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Working with System Exclusive messages

Introduction

System Exclusive (SysEx) is a special type of MIDI message used to send things that only make sense to a unit of a certain make and type. Every major MIDI manufacturer has its own SysEx identity code. System Exclusive messages are typically used for transmitting patch data, i.e. the numbers that make up the settings of one or more sounds in a MIDI instrument.

Cubase SX/SL allows you to record and manipulate System Exclusive data in various ways. This chapter points to various features that help you manage and create System Exclusive data.

Bulk dumps

Recording a bulk dump in Cubase SX/SL

In any programmable device, all settings are stored as numbers in computer memory. Change those numbers, and you will change the settings.

Normally, MIDI devices allow you to dump (transmit) all or some settings in the device's memory, in the form of MIDI System Exclusive messages. Return these messages, and you get the settings back. This is (among other things) a way of making backup copies of the settings of any instrument.

If your instrument allows the dumping of a few or all of its settings via MIDI by activating some function on the front panel, this dump will most probably be recordable in Cubase SX/SL.

1. Open the Preferences dialog from the File menu (on the Mac, this is located on the Cubase SX/SL menu) and select the MIDI–MIDI Filter page. This allows you to govern which MIDI event types should be recorded and/or thru-put.



2. Deactivate the Sysex checkbox in the Record section, but make sure the Sysex checkbox in the Thru section is activated. With this setting (shown in the figure above) SysEx messages will be recorded but not echoed back out to the instrument (which could lead to strange results).
3. Activate recording on a MIDI track and initiate the dump from the front panel of the instrument.
4. When done recording, select the new part and open the List Editor from the MIDI menu. This allows you to check that the System Exclusive dump was recorded – there should be one or several SysEx events in the part/event list.



If your MIDI instrument doesn't offer a way to initiate a dump "by itself", you have to send a Dump Request message from Cubase SX/SL to start the dump. You will then have to use the MIDI SysEx Editor (see [page 108](#)) to insert the specific Dump Request message (see the instrument's documentation) at the beginning of a MIDI track. When you activate recording, the Dump Request message will be played back (sent to the instrument), the dump will start and be recorded as above.

Transmitting a bulk dump back to a device

1. Make sure the MIDI track with the System Exclusive data is routed to the device.
You may want to check your device's documentation to find details about which MIDI channel should be used, etc.
2. Solo the track.
This might not be necessary, but it is a good safety measure.
3. Make sure the device is set up to receive System Exclusive data (often, the reception of SysEx is turned off by default).
4. If necessary, put the device in "Standby to Receive System Exclusive" mode.
5. Play back the data.

Some advice

- Don't transmit more data than you need. If all you want is a single program, don't send them all, it will only make it harder to find the one you want. Usually, you can specify exactly what you want to send.
- If you want the sequencer to dump the pertinent sounds to your instrument each time you load a project, put the SysEx data in a silent "count-in" before the project itself starts.
- If the dump is very short (for instance, a single sound) you can put it in the middle of the project to re-program a device on the fly. However, you can achieve the same effect by using Program Change. This is definitely preferable, since less MIDI data is sent and recorded. Some devices may be set up to dump the settings for a sound as soon as you select it on the front panel.

- If you create parts with useful “SysEx dumps”, you can put these on a special muted track. When you want to use one of them, drag it to an empty unmuted track and play it back from there.
- Do not transmit several SysEx dumps to several instruments at the same time.
- Make a note of the current device ID setting of the instrument. If you change this, the instrument may refuse to load the dump later.

Recording System Exclusive parameter changes

Often you can use System Exclusive to remotely change individual settings in a device, open up a filter, select a waveform, change the decay of the reverb etc. Many devices are also capable of transmitting changes made on the front panel as System Exclusive messages. These can be recorded in Cubase SX/SL, and thus incorporated into a regular MIDI recording.

Here's how it works: let's say you open up a filter while playing some notes. In that case, you will record both the notes and the System Exclusive messages generated by your opening of the filter. When you play it back, the sound changes exactly like it did when you recorded it.

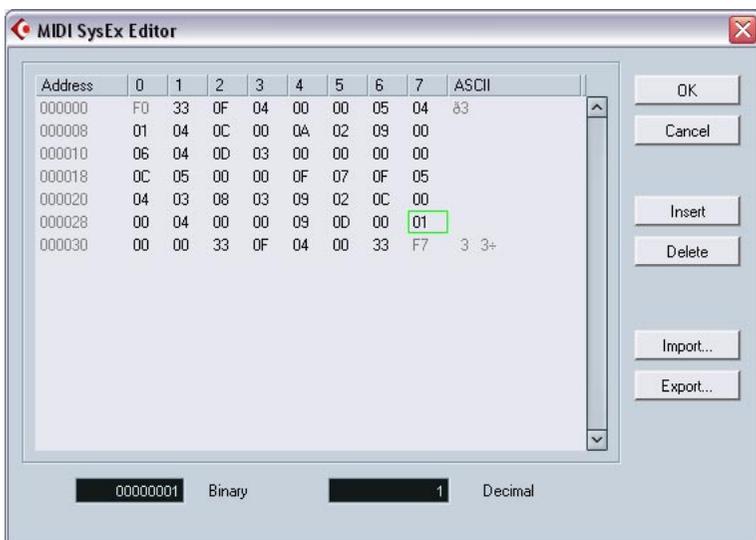
1. Open the Preferences dialog from the File menu (on the Mac, this is located on the Cubase SX/SL menu), select the MIDI-MIDI Filter page and make sure that System Exclusive is recorded.
2. Make sure the instrument is actually set to transmit front panel control movements as System Exclusive data.
3. Record normally.
When you're done, you can check that the events were recorded properly in the List Editor.

Editing System Exclusive messages

While System Exclusive events are shown in the List Editor/Project Browser, their entire content is not (only the beginning of the message is displayed in the Comment column for the event). Furthermore, you cannot edit the event (other than moving it) as you can with other event types in the List Editor.

Instead, you use the MIDI SysEx Editor for this.

- To open the MIDI SysEx Editor for an event, click in the Comments column for the event in the List Editor/Project Browser.



The display shows the entire message on one or several lines. All System Exclusive messages always begin with F0 and end with F7 with a number of arbitrary bytes in between. If the message contains more bytes than fit on one line, it continues on the next. The Address indication to the left helps you find out on which position in the message a certain value resides.

Selecting and viewing values

To select a value, either click on it or use the cursor keys. The selected byte is indicated in various formats:

- In the main display, values are shown in hexadecimal format.
- To the right of this, values are shown in ASCII format.
- At the bottom of the dialog, the selected value is shown in binary and decimal formats.

Editing a value

The selected value can be edited directly in the main display or in the decimal and binary displays. Just click on it and type in the desired value as usual.

Adding and deleting bytes

Using the Insert and Delete buttons, or their corresponding computer keyboard keys, you can add and delete bytes from the message. Inserted data will appear before the selection.

Importing and exporting data

The Import and Export buttons allow you to get SysEx data from disk and to export the edited data to a file. The file format used is called "MIDI SysEx" (.SYX), in which data is saved exactly as is, in a binary file. Only the first dump in a .SYX file will be loaded.

This format should not be confused with MIDI files.

