

KBD-INFINITY

Power tools for digital keyboards

MIDI Utility Pack Instruction Manual

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Contents

1	Introduction	3
2	MIDI Microscope	4
2.1	Loading files	4
2.2	The byte window	4
2.3	The event window	5
2.4	Connections between the windows	7
2.5	MIDI ports	7
2.6	Playing tracks	7
3	MIDI Typer	8
4	Mini MIDI Player	11
5	Mini MIDI Recorder	13
5.1	Recording procedure	13
5.2	Arm and stop buttons	15
5.3	Reviewing and archiving the recording	15
5.4	Metronome	16
6	MIDI File Organizer	17
6.1	General features	17
6.2	Navigation	17
6.3	Operations	18
6.4	Saved locations	19
6.5	Program settings	19
6.6	Advanced functions	21
6.7	MIDI files	23
7	Tempus Fugit	24

1 Introduction

The **MIDI Utility Pack** contains six programs invaluable to anyone who creates or uses MIDI files.

MIDI Microscope

An essential utility for music students and digital musicians. **MIDI Microscope** helps you to understand the organization of MIDI files. The program displays the byte content of `mid`, `kar` or `sty` files in one window and gives an English translation of the MIDI events in another window. The translation can be saved as a text file. Clicking on an event in the translation window highlights the corresponding timing, status and data bytes. Conversely, clicking on a byte shows its function in the translation window. **MIDI Microscope** also plays the file content on any connected MIDI device. You can choose to play all tracks or selected tracks to hear their contributions to the total sound.

MIDI Typer

The program does general bulk cleaning operations on sets of MIDI files. A primary function is conversion between *Type 0* and *Type 1* formats. **MIDI Typer** can also be set to remove specific content such as system exclusive messages, text messages, program controls, XG voice settings,....

MiniMIDI Player

A compact, fast and accurate MIDI file player. The program handles all *Type 0* and *Type 1* MIDI files. Output may be ported to any connected MIDI device.

MiniMIDI Recorder

A program to record your electronic keyboard performances and to save them as MIDI files. **MiniMIDI Recorder** features an easy-to-learn and reliable interface. You can record from any connected MIDI device. Use the built-in player to preview a performance before saving. The program includes a metronome.

MIDI File Manager

A general-purpose two-window file manager with special features to organize MIDI files. The program has a clear and logical layout of controls that makes it quick to learn and easy to use. A unique *Backup* command makes it easy to synchronize files between computers via a USB drive. Several advanced functions are particularly useful for data organization (e.g., create text listings of directory contents, determine directory sizes, copy full file paths to the clipboard, launch a terminal window in the current directory,...). The program includes a built-in player to review the contents of MIDI files.

Tempus Fugit

A versatile MIDI-based metronome.

2 MIDI Microscope

MIDI Microscope (Fig. 1) dissects the content of any MIDI, karaoke or style file. It is a valuable resource for music students or anyone who wants to understand the structure of MIDI files.

2.1 Loading files

The first step is to load a file for inspection. Click on the *Load MIDI file* button to bring up a standard load dialog. You can navigate to any directory on your computer. The program shows all available files with names of the form *.mid (general MIDI file), *.kar (MIDI file with lyrics included) and *.sty (Yamaha-format style files). When the file loads, the program displays the file size in bytes, the MIDI type and the number of tracks. The type numbers have the following interpretation:

- 0: single song in a single track
- 1: single song with information divided between multiple tracks
- 2: multiple songs and multiple tracks

Several buttons become active when a file has been loaded. **MIDI Microscope** can help in debugging corrupted MIDI files. If a bad file is encountered, the program gives the option to save a file of commands up to the error point.

2.2 The byte window

The raw byte content of the file is displayed in the left-hand window. Numbers are displayed in hexadecimal notation. The numbers in the header and left column show the position of the byte in the file. For example, the highlighted byte in the screenshot is at position $60h + 02h = 62h = 98$. The cells show the byte content as two hex characters. The cell content may range from 00h (0) to FFh (255). The bytes are color coded according to function:

- Chunk designators are shown in bold red. In the screenshot, note that the first four bytes are 4Dh 54h 68h 64h (the code numbers for the characters *MThd*). Track chunks begin with the bytes 4Dh 54h 72h 6Dh (*MTrk*).
- Event time differences and the lengths of system exclusive messages are shown in cyan.
- Status bytes are in bold green.
- Chunk header data are in violet.
- Event and system-exclusive data bytes are in black.

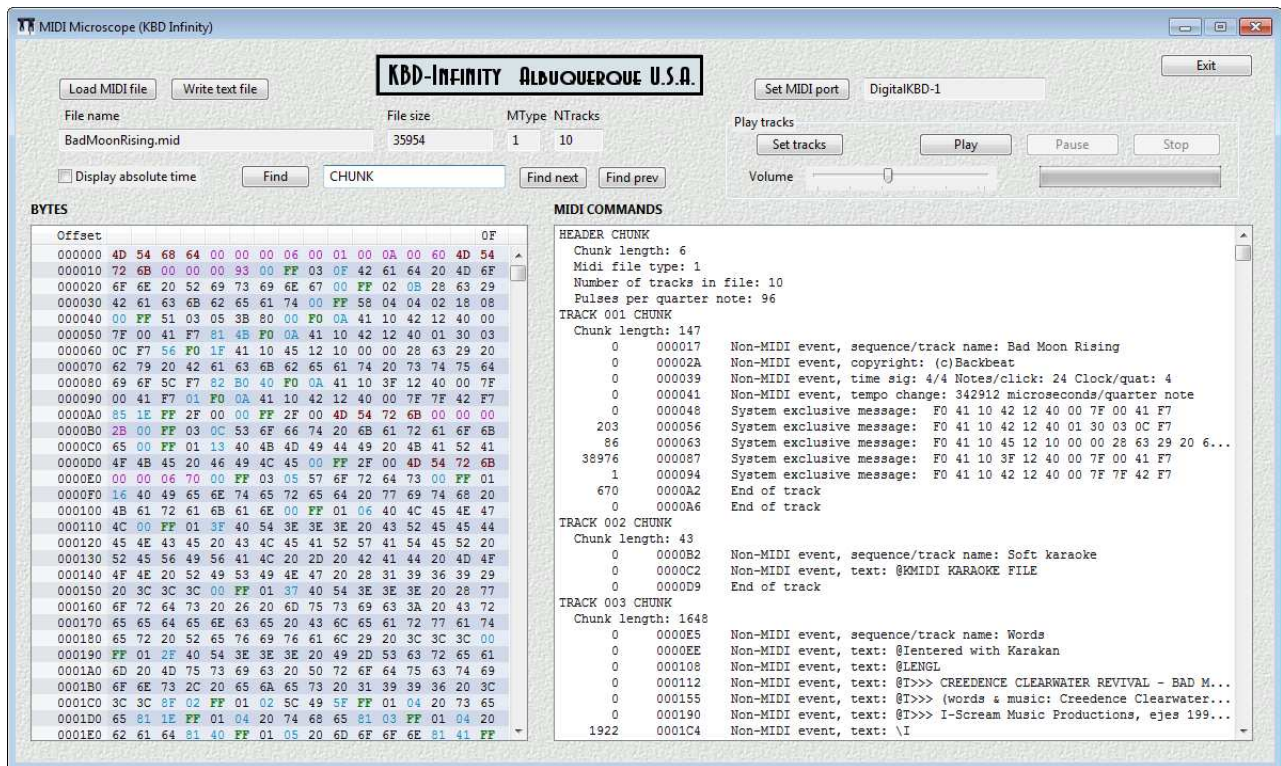


Figure 1: Screenshot of MIDI Microscope.

2.3 The event window

The event window on the right-hand is the crux of **MIDI Microscope**. It gives an English-language translation of the mysterious bytes organized by MIDI events. The first column lists the time in units of pulses. If the *Display absolute time* box is unchecked, the program shows the delay of an event relative to the previous event (the quantity recorded in the MIDI file). When the box is checked, **MIDI Microscope** shows the absolute timing of the events (the sum of all previous delays). The example in the screenshot specifies that there are 96 pulses per quarter note and a starting tempo of 342912 microseconds/quarter note. Therefore, each pulse corresponds to 3.572 ms. The first delay of 203 pulses corresponds to 0.725 seconds. The second column is the file position (in hexadecimal notation) of the event status byte (or the first data byte in the event of a running status). Note that the sixteen MIDI channels are designated 00h through 0Fh.

The remainder of the line is a description of the action of the status and data bytes. Note that **MIDI Microscope** gives the names of notes and general MIDI program values rather than simple byte values.

The *Find* buttons are useful for locating track divisions or specific features like system exclusive events. Type search text in the box and click *Find* (*F2*) to locate the first instance in the file. Use *Find next* (*F3*) to locate the next instance below the current position or *Find prev* (*F4*) to locate the previous one. Note that the find routines are case insensitive. Use the *Write text file* button to make a permanent record of the contents of the event window. Table 1 shows an example of the program output.

Table 1: Example of event text output from **MIDI Microscope**.

```

MIDI command analysis of file: 1540mando2.mid
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  Telephone: +1 505 220 3975   FAX: +1 617 752 9077
  URL: http://www.kbd-infinity.com
  E mail: info@kbd-infinity.com

Content of data lines
Column 1: Event time difference
Column 2: Start position in file
Column 3: Status
Column 4+: Data

HEADER CHUNK
  Chunk length: 6
  Midi file type: 1
  Number of tracks in file: 8
  Pulses per quarter note: 120
TRACK 001 CHUNK
  Chunk length: 267
    0      000017   Non-MIDI event, time sig: 4/4 Notes/click: 24 Clock/quat: 4
    0      00001F   Non-MIDI event, key signature: C Major
    0      000025   Non-MIDI event, tempo change: 300000 microseconds/quarter note
  480     00002D   Non-MIDI event, tempo change: 1463414 microseconds/quarter note
    ...
    30     000117   Non-MIDI event, tempo change: 2000000 microseconds/quarter note
    0      00011E   End of track
TRACK 002 CHUNK
  Chunk length: 1732
    0      00012A   Non-MIDI event, MIDI port: 0
    0      00012F   Non-MIDI event, sequence/track name: Mandolin
    0      00013B   Program change, channel 00   Koto
    0      00013E   Control change, channel 00   Pan:   46
    0      000142   Control change, channel 00   Bank select:  00
    0      000146   Control change, channel 00   CMM Reset All Controllers:  00
  525     00014A   Note on, channel 00   Note: A4   Velocity: 3E
  15      00014E   Note on, channel 00   Note: A4   Velocity: 00
    0      000151   Note on, channel 00   Note: A4   Velocity: 3E
    ...

```

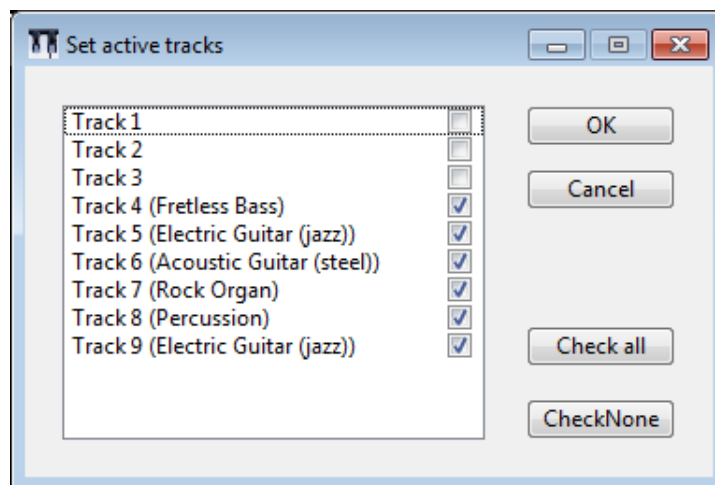


Figure 2: Dialog to choose tracks for playback.

2.4 Connections between the windows

The byte and event windows are connected so you can quickly find 1) the function that corresponds to a byte sequence or 2) the byte sequence that corresponds to a function. Regarding the first action, a byte is highlighted when you left-click on it. The right-hand window highlights the corresponding event line that contains the byte. The included byte may be either a timing, status or data byte associated with the event. To go in reverse, select an event line. **MIDI Microscope** highlights the first timing byte of the event.

2.5 MIDI ports

When you first start **MIDI Microscope**, the program determines the available MIDI output ports and picks the first one available. Thereafter, it will attempt to open the last port that you used. If you add a port after the program has started (*e.g.*, turning on a keyboard), click on the *Set MIDI port* button and pick the desired output port from the list.

2.6 Playing tracks

The program can play MIDI files through the current MIDI output device. Use the *Play* button to start the loaded file and the *Pause* button to stop it temporarily. The *Stop* button terminates playing and rewinds the file. To start a file in the middle, left-click the mouse at the appropriate position inside the play progress bar. The default is to include all tracks. Use the *Set tracks* button to open the dialog of Fig. 2 to deactivate and activate selected tracks. With this feature, you can understand the role of individual tracks in the creation of the total sound. If you have inspected several files with **MIDI Microscope**, you've probably noticed that some tracks may not affect the performance note values. For example, the events in the first track shown in Table 1 consist entirely of tempo changes.

3 MIDI Typer

MIDI Typer is a utility for bulk conversion of MIDI files between *Type 0* and *Type 1* formats. In addition, the program may be used to remove unnecessary or unwanted information from files. To review, a *Type0* file combines musical and control information for all channels into a single track. This is the type of file that is used for ringtones. In contrast, a *Type1* file contains multiple tracks, often one for each MIDI channel. Furthermore, special data like lyrics or tempo changes may occupy individual tracks. During conversion, **MIDI Typer** can remove *System Exclusive* messages, voice settings and non-musical information.

Operation of **MIDI Typer** is simple. Use the navigation window and buttons in the lower portion of the screen (Fig. 3) to open a folder that contains MIDI files (*mid* and *kar*). There are three main functions:

- **Type1** → **Type0**. Change *Type1* files to *Type0* format, applying any user-specified output filters.
- **Type0** → **Type1**. Change *Type0* files to *Type1* format, applying any user-specified output filters. In this conversion, **MIDI Typer** puts information for each MIDI channel (00h to 0Fh) in a corresponding track. System exclusive and non-MIDI messages are recorded in Track 1.
- **Clean**. Rewrite files in a standard, logical format without changing the MIDI type, applying any user-specified output filters.

One option is to select one or more files and then to click one of the function buttons. Select files with the left mouse button. Hold down the *Ctrl* key to select multiple files. To select a block of files, select the top (bottom) entry, hold down the *Shift* key and then select the bottom (top) entry. For example, in response to the *Type1* → *Type0* button, the program checks the set of selected files. If a file is of *Type1*, it is converted to *Type0* and then is either saved as a new file or overwrites the old file. If there is no selection, the operation is applied to all *Type1* MIDI files in the folder.

Use the *Delete* button to erase selected files. Right-click anywhere in the program window to view a popup menu of options, including *Activate program*. Use the function keys for the following operations:

- **F1**: show the **MIDI Utility Pack** instruction manual in your default PDF reader.
- **F3**: refresh the folder display if files have been changed by another program.
- **F6**: display the setup dialog.
- **F8**: delete selected files.

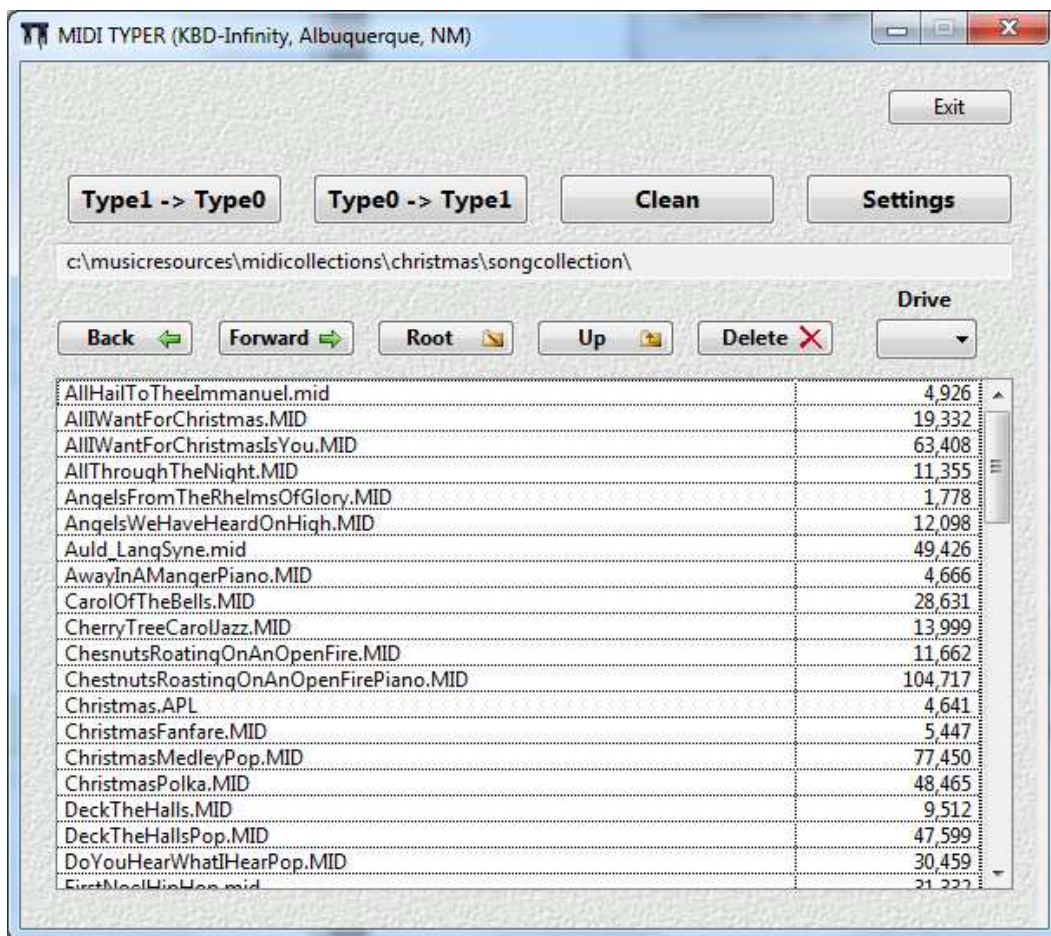


Figure 3: Screenshot of **MIDI Typer**.

To specify information included in the output files, click the *Settings* button to open the dialog of Fig. 4. The checkboxes at the top control the following functions:

- **Overwrite files.** When checked, **MIDI Typer** overwrites the existing MIDI file. In this case, the output file has the same name as the original. When unchecked, the program does not delete the original file and creates a modified name for the output file by appending a suffix: T0, T1 or CL.
- **Show messages.** When checked, the program shows a message at the end of a bulk conversion to show how many files were converted and how many were left unchanged.

The checkboxes in the *File filters* group control the type of information included in the output MIDI file:

- **Tempo changes (after start).** Sometimes, MIDI files may contain a large number of tempo messages because the transcriber was either particularly expressive or did not use a metronome. Such tempo changes are undesirable if you are preparing an accompaniment. If you uncheck the box, all tempo messages after the first one will be omitted.
- **System exclusive messages.** These messages are extended structures that contain binary instructions for specific hardware devices. They are generally ignored, so you can remove them from files intended for general distribution.



Figure 4: MIDI Typer output file settings dialog.

- **Program messages.** Program messages set the GM (general MIDI) numbers of channels. The numbers control the type of instrumental voice associated with the channel. Such messages may cause a conflict if you are working with a digital workstation with a virtual instrument setup. Uncheck this box to exclude all program messages.
- **XG voice settings.** XG messages specify synthesizer voices beyond the 128 general MIDI options. These settings are hardware specific. Uncheck this box if you want to ensure compatibility between all GM compliant devices.
- **Other voice control messages.** These messages control characteristics of channel voices, such as volume, pan reverberation and timbre. If you want to control voices entirely from software when playing the output file, uncheck this box as well as *Program messages* and *XG voice settings*.
- **Text messages and lyrics.** The words in karaoke files are sometimes stored as text messages and sometimes as lyric messages. Uncheck these boxes if you want to remove the information, converting a KAR file to a standard MID file. This option is useful for creating scores with music notation programs. Some programs attempt to include lyrics, making a messy display.
- **Markers.** Markers designate sections of a MIDI file. They may appear in specialized applications like Yamaha style files.
- **Other non-MIDI messages.** Include or exclude specialized non-MIDI messages that are usually not required to play the file, including SMPTE, MIDI port, MIDI channel, copyright, cue point, instrument and sequence track name.
- **Pitch wheel messages.** Pitch wheel messages shift the frequency of the synthesizer to give a twangy or bluesy sound. Uncheck this box if you want all notes to sound at their prescribed pitch.

4 Mini MIDI Player

MiniMIDI Player (Fig. 5) is a fast and accurate utility to play MIDI files on any connected port. The program follows the conventions of **MIDI Microscope** for choosing an output port.

Loading files

Start by loading a file. The select-file dialog displays files with the suffixes `mid`, `kar` and `sty`. The program remembers the last directory that you accessed. File information is displayed in the boxes: name, size in bytes and MIDI type. Load a different file to hear a different song. (Note that the program does not play Type 2 files that may contain multiple songs.)

Playing files

Use the *Play* button to start the loaded file and the *Pause* button to stop temporarily. The *Stop* button terminates playing and rewinds the file. To start a file in the middle, left-click the mouse at the appropriate position inside the play progress bar. MIDI files tend to vary considerably in volume, so a control has been included. The program remembers the last volume setting.



Figure 5: Screenshot of MiniMIDI Player.

Command line operation

The program can start from a terminal window with a command of the form

```
[Path]\minimidiplayer.exe [Path]\MIDIFileName.mid  
[Path]\minimidiplayer.exe [Path]\MIDIFileName.kar
```

If you make **MiniMIDI Player** the default program for MIDI and karaoke files, it will start if you double-click a file with extensions `mid`, `kar` or `sty` in **Windows Explorer** or most other file managers. Also, the program will play Internet MIDI files referenced in a browser by clicking on the link. In the command mode, **MiniMIDI Player** will open in a window, restore the previous configuration and load and play the specified file. Thereafter, the program operates in the normal interactive mode.¹

¹To set a default program in **Windows 7**, run the *Control Panel* and go to *Programs*. Under *Default programs*, pick *Make a file type always open in a specific program*. The dialog displays a list of file extensions. Highlight `mid`, `kar` or `sty` and click the *Change program* button. Click the *Browse* button to go to the folder `Program Files (X86)\MiniMIDIPlayer` and then pick `MiniMIDIPlayer.exe`.

5 Mini MIDI Recorder

MiniMIDI Recorder records keyboard performances (including complete voice and style information) and saves them as general MIDI files.

5.1 Recording procedure

To illustrate the general program organization, consider a specific example of an input device: the Yamaha PSR E423. Other keyboards have similar control functions. The challenge is to include all information in the recording: melody notes, accompaniment styles and voices. In order to see how to accomplish this with **MiniMIDI Recorder**, it is necessary to understand some basics of data flow from the keyboard to a computer. Figure 6 shows a flow chart. The keys of the keyboard (along with a simple processor) generate basic MIDI *NoteOn* and *NoteOff* commands that are sent to the computer via a MIDI output port. These signals are sent when *KbdOut* = *ON*, the default setting of the E423.

The main processor can generate sequences of accompaniment style notes based on the set of styles in memory. Harmonic offsets are added to the style notes when the user presses key combinations below the split point. In the default mode, style notes are not added to the MIDI output flow. The parameter *StyleOut* must be set manually with the following procedure:

- Press the *Function* button.
- Use the *Up/Dn* arrows under *Category* to scroll through the list of options to *StyleOut*.
- Rotate the wheel above *Category* to turn the option *ON*.

A complete MIDI file of a keyboard performance contains two main types of information. The beginning of the file contains data on voice settings for the melody and the instruments of the style. This initialization is followed by the notes and other musical signals that constitute the performance. The following procedure instructs the main processor to send MIDI data on voices and other settings.

- Press the *Function* button
- Use the *Up/Dn* arrows under *Category* to find *InitSend*.
- Press *Reset* button and then the *Yes* button to send the information.

With this background, here is how to use **MiniMIDI Recorder** to record a keyboard performance, complete with voice and style information:

1. Set up the keyboard for the performance.
2. Click the *Arm* button of **MiniMIDI Recorder** (Fig. 7). The button turns green and the *Stop* button turns red to show that the program is in the static armed mode.

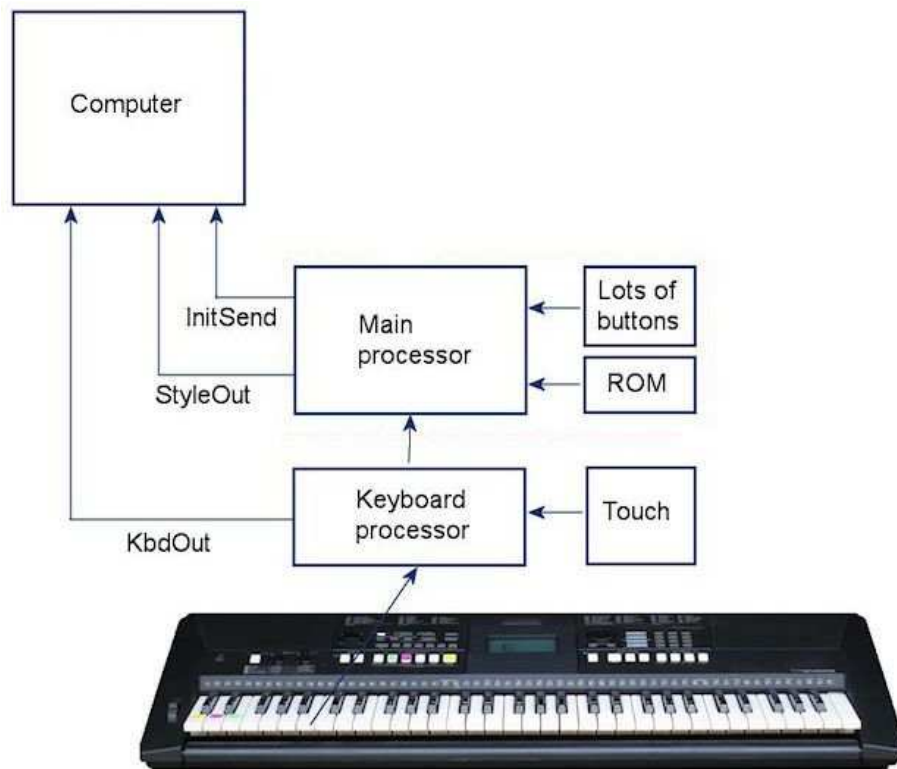


Figure 6: Data flow in a recording.

3. Send out the voice and other initialization information using the keyboard *InitSend* procedure. **MiniMIDI Recorder** remembers the data and will include them in the file as MIDI events at time zero. It is not necessary to hurry – synchronized recording doesn't begin until the first *NoteOn* message is received. If this step is omitted, the melody voices and all voices of the style are set to piano by default.
4. If the performance uses an accompaniment style, make sure it is active by pressing *Synch start* on the keyboard.
5. Start playing the song. When **MiniMIDI Recorder** detects a *NoteOn* signal (either from the melody or style), the program enters the dynamic armed mode. The *Arm* button flashes and the program records incoming MIDI signals with timing information.
6. Press *Stop* when the song ends. Again, there is no need to hurry. Nothing else is recorded if there are no incoming *NoteOn* signals.

At this point, you can listen to the recording using the controls in the *Review* box (upper-right). If everything sounds good, use the *Write file* button to create a *Type 0* MIDI file.

Any connected input MIDI source can supply the incoming data. The output port is used to review the recording before writing a file. When you first start the program, it will determine the available MIDI output ports and pick the first ones available. Thereafter, it will attempt to open the last ports that you used. Use the *Change port* button to set the ports.



Figure 7: Screenshot of **MiniMIDI Recorder**.

5.2 Arm and stop buttons

The *Arm* and *Stop* buttons are the main recording controls. Assuming the keyboard is set up properly, press the *Arm* button to set the program to the static armed mode. At this point, send time-zero setup information from the keyboard to be included at the beginning of the MIDI file ($t = 0.0$ s). The program enters the dynamic armed mode when the first *NoteOn* signal is received from the keyboard. Subsequent MIDI information is recorded with timing information.

Press *Stop* when the performance is complete. A delay in pressing the button is not critical – the program does not record information if keyboard keys are not pressed. The *Write file* button and the controls of the *Review* section become active when MIDI information is available.

5.3 Reviewing and archiving the recording

The recording may be checked with the controls of the *Review* group. Use the *Play* button to start playback on the current MIDI output device. Click the *Pause* button to stop temporarily. The *Stop* button terminates playing and rewinds the file.

Use the *Write file* button to create a Type 0, general MIDI file of the recording. Note that **MiniMIDI Recorder** faithfully records input signal sequences, but has no idea of the tempo and key signature values you had in mind. The program adds arbitrary timing information to the MIDI file to ensure that it plays back at the correct speed. If you want specific values to appear in the output file, set values for *Tempo* and *Time signature* in the *Metronome* group. This data will be included in the file, even if the metronome is not used.

5.4 Metronome

The program includes a metronome which sends timing sounds to the MIDI output device. These sounds are not included in the recording. To use the function, check the *Metronome* box, set the tempo in quarter notes per minute and set the time signature. For example, if you are playing a waltz, enter 3 in the left-hand box and 4 in the right hand box. Some players may tend to lead or lag the metronome. In this case, notes will be shifted with respect to measure divisions if you load the recorded MIDI file into musical notation software. The resulting score may be confusing. Compensate by setting the *Offset* time. Use a positive value if you are playing notes early, or a negative value if you are late. For reference, a 32nd note at a tempo of 120 quarter-notes/minute has a 32 ms duration.

You should not use the metronome when you use a style because the keyboard controls the timing. In this case, you can use the internal metronome of your keyboard. The main processor sends timing signals to the keyboard speakers but not to the computer interface, so the sounds are not added to the recording.

6 MIDI File Organizer

MIDI File Organizer is a versatile two-window file-management system for personal computers with special features for MIDI files. The program's clear and logical layout of controls makes it quick to learn and easy to use. For on-line instructions, press the *F1* key.

6.1 General features

Figure 8 shows the program layout. The left and right windows give listings of directories (folders) and files at chosen locations on a hard disk or USB drive. The controls above the windows are used for navigation between directories. One window is active at any time. The red active-button shows the window that currently has the focus. Some of the controls (*Delete*, *Rename*, *Create dir*, *Edit file*) act on selected files in the active window. The other controls (*Copy*, *Move*, *Backup*) transfer files from the active window to the other. The active window changes if you click on the opposite window or on any of the controls on the other side.

Selection of files in the windows follows the standard Window conventions. Left-click an entry to select a single file or directory. Hold down the control key to select multiple entries. To select a block of files or directories, select one entry at the top (or bottom) and select another entry at the bottom (or top) while holding the shift key.

6.2 Navigation

Directory names in a window are shaded. To move into a directory, double-click its name. Use the *Up* button to move up one level in the directory tree. The *Root* button takes you to the root of the current drive. Use the *Change drive* menu to change the active window to a different drive of the computer. Sometimes it's useful to set both windows to the same location (for example, to move files into a new child directory). To set the right window to the same location as the left window, right-click the right active-button.

As you move between directories, **MIDI File Organizer** saves a list of previous locations. Use the *Back* button to move to the previous directory. When you move back, the program saves a list of locations in the forward stack. In this case, use the *Forward* button to return to a directory.

MIDI File Organizer saves its current state when you exit. Information includes the current directories of the left and right windows, tools and saved locations. The settings are restored the next time you run the program.

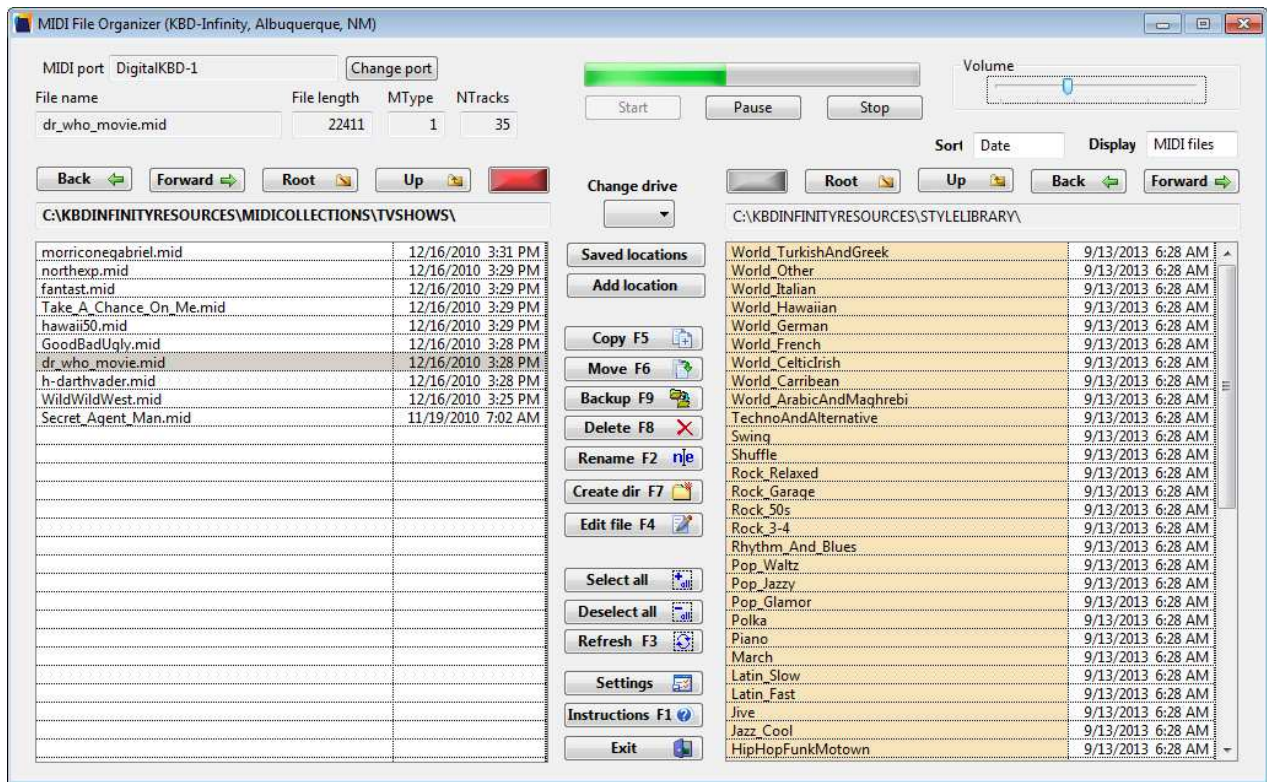


Figure 8: Screenshot of MIDI File Organizer.

6.3 Operations

The file-operation controls located between the windows are the core of MIDI File Organizer. They perform the following functions:

- **Copy:** copy the selected directories and files of the active window to the directory of the other window. The copy function may also be initiated with the *F5* key.
- **Move:** move the selected directories and files of the active window to the directory of the other window. In this case, the directories or files are copied to the destination directory, checked for validity and then deleted in the source directory. (*F6* key)
- **Backup:** this command is useful for backing up a project or synchronizing data if you work on multiple computers. Its primary task is copying project directories to and from a master copy on a portable device such as a USB stick. If the project directory does not exist in the destination, all source files and subdirectories are copied. Otherwise, only new directories and files are copied. Source files replace existing destination files only if they have a more recent modification date/time. In typical operation, you would use the Backup command with the master USB stick as the source when you start work on a computer to ensure that all files reflect the latest version. At the end of the session, use Backup with the USB stick as the destination to archive and to synchronize your work. If the setting Make backup log is active, MIDI File Organizer prompts you to save a record of the backup as a file. The file contains a list of directories and files created on the destination and also the files that were replaced. (*F9* key)

- **Delete:** delete the selected directories and files of the active window. If the Confirm delete condition is active (see Settings), MIDI File Organizer prompts to delete the collection of files and directories. (*F8* key)
- **Create dir:** create a new directory within the directory of the active window. Type a name in the text field of the dialog and press OK or Cancel. Alternatively, press Enter in the text field to create the directory or Esc to cancel the operation. (*F7* key)
- **Edit file:** open a single file selected in the active window with an editor. A text or hex editor must be defined in the Settings dialog to use this feature. (*F4* key)
- **Select all:** select all directories and files in the active window.
- **Deselect all:** cancel all selections in the active window.
- **Refresh:** use this command to update the display if you change the files in one or both of the displayed directories with an external program. (*F3* key)

To launch an external program (`FileName.exe`) or batch file (`FileName.bat`), double-click the program name. You can also open files whose extensions are associated with programs in Windows by double-clicking on them. For example, double-clicking an HTML file will open it in your default browser. You can copy the path of the directory locations of the left or right windows to the clipboard. Click on the text field listing the directory above the window and press *Ctrl-C*. You can also copy the names of any group of directories or files in either window to the clipboard. Make a selection using the standard rules and then press *Ctrl-C*.

MIDI File Organizer shows the progress of extended copy, move or delete operations. During this period, other program commands are deactivated. Click *Cancel* to abort the operation.

6.4 Saved locations

You may often return to a specific directory when working on a project. In this case, a saved location can eliminate the effort of stepping through the directory tree each time. If you want to return to the directory of the active window later, click the *Add location* button to add the folder to the list of saved locations.

Click the *Saved locations* button to show the dialog of Fig. 9. The window shows a listed of saved directories. Double-click on an entry to move the active window to the directory. Alternatively, select a location and click *OK*. To delete a location, select it and click the *Remove from list* button. Click *Cancel* if you decide not to change the location of the active window. You can drag entries up and down with the mouse to organize the list. Note that the location list is saved when you exit **MIDI File Organizer** and restored next time you run the program.

6.5 Program settings

Click the *Settings* button to bring up the settings dialog of Fig. 10. Use the *Pick file* editor button to specify an external program called by the *Edit file* control. Navigate through **Program files** or **Program files (X86)** to find your editor of choice.

The *Confirm delete* checkbox controls whether the program prompts to confirm delete operations. Use caution if you deactivate this feature. When the *Confirm overwrite* checkbox is

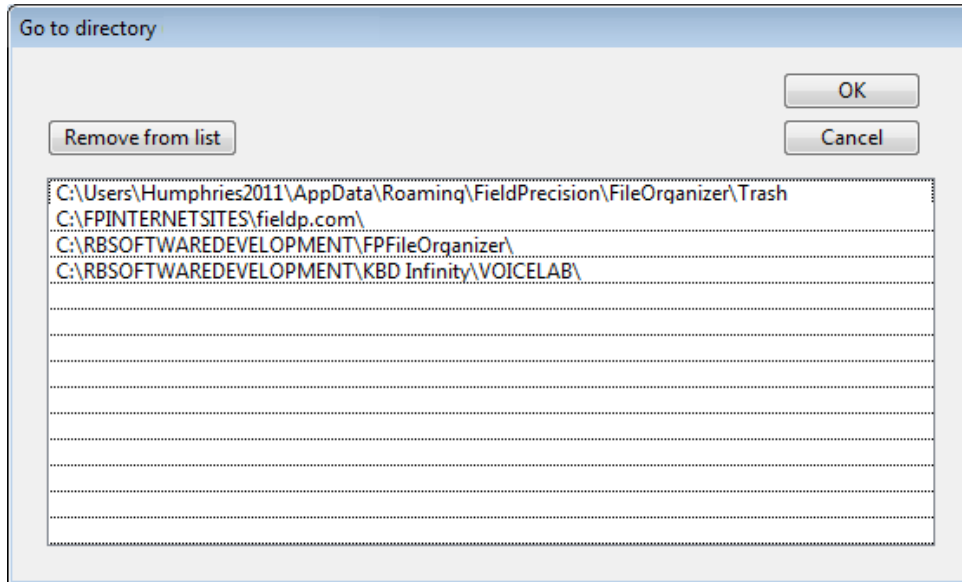


Figure 9: Saved locations dialog.

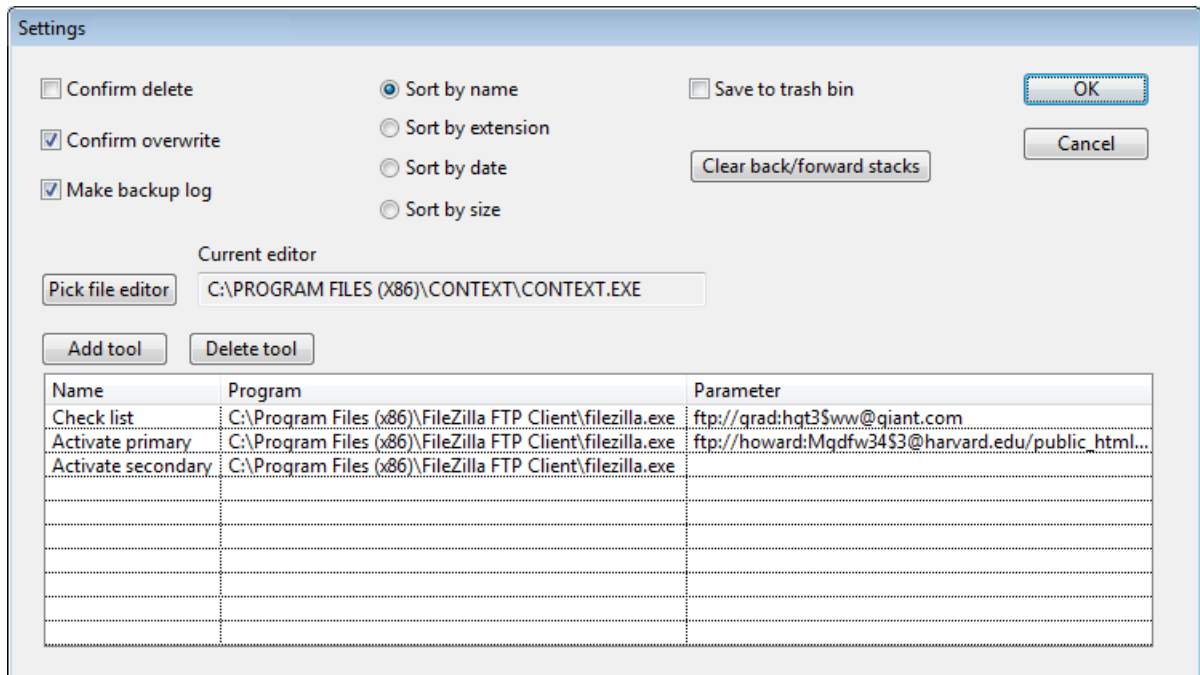


Figure 10: Program settings dialog.

active, the program prompts if you attempt to copy or move a file or directory into a directory where an item has the same name. When the *Save to trash* checkbox is checked, files are copied to the Windows recycle directory before being deleted. Use the *Clear back/forward stacks* to reset operation of the *Back* and *Forward* buttons.

The sort options control how directory and file names are displayed in the windows and what additional information is available.

- **Sort-by-name.** Directories are listed in alphabetic order with their last-modification date, and files are organized alphabetically with their byte size.
- **Sort-by-extension.** The same as the previous option, except that files are grouped alphabetically by their extension (suffix) and then by name.
- **Sort-by-date.** Both directories and files are ordered first by last-modification date and then alphabetically by name showing the last-modification date.
- **Sort-by-size.** Directories are listed in alphabetic order with their last-modification date, and files are organized in the order of their byte size.

In all cases, directories are listed first. You can change the display method quickly with the following shortcuts: *Ctrl-N* (sort by name), *Ctrl-D* (sort by date), *Ctrl-E* (sort by extension) or *Ctrl-S* (sort by size). The sort options may also be changed in the advanced-features popup menu. The current sort method is shown in the *Sort* text field.

6.6 Advanced functions

Advanced features of **MIDI File Organizer** are collected in a popup menu. To bring up the menu, right-click anywhere in the program window. Besides, the sort options, the menu includes the following capabilities:

- **Open terminal window.** Run `cmd.exe`, opening the program in the currently-active window.
- **Selected path to clipboard.** Use this command after selecting a file or directory (left-click). The full path to the item is copied to the Windows clipboard. This function is useful to fill in programs and parameters for user-defined tools (see below).
- **List items in current directory.** Collect information on the files and directories in the currently-active directory (names, lengths, modification date, creation date) and save it to a text file.
- **Size of current directory.** Show the number of directories and files in the currently-active directory and the cumulative byte size of the files.
- **Size of selected directory.** List the total number of items (files and directories) and cumulative file bytes in a selected directory. All subdirectories are included. To use the feature, select a directory, right-click to display the popup menu and click on the command.

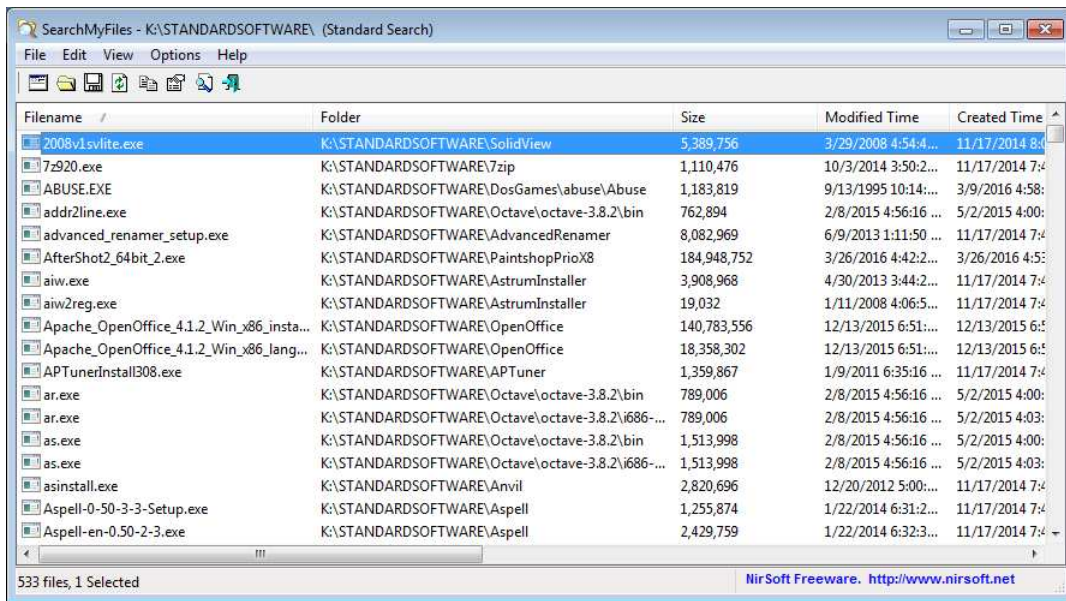


Figure 11: SearchMyFiles launched from MIDI File Organizer.

- **Shortcut on desktop.** Add a shortcut to the selected program or document on the Windows desktop.
- **Available space on drive.** Shows the following information for the drive of the window that currently has the focus: total size on the drive, free bytes available to the current user and total free bytes.
- **Fast file search.** Find a lost file quickly on a disk or in a folder. To use the utility, first navigate in either window to the folder where you want to start the search. (To search an entire disk, click the *Root* button.) Then, bring up the popup menu and run the command. Enter the file name in the dialog – you can use the standard wildcard characters (* and ?) to specify classes of files. Click *OK* to display the window of Fig. 11. The command launches the independent program **SearchMyFiles** from NirSoft. For information on advanced search capabilities and other utilities, see www.nirsoft.net.

You can also define custom commands that appear in the popup menu. They will launch external programs with specified pass parameters. Commands are created in the list box at the bottom of the *Settings* dialog (Fig. 10). Click the *Add tool* button to add a new command, then type in replacements for the default text entries. The first column is the name that will appear in the popup menu. The second column is the full path of the executable that will be launched. The third column contains parameters to pass to the program at startup. Leave this column blank if you simply want to start an external program. The examples in Fig. 10 show how to launch **FileZilla**, open a password protected FTP connection and go to a remote directory.

The symbols %f and %d may be used in a pass parameter to represent the full path of the currently-selected file or directory. To launch a program to operate on a specific file, left-click the file in the left or right windows to select it and then right-click anywhere in the program window to bring up the popup menu.

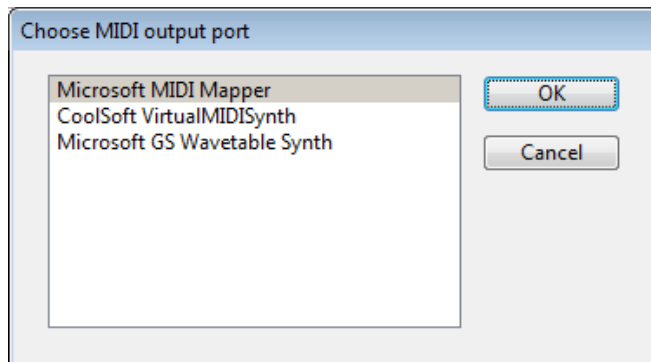


Figure 12: Dialog to set the MIDI output port.

6.7 MIDI files

To work exclusively with MIDI files, right-click to raise the popup menu and click on *Toggle display MIDI only*. The current state is shown in the *Display* text field. In the **MIDI** files mode, the program displays and operates on only files with extensions `mid`, `kar` and `sty`.

In either display mode, you can load a MIDI file for playing by double-clicking the file entry in either window. When loaded, the file length, type and number of tracks is displayed at the upper-left part of the screen. Also, the *Start* button of the player (upper-right) becomes active. Use the *Start*, *Pause*, *Stop* and *Volume* controls to play the file. To start a file in the middle, left-click the mouse at the appropriate position inside the play progress bar. Click the *Change port* button to set the destination for the player output. The button brings up the dialog of Fig. 12.

7 Tempus Fugit

Tempus Fugit is a digital metronome for MIDI devices with several convenient features: 1) audio and visual indicators, 2) customizable beat sound (volume, pitch and MIDI instrument), 3) output to any connected MIDI port and 4) output channel control to avoid interference. Figure 13 shows the program interface.

Audio output may be directed to any MIDI device – the computer soundcard via a virtual instrument or a connected keyboard. In the later case, you can set the MIDI channel to avoid interference with performances or recordings. The first time you run the program, click the *Set* button to choose a MIDI device. Use the up-down arrows to change the MIDI channel if there is a problem with the default of 07h. Port parameters are preserved for the next session.

To use the metronome, set the time-signature controls using the up-down arrows. For example, the number 6 in the left box and 8 in the right box corresponds to 6/8 time. Set the tempo using the up-down arrows or type in a value. The tempo equals the number of quarter notes per minute. The allowed range is 10 to 400 bpm. The *On/Off* button starts and stops the metronome. For audio output, the first beat in a measure is louder. Beats are also shown by the visual indicators.

You can fine-tune the metronome sound to achieve an audible but pleasing sound. Use the controls at lower-right to set the volume, note pitch and instrument (GM program value). The *Test* button plays one beat with the current settings. Voice settings are also preserved for the next session.

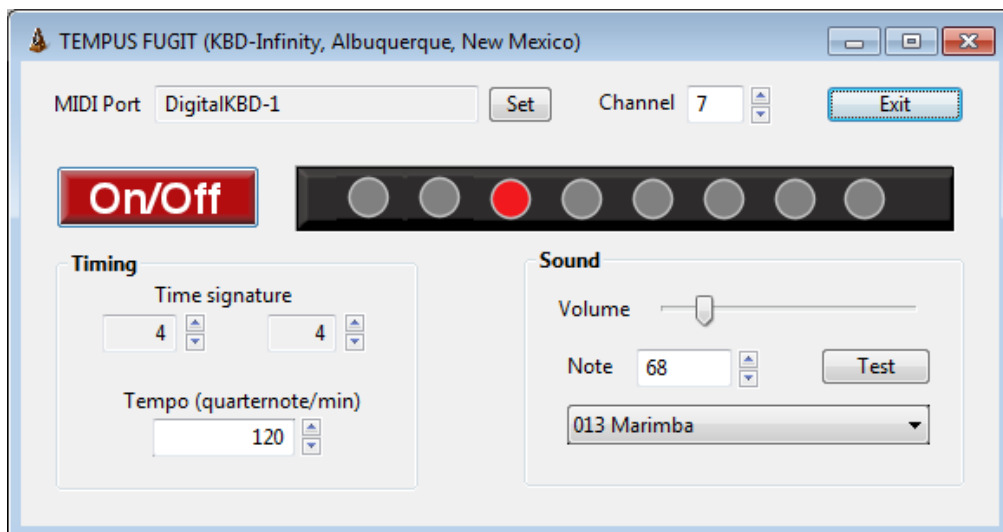


Figure 13: Screenshot of **Tempus Fugit**.