [A51] 4 050 [A72] 3 051 [A73] 2 052 A74] 3 053 [A75] 3 054 Pipe Org 1 Pipe Org 1  [A51] 4 050 [A72] 3 051 [A73] 2 052 A74] 3 053 [A75] 3 054 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[A12] 2 003 [A13] 1 004 [A14] 3 005 [A15] 2 006 [A16] 2 Elec Piano 1	[A11] 4 002 [A12] 2 003 [A13] 1 004 [A14] 3 005 [A15] 2 006 [A16] 2 007 Piano 1 Acou Piano 2 Acou Piano 3 Elec Piano 1 Elec Piano 2 Elec Piano 3 Elec Piano 3 Elec Piano 1 Elec Piano 2 Elec Piano 3 Elec Piano 3 Elec Piano 1 Elec Piano 2 Elec Piano 3 Elec Piano 2 Elec Piano 3 Elec Piano 3 Elec Piano 3 Elec Piano 2 Elec Piano 3 Elec Piano 3 Elec Piano 2 Elec Piano 3 Elec Piano 3 Elec Piano 2 Elec Piano 3 Elec Piano 3 Elec Piano 2 Elec Piano 3 Elec Piano 3 Elec Piano 3 Elec Piano 3 Elec Piano 2 Elec Piano 3 Elec Piano 3 Elec Piano 3 Elec Piano 3 Elec Piano 2 Elec Piano 3 Elec Piano 3 Elec Piano 3 Elec Piano 2 Elec Piano 3 Elec Piano 3 Elec Piano 3 Elec Piano 3 Elec Piano 2 Elec Piano 2 Elec Piano 3 Elec Piano 3 Elec Piano 3 Elec Piano 3 Elec Piano 2 Elec Piano 3 Elec Piano 3 Elec Piano 2 Elec Piano 2 Elec Piano 3 Elec Piano 3 Elec Piano 2 Elec Piano 3 Elec Piano 2 Elec Piano 3 Elec Piano 2 Elec Piano 3 Elec Piano 2 Elec 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Celesta 4 Celesta 5 Celesta 5 Celesta 6 Celesta 6 Celesta 7 Celes



# **Sound List**



Prog-No. [HP-Prog] Use Partial Timbre name

### PRESET TIMBRE MAP

3/13		(F)(0)	See toncas seg	Hara amagan merus	3 30/86-44	a va antistr				Maria Transfer				STATE OF THE PARTY									Mark to the
065	[B11]	2	066	[B12]	1	067	[B13]	2	068	[B14]	1	069	[B15]	3	070	[B16]		071	[D47]				
Acou	Bass 1		Acou	Bass 2		Elec 6	-			Bass 2	į		Bass 1	J		Bass 2	2	071	[B17]	4	072	(B18)	2
WIN			Shar 3		A.E.			藩				Olap	Jusy		Siap :	Dass Z		Fretle			Fretle	ess 2	Sales of Sales
073	[B21]	4	074	[B22]	2	075	[B23]	3	076	[B24]	2	077	[B25]	2	078	[B26]		ME 100 72					1
Flute	1		Flute	2		Picco	•	Ū	Picco	=	~	Reco	- "	2	Pan P		3	079	[B27]	4	080	[B28]	3
								1.525	1.000			Heed	idei Ta		ranir	ipes	2 10	Sax 1		th sign	Sax 2		
081	[B31]	2	082	[B32]	1	083	[B33]	3	084	[B34]	2	085	[B35]	2	086	[B36]	2	007	[ 00 7]				
Sax 3			Sax 4	•		Clarin	•		Clarin		-	Oboe		2	Engl I		2	087 Basso	[B37]	2	088	[B38]	2
BEA					e de la companya de la companya de la companya de la companya de la companya de la companya de la companya de La companya de la co	TOTAL CAR	211 Z K								Liigi			Dasso			Harm	onica	
089	[B41]	3	090	[B42]	2	091	[B43]	3	092	[B44]	2	093	[ B45]	3	094	[B46]	2	095	[ [ [ ] ]			[040]	
Trump	pet 1		Trum				bone 1			bone 2	_	Fr Ho		J	Fr Ho	-	2		[B47]	2	096	[B48]	4
			AND I		14. c. 57.									ÇI SK	ri no		4400	Tuba		45-30	Brs Se		SAKAME
097	[B51]	3	098	[B52]	3	099	[B53]	2	100	[B54]	1	101	[B55]	2	100	[250]		4.00	\\ \			talibi.	
Brs Se		Ū	Vibe		J	Vibe		2	Syn N	-	,			3	102	[B56]	2	103	[B57]	4	104	[B58]	1
		M. W. SH				VIDE .	<b>.</b>		Synt	nanet	F1 10 10 10 10 10 10 10 10 10 10 10 10 10	Wind	oen		Glock		eda, edi.	Tube	Bell		Xylop	hone	23 col 30
105	[B61]	3	106	[B62]	2	107	(DC2)	4	100												a dina		
Marim		J		[ 002]	2		[B63]	4	108	[B64]	4	109	[B65]	2	110	[B66]	1	111	[B67]	4	112	[B68]	3
PERC			Koto			Sho	for the party		Shaki	uhachi	100 Marie	Whist	le 1	Starte act	Whist	le 2		Bottle	blow		Breath	pipe	
and the same of th	[B71]		A NAMES OF	[070]			()					排稿。											
	_	2	114	[B72] –	1	115	[B73]	2	116	[B74]	2	117	[B75]	2	118	[B76]	3	119	[B77]	1	120	[B78]	2
Timpa	1111		Meloc	lic Tom		Deep		Den sa	Elec F	erc 1		Elec F	erc 2		Taiko			Taiko	Rim		Cymb	al	
					1	Berry Salar Salar Salar	CTS				4.4	7 Y			\$	4	•						200
121	[B81]	2	122	[B82]	2	123	[B83]	4	124	[B84]	1	125	[B85]	1	126	[886]	4	127	[B87]	3	128	[B88]	4
Castan	nets		Triang	gle		Orche	Hit		Telep	hone		Bird T	weet		One N	lote Jam		Water	Bells		Jungle	Tune	



MT-32 MIDI Implementation

### 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	Manufactures ID (Roland)
DEV	Device ID
MDL	Model ID
CMD	Command ID
[BODY]	Maindata
F7H	End of exclusive

### # MIDI status: F0H, F7H

An exclusive message must be flanked by a pair of status codes, starting with a Manufactures - ID immediately after FOH (MIDI version LO).

### # Manufactures - ID: 41H

The Manufactures ID identifies the manufacturer of a MIDI instrument that triggeres an exclusive message. Value 41H represents Roland's Manufactures-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 00II = 0FH, a value smaller by one than that of a basic channel, but value 00II = 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

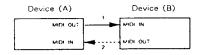
Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory—resident records—waveform and tone data, switch status, and parameters, for example—to specific locations in a machine—dependent address space, thereby allowing access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

### Connection Diagram

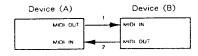


Connectionat point2 is essential for "Request data" procedures, (See Section3.)

### # 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



Connectional points1 and 2 is essential,

- \*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, andare 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
FOH	Exclusive status
41H	Manufactures ID (Roland)
DEV	Device ID
MDL	Model ID
11H	Command ID
аан	Address MSB
ssH	LSB 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 and data 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 lower seven 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 DTI message can convey the starting address (es) 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 maintaincompatibility with such devices, Roland has limited the DT1 to 256bytes so that an excessively long message is sent out in separate segments.

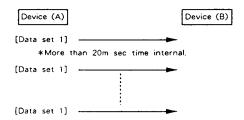
Byte	Description
FOH	Exclusive
41H	Manufactures ID (Roland)
DEV	Device ID
MDL	Model ID
12H	Command ID
ааН	Address MSB
ddH sum	Data Check sum
F7H	End of exclusive

- \*A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.
- \*Some models and data 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 lower seven bits are zero when values for an address, size, and that checksum are summed.

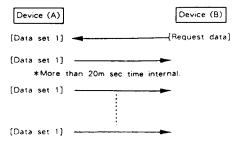
### # Example of Message Transactions

● 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 Λ 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 becausedata 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 morcefficient 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	Manufactures ID (Roland)
DEV	Device ID
MDL	Model ID
40H	Command ID
ааН	Address MSB : : : LSB
ssH	Size MSB : : : LSB
sum	Check sum
F7H	End of exclusive
	hat a desired to the second se

- \*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 and data 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 lower seven 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	Manufactures ID (Roland)
DEV	Device ID
MOL	Model ID
41H	Command ID
aaH	Address MSB
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 and data 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 lower seven 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 (es) 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 maintaincompatibility 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	Manufactures ID (Roland)
DEV	Device ID
MDL	Model ID
42H	Command ID
ааН	Address MSB
ddH : sum	Oata 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 and data 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 lower seven 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	Manufactures 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	Manufactures 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	Manufactures ID (Roland)
DEV	Device ID
MDL	Model ID
45H	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, or 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.

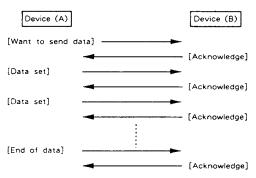
a communications error has occurred.

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.

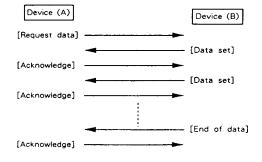
Byte	Description
FOH	Exclusive status
41H	Manufactures ID (Roland)
DEV	Device ID
MDL	Model ID
4FH	Command ID
F7H	End of exclusive

### # Example of Message Transactions

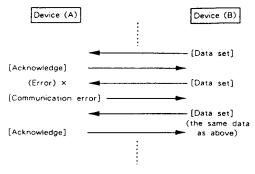
Data transfer from device (A) to device (B).



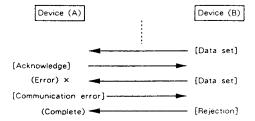
● Device (A) requests and receives data from device (B).



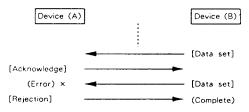
- Error occurs while device (A) is receiving data from device (B).
- 1) Data transfer from device (A) to device (B).



2) Device (B) rejects the data re-transmitied, and completes data transfer.



3) Device (A) immediately completes data transfer.



### MODEL MT-32

# MIDI Imprementation

### Version: 1.01

Date: Sep. 19. 1987

### 1. TRANSMITTED DATA

### Bypassed message

in Overflow Assign mode, the following MIDI in messages are sent to MIDI Outus

- · Channel Voice messages except Note On
- \*System Exclusive message whose manufacturer ID# is 4111
- Odd Note On (s) left unassigned any voice because all assignable voices are engaged.

### Created message

### System exclusive

Status

FOH: System Exclusive

F7H: EOX (End of System Exclusive)

See "3,EXCLUSIVE COMMUNICATIONS" for details.

### 2. RECOGNIZED DATA

### ■ Note event

### Note off

Status	Second	Third
8nH	kkH	vvII
9nII	kkH	1100

kkH: Note number OCH -6CH (12--108) vvH: ignored

### Note on

Statu	Second	Third
9nH	kkH	vvH

kkH: Note number 0CH 6CH (12 108) vvH: Velocity 1H-7FH (1 127)

### **■** Control change

### Continuous controller (14 bits)

Status BnH	Second mml1	Third vvll
Modulation	mmH=-0111	vvH~0H 7FH (0~127)
Volume	mm11 = 0711	vvII - 0II - 7FH (0 - 127)
Panpot	IIIV0 = IHuu	vvII 0H 7FH (0-127)
Expression	mmH == 0BH	vvII=0H 7FH (0 -127)

### Continuous controller (7 bits)

<u>Status</u>	Second	<u>Third</u>
BnH	mmH	vvH
Hold 1	mmII = 40H	vvH=0H - 3FH (0 - 63) OFF 40H - 7FH (64 - 127) ON

Resets all controllers

mmH=79h vvH=0

### Program change

CnH	ppH		
	W . December	011	 

ppH: Program number 0H -7FII (0 -127)

Program Change changes Patch.

### Pitch bender

Status	Second	Third
EnH	IIH	mmH

IIH: 0H-7FH (0-127) mmH: 0H-7FH (0-127)

### mmH: UH-7FH (0-127

Channel mode message

# Status Second Third

mmH: All Notes Off 7BH (123) Omni Off 7CH (124) Omni On 7DH (121) Mono On 7EH (124) Poly On 7FH (128) Recognized as only All Notes Off,  $$\rm MT/32$$  does not change mode, but remains in mode 3. (Omni off,

## ■ Active sensing

Status FEH

### System exclusive

Status

F0H: System Exclusive

F7H: EOX (End of System Exclusive)

### 3. EXCLUSIVE COMMUNICATIONS

Model-ID# of MT-32 is 16H.

Model-ID# of D-50 is 14H.

Device-ID# is the basic channel# of the each part or Unit# of the MT-32

Unit# can be changed in "UNIT# SETUP MODE".

Device ID numbers, 0-31, are displayed on the LCD as 1-32, respectively.

RQ1 11H

### One way communication

### Request

When the RQ1 received contains a start address listed in Parameter base address, and address size is 1 or more, MT-32 sends the corresponding data.

In Overflow Assign mode,  $\mathrm{MT} - 32$  does not recoginze RQ1, but passes the message to MIDLOUT,

MT -32 won't transmit RQ1 in the default mode.

Byte	Description	
FOH	Exclusive status	
41H	Roland - ID	
DEV	Device - ID	
16H (14H)	Model - ID (MT - 32 (I) - 50))	*3 -1
11H	Command - ID (RQ1)	
aaH	Address MSB	*3 -2
aall	Address	
aall	Address LSB	
ssH	Size MSB	
ssH	Size	
ssH	Size LSB	
sum	Checksum	
F7H	EOX (End of Exclusive)	

### Data set DT1 12H

When the DT1 contains a start address as defined in RQ1 above,  $\rm MT\!-\!32$  stores the data into that memory location,

MT-32 sends this message upon receiving RQ1 in the default mode.

Additional function in Overflow Assign mode:

MT-32 retransmits DT1 while it processes the DT1 data as necessary.

Byte	Description	
F0H	Exclusive status	
41H	Roland - ID	
DEV	Device-ID	
16H (14H)	Model-ID (MT-32 (D-50))	<b>*</b> 3-1
12H	Command-ID (DT1)	
aaH	Address MSB	*3-2
aaH	Address	
aaH	Address LSB	
ddH	Data	*3-3
:		
sum	Checksum	
F7H	EOX (End of Exclusive)	

### Handshaking communication

### Want to send data WSD 40H

Upon receiving WSD, MT-32 sends ACK and waits for DATA SET message. However, if any part is reproducing sound, MT-32 sends RJC.

In Overflow Assign mode, MT - 32 relays this message to downstream.

In the default mode, MT -32 won't send this message,

Byte	Description	
FOIL	Exclusive status	
4411	Roland ID	
DEV	Device - ID ·	
16H	Model - ID (MT - 32)	
40H	Command - ID (WSD)	
aaH	Address MSB	*3-2
aall	Address	
aall	Address LSB	
ssH	Size MSB	
ssH	Size	
ssH	Size LSB	
sum	Checksum	
F7H	EOX (End of Exclusive)	

### Request data

RQD 41H

When the RQI) contains a start address as defined in RQI above, MT-32 stores the data into that memory location. However, if any part is reproducing sound, MT-32 sends RIC.

In Overflow Assign mode, MT -32 relays this message to downstream without recognizing it.

In the default mode, MT-32 won't send this message.

Byte	Description	
FOH	Exclusive status	
4111	Roland - ID	
DEV	Device - ID	
1611	Model - ID (MT = 32)	
4111	Command ID (RQD)	
aaH	Address MSB	*3-2
aall	Address	
aali	Address LSB	
ssH	Size MSB	
ssH	Size	
ssH	Size LSB	
sum	Checksum	
F711	EOX (End of Exclusive)	

### Data set

DAT 42H

When the DAT contains a start address as defined in RQ1 above, MT-32 stores the data into that memory location, However,if any part is reproducing sound, MT-32 sends RIC.

In the default mode, MT-32 sends this data upon receipt of RQD.

In Overflow Assign mode, MT-32 relays this message to downstream without recognizing it.

Byte	Description .	
F011	Exclusive status	
41H	Roland – ID	
DEV	Device - ID	
1611	Model ID (MT 32)	
4211	Command-ID (DAT)	
aaH	Address MSB	*3-2
aaH	Address	
aall	Address LSB	
ddH	Data	*3-3
:		
sum	Checksum	
F7H	EOX (End of Exclusive)	

### Acknowledge

ACK 43H

When MT-32 receives this message after sending DAT, it sends the next data. When MT-32 receives this message after sending EOD, it ends the current handshaking.

MT-32 sends ACK when it receives WSD, RQD or DAT in the default mode with no part reproducing sound and with data checksum proves correct.

Byte	Description
FOH	Exclusive status
4111	Roland – ID
DEV	Device - ID
1GH	Model-ID (MT-32)
4311	Command-ID (ACK)
F7H	EOX (End of Exclusive)

### End of data

EOD 45H

Upon receiving this message, it sends ACK and ends the current handshaking.

After finishing the data set (DAT) transmission in the default mode,  $MT\!-\!32$  sends this message,

In Overflow Assign mode, MT-32 relays this message to downstream without recognizing the contents.

Byte	Description
FOII	Exclusive status
4111	Roland ID
DEV	Device - ID
16H	Model - ID (NT - 32)
45H	Command—ID (EOD)
F7H	EOX (End of Exclusive)

### Communication error

If checksum doesn't agree (failure in data reception), MT-32 sends this message,

ERR 4EH

When MT- 32 receives this message in the default mode, it sends the latest message again.

In Overflow Assign mode, MT+32 relays this message to downstream without recognizing it.

Byte	Description
FOII	Exclusive status
4111	Roland – ID
DEV	Device - ID
1611	Model - ID (MT32)
4EH	Command - ID (ERR)
F7H	EOX (End of Exclusive)

### Rejection

RJC 4FH

If MT-32 receives WSD while it is reproducing sound, it sends RJC.

When MT-32 receives this message, it ends the current handshaking.

In Overflow Assign mode, MT-32 relays this message to downstream without recognizing it,

Byte	Description
FOH	Exclusive status
4111	Roland – ID
DEV	Device - ID
16H	Model - ID (MT - 32)
4FH	Command - ID (RJC)
F7H	EOX (End of Exclusive)

### Notes:

\*3-1 Both model-IDs are supported, Addresses & parameters are described in section 4 for model-ID 16H (MT-32) and in section 5 for model-ID 14H (D-50, PG-1000).

\*3-2 Address & Size should be the address where data exist.

\*3-3 If the data is Partial Reserve Parameter, received data must comprise all the parameters for being recognized.

### 4. Address mapping of parameters

Addresses are shown in Hexa - decimal, while numbers are given in 7 bits,

Address	MSB		LSB
binary	Oaaa aaaa	0bbb bbbb	Occc cccc
7 bit Hex	ΛA	BB	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. That is, parameters marked by \*4-1, \*4-2 have two offset addresses: one in the table under NOTE  $*4\cdot 1$ , \*4-2 and the other in Rhythm Setup table, in Common parameter table or in Partial parameter table.

### ■ Parameter base address

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

Start address	Description	
00 00 00	Patch Temp Area (part 1-8)	
01 00 00	Setup Temp Area (rhythm part)	*4-1
02 00 00	Timbre Temp Area (part 1-8)	*4-2

### Whole part (Accessible on UNIT#)

Start address	Description	
03 00 00	Patch Temp Area (part 1)	
03 00 10	Patch Temp Area (part 2)	
03 00 60	Patch Temp Area (part 7)	
03 00 70	Patch Temp Area (part 8)	
03 01 10	Setup Temp Area (rhythm part)	
04 00 00	Timbre Temp Area (part 1)	*4-2
04 01 76	Timbre Temp Area (part 2)	*4-2
:		
04 0b 44	Timbre Temp Area (part 7)	*4-2
04 0d 3a	Timbre Temp Area (part 8)	*4-2
05 00 00	Patch Memory #1	
05 00 08	Patch Memory #2	
:	D-1-1- V #107	
05 07 70	Patch Memory #127	
05 07 78	Patch Memory #128	
08 00 00	Timbre Memory #1	*4-2
08 02 00	Timbre Memory #2	*4-2
08 7C 00	Timbre Memory #63	*4-2
08 7E 00	Timbre Memory #64	*4-2
10 00 00	System area	
20 00 00	Display	*4-3
7F xx xx	All parameter reset	*4-4

# Notes: \*4-1 Structure of "Setup Temp" area is as follows.

Offset address	Description
00 00 00	Rhythm Setup (for Key# 24)
00 00 04	Rhythm Setup (for Key# 25)
80 00 00	Rhythm Setup (for Key# 26)
00 00 0C	Rhythm Setup (for Key# 27)
01 00 00	Rhythm Setup (for Key# 28)
:	:
:	:
:	:
00 01 78	Rhythm Setup (for Key# 86)
00 01 7C	Rhythm Setup (for Key# 87)

# \*4-2 Structure of "Timbre Temp Memory" area is as follows.

Description
Common parameter
Partial parameter (for Partial = 1)
Partial parameter (for Partial# 2)
Partial parameter (for Partial# 3)
Partial parameter (for Partial# 4)

- \*4-3 The data sent to this address are recognized as the string of letters in ASCII CODE, and displayed on MT 32 LCD.
  Cannot be called on RQI or RQD.
- \*4-4 All parameters will be initialized by sending data to this address, Cannot be called on RQI or RQD.

### ■ Common parameter \*4 5

Offset address	Description		
1100	Oaan aaaa	TONE NAME 1	32 · 127 (ASCII)
1160	Oaaa aaaa	TONE NAME 10	
110	.0000 aaaa	Structure of Partial# 1&2	0 12 (1 13)
овн	0000 <b>aa</b> aa	Structure of Partial# 3&4	0 - 12 (1 - 13)
0CH	0000 aaaa	PARTIAL MUTE	0 - 15
ODH	0000 000a	ENV MODE	0 1
Total size		00 00 0EH	al,No sustain)

### Partial parameter \*4 5

	fset dress	Description		
00	H00	Oaaa aaaa	WG PITCH COARSE	0 96
00	0111	Oaaa aaaa	WG PITCH FINE	(C1.C#1, C9) 0 100 ( 50 ++50)
00	02H	0000 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,s,t)
00	3H	0000 000a	WG PITCH BENDER SW	s2) 0 · 1
00	0411	0000 000a	WG WAVEFORM	(OFF,ON) 0 · 1
00	0511	Oaaa aaaa	WG PCV WAVE #	(SQU,SAW) 0 ~ 127 (1 ~ 128)
00	06H	Oaaa aaaa	WG PULSE WIDTH	0-100
00	0711	0000 aaaa	WG PW VELO SEXS	0 - 14 $(-7 - 7)$
00	1180	0000 aaaa	P-ENV DEPTH	0 - 10
00	09H	Oaaa aaaa	P-ENV VELO SENS	001-0
00	0AH	0000 0aaa	P-ENV TIME KEYF	0 - 4
00	OBH	Oaaa aaaa	P-ENV TIME 1	0 - 100
00	OCH	Oaaa aaaa	P-ENV TIME 2	0-100
00	ODH	Oaaa aaaa	P-ENV TIME 3	0 - 100
00	OEH	Oaaa aaaa	P-ENV TIME 4	0 - 100
00	OFII	Oaaa aaaa	P-ENV LEVEL 0	0 - 100
00	1011	Oaaa aaaa	P -ENV LEVEL 1	( -50 - +50) 0 -100 ( -50 - +50)
00	11H	Oaaa aaaa	PHENV LEVEL 2	0 - 100 ( - 50 - + 50)
00	1211	Oaaa aaaa	P ENV SUSTAIN LEVEL	( 50 + 50) 0 - 100 ( 50 + 50)

00	13H	Oaaa	aaaa	END LEVEL	0 - 100
					$(+50 - \pm 50)$
	1411	()aaa		P LFO RATE	0 100
	15H	Oaaa		P : LFO DEPTH	0 - 100
	16H	0aaa	aaaa		0 100
	1711	()aaa			0 - 100
	1811	000a		TVF RESONANCE	0 30 .
00	1911	0000	aaaa	TVF KEYFOLLOW	014
					( -1,1. 2,
					1 4,0,1 8,
					1 1,3 8,1 2,
					5 8,3 4,7 8,
					1,5 4,3 2,2)
00	TAH	()aaa	aaaa	TVF BIAS POINT DIR	0 -127
					C >1A>7C)
00	1BH	0000	aaaa	TVF BIAS LEVEL	0 14
		_			( · 7 · · + 7)
	1CH	0aaa		TVF ENV DEPTH	0-100
	IDH	0aaa		TVF EXV VELO SENS	0-100
	1EH	0000		TVF ENV DEPTH KEYF	04
	1FH	0000		TVF ENV TIME KEYF	0 4
	20H	0aaa		TVF ENV TIME I	0 - 100
	21H	0aaa		TVF ENV TIME 2	0-100
	22H	0aaa		TVF ENV TIME 3	0-100
	23H	Oaaa		TVF ENV TIME 4 TVF ENV TIME 5	0-100
	2411	Oaaa .			0 100
	25H 26H	Oaaa .		TVF ENV LEVEL 1 TVF ENV LEVEL 2	0 100
	26FI 27H	Oaaa		TVF ENV LEVEL 3	0-100
	28H	Oaaa .		TVF ENV SUSTAIN LEVEL	0 - 100
	29H	Oaaa .		TVA LEVEL	0 - 100
	25H	Oaaa :		TVA VELO SENS	0-100
	2BH	Oaaa :		TVA BIAS POINT 1	0-100
00	2011	Oddd .	aaaa	(<1A <7C)	
00	2CH	0000	aaaa	TVA BIAS LEVEL I	0-12
00	2011	(//////	aaaa	1777 196.00 196.7650 1	(-12-0)
00	2DH	Oaaa a	anaa	TVA BIAS POINT 2	0 - 127
~~		· · · · · ·	adad	(<1A < 7C )	
00	2EH	0000	aaaa	TVA BIAS LEVEL 2	0 -12
					(-12-0)
00	2FH	0000	0aaa	TVA ENV TIME KEYF	0 - 4
	30H	0000		TVA ENV TIME V FOLLOW	
	31H	Oaaa a		TVA ENV TIME 1	0 100
	3211	Oaaa a		TVA ENV TIME 2	0-100
	33H	Oaaa a	aaaa	TVA ENV TIME 3	0100
	3411	Oaaa a		TVA ENV TIME 4	0 - 100
00	35H	Oaaa a	aaa	TVA ENV TIME 5	0 - 100
		Oaaa a		TVA ENV LEVEL 1	0 - 100
		Oaaa a			0 -100
		Oaaa a			0-100
00	3911	Oaaa a	iaaa	TVA ENV SUSTAIN LEVEL	0 - 100
Tota	al size			00 00 3AH	
					<del></del>

### System area

Offset address	Description	
1100 00	Oaaa aaaa	MASTER TUNE 0 127
00 OIH	0000 00aa	(432,1Hz 457,6Hz) REVERB MODE 0 3
		(Room, Hall, Plate, Tap9 delay)
00 02H	0000 0aaa	REVERB TIME 0 7
		(1 8)
00 03H	0000 0aaa	REVERB LEVEL 0 - 7
00 0411	00aa aaaa	PARTIAL RESERVE (Part 1) 0 -32
00 05H	00aa aaaa	PARTIAL RESERVE (Part 2) 0-32
00 0611	00aa aaaa	PARTIAL RESERVE (Part 3) 0 · 32
00 0711	00aa aaaa	PARTIAL RESERVE (Part 4) 0-32
00 0811	00aa aaaa	PARTIAL RESERVE (Part 5) 0 - 32
1160 00	00aa aaaa	PARTIAL RESERVE (Part 6) 0 32
11A0 00	00aa aaaa	PARTIAL RESERVE (Part 7) 0-32
00 OBH	00aa aaaa	PARTIAL RESERVE (Part 8) 0 32
00 0CH	00aa aaaa	PARTIAL RESERVE (Part R) 0-32
00 ODII	000a aaaa	MIDI CHANNEL (Part 1) 0-16
		(1-16,OFF)
00 0EH	000a aaaa	MIDI CHANNEL (Part 2) 0 16
		(1 16,OFF)
00 OF11	000a aaaa	MIDI CHANNEL (Part 3) 0 - 16
		(1 · 16,OFF)
00 1011	000a aaaa	MIDL CHANNEL (Part 4) 0 ·16
		(1-16,OFF)
00 1111	000a aaaa	MIDI CHANNEL (Part 5) 0 - 16
		(116,OFF)
00 1211	000a aaaa	MIDI CHANNEL (Part 6) 0-16
		(1 16,OFF)
00 1311	000a aaaa	MIDI CHANNEL (Part 7) 0-16
		(1 -16,OFF)
00 14H	000a aaaa	MIDI CHANNEL (Part 8) 0-16
		(116,OFF)
00 1511	000a aaaa	MIDI CHANNEL (Part R) 0 - 16
		(1-16,OFF)
00 1611	Oaaa aaaa	MASTER VOLUME 0 100
Total size		00 00 1711
		. <del></del>

### Rhythm setup

Offset address	Description		
00 0011	Oaaa aaaa	TIMBRE	0-94
		(M1 – M	64,R1-R30,OFF)
00 0111	Oaaa aaaa	OUTPUT LEVEL	0-100
00 0211	0000 aaaa	PANPOT	0 - 14
			(R-L)
00 03H	0000 000a	REVERB SWITCH	0 - 1
			(OFF,ON)
Total size		00 00 04H	

### Patch temp

Offset address	Description		
1100 00	0000 00aa	TIMBRE GROUP	0-3
		(GROUP A,GROUP B,N	MEMORY, RHYTHM)
H10 00	00aa aaaa	TIMBRE NUMBER	0-63
			(1-64)
00 02H	00aa aaaa	KEY SHIFT	0-48
			(-24-+24)
00 03H	Oaaa 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	P,POLY 3,POLY 4)
00 0611	0000 000a	REVERB SWITCH	0-1
			(OFF,ON)
00 07H	0xxx xxxx	dummy	
00 0811	Oaaa aaaa	OUTPUT LEVEL	0-100
00 09H	0000 aaaa	PANPOT	0-14
			(R-L)
00 0AH	0xxx xxxx	dummy	
:			
00 0FH	Oxxx xxxx		
Total size		00 00 10H	

### Patch memory

Offset address	Description		
1100 00	0000 00aa	TIMBRE GROUP	0-3
		(GROUP A,GROUP B,MI	EMORY, RHYTHM)
00 O1H	00aa aaaa	TIMBRE NUMBER	0-63
00 02H	00aa aaaa	KEY SHIFT	0-48
			(-24 - +24)
00 03H	Oaaa aaaa	FINE TUNE	0-100
			(-50 - +50)
00 0411	000a aaaa	BENDER RANGE	0-24
00 05H	0000 00aa	ASSIGN MODE	0-3
		(POLY 1,POLY 2,I	POLY 3.POLY 4)
00 0611	0000 000a	REVERB SWITCH	0-1
			(OFF.ON)
00 0711	Oxxx xxxx	dummy	
Total size		00 00 08H	

### **DISPLAY**

Offset address	Description		
00H :	Озаа азаа	DISPLAYED LETTER	32-127 (ASCII)
13H Total size	Oaaa aa <b>aa</b>	DISPLAYED LETTER 00 00 14H	

Note:

\*4-5

This parameter can be modified from D-50 (PG-1000) and results in accessing the address "02-00-00 (Timbre Temp Area (part))" of MT-32

### 5. ADDRESS MAPPING OF PARAMETERS

 $\langle compatible with D-50 (PG-1000) \rangle$ 

### Parameter base address

Start address	Description	
00-00-00	Partial 3	(0-53)
00 - 00 - 40	Partial 4	(64-117)
00 - 01 - 0A	Upper Common	(138-175)
00 - 01 - 40	Partial 1	(192 - 245)
00 - 02 - 00	Partial 2	(256 - 309)
00 02 - 4A	Lower Common	(330-367)

### ■ Partial parameters

Offset address	Description		
00 0011	Оааа аааа	WG PITCH COARSE	0-72
00 01H	Озаа азаа	WG PITCH FINE	(C1,C#1,-C7) 0-100 (-50-+50)
00 0211	0000 aaaa	WG PITCH KEYFOLLOW	(-50-+50) 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,s1 s2)
00 0311	0xxx xxxx	dummy	,
00 04H	Oxxx xxxx	dummy	
00 0511	0000 000a	WG PITCH BENDER SW	0-1 (OFF,ON)
00 0611	0000 000a	WG WAVEFORM	0-1 (SQU,SAW)
00 07H	Oaaa aaaa	WG PCM WAVE #	0-99 (1-100)
00 0811	Oaaa aaaa	WG PULSE WIDTH	0 - 100
00 0911	0000 aaaa	WG PW VELO SENS	0-14
00 OAH	Oxxx xxxx	dummy	(-7-+7)
00 OBH	Oxxx xxxx	dummy	
00 0CH	Oxxx xxxx	dummy	
11010 00	Oaaa aaaa	TVF CUTOFF FREQ	0 - 100
00 0EH	000a aaaa	TVF RESONANCE	0-30
00 OFH	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 1011	Osas assa	TVF BIAS POINT/DIR	0-127 7C >1A->7C)
00 1111	0000 aaaa	TVF BIAS LEVEL	0-14 (-7-+7)
00 12H	Oaaa aaaa	TVF ENV DEPTH	0-100
00 13H	Oaaa aaaa	TVF ENV VELO SENS	0-100
00 14H	0000 0aaa	TVF ENV DEPTH KEYF	0-4
00 15H	0000 0aaa	TVF ENV TIME KEYF	0~4
00 16H 00 17H	Oaaa aaaa Oaaa aaaa	TVF ENV TIME 1 TVF ENV TIME 2	0-100
00 1811	Oaaa aaaa	TVF ENV TIME 3	0-100 0-100
00 1911	Oaaa aaaa	TVF ENV TIME 4	0-100
00 1AH	Oaaa aaaa	TVF ENV TIME 5	0-100
00 1BH	Oaaa aaaa	TVF ENV LEVEL 1	0-100
00 1CH	Oaaa aaaa	TVF ENV LEVEL 2	0-100
00 IDH	Оава вава	TVF ENV LEVEL 3	0-100
00 1EH 00 1FH	0aaa aaa <b>a</b> 0xxx xx <b>xx</b>	TVF ENV SUSTAIN LEVEL dummy	0-100
: 00 22H	Oxxx xxxx	dummy	
00 2311	Oaga agga	TVA LEVEL	0-100
00 24H	Oaaa aaaa	TVA VELO SENS	0-100
00 25H	Ouau anau		0-127
00 26H	0000 aaaa	(<1A-<7	C >1A->7C) 0-12
00 27H	Oaaa aaaa	TVA ENV TIME 1	(-12-0) 0-100
00 2811	Oaaa aaaa	TVA ENV TIME 2	0-100
00 29H	Oaaa aaaa	TVA ENV TIME 3	0-100
00 2AH	Oaaa aaaa	TVA ENV TIME 4	0-100
00 2BH	Oaaa aaaa	TVA ENV TIME 5	0-100
00 2CH	0aaa aaaa 0aaa aaaa	TVA ENV LEVEL 1	0-100
00 2DH 00 2EH	Oaaa aaaa Oaaa aaaa	TVA ENV LEVEL 2 TVA ENV LEVEL 3	0-100 0-100
00 2FH	0aaa aaaa 0aaa aaaa	TVA ENV LEVEL 3	
00 3011	Oxxx xxxx	dummy	5 100
00 3111	0000 0aaa	TVA ENV TIME V_FOLLOV	V0-4
00 32H	0000 Oaaa	TVA ENV TIME KEYF	0-4
00 33H	Oxxx xxxx	dummy	
00 34H	Oxxx xxxx	dummy	
00 35H Total size	0xxx xxxx	dummy 00 00 36H	
TOTAL SIZE		00 00 0011	

### ■ Lower common parameter

Offset address	Description	
H00 00	0000 aaaa	Structure of Partial# 1&2 0 : 12 (1 13)
00 O1H	Oaaa aaaa	P-ENV VELO SENS (Partial#1)0-100
00 0211	0000 Oaaa	P-ENV TIME KEYF (Partial#1)0 - 4
00 03H	Oaaa aaaa	P-ENV TIME I (Partial#1) 0-100
00 04H	Oaaa aaaa	P-ENV TIME 2 (Partial#1) 0-100
00 0511	Oaaa aaaa	P-ENV TIME 3 (Partial#1) 0-100
00 06H	Oaaa aaaa	P-ENV TIME 4 (Partial#1) 0-100
00 07H	Oaaa aaaa	P-ENV LEVEL 0 (Partial#1) 0-100 (-50-±50)
1180 00	0aaa aaaa	P-ENV LEVEL 1 (Partial#1) 0 · 100 (-50 · ÷50)
00 09H	0aaa aaaa	P-ENV LEVEL 2 (Partial#1) 0 · 100 (-50 - +50)
11V0 00	Oaaa aaaa	P-ENV SUS LEVEL (Partial#1) 0-100 (-50-+50)
00 0811	Oaaa aaaa	END LEVEL (Partial#1) 0-100
		(-50-+50)
00 OCH	Oxxx xxxx	dummy
11G0 00	Oaaa aaaa	P-LFO MOD SENS (Partial#1) 0-100
00 OEH	Oaaa aaaa	P-LFO MOD SENS (Partial#2) 0-100
00 OFH	Oxxx xxxx	dummy
00 1011	Oaaa aaaa	P-LFO RATE (Partial#1) 0-100
00 11H	Oaaa aaaa	P~LFO DEPTH (Partial#1) 0-100
00 12H	Oxxx xxxx	dummy
00 13H	Oxxx xxxx	dummy
00 14H	Qaaa aaaa	P-LFO RATE (Partial#2) 0-100
00 15H	Oaaa aaaa	P-LFO DEPTH (Partial#2) 0-100
00 16H :	0xxx xxxx	dummy
00 23H	0xxx xxxx	dummy
00 24H	0000 00aa	PARTIAL MUTE (Partial# 1&2) 0-3 (00-11)
00 25H Total size	0xxx xxxx 00 00 26H	dummy

### **■** Upper common parameter

Offset address	Description	
00 00Н	0000 aaaa	Structure of Partial# 1&2 0-12
		(1-13)
00 O1H	Oaaa aaaa	P-ENV VELO SENS (Partial#3)0-100
00 02H	0000 0aaa	P-ENV TIME KEYF (Partial#3)0-4
00 O3H	Oaaa aaaa	P-ENV TIME 1 (Partial#3) 0-100
00 04H	Oaaa aaaa	P -ENV TIME 2 (Partial#3) 0-100
00 05H	Oaaa aaaa	P - ENV TIME 3 (Partial#3) 0-100
00 06H	Oaaa aaaa	P-ENV TIME 4 (Partial#3) 0-100
00 0711	Oaaa aaaa	P-ENV LEVEL 0 (Partial#3) 0-100
		(-50-+50)
1180 00	Oaaa aaaa	P-ENV LEVEL 1 (Partial#3) 0-100
		(-50- +50)
00 09H	Oaaa aaaa	P-ENV LEVEL 2 (Partial#3) 0-100
		(-50-+50)
11A0 00	Oaaa aaaa	P ENV SUS LEVEL (Partial#3) 0-100
		(-50-+50)
00 OBH	Oaaa aaaa	END LEVEL (Partial#3) 0-100
		(-50-+50)
00 OCH	Oxxx xxxx	dummy
00 0DH	Oaaa aaaa	P-LFO MOD SENS (Partial#3) 0-100
00 0EH	Oaaa aaaa	P-LFO MOD SENS (Partial#4) 0-100
00 OFH	Oxxx xxxx	dummy
00 10H	Oaaa aaaa	P-LFO RATE (Partial#3) 0-100
00 11H	Oaaa aaaa	P-LFO DEPTH (Partial#3) 0-100
00 12H	Oxxx xxxx	dummy
00 13H	Oxxx xxxx	dummy
00 14H	Oaaa aaaa	P-LFO RATE (Partial#4) 0-100
00 15H	Oaaa aaaa	P-LFO DEPTH (Partial#4) 0-100
00 16H :	Oxxx xxxx	dummy
00 23H	Oxxx xxxx	dummy
00 24H	0000 00aa	PARTIAL MUTE (Partial# 3&4) 0-3
		(00 11)
00 25H	Oxxx xxxx	dummy
Total size		00 00 2611

MODEL MT-32

MIDI Implementation Chart

Version: 1.00

	Function	Transmitted	Recognized	Remarks
Basic Channel	Default Changed		2-10 1-16	
Mode	Default Messages Altered	*****	Mode 3	
Note Number	True Voice	* 0-127 *****	0-127 12-108	
Velocity	Note ON Note OFF	*	○ v=1-127 ×	
After Touch	Key's Ch's	* *	× ×	
Pitch Bende	r	*	○ 0-24 semi	
Control Change	1 7 10 11 12 : 63 64 65	* * * * * *	0 0 0 0 X	Modulation Part Volume Panpot Expression
	: 120 121	*	× 0	Reset all controllers
Prog Change	True #	*	○ 0-127 0-127	
System Excl	usive	O *	0	
System Common	Song Pos Song sel Tune	× × ×	× × ×	
System Real Time	Clock Commands	× ×	×	
Aux Message	Local ON/OFF All Notes OFF Active Sense Reset	× × ×	× ○ (123-127) ○ ×	
Notes		*in OVERFLOW MODE, r	eceived message goes thru	MIDI OUT

Mode 1: OMNI ON. POLY Mode 3: OMNI OFF. POLY Mode 2: OMNI ON. MONO Mode 4: OMNI OFF, MONO O : Yes  $\times$  : No

