

HQ
High Quality
Software Synthesizer

HyperCanvas

**GENERAL
MIDI2**

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Features

Hyper Canvas is a GM2 (General MIDI 2) compatible, high-quality, software synthesizer featuring a newly developed software synthesis engine, with 256 sounds and 9 drum sets built in.

- High-quality sounds from a newly developed software synthesis engine
The newly developed software synthesis engine uses 32-bit internal processing to produce high-quality sound. 96 kHz sampling rates are also supported (*1), letting you take full advantage of the performance of your audio device. High-quality reverb and chorus are also provided.

[Note] *1: The output sampling rate will depend on the performance of your host application and audio device.

- A rich array of GM2 compatible sounds, covering all styles of music
256 GM2-compatible sounds and 9 drum sets are built in. In addition, you can create 512 user sounds and 128 drum sets. Maximum polyphony is a generous 128 notes (*2), giving you the power for serious music production for jazz, rock, classical, or any other style.

[Note] *2: The actual polyphony will depend on the performance of your computer and audio device.

- Customizable sounds
Each sound can be customized from a dedicated edit window. You can make detailed edits to the tone control, envelope, resonance, tuning, portamento, modulation, and more, allowing you to express subtle nuances of tone. Customized sounds can be saved as user sounds for use at any time.
- In the [Mixer Window](#) you can easily specify things such as the sound and volume of each part. Here you can also monitor the level of each part and the total polyphony, allowing you to check the status during playback, and use it as a valuable reference when creating music data.
- Intel Corporation's SSE instructions, AMD Corporation's Enhanced 3D Now! technology, and Motorola Corporation's AltiVec are all supported, so you'll be able to take full advantage of the high-speed calculation potential of your CPU.
- Support for multiple outputs
The multi-channel output capability of DXi 2 and VST 2.0 is supported. In your host application, you can apply effects independently to each part, or output audio to multiple devices.

[Note] In order to use multiple outputs, you must have a host application that supports DXi 2 or VST 2.0 multi-out capability.

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Using the Mixer window



In the Mixer window, you can select the sound, set the volume, and adjust the effects for each part. Changes in the various parameters can be made by dragging a knob up or down. You can also click the spin button below a knob to adjust the value of a parameter in terms of its smallest increments.

Double-click the parameter value that is displayed below or beside a knob or slider, and you will be able to directly enter a value for that parameter.

The entry dialog box will show the allowable range for that parameter, so enter a value in this range.

[Note] Settings you make in the Mixer window are temporary, and will not be reflected in the settings of the host application, or in the settings data that is embedded in the song (project). If you want your edits to be applied to the settings of the song, you must either make your edits in the host application, or use the parameter preset function. For details, refer to the operation manual for your host application.

[1] Panel Descriptions

Edit

Displays the editing window for that part.

Chorus (Chorus Send Level)

Sets the output level of the signal that is sent to the chorus.
Double-click the knob to restore the default value.

Reverb (Reverb Send Level)

Sets the output level of the signal that is sent to the reverb.
Double-click the knob to restore the default value.

Pan

Sets the stereo location of the output sound.
L63 is far left, 0 is center, and R63 is far right.
Double-click the knob to restore the default value.

Level

Channel volume	Adjusts the output volume of the part. Double-click the slider to restore the default value.
MIDI indicator	This will light when a MIDI message is received.
Peak indicator	Located at the upper-right of Part Volume; lights when the Part Level has exceeded the maximum value.

Preview

Lets you audition the sound you are selecting. A sound can be auditioned using a phrase that is appropriate for the sound, making it easier to get a feel for the character of that sound.

[Note] If the Phrase Preview function is turned off, a phrase will not play. (A single note will sound.) You can switch Phrase Preview on/off in the [Options page](#) of the Option window.

HELP

Displays the online help.

PANIC

Stops all currently sounding notes.

GM2

Performs the same processing as when a GM2 System On message is received.

EFFECT

Displays the [Effect Edit window](#).

SYSTEM

Displays the [System settings window](#).

POLYPHONY

CURRENT	Displays the number of currently sounding voices.
PEAK	Displays the maximum number of voices that have sounded simultaneously up to this point. This will be reset if you double-click the displayed value.

[Note] Some sounds use more than one voice for each note.

MASTER (Master Volume)

Here you can adjust the master volume and view the level display.

[2] To select a different sound for a part

To change the sound of a Part, click on the sound name to the right of the Volume fader, then select the name of the desired sound from the menu that appears.

Preset	Select from the 256 sounds and 9 drum sets defined by GM2 (General MIDI 2).
User Normal	Select from the 512 user-customized normal sounds (128 sounds x four banks).
User Rhythm	Select from the 128 user-customized rhythm sounds.
Load Bank	Load user-customized sounds from a file.
Save Bank	Save user-customized sounds as a file.

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Using the Part Edit window



When you click the **Edit** button in the Mixer window, the Part Edit window will appear. In the Part Edit window, you can select a sound, adjust the volume, pan, and effect send level, edit the sound, and save sounds. Each parameter can also be edited by dragging the mouse. Changes in the various parameters can be made by dragging a knob up or down. You can also click the spin button below a knob to adjust the value of a parameter in terms of its smallest increments.

Double-click the parameter value that is displayed below or beside a knob or slider, and you will be able to directly enter a value for that parameter.

The entry dialog box will show the allowable range for that parameter, so enter a value in this range.

[Note] Parameters whose range is -63 to +63 apply relative change to the preset values of the sound. If the preset value is already set to the maximum or minimum value, only negative or positive adjustment will be available.

[1] Objects in the window and what they do

PART

To change the Part being edited, click on the Part number and select from the menu that appears.

Or, you can click on the buttons to the right and left of the Part number.

Sound set indicators

GM2 NORMAL	This will light when GM2 sounds are selected.
GM2 RHYTHM	This will light when GM2 drum sets are selected.
USER NORMAL	This will light when user-customized sounds are selected.
USER RHYTHM	This will light when user-customized rhythm sounds are selected.

[Memo] For the Bank number of each sound set, refer to the MIDI implementation.

Preview

Lets you audition the sound you are editing. A sound can be auditioned using a phrase that is appropriate for the sound, making it easier to get a feel for the character of that sound.

[Note] If the Phrase Preview function is turned off, a phrase will not play. (A single note will sound.) You can switch Phrase Preview on/off in the [Options page](#) of the Option window.

WRITE

Customized sounds can be saved in the user bank. For details on [Saving user sounds](#), refer to Saving User Sounds.

INST (Program number)

Displays the program number of the currently selected sound.

[Note] On this device, program numbers are expressed within the range 1--128, but MIDI program change messages use values of 0--127. When using program change messages to switch sounds, specify a program change number that is one less than the desired program number.

VAR. (Variation number)

Displays the variation number of the currently selected sound.

[Memo] The Variation number is equivalent to the LSB of the Bank number. For details concerning the Bank number, refer to the [MIDI implementation](#).

Filter

CUT OFF (Brightness)	Adjusts the brightness of the sound. Lower values will produce a darker sound, and higher values will produce a brighter sound.
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RESONANCE (Timbre/Harmonic Intensity)	Modifies the tone color by boosting or cutting the harmonics. The sound will become less idiosyncratic as this value is lowered, and sharper and more unique as the value is raised.
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[Note] This will have no effect on sounds that do not use the filter.

[Note] Depending on the sound or the pitch range, this may have no effect.

Character

Modifies the character of the harmonics. By operating this knob you can make the sound more reedy or muffled.

[Note] With certain sounds, or in certain pitch ranges, this may have no effect.

[Note] The effect of this parameter will differ depending on the sound.

Tone (Tone control)

BASS	Adjusts the response of the lower range of frequencies, below 400 Hz
MID	Adjusts the response of the midrange, in the 1 kHz region
TREBLE	Adjusts the response of the upper range of frequencies, above 4 kHz
ON/OFF	The tone settings will be valid when this is on.

Envelope

ATTACK (Attack Time)	Adjusts the attack time of the envelope.
DECAY (Decay Time)	Adjusts the decay time of the envelope.
RELEASE (Release Time)	Adjusts the release time of the envelope.

Vibrato

RATE (Vibrato Rate)	Adjusts the modulation speed of the vibrato.
DEPTH (Vibrato Depth)	Adjusts the depth of the vibrato.
DELAY (Vibrato Delay)	Adjusts the time that is to pass after a note begins sounding (or after a key's been pressed) before vibrato starts being applied.

Tuning

COARSE (Coarse Tune)	Specifies the amount of pitch shift in semitone units.
FINE (Fine Tune)	Specifies the amount of pitch shift in one-cent units (one cent is 1/100th of a semitone).

Mono

MONO (Mono Mode On)	Selects Mono mode. For example, you would use this setting when you want to play the sound as a mono synth from a keyboard controller.
POLY (Poly Mode On)	Selects Polyphonic mode. Use this mode when you want to play chords from a keyboard.

Portamento

Portamento is a function that creates a smooth change in pitch from one note to the next-played note.

TIME (Portamento Time)	Adjusts the amount of time it takes for the transition to the next pitch to take place.
ON/OFF (Portamento on/off)	Switches the portamento function on/off.

Mod Depth (Modulation Depth)

Adjusts the depth of modulation that will occur when modulation messages are received.

Bend Range (Pitch Bend Sensitivity)

Specifies the amount (in semitone units) of pitch change that is possible when the pitch bend lever is operated. This determines the amount of change that can take place when the lever is moved.

Chorus (Chorus Send Level)

Sets the output level of the signal that is sent to the chorus.

Reverb (Reverb Send Level)

Sets the output level of the signal that is sent to the reverb.

Pan

Sets the stereo position of the output sound.
L63 is far left, 0 is center, and R63 is far right.

Level

Channel volume	Adjusts the output volume of the part. Double-click the slider to restore the default value.
MIDI indicator	This will light when a MIDI message is received.
Peak indicator	Located at the upper-right of Part Volume; lights when the Part Level has exceeded the maximum value.

[2] To switch sounds

To switch sounds, use the following procedure.

1. Click the sound name.
2. From the menu that appears, select the sound that you want to hear.
3. Click the OK button.

[3] To edit the sound name

To edit the sound name, use the following procedure.

1. Double-click the sound name.
2. Input the desired sound name into the dialog box that appears.

[Note] The sound name can consist of up to 12 characters.

[4] To close the editing window

Click the [X] located in the upper right of the window.

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Using the Rhythm Edit window



In the Mixer window, when you click the **EDIT** button of a part for which a drum set is selected, the Rhythm Edit window will appear. In the Rhythm Edit window you can select sounds, adjust the volume, pan, and effect send levels, edit sounds, and save sounds. You can also edit each rhythm instrument individually. The parameters can also be edited by dragging with the mouse. Changes in the various parameters can be made by dragging a knob up or down. You can also click the spin button below a knob to adjust the value of a parameter in terms of its smallest increments.

[Note] Parameters whose range is -63 to +63 apply relative change to the preset values of the sound. Depending on the preset settings, change may not be possible in either the negative or the positive direction.

[1] Objects in the screen and what they do

PART

To change the Part being edited, click on the Part number and select from the menu that appears. Or, you can click on the buttons to the right and left of the Part number.

Sound set indicators

GM2 NORMAL	This will light when GM2 sounds are selected.
GM2 RHYTHM	This will light when GM2 drum sets are selected.
USER NORMAL	This will light when user-customized sounds are selected.
USER RHYTHM	This will light when user-customized rhythm sounds are selected.

[Memo] For the Bank number of each sound set, refer to the [MIDI implementation](#).

Preview

This lets you audition the rhythm sound that you are editing.

[Note] In the Rhythm Part Editor, you'll hear the rhythm sound currently being edited, regardless of whether the Phrase Preview function is switched on or off.

WRITE

Customized sounds can be saved in the user bank. For details on [Saving user sounds](#), refer to Saving User Sounds.

INST (Program number)

Displays the program number of the currently selected sound.

[Note] On this device, program numbers are expressed within the range 1--128, but MIDI program change messages use values of 0--127. When using program change messages to switch sounds, specify a program change number that is one less than the desired program number.

VAR. (Variation number)

Displays the variation number of the currently selected sound.

[Memo] The Variation number is equivalent to the LSB of the Bank number. For details concerning the Bank number, refer to the [MIDI implementation](#).

Instrument

You can individually edit the sound parameters of the rhythm instrument assigned to each key.

MIDI Edit	If this is turned ON, instruments will be selected in accord with the note numbers of incoming MIDI Note On messages. * Since it's not good to have instruments displayed too rapidly, you should turn this OFF when a song played.
LEVEL	Adjusts the output volume of the instrument.

PAN	Sets the stereo position of the instrument. L63 is far left, 0 is center, and R63 is far right. If the overall panning of all sounds has been adjusted, that setting will also be taken into account.
COARSE TUNE	Specifies the amount of pitch shift for the instrument in semitone units.
FINE TUNE	Specifies the amount of pitch shift for the instrument in one-cent steps. (1 cent = 1/100th semitone)
REVERB LEVEL (Reverb Send Level)	Specifies the output level of the signal that is sent from the instrument to reverb. This will have no effect if the overall Reverb (Reverb Send Level) for all sounds has been set to 0.
CHORUS LEVEL (Chorus Send Level)	Specifies the output level of the signal that is sent from the instrument to chorus. This will have no effect if the overall Chorus (Chorus Send Level) for all sounds has been set to 0.

Filter

CUT OFF (Brightness)	Adjusts the brightness of the sound. Lower values will produce a darker sound, and higher values will produce a brighter sound.
RESONANCE (Timbre/Harmonic Intensity)	Modifies the tone color by boosting or cutting the harmonics. The sound will become less idiosyncratic as this value is lowered, and sharper and more unique as the value is raised.

[Note] This will have no effect on sounds that do not use the filter.

[Note] Depending on the sound or the pitch range, this may have no effect.

Tone (Tone control)

BASS	Adjusts the response of the lower range of frequencies, below 400 Hz
MID	Adjusts the response of the midrange, in the 1 kHz region
TREBLE	Adjusts the response of the upper range of frequencies, above 4 kHz
ON/OFF	The tone settings will be valid when this is on.

Chorus (Chorus Send Level)

Sets the output level of the signal that is sent to the chorus.

Reverb (Reverb Send Level)

Sets the output level of the signal that is sent to the reverb.

Pan

Sets the stereo position of the output sound.
L63 is far left, 0 is center, and R63 is far right.

Level

Channel volume	Adjusts the output volume of the part. Double-click the slider to restore the default value.
MIDI indicator	This will light when a MIDI message is received.
Peak indicator	Located at the upper-right of Part Volume; lights when the Part Level has exceeded the maximum value.

[2] To switch drum sets

Use the following procedure to switch drum sets.

1. Click the drum set name displayed at the top of the window.
2. From the menu that appears, select the drum set that you want to hear.

[3] To edit the drum set name

Use the following procedure to edit the drum set name.

1. Double-click the drum set name displayed at the top of the window.
2. Input the desired drum set name into the dialog box that appears.
3. Click the OK button.

[Note] The drum set name can consist of up to 12 characters.

[4] To switch rhythm instruments

Either click the name displayed in the Instrument field and choose from the menu, or click the buttons located at the right of the name. If MIDI Edit is turned on, you can switch instruments from your MIDI keyboard.

[Note] MIDI Edit cannot be used if the channel of your MIDI keyboard does not match the part number.

[5] To close the editing window

Click the [X] located in the upper right of the window.

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Using the Effect Edit window



In the Effect Edit window you can edit the chorus and reverb parameters.

[1] Objects in the window and what they do

Chorus

ON/OFF	Turns the chorus on/off.
Chorus Type	Type Selects the chorus type.
RATE (Modulation Rate)	Sets the modulation frequency of the chorus sound.
DEPTH (Modulation Depth)	Sets the modulation depth of the chorus.
FEEDBACK (Feedback)	Sets the amount of post-chorus sound that is returned (feedback) to the input of the chorus. Increasing this value will produce a more complex chorus effect.
REV SND LEVEL (Send to Reverb)	Sets the level of the output to reverb.

Reverb

ON/OFF	Switches the reverb on/off.
Reverb Type	Type Selects the reverb type.
TIME (Reverb Time)	Adjusts the length of reverberation.

[2] To close the editing window

Click the [X] located in the upper right of the window.

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Using the System Settings window



When you click the **SYSTEM** button in the Mixer window, the System Settings window will appear. In the System Settings window you can set the master tuning, master key shift, and polyphony limit.

[1] Objects in the window and what they do

MASTER TUNE

Sets the master tuning in 0.1Hz steps.
Double-click the knob to restore the default value.

MASTER KEY SHIFT

Sets the master key shift in semitone steps.
Double-click the knob to restore the default value.

POLYPHONY LIMIT

Specifies the maximum number of voices that can be sounded simultaneously.
Double-click the knob to restore the default value.

[Note] For some sounds, a single note may use more than one voice.

OPTION

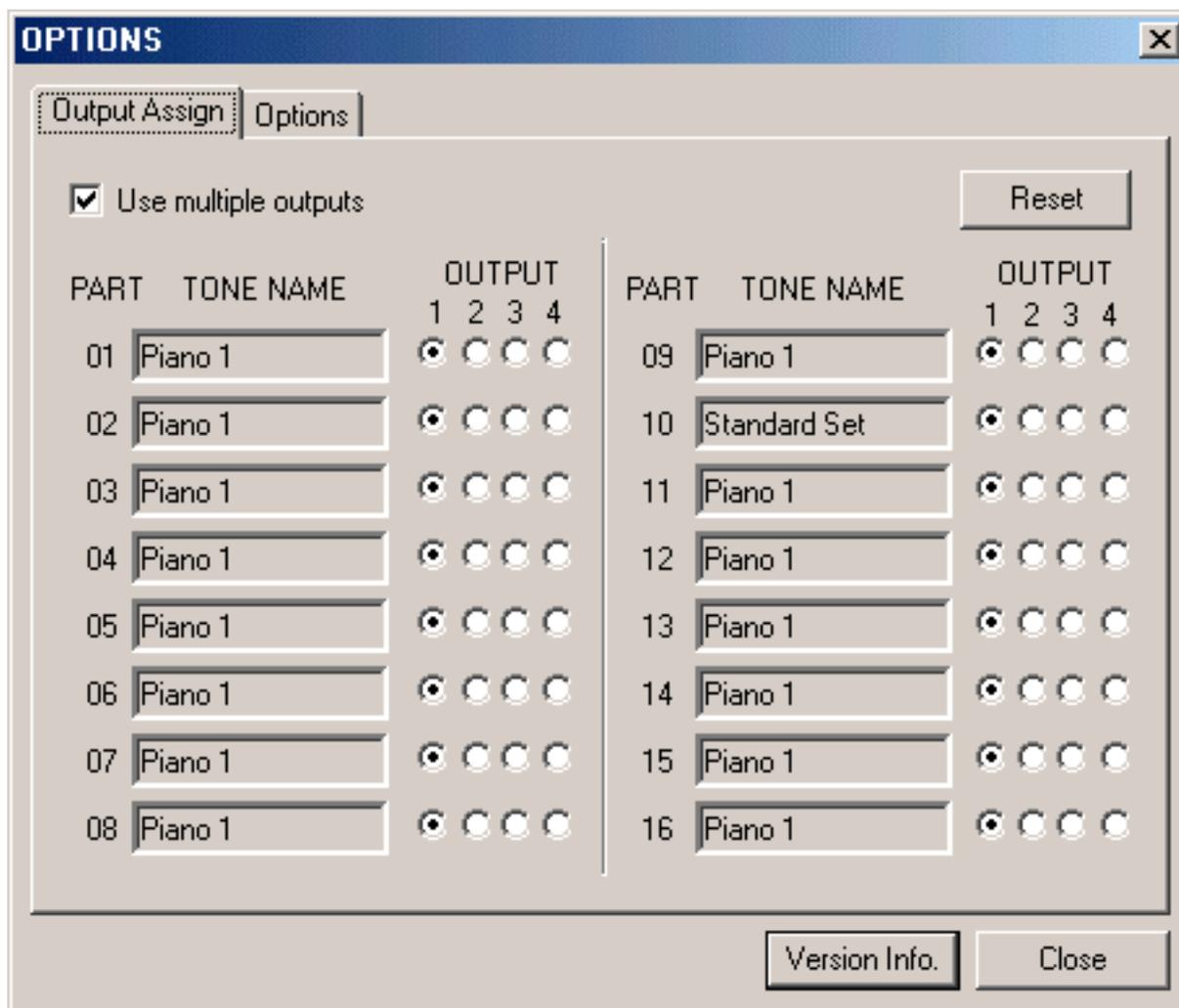
Displays the [Options window](#). In the Options window you can specify the output destination of each part, and save/load user data files.

[2] To close the settings window

Click the [X] located in the upper right of the window

Using the Option window

In the [System Settings window](#), click the **OPTION** button to open the Options window. The Options window contains two pages; **Output Assign** and **Options**. In these pages you can specify the output destination for each part, save/load user data files, and make settings for the entire synthesizer.



Version Info.

Displays the software version (ABOUT) window, which displays the version of the software and copyright information.

Close

Close the Option window.

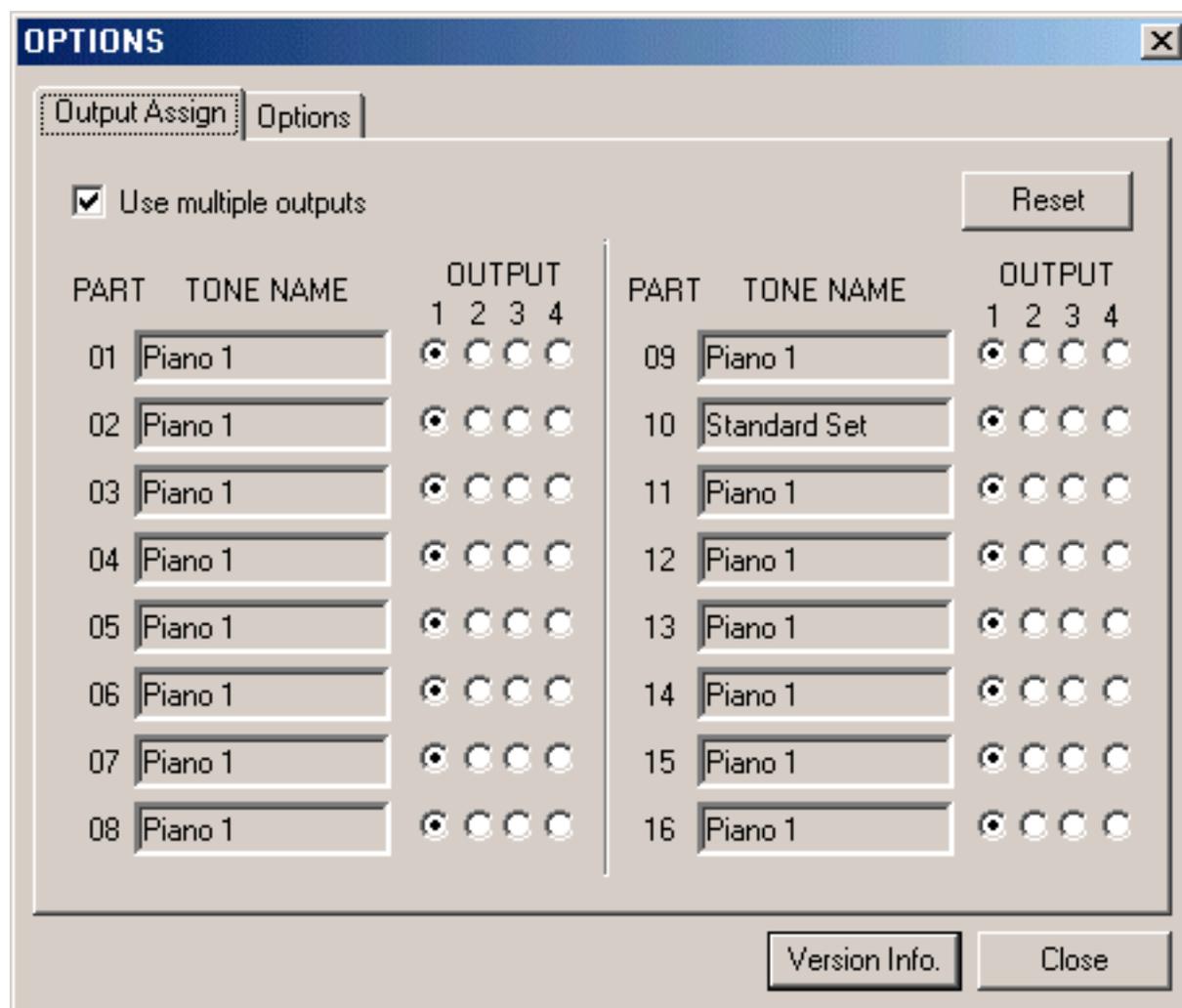
[1] Output Assign

For each part, you can select one of four stereo outputs as the output destination. This capability is referred to as "**multi-out.**" Multi-out lets you apply separate effects to each output in your host application, or send each output to a different audio device.

In the Output Assign page you can select the output destination for each part, and switch the multi-out function on/off.

[Note] In order to use Hyper Canvas's multi-out feature, your host application must support DXi2 or VST2.0. For details on how to use multi-out, refer to the owner's manual for your host application.

[Note] If your host application does not support multi-out and you set a part to an output destination other than OUTPUT 1, that part may not sound.



User multiple outputs

Switches the multi-out function on/off. If this is on, each part will be sent to the specified output destination. If this is off, all outputs will be sent to OUTPUT 1, regardless of the output destination specified for each part.

PART / TONE NAME

This shows the part number, and the name of the sound or drum set selected for that part.

OUTPUT

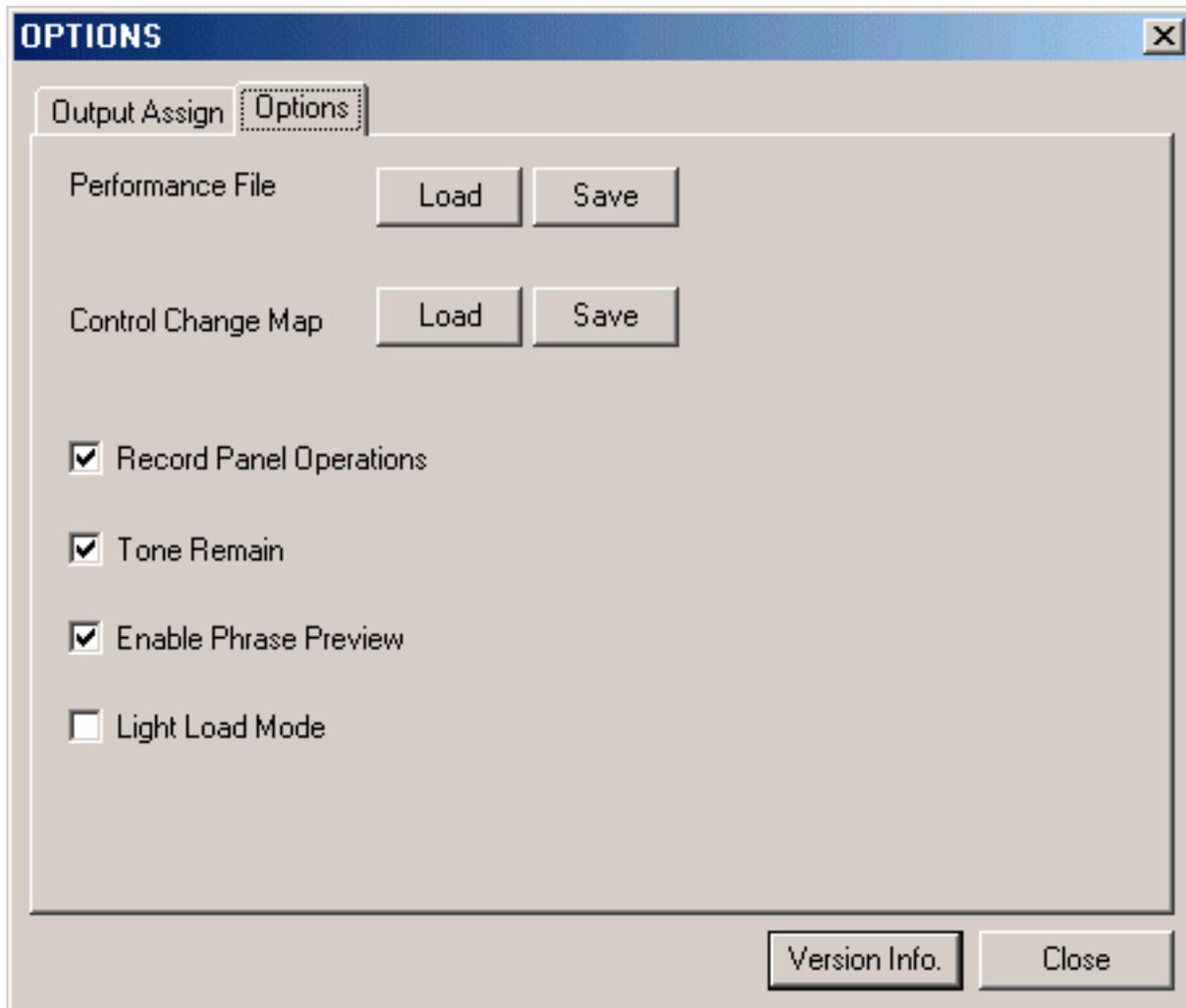
Selects one of four stereo outputs as the output destination for each part.

[Note] Hyper Canvas's built-in effects (reverb and chorus) can be used only on OUTPUT 1. The built-in effects cannot be applied to other output destinations.

RESET

When you click this, the output destination of all parts will be changed to OUTPUT 1.

[2] Options



PERFORMANCE

Save all of Hyper Canvas's current settings as a file, or load previously saved [PERFORMANCE](#) data.

Control Change Map

Loads or saves control change message assignments (control change map). For details, refer to "[Saving and loading control change assignments \(Control change map\).](#)"

Record Panel Operations [DXi version] / Automation [VST version]

This specifies whether operations you perform in Hyper Canvas's panel will be transmitted to your host application in the form of MIDI messages that are assigned to that parameter. If you are using the VST version, you can choose either MIDI or VST as the recording method. For details, refer to "[Recording panel operation \(Automation\).](#)"

Tone Remain

This specifies whether you want the notes that are sounding to remain (ON) or turn off (OFF) when you select a new Tone or Rhythm Set. If this is ON, the following parameters will be carried over to the new sound or rhythm set. If this is OFF, the values of that sound or rhythm set will be used.

- PORTAMENTO TIME
- PORTAMENTO SWITCH
- SOLO SWITCH
- BEND RANGE
- PART FINE TUNING
- PART COARSE TUNING

Enable Phrase Preview

This switches the Phrase Preview function on/off. If this is on, clicking the PREVIEW button in the Tone Finder or Normal Part Editor will play a phrase suitable for the selected sound, letting you audition it. If you do not want a phrase to be played (for example if a song is playing), turn this off so that the PREVIEW button will sound only a single note.

Light Load Mode

If this is checked, some of the internal processing of the software synthesizer will be abbreviated, reducing the processing load on your computer.

[Note] Using Light-Load mode will decrease the audio quality. For some sounds, the tonal character may change. We recommend that you leave this unchecked unless necessary.

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Saving user sounds

[1] Saving a user sound

Here's how you can create user sounds and drum sets by editing the sounds that are built into Hyper Canvas.

1. Click the **Edit** button in the Mixer window.
2. Click the sound name, and select a sound from the menu that appears.
3. Edit the parameters in the Part Edit window or Rhythm Edit window to create the desired sound.
4. Click the **Preview** button to audition the sound you've created.
5. Double-click the sound name.
6. Input a name for the sound into the dialog box that appears.

[Note] The sound name can consist of up to 12 characters.

7. Click **[OK]**.
8. Click the **WRITE** button to access the menu.
9. In the menu that appears, click the location where you want to save your sound.
10. When the dialog box appears, click **[OK]**.

[Note for Mac users]

If you plug-in multiple instances of Hyper Canvas user sounds saved from one plug-in will not be reflected in the user sounds of the other plug-ins. Also, the user sounds that are saved automatically when you exit the plug-in will be the sounds of the plug-in that was exited last. If you want to keep the user sounds that were saved from each plug-in, you must save the user sounds in a file.

[2] Loading a user sound

1. Click the name field of the Mixer window.
2. Choose either **User Normal** or **User Rhythm** from the menu that appears, to select a user sound that's been saved.

The user sound has now been loaded.

[3] Saving a user sound to a file

User sounds you create can be saved in a file as a bank of 128 sounds. Here's how to save a bank of user sounds.

1. Click the name field in the Mixer window.
2. From the menu that appears, choose **Save Bank**.
3. When the dialog box appears, select either User Bank 1, User Bank 2, User Bank 3, User Bank 4, or User Rhythm to choose the bank you intend to save.
4. Click **[OK]**.
5. When a dialog box appears, allowing you to specify the location at which the file will be saved, specify the saving location and input a filename.
6. Click **[Save]**.

The user bank has now been saved.

[4] Loading a user sound from a file

1. In the Mixer window, click the name field.
2. From the menu that appears, choose **Load Bank**.
3. When the dialog box appears, select the file that you want to load.
4. When the dialog box appears, select either User Bank 1, User Bank 2, User Bank 3, User Bank 4..
5. When the confirmation dialog box appears, click **[OK]**.

The user bank has now been loaded.

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Parameter control via MIDI

Most of the parameters that can be set from the panel of this software can be edited using MIDI control changes and RPN (Registered Parameter Number) or NRPN (Non-Registered Parameter Number) messages.

Additionally, a control change message can be freely assigned to any parameter. This lets you flexibly control Hyper Canvas when using it in combination with an external MIDI controller.

[Memo] For details on MIDI messages, refer to "[MIDI Implementation](#)."

[Note] If you change the control change assignments, existing song data may no longer play back correctly. In this case, you will also need to change the control change messages within the song data.

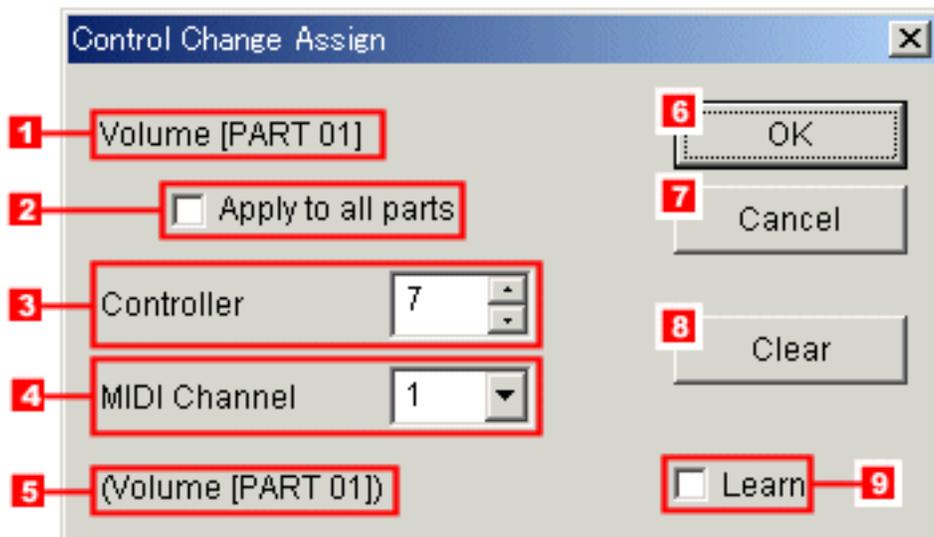
[1] Control change assignments

Hyper Canvas allows you to freely assign any parameter to control change numbers 1--31 and 33--119 (CC#1--CC#31, CC#33--CC#119).

To assign a control change message to a parameter, right-click the controller (e.g. knob or slider) for the parameter for which an assignment is to be made (on the Macintosh, hold down the [Option] key and click), to open the Control Change Assign dialog box.

[Note] If a dialog box does not appear, it is not possible to assign a control change to that parameter.

[Note] If you are using the VST version and you select **VST** as the type of automation, you will not be able to assign control changes to parameters. In this case, you can temporarily set the automation type to **OFF**, and then assign the control changes.



[Memo] The screen shown here is from the Windows version.

[1] The name of the parameter to which you are assigning a control change message.

[2] If you check this, the same control change can be assigned to the same parameter for every part number, using the MIDI channel corresponding to the part number, regardless of any MIDI channel settings that have been made.

For example, if you are assigning PART CHARACTER to control change number 3, and this box is checked, control change number 3 will control PART CHARACTER for all parts.

[Memo] You can use this option only for a Part parameter (including Scale Tune). This cannot be used for the sound parameters of individual rhythm instruments that you adjust in the Rhythm Part Editor.

[3] Controller : The control change number that will be assigned to this parameter. You can directly enter a number in the range of CC#1--CC#31 or CC#33--CC#119, or use the up/down spin buttons.

[4] MIDI Channel : The MIDI channel of the control change that will be assigned to this parameter. Click the pulldown menu and choose from the list.

[5] If the currently specified control change number/MIDI channel has already been assigned to a parameter, the name of the parameter will be displayed here.

If you assign a new parameter, the previously specified parameter assignment will be cancelled.

[6] OK : Finalizes the assignment and closes the dialog box.

[7] Cancel : Cancels the assignment and closes the dialog box.

[8] Clear : Clears the control change number and MIDI channel settings. By clicking **OK** in this state, you can cancel the control change assignment for the parameter.

[9] Learn : If this is checked, the Learning function will be enabled. For details on using the Learning function to make an assignment, refer to the next section.

[2] Using an external controller to make assignments (Learning)

As an easy way to assign a control change message, you can transmit the actual message from your external MIDI controller and use the Learn function to assign it to the desired parameter. This lets you easily assign a control change without having to be aware of the control change number or MIDI channel.

Here's how control changes sent from an external MIDI controller can be assigned to a parameter.

[Note] If you want to use the Learning function, you must first make settings in your host application so that MIDI messages from an external MIDI controller will be input to Hyper Canvas.

1. Right-click the controller (e.g., knob or slider) of the parameter for which you want to assign a control change message. (On the Macintosh, hold down the [Option] key and click.) The Control Change Assign dialog box will appear.
2. Check the "**Learn**" box.
3. Operate your external MIDI controller to transmit the control change message you want to assign.
4. The control number (**Controller**) and MIDI channel (**MIDI Channel**) fields will be updated to reflect the control change message that you transmitted. Verify that they are correct, and click **OK**.

The control change message transmitted from the external MIDI controller has been assigned to the parameter.

[3] Canceling control change assignments

Here's how to cancel the control change assignment for a parameter.

1. Right-click the controller (e.g., knob or slider) of the parameter for which you want to cancel the control change assignment. (On the Macintosh, hold down the [Option] key and click.) The Control Change Assign dialog box will appear.
2. Click **Clear**.

3. Verify that the control number (**Controller**) and MIDI channel (**MIDI Channel**) fields have been cleared, and click **OK**.

The control change assignment for this parameter has been cleared.

[4] Checking the control change assignments

When you save the current control change assignments as a file, another file will also be saved, allowing you to check these assignments.

Since this file is in text format, you can use any text editor to view it.

For details on how to save control change assignments in a file, refer to the section that follows, "[Saving and loading control change assignments \(Control Change Map\)](#)."

File contents

The saved file has the following contents.

Example of file contents		
# Control Change Map		
#		
Ch	CC#	Parameter
1	1	Modulation
1	2	-----
1	3	Master Volume
1	4	-----
1	5	Portamento Time [PART 01]
1	6	Master Volume
1	7	Volume [PART 01]
:	:	:

The file lists all parameters to which a control change is assigned, with each line showing the MIDI channel, control change number, and parameter name.

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Saving and loading control change assignments (Control Change Map)

The control change assignments you make can be saved in a file, and can be loaded and used whenever you wish. Several different predefined assignments are also provided, and you can load and use these settings if desired.

[Memo] Since Hyper Canvas provides three preset maps that have the most frequently used parameters assigned to them, you can record automation without having to make your own assignments. For details on the preset maps, refer to "[Assignable controllers](#)" in MIDI Implementation.

[1] Saving a control change map

1. In the Master Panel, click the **SYSTEM** button to open the **System Setting (SYSTEM SETTINGS)** window.
2. Open the **OPTIONS** page of the System Setting window.
3. Click the **Control Change Map SAVE** button.
4. When the Save dialog box appears, enter a name for the file and click **Save**.

Your control change map have now been saved in a file.

At the same time, a file that lets you view the assignments will also be saved, with the name you specified and a filename extension of .txt.

[2] Loading a control change map

[Note] When you load a control change map, the current assignments will all be overwritten. If you want to keep the current assignments, you must first save the current assignments in a file.

1. In the Master Panel, click the **SYSTEM** button to open the **System Setting (SYSTEM SETTINGS)** window.
2. Open the **OPTIONS** page of the System Setting window.
3. Click the **Control Change Map LOAD** button.
4. From the menu that appears, select the control change map that you want to load.

Type	Description
Minimum Map	Only the controllers available in the default state can be used.
Normal Map	The parameters which will be used frequently are assigned in addition to the controllers that are available in the default state.
Logic	These settings are ideal if you are using Emagic's "Logic" series as your host application.
File	Loading the control change map from a file

[Memo] For the actual parameter assignments, refer to "MIDI implementation" -> "[Assignable controllers](#)."

5. If you select **File**, a dialog box will appear, allowing you to select a file. Select the desired control change map file, and click **Open**.
6. A message will ask you to confirm the operation, so click **OK**.

The control change map that were saved in that file will be loaded into Hyper Canvas.

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Recording panel operation (Automation)

Operations you perform in the various panels of Hyper Canvas can be recorded by your host application, and reproduced during playback. This is referred to as "**Automation**." Automation makes it easy to change a parameter setting during a song, or to vary a parameter continuously.

There are two ways to record automation: MIDI automation, in which the host application records the MIDI messages assigned to the parameter you operate; and VST automation, which is supported only by the VST version.

- [MIDI Automation](#)
- [VST Automation \[VST version only\]](#)

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Using MIDI Automation

In MIDI Automation, the control change messages assigned to the parameters being controlled are recorded by the host application. Later, such parameter changes are recreated when the recorded data is played back.

You are free to assign the control change messages that are actually recorded. For details on assigning control changes, refer to "[Parameter control via MIDI](#)."

[Memo] Since Hyper Canvas provides three preset maps that have the most frequently used parameters assigned to them, you can record automation without having to make your own assignments. For details on the preset maps, refer to "[Assignable controllers](#)" in MIDI Implementation.

[Note] In order to use Hyper Canvas's automation capability, you must have a host application that supports DXi2 or VST 2.0. However, some host applications that support DXi2 or VST 2.0 are unable to record MIDI messages transmitted from a plug-in. In this case you will not be able to use Hyper Canvas's automation.

For details on how to make your host application record MIDI messages transmitted from a plug-in, refer to the owner's manual of your host application.

[1] Enabling MIDI Automation

Here's how to enable MIDI Automation.

1. In the Mixer window, click the **SYSTEM** button. The System settings window will appear.
2. In the System settings window, click the **OPTION** button. The OPTIONS window will appear.
3. Open the **OPTIONS** page.
4. If you are using the DXi version, check "**Record panel operations**."
If you are using the VST version, choose **MIDI** from the Automation list.

Now when you operate a controller in the panel, the control change message assigned to that parameter will be sent to the host application.

[2] Recording your operations

Here's how to record your panel operations.

1. Assign the desired control change to the parameter whose operations you want to record.
2. In your host application, begin recording the MIDI messages that are sent from a plug-in.
3. Perform the panel operations that you want to record.

Your panel operations will be recorded by the host application.

[Note] If, after recording automation, you change the control change assignment for a parameter, the automation for that parameter can no longer be reproduced. Also, if you assign the recorded automation data (control change data) to a different parameter, the recorded automation data will cause the newly assigned parameter to change.

If you change the control change assignments, you should delete unneeded automation data (control change messages) from your host application.

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Using VST automation [VST version only]

[1] What is VST automation?

By using VST automation, parameter operations in the Hyper Canvas window can be recorded on your host application in real time. The corresponding parameters will be updated automatically during playback.

Hyper Canvas can be assigned to any automation ID from 0 to 63. By default, parameters are assigned as shown in the following table.

Automation ID	Parameter
0--15	Part 1--16 volume
16--31	Part 1--16 pan
32-47	Part 1--16 chorus send level
48-63	Part 1--16 reverb send level

If you want to automate a parameter that is not currently assigned, refer to ["Changing the parameters to automate."](#)

[2] Preparing to use automation

In order to use automation, you must use the following procedure to enable automation.

1. In the Mixer window, click the **SYSTEM** button. The System settings window will appear.
2. In the System settings window, click the **OPTION** button. The OPTIONS window will appear.
3. .Open the **Options** page.
4. Choose "**VST**" from the Automation list.

VST Automation has now been enabled.

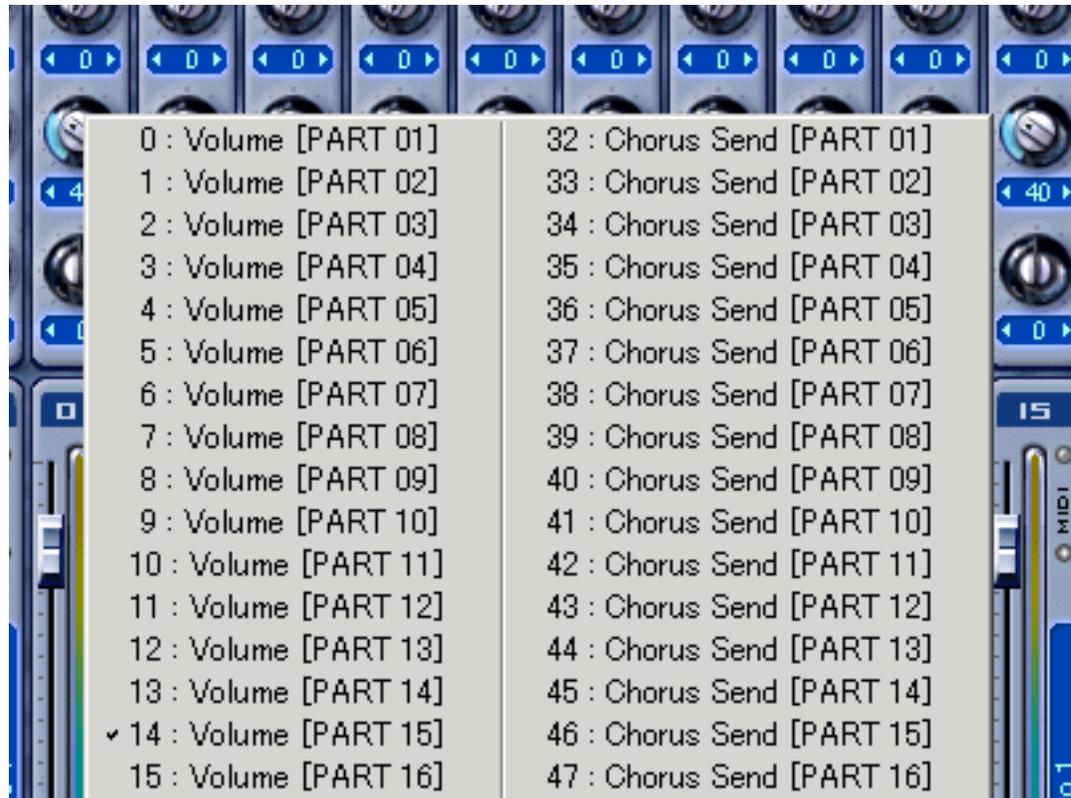
[3] Changing the parameters to automate

If you want to automate parameters such as master volume or effect type that are not currently specified for automation, use the following procedure.

1. Plug-in Hyper Canvas.
2. Right-click (or on the Macintosh, hold down the Option key and click) the knob, slider, or button of

the parameter that you want to automate.

3. A list of parameters currently assigned for automation will appear in a popup menu.



[Note] Parameters not shown in the menu cannot be assigned for automation.

[Memo] "-----" will be displayed beside automation ID's to which no parameter has been assigned.

4. Select the automation ID.

Now the parameter will be recorded with the selected automation ID.

[Note] If you select a parameter whose name is already displayed for an automation ID, that parameter can no longer be automated.

5. Once again, right-click the parameter that you right-clicked in step 2.

6. Verify that the parameter name has been changed for the automation ID you selected in step 4.

Now the selected parameter can be automated.

[Note] When Hyper Canvas is unplugged, all automation ID's will return to their default settings. You should save these settings as performance data before unplugging Hyper Canvas.

[Memo] For details on how automation will actually be recorded/played, refer to the owner's manual for your host application.

[4] Disabling automation for a parameter

To disable automation for a parameter, click that knob or slider, and from the menu that appears, delete the name of the parameter that you want to disable. Use the following procedure to delete the parameter name.

1. Right-click (on the Macintosh, hold down the Option key and click) the knob, slider, or button of the parameter for which you want to disable automation.
2. From the menu that appears, select the name of the parameter that you selected in step 1. This will disable automation.
3. Once again, right-click the parameter that you right-clicked in step 1.
4. Verify that the name is displayed as "-----" for the automation ID number you selected in step 2.

Automation has now been disabled for the parameter.

[Note]

This procedure disables recording and playback of automation, but it won't delete any automation data that's already been recorded. This means that if a different parameter is assigned to the same automation ID, the previously recorded automation data will affect a different parameter than the one for which it was originally recorded. If you want to completely delete the automation data that was recorded, refer to the owner's manual for your host application, and delete the automation data as well.

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Saving/loading all parameters as performance data

The settings you make from the panels of Hyper Canvas will be lost when you close the song file or remove (unplug) the Hyper Canvas plugin.

If you are using the DXi version, you can use the Preset function of your host application to save the current settings in the song file, but this will be a special file that cannot be used by another host application.

[Memo] For details on DXi's Preset function, refer to the owner's manual of your host application.

Hyper Canvas lets you save the current settings in a file as Performance data, allowing you to reproduce the current settings later, or on a different system.

The following parameters are saved as Hyper Canvas performance data.

- The master parameters you set in the System Setting (SYSTEM SETTING) window
- The effect parameters and effect on/off setting you set in the Effect Editor
- The parameters of each part that can be set in the Part Editor
- The Output Selector and multi-out on/off setting of each part
- The control change assignments (Control Change Map)
- The settings of VST Automation [VST version only]

[Memo] User sounds and effect user preset data is not saved as part of the performance data.

[1] Saving performance data in a file

Here's how to save performance data in a file.

1. In the Mixer window, click the **SYSTEM** button to open the **System Setting (SYSTEM SETTINGS)** window.
2. Click the **OPTION** button in the System Setting window. The Options window will appear.
3. Open the **OPTIONS** page of the Options window.
4. Click the **Performance File SAVE** button.
5. When the Save dialog box appears, enter a name for the file and click **Save**.

Your performance data have now been saved in a file.

[2] Loading performance data from a file

Here's how to load the performance data that you saved in a file.

[Note] When you load the performance data from a file, the currently settings of Hyper Canvas will all be overwritten. If you want to keep the current settings of Hyper Canvas, you must first save the performance data in a file.

1. In the Mixer window, click the **SYSTEM** button to open the **System Setting (SYSTEM SETTINGS)** window.
2. Click the **OPTION** button in the System Setting window. The Options window will appear.
3. Open the **OPTIONS** page of the Options window.
4. Click the **Performance File LOAD** button.
5. A dialog box will appear, allowing you to select a file. Select the desired file of performance data, and click **Open**.
6. A message will ask you to confirm the operation, so click **OK**.

The performance data that were saved in that file will be loaded into Hyper Canvas.

All parameter settings of Hyper Canvas can be saved as performance data.

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Troubleshooting

1. [Sound is too loud/too soft/cannot be heard](#)
2. [Sound is interrupted/playback tempo is irregular/playback stops midway through](#)
3. [Notes are delayed](#)
4. [Insufficient polyphony/Notes are omitted](#)
5. [Sound is distorted](#)
6. [Effects \(reverb/chorus\) are not applied](#)
7. [Effects \(reverb/chorus\) are not applied to the drum part](#)
8. [Failure to plug-in](#)
9. [System exclusive messages cannot be received](#)
10. [An error of "Can't allocate Memory" is displayed when you plug-in \(Macintosh\)](#)
11. [VST instruments do not receive control change messages](#)
12. [Can't use Save Bank/Load Bank of VST instruments to save/load settings](#)
13. [When the Hyper Canvas's panel is operated, a different slider or the sound of another sound module also changes.](#)
14. [Can't use the Learning function](#)
15. [Can't record/play back VST automation](#)

[1] Sound is too loud/too soft/cannot be heard

Check the following points.

- Check the Mixer window master volume setting.
- If the MIDI indicator for each part in the Mixer window are not blinking, it is possible that MIDI messages are not being input correctly to Hyper Canvas. Check the following settings on your host application.
 - Make sure that Hyper Canvas is selected as the output destination for the MIDI tracks that are playing.
 - Check the MIDI channel, volume, and mute settings for the MIDI tracks that are playing.
- If the Mixer window level meters are **moving**, it is possible that there is a problem with the audio output settings. Check the following points.
 - Check the audio volume of the host application. Also make sure that the audio device you are using has been correctly selected.
 - Check the volume and other necessary settings for your audio device.
 - Check the connections and volume of your audio system (amp, speakers, etc.)

- If a heavy processing load is placed on your computer, your host application may stop processing audio, causing the sound to stop. Refer to the troubleshooting items for "[2] Sound is interrupted/playback tempo is irregular/playback stops midway through."

[2] Sound is interrupted/playback tempo is irregular/playback stops midway through

Check the following items.

- If your host application allows you to adjust the size of the audio buffer, try increasing the buffer size.

* Increasing the buffer size will increase the delay (latency) of the sound.
- If you are using the UA-5, SD-90, SC-D70, etc., with the Macintosh, try decreasing the ASIO buffer size (BufferSize).
- It is possible that playback cannot be performed correctly because other software is placing a processing load on the computer. Please exit any software you are not using.
- Refer to the troubleshooting section in the documentation for your host application or audio device. Suggestions on how to solve problems with audio playback may be effective for this situation as well.
- Try decreasing the POLYPHONY LIMIT in the System settings window.
- In the Effect Edit window, try turning [CHORUS] and/or [REVERB] off.

Note, however, that if the MIDI data you are attempting to play is of such complexity that it requires sound processing capabilities that are well beyond those of your computer, these measures may not help.

Such problems can also occur depending on the operating environment of your computer (other drivers and software).

[3] Notes are delayed

Check the following points.

- If your host application allows you to adjust the size of the audio buffer, try decreasing the buffer size.
 - * Decreasing the buffer size too much may cause notes to be interrupted or fail to sound. Make this setting as appropriate for the performance of your computer and audio device.
- If the documentation for your host application or audio device contains suggestions on how to fix problems with delayed notes, follow those suggestions.

Depending on the performance of your computer, and on the specifications of your host application and audio device, it may not be possible to resolve this problem.

[4] Insufficient polyphony/Notes are omitted

It is possible that this is being limited by the maximum polyphony setting. Check the LIMIT setting for **POLYPHONY** in the System Setting window.

* You can check the actual polyphony in the [POLYPHONY] area of the Mixer window.

- Are you using Macintosh with the Cubase VST?
 - If you are using Macintosh with the Cubase series, check the "Favor MIDI Timing" setting found in the General section of Audio System Setup.

[5] Sound is distorted

Check the following points.

- Try lowering the master volume in the Mixer window.

[6] Effects (reverb/chorus) are not applied

Check the following.

- In the Effects tab of the Master panel, make sure that effects are turned ON.

- Are you using multi-out?

If you are using multi-out, parts assigned to an output destination other than **OUTPUT 1** cannot use Hyper Canvas's built-in effects (reverb/chorus).

If you want to use the built-in effects on a part, set the output destination of that part to **OUTPUT 1**.

[7] Effects (reverb/chorus) are not applied to the rhythm part

For the drum part, the effect send amount (send level) is set individually for each drum instrument. Even if the send level of the drum part is specified from the Mixer window, or from within the music data, there will be no effect if the send level of each instrument is turned down.

Make sure that the music data also specifies the send level of each instrument to which you want to apply the effect.

* For details on effect send level settings for drum instruments, refer to the [Using the Rhythm Edit window](#).

[8] Failure to plug-in

Check the following points.

- Hyper Canvas can be used only with the following audio formats. Check the audio format of your host application.

Sampling frequency [kHz]	44.1, 48, 96
Number of channels	2

- It is possible that your computer does not have enough memory. Try exiting any other applications that you are not using. If failure to plug-in occurs frequently due to insufficient memory, we recommend that you install additional memory in your computer.
- If you are using a Macintosh, increase the amount of memory allocated to the application.

[9] System exclusive messages cannot be received

If you are using the VST instrument version, system exclusive messages cannot be received due to the VST instrument specification.

[10] An error of "Can't allocate Memory" is displayed when you plug-in (Macintosh)

This error occurs if there is not enough memory to start up the plug-in. Please increase the memory that is allocated to the application.

[11] VST instruments do not receive control change messages

If you are using Emagic's "Logic" series as the host application, some control change messages cannot be received by VST instruments, due to the specifications of the Logic series. (For the current specifications of Logic, refer to the documentation of the Logic series.)

To modify a parameter that cannot be modified by control change messages, you can either directly operate its knob or slider in the VST instruments window, or use the Automation function to control it. For details on the Automation function, refer to ["Using VST Automation."](#)

[12] Can't use Save Bank/Load Bank of VST instruments to save/load settings

It is not possible to use the "Save Bank" and "Load Bank" commands for VST instruments of your host application to save Hyper Canvas settings.

Hyper Canvas settings must be saved/loaded as performance data. For details on saving/loading performance data, refer to ["Saving/loading all parameters as performance data."](#)

[13] When the Hyper Canvas's panel is operated, a different slider or the sound of another sound module also changes.

Is MIDI automation enabled?

If MIDI automation is enabled, operating the Hyper Canvas's panel will send MIDI messages that assigned to parameter to the host application.

These MIDI messages may cause unintended parameters to change at the same time.

If this occurs, try unchecking "**Record Panel operations**"(DXi version) or select the Automation "OFF"(VST version) in the "[Options](#)" page of the **OPTIONS** window.

[14] Can't use the Learning function

- Has your host application stopped processing audio?

If audio processing has been halted, it may not be possible to use the Learning function to specify a control change, since MIDI messages are not being sent to Hyper Canvas. Refer to the owner's manual for your host application, and make sure that audio processing is enabled.

[15] Can't record/play back VST automation

- Is the VST automation function enabled?

In order to use the VST automation function, you must enable it. For details on using the VST automation function, refer to "[Using VST automation](#)."

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Instrument List

[GM2 Instrumet List](#)

[GM2 Drum Set List](#)

[Software Synthesizer]

MIDI Implementation

MODEL:HQ-GM2

Ver. 1.50

Function ...		Transmitted	Recognized	Remarks
Basic Channel	Default	x	1-16	
	Changed	x	1-16	
Mode	Default	x	Mode 3	
	Messages	x	Mode 3, 4 (M = 1)	*2
	Altered	*****		
Note Number		x	0-127	
	True voice	*****	0-127	
Velocity	Note ON	x	o	
	Note OFF	x	x	
After Touch	Key's	x	x	
	Ch's	x	o *1	
Pitch Bend		x	o	
Control Change	0, 32	x	o	Bank select
	1-31, 33-119	x	o	*3
Prog Change		x	o	
	True #	*****	0-127	Prog.1-128
System Exclusive		x	o	
System Common	Song Pos	x	x	
	Song Sel	x	x	
	Tune	x	x	
System Real Times	Clock	x	x	
	Commands	x	x	
Aux Messages	All Sounds OFF	x	o (120, 126, 127)	
	Reset All Controllers	x	o	
	Local ON/OFF	x	x	
	All Notes OFF	x	o (123-125)	
	Active Sensing	x	x	
	System Reset	x	x	
Notes	*1 o x is selectable			
	*2 Recognize as M = 1 even if M not EQ 1			
	*3 It can be assigned to any parameter of the operation panels.			

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO
 Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO

o : Yes
 x : No

Section 1. Receive data**Channel Voice Messages**

<Note off>

Status	2nd byte	3rd byte
8nH	kkH	vvH
9nH	kkH	00H

n = MIDI channel number : 0H-FH (ch.1-ch.16)

kk = note number : 00H-7FH (0-127)

vv = note off velocity : 00H-7FH (0-127)

* The velocity values of Note Off messages are ignored.

<Note on>

Status	2nd byte	3rd byte
9nH	kkH	vvH

n = MIDI channel number : 0H-FH (ch.1-ch.16)

kk = note number : 00H-7FH (0-127)

vv = note on velocity : 01H-7FH (1-127)

<Control Change>

Hyper Canvas allows you to assign control changes to any parameter of the operating panels. Controller numbers in the range of 1--31 and 33--119 can be assigned to the operating panels.

In the default state, Hyper Canvas will recognize the following controller numbers. If you reassign these numbers to panel parameters, the default assignment will be overridden (except in the case of Bank Select).

[Limitations with Emagic's Logic series]

If you are using Emagic's Logic series as your host application, some control change messages may not be received by VST instruments due to Logic's plug-in specifications.

For details on current specifications for the Logic series, refer to the Logic owner's manual.

> Bank Select (Controller number 0, 32)

Status	2nd byte	3rd byte
BnH	00H	mmH
BnH	20H	llH

n = MIDI channel number : 0H-FH (ch.1-ch.16)

mm, ll = Bank number : 00H, 00H-7FH, 7FH (bank.1-bank.16384), Initial Value = 00 00H (bank.1)

* When sending Bank Select messages, you have to send both the MSB (mmH) and LSB (llH) together.

* Bank Select processing will be suspended until a Program Change message is received.

BANK MSB	BANK LSB	PROGRAM NUMBER	DESCRIPTION
001	000 - 003	001 - 128	User Normal
002	000	001 - 128	User Rhythm
120	000	001,009,017, 025,026,033, 041,049,057	GM2 Rhythm
121	000 - 009	001 - 128	GM2 Normal

[Regarding Bank Select in Emagic's Logic series]

If you are using Emagic's Logic series, VST instruments may not be able to receive controller number 32 messages (Bank Select LSB). In this case, you will not be able to switch banks in Hyper Canvas.

As a work-around for this, Hyper Canvas lets you select all banks using just the Bank Select MSB if you have specified "Logic" as the

control change map.

For details, refer to the explanation for the "[Logic](#)" control change map.

Assignable controllers (controller numbers 1--31, 33--119)

Status	2nd byte	3rd byte
BnH	ccH	vvH

n = MIDI channel number : 0H-FH (ch.1-ch.16)

cc = Controller number : 01H-1FH, 21H-77H (1-31, 33-119)

vv = Value range : 00H-7FH (0-127)

These controllers can be assigned to any parameter of the operation panels. If you reassign these controllers to panel parameters, the previous assignment will be overridden.

Controllers defined in GM2

If you have chosen Normal as the preset controller map, HyperCanvas supports the following controllers defined by GM2. This means that if you choose a different preset map, or if you modify the controller assignments, GM2 song data may no longer play back correctly. Furthermore, song data you created for use with the modified controller assignments will not be played back correctly by another GM2-compatible MIDI sound module.

If you want the song data you create to play back correctly on other GM2-compatible MIDI sound modules, choose Normal as the controller preset map, and use the following controllers.

Controllers defined in GM2

Controller number (cc)	Value range	Default value	Name of function
1	00H-7FH (0-127)	00H (0)	Modulation
5	00H-7FH (0-127)	00H (0)	Portamento Time
6 / 38	00H-7FH (0-127)	00H/00H (0/0)	Data Entry
7	00H-7FH (0-127)	64H(100)	Volume
10	00H-40H-7FH (Left-Center-Right)	40H(Center)	Pan
11	00H-7FH (0-127)	7FH(127)	Expression
64	00H-3FH(0-63):OFF, 40H-7FH (64-127):ON	OFF	Hold 1
65	00H-3FH(0-63):OFF, 40H-7FH (64-127):ON	OFF	Portamento
66	00H-3FH(0-63):OFF, 40H-7FH (64-127):ON	OFF	Sostenuto
67	00H-3FH(0-63):OFF, 40H-7FH (64-127):ON	OFF	Soft
71	00H-40H-7FH (-64 - 0 - +63)	40H(0)	Filter Resonance
72	00H-40H-7FH (-64 - 0 - +63)	40H(0)	Release Time
73	00H-40H-7FH (-64 - 0 - +63)	40H(0)	Attack Time

74	00H-40H-7FH (-64 - 0 - +63)	40H(0)	Cutoff
75	00H-40H-7FH (-64 - 0 - +63)	40H(0)	Decay Time
76	00H-40H-7FH (-64 - 0 - +63)	40H(0)	Vibrato Rate
77	00H-40H-7FH (-64 - 0 - +63)	40H(0)	Vibrato Depth
78	00H-40H-7FH (-64 - 0 - +63)	40H(0)	Vibrato Delay
91	00H-7FH (0-127)	28H (40)	Reverb Send Level
93	00H-7FH (0-127)	00H (0)	Chorus Send Level
100	00H-7FH (0-127)	7FH (NULL)	Lower byte of the parameter number specified by RPN (LSB)
101	00H-7FH (0-127)	7FH (NULL)	Upper byte of the parameter number specified by RPN (MSB)

Controllers available in the default state

With the default settings, the following parameters and functions are available, but if you assign these control numbers to other parameters, the original parameter or function will be disabled.

However, if you cancel the parameter assignment, the original function will once again be valid. For details on how to cancel an assignment, refer to "[Canceling control change assignment.](#)"

[Memo] These functions and parameters cannot be assigned to other control numbers.

Controllers available in the default state

Controller number (cc)	Value range	Name of function
1	00H-7FH (0-127)	Modulation
6	00H-7FH (0-127)	Data Entry MSB the value of the parameter specified by RPN/NRPN
38	00H-7FH (0-127)	Data Entry LSB the value of the parameter specified by RPN/NRPN
11	00H-7FH (0-127)	Expression
64	00H-3FH(0-63):OFF, 40H-7FH (64-127):ON	Hold 1
66	00H-3FH(0-63):OFF, 40H-7FH (64-127):ON	Sostenuto
67	00H-3FH(0-63):OFF, 40H-7FH (64-127):ON	Soft * This message is effective only when you use piano sounds.
98	00H-7FH (0-127)	NRPN LSB lower byte of the parameter number specified by NRPN
99	00H-7FH (0-127)	NRPN MSB upper byte of the parameter number specified by NRPN
100	00H-7FH (0-127)	RPN LSB lower byte of the parameter number specified by RPN

101	00H-7FH (0-127)	RPN MSB upper byte of the parameter number specified by RPN
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Assignable parameters

The following parameters can be freely assigned to any control number. The assignment settings (control change map) can be saved in a file, or loaded from a previously saved file. For details on the control change map, refer to "[Control change assignments](#)."

Assignable parameters

Parameter name	Controller values	Parameter range
MASTER VOLUME	00H-7FH (0 - 127)	0 - 127
MASTER TUNING	00H-40H-7FH (0 - 64 - 127)	433.6 - 440.0 - 446.3 [Hz]
MASTER KEY SHIFT	28H-64H-58H (40 - 64 - 88)	-24 - 0 - +24 [semi note]
PART VOLUME	00H-7FH (0 - 127)	0 - 127
PART PAN	01H-40H-7FH (1 - 64 - 127)	-63 - 0 - +63
PART REVERB SEND	00H-7FH (0 - 127)	0 - 127
PART CHORUS SEND	00H-7FH (0 - 127)	0 - 127
MONO/POLY	00H-3FH (0 - 63) / 40H-7FH (64 - 127)	POLY(0 - 63) / MONO(64 - 127)
ENVELOPE ATTACK TIME	01H-40H-7FH (1 - 64 - 127)	-63 - 0 - +63
ENVELOPE DECAY TIME	01H-40H-7FH (1 - 64 - 127)	-63 - 0 - +63
ENVELOPE RELEASE TIME	01H-40H-7FH (1 - 64 - 127)	-63 - 0 - +63
CHARACTER	1CH-40H-64H (28 - 64 - 100)	-36 - 0 - +36
FILTER CUTOFF	01H-40H-7FH (1 - 64 - 127)	-63 - 0 - +63
FILTER RESONANCE	01H-40H-7FH (1 - 64 - 127)	-63 - 0 - +63
TONE SWITCH	00H-3FH (0 - 63) / 40H-7FH (64 - 127)	OFF / ON
BASS GAIN	34H-40H-4CH (52 - 64 - 76)	-12 - 0 - +12 [dB]
MID GAIN	34H-40H-4CH (52 - 64 - 76)	-12 - 0 - +12 [dB]
TREBLE GAIN	34H-40H-4CH (52 - 64 - 76)	-12 - 0 - +12 [dB]
PART FINE TUNING	08H-40H-72H (14 - 64 - 114)	-50 - 0 - +50 [cent]
PART COARSE TUNING	10H-40H-70H (16 - 64 - 112)	-48 - 0 - +48 [semi note]
VIBRATO RATE	01H-40H-7FH (1 - 64 - 127)	-63 - 0 - +63
VIBRATO DEPTH	01H-40H-7FH (1 - 64 - 127)	-63 - 0 - +63
VIBRATO DELAY	01H-40H-7FH (1 - 64 - 127)	-63 - 0 - +63
PORTAMENTO SWITCH	00H-3FH (0 - 63) / 40H-7FH (64 - 127)	OFF / ON
PORTAMENTO TIME	00H-7FH (0 - 127)	0 - 127
MODURATION DEPTH	00H-7FH (0 - 127)	0 - 127
BEND RANGE	00H-18H (0 - 24)	0 - 24 [semi note]
INSTRUMENT LEVEL	00H-7FH (0 - 127)	0 - 127
INSTRUMENT PAN	01H-40H-7FH (1 - 64 - 127)	-63 - 0 - +63
INSTRUMENT COARSE TUNE	10H-40H-70H (16 - 64 - 112)	-48 - 0 - +48 [semi note]
INSTRUMENT FINE TUNE	08H-40H-72H (14 - 64 - 114)	-50 - 0 - +50 [cent]
INSTRUMENT REVERB SEND	00H-7FH (0 - 127)	0 - 127
INSTRUMENT CHORUS SEND	00H-7FH (0 - 127)	0 - 127

REVERB TYPE	00H - 05H (0 - 5)	Small Room, Medium Room, Large Room, Medium Hall, Large Hall, Plate
REVERB TIME	00H-7FH (0 - 127)	0 - 127
REVERB SWITCH	00H-3FH (0 - 63) / 40H-7FH (64 - 127)	OFF / ON
CHORUS TYPE	00H-05H (0 - 5)	Chorus1, Chorus2, Chorus3, Chorus4, FB Chorus, Flanger
CHORUS RATE	00H-7FH (0 - 127)	0 - 127
CHORUS DEPTH	00H-7FH (0 - 127)	0 - 127
CHORUS FEEDBACK	00H-7FH (0 - 127)	0 - 127
REVERB SEND LEVEL	00H-7FH (0 - 127)	0 - 127
CHORUS SWITCH	00H-3FH (0 - 63) / 40H-7FH (64 - 127)	OFF / ON

Control change preset maps

Hyper Canvas provides the following three control change maps as presets.

- o **Minimum Map**

Only [the controllers available in the default state](#) can be used.

- o **Normal Map**

The following parameters are assigned in addition to [the controllers available in the default state](#).

Controller number (cc)	MIDI Channel	Parameter name
3	1	MASTER VOLUME
5	same as part number	PORTAMENTO TIME
7	same as part number	PART VOLUME
10	same as part number	PART PAN
16	same as part number	PART COARSE TUNING
17	same as part number	PART FINE TUNING
18	same as part number	CHARACTER
23	same as part number	MODULATION DEPTH
26	same as part number	BEND RANGE
27	same as part number	EQ SWITCH
28	same as part number	EQ LOW GAIN
29	same as part number	EQ MID GAIN
30	same as part number	EQ HIGH GAIN
65	same as part number	PORTAMENTO SWITCH
68	same as part number	PATCH DECREMENT
69	same as part number	PATCH INCREMENT
71	same as part number	FILTER RESONANCE
72	same as part number	ENVELOPE RELEASE TIME
73	same as part number	ENVELOPE ATTACK TIME
74	same as part number	FILTER CUTOFF

75	same as part number	ENVELOPE DECAY TIME
76	same as part number	VIBRATO RATE
77	same as part number	VIBRATO DEPTH
78	same as part number	VIBRATO DELAY
80	same as part number	MONO/POLY
91	same as part number	PART REVERB SEND
93	same as part number	PART CHORUS SEND

[Note]

Patch Decrement and Patch Increment, which are assigned to controller numbers 68 and 69, cannot be assigned to other controller numbers.

Thus, if you assign other parameters to controller numbers 68 and 69, Patch Decrement and Patch Increment will be unavailable. If you want to use Patch Decrement and Patch Increment, reload the Normal Map.

- o **Logic**

These settings are ideal if you are using Emagic Corporation's "Logic" series as your host application. The following parameters are assigned.

Controller number (cc)	MIDI Channel	Parameter name
1	same as part number	Modulation
2	same as part number	PART VOLUME
4	same as part number	PART PAN
5	same as part number	PART REVERB SEND
6	same as part number	PART CHORUS SEND
11	same as part number	Expression
16	same as part number	SOLO SWITCH
17	same as part number	ENVELOPE ATTACK TIME
18	same as part number	ENVELOPE RELEASE TIME
19	same as part number	CHARACTER
20	same as part number	BEND RANGE
21	same as part number	EQ SWITCH
22	same as part number	EQ LOW GAIN
23	same as part number	EQ MID GAIN
24	same as part number	EQ HIGH GAIN
64	same as part number	Hold 1

If you select this control change map, you will be able to select all sound banks by using control number 0 messages (Bank Select MSB).

BANK MSB	PROGRAM NUMBER	DESCRIPTION
000 - 009	001 - 128 (00H - 7FH)	Preset Normal 0 - 9
010	001, 009, 017, 025, 026, 033, 041, 049, 057	Preset Rhythm (Drum Set)
011 - 014	001 - 128 (00H - 7FH)	User Normal 1 - 4
015	001 - 128 (00H - 7FH)	User Rhythm

This function also applies to any control change map that you create/save based on this control change map. Conversely, if you select the [Minimum Map](#), [Normal Map](#), or any control change map that was created/saved based on these maps, the conventional bank selection method will be used.

> NRPN MSB/LSB (Controller number 98, 99)

Status	2nd byte	3rd byte
BnH	63H	mmH
BnH	62H	llH

n = MIDI channel number : 0H-FH (ch.1-ch.16)

mm = upper byte of the parameter number specified by NRPN

ll = lower byte of the parameter number specified by NRPN

****NRPN****

The NRPN (Non Registered Parameter Number) message allows an extended range of control changes to be used. To use these messages, you must first use NRPN MSB and NRPN LSB messages to specify the parameter to be controlled, and then use Data Entry messages to specify the value of the specified parameter. Once an NRPN parameter has been specified, all Data Entry messages received on that channel will modify the value of that parameter. To prevent accidents, it is recommended that you set RPN Null (RPN Number = 7FH/7FH) when you have finished setting the value of the desired parameter. Refer to Supplementary material "Examples of actual MIDI messages" <Example 4>. On the Hyper Canvas devices, Data entry LSB (llH) of NRPN is ignored, so it is no problem to send Data entry MSB (mmH) only (without Data entry LSB)

NRPN messages are used only for Hyper Canvas. Since the VST instruments cannot use exclusive messages, some of the functions defined by General MIDI 2 are assigned to NRPNs to be used with the Hyper Canvas.

On the Hyper Canvas, NRPN can be used to modify the following parameters.

NRPN MSB LSB	Data entry MSB	Explanation
58H 01H	mmH	Charactor (absolute change) mm: 1CH-40H-64H (-36 - 0 - +36)
58H 20H	mmH	Tone control switch (absolute change) mm: 00H-7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON
58H 22H	mmH	Tone control bass gain (absolute change) mm: 34H-40H-4CH (-12 - 0 - +12)
58H 24H	mmH	Tone control treble gain (absolute change) mm: 34H-40H-4CH (-12 - 0 - +12)
58H 27H	mmH	Tone control mid gain (absolute change) mm: 34H-40H-4CH (-12 - 0 - +12)
58H 30H-3BH	mmH	Scale tune C - B mm: 00H-40H-7FH (-64 - 0 - +63 cent)
58H 40H	mmH	Reverb switch mm: 00H-7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON * Sets the reverb settings regardless of the channel on which it's received.
58H 41H	mmH	Reverb type mm: 00H-08H (00H = Small Room, 01H = Medium Room, 02H = Large Room, 03H = Medium Hall, 04H = Large Hall, 08H = Plate) * Sets the reverb settings regardless of the channel on which it's received.

58H 42H	mmH	Reverb time mm: 00H-7FH (0 - 127) * Sets the reverb settings regardless of the channel on which it's received.
58H 50H	mmH	Chorus switch mm: 00H-7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON * Sets the chorus settings regardless of the channel on which it's received.
58H 51H	mmH	Chorus type mm: 00H-05H (00H = Chorus1, 01H = Chorus2, 02H = Chorus3, 03H = Chorus4, 04H = FB Chorus, 05H = Flanger) * Sets the chorus settings regardless of the channel on which it's received.
58H 52H	mmH	Chorus rate mm: 00H-7FH (0 - 127) * Sets the chorus settings regardless of the channel on which it's received.
58H 53H	mmH	Chorus depth mm: 00H-7FH (0 - 127) * Sets the chorus settings regardless of the channel on which it's received.
58H 54H	mmH	Chorus feedback mm: 00H-7FH (0 - 127) * Sets the chorus settings regardless of the channel on which it's received.
58H 55H	mmH	Chorus send to reverb mm: 00H-7FH (0 - 127) * Sets the chorus settings regardless of the channel on which it's received.
58H 70H	mmH	Master volume mm: 00H-7FH (zero-maximum) * Sets the master volume regardless of the channel on which it's received.
58H 71H	mmH llH	Master tuning mm, ll: 00 00H-40 00H-7F 7FH (-100 - 0 - +99.99 cent) * Sets the master tuning regardless of the channel on which it's received.
58H 72H	mmH	Master key shift mm: 28H-40H-58H (-24 - 0 - +24) * Sets the master key shift regardless of the channel on which it's received.
58H 7FH	mmH	System reset mm: ignore * Resets the synth to the initial state regardless of the channel on which it's received.
18H rrH	mmH	Pitch coarse of rhythm instrument (relative change) rr: key number of rhythm instrument (21 - 108) mm: 10H - 40H - 70H (-48 - 0 - +48)
19H rrH	mmH	Pitch fine of rhythm instrument (relative change) rr: key number of rhythm instrument(21 - 108) mm: 0EH-40H-72H (-50 - 0 - 50)
1AH rrH	mmH	Rhythm instrument level(relative change) rr: key number of rhythm instrument mm: 00H-7FH (0 - 200 percent)
1CH rrH	mmH	Panpot of rhythm instrument (absolute change) rr: key number of rhythm instrument mm: 00H-40H-7FH (left-center-right)
1DH rrH	mmH	Reverb send level of rhythm instrument (absolute change) rr: key number of rhythm instrument mm: 00H-7FH (zero-maximum)

1EH rrH	mmH	Chorus send level of drum instrument (absolute change) rr: key number of drum instrument mm: 00H-7FH (zero-maximum)
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* Parameters marked "relative change" will change relative to the preset value. Depending on the sound or the pitch range, this may have no effect.

* Parameters marked "absolute change" will be set to the absolute value of the parameter, regardless of the preset value.

> RPN MSB/LSB (Controller number 100, 101)

Status	2nd byte	3rd byte
BnH	65H	mmH
BnH	64H	llH

n = MIDI channel number : 0H-FH (ch.1-ch.16)

mm = upper byte of parameter number specified by RPN

ll = lower byte of parameter number specified by RPN

****RPN****

The RPN (Registered Parameter Number) messages are expanded control changes, and each function of an RPN is described by the MIDI Standard.

To use these messages, you must first use RPN MSB and RPN LSB messages to specify the parameter to be controlled, and then use Data Entry messages to specify the value of the specified parameter. Once an RPN parameter has been specified, all Data Entry messages received on that channel will modify the value of that parameter. To prevent accidents, it is recommended that you set RPN Null (RPN Number = 7FH/7FH) when you have finished setting the value of the desired parameter. Refer to Section "Examples of actual MIDI messages" <Example 4>

On the Hyper Canvas, RPN can be used to modify the following parameters.

RPN MSB LSB	Data entry MSB LSB	Explanation
00H 00H	mmH ---	Pitch Bend Sensitivity mm: 00H-18H (0-24 semitones), Initial Value = 02H (2 semitones) ll: ignored (processed as 00H) specify up to 2 octaves in semitone steps
00H 01H	mmH llH	Master Fine Tuning mm, ll: 00 00H - 40 00H - 7F 7FH (-100 - 0 - +99.99 cents), Initial Value = 40 00H (0 cent) Refer to Supplementary material, "About tuning".
00H 02H	mmH ---	Master Coarse Tuning mm: 30H-40H-70H (-48 - 0 - +48 semitones), Initial Value = 40H (0 semitone) ll: ignored (processed as 00H)
00H 05H	mmH llH	Modulation Depth Range mm, ll: 00 00H - 06 00H (0.0 - 600.0 cent) 00H-7FH (0 - 100 cents) 100/128 Cent/Value
7FH 7FH	--- ---	RPN null Set condition where RPN and NRPN are unspecified. The data entry messages after set RPN null will be ignored. (No Data entry messages are required after RPN null). Settings already made will not change. mm, ll: ignored

<Program Change>

Status	2nd byte
CnH	ppH

n = MIDI channel number : 0H-FH (ch.1-ch.16)

pp = Program number : 00H-7FH (prog.1-prog.128)

<Channel Pressure>

Status	2nd byte
DnH	vvH

n = MIDI channel number : 0H-FH (ch.1-ch.16)

vv = Channel Pressure : 00H-7FH (0-127)

* The specifics of the effect are determined by means of universal exclusive messages. In the default state, no effect is obtained.

<Pitch Bend Change>

Status	2nd byte	3rd byte
EnH	llH	mmH

n = MIDI channel number : 0H-FH (ch.1-ch.16)

mm, ll = Pitch Bend value : 00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191)

* The depth of pitch bend change is determined by the pitch bend sensitivity of the RPN.

Channel Mode Messages**<All Sounds Off (Controller number 120)>**

Status	2nd byte	3rd byte
BnH	78H	00H

n = MIDI channel number : 0H-FH (ch.1-ch.16)

* When this message is received, all currently-sounding notes on the corresponding channel will be turned off immediately.

<Reset All Controllers (Controller number 121)>

Status	2nd byte	3rd byte
BnH	79H	00H

n = MIDI channel number : 0H-FH (ch.1-ch.16)

* When this message is received, the following controllers will be set to their reset values.

Controller	Reset value
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Pitch Bend Change	0 (center)
Channel Pressure	0 (off)
Modulation	0 (off)
Expression	127 (max)
Hold 1	0 (off)
Portamento	0 (off)
Sostenuto	0 (off)
Soft	0 (off)
RPN	unset; previously set data will not change
NRPN	unset; previously set data will not change

<All Notes Off (Controller number 123)>

Status	2nd byte	3rd byte
BnH	7BH	00H

n = MIDI channel number : 0H-FH (ch.1-ch.16)

* When All Notes Off is received, all notes on the corresponding channel will be turned off. However if Hold 1 or Sostenuto is ON, the sound will be continued until these are turned off.

<OMNI OFF (Controller number 124)>

Status	2nd byte	3rd byte
BnH	7CH	00H

n = MIDI channel number : 0H-FH (ch.1-ch.16)

* The same processing will be carried out as when All Notes Off is received.

<OMNI ON (Controller number 125)>

Status	2nd byte	3rd byte
BnH	7DH	00H

n = MIDI channel number : 0H-FH (ch.1-ch.16)

* OMNI ON is only recognized as "All notes off"; the Mode doesn't change (OMNI OFF remains).

<MONO (Controller number 126)>

Status	2nd byte	3rd byte
BnH	7EH	mmH

n = MIDI channel number : 0H-FH (ch.1-ch.16)

mm = mono number : 00H-10H (0-16)

* The same processing will be carried out as when All Sounds Off and All Notes Off is received, and the corresponding channel will be set to Mode 4 (M = 1) regardless of the value of "mono number."

<POLY (Controller number 127)>

Status	2nd byte	3rd byte
BnH	7FH	00H

n = MIDI channel number : 0H-FH (ch.1-ch.16)

* The same processing will be carried out as when All Sounds Off and All Notes Off is received, and the corresponding channel will be set to Mode 3.

System Exclusive Message

Status	Data byte	Status
F0H	iiH, ddH,, eeH	F7H

F0H : System Exclusive Message status

ii = ID number : an ID number (manufacturer ID) to indicate the manufacturer whose Exclusive message this is. Roland's manufacturer ID is 41H.

ID numbers 7EH and 7FH are extensions of the MIDI standard; Universal Non-realtime Messages (7EH) and Universal Realtime Messages (7FH).

dd,....,ee = data : 00H-7FH (0-127)

F7H : EOX (End Of Exclusive)

The System Exclusive Messages received by the Hyper Canvas are; messages related to mode settings, Universal Realtime System Exclusive messages and Universal Non-realtime System Exclusive messages.

[Note] Reception of system exclusive messages is possible only for DXi.

<System exclusive messages related to mode settings>

> GM1 System On

This is a command message that resets the internal settings of the unit to the General MIDI System Level-1 initial state. After receiving this message Hyper Canvas, will automatically be set to the proper condition for correctly playing a General MIDI score.

Status	Data byte	Status
F0H	7EH, 7FH, 09H, 01H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (General MIDI Message)
01H	Sub ID#2 (General MIDI 1 On)

F7H	EOX (End Of Exclusive)
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* There must be an interval of at least 50 ms between this message and the next message.

> GM2 System On

This is a command message that resets the internal settings of the unit to the General MIDI System Level-2 initial state. After receiving this message Hyper Canvas, will automatically be set to the proper condition for correctly playing a General MIDI score.

Status	Data byte	Status
F0H	7EH, 7FH, 09H, 03H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (General MIDI Message)
03H	Sub ID#2 (General MIDI 2 On)
F7H	EOX (End Of Exclusive)

* There must be an interval of at least 50 ms between this message and the next message.

> Scale/Octave Tuning Adjust

Status	Data byte	Status
F0H	7EH, 7FH, 08H, 08H, ffH, ggH, hhH, ssH,...	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (universal non-realtime message)
7FH	Device ID (Broadcast)
08H	Sub ID#1 (MIDI Tuning Standard)
08H	Sub ID#2 (scale/octave tuning 1-byte form)
ffH	Channel/Option byte1 bits 0 to 1 = channel 15 to 16 bit 2 to 6 = Undefined
ggH	Channel byte2 bits 0 to 6 = channel 8 to 14
hhH	Channel byte3 bits 0 to 6 = channel 1 to 7
ssH	12 byte tuning offset of 12 semitones from C to B 00H = -64 [cents] 40H = 0 [cents] (equal temperament) 7FH = +63 [cents]

F7H	EOX (End Of Exclusive)
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<Universal Realtime System Exclusive Messages>

> Master volume

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 01H, llH, mmH	F7H
Byte	Explanation	
F0H	Exclusive status	
7FH	ID number (universal realtime message)	
7FH	Device ID (Broadcast)	
04H	Sub ID#1 (Device Control messages)	
01H	Sub ID#2 (Master Volume)	
llH	Master volume lower byte	
mmH	Master volume upper byte	
F7H	EOX (End Of Exclusive)	

* The lower byte (llH) of Master Volume will be handled as 00H.

> Master Fine Tuning

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 03H, llH, mmH	F7H
Byte	Explanation	
F0H	Exclusive status	
7FH	ID number (universal realtime message)	
7FH	Device ID (Broadcast)	
04H	Sub ID#1 (Device Control messages)	
03H	Sub ID#2 (Master Fine Tuning)	
llH	Master Fine Tuning LSB	
mmH	Master Fine Tuning MSB	
F7H	EOX (End Of Exclusive)	

* mm, ll : 00 00H - 40 00H - 7F 7FH (-100 - 0 - +99.9 [cents])

> Master Coarse Tuning

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 04H, llH, mmH	F7H
Byte	Explanation	
F0H	Exclusive status	
7FH	ID number (universal realtime message)	
7FH	Device ID (Broadcast)	

04H	Sub ID#1 (Device Control messages)
04H	Sub ID#2 (Master Coarse Tuning)
llH	Master Coarse Tuning LSB
mmH	Master Coarse Tuning MSB
F7H	EOX (End Of Exclusive)

* llH : ignored (processed as 00H)

* mmH : 28H - 40H - 58H (-24 - 0 - +24 [semitones])

> Reverb Parameters

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 05H, 01H, 01H, 01H, 01H, 01H, ppH, vvH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control messages)
05H	Sub ID#2 (Global Parameter Control)
01H	Slot path length
01H	Parameter ID width
01H	Value width
01H	Slot path MSB
01H	Slot path LSB (Effect 01 01:Reverb)
ppH	Parameter to be controlled.
vvH	Value for the parameter.
F7H	EOX (End Of Exclusive)

pp=0 Reverb Type

- vv = 00H : Small Room (Room1)
- vv = 01H : Medium Room (Room2)
- vv = 02H : Large Room (Room3)
- vv = 03H : Medium Hall (Hall1)
- vv = 04H : Large Hall (Hall2)
- vv = 08H : Plate (Plate)

pp=1 Reverb Time

- vv = 00H - 7FH : 0 - 127

> Chorus Parameters

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 05H, 01H, 01H, 01H, 01H, 02H, ppH, vvH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control messages)
05H	Sub ID#2 (Global Parameter Control)
01H	Slot path length
01H	Parameter width
01H	Value width
01H	Slot path MSB
02H	Slot path LSB (Effect 01 02:Chorus)
ppH	Parameter to be controlled.
vvH	Value for the parameter.
F7H	EOX (End Of Exclusive)

pp=0 Chorus Type
 vv = 00H : Chorus1
 vv = 01H : Chorus2
 vv = 02H : Chorus3
 vv = 03H : Chorus4
 vv = 04H : FB Chorus
 vv = 05H : Flanger

pp=1 Mod Rate
 vv = 00H - 7FH : 0 - 127

pp=2 Mod Depth
 vv = 00H - 7FH : 0 - 127

pp=3 Feedback
 vv = 00H - 7FH : 0 - 127

pp=4 Send To Reverb
 vv = 00H - 7FH : 0 - 127

> Channel Pressure

Status	Data byte	Status
F0H	7FH, 7FH, 09H, 01H, 0nH, ppH, rrH	F7H

Byte	Explanation

F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (Controller Destination Setting messages)
01H	Sub ID#2 (Channel Pressure)
0nH	MIDI Channel (00-0F)
ppH	Controlled parameter
rrH	Controlled range
F7H	EOX (End Of Exclusive)

pp=0 Pitch Control
rr = 28H - 58H : -24 - +24 [semitones]

pp=1 Filter Cutoff Control
rr = 00H - 7FH : -9600 - +9450 [cents]

pp=2 Amplitude Control
rr = 00H - 7FH : 0 - 200%

pp=3 LFO Pitch Depth
rr = 00H - 7FH : 0 - 600 [cents]

pp=4 LFO Filter Depth
rr = 00H - 7FH : 0 - 2400 [cents]

pp=5 LFO Amplitude Depth
rr = 00H - 7FH : 0 - 100%

> Controller

Status	Data byte	Status
F0H	7FH, 7FH, 09H, 03H, 0nH, ccH, ppH, rrH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (Controller Destination Setting messages)
03H	Sub ID#2 (Control Change)
0nH	MIDI Channel (00-0F)
ccH	Controller number (01-1FH, 40-5FH)
ppH	Controlled parameter
rrH	Controlled range
F7H	EOX (End Of Exclusive)

pp=0 Pitch Control
rr = 28H - 58H : -24 - +24 [semitones]

pp=1 Filter Cutoff Control
rr = 00H - 7FH : -9600 - +9450 [cents]

pp=2 Amplitude Control
rr = 00H - 7FH : 0 - 200%

pp=3 LFO Pitch Depth
rr = 00H - 7FH : 0 - 600 [cents]

pp=4 LFO Filter Depth
rr = 00H - 7FH : 0 - 2400 [cents]

pp=5 LFO Amplitude Depth
rr = 00H - 7FH : 0 - 100%

> Key-Based Instrument Controllers

Status	Data byte	Status
F0H	7FH, 7FH, 0AH, 01H, 0nH, kkH, nnH, vvH	F7H
Byte	Explanation	
F0H	Exclusive status	
7FH	ID number (universal realtime message)	
7FH	Device ID (Broadcast)	
0AH	Sub ID#1 (Key-Based Instrument Control messages)	
01H	Sub ID#2 (Controller)	
0nH	MIDI Channel (00-0F)	
kkH	Key Number	
nnH	Control Number	
vvH	Value	
F7H	EOX (End Of Exclusive)	

nn=07H Level
vv = 00H - 7FH : 00 - 200% (Relative)

nn=0AH Pan
vv = 00H - 7FH : Left - Right (Absolute)

nn=5BH Reverb Send
vv = 00H - 7FH : 0 - 127 (Absolute)

nn=5DH Chorus Send
rr = 00H - 7FH : 0 - 127 (Absolute)

* This parameter affects drum instruments only.

Supplementary material

<Decimal and Hexadecimal table>

In MIDI documentation, data values and addresses/sizes of exclusive messages etc. are expressed as hexadecimal values for each 7 bits. The following table shows how these correspond to decimal numbers.

Dec.	Hex.	Dec.	Hex.	Dec.	Hex.	Dec.	Hex.
0	00H	32	20H	64	40H	96	60H
1	01H	33	21H	65	41H	97	61H
2	02H	34	22H	66	42H	98	62H
3	03H	35	23H	67	43H	99	63H
4	04H	36	24H	68	44H	100	64H
5	05H	37	25H	69	45H	101	65H
6	06H	38	26H	70	46H	102	66H
7	07H	39	27H	71	47H	103	67H
8	08H	40	28H	72	48H	104	68H
9	09H	41	29H	73	49H	105	69H
10	0AH	42	2AH	74	4AH	106	6AH
11	0BH	43	2BH	75	4BH	107	6BH
12	0CH	44	2CH	76	4CH	108	6CH
13	0DH	45	2DH	77	4DH	109	6DH
14	0EH	46	2EH	78	4EH	110	6EH
15	0FH	47	2FH	79	4FH	111	6FH
16	10H	48	30H	80	50H	112	70H
17	11H	49	31H	81	51H	113	71H
18	12H	50	32H	82	52H	114	72H
19	13H	51	33H	83	53H	115	73H
20	14H	52	34H	84	54H	116	74H
21	15H	53	35H	85	55H	117	75H
22	16H	54	36H	86	56H	118	76H
23	17H	55	37H	87	57H	119	77H
24	18H	56	38H	88	58H	120	78H
25	19H	57	39H	89	59H	121	79H
26	1AH	58	3AH	90	5AH	122	7AH
27	1BH	59	3BH	91	5BH	123	7BH
28	1CH	60	3CH	92	5CH	124	7CH
29	1DH	61	3DH	93	5DH	125	7DH
30	1EH	62	3EH	94	5EH	126	7EH
31	1FH	63	3FH	95	5FH	127	7FH

* Decimal values such as MIDI channel, bank select, and program change are listed as one (1) greater than the values given in the above table.

* A 7-bit byte can express data in the range of 128 steps. For data where greater precision is required, we must use two or more bytes. For example, two hexadecimal numbers aa bbH expressing two 7-bit bytes would indicate a value of $aa \times 128 + bb$.

* In the case of values which have a (+/-) sign, 00H = -64, 40H = +/-0, and 7FH = +63, so that the decimal expression would be 64 less than the value given in the above chart. In the case of two types, 00 00H = -8192, 40 00H = +/-0, and 7F 7FH = +8191. For example if aa bbH were expressed as decimal, this would be $aa \text{ bbH} - 40 \text{ 00H} = aa \times 128 + bb - 64 \times 128$.

<Example 1> What is the decimal expression of 5AH ?

From the preceding table, 5AH = 90

<Example 2> What is the decimal expression of the value 12 34H given as hexadecimal for each 7 bits?

From the preceding table, since 12H = 18 and 34H = 52

$18 \times 128 + 52 = 2356$

<Examples of actual MIDI messages>

<Example 1> 92 3E 5F

9n is the Note-on status, and n is the MIDI channel number. Since 2H = 2, 3EH = 62, and 5FH = 95, this is a Note-on message with MIDI CH = 3, note number 62 (note name is D4), and velocity 95.

<Example 2> CE 49

CnH is the Program Change status, and n is the MIDI channel number. Since EH = 14 and 49H = 73, this is a Program Change message with MIDI CH = 15, program number 74 (Flute).

<Example 3> EA 00 28

EnH is the Pitch Bend Change status, and n is the MIDI channel number. The 2nd byte (00H = 0) is the LSB and the 3rd byte (28H = 40) is the MSB, but Pitch Bend Value is a signed number in which 40 00H (= $64 \times 128 + 0 = 8192$) is 0, so this Pitch Bend Value is $28 \text{ 00H} - 40 \text{ 00H} = 40 \times 128 + 0 - (64 \times 128 + 0) = 5120 - 8192 = -3072$

If the Pitch Bend Sensitivity is set to 2 semitones, -8192 (00 00H) will cause the pitch to change -200 cents, so in this case $-200 \times (-3072) / (-8192) = -75$ cents of Pitch Bend is being applied to MIDI channel 11.

<Example 4> B3 64 00 65 00 06 0C 26 00 64 7F 65 7F

BnH is the Control Change status, and n is the MIDI channel number. For Control Changes, the 2nd byte is the control number, and the 3rd byte is the value. In a case in which two or more messages consecutive messages have the same status, MIDI has a provision called "running status" which allows the status byte of the second and following messages to be omitted. Thus, the above messages have the following meaning.

B3 64 00	MIDI ch.4, lower byte of RPN parameter number: 00H
(B3)65 00	(MIDI ch.4) upper byte of RPN parameter number: 00H
(B3)06 0C	(MIDI ch.4) upper byte of parameter value: 0CH
(B3)26 00	(MIDI ch.4) lower byte of parameter value: 00H
(B3)64 7F	(MIDI ch.4) lower byte of RPN parameter number: 7FH
(B3)65 7F	(MIDI ch.4) upper byte of RPN parameter number: 7FH

In other words, the above messages specify a value of 0C 00H for RPN parameter number 00 00H on MIDI channel 4, and then set the RPN parameter number to 7F 7FH.

RPN parameter number 00 00H is Pitch Bend Sensitivity, and the MSB of the value indicates semitone units, so a value of 0CH = 12 sets the maximum pitch bend range to +/-12 semitones (1 octave). (The LSB of Pitch Bend Sensitivity is ignored, but the LSB should be transmitted anyway (with a value of 0) so that operation will be correct on any device.)

Once the parameter number has been specified for RPN or NRPN, all Data Entry messages transmitted on that same channel will be valid, so after the desired value has been transmitted, it is a good idea to set the parameter number to 7F 7FH to prevent accidents. This is

the reason for the (B3) 64 7F (B3) 65 7F at the end.

It is not desirable for performance data (such as Standard MIDI File data) to contain many events with running status as given in <Example 4>. This is because if playback is halted during the song and then rewound or fast-forwarded, the sequencer may not be able to transmit the correct status, and the sound source will then misinterpret the data. Take care to give each event its own status.

It is also necessary that the RPN or NRPN parameter number setting and the value setting be done in the proper order. On some sequencers, events occurring in the same (or consecutive) clock may be transmitted in an order different than the order in which they were received. For this reason it is a good idea to slightly skew the time of each event (about 1 tick for TPQN = 96, and about 5 ticks for TPQN = 480).

* TPQN: Ticks Per Quarter Note

<About tuning>

In MIDI, individual Parts are tuned by sending RPN #1 (Master Fine Tuning) to the appropriate MIDI channel.

In MIDI, an entire device is tuned by either sending RPN #1 to all MIDI channels being used, or by sending a System Exclusive MASTER FINE TUNE.

RPN #1 allows tuning to be specified in steps of approximately 0.012 cents (to be precise, 100/8192 cent).

The values of RPN #1 and System Exclusive MASTER FINE TUNE are added together to determine the actual pitch sounded by each Part.

Frequently used tuning values are given in the following table for your reference. Values are in hexadecimal (decimal in parentheses).

Hz in A4	cent	RPN #1
445.0	+19.56	4C 43 (+1603)
444.0	+15.67	4A 03 (+1283)
443.0	+11.76	47 44 (+964)
442.0	+ 7.85	45 03 (+643)
441.0	+ 3.93	42 42 (+322)
440.0	0.00	40 00 (0)
439.0	- 3.94	3D 3D (-323)
438.0	- 7.89	3A 7A (-646)

<Example> Set the tuning of MIDI channel 3 to A4 = 442.0 Hz

Send RPN#1 to MIDI channel 3. From the above table, the value is 45 03H.

B2 64 00	MIDI ch.3, lower byte of RPN parameter number: 00H
(B2)65 01	(MIDI ch.3) upper byte of RPN parameter number: 01H
(B2)06 45	(MIDI ch.3) upper byte of parameter value: 45H
(B2)26 03	(MIDI ch.3) lower byte of parameter value: 03H
(B2)64 7F	(MIDI ch.3) lower byte of RPN parameter number: 7FH
(B2)65 7F	(MIDI ch.3) upper byte of RPN parameter number: 7FH

GM2 Instrument List

PC#	CC32	Instrument Name
1	0	Piano 1
	1	Piano 1 st.
	2	Piano 1d
2	0	Piano 2
	1	Piano 2 st.
3	0	Piano 3
	1	Piano 3 w
4	0	Honky-tonk
	1	Honky-tonk w
5	0	E.Piano 1
	1	Detuned EP1
	2	E.Piano 1 v
	3	60's E.Piano
6	0	E.Piano 2
	1	Detuned EP2
	2	E.Piano 2v
	3	EP Legend
	4	EP Phase
7	0	Harpsichord
	1	Coupl hps.
	2	Harpsi.w
	3	Harpsi.o
8	0	Clav.
	1	Pulse Clav
9	0	Celesta
10	0	Glockenspiel
11	0	Music Box
	0	Vibraphone

12	1	Vibraphone w
13	0	Marimba
	1	Marimba w
14	0	Xylophone
15	0	Tubular-bell
	1	Church Bell
	2	Carillon
16	0	Santur
17	0	Organ 1
	1	Detuned Or.1
	2	Organ 60
	3	Organ 4
18	0	Organ 2
	1	DetuneOr.2
	2	Organ 5
19	0	Organ 3
20	0	Church 1
	1	Church 2
	2	Church 3
21	0	Reed Organ
	1	Puff Org.
22	0	Accordion F
	1	Accordion I
23	0	Harmonica
24	0	Bandneon
25	0	Nylon Gt.
	1	Ukulele
	2	Nylon o
	3	Nylon Gt.2
26	0	Steel-str.Gt
	1	12-Str.Gt
	2	Mandolin

	3	Steel+Body
27	0	Jazz Gt.
	1	Pedal Steel
28	0	Clean Gt
	1	Clean Harf
	2	Mid Tone Gt.
29	0	Muted Gt.
	1	Funk Gt.
	2	Funk Gt. 2
	3	Jazz Man
30	0	Overdrive Gt
	1	Gt.Pinch
31	0	DistortionGt
	1	Feedback Gt.
	2	DistRythm Gt
32	0	Gt.Harmonics
	1	Gt.Feedback
33	0	Acoustic Bs.
34	0	Fingered Bs.
	1	FingerJ.Bass
35	0	Picked Bass
36	0	Fretless Bs.
37	0	Slap Bass 1
38	0	Slap Bass 2
39	0	Synth Bass 1
	1	SynthBass101
	2	Acid Bass
	3	Clavi Bass
	4	Hammer
40	0	Synth Bass 2
	1	Beef FM Bs
	2	Rubber Bass

	3	Attack Pulse
41	0	Violin
	1	Slow Violin
42	0	Viola
43	0	Cello
44	0	Contrabass
45	0	Tremolo Str
46	0	PizzicatoStr
47	0	Harp
	1	Yangqin
48	0	Timpani
49	0	Strings
	1	Orchestra
	2	60'Strings
50	0	Slow Strings
51	0	Syn.Strings1
	1	Syn.Strings3
52	0	Syn.Strings2
53	0	Choir Aahs
	1	Choir Aahs 2
54	0	Voice Oohs
	1	Hamming
55	0	SynVox
	1	Ana Voice
56	0	Orchestrahit
	1	Bass Hit
	2	6th Hit
	3	Euro Hit
57	0	Trumpet
	1	Dark Trumpet
58	0	Trombone
	1	Trombone 2

	2	Brite Bone
59	0	Tuba
60	0	Mt Trumpet
	1	Mt Trumpet2
61	0	French Horns
	1	Fr.Horn
62	0	Brass 1
	1	Brass 2
63	0	SynthBrass 1
	1	SynthBrass 3
	2	Oct.SynBrass
	3	Jump Brass
64	0	SynthBrass 2
	1	SynthBrass 4
	2	Velo Brass
65	0	Soprano Sax
66	0	Alto Sax
67	0	Tenor Sax
68	0	Bariton Sax
69	0	Oboe
70	0	EnglishHorn
71	0	Bassoon
72	0	Clarinet
73	0	Piccolo
74	0	Flute
75	0	Recorder
76	0	Pan Flute
77	0	Bottle Blow
78	0	Shakuhachi
79	0	Whistle
80	0	Ocarina
	0	Square Wave

81	1	Square
	2	Sine Wave
82	0	Saw Wave
	1	Saw
	2	Doctor Solo
	3	Natural Lead
	4	SequencedSaw
83	0	Syn.Calliope
84	0	Chiffer Lead
85	0	Charang
	1	Wire Lead
86	0	Solo Vox
87	0	5th SawWave
88	0	Bass & Lead
	1	DelayedLead
89	0	Fantasia
90	0	Warm Pad
	1	Sine Pad
91	0	Polysynth
92	0	SpaceVoice
	1	Itopia
93	0	BowedGlass
94	0	Metal Pad
95	0	Halo Pad
96	0	Sweep Pad
97	0	Ice Rain
98	0	Soundtrack
99	0	Crystal
	1	Syn Mallet
100	0	Atmosphere
101	0	Brightness
102	0	Goblin

103	0	Echo Drops
	1	Echo Bell
	2	Echo Pan
104	0	Star Theme
105	0	Sitar
	1	Sitar 2
106	0	Banjo
107	0	Shamisen
108	0	Koto
	1	Taisho Koto
109	0	Kalimba
110	0	Bag Pipe
111	0	Fiddle
112	0	Shanai
113	0	Tinkle Bell
114	0	Agogo
115	0	Steel Drums
116	0	Woodblock
	1	Castanet
117	0	Taiko
	1	Concert BD
118	0	Melo. Tom 1
	1	Melo. Tom 2
119	0	Synth Drum
	1	808 tom
	2	Elec Perc
120	0	Reverse Cym.
121	0	GtFret Noise
	1	Gt.Cut Noise
	2	Slap_St.Bass
122	0	Breath Noise
	1	Fl.Key Click

123	0	Seashore
	1	Rain
	2	Thunder
	3	Wind
	4	Stream
	5	Bubble
124	0	Bird Tweet
	1	Dog
	2	Horse Gallop
	3	Bird Tweet 2
125	0	Telephone
	1	Telephone 2
	2	Door Creak
	3	Door
	4	Scratch
	5	Wind Chimes
126	0	Helicopter
	1	Car-Engine
	2	Car-Stop
	3	Car-Pass
	4	Car-Crash
	5	Siren
	6	Train
	7	Jetplane
	8	Starship
127	0	Applause
	1	Laughing
	2	Screaming
	3	Punch
	4	Heart Beat
	5	Footsteps
	0	Gunshot

128	1	Machine Gun
	2	Lasergun
	3	Explosion

GM2 Rhythm Tone List

PC#	Instrument Name
1	Standard Set
9	Room Set
17	Power Set
25	Electric Set
26	Analog Set
33	Jazz Set
41	Brush Set
49	OrchestraSet
57	SFX Set

Standard Set

Note#	Instrument Name
Eb1[27]	High Q
E 1[28]	Slap
F 1[29]	Scratch Push
F#1[30]	Scratch Pull
G 1[31]	Sticks
G#1[32]	Square Click

A 1[33]	Metron Click
Bb1[34]	Metron Bell
B 1[35]	Kick Drum 2
C 2[36]	Kick Drum 1
C#2[37]	Side Stick
D 2[38]	Aco.Snare
Eb2[39]	Hand Clap
E 2[40]	Elec.Snare
F 2[41]	Low Tom 2
F#2[42]	ClosedHi-hat
G 2[43]	Low Tom 1
G#2[44]	Pedal Hi-hat
A 2[45]	Mid Tom 2
Bb2[46]	Open Hi-hat
B 2[47]	Mid Tom 1
C 3[48]	Hi Tom 2
C#3[49]	CrashCymbal1
D 3[50]	Hi Tom 1
Eb3[51]	Ride Cymbal1
E 3[52]	China Cymbal
F 3[53]	Ride Bell
F#3[54]	Tambourine
G 3[55]	SplashCymbal
G#3[56]	Cowbell
A 3[57]	CrashCymbal2
Bb3[58]	Vibra-slap
B 3[59]	Ride Cymbal2
C 4[60]	High Bongo
C#4[61]	Low Bongo
D 4[62]	MuteHi Conga
Eb4[63]	OpenHi Conga
E 4[64]	Low Conga

F 4[65]	High Timbale
F#4[66]	Low Timbale
G 4[67]	High Agogo
G#4[68]	Low Agogo
A 4[69]	Cabasa
Bb4[70]	Maracas
B 4[71]	ShortWhistle
C 5[72]	Long Whistle
C#5[73]	Short Guiro
D 5[74]	Long Guiro
Eb5[75]	Claves
E 5[76]	Hi WoodBlock
F 5[77]	LowWoodBlock
F#5[78]	Mute Cuica
G 5[79]	Open Cuica
G#5[80]	MuteTriangle
A 5[81]	OpenTriangle
Bb5[82]	Shaker
B 5[83]	Jingle Bell
C 6[84]	Bell Tree
C#6[85]	Castanets
D 6[86]	Mute Surdo
Eb6[87]	Open Surdo

Room Set

Note#	Instrument Name
Eb1[27]	High Q
E 1[28]	Slap
F 1[29]	Scratch Push

F#1[30]	Scratch Pull
G 1[31]	Sticks
G#1[32]	Square Click
A 1[33]	Metron Click
Bb1[34]	Metron Bell
B 1[35]	Room Kick 2
C 2[36]	Room Kick 1
C#2[37]	Side Stick
D 2[38]	Room Snare
Eb2[39]	Hand Clap
E 2[40]	Elec.Snare
F 2[41]	Room LowTom2
F#2[42]	ClosedHi-hat
G 2[43]	Room LowTom1
G#2[44]	Pedal Hi-hat
A 2[45]	Room MidTom2
Bb2[46]	Open Hi-hat
B 2[47]	Room MidTom1
C 3[48]	Room Hi Tom2
C#3[49]	CrashCymbal1
D 3[50]	Room Hi Tom1
Eb3[51]	Ride Cymbal1
E 3[52]	China Cymbal
F 3[53]	Ride Bell
F#3[54]	Tambourine
G 3[55]	SplashCymbal
G#3[56]	Cowbell
A 3[57]	CrashCymbal2
Bb3[58]	Vibra-slap
B 3[59]	Ride Cymbal2
C 4[60]	High Bongo
C#4[61]	Low Bongo

D 4[62]	MuteHi Conga
Eb4[63]	OpenHi Conga
E 4[64]	Low Conga
F 4[65]	High Timbale
F#4[66]	Low Timbale
G 4[67]	High Agogo
G#4[68]	Low Agogo
A 4[69]	Cabasa
Bb4[70]	Maracas
B 4[71]	ShortWhistle
C 5[72]	Long Whistle
C#5[73]	Short Guiro
D 5[74]	Long Guiro
Eb5[75]	Claves
E 5[76]	Hi WoodBlock
F 5[77]	LowWoodBlock
F#5[78]	Mute Cuica
G 5[79]	Open Cuica
G#5[80]	MuteTriangle
A 5[81]	OpenTriangle
Bb5[82]	Shaker
B 5[83]	Jingle Bell
C 6[84]	Bell Tree
C#6[85]	Castanets
D 6[86]	Mute Surdo
Eb6[87]	Open Surdo

Power Set

Note#	Instrument Name

Eb1[27]	High Q
E 1[28]	Slap
F 1[29]	Scratch Push
F#1[30]	Scratch Pull
G 1[31]	Sticks
G#1[32]	Square Click
A 1[33]	Metron Click
Bb1[34]	Metron Bell
B 1[35]	Kick Drum 2
C 2[36]	Power Kick
C#2[37]	Side Stick
D 2[38]	Power Snare
Eb2[39]	Hand Clap
E 2[40]	Elec.Snare
F 2[41]	PowerLowTom2
F#2[42]	ClosedHi-hat
G 2[43]	PowerLowTom1
G#2[44]	Pedal Hi-hat
A 2[45]	PowerMidTom2
Bb2[46]	Open Hi-hat
B 2[47]	PowerMidTom1
C 3[48]	Power HiTom2
C#3[49]	CrashCymbal1
D 3[50]	Power HiTom1
Eb3[51]	Ride Cymbal1
E 3[52]	China Cymbal
F 3[53]	Ride Bell
F#3[54]	Tambourine
G 3[55]	SplashCymbal
G#3[56]	Cowbell
A 3[57]	CrashCymbal2
Bb3[58]	Vibra-slap

B 3[59]	Ride Cymbal2
C 4[60]	High Bongo
C#4[61]	Low Bongo
D 4[62]	MuteHi Conga
Eb4[63]	OpenHi Conga
E 4[64]	Low Conga
F 4[65]	High Timbale
F#4[66]	Low Timbale
G 4[67]	High Agogo
G#4[68]	Low Agogo
A 4[69]	Cabasa
Bb4[70]	Maracas
B 4[71]	ShortWhistle
C 5[72]	Long Whistle
C#5[73]	Short Guiro
D 5[74]	Long Guiro
Eb5[75]	Claves
E 5[76]	Hi WoodBlock
F 5[77]	LowWoodBlock
F#5[78]	Mute Cuica
G 5[79]	Open Cuica
G#5[80]	MuteTriangle
A 5[81]	OpenTriangle
Bb5[82]	Shaker
B 5[83]	Jingle Bell
C 6[84]	Bell Tree
C#6[85]	Castanets
D 6[86]	Mute Surdo
Eb6[87]	Open Surdo

Electric Set

Note#	Instrument Name
Eb1[27]	High Q
E 1[28]	Slap
F 1[29]	Scratch Push
F#1[30]	Scratch Pull
G 1[31]	Sticks
G#1[32]	Square Click
A 1[33]	Metron Click
Bb1[34]	Metron Bell
B 1[35]	Kick Drum 2
C 2[36]	Elec.Kick 1
C#2[37]	Side Stick
D 2[38]	E.SnareDrum1
Eb2[39]	Hand Clap
E 2[40]	E.SnareDrum2
F 2[41]	E.Low Tom 2
F#2[42]	ClosedHi-hat
G 2[43]	E.Low Tom 1
G#2[44]	Pedal Hi-hat
A 2[45]	E.Mid Tom 2
Bb2[46]	Open Hi-hat
B 2[47]	E.Mid Tom 1
C 3[48]	E.Hi Tom 2
C#3[49]	CrashCymbal1
D 3[50]	E.Hi Tom 1
Eb3[51]	Ride Cymbal1
E 3[52]	Reverse Cym.
F 3[53]	Ride Bell
F#3[54]	Tambourine
G 3[55]	SplashCymbal

G#3[56]	Cowbell
A 3[57]	CrashCymbal2
Bb3[58]	Vibra-slap
B 3[59]	Ride Cymbal2
C 4[60]	High Bongo
C#4[61]	Low Bongo
D 4[62]	MuteHi Conga
Eb4[63]	OpenHi Conga
E 4[64]	Low Conga
F 4[65]	High Timbale
F#4[66]	Low Timbale
G 4[67]	High Agogo
G#4[68]	Low Agogo
A 4[69]	Cabasa
Bb4[70]	Maracas
B 4[71]	ShortWhistle
C 5[72]	Long Whistle
C#5[73]	Short Guiro
D 5[74]	Long Guiro
Eb5[75]	Claves
E 5[76]	Hi WoodBlock
F 5[77]	LowWoodBlock
F#5[78]	Mute Cuica
G 5[79]	Open Cuica
G#5[80]	MuteTriangle
A 5[81]	OpenTriangle
Bb5[82]	Shaker
B 5[83]	Jingle Bell
C 6[84]	Bell Tree
C#6[85]	Castanets
D 6[86]	Mute Surdo
Eb6[87]	Open Surdo

Analog Set

Note#	Instrument Name
Eb1[27]	High Q
E 1[28]	Slap
F 1[29]	Scratch Push
F#1[30]	Scratch Pull
G 1[31]	Sticks
G#1[32]	Square Click
A 1[33]	Metron Click
Bb1[34]	Metron Bell
B 1[35]	Kick Drum 2
C 2[36]	Ana.Kick
C#2[37]	Ana.Rim Sho
D 2[38]	Ana.Snare 1
Eb2[39]	Hand Clap
E 2[40]	Elec.Snare
F 2[41]	Ana.Low Tom2
F#2[42]	Closed Hi-ha
G 2[43]	Ana.Low Tom1
G#2[44]	ClosedHi-hat
A 2[45]	Ana.Mid Tom2
Bb2[46]	Closed Hi-ha
B 2[47]	Ana.Mid Tom1
C 3[48]	Ana.Hi Tom2
C#3[49]	Ana.Cymbal
D 3[50]	Ana.Hi Tom1
Eb3[51]	Ride Cymbal1
E 3[52]	China Cymbal

F 3[53]	Ride Bell
F#3[54]	Tambourine
G 3[55]	SplashCymbal
G#3[56]	Ana.Cowbell
A 3[57]	CrashCymbal2
Bb3[58]	Vibra-slap
B 3[59]	Ride Cymbal2
C 4[60]	High Bongo
C#4[61]	Low Bongo
D 4[62]	Ana.Hi Conga
Eb4[63]	Ana.MidConga
E 4[64]	Ana.LowConga
F 4[65]	High Timbale
F#4[66]	Low Timbale
G 4[67]	High Agogo
G#4[68]	Low Agogo
A 4[69]	Cabasa
Bb4[70]	Ana.Maracas
B 4[71]	ShortWhistle
C 5[72]	Long Whistle
C#5[73]	Short Guiro
D 5[74]	Long Guiro
Eb5[75]	Ana.Claves
E 5[76]	Hi WoodBlock
F 5[77]	LowWoodBlock
F#5[78]	Mute Cuica
G 5[79]	Open Cuica
G#5[80]	MuteTriangle
A 5[81]	OpenTriangle
Bb5[82]	Shaker
B 5[83]	Jingle Bell
C 6[84]	Bell Tree

C#6[85]	Castanets
D 6[86]	Mute Surdo
Eb6[87]	Open Surdo

Jazz Set

Note#	Instrument Name
Eb1[27]	High Q
E 1[28]	Slap
F 1[29]	Scratch Push
F#1[30]	Scratch Pull
G 1[31]	Sticks
G#1[32]	Square Click
A 1[33]	Metron Click
Bb1[34]	Metron Bell
B 1[35]	Jazz Kick 2
C 2[36]	Jazz Kick 1
C#2[37]	Side Stick
D 2[38]	Jazz Snare
Eb2[39]	Hand Clap
E 2[40]	Elec.Snare
F 2[41]	Low Tom 2
F#2[42]	ClosedHi-hat
G 2[43]	Low Tom 1
G#2[44]	Pedal Hi-hat
A 2[45]	Mid Tom 2
Bb2[46]	Open Hi-hat
B 2[47]	Mid Tom 1
C 3[48]	Hi Tom 2
C#3[49]	CrashCymbal1

D 3[50]	Hi Tom 1
Eb3[51]	Ride Cymbal1
E 3[52]	China Cymbal
F 3[53]	Ride Bell
F#3[54]	Tambourine
G 3[55]	SplashCymbal
G#3[56]	Cowbell
A 3[57]	CrashCymbal2
Bb3[58]	Vibra-slap
B 3[59]	Ride Cymbal2
C 4[60]	High Bongo
C#4[61]	Low Bongo
D 4[62]	MuteHi Conga
Eb4[63]	OpenHi Conga
E 4[64]	Low Conga
F 4[65]	High Timbale
F#4[66]	Low Timbale
G 4[67]	High Agogo
G#4[68]	Low Agogo
A 4[69]	Cabasa
Bb4[70]	Maracas
B 4[71]	ShortWhistle
C 5[72]	Long Whistle
C#5[73]	Short Guiro
D 5[74]	Long Guiro
Eb5[75]	Claves
E 5[76]	Hi WoodBlock
F 5[77]	LowWoodBlock
F#5[78]	Mute Cuica
G 5[79]	Open Cuica
G#5[80]	MuteTriangle
A 5[81]	OpenTriangle

Bb5[82]	Shaker
B 5[83]	Jingle Bell
C 6[84]	Bell Tree
C#6[85]	Castanets
D 6[86]	Mute Surdo
Eb6[87]	Open Surdo

Brush Set

Note#	Instrument Name
Eb1[27]	High Q
E 1[28]	Slap
F 1[29]	Scratch Push
F#1[30]	Scratch Pull
G 1[31]	Sticks
G#1[32]	Square Click
A 1[33]	Metron Click
Bb1[34]	Metron Bell
B 1[35]	Jazz Kick 2
C 2[36]	Jazz Kick 1
C#2[37]	Side Stick
D 2[38]	Brush Tap
Eb2[39]	Brush Slap
E 2[40]	Brush Swirl
F 2[41]	BrushLowTom2
F#2[42]	ClosedHi-hat
G 2[43]	BrushLowTom1
G#2[44]	Pedal Hi-hat
A 2[45]	BrushMidTom2
Bb2[46]	Open Hi-hat

B 2[47]	BrushMidTom1
C 3[48]	Brush HiTom2
C#3[49]	CrashCymbal1
D 3[50]	Brush HiTom1
Eb3[51]	Ride Cymbal1
E 3[52]	China Cymbal
F 3[53]	Ride Bell
F#3[54]	Tambourine
G 3[55]	SplashCymbal
G#3[56]	Cowbell
A 3[57]	CrashCymbal2
Bb3[58]	Vibra-slap
B 3[59]	Ride Cymbal2
C 4[60]	High Bongo
C#4[61]	Low Bongo
D 4[62]	MuteHi Conga
Eb4[63]	OpenHi Conga
E 4[64]	Low Conga
F 4[65]	High Timbale
F#4[66]	Low Timbale
G 4[67]	High Agogo
G#4[68]	Low Agogo
A 4[69]	Cabasa
Bb4[70]	Maracas
B 4[71]	ShortWhistle
C 5[72]	Long Whistle
C#5[73]	Short Guiro
D 5[74]	Long Guiro
Eb5[75]	Claves
E 5[76]	Hi WoodBlock
F 5[77]	LowWoodBlock
F#5[78]	Mute Cuica

G 5[79]	Open Cuica
G#5[80]	MuteTriangle
A 5[81]	OpenTriangle
Bb5[82]	Shaker
B 5[83]	Jingle Bell
C 6[84]	Bell Tree
C#6[85]	Castanets
D 6[86]	Mute Surdo
Eb6[87]	Open Surdo

OrchestraSet

Note#	Instrument Name
Eb1[27]	ClosedHi-hat
E 1[28]	Pedal Hi-hat
F 1[29]	Open Hi-hat
F#1[30]	Ride Cymbal1
G 1[31]	Sticks
G#1[32]	Square Click
A 1[33]	Metron Click
Bb1[34]	Metron Bell
B 1[35]	Concert BD 2
C 2[36]	Concert BD 1
C#2[37]	Side Stick
D 2[38]	Concert SD
Eb2[39]	Castanets
E 2[40]	Concert SD
F 2[41]	Timpani F
F#2[42]	Timpani F#
G 2[43]	Timpani G

G#2[44]	Timpani G#
A 2[45]	Timpani A
Bb2[46]	Timpani A#
B 2[47]	Timpani B
C 3[48]	Timpani c
C#3[49]	Timpani c#
D 3[50]	Timpani d
Eb3[51]	Timpani d#
E 3[52]	Timpani e
F 3[53]	Timpani f
F#3[54]	Tambourine
G 3[55]	SplashCymbal
G#3[56]	Cowbell
A 3[57]	Concert Cym2
Bb3[58]	Vibra-slap
B 3[59]	Concert Cym1
C 4[60]	High Bongo
C#4[61]	Low Bongo
D 4[62]	MuteHi Conga
Eb4[63]	OpenHi Conga
E 4[64]	Low Conga
F 4[65]	High Timbale
F#4[66]	Low Timbale
G 4[67]	High Agogo
G#4[68]	Low Agogo
A 4[69]	Cabasa
Bb4[70]	Maracas
B 4[71]	ShortWhistle
C 5[72]	Long Whistle
C#5[73]	Short Guiro
D 5[74]	Long Guiro
Eb5[75]	Claves

E 5[76]	Hi WoodBlock
F 5[77]	LowWoodBlock
F#5[78]	Mute Cuica
G 5[79]	Open Cuica
G#5[80]	MuteTriangle
A 5[81]	OpenTriangle
Bb5[82]	Shaker
B 5[83]	Jingle Bell
C 6[84]	Bell Tree
C#6[85]	Castanets
D 6[86]	Mute Surdo
Eb6[87]	Open Surdo
E 6[88]	Applause

SFX Set

Note#	Instrument Name
Eb2[39]	High Q
E 2[40]	Slap
F 2[41]	Scratch Push
F#2[42]	Scratch Pull
G 2[43]	Sticks
G#2[44]	Square Click
A 2[45]	Metron Click
Bb2[46]	Metron Bell
B 2[47]	GtFret Noise
C 3[48]	Cut Noise Up
C#3[49]	Cut Noise Dw
D 3[50]	Slap_St.Bass
Eb3[51]	Fl.Key Click

E 3[52]	Laughing
F 3[53]	Scream
F#3[54]	Punch
G 3[55]	Heart Beat
G#3[56]	Footsteps 1
A 3[57]	Footsteps 2
Bb3[58]	Applause
B 3[59]	Door Creak
C 4[60]	Door
C#4[61]	Scratch
D 4[62]	Wind Chimes
Eb4[63]	Car-Engine
E 4[64]	Car-Stop
F 4[65]	Car-Pass
F#4[66]	Car-Crash
G 4[67]	Siren
G#4[68]	Train
A 4[69]	Jetplane
Bb4[70]	Helicopter
B 4[71]	Starship
C 5[72]	Gun Shot
C#5[73]	Machine Gun
D 5[74]	Lasergun
Eb5[75]	Explosion
E 5[76]	Dog
F 5[77]	Horse-Gallop
F#5[78]	Birds
G 5[79]	Rain
G#5[80]	Thunder
A 5[81]	Wind
Bb5[82]	Seashore
B 5[83]	Stream

C 6[84]	Bubble
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