

MA-5

Authoring Tool

User's Manual

(ATS-MA5 Edition)

Ver.1.2.0

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YAMAHA Corporation

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Introduction

MA-5 Authoring Tool is the application software for authoring, correcting, and verifying the contents for portable terminals. The operating systems for running this software include Windows®2000 and Windows®XP.

The use of this application allows a conversion from SMF (standard MIDI file) into Synthetic Music Mobile Application Format (hereafter called “SMAF”) which is proposed by YAMAHA, editing of voices, editing of management information, and verification of voice generation by MA-5 emulator.

Recommended Operating Environment

The recommended operating environment of this Authoring Tool is as follows.

Compatible OS	Microsoft® Windows® XP Microsoft® Windows® 2000
CPU/Clock	Pentium®, Celeron™, or compatible processor / 166MHz or over
Memory	64MB or more
Necessary Hard Disk Space	40MB or more

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Revision History

Version	Date	Description	
1.0.0	2003/4/25	First Release	
1.0.1	2003/5/7	-	Hyper-Threading environment was excepted from recommended operating environment.
1.0.2	2003/6/13	-	The description about Hyper-Threading un-corresponding is deleted from recommended operating environment.
1.1.0	2003/9/12	3.2.1. 3.2.1.1 3.2.6 3.3 3.4 3.5 3.5.1 4.3 4.7 4.11 4.13 5.2 5.2 7.	Explanation about File Manu was added. Picture on Direct Play was changed. Notations were changed. Picture in Control Bar was changed, and also explanation of TB was changed. Picture and explanation about Volume Bar were newly added. Explanations about report-bar and timing of RAM size check were added. Explanation about RAM size was added. Picture on Stream PCM Assign Map was changed. Explanation about MA-3 was added. Explanation about STM Size Window was changed. Explanation about Preference was changed. Picture on About was changed. Picture on PCM Voice Edit Parameter was changed, and explanations were added. Explanation about LP/EP Automatic Control Function was added. Error messages were added.
1.2.0	2004/01/19	1. 3. 3.3 3.3.1 3.3.2 3.3.4 3.3.5 3.3.6 3.7 3.8.2 4.1 4.2.2 4.3.1 4.3.2 4.12 4.14 5.2	Description about VLW-MA3 was added in the section "Realize the Various Sounds Easily by Using Voice Library." Picture of "Application Window" was changed. Picture of "Menu Bar" was changed. Picture of "File Menu" was changed. Description about "Direct Play" was deleted from File menu, and "Direct Play" function was added into File List. Description of "Open" was changed to "Open (Add File List)...." Picture of "Edit Menu" was changed. "Undo" and "Redo" functions were newly added. Picture of "Window Menu" was changed. "File List" function was newly added. Picture of "Option Menu" was changed. Picture of "Help Menu" was added. "Authoring Tool Help" was newly added. Picture of "Tool Bar" was changed. "Undo" and "Redo" function were newly added. Support to a read of SMF Format1 Restriction of the number of maximum Stream PCM unit bytes was changed into 8 KByte/s (MA-3) / 12 KByte/s (MA-5). Description of "File List Window" function was newly added. Picture of "Piano Roll Window" was changed. A display about "Stream PCM Edit View" function was added. "Paste Voice List" item addition to a Voice Assign Map voice name upper right click menu. In Right Clock Menu of Voice Assign Map, "Undo" and "Redo" function were added. Stream PCM Reserve function was deleted. Picture was changed. Error messages were updated.

1. About MA-5 Authoring Tool

Possible to create contents for both MA-3 and MA-5

In the MA-5 Authoring Tool, both MA-3 contents and MA-5 contents can be created by changing AT-mode.

Easy Editing from MA-3 Contents to MA-5 Contents

In a condition, which AT-Mode is set in "MA-5", it is convertible to the contents for MA-5 only by reading the contents for MA-3 and saving as the SMAF file after editing.

Independence of MA-5 Authoring Tool and Sequencer

MA-5 Authoring Tool is independent application software that is used together with general-purpose MIDI sequencer. Therefore, the user is allowed to select the most familiar sequencer. All operations up to conversion to SMAF file can be made by performing sequence using your sequence software, and performing editing of voices and editing of management information using MA-5 Authoring Tool.

Maximum of Enabling Simultaneous Voices

MA-5 Authoring tool has FM16 mode, FM32 mode, and ALL64 mode. The maximum of enabling simultaneous voices depends on the mode setting, or whether using or not using AL Channel.

<MA-3 Mode>

	FM Synthesizer	PCM Synthesizer	Stream PCM	Total
FM16 Mode	16	8	2	26
FM32 Mode	32	8	2	42

【Note】 When the "2 Voice Reserved" is selected with Stream PCM Reserve, the enabling simultaneous voice numbers of PCM synthesizer become "6".

<MA-5 Mode>

- The maximum of enabling simultaneous voices without AL channel are described as follows.

	FM Synthesizer	PCM Synthesizer	Stream PCM	Total
FM16 Mode	16	16	2	34
FM32 Mode	32	16	2	50
ALL64 Mode	32	32	Disable	64

<MA-5 Mode>

- The maximum of enabling simultaneous voices with AL channel are described as follows.

	AL	FM Synthesizer	PCM Synthesizer	Stream PCM	Total
FM16 Mode	1	15	15	2	33
FM32 Mode	1	31	15	2	49
ALL64 Mode	Disable	32	32	Disable	64

In PCM synthesizer, you can use your favorite sound as the maximum of 16 notes (without AL channel) by FM16/FM32 mode and the maximum of 32 notes (with a size limitation) by ALL64 mode by reading the sound file (AIFF, WAVE) of 16bitPCM (encoding to 4bitADPCM) or 8bitPCM (encoding to 8bitPCM), and by performing the frequency change, envelopes change, loop points setup, etc..

Sequencer Direct MIDI Playback Function

Data and voices are confirmable directly from your sequence software.

Stream PCM Pasting Function

By using this function, the Stream PCM file to perform a synchronized playback with channel sequence can be read and assigned. In addition, the exclusive data to applicable channels and applicable notes can be transmitted to MA-5 emulator when it is assigned. For the reasons, an editing and verification of Stream PCM can be performed easily by combining the external MIDI sequencer with MA-5 Authoring Tool.

Real Time Voice Editing Function

The read SMF data can be verified on the event viewer. Real time voice change can be made by using MIDI keyboard. In addition, voice can be changed while confirming them.

Event Viewer Function

This function allows to confirm the event information on Score Window by reading SMF/SMAF file. In addition, it allows to verify the contents of SMF/SMAF files on the event list or piano roll window. During a confirmation of the playback, window of piano roll advances synchronously. Furthermore, it allows to perform an editing of music information. It allows to read and re-edit a SMAF file, additionally.

AL Parameter Equip Function

<MA-5 mode>

The effect of filter is obtained by setting AL parameters in FM voices, PCM voices, and Noises.

(AL parameters cannot be used when AT-Mode is set to "MA-3" or FM Mode is set to "ALL64".)

Realize the Various Sounds Easily by Using Voice Library

In this application, the Voice Libraries (VLF-MA3/VLP-MA3/VLP-MA5/VLA-MA5/VLW-MA3) which record various voices data are attached.

- VLF-MA3 is the extended voice library of FM voice. The sounds, which have a different idea to default voices, can be extended and used easily.
- Both VLP-MA3 and VLP-MA5 are PCM voice library, and a real sound which is different from FM sound is easily realizable.
- VLA-MA5 is the voice library with AL parameters; in addition, the sound which has the filter effect to FM voice and PCM voice can be used.
- VLW-MA3 is the Ethnic Library and is possible to extend a sound of ethnic instruments.

The various sounds are possible to realize easily by using these.

For the details, such as registration methods of each voice library, refer to the following manuals attached to library.

(VLF-MA3_v***.pdf, VLP-MA3_v***.pdf, VLP-MA5_v***.pdf, VLA-MA5_v***.pdf, VLW-MA3_v***.pdf)

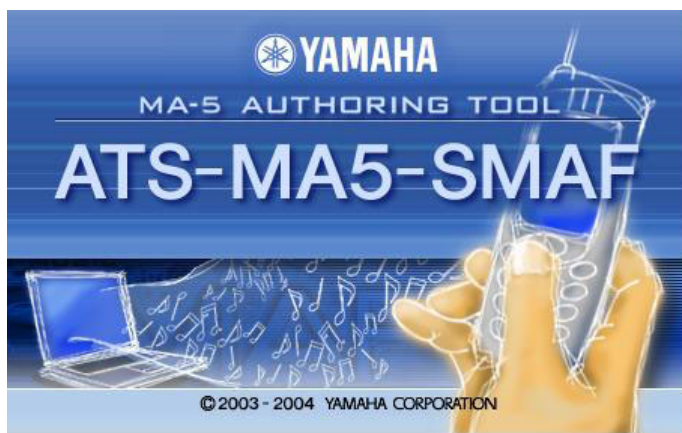
2. How to Start a Program?

This chapter describes the method to startup MA-5 Authoring Tool using a USB connection.

- Double-click “MA-5_ATS.exe” that can be found in “Exe” folder or double-click the shortcut of “ATS-MA5-SMAF” icon created on the desktop at the installation.



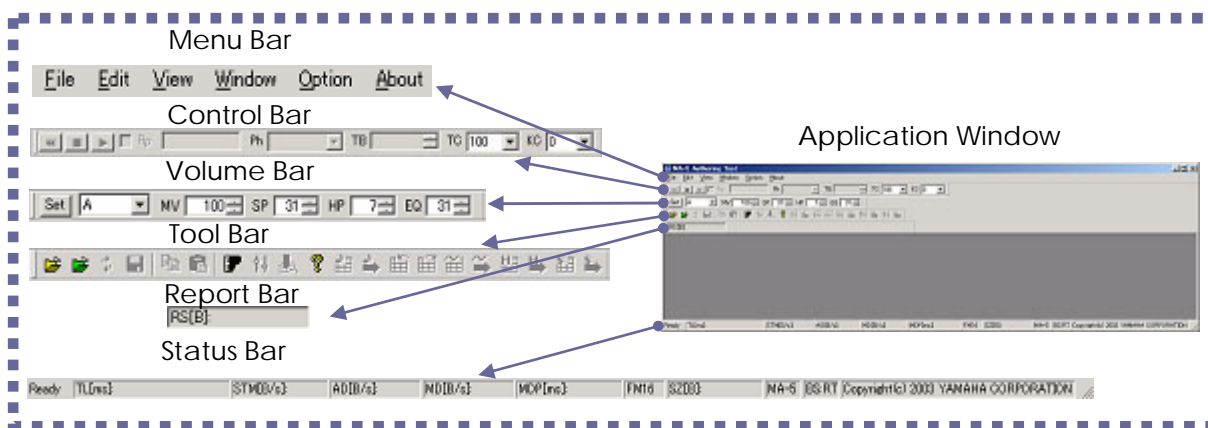
ATS-MA5-SMAF.lnk



3. Preference

3.1. Application Window

Each edit windows are opened on this application window. The application window is provided with Menu bar, Volume Bar, Report Bar, Tool Bar, and Status Bar that are applicable commonly to all editing windows. The Menu bar, Control Bar, Volume Bar, and Tool Bar are used to select or execute various functions through clicking or dragging. The Report Bar and Status Bar show a present status.

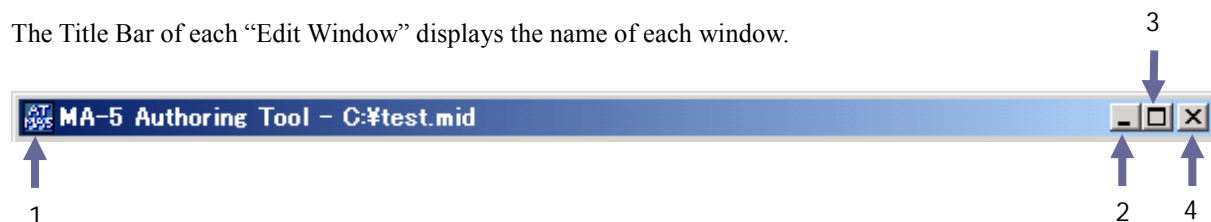


【Note】 The “Control Bar”, “Volume Bar”, “Report Bar”, “Tool Bar” and/or “Status Bar” can be displayed or hidden as necessary. Click “View” menu of the Menu Bar to display the pull-down menu. Click the check box of “Control Bar“, “Volume Bar“, “Report Bar“, “Toolbar“ and/or “Status Bar“in the list to place a check in them to display the “Control Bar”, “Volume Bar”, “Report Bar”, “Tool Bar” and/or “Status Bar” respectively. Click the check box of “Control Bar”, “Volume Bar”, “Report Bar”, “Toolbar”, and/or “Status Bar” with a check placed in it to remove the check, causing the bar to be hidden in the application.

3.2. Title Bar

The “Title Bar” on the “Application Window” displays the name of file that is presently opened with MA-5.

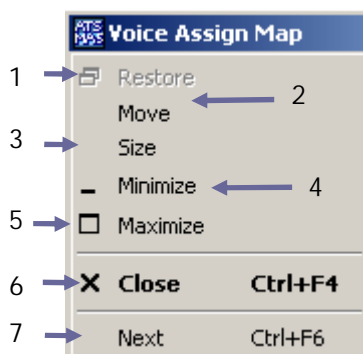
The Title Bar of each “Edit Window” displays the name of each window.



No.	Name	Description
1	Application icon	Clicks the icon to open the icon pop up menu.
2	Minimize button	Clicks this button to minimize (to make it an icon) the window.
3	Maximize button/Undo (Minimize) button	Clicks this button to maximize the window. When the window is maximized, clicks this button to restore the window to original size.
4	Close button	Clicks this button to close the window, and if it is the “Application Window”, the application is ended. If it is the “Edit Window”, each window is closed.

3.2.1. Icon Popup Menu

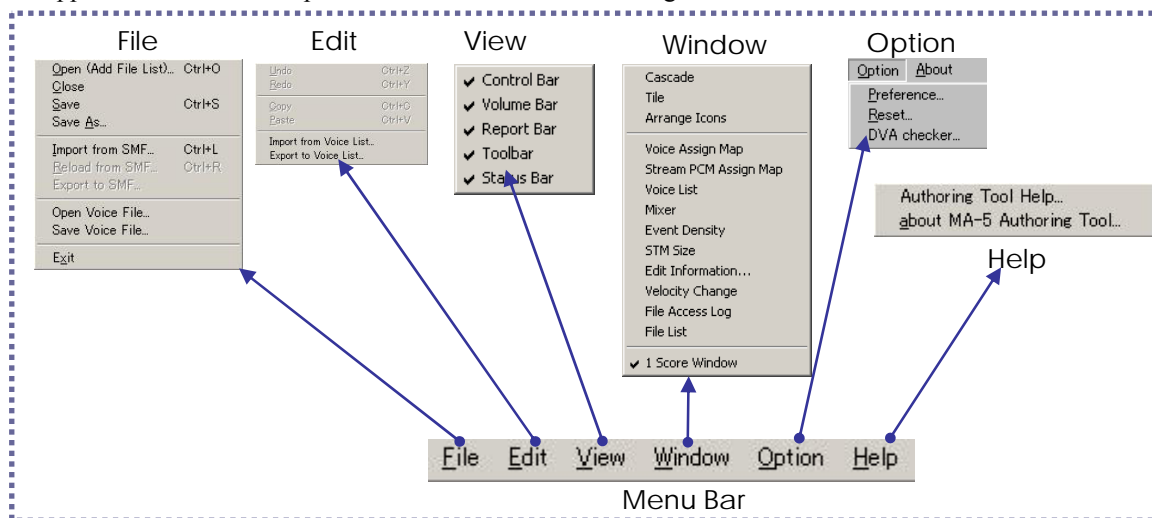
Clicks the icon located on the left end of the title bar to open the icon popup menu.



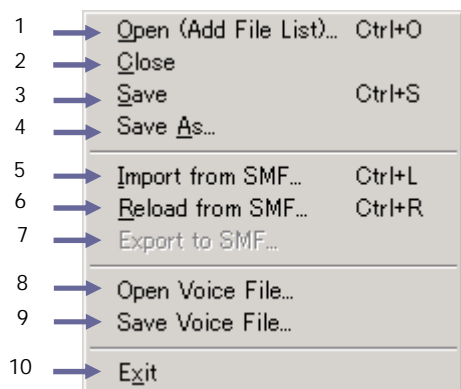
No.	Name	Description
1	Restore (R)	Restores the maximized windows to original size
2	Move (M)	Changes the mouse pointer to a moving tool. Use this pointer to move the windows by clicking & dragging the window at the title bar. The maximized window cannot be moved.
3	Size (S)	Changes the mouse pointer to size change tool. Put this pointer on the upper, lower, left side or right side line of the window, and clicks and drags the line to change the size of the window. The maximized window cannot be changed.
4	Minimize (N)	Window is minimized (to make it an icon)
5	Maximize (X)	Window is maximized. If the window is already maximized, it cannot be changed.
6	Close (C)	Closes windows. If it is the “Application Window”, the application is ended; in addition, if it is the “Edit Window”, each window is closed.
7	Next(T)	When two or more windows are opened on “Application Window”, click this item to change the active window. This command is displayed only on the icon pop up menu of “Edit window.”

3.3. Menu Bar

The “Application Window” is provided with menus for executing various functions.

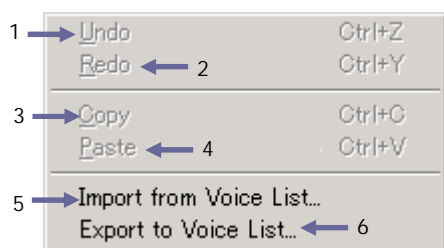


3.3.1. File Menu



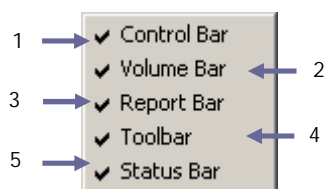
No.	Name	Description
1	Open (Add File List)...	Opens a SMAF file on File List <MA-3 mode> Opens a SMAF/MA-3 file <MA-5 mode> Opens a SMAF/MA3 and SMAF/MA5 file
2	Close	Closes a SMF/SMAF file
3	Save	Save as a SMAF file format (.mmf) <MA-3 mode> Saves a SMAF/MA-3 file <MA-5 mode> Saves a SMAF/MA-5 file
4	Save As	Newly saves as SMAF file format. (.mmf) <MA-3 mode> Saves a SMAF/MA-3 file <MA-5 mode> Saves a SMAF/MA-5 file
5	Import from SMF	Reads a SMF file
6	Reload from SMF	Reloads a SMF file
7	Export to SMF	Saves as a SMF format Only the events described in the “ <i>SMF Authoring Guideline</i> ” is output.
8	Open Voice File	<MA-3 mode > Reads a MA-3 voice file (*.vm3) <MA-5 mode > Reads a MA-3 voice file (*.vm3) and MA-5 voice file (*.vm5)
9	Save Voice File	<MA-3 mode > Saves as a MA-3 voice file format (*.vm3) <MA-5 mode> Saves as aMA-5 voice file format(*.vm5)
10	Exit	Exits from MA-5 Authoring Tool

3.3.2. Edit Menu



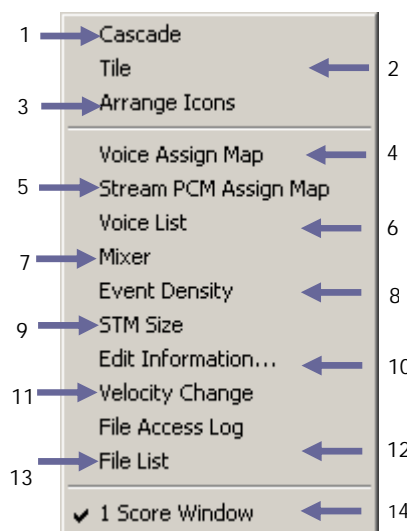
No.	Name	Description
1	Undo	In Voice Assign Map, the voice parameter updated by paste operations is returned to the parameter before the operation.
2	Redo	The voice parameter updated by Undo operation is returned to the parameter before the operation.
3	Copy	Copies voices which is selected in the Voice List or Voice Assign Map. When nothing is selected, it is displayed with gray color.
4	Paste	Pastes the copied voices on the designation locations of Voice list or Voice Assign Map.
5	Import from Voice List...	When the voice is registered in Voice Assign Map, the voice specified by Bank (M/L) and pch# is stuck into Voice Assign Map from Voice List.
6	Export to Voice List.	When the voice is registered in Voice Assign Map, the voice specified by Bank (M/L) and pch# is stuck into Voice List from Voice Assign Map.

3.3.3. View Menu



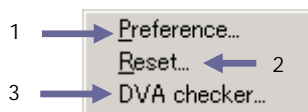
No.	Name	Description
1	Control Bar	Switches a display/un-display of Control Bar
2	Volume Bar	Switches a display/un-display of Volume Bar
3	Report Bar	Switches a display/un-display of Report Bar
4	Tool Bar	Switches a display/un-display of Tool Bar
5	Status Bar	Switches a display/un-display of Status Bar

3.3.4. Window Menu



No.	Name	Description
1	Cascade	Displays windows in piles
2	Tile	Displays windows in a line
3	Arrange Icons	Arranges the minimized windows on the bottom of "Application Window"
4	Voice Assign Map	Displays the Voice Assign Map
5	Stream PCM Assign Map	Displays the Stream PCM Assign Map
6	Voice List	Displays the Voice List
7	Mixer	Displays the Mixer Window
8	Event Density	Displays the Event Density Window
9	STM Size	Displays the Stream PCM Size Window
10	Edit Information	Displays the Administrator Information dialog
11	Velocity Change	Displays the Velocity Change Dialog
12	File Access Log	Displays the File Access Log Window
13	File List	Displays the File List Window
14	List of Active Windows	Lists the windows currently opened in "Application Window." In addition, a window currently active is shown with checked mark as shown like in figure. Moreover, the selected window will become an active condition if optional windows are chosen from a list.

3.3.5. Option Menu



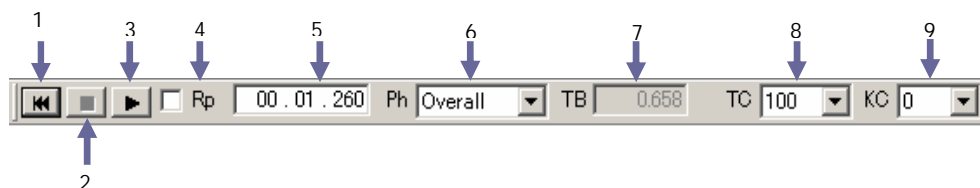
No.	Name	Description
1	Preference	Opens a Preference dialog
2	Reset	Transmits a MA-5 Native Reset Message Resets a volume value of volume bar For the details, see “3.5Volume Bar (p.18).”
3	DVA Checker	Opens a DVA Checker Window, and the maximum pronounced number in data can be checked.

3.3.6. Help Menu



No.	Name	Description
1	Authoring Tool Help...	Displays the “ <i>MA-5 Authoring Tool User’s Manual</i> ” in the Installation folder. According to the Operation System, an opened file is changed.
2	about MA-5 Authoring Tool	Displays the “about MA-5 Authoring Tool”. See “4.14About Authoring Tool p.49).”
3	SMAF Official Website	Refer to the following website URL: http://smaf-yamaha.com/jp/

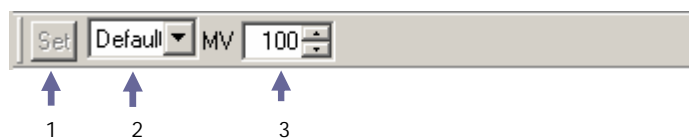
3.4. Control Bar



No.	Name	Description
1	Rewind	Moves a play bar to the head of music
2	Stop	Stops a playback of music
3	Play	Plays music
4	Repeat(Rp)	Designates a repeat
5	Playback Position Indicator	Displays a playback position. Any value can be input directly. The unit is "ms."
6	Phrase List (PL)	Selects a phrase list which is candidate to playback
7	TimeBase (TB)	Displays a time base
8	Tempo Control (TC)	Displays a Tempo Control. Tempo value set in the read data can be changed and played in the range of 70% to 130%.
9	Key Control (KC)	Displays a key control. The range from +12 to -12. can be changed. Only the channel which uses the normal bank voice can receive a key control. The channel, which uses the voice of a drum bank, does not receive key control.

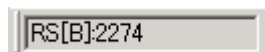
【Note】 The setting of repeat and change of phrase list playback mode, tempo control setting and key control setting are valid only when the Authoring Tool is used, and are not reflected on the SMAF file. Time base displays the time per 1 Tick by using the unit of "ms."

3.5. Volume Bar



No.	Name	Description
1	Set	Possible to memorize a five set of volume as maximum If this button is clicked in case of the name of memory domain whichever "A" to "E" is shown in the selection box, the present setting value is memorized into a range of domain. "Default" is set as "MV=100", and can not memorize the other values.
2	Setting	Selecting a memory area. Sets memorized master volume.
3	MV(Master Volume)	Displays the master volume value input right before the head of note message. When the SMF which dose not set the master volume is Imported/Reloaded, the master volume value input just before the head of note message is displayed. When the SMF is Imported/Reloaded, the value of last saved MV by Set button operation is set up. Arbitrary values can be input directly.

3.6. Report Bar



The total RAM size in music is displayed per byte.

The timing at checking RAM size is as follows.
When clicking the “OK” button of Voice Edit dialog.
at SMF Import
at SMF Reload
In case of performing a “Voice Paste” to Voice Assign Map
at Import from Voice List
When selecting the “OK” of “Preference”
When changing the Reserve settings on Piano Roll/Stream PCM Edit View

3.6.1. About RAM Size

<MA-3 Mode>

The total RAM size of MA-3 is 8176Bytes, and thus, if it exceeds the capacity, it cannot playback the music. Authoring Tool calculates the used RAM size in music, in addition, if it exceeds 8176Bytes, an error message will be output.

<MA-5 Mode>

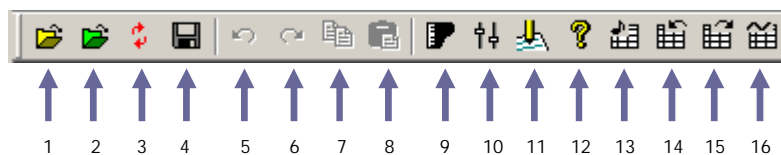
The total RAM size of MA-5 is 8192Bytes, and thus, if it exceeds the capacity, it cannot playback the music. Authoring Tool calculates the used RAM size in music, in addition, if it exceeds 8192Bytes, an error message will be output.

Size List	
Registration of Voice Parameter	FM2op : 16 bytes / one voice FM4op : 30 bytes / one voice PCM : 14 bytes / one voice
Registration of AL Parameter	AL+FM2op : 16 bytes / one voice AL+FM4op : 30 bytes / one voice AL+PCM : 14 bytes / one voice AL+Noise : 14 bytes / one voice
Registration of PCM Voice Waveforms	Bytes number in data section (1 byte will be added if it is an odd number.) / one waveform
Registration of FM Fundamental Waveform	2048 byte / one waveform
Registration of Stream PCM Waveform	When not used (No Reserved) / 0 byte When max. number of voices pronouciation number is "1" (1 Voice Reserved) / 1024 bytes When max. number of voices pronouciation number is "2" (2 Voice Reserved) / 2048 bytes

【Note】 A warning message is displayed when the value of RAM size exceeds the following; moreover, the background color is usually indicated by blink in a color and red.

- **MA-3 Mode: 8176byte**
- **MA-5 Mode: 8192byte**

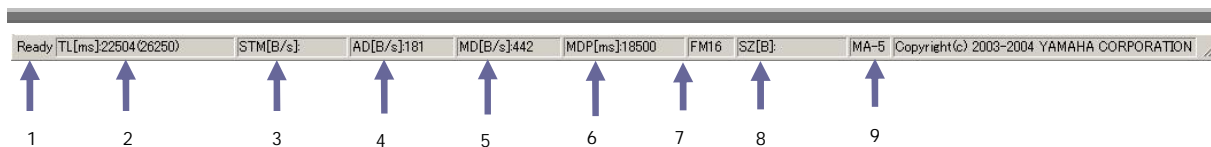
3.7. Tool Bar



No.	Name	Description
1	Open	Opens a SMAF file.
2	Import from SMF	Imports a SMF file. Refer to the following "Note".
3	Reload from SMF	Reloads a SMF file.
4	Save	Saves a SMAF file.
5	Undo	Voice data paste is undone.
6	Redo	Voice data paste is redone.
7	Copy	Copies a voice data.
8	Paste	Pastes a voice data.
9	Voice List	Displays a voice list window.
10	Mixer	Displays a mixer window.
11	Information	Displays a information window.
12	Help	Displays a version information.
13	Voice Assign Map	Displays a Voice Assign Map.
14	Import from Voice List	Reads the voice in voice lists that bank number and voice number is same into Voice Assign Map.
15	Export to Voice list	Writes the voices in voice list that bank number and voice number is same from Voice Assign Map.
16	Stream PCM Assign Map	Displays a Stream PCM Assign Map.

【Note】 It is only applicable for SMF Format 0 and SMF Format 1.

3.8. Status Bar



No.	Name	Description
1	Status Display	Displays the simple explanation about each buttons and functions in the position where the mouse is pointing.
2	TL (Total Length)	Displays “the actual playing total time (end position)” in the read music. The unit is “ms” The actual playing total time is the time from Start Point to Stop Point. The end position is displayed with Tick count from the head.
3	STM (Stream PCM)	Displays the maximum unit byte count of Stream PCM. Refer to the following “Note”.
4	AD (Average Density)	Converts the event density of the read one music to the MIDI byte count and displays it. The unit is “Bytes/sec” (Counts as 6 Bytes per one note.) Refer to the following Note.
5	MD (Max Density)	Displays the event density about unit time in the position which an event density is the highest in one music. The unit is “Bytes/sec” Refer to the following Note.
6	MDP (Max Density Position)	Displays the position where event density is the highest in one music. The unit is “ms”
7	Mode Display	Displays FM mode set up by Preference. When SMAF is read, the mode of the SMAF is displayed.
8	SZ (Size)	Displays the size of SMAF when saved as SMAF form, or when SMAF is read.
9	MA-5,MA-3(AT-Mode)	Displays AT mode that is selected at current “Preference.”

【Note】 When the value of Average Density exceeds “500 byte/s,” warning is displayed and the “AD” column of “Status Bar” blinks in red.

【Note】 When the value of Max Density exceeds “1000 byte/s,” warning is displayed and the “MD” column of “Status Bar” and the “MDP” column blink in red.

【Note】 While one of the “AD”, “MD” or “MDP” is blinked in red, it cannot save as a SMAF file.

3.8.1. Calculation Method of Event Density

The size which is consumed by MIDI event is differed. When an error comes out by event density, it is necessary to cut an event. For the details, refer to “4.7Event Density (p.42).”

The number of consumption bytes of a MIDI event	
Note Event	6Byte
Control Change	3Byte
Program Change	2Byte
Pitch bend	3Byte
Exclusive Message	Bytes number of Data Section + 2 (F0, F7)Byte

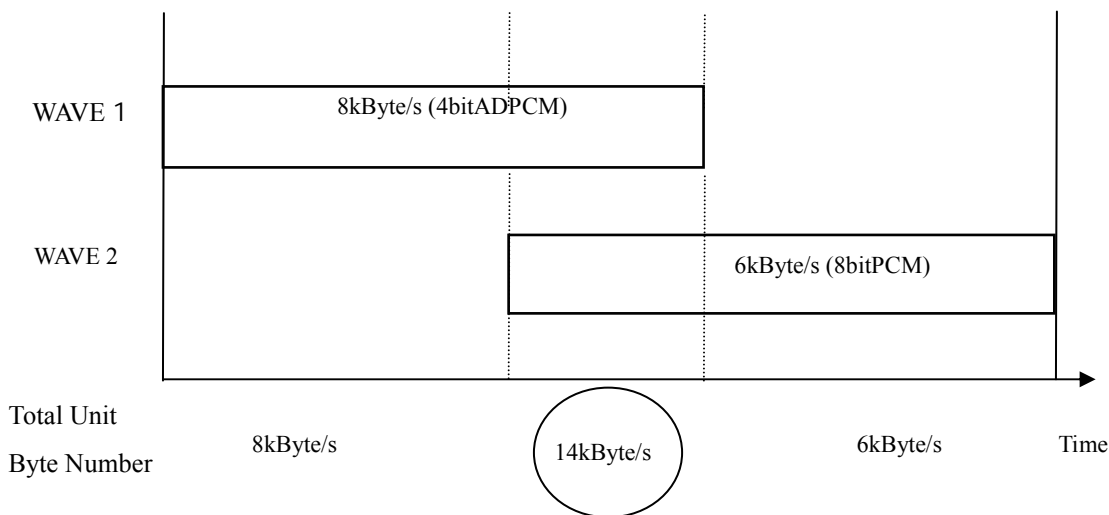
3.8.2. STM Display (a maximum of number of Stream PCM unit bytes)

As for the number of maximum Stream PCM unit bytes (the amount of data per second), it is displayed on SMAF form by the status bar only at the time of save. It cannot save, if the number of maximum Stream PCM unit bytes is exceeded. The restriction of the number of maximum Stream PCM unit bytes serves as 12kByte/s by MA-5 and 8kByte/s by MA-3. In case a sound file is used as a Stream PCM data, it is necessary to restrict the number of maximum Stream PCM unit bytes.

Therefore, it is necessary to convert the sampling frequency of a sound file to the number of Stream PCM unit bytes “1kHz=1 KByte/s”, and use the sound file to fit in the restriction range.

Refer to the following example for the calculation method of the number of unit bytes.

“Example” When 4bitADPCM of Fs=6kHz and 8bitPCM of Fs=6kHz are used,



Conversion is made as described below.

Unit byte number/4bit ADPCM waveform “kBytes/s” ← Sampling frequency Fs “kHz” ÷ 2

Unit byte number/8bit ADPCM waveform “kBytes/s” ← Sampling frequency Fs “kHz”

In the above-mentioned example, in the time zone when playbacks of two waveforms has overlapped, since it is set to 14 “kByte/s”, it cannot be saved.

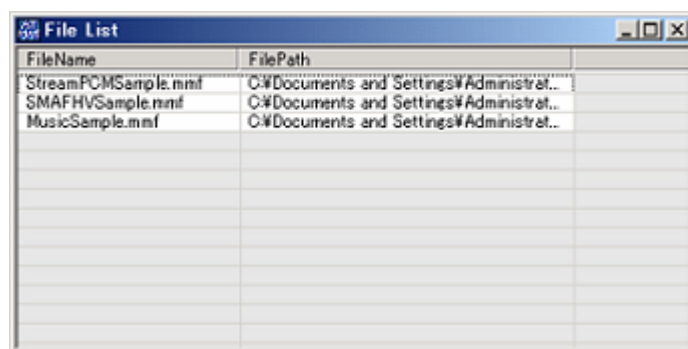
4. Description of each Windows

4.1. File List Window

A SMAF file is displayed in a list.

If the SMAF file read into File List Window is double-clicked, the data is reflected to the score window and it will be in the condition, which can be edited.

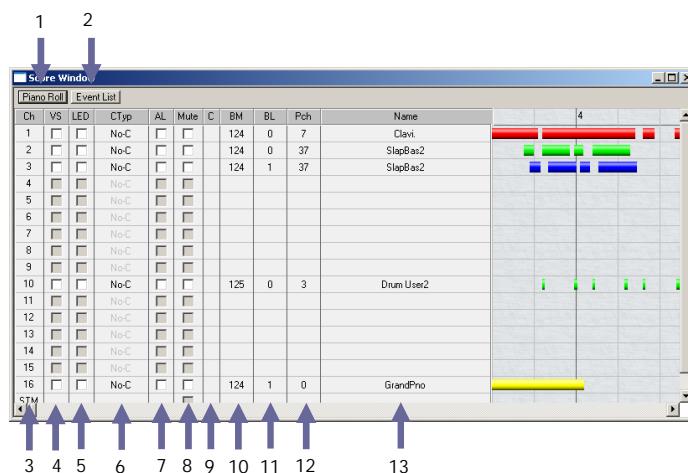
If a play button is pushed in a condition, which a list is selected, “DirectPlay” will be operated, and the data is reflected to the score window by double-clicking the list.



Name	Description
File Name	Displays a file name of the read SMAF file
File Path	Displays a file-path of the read SMAF file

4.2. Score Window

The contents of read SMF/SMAF data are displayed.

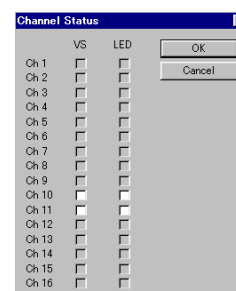


No.	Name	Description
1	Piano Roll	Displays the contents read into the “Score Window” to the “Piano Roll Window.”
2	Event List	Displays the data read into the “Score Window” to the “Event List Window.”
3	CH	Displays the channel numbers.
4	VS (Vibration Status)	Designates whether Vibration Control is performed synchronizing with the data of applicable channel or not. Placing a check in the box to enable a Vibration. For VS setting of Stream PCM, refer to the following term “VS and LED setup of Stream PCM”.
5	LED	Designates whether LED Control is performed synchronizing with the data of applicable channel or not. Placing a check in the box to enable LED. For LED setting of Stream PCM, refer to the following term “VS and LED Setup of StreamPCM”.
6	Ctyp (Channel Type)	Designates the Channel Type for applicable channel. By clicking the field of Ctyp of each channel, it can be changed the content in order of No-C, Melo, No-M and Rhy.
7	AL (Analog Like)	<MA-5 mode> By placing a check in this box, the channel can be set for AL voice channel. All voices of channel that has been set for AL voice channel become monophonic voices. After placing a check in the box of AL, and double-clicks any voice in voice assign map; in addition, places a check in the “Enable AL” of AL Voice Edit”, and then, the effect of AL parameters can be obtained.
8	Mute	Silences the applicable channel by placing a check in the box. It is not reflected to SMAF file.
9	C (Change Flag)	If it differ when comparing a voice of voice number and same back numbers of voice list, a blue circle is displayed. Even one of the voice which differs to the voice list is existed in applicable channel, a blue circle is also displayed.
10	BM (Bank Select MSB)	Displays a Bank Select MSB.
11	BL (Bank Select LSB)	Displays a Bank Select LSB.
12	Pch (Program Change)	Displays a program change number.
13	Name	Displays a name of voice. When a voice name is double-clicked, “Voice Edit Window” will be opened. (“Voice Edit window” of built-in ROM voices cannot be opened.)

4.2.1. VS and LED Setup of Stream PCM

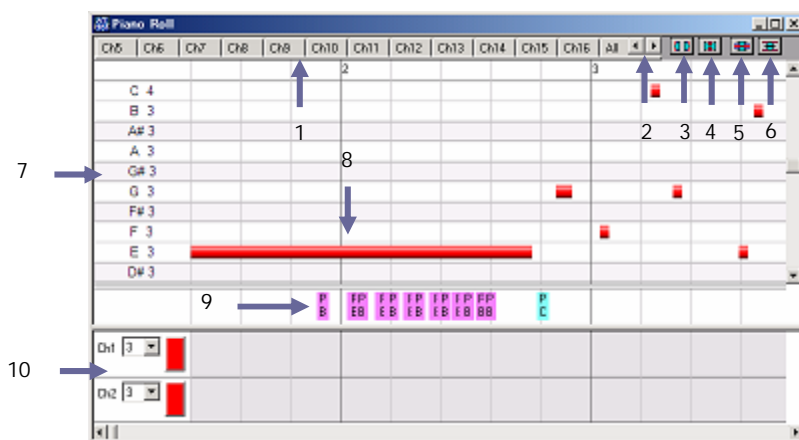
The “Channel Status Window” is displayed by clicking the check box of “VS” or “LED” on the STM field of “Score Window.”

“VS” and “LED” can be set to the channel into the note which plays Stream PCM is inputted.



4.2.2. Piano Roll

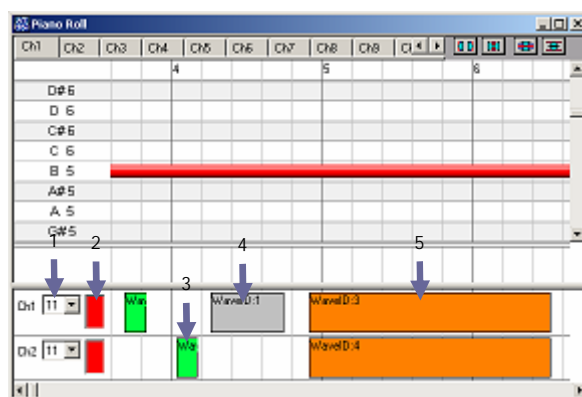
Displays the contents read into the “Score Window” on the “Piano Roll window.”



No.	Name	Description
1	[Ch1~15] [All] part tab	By clicking each tab, parts displayed on “Piano Roll Window” can be changed
2	Scroll button	Part tabs are scrolled left and right. Part tab that is not displayed can be displayed.
3	Horizontal zoom-in button	By clicking this button, display size of the window can be enlarged horizontally.
4	Horizontal zoom-out button	By clicking this button, display size of the window can be decreased horizontally.
5	Vertical zoom-in button	By clicking this button, display size of the window can be enlarged vertically.
6	Vertical zoom-out button	By clicking this button, display size of the window can be decreased vertically.
7	Interval display	Displays an interval of “Piano Roll Window.”
8	Note Bar	Displays an interval and gate time of each MIDI note.
9	Controller display	Displays a control change or pitch bend input in each part.
10	Stream PCM Edit View	Stream PCM is assignable.

Stream PCM Edit View is the window which assigns Stream PCM to SMAF.

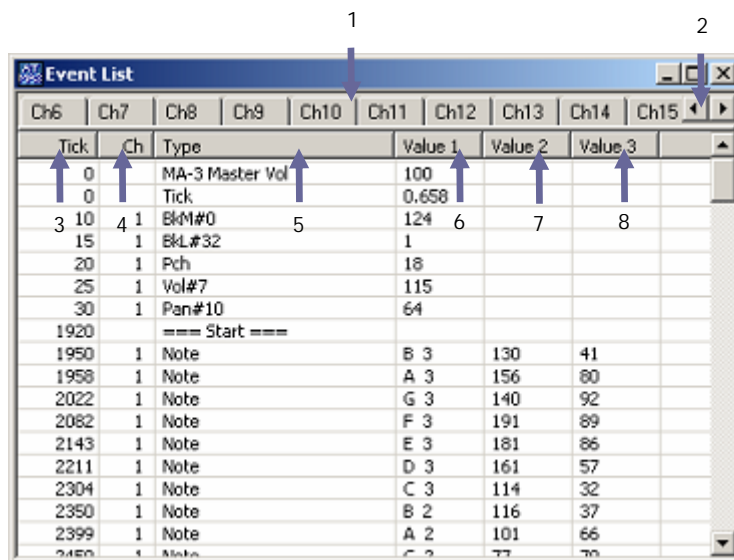
The number of the maximum pronunciation of Stream PCM is divided into two steps of upper and lower sides for two sounds. Refer to “0 Stream PCM Assign Map” for the assignment method of Stream PCM Assign Map to Stream PCM. If a stream track is double-clicked, a stream track can be deleted by velocity conversion of a stream track and right click.



No.	Name	Description
1	Ch	The channel which inserts a Stream PCM event is selected. From newer to older, the number in channel without events is initial-displayed.
2	Stream PCM Reserve Button	Sets the reserved number of Stream PCM. According to the reserved numbers, the amount of RAM consumption will be changed. Please refer to “3.6.1 About RAM Size (p.20)” for details.
3	Stream PCM Track (Mono)	It is the Stream PCM track of monophonic pronunciation. It is displayed in yellow-green.
4	Stream PCM Track (Not Assigned)	It is the Stream PCM track with which only the stream event exists and a voice is not assigned. It is indicated in gray.
5	Audio Bar	WaveID of a StreamPCM event is shown. In the case of a monophonic, it is displayed in yellow-green; in addition, in the case of stereo, it is displayed in orange.

4.2.3. Event List

Displays the data read into the “Score Window” on the “Event List Window”



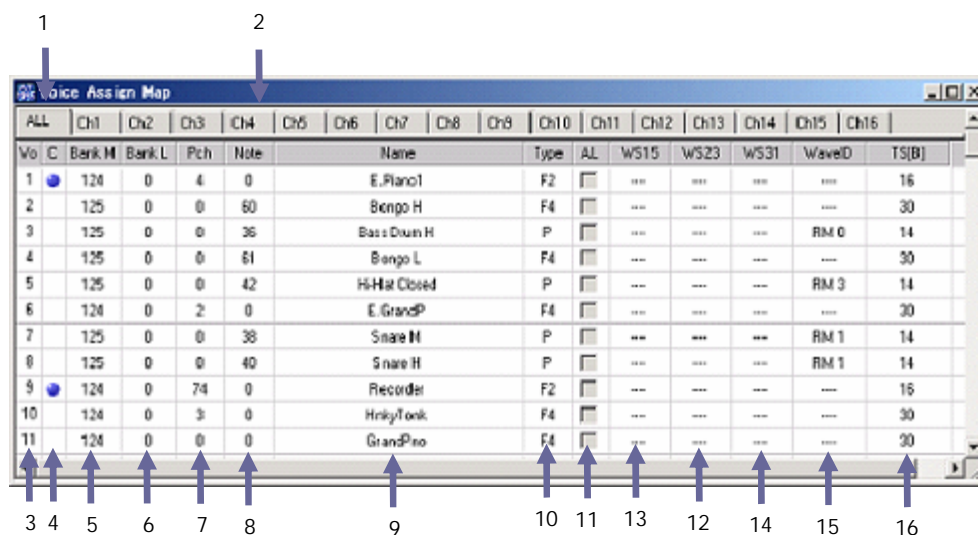
No.	Name	Description
1	[Ch1~15] [Stream PCM] [All]Part tab	By clicking each tab, a part displayed on the “Event List Window” can be changed.
2	Scroll button	Part tab is scrolled left or right by pressing this button. Part tab that is not displayed can be displayed.
3	Tick (Location)	Displays a location of each event by using the unit of Tick.
4	Ch (Channel)	Displays a channel of each event.
5	Type	Displays the type of each event.
6	Value1	Control Change...Displays a data value. Pitch Bend...Displays a pitch bend value. Note...Displays a note number. Stream PCM...Displays a WaveID.
7	Value2	Note...Displays game time of note. Stream PCM...Displays gate time of Stream PCM.
8	Value3	Note...Displays velocity of note. Stream PCM...Displays velocity of Stream PCM.

4.3. Voice Assign Map

Displays voices used in each channels by channel. Up to 128 voices can be displayed totaling all channels. (The data which use over 128 voices cannot be read.)

AL voice can register up to 16 voices into Voice Assign Map.

【Note】 Voice, which has a built-in ROM, is displayed in blue color. (For the details, see “5.1.7”, “5.1.8”).



No.	Name	Description
1	ALL	Displays all voices in used.
2	Ch1~Ch16	Displays voices used by each channel.
3	Vo.	Displays the number of voices in used.
4	C (Change Flag)	Compares with voices with the same back number and voice number of Voice List, and displays a blue circle when it is different.
5	Bank M (Bank Select MSB)	Displays the BankSelect MSB.
6	Bank L (Bank Select LSB)	Displays the BankSelect LSB.
7	Pch	Displays program change numbers.
8	Note	Displays note numbers.
9	Name	Displays name of voices. “Voice Edit Window” is opened by double clicking Name field. For more information about “Voice Edit Window”, refer to “4.15Voice Edit Window (p.50).” <MA-5 mode> Note field of voices with a check in “AL” field of score window and a check in “Enable AL” of AL Voice Edit are displayed with green. Name field of voices with a check in “AL” field of score window but no check in “Enable AL” of AL Voice Edit are displayed with light green.
10	Type	Displays the voice types in used. F4: 4 operator setting, F2 2 operator setting, P: PCM setting
11	AL	AL voice use in an applicable voice is specified.
12	WS15 (Wave 15)	When the voice currently used is using WS15 in FM voice, it is displayed as “used”.

No.	Name	Description
13	WS23 (Wave 23)	When the voice currently used is using WS23 in FM voice, it is displayed as “used”.
14	WS31 (Wave 31)	When the voice currently used is using WS31 in FM voice, it is displayed as “used”.
15	WaveID	Displays its WaveID when currently voice is using RAM voice in PCM. Displays “RM 0 ~ 6” when currently voice is using Drum voice “RM” of ROM.
16	TS”B” (Total Size)	Displays RAM size of currently voice. Unit is “Byte”. For more details about RAM, refer to “3.6.1 About RAM Size (p.20). “

4.3.1. Voice Copy/Paste Function

Right-click on the voice name of Voice Assign Map displays copy / paste menu.

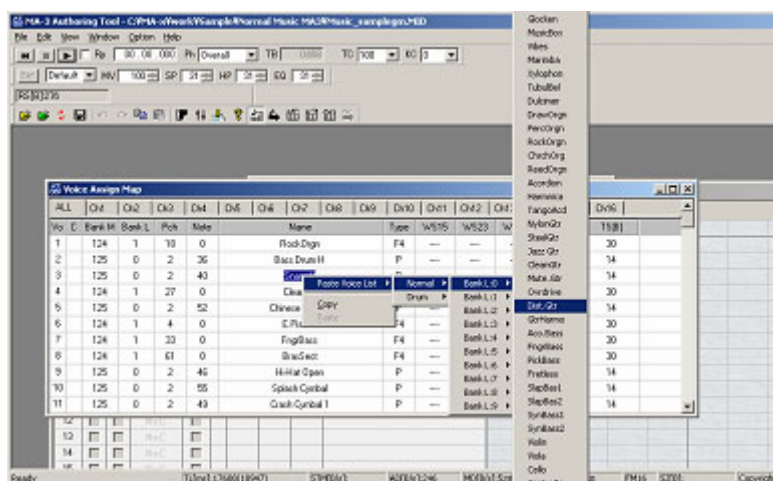
【Note】 For the details about Voice data Copy/Paste functions, refer to “4.5.3 Copy of Voice Data (p.38).”



Name	Description
Paste Voice List	The contents of Voice List are displayed. Please look at the following figure for details.
Copy	Copies voices.
Paste	Pastes voices.

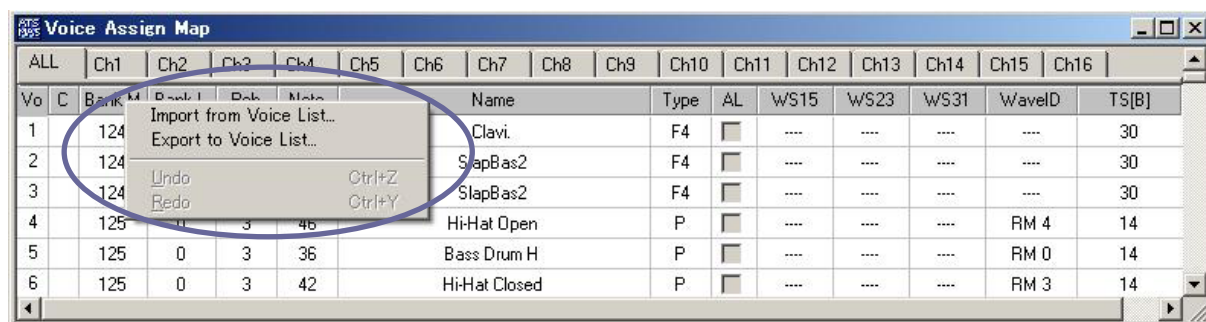
The voice assignment method to SMAF can also select and assign a voice from “Paste Voice List” of Voice Assign Map besides copy & paste of Voice List to Voice Assign Map.

It is possible to change a voice by choosing Paste Voice List, and following and choosing a voice from the menu displayed by carrying out the right click of the voice name changing.



4.3.2. Voice Assign Map Right Click Menu

When Right-click on the status such as “BankM”, Voice Assign Map Right-click menu is appeared.



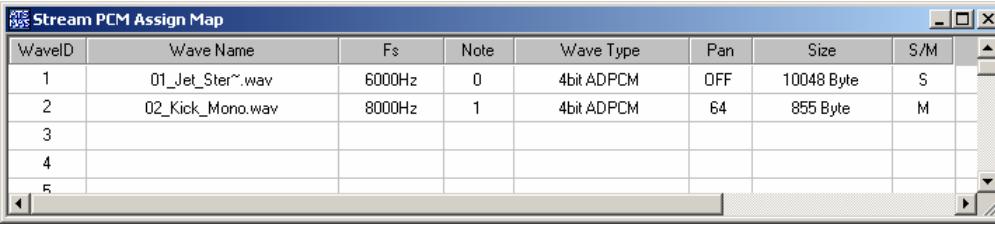
Name	Description
Import from Voice List	Reads the voice of same bank number and voice number of voice list into voice assignment map. Same operation can be done by “Import from Voice List” button of Tool bar.
Export to Voice List	Writes the voice of same bank number and voice number of voice list from voice assignment map. Same operation can be done by “Export to Voice List” button of Tool bar.
Undo	Copy operation of a voice performed immediately before is repealed, and it returns to the state before a copy.
Redo	The same processing as the processing performed immediately before is repeated and performed.

4.4. Stream PCM Assign Map

Stream PCM is assignable.

Stream PCM can be registered a maximum of 32 waves, and can be simultaneously pronounced to two sound.

(The number of simultaneous pronunciation at the time of use is one sound about a Stereo wave.)



WaveID	Wave Name	Fs	Note	Wave Type	Pan	Size	S/M
1	01_Jet_Ster~.wav	6000Hz	0	4bit ADPCM	OFF	10048 Byte	S
2	02_Kick_Mono.wav	8000Hz	1	4bit ADPCM	64	855 Byte	M
3							
4							
5							
6							
7							
8							

1 2 3 4 5 6 7 8

No.	Name	Description
1	WaveID	Displays wave ID. The wave ID corresponds to NoteNo. Up to 32 waves can be registered.
2	WaveName	A stream PCM wave name is displayed. The file name of 16 characters is displayed from a head. Only a half-size alphanumeric character can be displayed.
3	Fs	Displays the frequency of wave.
4	Note	Displays note numbers. (0 to 12, 92 to 110)
5	Wave Type	Displays wave types.
6	Pan	Displays a pan of Wave
7	Size	Displays the size of wave data that have been read.
8	S/M (Stereo/Mono)	The read wave data indicates whether it is stereo wave data and whether it is monophonic wave data.

4.4.1. About a note which can assign Stream PCM

In order to register a Stream PCM event into SMF, it is necessary to set up by a bank selection, a program change, and the note number beforehand.

The bank selection of the note which can be used as a Stream PCM, a program change (an arbitrary value needs to be program changed for decision of a bank selection), and the note number are as follows.

Bank MSB	Note Number	Definitions	
125	0	Stream PCM	Wave ID:1
	1		Wave ID:2
	:		Wave ID:X
	12		Wave ID:13
	13	Drum Channel	
	14		
	:		
	91		
	92	Stream PCM	Wave ID:14
	93		Wave ID:15
	:		Wave ID:X
	110		Wave ID:17

【Note】 For details, refer to another document “*Contents Authoring Guideline.*”

4.4.2. Sound file which can be registered as Stream PCM

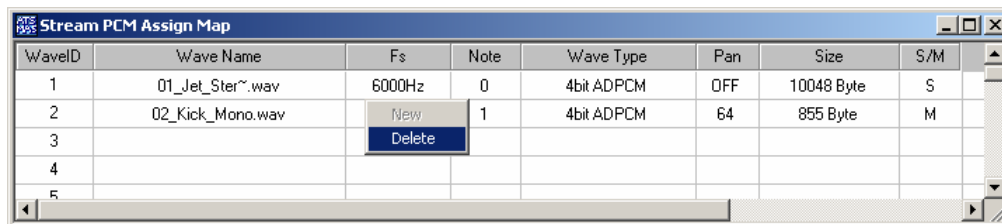
In MA-5 authoring tool, it can change as a Stream PCM, which carried out encoding processing (compression) of the sound file, and can register with SMAF so that the synchronous performance of a channel sequence and the sound file (AIFF/WAVE) can be carried out on SMAF.

Stream PCM can be registered to 32 kinds and can be simultaneously pronounced to two sounds by the maximum.

Read Sound File			Stream PCM
Bit Rate	Sampling Frequency (The inside of () is the MA-5 mode)	Form	Compression System
8-Bit	4KHz ~ 8KHz(12kHz)	AIFF/WAVE Mono	8-Bit PCM
16-Bit	4KHz ~ 16KHz(24kHz)		4-Bit ADPCM
8-Bit	4KHz~(8kHz)	AIFF/WAVE Stereo	8-Bit PCM
16-Bit	4KHz ~ 8KHz(12kHz)		4-Bit ADPCM

PCM (Pulse Code Modulation) is the digital recording system which changes analog signals, such as sound, into a digital signal. The signal of the sound which is the continuous waveform is started a fixed cycle (sampling), and it records as a digital signal by quantizing. ADPCM (Adaptive Differential Pulse Code Modulation) By the system, the whole amount of data is made small by quantizing only the difference of the data, which adjoins each other in the case of a sampling.

4.4.3. Stream PCM Assign Map New/Delete Menu

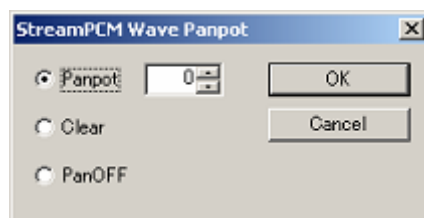


If the right click of the inside of a “Stream PCM Assign Map Window” is carried out, a New/Delete menu is displayed and registration of a sound file and deletion can be performed.

【Note】 Please refer to “4.4.2 Sound file which can be registered as Stream PCM” about Fs of the file which can be read as a Stream PCM, and the encoding system which can be chosen.

【Note】 When a stereo sound file is read, it divides and registers with two waves ID in the MA-3 mode. Moreover, in the MA-5 mode, the sound of a stereo can be registered to the one wave ID. (Stereo Lch/Rch is considered as one wave and it is a count)

4.4.4. Stream PCM Wave Panpot



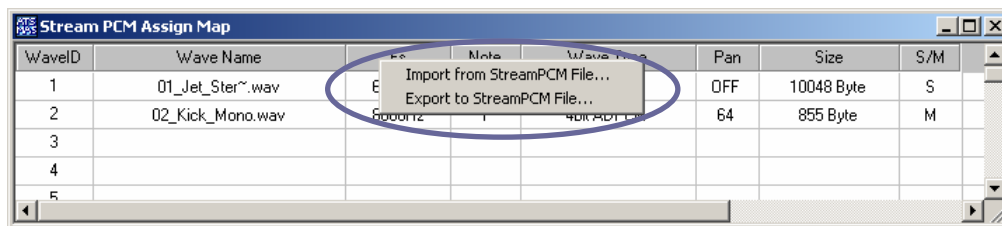
When a sound file is loaded, Panpot will be set up automatically according to the kind of sound file.

- Mono sound file : Panpot=64
- Stereo sound file : Lch. Panpot=0, Rch. Panpot=127

【Note】 For “Stream PCM Wave Panpot Clear” and “Stream PCM Wave Panpot PanOFF”, refer to “Contents Authoring Guideline For MA-5 Authoring Tool”.

4.4.5. Stream PCM Assign Map Right Click Menu

The Voice Assign Map right click menu will be displayed if the top of status, such as “WaveID” or “Fs” is clicked.



Name	Description
Import from Stream PCM File	Waveform data can be read from Stream PCM File (.sm3, .sm5) saved by Export to Stream PCM File. 【Note】 In the MA-3 mode, waveform data can be read from Stream PCM File (.sm3).
Export to Stream PCM File	All registered wave data in Stream PCM Assign Map can be saved in Stream PCM File. (An extension serves as .sm5)

4.5. Voice List

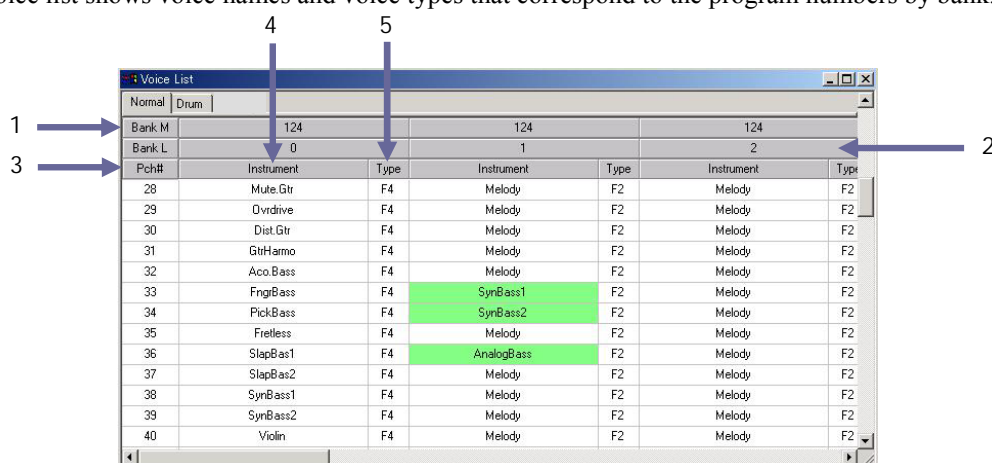
Voice map is displayed.

Clicks “Voice List” button of the application window or selects “VoiceList” from “Window” menu of the menu-bar.

4.5.1. Normal Voice List

By clicking a Normal tab, the Normal voice list is displayed.

Normal voice list shows voice names and voice types that correspond to the program numbers by bank.



No.	Name	Description
1	Bank M	Displays a Bank Select MSB.
2	Bank L	Displays a Bank Select LSB.
3	Pch#	Displays a voice number.
4	Instrument	Displays the name of voice. The background of voices that includes AL parameters is displayed with green. Double-click on the item opens the voice edit window. Refer to “4.15Voice Edit Window p.50)” for the details about “Voice Edit Window.”
5	Type	Displays a used voice type. F4: 4 operator setting, F2: 2 operator setting, P: PCM setting

【Note】 With the Import from Voice List button of a tool bar, it is from Voice List. Voice data can be exported to Voice Assign Map from Voice Assign Map with import of voice data and an Export from Voice List button to Voice List.

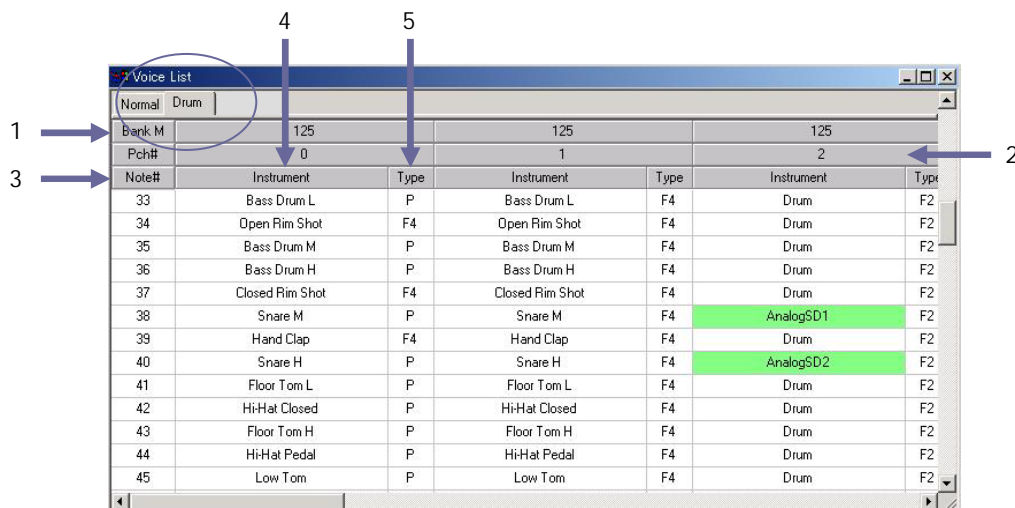
【Note】 By the drum voice list, the voice name corresponding to the note number in the voice name corresponding to the program number and the voice type and a voice type are expressed as a normal voice list for every program for every bank.

【Note】 Voice change is possible for each voice respectively, and the changed voice can be saved per bank. Refer to “4.5.5Saving Voice List (p.40)”, for the details about the preservation of a voice list.

4.5.2. Drum Voice List

Clicks Drum tab to display Drum voice list.

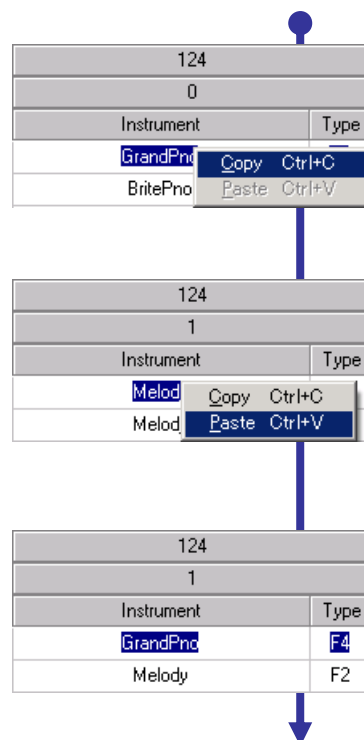
Drum voice list shows voices names and voice types that correspond to note numbers by bank.



No.	Name	Description
1	Bank M	Displays a Bank Select MSB.
2	Pch#	Displays a voice number.
3	Note#	Displays a note number.
4	Instrument	Displays the name of voice. The background of voices that includes AL parameters is displayed with green. Double-click on the item opens the "Voice Edit Window." For details about Voice Edit Window, refer to "4.15Voice Edit Window p.50)."
5	Type	Displays a used voice type. F4: 4 operator setting, F2 2 operator setting, P: PCM setting

4.5.3. Copy of Voice Data

1. At first, right-clicks the mouse on the voice, which you want to copy, on the voice list window. Popup menu is displayed, and then selects "Copy" here.
2. Secondly, right-clicks the mouse on the voice name of voice, where you want to paste the copied voice. Popup menu is displayed, and then selects "Paste" here. For the details about "Voice paste to the Voice Assigned Map", refer to "4.3.1 Voice Copy/Paste Function p.30)."
3. Finally, the voice is pasted.



【Note】 The copy/paste operation of voices can also be made by using "Copy" or "Paste" on the "Edit" menu of the application, or by using Toolbar of the application.

4.5.4. Read of Voice Lists

4.5.4.1. Read of All Voices

Saved voice file can be read.

<MA-3 mode>

A voice file saved by MA-3 form can be read.

<MA-5 mode>

A voice file saved by MA-5/MA-3 form can be read.

Selects “Open Voice File” from “File” menu of the menu-bar on the “Application Window.” “Open” dialog box is displayed, and then, selects a file name and click “Open” button to read the voice file.



4.5.4.2. Read by bank Unit (Normal/Drum Voice Bank)

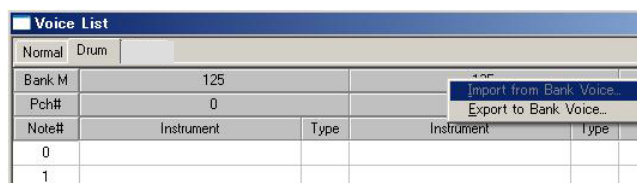
Saved voice file can be read in Normal Voice List and Drum Voice List.

<MA-3 mode>

Bank voice file saved by MA-3 form can be read.

<MA-5 mode>

Bank voice file saved by MA-3/MA-5 form can be read.



Bank voice files saved with MA-3 Authoring Tool or MA-5 Authoring Tool can be read for the Normal voice list or the Drum voice list.

Right-clicks on the Bank MSB field of Voice List. Selects “Import from Bank Voice” from the “Popup Window.” “Open” dialog box is displayed. Selects a file name, and then click “Open” button to read the voice file.

4.5.5. Saving Voice List

4.5.5.1. Saving All Voices

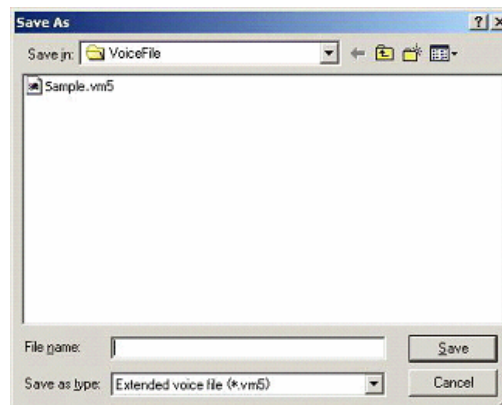
<MA-3 mode>

Allows to save as MA-3 form. (Extension is .vm3.)

<MA-5 mode>

Allows to save as MA-5 form. (Extension is .vm5.)

Selects “Save Voice File” from “File” menu of the menu-bar on the “Application window.” “Save As” dialog box is displayed. Enter the file name in “File name” (the extension is “.vm5”), and then click “Save” button to save the data.



4.5.5.2. Saving with Bank Unit (Normal/Drum Voice Bank)

<MA-3 mode>

Allows to save as MA-3 form. (Extension is .vm3.)

<MA-5 mode>

Allows to save as MA-5 form. (Extension is .vm5.)

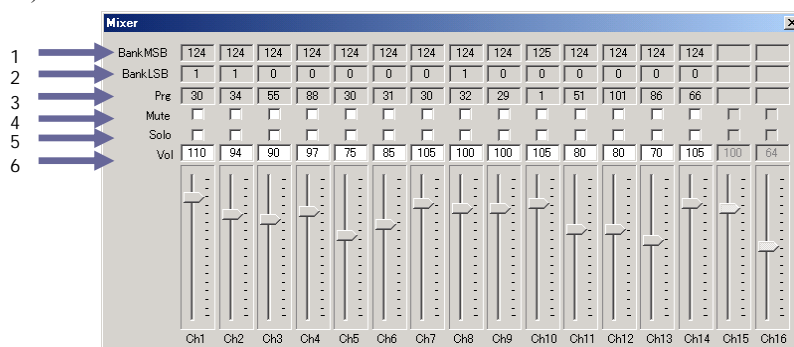
Voices that is registered in the Normal or Drum voice list can be saved by bank unit.

Right-clicks on the Bank MSB field of Voice List. Selects “Export to Bank Voice” from the “Popup window.” “Save As” dialog box is displayed. Enters the file name into the “File name” (extension is “.vm5”) and click “Save” button to save the data.



4.6. Mixer

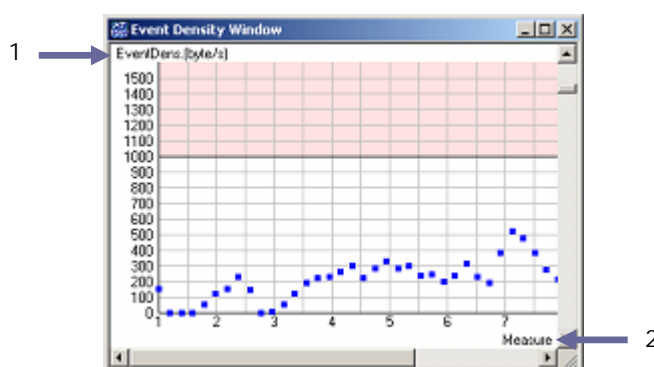
The playback balance of each channel can be kept with this function. (The balance cannot be changed during a playback of data.)



No.	Name	Description
1	Bank MSB (Bank Select MSB)	Displays a Bank Select MSB.
2	Bank LSB (Bank Select LSB)	Displays a Bank Select LSB.
3	Prg (Program)	Displays a program number.
4	Mute	Silences an applicable channel. This is not reflected on the music data (SMAF).
5	Solo	Plays an applicable channel with solo. This is not reflected on the music data (SMAF).
6	Vol	Displays the volume value.

4.7. Event Density

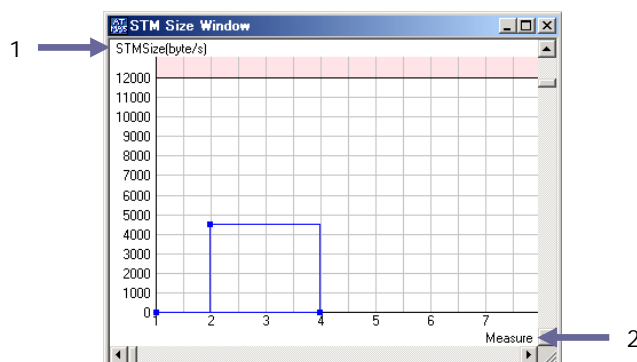
Converts the event density to the MIDI byte numbers in the read music and displays it.



No.	Name	Description
1	Event Density "byte/s"	Displays an event density. The unit time used as the standard for converting event density can be set by preference.
2	Measure/Time "Sec"	Displays time. • at SMF import: Measure (beat unit) is displayed. • at SMAF Open: Time "sec" is displayed.

4.8. STM Size

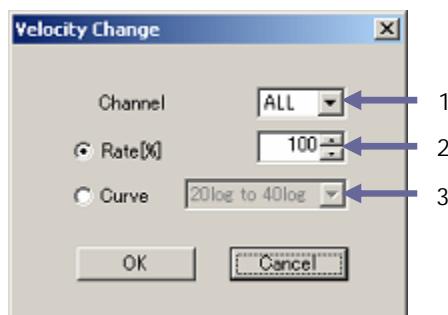
Displays the size of stream PCM in the read wave data.



No.	Name	Description
1	STM Size “byte/s”	Displays stream PCM size. The display of STM Size changes according to the setting of “StreamPCM Reserve” of Preference.
2	Measure/Time “Sec”	Displays time. •When SMF import : Displayed by Measure (per beat) •When SMAF open : Displayed by Time “sec”

4.9. Velocity Change

Velocity of note event can be changed in the read music.



No.	Name	Description
1	Channel	Designates channels that become objects of velocity change. Channels 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16, STM(Stream PCM), or ALL (all note events) can be designated.
2	Rate “%”	The rate of change of velocity value can be selected from the range of 50 to 200 %. When the value is inputted directly, press “Enter” key after inputting the data.
3	Curve	The curve to which velocity is changed can be specified. There are two kinds, “20-log to 40-log” and “40-log to 20-log.”

4.10.Edit Information

Management Information can be input/edited.

The 'Information' dialog box contains the following fields and their corresponding values:

- Contents Class: 0
- Contents Type: Melody
- Vendor name: (empty)
- Carrier name: (empty)
- Category name: (empty)
- Song title: MA3DEMO Music Sample
- Artist name: (empty)
- Lyricist: (empty)
- Composer: N.M.
- Arranger: K.Y.
- Copyright(C): YAMAHA 2001
- Management group: (empty)
- Management info.: (empty)
- Creation date: (empty)
- Revision date: (empty)
- Code Type: Shift-JIS

No.	Name	Definition
1	Contents Class	Contents Class can be displayed
2	Contents Type	Contents Type can be displayed.
3	Vendor name	Vendor's name can be input.
4	Carrier name	Carrier name can be input.
5	Category name	Category name can be input.
6	Song Title	Music title can be input.
7	Artist name	Artist's name can be input.
8	Lyricist	Lyricist name can be input.
9	Composer	Composer's name can be input.
10	Arranger	Arranger's name can be input.
11	Copyright (C)	Copyright can be input.
12	Management group	Name of copyright management group can be input.
13	Management Info.	Management Information can be input.
14	Creation Date	Creation date and time can be input.
15	Revision Date	Revision date can be input.
16	Code Type	Code type can be set. Shift-JIS, Latin-1, EUC-KR, or UTF-8 whichever are selectable.

4.11.File Access Log

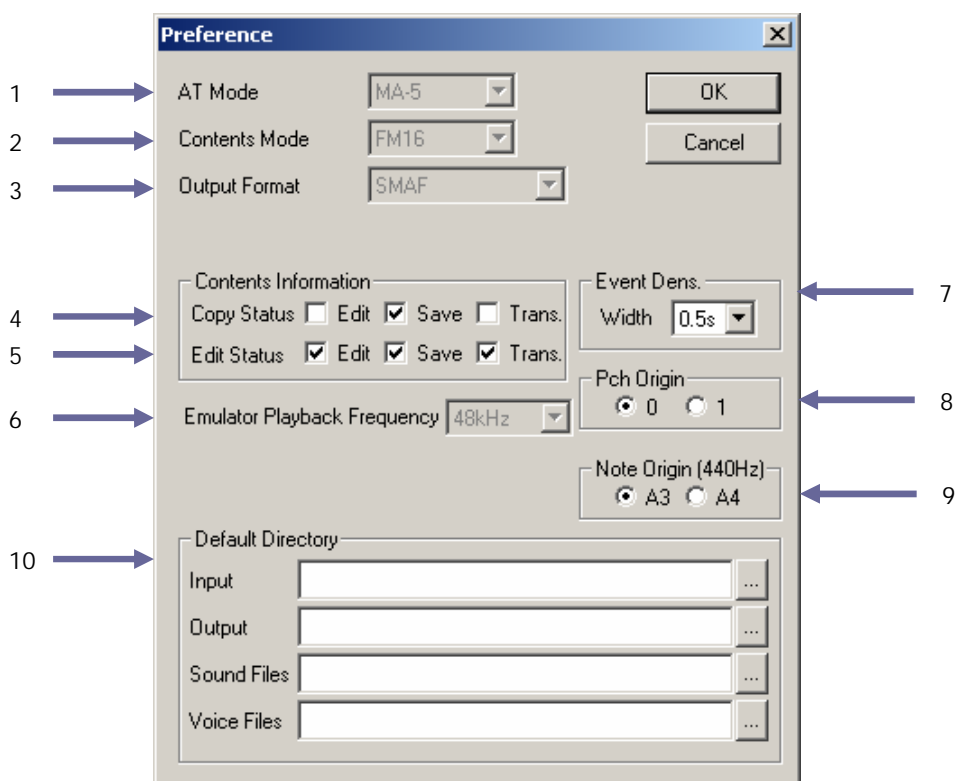


When an operation related to a file is performed, the log is displayed.

The operation that has been performed and the path of the file are displayed.

The displayed contents does not disappear until the application is closed.

4.12.Preference



No.	Name	Definition	
1	AT Mode	Changes a mode of the Authoring Tool.	
		MA-5 Mode	This is a mode for creating contents for MA-5. SMAF file that has been created with MA-3 Authoring Tool can be read and edited in this mode. (SMAF files for MA-3 that are saved in MA-5 are in the file type for .)
		MA-3 Mode	This is a mode for creating contents for MA-3. An SMAF file that has been created in MA-5 mode cannot be read in MA-3 mode.
2	Contents Mode	Changes FM mode. FM mode cannot be changed when music data are read on the Authoring Tool. Change FM mode after closing music data.	
		<MA-3 mode>	
		FM16 mode	2-operator voice, 4-operator voice, and PCM voice can be used.
		FM32 mode	2-operator voice and PCM voice can be used.
		<MA-5 mode>	
		FM16 mode	2-operator voice, 4-operator voice, and PCM voice can be used, and AL parameter can be set.
		FM32 mode	2-operator voice and PCM voice can be used, and AL parameter can be set.
		ALL64 mode	2-operator voice and PCM voice can be used. (AL parameter and Stream PCM voice are not available.)
		The maximum number of voices that can be generated simultaneously varies according to the condition that mode setting or AL channel is used or not.	
3	Output Format	Displays the output format..	
4	Copy Status	Copy status can be set.	
		Edit	Places a check here to enable edition of relevant contents on the portable terminals. To make the following setting of Edit Status valid, it is necessary to place a check here.
		Save	Places a check here to enable saving of relevant contents on the portable terminals.
		Trans	Places a check here to enable transfer of relevant contents on the portable terminals.
5	Edit Status	Edit status can be set. Edit status becomes the copy status of secondary literary works that have been edited using an application for edition on the portable terminals. For the details, refer to the explanation of the above copy status.	
6	Emulator Playback Frequency	Emulator playback frequency can be set. Either of 48kHz(Default), 44.1kHz, 32kHz, 22.05kHz can be selected.	

No.	Name	Definition
7	Event Dens. Width	The unit time used as the standard for converting event density can be set. 0. 1 sec, 0.2 sec, 0.5 sec, 1.0 sec, 1.5 sec, or 2.0 sec can be selected. (Density unit is Bytes/Sec=Density/Width.)
8	Pch Origin	Whether program change number starts from “0” or from “1” can be selected by selecting Pch Origin.
9	Note Origin	It can set to display Note of 440 Hz as A3 or A4. The Note display of EventList and PianoRoll change, but the interval of the voice that is generated does not change.
10	Default Directory	It can be set in the default directory at the reading of various files by clicking the right side button and choosing arbitrary folders.

【Note】 FM mode will change to a setup of the file, if a SMAF file is read. When a SMAF file is read before reading SMF, since a setup may have changed, cautions are required.

4.13.DVA Checker

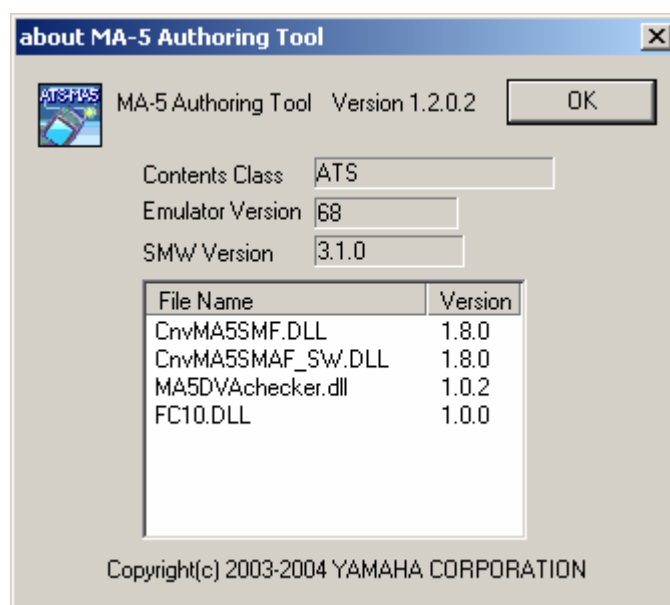
It is a window for investigating the number of the maximum simultaneous pronunciation.

When it becomes an error with the number of the maximum simultaneous pronunciation, since an error part is pinpointed, it uses.



No.	Name	Description
1	Mode (Check over the Max voice Number)	Pressing Check button checks the position at which the maximum number simultaneously generated voices in each mode (FM32, FM16 and ALL64) has been exceeded and the number of simultaneously generated voices. The values of “Time”, “FM” and “PCM” are displayed when the Result is “Over”.
	(Check the Max Voice Number of Sequence)	Pressing Check button checks the position at which the maximum number simultaneously generated voices in the data has been attained and the number of generated voices. The values of “Time”, “FM” and “PCM” will be displayed without regarding to Result..
2	Output file	By putting in the check, the result which checked the simultaneous pronunciation number can be saved with text-file format (DVAChecker_result.txt). The text file is saved in the folder in which the MA-5 Authoring Tool is installed.
3	Result	Displays the result of check of the number of voices that are generated simultaneously. “OK” appears when the maximum number of voices generated simultaneously is not exceeded, or “Over” if it is exceeded. If the result is “Over”, open the above text file and confirm the details.
4	Time	Displays object time using the unit of ms.
5	FM	Displays the number of simultaneously generated voices of FM voices.
6	PCM	Displays the number of simultaneously generated voices of PCM voices.

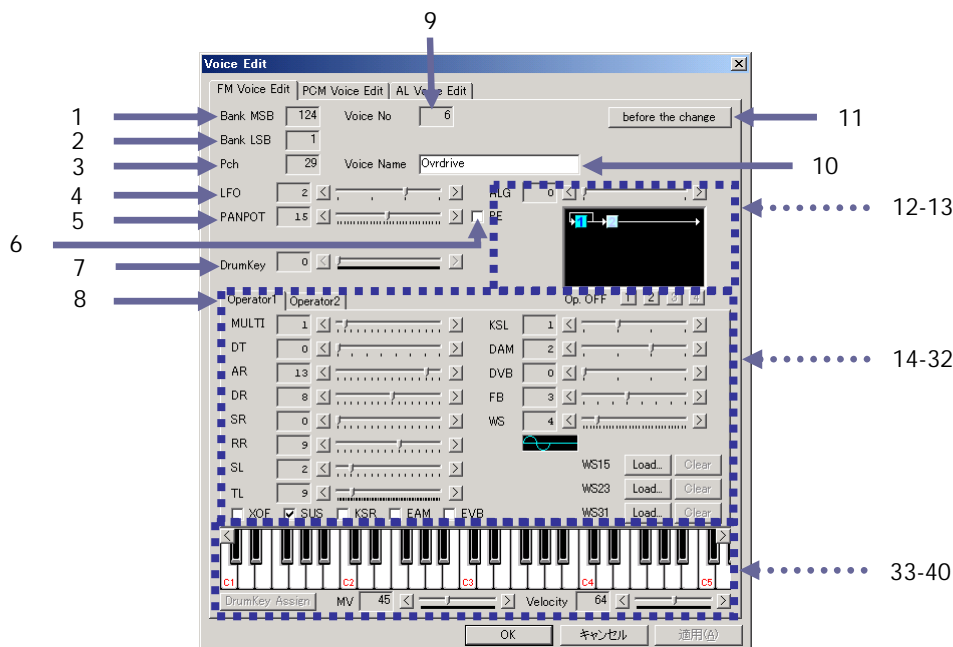
4.14.About Authoring Tool



4.15. Voice Edit Window

4.15.1. FM Voice Edit Parameter

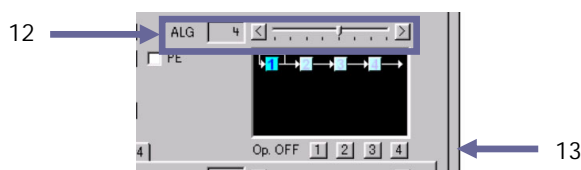
Double-click the user voice name shown on the “Voice List Window” to display “Voice Edit window.”



No. 1- 11

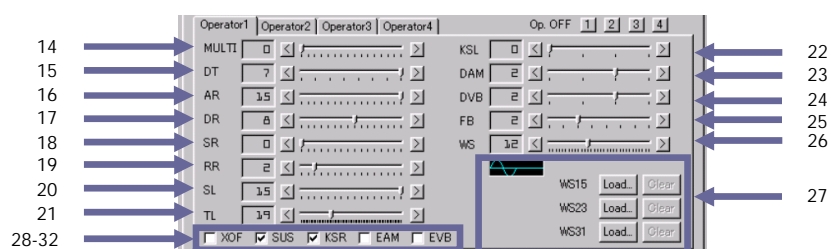
No.	Name	Description
1	Bank MSB	Displays bank MSB in which the voices being edited exist.
2	Bank LSB	Displays bank LSB in which the voices being edited exist.
3	Pch	Displays program change for the voices being edited.
4	LFO	Sets LFO frequency that is used for each voice. LFO= 0 : 1.8 Hz · LFO= 1 : 4.0Hz · LFO= 2 : 5.9Hz · LFO= 3 : 7.0Hz
5	Panpot	Sets right-left balance for each channel.(0...15...31) Smaller value pans to the left, or larger value pans to the right.
6	PE	Placing a check in this box disables the pan setting of the control change and enables the value of panpot of the voices.
7	DrumKey	This is a parameter that functions only at edition of the drum voice, and changes the key which the voice being edited actually generates.
8	Operator 1, 2, 3, 4	Changes Operator. The display changes between 1 to 2 and 1 to 4 in accordance with the setting of the algorithm. Right-click on the tab of Operator1 to 4 to display Copy/Paste menu with which the Operator can be copied.
9	Voice No.	Displays the voice number being edited with Voice Assign Map
10	Voice Name	Sets the voice name being edited.
11	Before the Change	Press this switch to listen to the voices before they are edited. Press this switch again to restore the voices being edited.

No.12-13

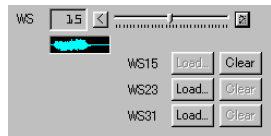


No.	Name	Description
12	ALG (Algorithm)	<p>Sets algorithm. 2 Operator or 4 Operator is set in accordance with the type of algorithm.</p> <p>In the FM32 mode, if algorithm of 2op is not chosen, it does not pronounce normally. Please set 0 or 1 to ALG</p>
13	Op.OFF "Operator OFF 1 ~ 4"	The output of each operator can be turned OFF, by selecting the button of 1 to 4.

No.14-32



No.	Name	Description																												
14	MULTI	<div>Designates a multiplier for the frequency.</div> <table><tr><td>MULTI</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10,11</td><td>12,13</td><td>14,15</td></tr><tr><td>Multiplier</td><td>1/2</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>12</td><td>15</td></tr></table>	MULTI	0	1	2	3	4	5	6	7	8	9	10,11	12,13	14,15	Multiplier	1/2	1	2	3	4	5	6	7	8	9	10	12	15
MULTI	0	1	2	3	4	5	6	7	8	9	10,11	12,13	14,15																	
Multiplier	1/2	1	2	3	4	5	6	7	8	9	10	12	15																	
15	DT “Detune”	<div>Designates Detune. Detune shifts the pitch delicately to cause the feeling of chorus. DT=1 ~ 3 shift the pitch upward. The shift width expands in numerical order. DT=5 ~ 7 shift the pitch downward. The shift width expands in numerical order. DT=0 and 4 are standard pitch.</div> <div>The frequency of Detune is affected by the setting of MULTI. When MULTI= 2 times, the change of pitch are doubled.</div>																												
16	AR (Attack Rate)	<div>Attack Rate is the time from the starting of play (-96 dB) to the moment maximum volume (0 dB) is attained.</div>																												
17	DR “Decay rate”	<div>Decay Rate is the decay time from the moment the maximum volume (0 dB) to the moment Sustain Level (SL) is attained.</div>																												
18	SR “Sustain rate”	<div>Sustain Rate designates the rate of decay from the moment a Sustain Level is attained. Unlike other rate setting, setting this to “0” causes continuation of the Sustain Level.</div>																												
19	RR “Release rate”	<div>Release Rate is the time from key off to the moment the silent state (-96 db) is attained. When a check is placed in the check box of SUS, the setting is ignored.</div>																												
20	SR “Sustain rate”	<div>Sustain Rate designates the rate of decay from the moment a Sustain Level is attained.</div>																												

No.	Name	Description																		
		Unlike other rate setting, setting this to “0” causes continuation of the Sustain Level.																		
21	TL “Total level”	Sets the level of envelope.																		
22	KSL “Designation of level scaling”	For natural instruments, the volume generally decreases and the interval becomes higher. The scaling of level simulates this phenomenon. KSL sets the amount of decay per octave. KSL= 0 : 0 KSL= 1 : 3.0dB / oct KSL= 2 : 1.5dB / oct KSL= 3 : 6.0dB / oct																		
23	DAM “Depth of AM”	Sets the depth of amplitude modulation (AM). DAM= 0 : 1.3 dB DAM= 1 : 2.8 dB DAM= 2 : 5.8 dB DAM= 3 : 11.8 dB																		
24	DVB “Depth of vibrato modulation”	DVB= 0 : 3.4 cents DVB= 1 : 6.7 cents DVB= 2 : 13.5 cents DVB= 3 : 26.8 cents																		
25	FB ”Amount of feeddback”	This function is valid only for Modulator side Operator. It designates the degree of feedback modulation. <table><tr><td>Setting value</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>Modulation</td><td>0</td><td>$\pi/16$</td><td>$\pi/8$</td><td>$\pi/4$</td><td>$\pi/2$</td><td>π</td><td>2π</td><td>4π</td></tr></table>	Setting value	0	1	2	3	4	5	6	7	Modulation	0	$\pi/16$	$\pi/8$	$\pi/4$	$\pi/2$	π	2π	4π
Setting value	0	1	2	3	4	5	6	7												
Modulation	0	$\pi/16$	$\pi/8$	$\pi/4$	$\pi/2$	π	2π	4π												
26	WS “Waveform selection”	Designates waveform of each Operator that is used for FM operation. The waveform that is used can be selected from 32 types.																		
27	WS15/23/31 (Wave 15/23/31)	Allows decision of arbitrary basic waveform. Reads 1024 samples from a sound file of 16 bit monaural (WAVE, AIFF). Set WS to 15 (23/31). Click the Load button of WS15 (23/31) to read a sound file Pressing “Clear” to clear each wave. <div><p><The cautions at the time of Clear FM user basic waveform></p><p>A user basic waveform is deleted from all the voices that the user basic waveform which Load(ed) in FM voice editing dialog is shared by the voice which set up the same basic waveform, and share a waveform between clear operation.</p><p>Please perform SMAF preservation after checking the use situation of a basic waveform by Voice Assign Map, when a user basic waveform is used.</p></div> 																		
28	XOF (Ignore KeyOff)	Sets ignoring KeyOff or not. Place a check in the check box to ignore KeyOff. KeyOff does not cause the change of state.																		
29	SUS (Sustain)	Sets whether the rate change after KeyOff is allowed or not. Place a check in the check box to continue the SUS rate after KeyOff. <div>Be sure to set SUS to ON to enable hold 1 (damper) of MIDI message.</div>																		
30	KSR (Rate Scaling)	Places a check in the check box to set ON/OFF of key scale of rate. For natural musical instrument, the rise and falling of sound become earlier as a pitch becomes high in general. The key scale of the rate simulates this phenomenon.																		
31	EAM (AM Modulation)	Sets ON/OFF of amplitude modulation (AM). Place a check in the check box to enable setting of DAM.																		
32	EVB (Vibrato Modulation)	Sets ON/OFF of vibrato modulation. Place a check in the check box to enable setting of DVB. <div>Be sure to set EVB to ON to enable modulation of MIDI message.</div>																		

4.15.1.1. Fundamental FM Waveforms

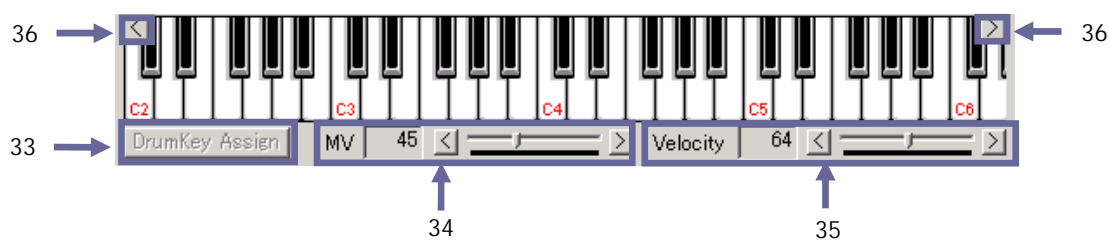
0		1		2		3	
4		5		6		7	
8		9		10		11	
12		13		14		15	Use any waveform on SRAM
16		17		18		19	
20		21		22		23	Use any waveform on SRAM
24		25		26		27	
28		29		30		31	Use any waveform on SRAM

No. 33-40 Keyboard

The voice under editing can be monitored by clicking the keyboard

Display at editing of normal voice

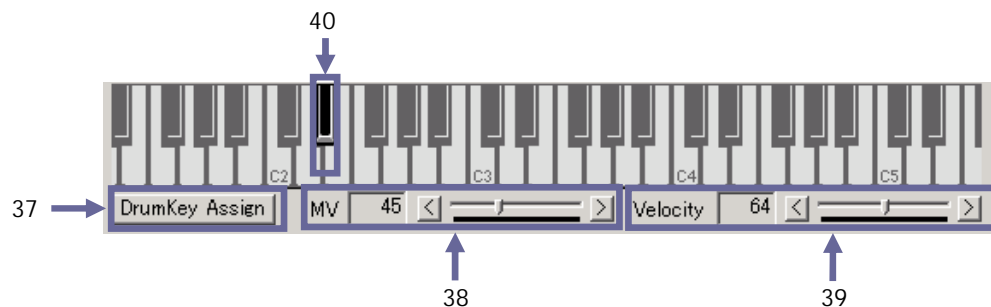
In the case of normal voice, voices are generated with higher musical interval to the right side of keyboard, or lower musical interval to the left side.




No.	Name	Description
33	DrumKey Assign	It is not used at edition of normal voices. (It is valid only at edition of drum voices.)
34	MV (Master Volume)	Master volume value at monitoring by the keyboard can be changed.
35	Velocity	Velocity value at monitoring by the keyboard can be changed.
36	Scroll Button	By pushing this button, the display of keyboard compass can be changed. <ul style="list-style-type: none"> Click right side button to display higher interval. Click left side button to display lower interval.

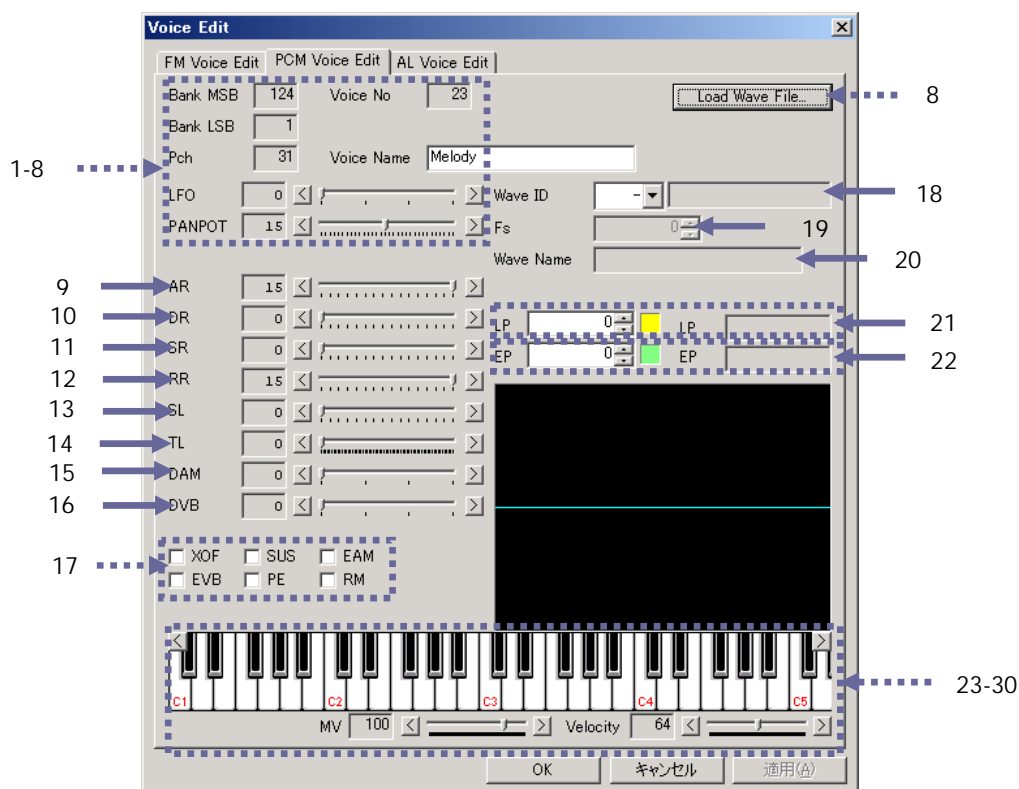
▪ Display at the time of editing of drum voice

In the case of drum voices, voices are generated only when Note No. under edition is clicked.

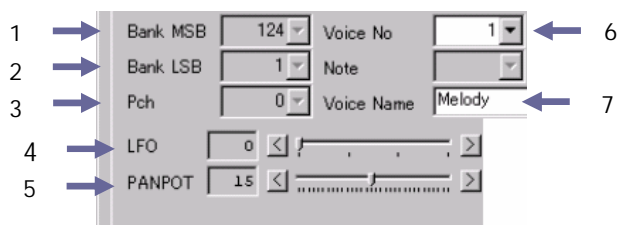


No.	Name	Description
37	DrumKey Assign	<p>By pushing this switch, drum voices are generated with higher musical interval to the right side of keyboard, or lower musical interval to the left side. Find a desired key to set DrumKey.</p> <p>(Figure DrumKey Assign is in the state in which the DrumKey Assign switch is pushed.)</p>  <p>All keys can be made to pronounce by pushing a DrumKey Assign switch.</p>
38	MV (Master Volume)	Master volume value at monitoring by the keyboard can be changed.
39	Velocity	Velocity value at monitoring by the keyboard can be changed.
40	Key	Displays only the note number under editing.

4.15.2. PCM Voice Edit Parameter



No.1-22



No.	Name	Description
1	Bank MSB	Displays bank MSB in which the voices being edited exist.
2	Bank LSB	Displays bank LSB in which the voices being edited exist.
3	Pch	Displays program change for the voices being edited.
4	LFO	Sets LFO frequency that is used for each voice. LFO= 0 : 1.8 Hz LFO= 1 : 4.0Hz LFO= 2 : 5.9Hz LFO= 3 : 7.0Hz
5	Panpot	Sets right-left balance for each channel.(0...15...31) Smaller value pans to the left, or larger value pans to the right.
6	Voice No.	Displays the voice number being edited with Voice Assign Map.
7	Voice Name	Sets the voice name being edited.

No.	Name	Description
8	Load Wave File	<p>Sound file (AIFF, WAVE) of up to 48 kHz can be read with 4bitADPCM (16bitADPCM) or 8bit (8bitPCM, 16bitPCM).</p> <p>The waveform that has been read is assigned to NoteNo.60 (C key) and can be played upto 48kHz.</p> <p>“Example” When a 24000Hz sound file is read</p> <p>Playing lower key makes FS lower or playing higher key makes FS higher with respect to C key (24000Hz) of NoteNo.60.</p>
	Detach Wave File	<p>Press this switch to delete the waveform that has been read with “Load Wave File”.</p> <div data-bbox="606 479 1324 770"> </div>
9	AR (Attack Rate)	Attack Rate is the time from the starting of play (-48 dB) to the moment maximum volume (0 dB) is attained.
10	DR (Decay Rate)	Decay Rate is the decay time from the moment the maximum volume (0 dB) to the moment Sustain Level (SL) is attained.
11	SR (Sustain Rate)	Sustain Rate designates the rate of decay from the moment a Sustain Level is attained. Unlike other rate setting, setting this to “0” causes continuation of the Sustain Level.
12	RR (Release Rate)	Release Rate is the time from key off to the moment the silent state (-96 db) is attained. When a check is placed in the check box of SUS, the setting is ignored.
13	SL (Sustain Level)	The Sustain Level is the one at which Decay Rate changes to Release Rate for decaying voice, or the level at which volume of a continuous voice is sustained.
14	TL (Total Level)	Sets the level of envelope.
15	DAM (Depth of AM)	<p>Sets the depth of amplitude modulation (AM).</p> <p>DAM= 0 : 1.3 dB</p> <p>DAM= 1 : 2.8 dB</p> <p>DAM= 2 : 5.8 dB</p> <p>DAM= 3 : 11.8 dB</p>
16	DVB ((Depth of vibrato modulation)	<p>DVB= 0 : 3.4 cents</p> <p>DVB= 1 : 6.7 cents</p> <p>DVB= 2 : 13.5 cents</p> <p>DVB= 3 : 26.8 cents</p>
17	XOF(Ignore KeyOff)	Sets ignoring KeyOff or not. Place a check in the check box to ignore KeyOff. KeyOff does not cause the change of state.
	SUS(Sustain)	<p>Sets whether the rate change after KeyOff is allowed or not. Place a check in the check box to continue the SR rate after KeyOff.</p> <p>Be sure to set SUS to ON to enable hold 1 (damper) of MIDI message.</p>
	EAM (AM modulation ON/OFF)	Sets ON/OFF of amplitude modulation (AM). Place a check in the check box to enable setting of DAM.
	EVB (Vibrato modulation ON/OFF)	<p>Sets ON/OFF of vibrato modulation. Place a check in the check box to enable setting of DVB.</p> <p>Be sure to set EVB to ON to enable modulation of MIDI message.</p>
	PE (Pan enable)	Placing a check in this box disables the pan setting of the control change and enables the value of panpot of the voices.

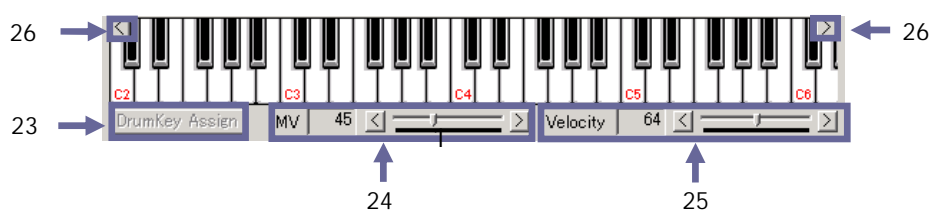
No.	Name	Description
	RM (Designate ROM/RAM)	Selects ROM or RAM for waveforms that are used. When ROM is designated, a waveform can be selected from seven waveform list in the ROM at Wave ID. When RAM is designated, arbitrary waveform can be designated from the load wave file. When this box is not checked, all keys are directly outed.
18	Wave ID	For MA-5, multiple PCM waveforms can be read and stored. The management number can be displayed and selected.
19	Fs	Displays the frequencies of waveforms that have been read. On MA-5 Authoring Tool, the frequency when playing NoteNo.60 (C key) is displayed. Changing the value changes the pitch.
20	Wave Name	A name can be attached to the read waveform. Wave Name is displayed on Wave ID field. Wave Name is not displayed on Wave ID field immediately after attaching Wave Name. Please reopen Voice Edit to display it.
21	LP	Designates a loop point for loop playback. In addition, value of peak factor at the following points are displayed on right hand. 4 bits ADPCM :Loop Point. 8 Bits PCM :End Point +1
22	EP (End Point)	Designates end point of play and loop End Point of loop playback. In addition, value of peak factor at the following points are displayed on right hand. 4 bits ADPCM : End Point -1 8 bits PCM : End Point The value of "0" generates no voice.

No.23 to 30

The voice under editing can be monitored by clicking the keyboard

Display at editing of normal voice

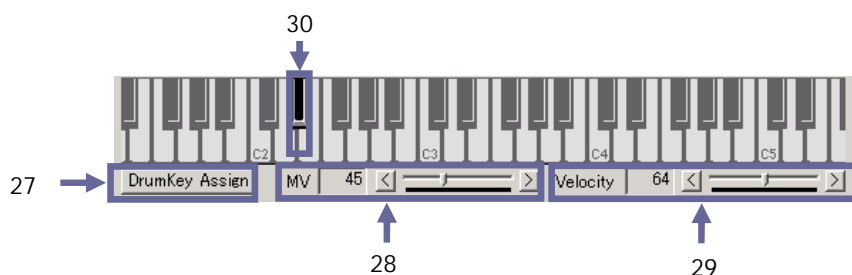
In the case of normal voice, voices are generated with higher musical interval to the right side of keyboard, or lower musical interval to the left side.




No.	Name	Description
23	DrumKey Assign	A normal voice is not used at the time of editing. (effective only at the time of editing in a drum voice)
24	MV (Master Volume)	Master volume value at monitoring by the keyboard can be changed.
25	Velocity	Velocity value at monitoring by the keyboard can be changed.
26	Scroll Button	By pushing this button, the display of keyboard compass can be changed. ▪ Click right side button to display higher interval. ▪ Click left side button to display lower interval.

▪ Display at the time of edit of drum voice

In the case of drum voices, voices are generated only when Note No. under edition is clicked.



No.	Name	Description
27	DrumKey Assign	<p>By pushing this switch, drum voices are generated with higher musical interval to the right side of keyboard, or lower musical interval to the left side. Find a desired key to set DrumKey.</p> <p>(Figure DrumKey Assign is in the state in which the DrumKey Assign switch is pushed.)</p> <div style="text-align: center;">  </div> <p>All keys can be made to pronounce by pushing a DrumKey Assign switch.</p>
28	MV (Master Volume)	Master volume value at monitoring by the keyboard can be changed.
29	Velocity	Velocity value at monitoring by the keyboard can be changed.
30	Key	Displays only the note number under editing.

4.15.2.1. LP and EP Automatic Control Function

If it is an inaccurate voice which is carried out when reading a sound file and displaying a current PCM voice, the above conformation message will be appeared

“Automatically operated loop and/or End Point adjusted according to PCM mode”

In addition, it is twisted into a correct value automatically.

Example of correcting the sampling number “2000”,

<with 4bit ADPCM>

In case of the OneShot(LoopPoint=EndPoint)

In case of (LoopPoint \geq Sample) or (EndPoint \geq Sample)

LoopPoint = EndPoint = Sample - 1

ex) LP=2000/EP=2000 \rightarrow LP=1999/EP=1999

LP=2000/EP=2001 \rightarrow LP=1999/EP=1999

In the case in which only LoopPoint is outside of the range.

LoopPoint = EndPoint

ex) LP=2001/EP=1500 \rightarrow LP=1500/EP=1500

In the case in which only EndPoint is outside of the range.

EndPoint = Sample - 1

ex) LP=1500/EP=2001 \rightarrow LP=1500/EP=2000

<with 8bit PCM>

In case of the OneShot(LoopPoint=EndPoint)

In case of (LoopPoint \geq Sample - 1) or (EndPoint \geq Sample - 1)

LoopPoint = EndPoint = Sample - 2

ex) LP=2000/EP=2000 \rightarrow LP=1998/EP=1998

In the case in which only LoopPoint is outside of the range.

LoopPoint = EndPoint

ex) LP=2001/EP=1500 \rightarrow LP=1500/EP=1500

In the case in which only EndPoint is outside of the range.

EndPoint = Sample - 1

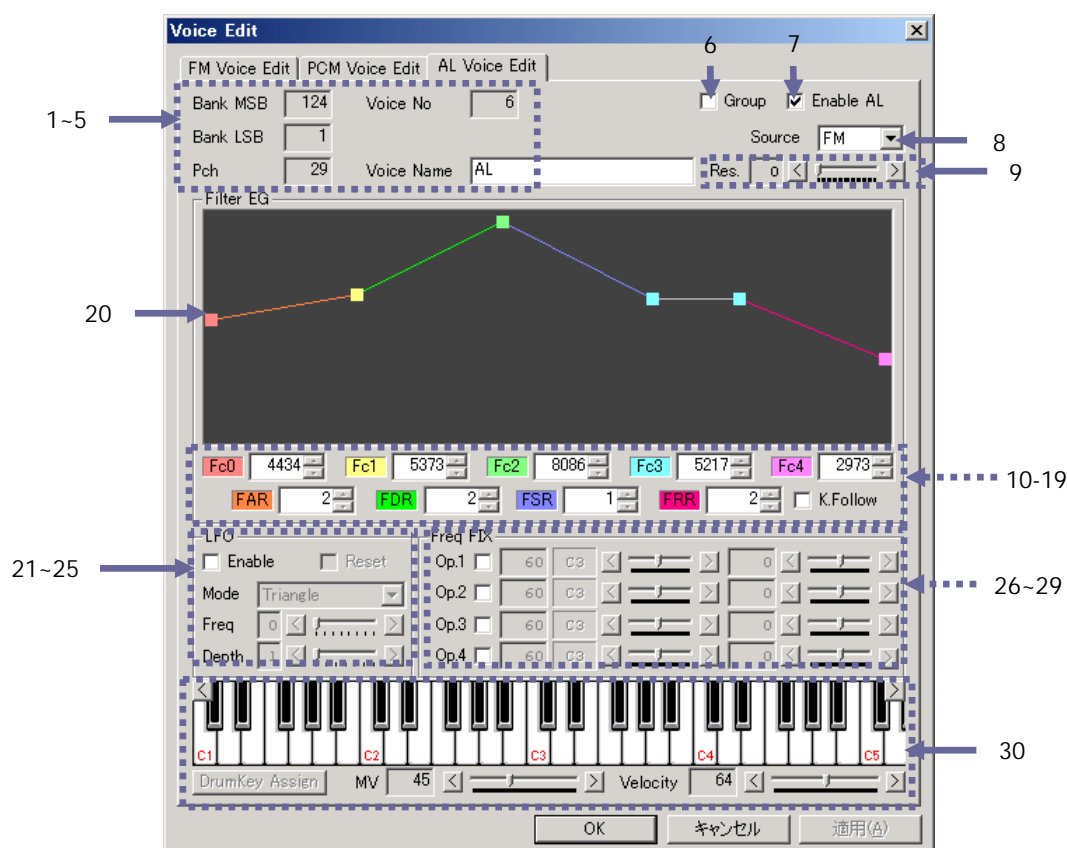
ex) LP=1500/EP=2001 \rightarrow LP=1500/EP=1999

4.15.3. AL Voice Edit Parameter

<MA-5 mode>

Double-click user voice name on the voice list window to display voice edit window, where double-clicking on AL Voice Edit tab can set AL voice parameter.

To open voice AL voice edit on the voice assign map, the channel in which voices for which AL voice is to be used are inputted must be designated as AL channel. By placing a check in “AL” field of score window can be set as AL voice. Voices of AL channel are generated as monaural.



No.	Name	Description
1	Bank MSB	Displays bank MSB in which the voices being edited exist.
2	Bank LSB	Displays bank LSB in which the voices being edited exist.
3	Pch (Program Change)	Displays program change for the voices being edited.
4	Voice No (Voice Number)	Displays the voice number being edited with Voice Assign Map.
5	Voice Name	Sets the voice name being edited.
6	Group (Group Setting) Display	For voices of program change that exist in the channels designated by AL setting, this parameter designates whether the same AL voice parameter is used for all voice, "ON, or AL voice parameters are used for each voice individually "OFF".

No.	Name	Description
		<div> When Paste operation is performed for voice parameters for which Group is set on Voice Assign Map, only AL voice parameter is changed for all voices of program change that exist in the channel designated by AL setting. For FM/PCM voice parameters, only the relevant voices are changed. </div>
7	Enable AL (AL enable setting) display	Designates whether AL is enabled, "ON", or disabled "OFF".
8	Source (Source selection) display	Designates whether AI voice parameter is attached to FM voice parameter, "FM", AI voice parameter is attached to PCM voice parameter, "PCM", or AI voice parameter is attached to Noise, "Noise".
9	Resonance (Resonance setting)	Designates resonance.
10	Fc0 (KeyOn cut off frequency)	Designates cutoff frequency change rate in attack state.
11	FAR (Attack state cutoff frequency change rate)	Designates cutoff frequency change rate in attack state.
12	Fc1 (Attack end cutoff frequency)	Designates cutoff frequency at attack end.
13	FDR (Decay state cutoff frequency change rate) display	Designates cutoff frequency change rate in decay state.
14	Fc2 (Decay end cutoff frequency) display	Designates cutoff frequency at decay end.
15	FSR (Sustain state cutoff frequency change rate) display	Designates cutoff frequency change rate in sustain state.
16	Fc3 (KeyOff cutoff frequency) display	Designates cutoff frequency at KeyOff start.
17	FRR (Release state cutoff frequency change rate) display	Designates cutoff frequency change rate in release state.
18	Fc4 (Release cutoff frequency) display	Designates cutoff frequency at release.
19	Key Follow (Key follow setting) display	Designates whether the setting of key follow for cutoff frequency (increases cutoff frequency according to the advance to upper interval).
20	Filter setting graph display (Shows Fc0 to Fc4, FAR, FDR, FSR and FRR on the sequential line graph. Click and drag the point of Fc0 to Fc4 with mouse to directly edit the graph. FAR, FDR, FSR and FRR change in accordance with the edition.
21	LFO Enable (LFO setting) display	Designates whether LFO is enabled, "ON", or disabled, "OFF" for cut off frequency. When a check is placed, LFO is enabled, where Freq, Depth or Mode can be changed. When a check is not placed, there parameters cannot be changed.
22	LFO Reset (LFO reset setting) display	Designates whether initial phase of LFO is reset, "ON" or not reset, "OFF". When LFO Mode is "S&H", CutOff frequency randomly changes, therefore this Reset function does not effect.
23	LFO Mode (LFO mode setting) display	Designates mode of LFO.
24	LFO Freq. (LFO frequency setting) display	Selects frequency of LFO.
25	LFO Depth (LFO depth setting)	Selects depth of cutoff frequency of LFO.

No.	Name	Description
	display	
26	Freq.FIX 1 Enable (Fixed frequency enabled setting operator 1) display	Designates whether fixed frequency of operator 1 is enabled, "ON" or disabled, "OFF". When OFF, Key and Fine cannot be designated.
27	Freq. FIX 1 Key (Fixed frequency key setting operator 1) display	Designates key number of fixed frequency of operator 1.
28	Freq. FIX 1 Fine (Fixed frequency fine setting operator 1) display	Designates fine pitch of fixed frequency of operator 1.
29	Freq.FIX 2 Enable(Fixed frequency enabled setting operator 2) display	Designates whether fixed frequency of operator 2 is enabled, "ON" or disabled, "OFF". When OFF, Key and Fine cannot be designated.
30	Freq. FIX 2 Key (Fixed frequency key setting operator 2) display	Designates key number of fixed frequency of operator 2.
31	Freq. FIX 2 Fine (Fixed frequency fine setting operator 2) display	Designates fine pitch of fixed frequency of operator 2.
32	Freq.FIX 3 Enable (Fixed frequency enabled setting operator 3) display	Designates whether fixed frequency of operator 3 is enabled, "ON" or disabled, "OFF". When OFF, Key and Fine cannot be designated.
33	Freq. FIX 3 Key (Fixed frequency key setting operator 3) display	Designates key number of fixed frequency of operator 3.
34	Freq. FIX 3 Fine (Fixed frequency fine setting operator 3) display	Designates fine pitch of fixed frequency of operator 3.
35	Freq.FIX 4 Enable (Fixed frequency enabled setting operator 4) display	Designates whether fixed frequency of operator 4 is enabled, "ON" or disabled, "OFF". When OFF, Key and Fine cannot be designated.
36	Freq. FIX 4 Key (Fixed frequency key setting operator 4) display	Designates key number of fixed frequency of operator 4.
37	Freq. FIX 4 (Fixed frequency fine setting operator 4) display	Designates fine pitch of fixed frequency of operator 4. <div style="border: 1px dashed blue; padding: 5px; margin-top: 10px;">The setting value of Freq.FIX is recalculated, when the "OK" button of Voice Edit is pushed, or when it moves to FM Voice Edit tab. Therefore, although some difference will come out of the setting value of Freq.FIX compared with the value set up first when Voice Edit is opened once again, playback sound becomes the same.</div>
38	Keyboard	By clicking a keyboard, voices during a editing can be displayed. For the details about Keyboard, refer to the "Keyboard" in the FM Voice Edit Parameter".

5. Supplementary Information

5.1. Voice List

5.1.1. MA-3 Native Normal Voice Map (FM16 mode 0 to 63)

Bank MSB	124			124			124			124			124					
Bank LSB	0			1			2			3~7			8			9		
	Default						User Assignable											
Pch#	Inst	Typ	Inst	Typ	Inst	Typ				Inst	Typ	Inst	Typ	Inst	Typ	Inst	Typ	
0	GrandPno	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
1	BritePno	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
2	E.GrandP	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
3	HnkyTonk	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
4	E.Piano1	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
5	E.Piano2	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
6	Harpsi.	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
7	Clavi.	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
8	Celesta	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
9	Glocken	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
10	MusicBox	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
11	Vibes	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
12	Marimba	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
13	Xylophon	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
14	TubulBel	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
15	Dulcimer	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
16	DrawOrgn	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
17	PercOrgn	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
18	RockOrgn	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
19	ChrchOrg	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
20	ReedOrgn	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
21	Acordion	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
22	Harmnica	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
23	TangoAcd	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
24	NylonGtr	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
25	SteelGtr	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
26	Jazz Gtr	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
27	CleanGtr	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
28	Mute. Gtr	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
29	Ovrdrive	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
30	Dist. Gtr	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
31	GtrHarmo	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
32	Aco. Bass	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
33	FngrBass	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
34	PickBass	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
35	Fretless	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
36	SlapBas1	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
37	SlapBas2	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
38	SynBass1	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
39	SynBass2	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
40	Violin	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
41	Viola	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
42	Cello	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
43	ContraBs	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
44	Trem.Str	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
45	Pizz.Str	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
46	Harp	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
47	Timpani	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
48	Strings1	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
49	Strings2	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
50	Syn.Str1	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
51	Syn.Str2	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
52	ChoirAah	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
53	VoiceOoh	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
54	SynVoice	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
55	Orch.Hit	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
56	Trumpet	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
57	Trombone	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
58	Tuba	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
59	Mute. Trp	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
60	Fr.Horn	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
61	BrasSect	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
62	SynBras1	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	
63	SynBras2	F4	User	A	User	A	•	•	•	User	A	User	A	User	A	User	A	

5.1.2. MA-5 Native Normal Voice Map (FM16 mode 64 to 127)

Bank MSB	124		124		124		124		124		124	
Bank LSB	0		1		2		3~7		8		9	
	Default		User Assignable									
Pch#	Inst	Typ	Inst	Typ	Inst	Typ			Inst	Typ	Inst	Typ
64	SprnoSax	F4	User	A	User	A	• • •		User	A	User	A
65	Alto Sax	F4	User	A	User	A	• • •		User	A	User	A
66	TenorSax	F4	User	A	User	A	• • •		User	A	User	A
67	Bari.Sax	F4	User	A	User	A	• • •		User	A	User	A
68	Oboe	F4	User	A	User	A	• • •		User	A	User	A
69	Eng.Horn	F4	User	A	User	A	• • •		User	A	User	A
70	Bassoon	F4	User	A	User	A	• • •		User	A	User	A
71	Clarinet	F4	User	A	User	A	• • •		User	A	User	A
72	Piccolo	F4	User	A	User	A	• • •		User	A	User	A
73	Flute	F4	User	A	User	A	• • •		User	A	User	A
74	Recorder	F4	User	A	User	A	• • •		User	A	User	A
75	PanFlute	F4	User	A	User	A	• • •		User	A	User	A
76	Bottle	F4	User	A	User	A	• • •		User	A	User	A
77	Shakhchi	F4	User	A	User	A	• • •		User	A	User	A
78	Whistle	F4	User	A	User	A	• • •		User	A	User	A
79	Ocarina	F4	User	A	User	A	• • •		User	A	User	A
80	SquareLd	F4	User	A	User	A	• • •		User	A	User	A
81	Saw.Lead	F4	User	A	User	A	• • •		User	A	User	A
82	CaliopLd	F4	User	A	User	A	• • •		User	A	User	A
83	ChiffLd	F4	User	A	User	A	• • •		User	A	User	A
84	CharanLd	F4	User	A	User	A	• • •		User	A	User	A
85	Voice Ld	F4	User	A	User	A	• • •		User	A	User	A
86	Fifth Ld	F4	User	A	User	A	• • •		User	A	User	A
87	Bass &Ld	F4	User	A	User	A	• • •		User	A	User	A
88	NewAgePd	F4	User	A	User	A	• • •		User	A	User	A
89	Warm Pad	F4	User	A	User	A	• • •		User	A	User	A
90	PolySyPd	F4	User	A	User	A	• • •		User	A	User	A
91	ChoirPad	F4	User	A	User	A	• • •		User	A	User	A
92	BowedPad	F4	User	A	User	A	• • •		User	A	User	A
93	MetalPad	F4	User	A	User	A	• • •		User	A	User	A
94	Halo Pad	F4	User	A	User	A	• • •		User	A	User	A
95	SweepPad	F4	User	A	User	A	• • •		User	A	User	A
96	Rain	F4	User	A	User	A	• • •		User	A	User	A
97	SoundTrk	F4	User	A	User	A	• • •		User	A	User	A
98	Crystal	F4	User	A	User	A	• • •		User	A	User	A
99	Atmosphr	F4	User	A	User	A	• • •		User	A	User	A
100	Bright	F4	User	A	User	A	• • •		User	A	User	A
101	Goblins	F4	User	A	User	A	• • •		User	A	User	A
102	Echoes	F4	User	A	User	A	• • •		User	A	User	A
103	Sci-Fi	F4	User	A	User	A	• • •		User	A	User	A
104	Sitar	F4	User	A	User	A	• • •		User	A	User	A
105	Banjo	F4	User	A	User	A	• • •		User	A	User	A
106	Shamisen	F4	User	A	User	A	• • •		User	A	User	A
107	Koto	F4	User	A	User	A	• • •		User	A	User	A
108	Kalimba	F4	User	A	User	A	• • •		User	A	User	A
109	Bagpipe	F4	User	A	User	A	• • •		User	A	User	A
110	Fiddle	F4	User	A	User	A	• • •		User	A	User	A
111	Shanai	F4	User	A	User	A	• • •		User	A	User	A
112	TnklBell	F4	User	A	User	A	• • •		User	A	User	A
113	Agogo	F4	User	A	User	A	• • •		User	A	User	A
114	SteelDrm	F4	User	A	User	A	• • •		User	A	User	A
*1 115	WoodBlok	F4	User	A	User	A	• • •		User	A	User	A
*2 116	TaikoDrm	F4	User	A	User	A	• • •		User	A	User	A
*3 117	MelodTom	F4	User	A	User	A	• • •		User	A	User	A
*4 118	Syn.Drum	F4	User	A	User	A	• • •		User	A	User	A
*4 119	RevCymb1	F4	User	A	User	A	• • •		User	A	User	A
120	FretNoiz	F4	User	A	User	A	• • •		User	A	User	A
121	BrthNoiz	F4	User	A	User	A	• • •		User	A	User	A
*5 122	Seashore	F4	User	A	User	A	• • •		User	A	User	A
*6 123	Tweet	F4	User	A	User	A	• • •		User	A	User	A
*7 124	Telephone	F4	User	A	User	A	• • •		User	A	User	A
*7 125	Helicptr	F4	User	A	User	A	• • •		User	A	User	A
*6 126	Applause	F4	User	A	User	A	• • •		User	A	User	A
*5 127	Gunshot	F4	User	A	User	A	• • •		User	A	User	A

*1 : 50cent/halfnote, #69 = F#4

*2 : 50cent/halfnote, #69 = A2

*3 : 50cent/halfnote, #69 = C#4

*4 : 50cent/halfnote

*5 : 20cent/halfnote

*6 : 5cent/halfnote

*7 : 10cent/halfnote

The key control judgment of voice set
Pch# attached "*" is treated as drum.
(Also UserBank)

(*)Type F2: FM 2 Operator, F4: FM 4 Operator, P: PCM, A: F2/F4/P Assignable

5.1.3. MA-5 Native Normal Voice Map (FM32, ALL64 mode 0 to 63)

Bank MSB	124		124		124		124	124		124		
Bank LSB	0		1		2		3~7	8		9		
	Default				User Assignable							
Pch#	Inst	Typ	Inst	Typ	Inst	Typ		Inst	Typ	Inst	Typ	
0	GrandPno	F2	User	A	User	A	. . .	User	A	User	A	
1	BritePno	F2	User	A	User	A	. . .	User	A	User	A	
2	E.GrandP	F2	User	A	User	A	. . .	User	A	User	A	
3	HnkyTonk	F2	User	A	User	A	. . .	User	A	User	A	
4	E.Piano1	F2	User	A	User	A	. . .	User	A	User	A	
5	E.Piano2	F2	User	A	User	A	. . .	User	A	User	A	
6	Harpsi.	F2	User	A	User	A	. . .	User	A	User	A	
7	Clavi.	F2	User	A	User	A	. . .	User	A	User	A	
8	Celesta	F2	User	A	User	A	. . .	User	A	User	A	
9	Glocken	F2	User	A	User	A	. . .	User	A	User	A	
10	MusicBox	F2	User	A	User	A	. . .	User	A	User	A	
11	Vibes	F2	User	A	User	A	. . .	User	A	User	A	
12	Marimba	F2	User	A	User	A	. . .	User	A	User	A	
13	Xylophon	F2	User	A	User	A	. . .	User	A	User	A	
14	TubulBel	F2	User	A	User	A	. . .	User	A	User	A	
15	Dulcimer	F2	User	A	User	A	. . .	User	A	User	A	
16	DrawOrgn	F2	User	A	User	A	. . .	User	A	User	A	
17	PercOrgn	F2	User	A	User	A	. . .	User	A	User	A	
18	RockOrgn	F2	User	A	User	A	. . .	User	A	User	A	
19	ChrchOrg	F2	User	A	User	A	. . .	User	A	User	A	
20	ReedOrgn	F2	User	A	User	A	. . .	User	A	User	A	
21	Acordion	F2	User	A	User	A	. . .	User	A	User	A	
22	Harmnica	F2	User	A	User	A	. . .	User	A	User	A	
23	TangoAcid	F2	User	A	User	A	. . .	User	A	User	A	
24	NylonGtr	F2	User	A	User	A	. . .	User	A	User	A	
25	SteelGtr	F2	User	A	User	A	. . .	User	A	User	A	
26	Jazz Gtr	F2	User	A	User	A	. . .	User	A	User	A	
27	CleanGtr	F2	User	A	User	A	. . .	User	A	User	A	
28	Mute.Gtr	F2	User	A	User	A	. . .	User	A	User	A	
29	Ovrdrive	F2	User	A	User	A	. . .	User	A	User	A	
30	Dist.Gtr	F2	User	A	User	A	. . .	User	A	User	A	
31	GtrHarmo	F2	User	A	User	A	. . .	User	A	User	A	
32	Aco.Bass	F2	User	A	User	A	. . .	User	A	User	A	
33	FngrBass	F2	User	A	User	A	. . .	User	A	User	A	
34	PickBass	F2	User	A	User	A	. . .	User	A	User	A	
35	Fretless	F2	User	A	User	A	. . .	User	A	User	A	
36	SlapBas1	F2	User	A	User	A	. . .	User	A	User	A	
37	SlapBas2	F2	User	A	User	A	. . .	User	A	User	A	
38	SynBass1	F2	User	A	User	A	. . .	User	A	User	A	
39	SynBass2	F2	User	A	User	A	. . .	User	A	User	A	
40	Violin	F2	User	A	User	A	. . .	User	A	User	A	
41	Viola	F2	User	A	User	A	. . .	User	A	User	A	
42	Cello	F2	User	A	User	A	. . .	User	A	User	A	
43	ContraBs	F2	User	A	User	A	. . .	User	A	User	A	
44	Trem.Str	F2	User	A	User	A	. . .	User	A	User	A	
45	Pizz.Str	F2	User	A	User	A	. . .	User	A	User	A	
46	Harp	F2	User	A	User	A	. . .	User	A	User	A	
47	Timpani	F2	User	A	User	A	. . .	User	A	User	A	
48	Strings1	F2	User	A	User	A	. . .	User	A	User	A	
49	Strings2	F2	User	A	User	A	. . .	User	A	User	A	
50	Syn.Str1	F2	User	A	User	A	. . .	User	A	User	A	
51	Syn.Str2	F2	User	A	User	A	. . .	User	A	User	A	
52	ChoirAah	F2	User	A	User	A	. . .	User	A	User	A	
53	VoiceOoh	F2	User	A	User	A	. . .	User	A	User	A	
54	SynVoice	F2	User	A	User	A	. . .	User	A	User	A	
55	Orch.Hit	F2	User	A	User	A	. . .	User	A	User	A	
56	Trumpet	F2	User	A	User	A	. . .	User	A	User	A	
57	Trombone	F2	User	A	User	A	. . .	User	A	User	A	
58	Tuba	F2	User	A	User	A	. . .	User	A	User	A	
59	Mute.Trp	F2	User	A	User	A	. . .	User	A	User	A	
60	Fr.Horn	F2	User	A	User	A	. . .	User	A	User	A	
61	BrasSect	F2	User	A	User	A	. . .	User	A	User	A	
62	SynBras1	F2	User	A	User	A	. . .	User	A	User	A	
63	SynBras2	F2	User	A	User	A	. . .	User	A	User	A	

5.1.4. MA-5 Native Normal Voice Map (FM32 , ALL64 mode 64 to 127)

Bank MSB	124		124		124		124		124		124	
Bank LSB	0		1		2		3~7		8		9	
	Default		User Assignable									
	Pch#	Inst	Typ	Inst	Typ	Inst	Typ		Inst	Typ	Inst	Typ
	64	SprnoSax	F2	User	A	User	A	• • •	User	A	User	A
	65	Alto Sax	F2	User	A	User	A	• • •	User	A	User	A
	66	TenorSax	F2	User	A	User	A	• • •	User	A	User	A
	67	Bari.Sax	F2	User	A	User	A	• • •	User	A	User	A
	68	Oboe	F2	User	A	User	A	• • •	User	A	User	A
	69	Eng.Horn	F2	User	A	User	A	• • •	User	A	User	A
	70	Bassoon	F2	User	A	User	A	• • •	User	A	User	A
	71	Clarinet	F2	User	A	User	A	• • •	User	A	User	A
	72	Piccolo	F2	User	A	User	A	• • •	User	A	User	A
	73	Flute	F2	User	A	User	A	• • •	User	A	User	A
	74	Recorder	F2	User	A	User	A	• • •	User	A	User	A
	75	PanFlute	F2	User	A	User	A	• • •	User	A	User	A
	76	Bottle	F2	User	A	User	A	• • •	User	A	User	A
	77	Shakhchi	F2	User	A	User	A	• • •	User	A	User	A
	78	Whistle	F2	User	A	User	A	• • •	User	A	User	A
	79	Ocarina	F2	User	A	User	A	• • •	User	A	User	A
	80	SquareLd	F2	User	A	User	A	• • •	User	A	User	A
	81	Saw.Lead	F2	User	A	User	A	• • •	User	A	User	A
	82	CaliopLd	F2	User	A	User	A	• • •	User	A	User	A
	83	ChiffLd	F2	User	A	User	A	• • •	User	A	User	A
	84	CharanLd	F2	User	A	User	A	• • •	User	A	User	A
	85	Voice Ld	F2	User	A	User	A	• • •	User	A	User	A
	86	Fifth Ld	F2	User	A	User	A	• • •	User	A	User	A
	87	Bass &Ld	F2	User	A	User	A	• • •	User	A	User	A
	88	NewAgePd	F2	User	A	User	A	• • •	User	A	User	A
	89	Warm Pad	F2	User	A	User	A	• • •	User	A	User	A
	90	PolySyPd	F2	User	A	User	A	• • •	User	A	User	A
	91	ChoirPad	F2	User	A	User	A	• • •	User	A	User	A
	92	BowedPad	F2	User	A	User	A	• • •	User	A	User	A
	93	MetalPad	F2	User	A	User	A	• • •	User	A	User	A
	94	Halo Pad	F2	User	A	User	A	• • •	User	A	User	A
	95	SweepPad	F2	User	A	User	A	• • •	User	A	User	A
	96	Rain	F2	User	A	User	A	• • •	User	A	User	A
	97	SoundTrk	F2	User	A	User	A	• • •	User	A	User	A
	98	Crystal	F2	User	A	User	A	• • •	User	A	User	A
	99	Atmosphr	F2	User	A	User	A	• • •	User	A	User	A
	100	Bright	F2	User	A	User	A	• • •	User	A	User	A
	101	Goblins	F2	User	A	User	A	• • •	User	A	User	A
	102	Echoes	F2	User	A	User	A	• • •	User	A	User	A
	103	Sci-Fi	F2	User	A	User	A	• • •	User	A	User	A
	104	Sitar	F2	User	A	User	A	• • •	User	A	User	A
	105	Banjo	F2	User	A	User	A	• • •	User	A	User	A
	106	Shamisen	F2	User	A	User	A	• • •	User	A	User	A
	107	Koto	F2	User	A	User	A	• • •	User	A	User	A
	108	Kalimba	F2	User	A	User	A	• • •	User	A	User	A
	109	Bagpipe	F2	User	A	User	A	• • •	User	A	User	A
	110	Fiddle	F2	User	A	User	A	• • •	User	A	User	A
	111	Shanai	F2	User	A	User	A	• • •	User	A	User	A
	112	TnkiBell	F2	User	A	User	A	• • •	User	A	User	A
	113	Agogo	F2	User	A	User	A	• • •	User	A	User	A
	114	SteelDrm	F2	User	A	User	A	• • •	User	A	User	A
	*1 115	WoodBlok	F2	User	A	User	A	• • •	User	A	User	A
	*2 116	TaikoDrm	F2	User	A	User	A	• • •	User	A	User	A
	*3 117	MelodTom	F2	User	A	User	A	• • •	User	A	User	A
	*4 118	Syn.Drum	F2	User	A	User	A	• • •	User	A	User	A
	*4 119	RevCymb1	F2	User	A	User	A	• • •	User	A	User	A
	120	FretNoiz	F2	User	A	User	A	• • •	User	A	User	A
	121	BrthNoiz	F2	User	A	User	A	• • •	User	A	User	A
	*5 122	Seashore	F2	User	A	User	A	• • •	User	A	User	A
	*6 123	Tweet	F2	User	A	User	A	• • •	User	A	User	A
	*7 124	Telephone	F2	User	A	User	A	• • •	User	A	User	A
	*7 125	Helicptr	F2	User	A	User	A	• • •	User	A	User	A
	*6 126	Applause	F2	User	A	User	A	• • •	User	A	User	A
	*5 127	Gunshot	F2	User	A	User	A	• • •	User	A	User	A

*1 : 50cent/halfnote, #69 = F#4

*2 : 50cent/halfnote, #69 = A2

*3 : 50cent/halfnote, #69 = C#4

*4 : 50cent/halfnote

*5 : 20cent/halfnote

*6 : 5cent/halfnote

*7 : 10cent/halfnote

The key control judgment of voice set Pch# attached "*" is treated as drum. (Also UserBank)

(*)Type F2: FM 2 Operator, F4: FM 4 Operator, P: PCM, A: F2/F4/P Assignable

5.1.5. MA-5 Native Drum Instrument MAP (FM16 mode)

Bank MSB	125		125		125		125		125	
Pch#	0		1		2		3~8		9	
	Default				User Assignable					
Note#	Inst	Typ	Inst	Typ	Inst	Typ		Inst	Typ	
24	Seq Click H	F4	Seq Click H	F4	User	A	• • •	User	A	
25	Brush Tap	F4	Brush Tap	F4	User	A	• • •	User	A	
@ 26	Brush Swirl	F4	Brush Swirl	F4	User	A	• • •	User	A	
27	Brush Slap	F4	Brush Slap	F4	User	A	• • •	User	A	
@ 28	Brush Tap Swirl	F4	Brush Tap Swirl	F4	User	A	• • •	User	A	
@ 29	Snare Roll	F4	Snare Roll	F4	User	A	• • •	User	A	
30	Castanet	F4	Castanet	F4	User	A	• • •	User	A	
31	Snare L	P	Snare L	F4	User	A	• • •	User	A	
32	Sticks	F4	Sticks	F4	User	A	• • •	User	A	
33	Bass Drum L	P	Bass Drum L	F4	User	A	• • •	User	A	
34	Open Rim Shot	F4	Open Rim Shot	F4	User	A	• • •	User	A	
35	Bass Drum M	P	Bass Drum M	F4	User	A	• • •	User	A	
36	Bass Drum H	P	Bass Drum H	F4	User	A	• • •	User	A	
37	Closed Rim Shot	F4	Closed Rim Shot	F4	User	A	• • •	User	A	
38	Snare M	P	Snare M	F4	User	A	• • •	User	A	
39	Hand Clap	F4	Hand Clap	F4	User	A	• • •	User	A	
40	Snare H	P	Snare H	F4	User	A	• • •	User	A	
41	Floor Tom L	P	Floor Tom L	F4	User	A	• • •	User	A	
42	Hi-Hat Closed	P	Hi-Hat Closed	F4	User	A	• • •	User	A	
43	Floor Tom H	P	Floor Tom H	F4	User	A	• • •	User	A	
44	Hi-Hat Pedal	P	Hi-Hat Pedal	F4	User	A	• • •	User	A	
45	Low Tom	P	Low Tom	F4	User	A	• • •	User	A	
46	Hi-Hat Open	P	Hi-Hat Open	F4	User	A	• • •	User	A	
47	Mid Tom L	P	Mid Tom L	F4	User	A	• • •	User	A	
48	Mid Tom H	P	Mid Tom H	F4	User	A	• • •	User	A	
49	Crash Cymbal 1	P	Crash Cymbal 1	F4	User	A	• • •	User	A	
50	High Tom	P	High Tom	F4	User	A	• • •	User	A	
51	Ride Cymbal 1	P	Ride Cymbal 1	F4	User	A	• • •	User	A	
52	Chinese Cymbal	P	Chinese Cymbal	F4	User	A	• • •	User	A	
53	Ride Cymbal Cup	F4	Ride Cymbal Cup	F4	User	A	• • •	User	A	
54	Tambourine	F4	Tambourine	F4	User	A	• • •	User	A	
55	Splash Cymbal	P	Splash Cymbal	F4	User	A	• • •	User	A	
56	Cowbell	F4	Cowbell	F4	User	A	• • •	User	A	
57	Crash Cymbal 2	P	Crash Cymbal 2	F4	User	A	• • •	User	A	
58	Vibraslap	F4	Vibraslap	F4	User	A	• • •	User	A	
59	Ride Cymbal 2	P	Ride Cymbal 2	F4	User	A	• • •	User	A	
60	Bongo H	F4	Bongo H	F4	User	A	• • •	User	A	
61	Bongo L	F4	Bongo L	F4	User	A	• • •	User	A	
62	Conga H Mute	F4	Conga H Mute	F4	User	A	• • •	User	A	
63	Conga H Open	F4	Conga H Open	F4	User	A	• • •	User	A	
64	Conga L	F4	Conga L	F4	User	A	• • •	User	A	
65	Timbale H	F4	Timbale H	F4	User	A	• • •	User	A	
66	Timbale L	F4	Timbale L	F4	User	A	• • •	User	A	
67	Agogo H	F4	Agogo H	F4	User	A	• • •	User	A	
68	Agogo L	F4	Agogo L	F4	User	A	• • •	User	A	
69	Cabasa	F4	Cabasa	F4	User	A	• • •	User	A	
70	Maracas	F4	Maracas	F4	User	A	• • •	User	A	
@ 71	Samba Whistle H	F4	Samba Whistle H	F4	User	A	• • •	User	A	
@ 72	Samba Whistle L	F4	Samba Whistle L	F4	User	A	• • •	User	A	
73	Guiro Short	F4	Guiro Short	F4	User	A	• • •	User	A	
74	Guiro Long	F4	Guiro Long	F4	User	A	• • •	User	A	
75	Claves	F4	Claves	F4	User	A	• • •	User	A	
76	Wood Block H	F4	Wood Block H	F4	User	A	• • •	User	A	
77	Wood Block L	F4	Wood Block L	F4	User	A	• • •	User	A	
78	Cuica Mute	F4	Cuica Mute	F4	User	A	• • •	User	A	
79	Cuica Open	F4	Cuica Open	F4	User	A	• • •	User	A	
80	Triangle Mute	F4	Triangle Mute	F4	User	A	• • •	User	A	
81	Triangle Open	F4	Triangle Open	F4	User	A	• • •	User	A	
82	Shaker	F4	Shaker	F4	User	A	• • •	User	A	
83	Jingle Bells	F4	Jingle Bells	F4	User	A	• • •	User	A	
84	Bell Tree	F4	Bell Tree	F4	User	A	• • •	User	A	

Only the voice attached "@" reacts to KeyOff.

• Exclusion allotment of Key#42/#44/#46

• Exclusion allotment of Key#71/#72

• Exclusion allotment of Key#73/#74

• Exclusion allotment of Key#78/#79

• Exclusion allotment of Key#80/#81

Use Exclusion allotment, if the voice is set to the above NoteNo. of UserBank.

(*) Type F4: FM 4 Operator, P: PCM, A: F2/F4/P Assignable

5.1.6. MA-5 Native Drum Instrument MAP (FM32 mode)

Bank MSB	125		125		125		125		125	
Pch#	0		1		2		3~8		9	
	Default				User Assignable					
Note#	Inst	Typ	Inst	Typ	Inst	Typ		Inst	Typ	
24	Seq Click H	F2	Seq Click H	F2	User	A	• • •	User	A	
25	Brush Tap	F2	Brush Tap	F2	User	A	• • •	User	A	
@ 26	Brush Swirl	F2	Brush Swirl	F2	User	A	• • •	User	A	
27	Brush Slap	F2	Brush Slap	F2	User	A	• • •	User	A	
@ 28	Brush Tap Swirl	F2	Brush Tap Swirl	F2	User	A	• • •	User	A	
@ 29	Snare Roll	F2	Snare Roll	F2	User	A	• • •	User	A	
30	Castanet	F2	Castanet	F2	User	A	• • •	User	A	
31	Snare L	P	Snare L	F2	User	A	• • •	User	A	
32	Sticks	F2	Sticks	F2	User	A	• • •	User	A	
33	Bass Drum L	P	Bass Drum L	F2	User	A	• • •	User	A	
34	Open Rim Shot	F2	Open Rim Shot	F2	User	A	• • •	User	A	
35	Bass Drum M	P	Bass Drum M	F2	User	A	• • •	User	A	
36	Bass Drum H	P	Bass Drum H	F2	User	A	• • •	User	A	
37	Closed Rim Shot	F2	Closed Rim Shot	F2	User	A	• • •	User	A	
38	Snare M	P	Snare M	F2	User	A	• • •	User	A	
39	Hand Clap	F2	Hand Clap	F2	User	A	• • •	User	A	
40	Snare H	P	Snare H	F2	User	A	• • •	User	A	
41	Floor Tom L	P	Floor Tom L	F2	User	A	• • •	User	A	
42	Hi-Hat Closed	P	Hi-Hat Closed	F2	User	A	• • •	User	A	
43	Floor Tom H	P	Floor Tom H	F2	User	A	• • •	User	A	
44	Hi-Hat Pedal	P	Hi-Hat Pedal	F2	User	A	• • •	User	A	
45	Low Tom	P	Low Tom	F2	User	A	• • •	User	A	
46	Hi-Hat Open	P	Hi-Hat Open	F2	User	A	• • •	User	A	
47	Mid Tom L	P	Mid Tom L	F2	User	A	• • •	User	A	
48	Mid Tom H	P	Mid Tom H	F2	User	A	• • •	User	A	
49	Crash Cymbal 1	P	Crash Cymbal 1	F2	User	A	• • •	User	A	
50	High Tom	P	High Tom	F2	User	A	• • •	User	A	
51	Ride Cymbal 1	P	Ride Cymbal 1	F2	User	A	• • •	User	A	
52	Chinese Cymbal	P	Chinese Cymbal	F2	User	A	• • •	User	A	
53	Ride Cymbal Cup	F2	Ride Cymbal Cup	F2	User	A	• • •	User	A	
54	Tambourine	F2	Tambourine	F2	User	A	• • •	User	A	
55	Splash Cymbal	P	Splash Cymbal	F2	User	A	• • •	User	A	
56	Cowbell	F2	Cowbell	F2	User	A	• • •	User	A	
57	Crash Cymbal 2	P	Crash Cymbal 2	F2	User	A	• • •	User	A	
58	Vibraslap	F2	Vibraslap	F2	User	A	• • •	User	A	
59	Ride Cymbal 2	P	Ride Cymbal 2	F2	User	A	• • •	User	A	
60	Bongo H	F2	Bongo H	F2	User	A	• • •	User	A	
61	Bongo L	F2	Bongo L	F2	User	A	• • •	User	A	
62	Conga H Mute	F2	Conga H Mute	F2	User	A	• • •	User	A	
63	Conga H Open	F2	Conga H Open	F2	User	A	• • •	User	A	
64	Conga L	F2	Conga L	F2	User	A	• • •	User	A	
65	Timbale H	F2	Timbale H	F2	User	A	• • •	User	A	
66	Timbale L	F2	Timbale L	F2	User	A	• • •	User	A	
67	Agogo H	F2	Agogo H	F2	User	A	• • •	User	A	
68	Agogo L	F2	Agogo L	F2	User	A	• • •	User	A	
69	Cabasa	F2	Cabasa	F2	User	A	• • •	User	A	
70	Maracas	F2	Maracas	F2	User	A	• • •	User	A	
@ 71	Samba Whistle H	F2	Samba Whistle H	F2	User	A	• • •	User	A	
@ 72	Samba Whistle L	F2	Samba Whistle L	F2	User	A	• • •	User	A	
73	Guiro Short	F2	Guiro Short	F2	User	A	• • •	User	A	
74	Guiro Long	F2	Guiro Long	F2	User	A	• • •	User	A	
75	Claves	F2	Claves	F2	User	A	• • •	User	A	
76	Wood Block H	F2	Wood Block H	F2	User	A	• • •	User	A	
77	Wood Block L	F2	Wood Block L	F2	User	A	• • •	User	A	
78	Cuica Mute	F2	Cuica Mute	F2	User	A	• • •	User	A	
79	Cuica Open	F2	Cuica Open	F2	User	A	• • •	User	A	
80	Triangle Mute	F2	Triangle Mute	F2	User	A	• • •	User	A	
81	Triangle Open	F2	Triangle Open	F2	User	A	• • •	User	A	
82	Shaker	F2	Shaker	F2	User	A	• • •	User	A	
83	Jingle Bells	F2	Jingle Bells	F2	User	A	• • •	User	A	
84	Bell Tree	F2	Bell Tree	F2	User	A	• • •	User	A	

Only the voice attached "@" reacts to KeyOff.

- Exclusion allotment of Key#42/#44/#46
- Exclusion allotment of Key#71/#72
- Exclusion allotment of Key#73/#74
- Exclusion allotment of Key#78/#79
- Exclusion allotment of Key#80/#81

Use Exclusion allotment, if the voice is set to the above NoteNo of UserBank.

(*) Type F2:FM 2 Operator, P: PCM, A: F2/F4/P Assignable

5.1.7. MA-5 GM Level1 Normal Voice MAP (Built-in ROM Voice)

Bank MSB	0	0		
Bank LSB	0	1-127		
	ROM			
Pch#	Inst	Typ	Inst	Typ
0	GrandPno	F2	←	
1	BritePno	F2	←	
2	E.GrandP	F2	←	
3	HnkyTonk	F2	←	
4	E.Piano1	F2	←	
5	E.Piano2	F2	←	
6	Harpsi.	F2	←	
7	Clavi.	F2	←	
8	Celesta	F2	←	
9	Glocken	F2	←	
10	MusicBox	F2	←	
11	Vibes	F2	←	
12	Marimba	F2	←	
13	Xylophon	F2	←	
14	TubulBel	F2	←	
15	Dulcimer	F2	←	
16	DrawOrgn	F2	←	
17	PercOrgn	F2	←	
18	RockOrgn	F2	←	
19	ChrchOrg	F2	←	
20	ReedOrgn	F2	←	
21	Acordion	F2	←	
22	Harmnica	F2	←	
23	TangoAcd	F2	←	
24	NylonGtr	F2	←	
25	SteelGtr	F2	←	
26	Jazz Gtr	F2	←	
27	CleanGtr	F2	←	
28	Mute.Gtr	F2	←	
29	Ovrdrive	F2	←	
30	Dist.Gtr	F2	←	
31	GtrHarmo	F2	←	
32	Aco.Bass	F2	←	
33	FngrBass	F2	←	
34	PickBass	F2	←	
35	Fretless	F2	←	
36	SlapBas1	F2	←	
37	SlapBas2	F2	←	
38	SynBass1	F2	←	
39	SynBass2	F2	←	
40	Violin	F2	←	
41	Viola	F2	←	
42	Cello	F2	←	
43	ContraBs	F2	←	
44	Trem.Str	F2	←	
45	Pizz.Str	F2	←	
46	Harp	F2	←	
47	Timpani	F2	←	
48	Strings1	F2	←	
49	Strings2	F2	←	
50	Syn.Str1	F2	←	
51	Syn.Str2	F2	←	
52	ChoirAah	F2	←	
53	VoiceOoh	F2	←	
54	SynVoice	F2	←	
55	Orch.Hit	F2	←	
56	Trumpet	F2	←	
57	Trombone	F2	←	
58	Tuba	F2	←	
59	Mute.Trp	F2	←	
60	Fr.Horn	F2	←	
61	BrasSect	F2	←	
62	SynBras1	F2	←	
63	SynBras2	F2	←	

Bank MSB	0	0		
Bank LSB	0	1-127		
	ROM			
Pch#	Inst	Typ	Inst	Typ
64	SprnoSax	F2	←	
65	Alto Sax	F2	←	
66	TenorSax	F2	←	
67	Bari.Sax	F2	←	
68	Oboe	F2	←	
69	Eng.Horn	F2	←	
70	Bassoon	F2	←	
71	Clarinet	F2	←	
72	Piccolo	F2	←	
73	Flute	F2	←	
74	Recorder	F2	←	
75	PanFlute	F2	←	
76	Bottle	F2	←	
77	Shakhchi	F2	←	
78	Whistle	F2	←	
79	Ocarina	F2	←	
80	SquareLd	F2	←	
81	Saw.Lead	F2	←	
82	CaliopLd	F2	←	
83	ChiffLd	F2	←	
84	CharanLd	F2	←	
85	Voice Ld	F2	←	
86	Fifth Ld	F2	←	
87	Bass &Ld	F2	←	
88	NewAgePd	F2	←	
89	Warm Pad	F2	←	
90	PolySyPd	F2	←	
91	ChoirPad	F2	←	
92	BowedPad	F2	←	
93	MetalPad	F2	←	
94	Halo Pad	F2	←	
95	SweepPad	F2	←	
96	Rain	F2	←	
97	SoundTrk	F2	←	
98	Crystal	F2	←	
99	Atmosphr	F2	←	
100	Bright	F2	←	
101	Goblins	F2	←	
102	Echoes	F2	←	
103	Sci-Fi	F2	←	
104	Sitar	F2	←	
105	Banjo	F2	←	
106	Shamisen	F2	←	
107	Koto	F2	←	
108	Kalimba	F2	←	
109	Bagpipe	F2	←	
110	Fiddle	F2	←	
111	Shanai	F2	←	
112	TnkIBell	F2	←	
113	Agogo	F2	←	
114	SteelDrm	F2	←	
*1 115	WoodBlok	F2	←	
*2 116	TaikoDrm	F2	←	
*3 117	MelodTom	F2	←	
*4 118	Syn.Drum	F2	←	
*4 119	RevCymb1	F2	←	
120	FretNoiz	F2	←	
121	BrthNoiz	F2	←	
*5 122	Seashore	F2	←	
*6 123	Tweet	F2	←	
*7 124	Telephone	F2	←	
*7 125	Helicptr	F2	←	
*6 126	Applause	F2	←	
*5 127	Gunshot	F2	←	

*1 : 50cent/halfnote, #69 = F#4
 *2 : 50cent/halfnote, #69 = A2
 *3 : 50cent/halfnote, #69 = C#4
 *4 : 50cent/halfnote
 *5 : 20cent/halfnote
 *6 : 5cent/halfnote
 *7 : 10cent/halfnote
 The key control judgment of voice
 attached "*" is treated as drum.

(*) Type F2: FM 2 Operator

5.1.8. MA-5 GM level1 Drum Instrument (Built-in ROM Voices)

Bank MSB	0		0		
Pch#	0		1-127		
	ROM				
Note#	Inst	Typ	Inst	Typ	
24	Seq Click H	F2	←		
25	Brush Tap	F2	←		
@ 26	Brush Swirl	F2	←		
27	Brush Slap	F2	←		
@ 28	Brush Tap Swirl	F2	←		
@ 29	Snare Roll	F2	←		
30	Castanet	F2	←		
31	Snare L	P	←		
32	Sticks	F2	←		
33	Bass Drum L	P	←		
34	Open Rim Shot	F2	←		
35	Bass Drum M	P	←		
36	Bass Drum H	P	←		
37	Closed Rim Shot	F2	←		
38	Snare M	P	←		
39	Hand Clap	F2	←		
40	Snare H	P	←		
41	Floor Tom L	P	←		
42	Hi-Hat Closed	P	←		
43	Floor Tom H	P	←		
44	Hi-Hat Pedal	P	←		
45	Low Tom	P	←		
46	Hi-Hat Open	P	←		
47	Mid Tom L	P	←		
48	Mid Tom H	P	←		
49	Crash Cymbal 1	P	←		
50	High Tom	P	←		
51	Ride Cymbal 1	P	←		
52	Chinese Cymbal	P	←		
53	Ride Cymbal Cup	F2	←		
54	Tambourine	F2	←		
55	Splash Cymbal	P	←		
56	Cowbell	F2	←		
57	Crash Cymbal 2	P	←		
58	Vibraslap	F2	←		
59	Ride Cymbal 2	P	←		
60	Bongo H	F2	←		
61	Bongo L	F2	←		
62	Conga H Mute	F2	←		
63	Conga H Open	F2	←		
64	Conga L	F2	←		
65	Timbale H	F2	←		
66	Timbale L	F2	←		
67	Agogo H	F2	←		
68	Agogo L	F2	←		
69	Cabasa	F2	←		
70	Maracas	F2	←		
@ 71	Samba Whistle H	F2	←		
@ 72	Samba Whistle L	F2	←		
73	Guiro Short	F2	←		
74	Guiro Long	F2	←		
75	Claves	F2	←		
76	Wood Block H	F2	←		
77	Wood Block L	F2	←		
78	Cuica Mute	F2	←		
79	Cuica Open	F2	←		
80	Triangle Mute	F2	←		
81	Triangle Open	F2	←		
82	Shaker	F2	←		
83	Jingle Bells	F2	←		
84	Bell Tree	F2	←		

Only the voice attached "@" reacts to KeyOff.

- Exclusion allotment of Key#42/#44/#46
- Exclusion allotment of Key#71/#72
- Exclusion allotment of Key#73/#74
- Exclusion allotment of Key#78/#79
- Exclusion allotment of Key#80/#81

(*) Type F2: FM 2 Operator, P: PCM

5.1.9. MA-5 ROM Wave MAP

WaveID	Instrument
0	Bass Drum
1	Snare Drum
2	Tom Tom
3	Hi-Hat Closed
4	Hi-Hat Open
5	Ride Cymbal
6	Crash Cymbal

5.2. Error Message

5.2.1. Error Messages Issued at Input/Output

Display	Description of error	Cause
Can not save SMAF (SMF) file Illegal output stream.	SMAF file cannot be saved. Output stream is not correct.	The document cannot be saved in SMAF (SMF) file.
Can not open SMAF (SMF) file Illegal file format.	SMAF file cannot be opened. Format of the file is not correct.	Format of SMAF (SMF) file is not correct at reading.
Can not open MA1 (SMF) file Illegal file format.	MA1 file cannot be opened. Format of the file is not correct.	Format of MA1 (MA5) file is not correct at reading.
Can not import from file Bank Number is different from selected bank.	File cannot be opened. Type of bank select is wrong.	When importing voices of bank row in Voice List, the type of bank select is wrong.
Can not open voice file Illegal file format.	Voice file cannot be opened. Format of the file is not correct.	Voice definition file format error
Cannot open SMAF file. Cannot open SMAF Phrase L2 in L1 mode.	Unable to open a SMAF file. Phrase L2 can not open by L1 mode.	Tried to open a Phrase L2 file by L1 mode.
Can not save voice file Illegal bank voice parameter.	Unable to save a voice file. Setting of banks in voice parameter is incorrect.	Failed to voice export in bank arrangement by Voice List.
Can not save SMAF file Illegal output stream.	Unable to save a SMAF file. The "output stream" is incorrect.	Failed to save for the MA5SMAF
Can not open file Illegal file format.	Unable to open a file. The format of the file is incorrect.	Tried to read the file with an extension besides support.
Can not convert DLL: Cannot create file.	Unable to convert a file. Unable to create a file.	File can no be generated since error is occurred.
Can not convert DLL: Output buffer overflow.	Unable to convert a file. Unable to fit in a buffer.	Converted file cannot be fit in a buffer.
Can not convert DLL: Illegal format type.	Unable to convert a file. The types of format are incorrect.	There is an invalid identifier.
Can not convert DLL: Illegal parameter of function.	Unable to convert a file. A function parameter value is not correct.	A function parameter value is not normal.
Can not convert DLL: Illegal event.	Unable to convert a file. An event is not correct.	There is an undefined event existing.
Can not convert DLL: Temporary buffer overflow.	Unable to convert a file. The temporary buffer is overflowing.	Temporary buffer overflow
Can not convert File size of SMAF is out of range. (256000 bytes)	Unable to convert a file. File size is over 256000 bytes.	Tried to play a SMAF exceeded 256000byte and to save.
Cannot assure contents. Total Length of SMAF is out of range. (2000000 msec).	These contents cannot be guaranteed. Total length is over 2000000 (msec).	The total length of the file exceeds 2000000(msec).
Can not save File. File path exceed 260 bytes.	The file path is over 260 bytes.	When the input file path is over 260 bytes.
Can not save file. File name exceed 59byte.	The file name is over 59byte.	When the input file name (except for an extension) is over 59 bytes.
Can not assure contents. Max Event Density must be under 1000 byte/s.	These contents cannot be guaranteed. The maximum event density is over 1000 at the moment.	When the maximum event density exceeds 1000 (Byte/s) at the moment.

Display	Description of error	Cause
Can not assure contents. Average Event Density must be under 500 byte/s.	These contents cannot be guaranteed. Average event density is over 500.	When average event density exceeds 500 (Byte/s).
Can not save SMAF file. The size of Stream PCM (total %u byte/s) is out of range.	Unable to save a SMAF. The total size of Stream PCM is exceeded.	When the total size of Stream PCM exceeds a standard (8 K byte/s).
Can not convert file. DLL:Total length is less than 20(msec).	Unable to convert a file. Total length is 20 or less msec.	The total length after changing into SMAF is too (below 20msec) short.
Can not convert. Program Change is specified at the timing of sounding notes.	Unable to convert a file. A program change is during note pronunciation.	When a program change is between note-off from note-on of arbitrary note messages.
Can not convert file. PCM voice setting error : Invalid Loop point setting. Bank MSB/LSB: %u / %u Pch: %u Note: %u (Display Voice Name)	Unable to convert a file. Setup of Loop Point is inaccurate.	When LP check shows an error.
Can not convert file. PCM voice setting error : Invalid End point setting. Bank MSB/LSB: %u / %u Pch: %u Note: %u (Display Voice Name)	Unable to convert a file. Setup of End Point is inaccurate.	When EP check shows an error.
Can not convert file. PCM voice setting error : SR ≤ 1 and XOF is checked. Bank MSB/LSB: %u / %u Pch: %u Note: %u (Display Voice Name)	Unable to convert a file. Setting error: SR ≤ 1 and XOF is checked.	When the check of EG, LPL, and EPL is an error in the case of LP=EP .
Can not convert file. PCM voice setting error : DR = 0, SL!= 0 and XOF is checked. Bank MSB/LSB: %u / %u Pch: %u Note: %u (Display Voice Name)	Unable to convert a file. Setting error: DR = 0, SL != 0 and XOF is checked	When the check of EG, LPL, and EPL is an error in the case of LP=EP .
Can not convert file. PCM voice setting error : RR ≤ 1 and XOF is not checked. Bank MSB/LSB: %u / %u Pch: %u Note: %u (Display Voice Name)	Unable to convert a file. Setting error: RR ≤ 1 and XOF is not checked	When the check of EG, LPL, and EPL is an error in the case of LP=EP .

5.2.2. Error Message Issued at Starting

Display	Description of error	Cause
Can not open application Application is already running.	The application has already been started.	An attempt was made to start MA-5 Authoring Tool that has already been started
Can not open application MA5_AT.ini (initial) file not found.	The ini file of MA-5 Authoring Tool does not exist	MA5_AT.ini does not exist
Can not open application. Illegal parameter of MA-5_AT.ini (Initial) file.	The application cannot be started. The parameter of ini file of MA-5 Authoring Tool is not correct	The setting of parameter of MA-5_AT.ini is not correct

5.2.3. Error Messages Related to Internal Input/Output

Display	Description of error	Cause
Can not export to M5N Unexpected problem is occurred.	M5N cannot be made. An unexpected problem has occurred	It was impossible to make M5N due to an unknown problem.
Can not export to M5N RAM size overflow.	M5N cannot be made. MA-5 RAM capacity is exceeded.	RAM capacity is exceeded.

5.2.4. MIDI Related Error Message

Display	Description of error	Cause
Can not assign sound file. RAM size overflow. (total %u byte)	Can not assign sound file. Over MA-5 RAM size (total %u byte)	Sound file cannot be assigned RAM capacity is exceeded.

5.2.5. Error Messages of WaveData

Display	Description of error	Cause
Can not open sound file. Stereo sound file is not supported.	Unable to open a sound file. It does not correspond to a stereo sound file.	Since WaveFile was a stereo, conversion processing was interrupted.
Can not convert sound file. Unexpected problem is occurred.	Unable to convert a sound file.	Processing was interrupted for a certain problem during WaveFile conversion.
Can not assign sound file. Numbers of Wave Exceed 128.	Unable to assign a sound file.	Since there was no free WaveID in VoiceList, processing was interrupted.
Can not assign sound file. Numbers of Wave exceed 128(for SMAF).	Unable to assign a sound file.	Since there was no free WaveID in Voice Assign Map, processing was interrupted.
Can not convert sound file. Sampling Frequency is not supported. (Must be over 4k Hz)	Unable to convert a sound file.	Sampling Frequency was under 4000 when Wave File was read by Stream PCM Assign Map.
Can not convert sound file. Sampling Frequency is not supported. (Must be under 8k Hz)	Unable to convert a sound file.	Sampling Frequency was over 8000 when Wave File of Mono 8bit PCM or Stereo 4bit ADPCM was read by Stream PCM Assign Map.
Can not convert sound file. Sampling Frequency is not supported. (Must be under 16k Hz)	Unable to convert a sound file.	Sampling Frequency was over 16000 when Wave File of Mono 4bit ADPCM was read by Stream PCM Assign Map.
Can not convert sound file. Sampling Frequency is not supported. (Must be 4k Hz)	Unable to convert a sound file.	When Wave File of Stereo 8bit PCM was read by Stream PCM Assign Map, Sampling Frequency was except 4000.
Can not convert sound file. Sampling Frequency is not supported. (Must be under 48k Hz)	Unable to convert a sound file.	Sampling Frequency was over 48000 when Wave File was read by Voice Edit/PCM.
Can not assign stereo sound file. Sound file is already assigned.	Unable to assign a sound file. Other sound files are already assigned.	By two continuations, it cannot register with Stream PCM Assign MAP.
Can not assign stereo sound file. Over Wave ID.(ID 1-31)	A sound file is un-assignable. Wave ID. (ID 1-32) is exceeded.	Tried to register the Stream PCM of Stereo into Wave ID 32.

5.2.6. Error Messages Related to User's Operation

Display	Description of error	Cause
Can not paste voice parameter Can not assign 4 operator on GM1 mode.	Cannot pastes voices parameter	In FM32 voice mode and ALL64 voice mode, 4 operator voice was copied from VoiceList and pasted into VAM
Can not play. Illegal output stream.	File cannot be played	Playback data are not normal
Can not close Voice Edit. Please load wave file or check 'RM'.	Voice Edit can not be closed. Load wave file or place a check to 'RM'.	OK button of PCM Voice Edit was selected in the status that voice wave is not loaded, or 'RM' is not checked.
Can not close Voice Edit. Please load basic waveform.	Voice Edit can not be closed. Load basic waveform.	OK button of FM Voice Edit was selected in the status of WS 15/23/31 was selected under Operator 1-4, and the WS concerned was not loaded.
Can not clear.	Unable to clear.	When the correspond FM basic

Display	Description of error	Cause
This basic waveform is used.	This basic waveform is used.	waveform is used by other operators (include others voice)
Can not close Voice Edit. Invalid Loop point setting.	Unable to close a Voice Edit. Loop Point is set un-correctly.	When LP check is in an error.
Can not close Voice Edit. Invalid End point setting.	Unable to close a Voice Edit. Loop Point is set un-correctly.	When EP check is in an error.
Can not close Voice Edit. Setting Error : SR <= 1 and XOF is checked.	Unable to close a Voice Edit Setting error : SR <= 1 and XOF is checked.	EG in case of LP = EP, or a check of both LPL and EPL is in an error
Can not close Voice Edit. Setting Error : DR = 0, SL != 0 and XOF is checked.	Unable to close a Voice Edit Setting error : DR = 0, SL != 0 and XOF is checked.	EG in case of LP = EP, or a check of both LPL and EPL is in an error
Can not close Voice Edit. Setting Error : RR <= 1 and XOF is not checked.	Unable to close a Voice Edit Setting error : RR <= 1 and XOF is checked.	EG in case of LP = EP, or a check of both LPL and EPL is in an error
Can not check AL enable. Number of AL voice exceed 16.	Unable to check the AL Enable.	Al voice numbers exceeds 16.
Can not open help. Unexpected problem is occurred.	Unable to open "Help". The unexpected problem is occurred.	A help is not opened on a certain problem.
Can not open help. Help file does not exist.	Unable to open "Help". There is no help file.	Since there is no help file, a help is not opened.

5.2.7. Other Error Message

Display	Description of error	Cause
Exit application Unexpected problem is occurred.	Unable to close a Voice Edit. Loop Point is set un-correctly.	When LP check is in an error.

5.3. Warning/Verification Messages

5.3.1. Warning Message Which Comes Out at Time of Input/Output

Display	Display Timing
Nonsupport chunk detect. DLL: Illegal chunk found in SMAF.	When a chunk, which SMAF.MA-5 does not define, is found.
Contents Code Type of SMAF is not supported. DLL: Contents Code Type will be ignored.	Un-supporting code type is found in SMAF
ATSig Information. DLL: Created by other tool.	When the vendors ID of ATSig differ
ATSig Information. DLL: Created by software version.	When the versions of ATSig differ
ATSig Information. DLL: Created by Lower version.	When the versions of ATSig differ
ATSig Information. DLL: Created by Upper version.	When the versions of ATSig differ
ATSig Information. DLL: Illegal Magic Code.	When the magic codes of ATSig differ
ATSig Information. DLL: ATSig not found.	When ATSig does not exist
Note Number (115-127) in SMAF is not supported. DLL: Note Message (#115-127) is ignored.	Since the note message of 115 to 127 exists, and when a note number controls an output.
Bank Number of Voice file is adjusted automatically.	When the specification of un-supporting voice is changed. * Since it checks by DLL and the main part, it may be displayed two or more times.
Automatically operated. The overlapping note was tied.	When tie processing of the overlapping note message is carried out.
Can not convert. RAM size overflow.	All voices registered into VoiceAssignMap Preference When the trial calculation of the amount of RAM size consumption is made and the sum total is over 8176 (Byte) from a setup of Stream PCM Reserved.
More than one Note messages found on the same duration in a mono mode channel. Only the last Note message will be accepted.	When two or more note messages exist in duration: 0 in a monochrome mode specification channel at the time of a SMAF output. * Only the last note message is output (it is filtered at DLL).
Can not convert. Max Event Density must be under 1000 byte/s.	At the time of SMF Import, the maximum event density at the moment when it is over 1000 (Byte/s).
Can not convert. Average Event Density must be under 500 byte/s.	When average event density is over 500 (Byte/s) at the time of SMF Import.
FM voice setting error : Invalid wave style Setting. Set wave style "0" automatically.	When opening SMAF or a voice file, and an unjust wave style setup is found and it corrects to "0" automatically.
Phrase L1 voice file. Can not import BankM:125 Pch#:1 bank voice.	When the voice file for Phrase L1 is loaded in the Phrase L2 mode and the voice set of BM: 125/Pch#:1 is read and thrown away.

5.3.2. Warning Message on WaveData

Display	Display Timing
Please check pitch of actual playing sound. Value of Fs is corrected.	Fs of PCM in Voice that is read in Edit/PCM is 1500 or less, or 48000 or more.

5.3.3. Warning Message Issued at User's Operation

Display	Display Timing
Exist editing document. Save the document?	When it is going to cancel a document in the condition in which the document under editing exists
Exist editing voice parameter. Save the voice parameter?	When it is going to cancel application in the condition in which the voice under editing exists
Loop / End Point is adjusted automatically.	When the LP/EP automatic control function starts to the timing in which performing SMAF Open, reading voice files, and opening the PCM Voice Edit.

5.3.4. Verification Messages Issued at User's Operation

Display	Display Timing
Confirm operation. Reset MA-5 Emulator?	When Reset of the Option menu is clicked.
Confirm operation. Sound file will be detached automatically.	With the condition in which a sound file is loaded to a PCM Voice Edit dialog, and when it is going to turn ON the check of RM.
Overwriting Voice List. Save the changed voice parameters?	When Open Voice File of the File menu is chosen.
Overwriting Voice List. Save the changed data of Voice List?	When Import from Bank Voice is chosen in Voice List.
Overwriting Voice List. Save the changed voice parameters?	When Preference of the Option menu is chosen.
Overwriting Stream PCM Assign Map. Export to Stream PCM File?	When Import from StreamPCM File is chosen in Stream PCM Assign Map.
Confirm operation. Sound file will be detached automatically.	When AL Enable or Source is set to Noise and the waveform is held to the PCM tab side.
Loop / End Point are adjusted automatically.	Since Loop Point and End Point are unjust values, when a round lump is performed.

5.4. Shortcut Key

In MA-5 Authoring Tool, the following shortcut keys can be used.

Sign “+” of each item means “while pushing and holding”. For example, “[CTRL]+[F4]” means that “Push [F4] key while pushing and holding [Ctrl] key”.

5.4.1. Shortcut Key Common to Each Windows

Corresponding Key	Operation
[ESC]	Cancels an editing operation.
[DEL]	Deletes the event chosen.
[CTRL]+ [F4]	Closes an active editing window.
[CTRL]+ [F6](or Tab)	Changes an active window in the editing window opened on the application window.
[Alt](or GRPH)+[Tab]	Opens an application window, while minimizing MA-5 Authoring Tool.
[Alt](or GRPH)+[Space key]	Opens an icon popup menu from the title bar of an application window.
[Alt](or GRPH)+[-](Hyphen)	Opens an icon popup menu from the title bar of an active edit window.
[Alt](or GRPH)+ [F4]	Closes application.

5.4.2. Shortcut Key Related to Menu Bar

Corresponding key	Operation
[Alt](or [GRPH])+character key	Executes the menu item corresponding to each letter key. For example, when pushes [E] key with pushing [Alt] (or [GRPH]), the pull-down menu of [Edit] menu will open. Copy will be chosen when [C] key is pushed on it.
[Alt](or [GRPH])	Moves cursor to [File] of menu bar. In this state, the cursor can be moved to the right or left by pushing the cursor key of computer keyboard, or can be moved up or down on the opened menu.

5.4.3. Shortcut Key Related to Control Button

Corresponding button	Corresponding key
Start / stop button	[Space]

5.4.4. Shortcut Key of File Menu

Corresponding command	Corresponding key
Open	[Ctrl]+[O]
Save	[Ctrl]+[S]
Import from SMF	[Ctrl]+[L]
Reload from SMF	[Ctrl]+[R]

5.4.5. Shortcut Key of Edit Menu

Corresponding command	Corresponding key
Copy	[Ctrl]+[C]
Paste	[Ctrl]+[V]
Undo	[Ctrl]+[Z]
Redo	[Ctrl]+[Y]

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