GM Arts Firmware v4.0

for BJ Devices
MIDI Foot Controllers

LIBRARY TUTORIAL

Revision 2

About Library Books

You must set Advanced mode to be able to use Library books. Each library book can contain:

- One or more MIDI message of ANY type
- Commands to control the MFC (such as pause, set bank, change footswitch page, etc)
- A list of other library book(s) to send

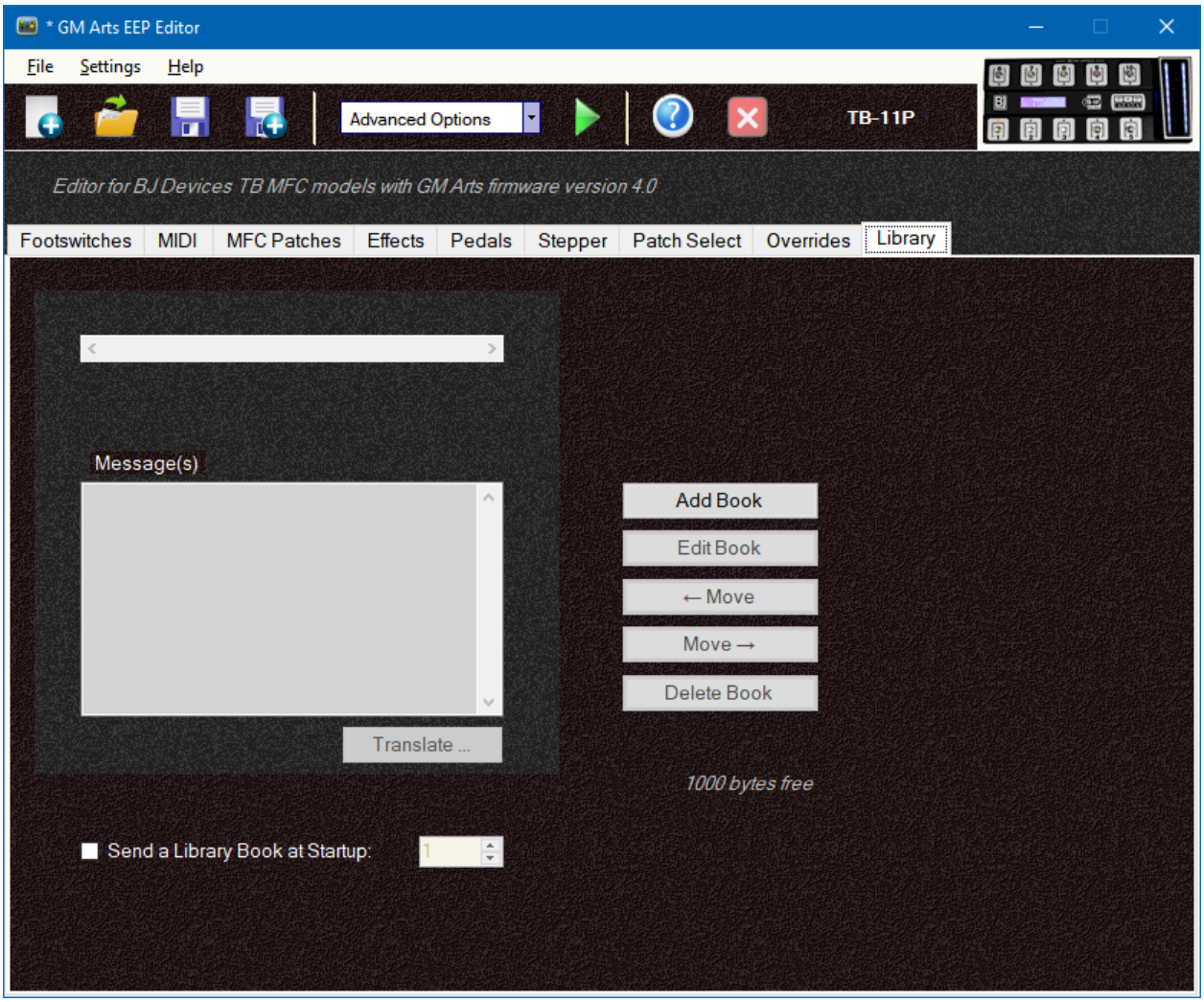
There can be up to 250 library books and each book can use up to 255 bytes. There is a total of 1000 bytes available for both library messages and override settings.

Library books can be sent instead of CC messages on the Effects tab, the Up/Down tab and the Patch Select tab. There's also a "Send MIDI" footswitch option on the Footswitches tab that uses library books.

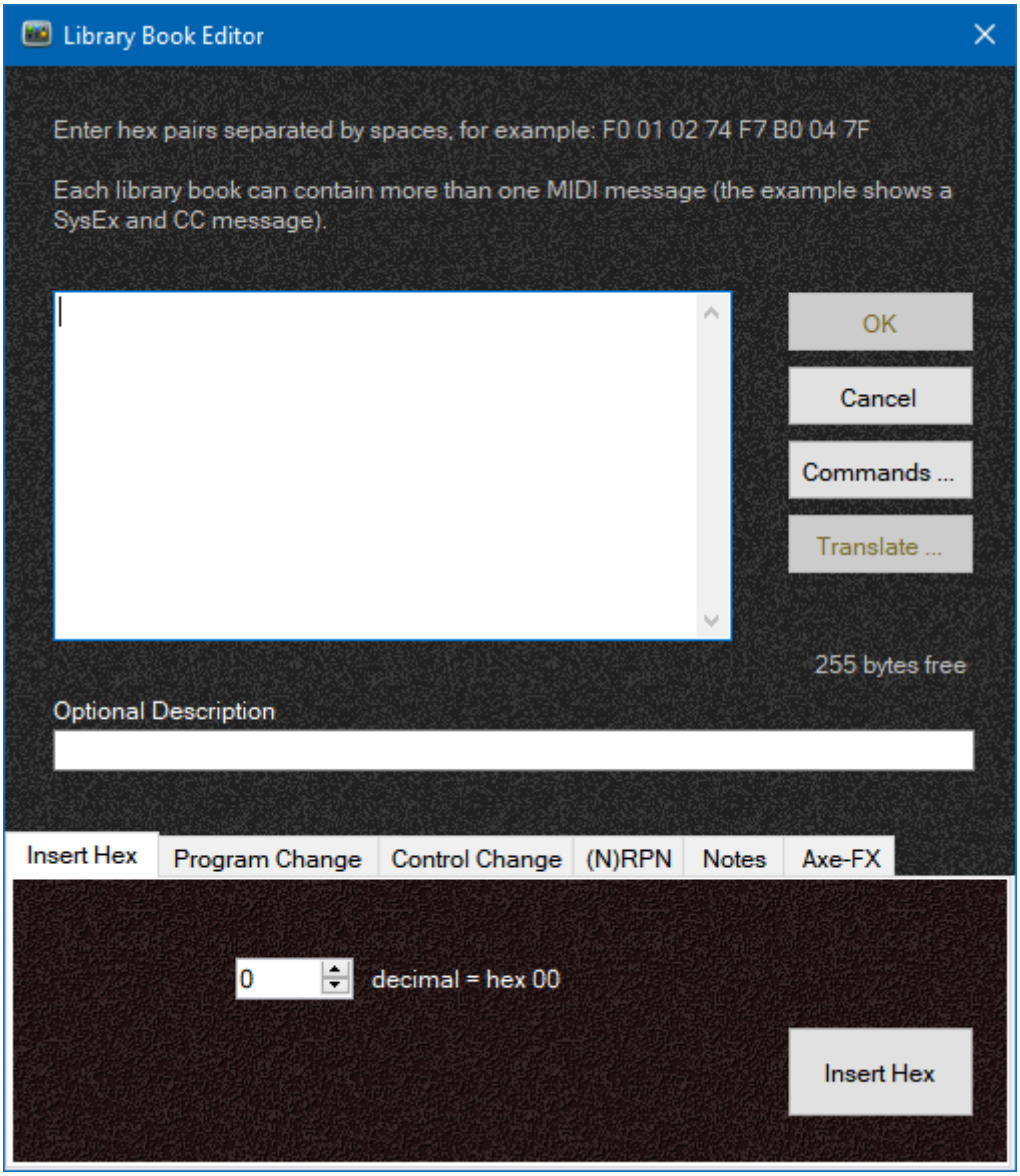
A Sample Library Book

We'll create a book to send a patch change and set an effect state.

Go to the Library tab and click on [Add Book]



You'll then see this window:



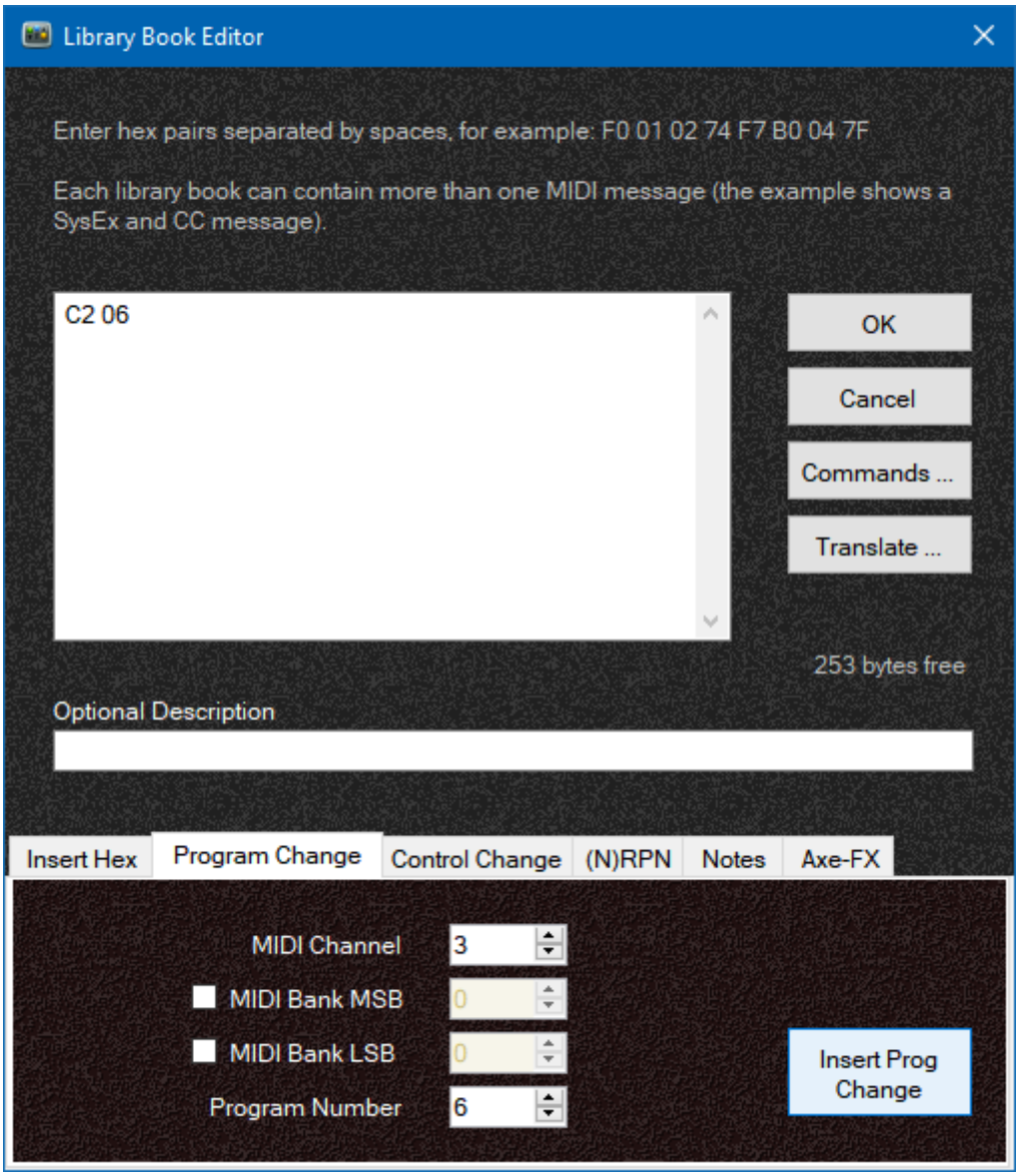
MIDI data is entered in hex-pair format. In many cases you will be able to copy this data from documentation.

"Free-form" hex-pair format might look a little strange at first if you've never seen it before. However, there are tabs that allow you to enter common MIDI messages and MFC commands. Also, if you need to convert a hex-pair to decimal, just highlight the hex pair and you'll see its decimal value.

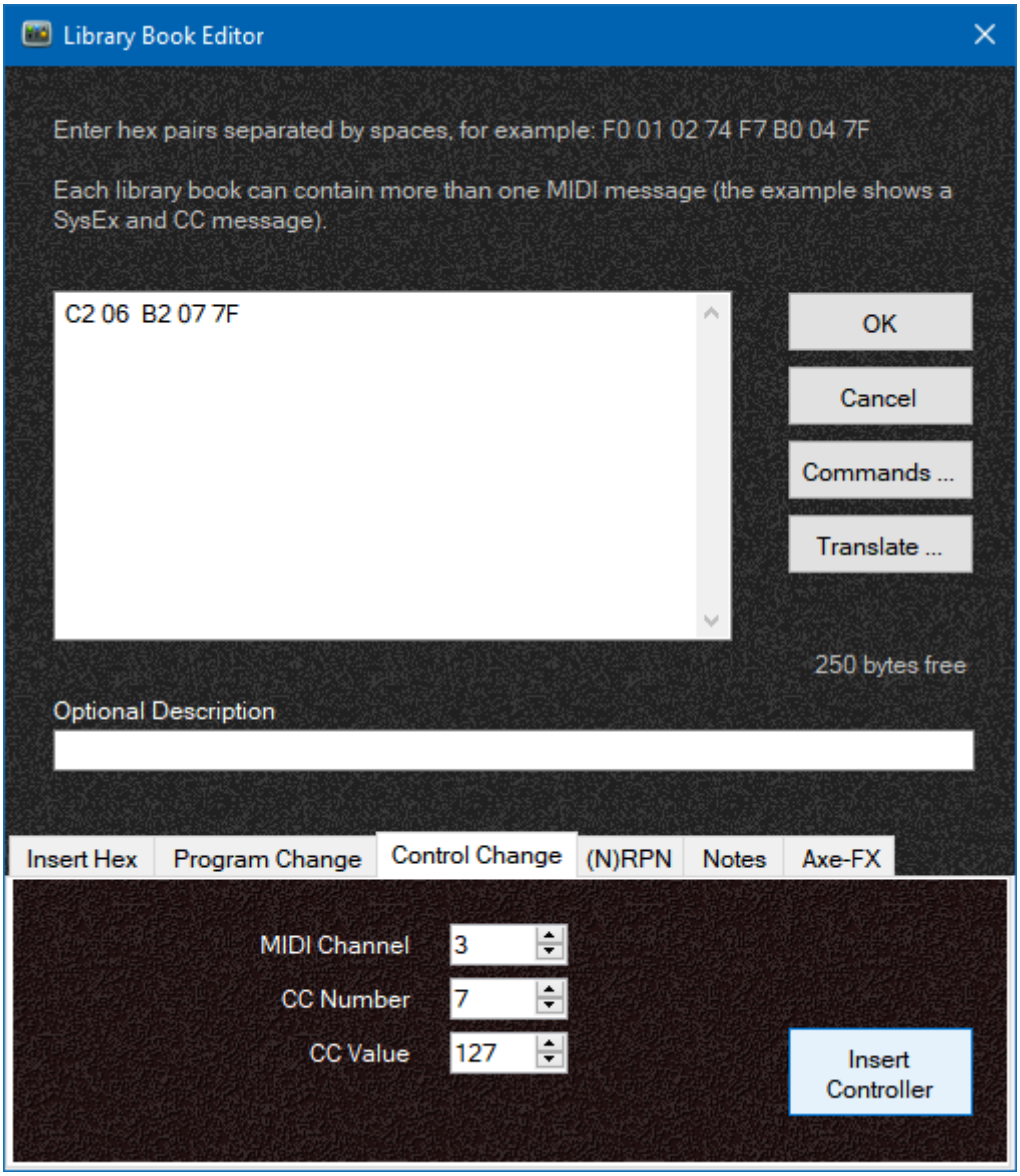
For our example of adding a patch change and effect message, we can use the tabs across the bottom of this window.

Select the Program Change tab, enter a MIDI channel and a program number, then click on [Insert Prog Change].

Note that this uses true MIDI program numbers from 0 to 127, regardless of your setting on the main window MFC Patches tab.

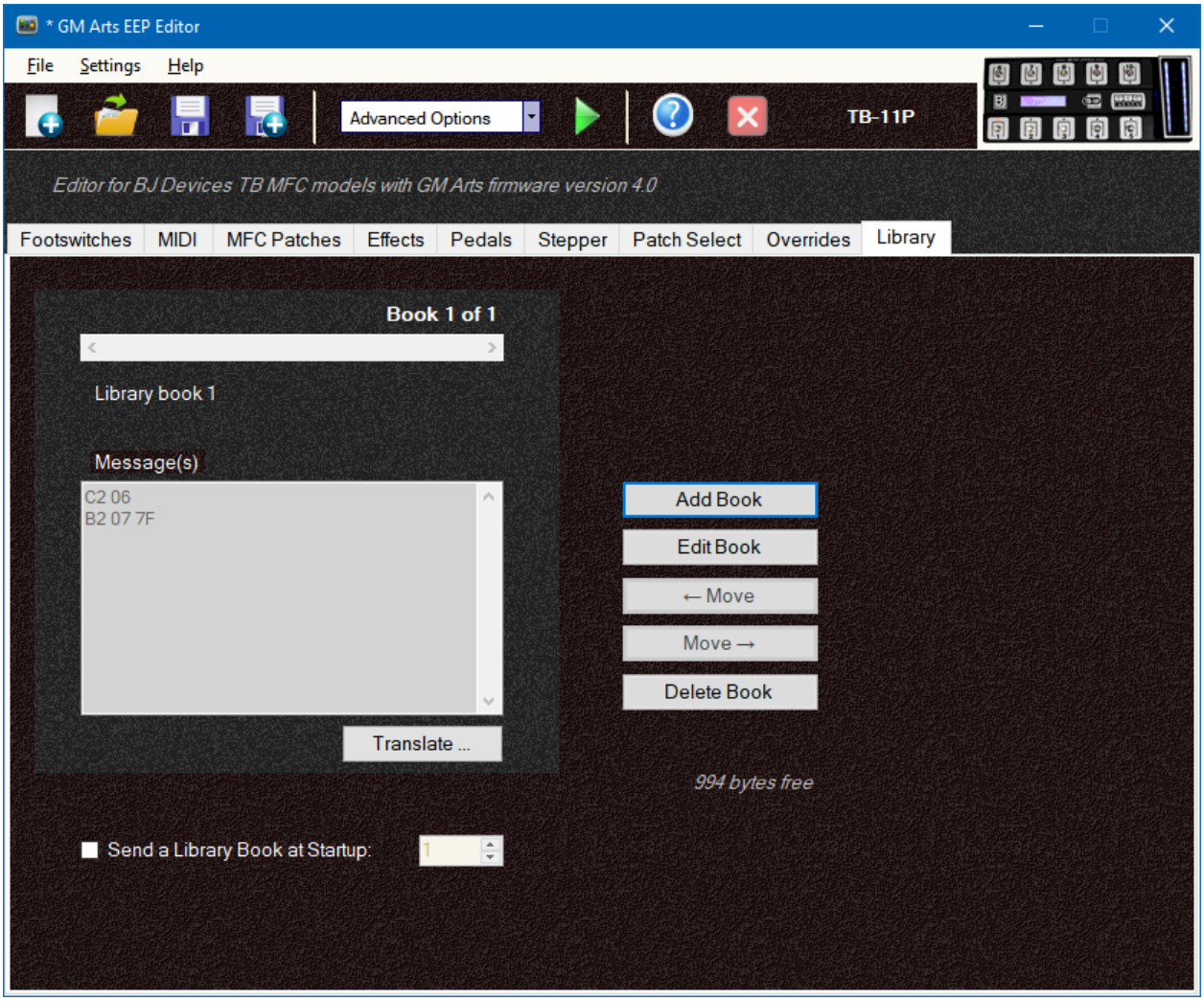


Now go to the Control Change tab, enter your settings and click [Insert Controller].

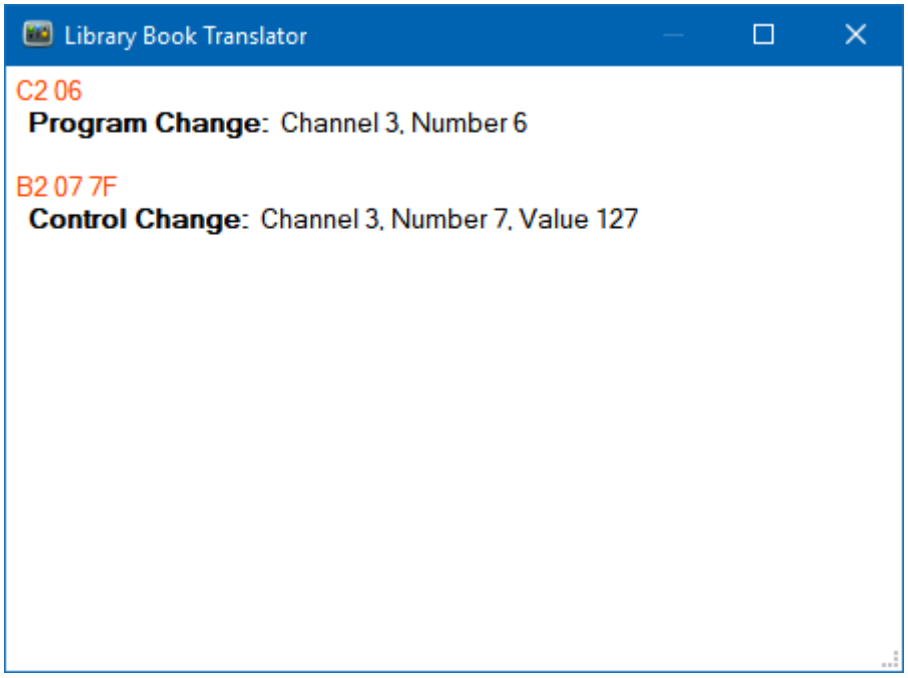


You can optionally add a description. This is not used anywhere, it's just for your own reference.

Finally, click [OK] and you'll see your new library book added:



Both the Library tab and the Library Book editor have a [Translate …] button to show you a description of the messages in your book. For example:



STARTUP LIBRARY BOOK

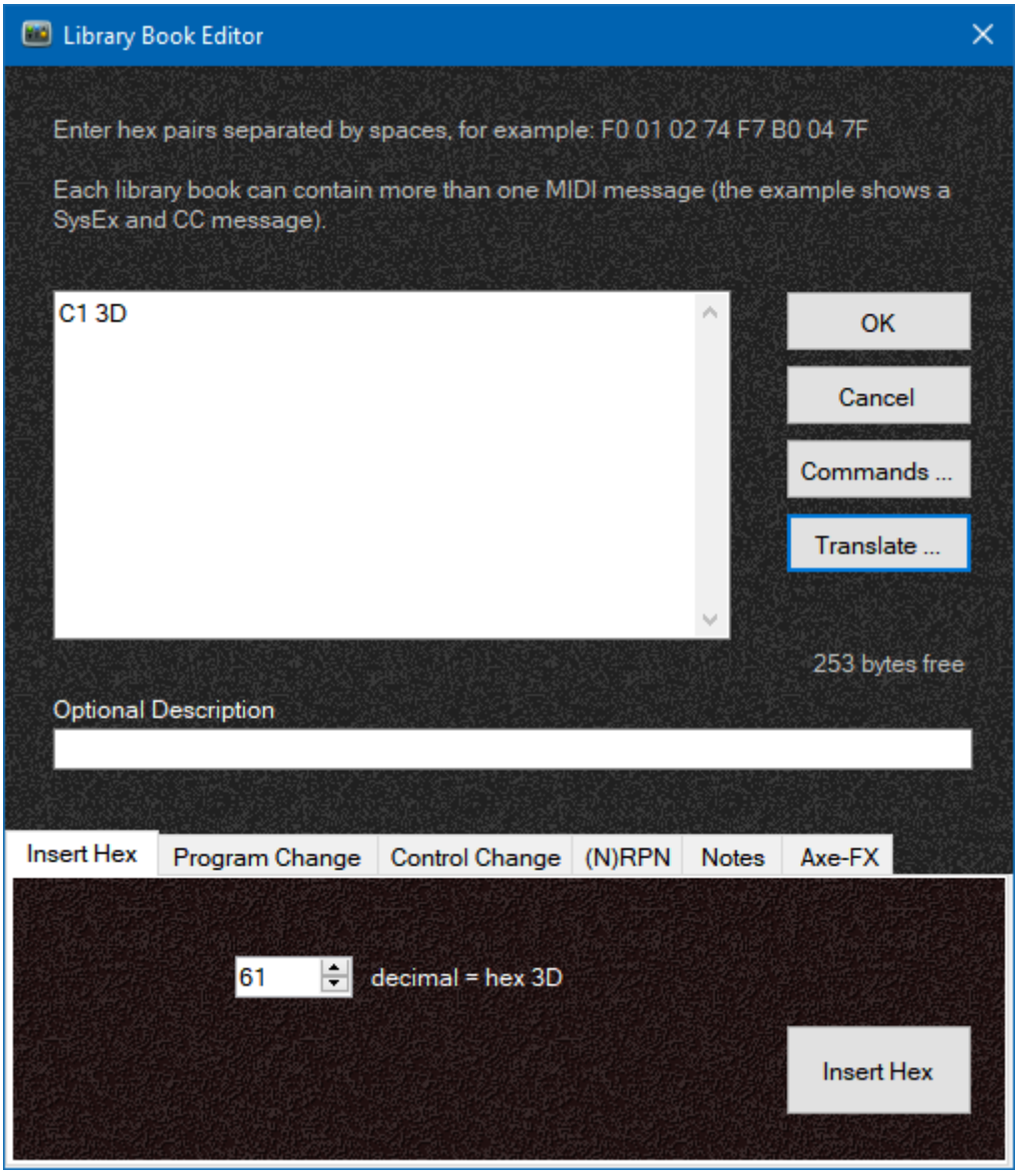
You can set a library book to be sent when you first power on your MFC. If you use this feature, you will need to make sure the receiving device is powered on and ready to receive MIDI messages before powering on the MFC.

Entering MIDI

We'll now look at all of the MIDI tabs. MIDI messages are just a sequence of several hex-pairs. Often there are only 2 or 3 hex-pairs, but some messages such as system exclusives can be longer. When entering MIDI messages it is important to make sure they follow one another, and that you don't accidentally put one message inside another.

INSERT HEX

This tab is simply a converter from decimal to hex-pairs. For those who know MIDI well and can construct their own messages, this tab helps enter numbers. For example, a program change on MIDI channel 2 starts with "C1" and is then followed by a program number from 0 to 127. If you want to select program number 61, you can enter 61 and click [Insert Hex] to enter the equivalent hex-pair "3D".



PROGRAM CHANGE

We've already seen this tab. You can optionally include MIDI Bank selection messages for devices that support them.

CONTROL CHANGE

Likewise, we've already seen this tab above.

(N)RPN MESSAGES

NRPN and RPN messages are used by some manufacturers to allow a large number of parameters to be controlled in fine detail. They are actually just a sequence of several control change messages, but this tab will make it easy to enter them all at once. Check your owner's manual to find settings needed for these messages.

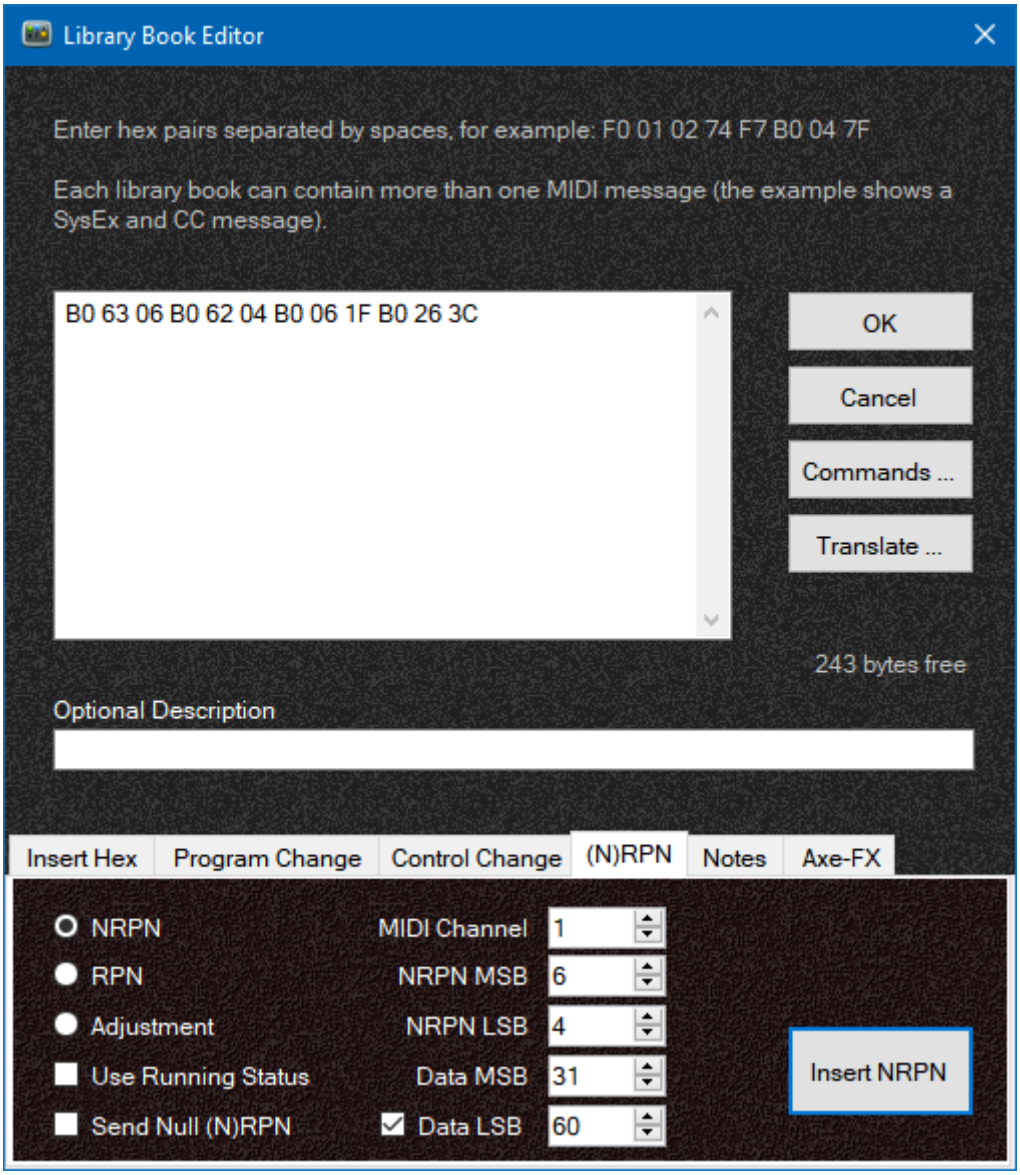
Select message type NRPN or RPN, or "Adjustment" to change the value of a previously sent (N)RPN message. Adjustment works provided you didn't use "Send Null RPN" with the previous (N)RPN message - see below.

"Use Running Status" is supported by most manufacturers and creates a shorter (and therefore faster) NRNP message.

"Send Null RPN" resets the (N)RPN number to prevent values sent later from changing the current message. Leave this unchecked if you want to be able to make adjustments in later messages. Or use this option as a safeguard against unintentional later changes.

The remaining settings are for MIDI channel, (N)RPN MSB and LSB, and for data (value) MSB and optional LSB. As always, take care with library messages that multiple MIDI messages occur one after the other, and not one inside another.

Here's an example of an NRPN message:

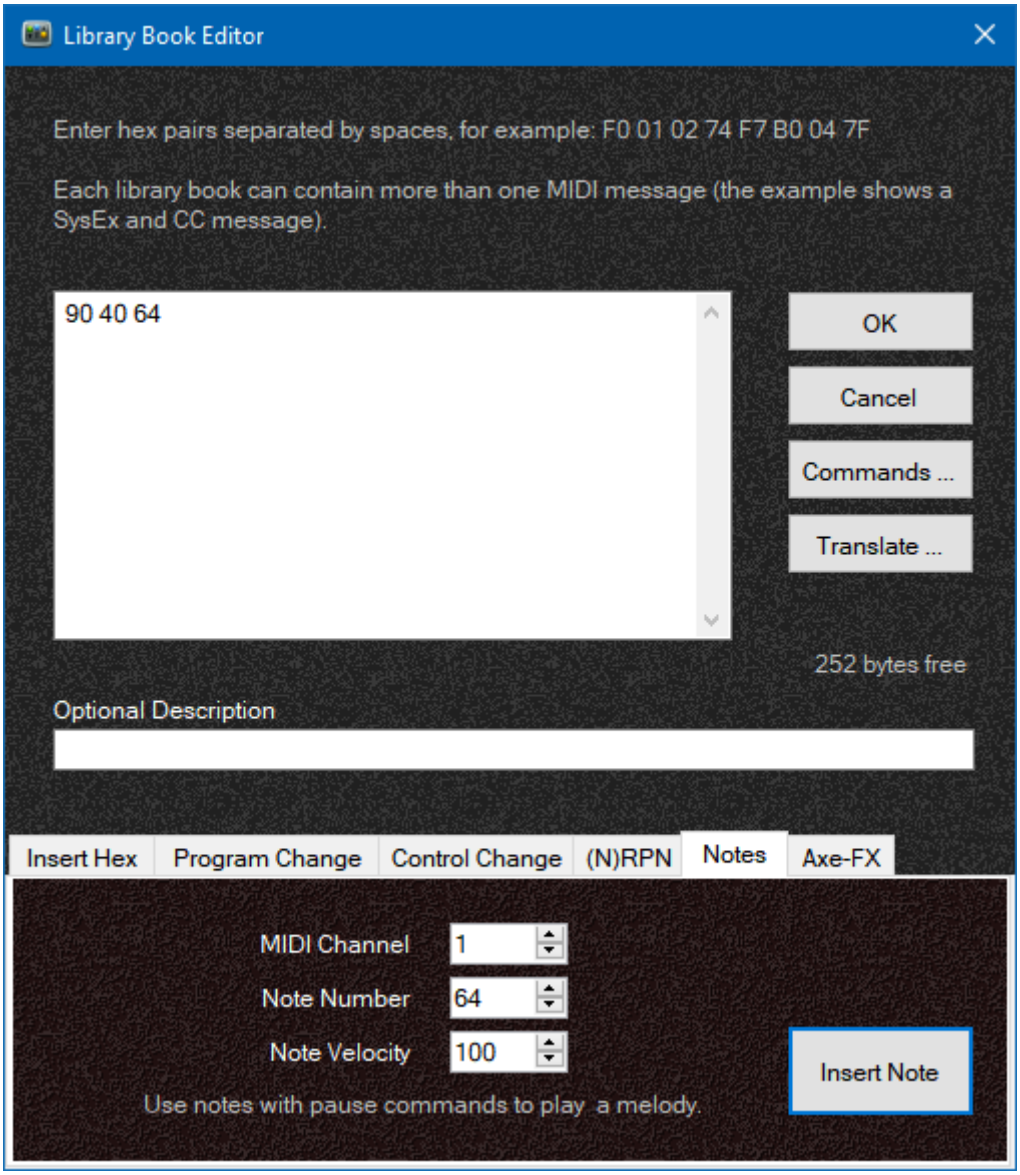


NOTES TAB

This tab can be used to enter MIDI notes that can be played back on a connected sound module. This could allow you to play special effects, or even short melodies by entering Pause Commands between notes.

There are a couple of thing to watch:

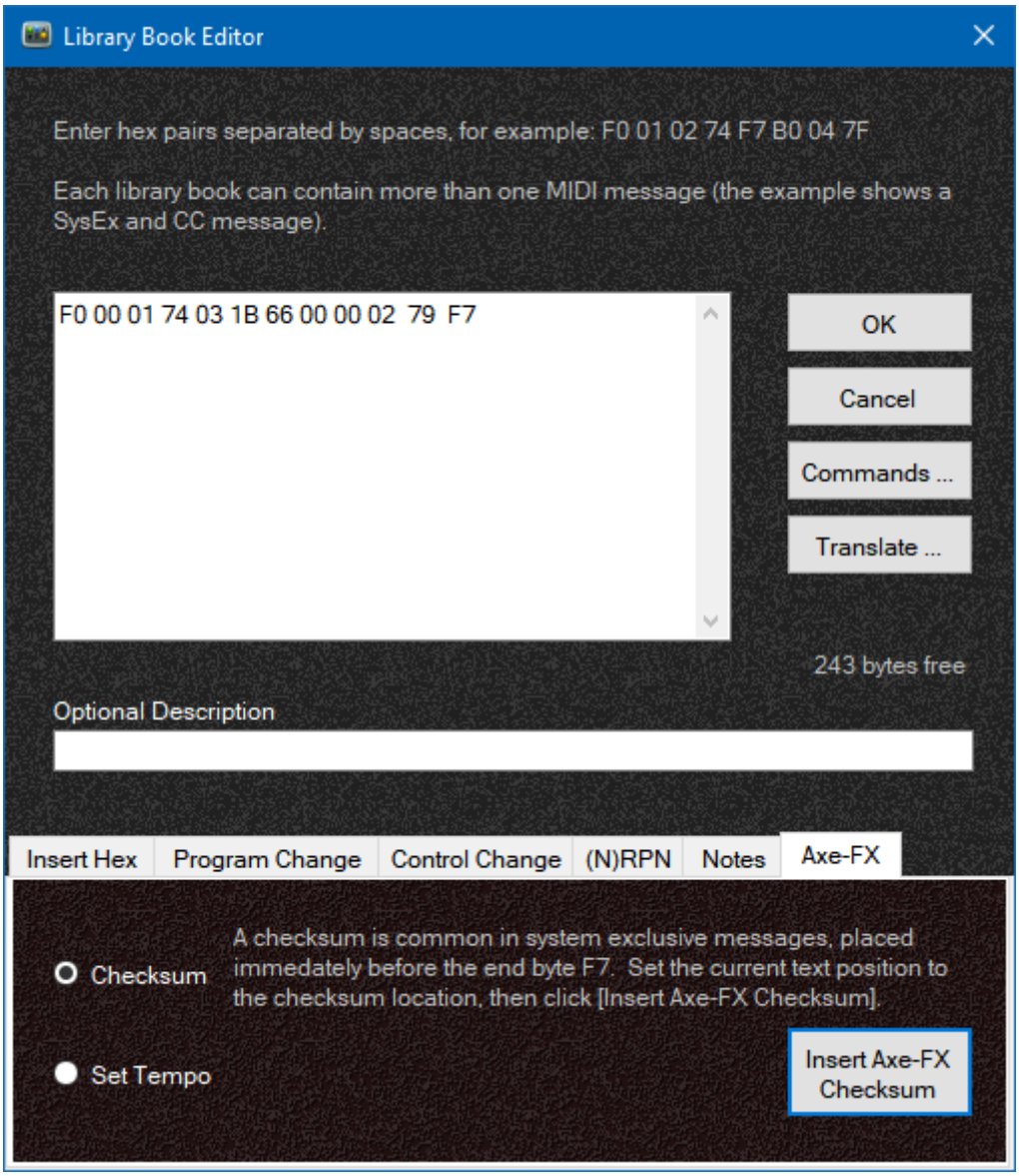
- Make sure any notes you turn on are turned off later (with Note Velocity 0)
- Playing melodies with pauses will lock the MFC while the melody is playing, so keep them short



AXE-FX TAB

This tab has a couple of options for Axe-FX users.

If you're entering and modifying system exclusive messages, place the caret (click in the message area) just before the end of system exclusive hex pair F7, then click [Insert Axe-FX Checksum] and the correct checksum will be inserted.



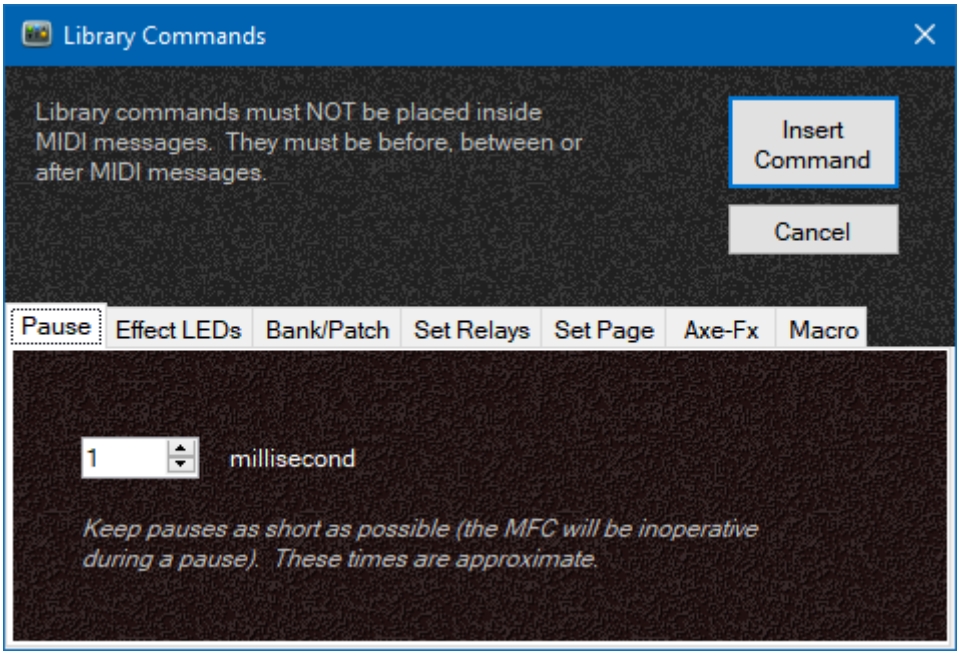
There is also an option to enter a global tempo.

MFC Commands

So far, we've looked at entering MIDI messages. We can also enter specific commands to control the MFC by clicking the [Commands …] button. These commands must never be placed inside a MIDI message, only before or after messages, or between two messages.

PAUSE

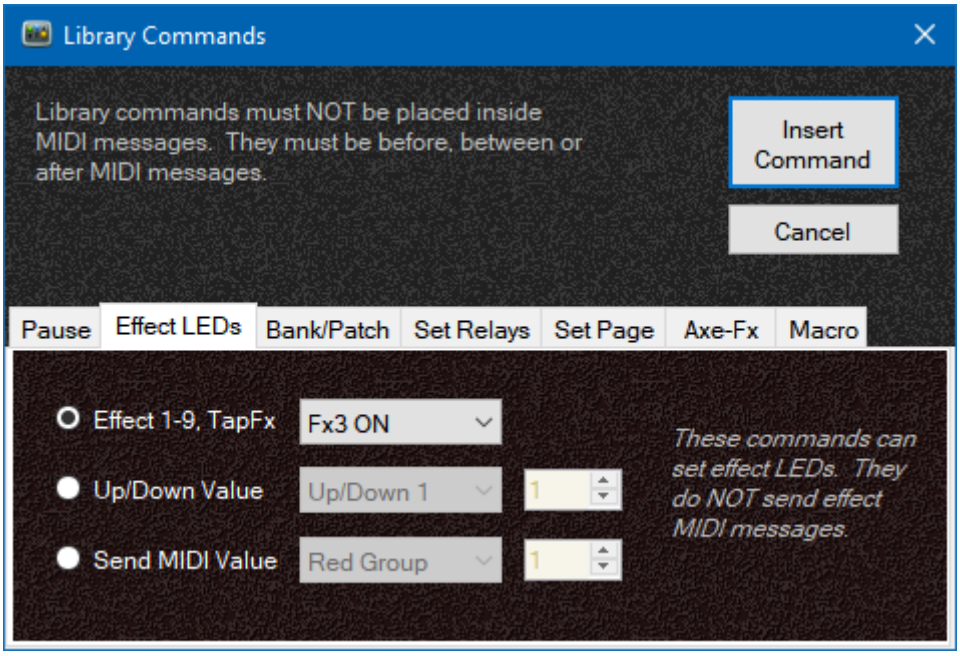
If you need to wait for a short time, such as waiting for your device to process a complex system exclusive, you can use the Pause tab. Modern equipment should generally not need pauses.



EFFECT LEDs

Setting LEDs off or on sets the effect state on the MFC. For example, if you set the LED ON for effect #1, the next time you press a footswitch for effect #1, it will send messages to turn effect #1 OFF.

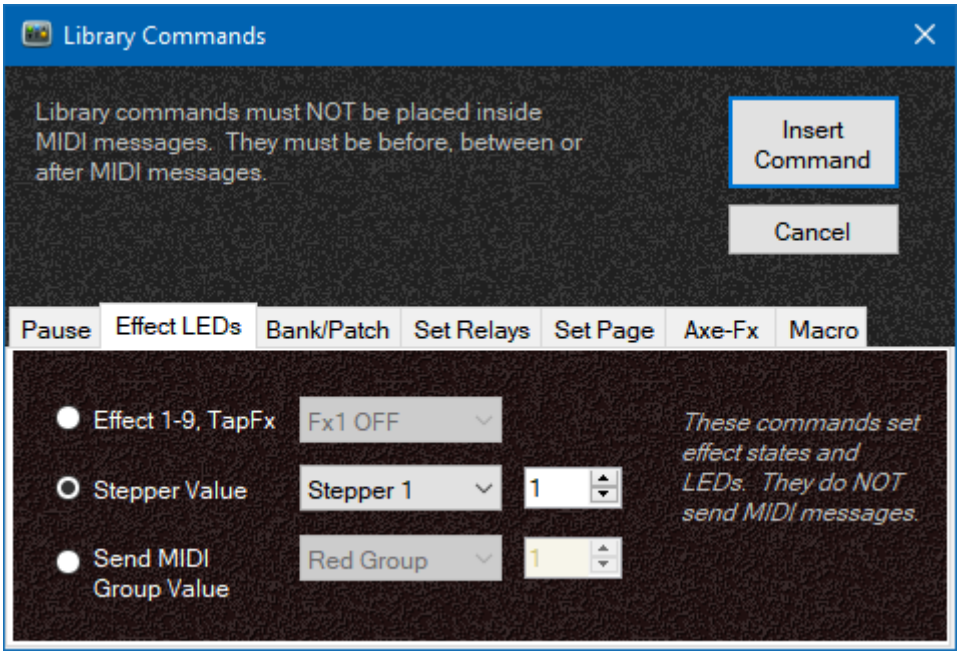
You can set an effect state OFF or ON on the MFC, without sending the effect's normal MIDI off/on messages. This might be useful if you've already included those commands in your library book and need to show the correct effect state on the MFC. There's also an option to set ALL effects LEDs off.



In addition to setting effect LEDs off and on, you can control LEDs for the Stepper and Send MIDI groups. None of these options sends MIDI messages associated with these effects, they only affect LEDs.

Stepper value sets the current value of an Stepper effect. LEDs then show as normal for that effect. A Stepper footswitch shows a red LED if it is at its limit, or a green LED if the current value is between the starting value and the limit.

If you set a value outside the Stepper limits, this command will set the start value.

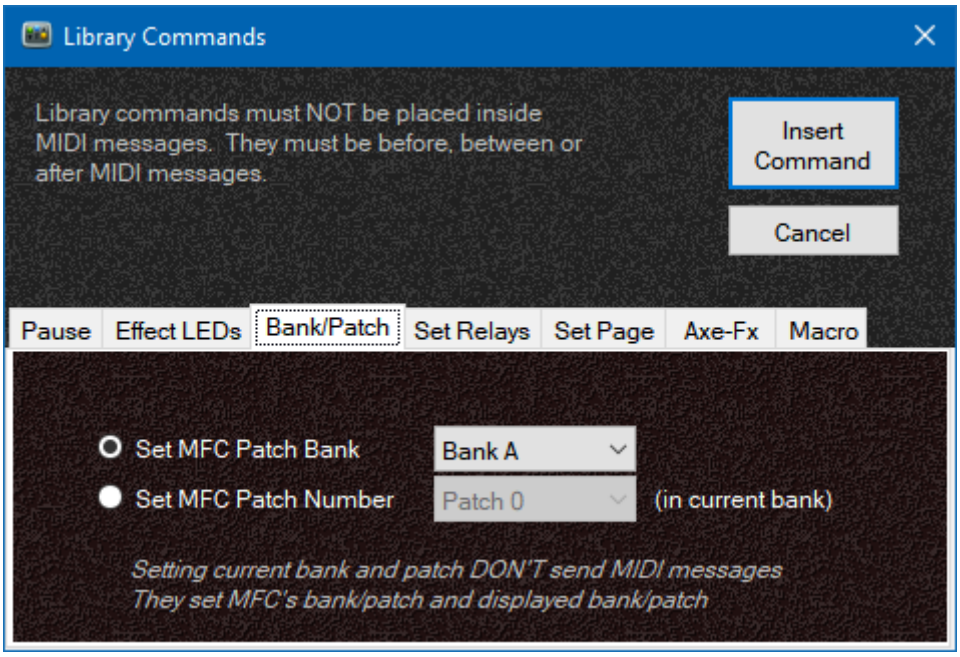


The Send MIDI value option allows you to set a current library book number for any of the Send MIDI groups. If this number matches a footswitch in the group, it's LED will light.

BANK/PATCH

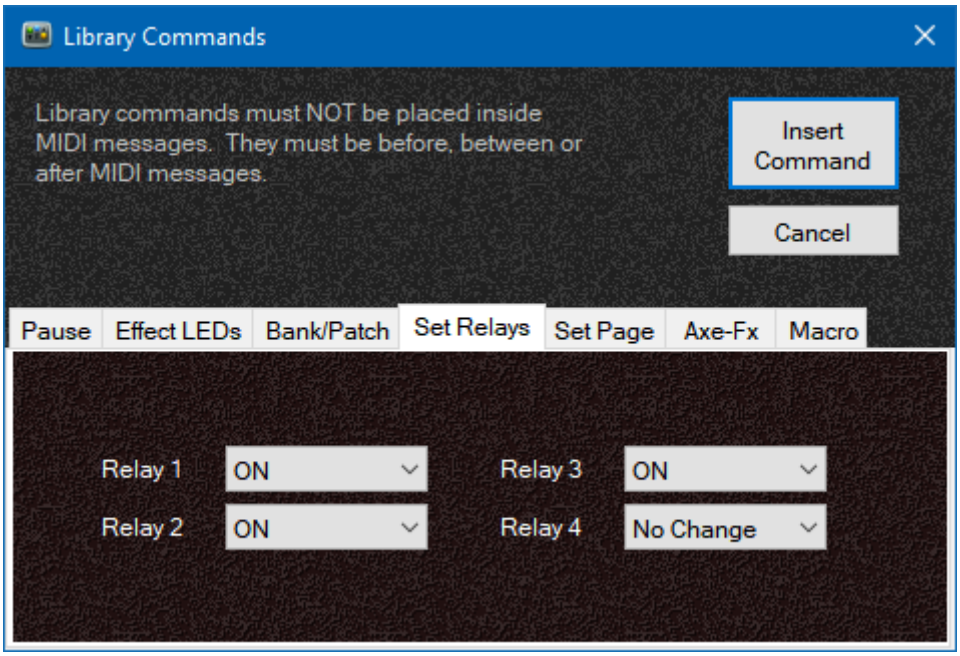
This tab simply allows you to

- Set the MFC bank from A to P, or Bank UP or Bank DOWN
- Set the MFC patch number in the current bank



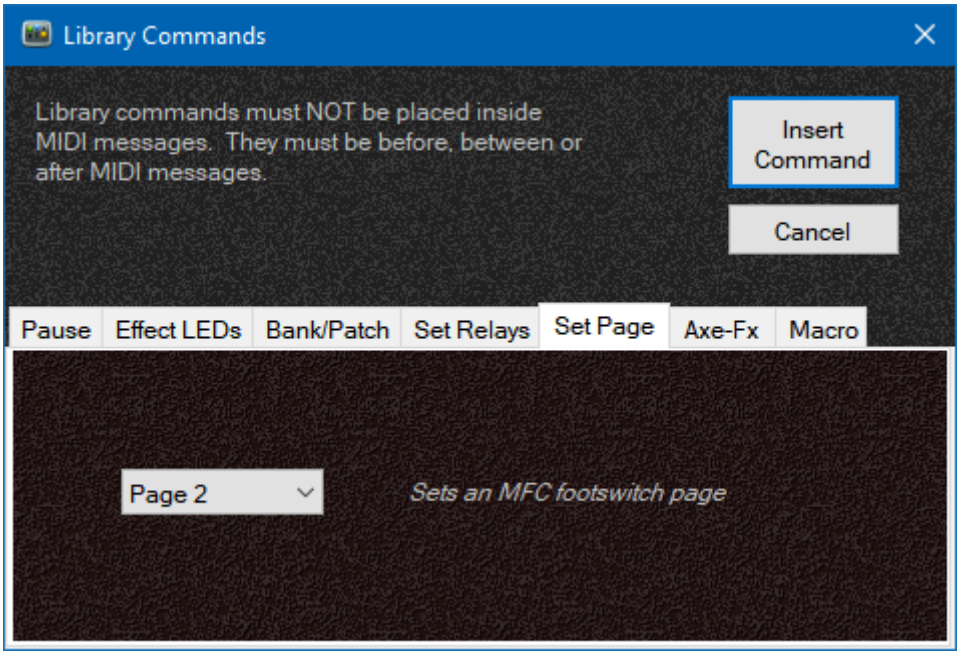
SET RELAYS

You can include a command to set and combination of relay states.



SET PAGE

This command sets a MFC footswitch page. You can also select "previous page" on the drop-down list.



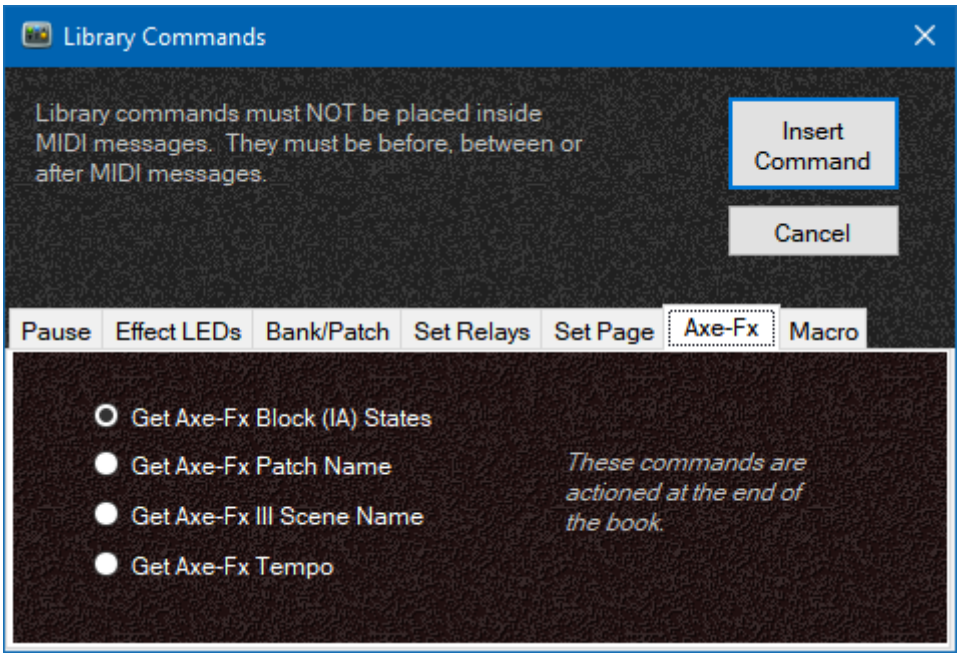
AXE-FX

If you use other library books or MIDI messages to modify Axe-FX settings, you can use these commands to get information to keep your Axe-FX and MFC synchronised.

Get Axe-FX block states will update your MFC effect states (and LEDs) to show current Axe-FX block states.

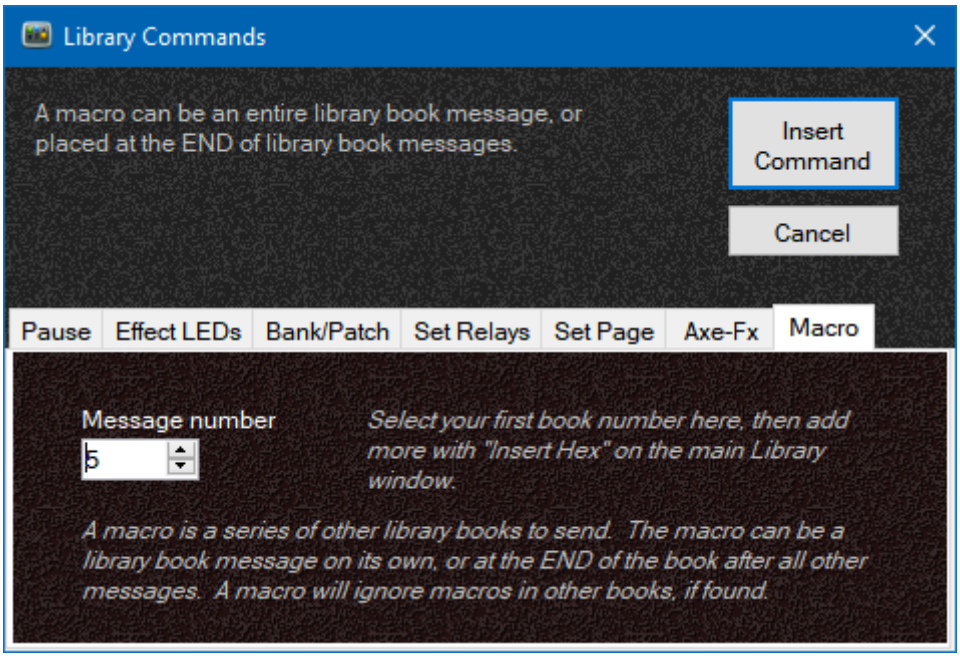
Get Axe-FX patch name can be used to update the MFC patch name if you've used a library book message to change patches. If you are using an Axe-FX III and have selected scene names on the main window's MIDI tab, this option will show "Get Axe-FX Scene name".

Get Axe-FX Global Tempo is used to update the MFC tempo tracking. This isn't displayed, but is used with effect and tempo backtracking.



MACROS

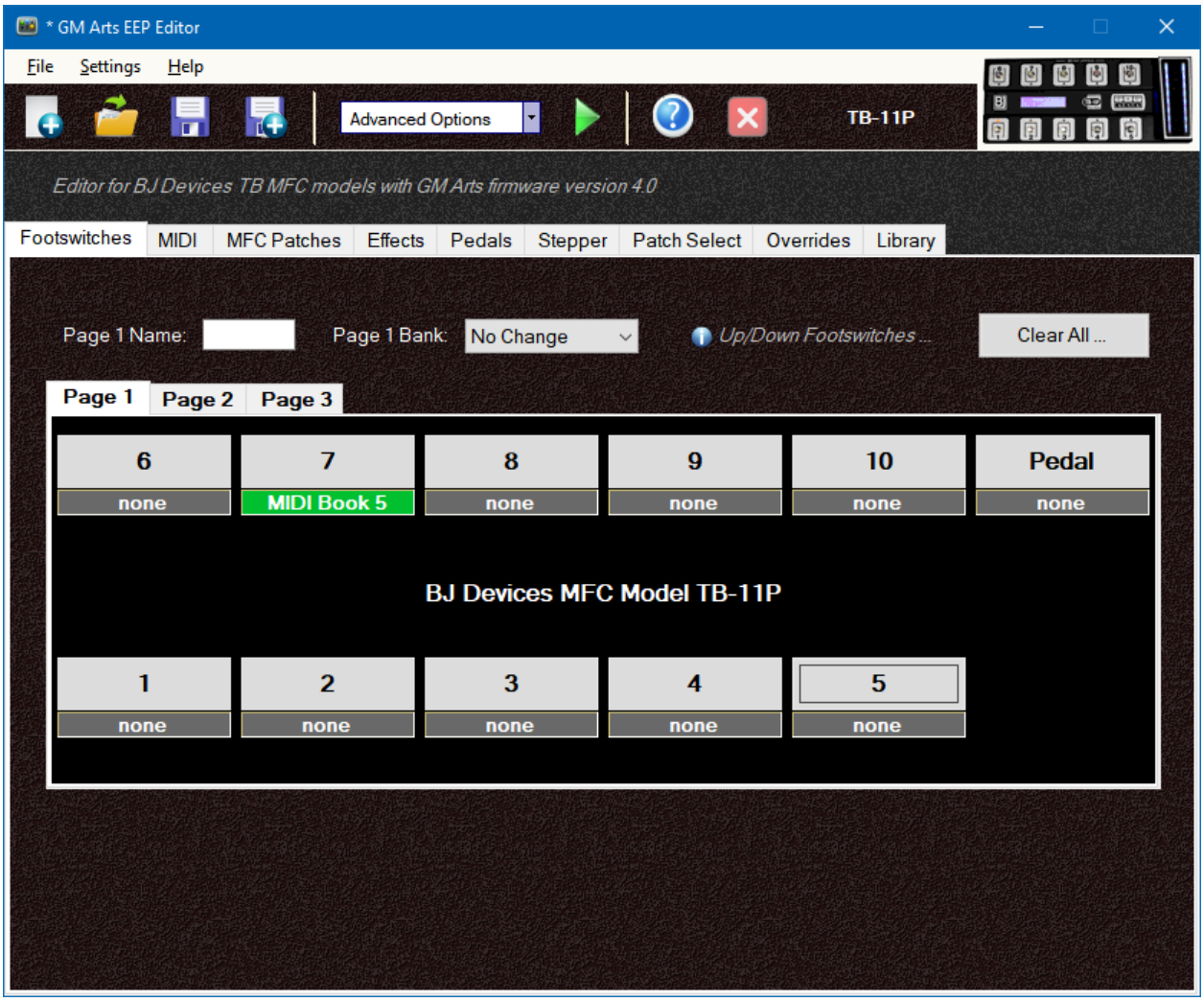
A macro allows you to chain several library books together. This command can be a library book on its own or can be placed at the end of a library book. You can follow this command with as many other library book numbers as you wish.

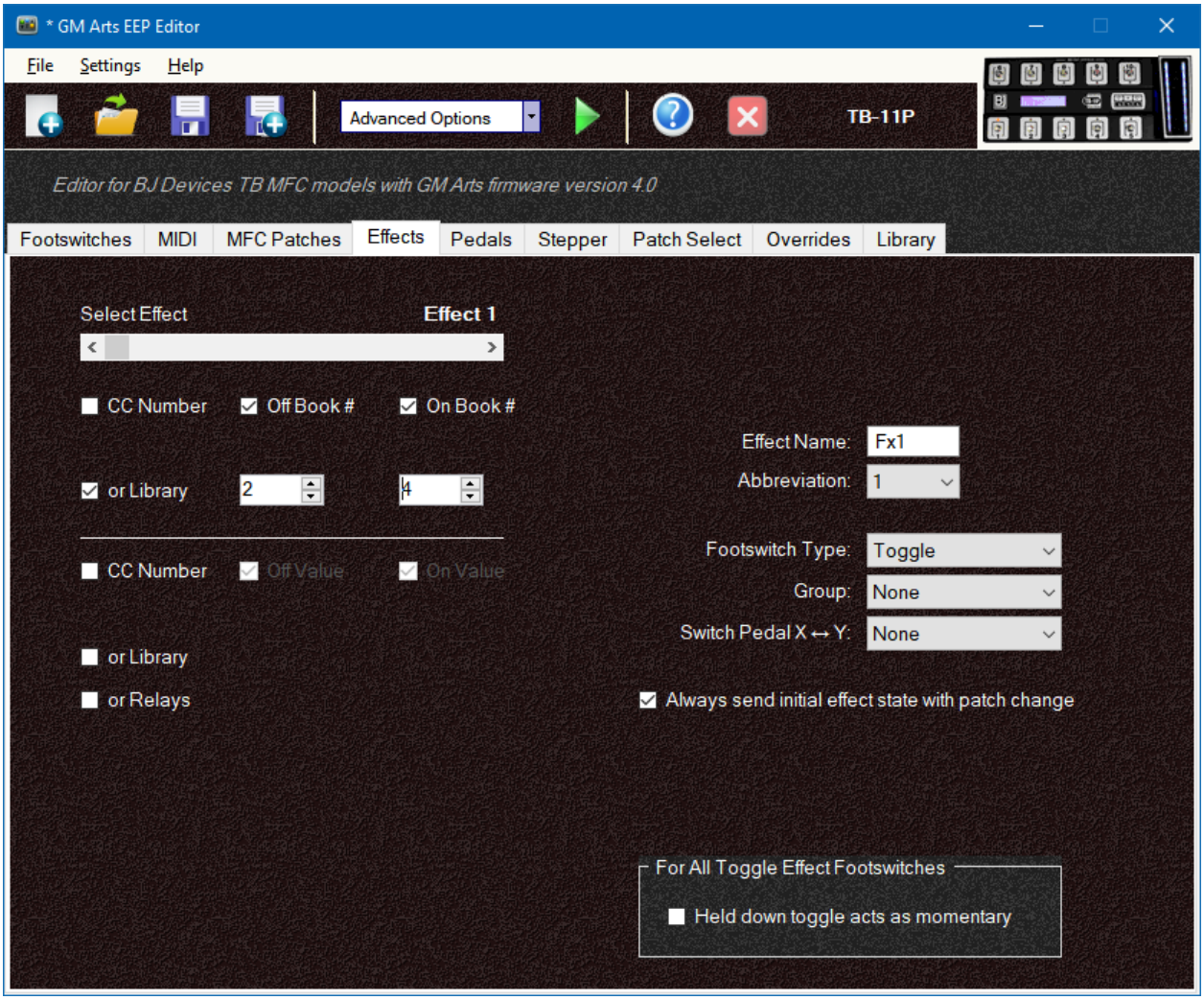


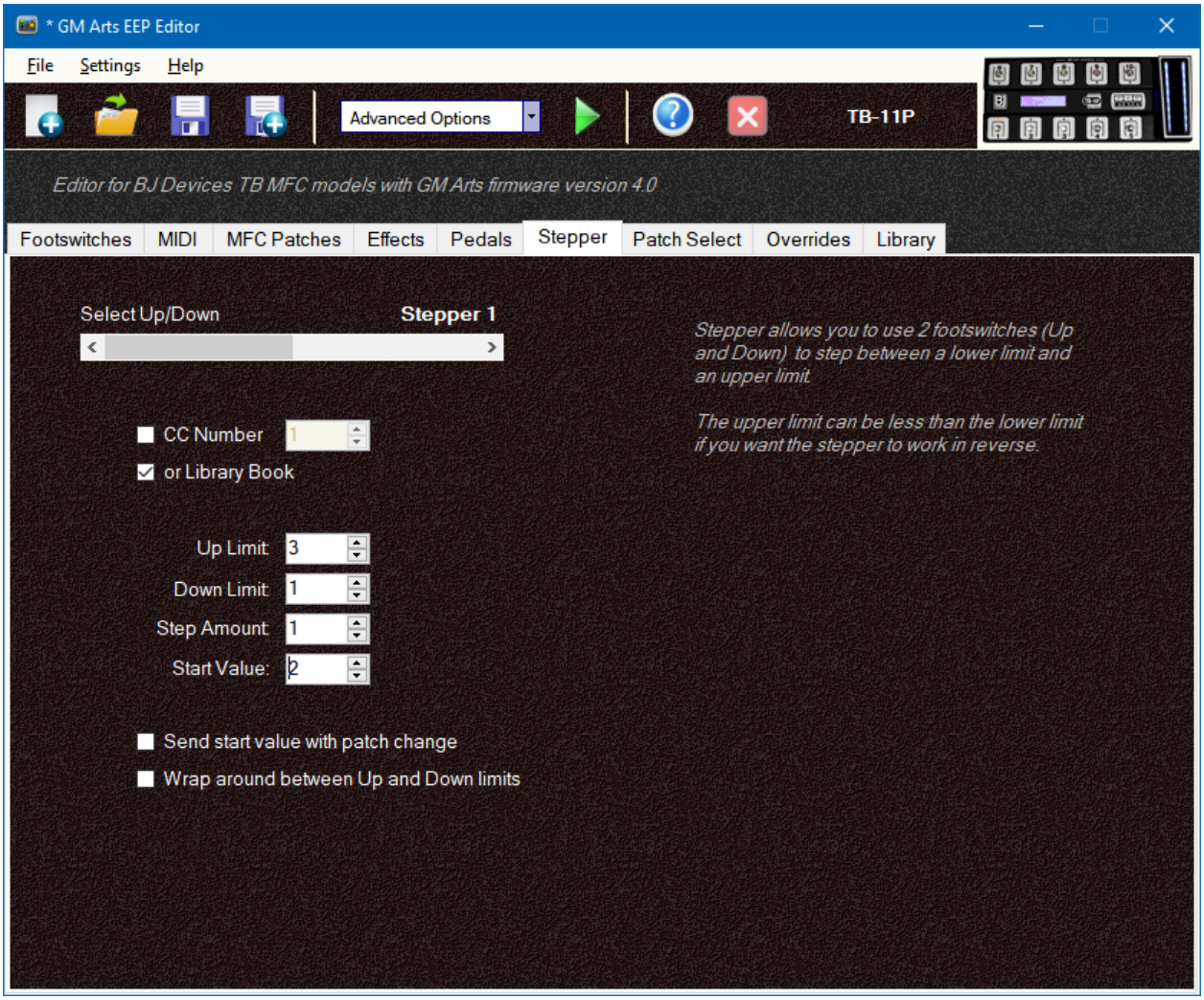
Note that a macro command ignores macros in other library books, as a safeguard to prevent locking the MFC in an endless loop.

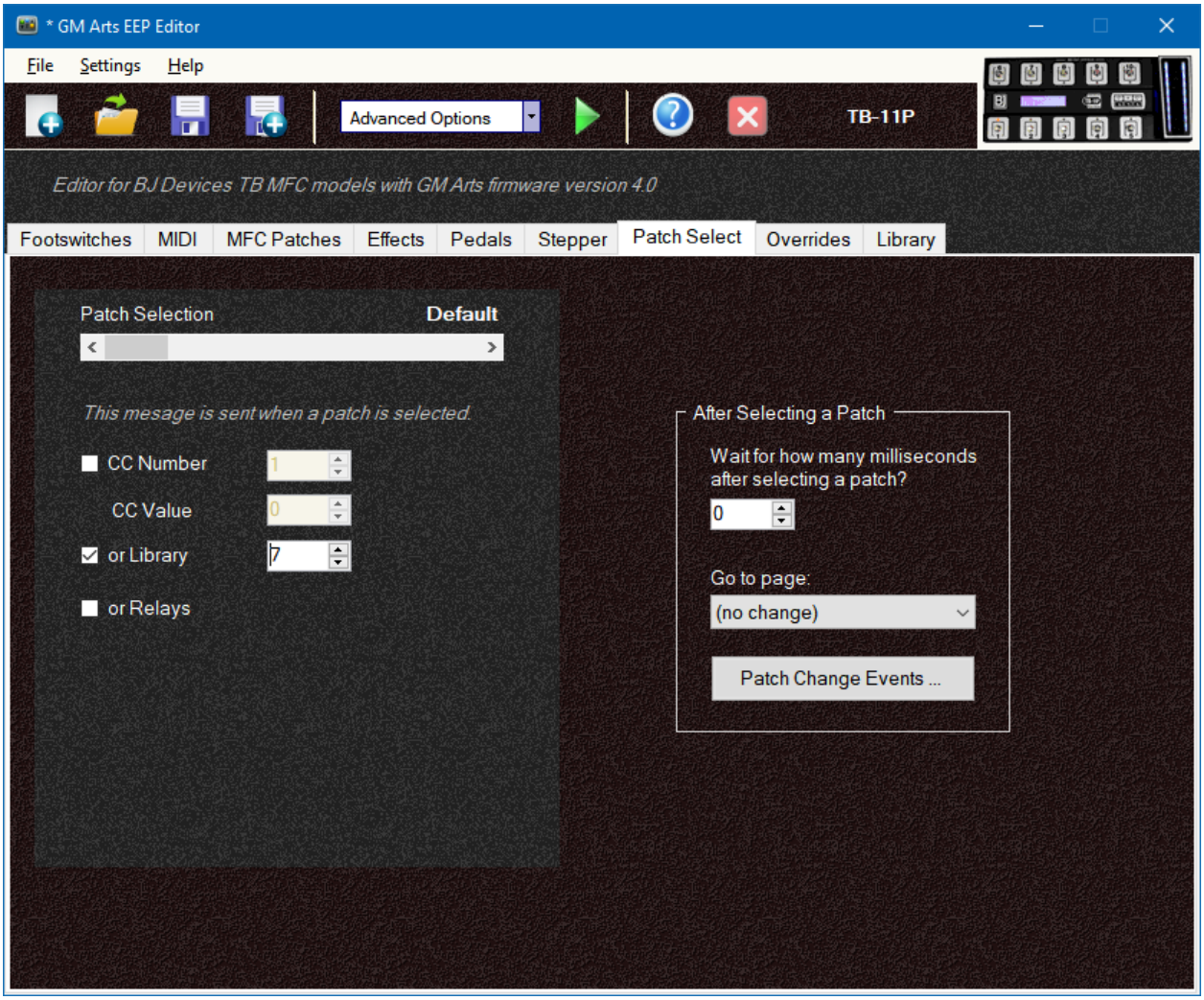
Using Library Books

When you have some library book messages, you can use them on several tabs shown in the following screenshots:




* GM Arts EEP Editor
File
Settings
Help
Advanced Options
TB-11P
Editor for BJ Devices TB MFC models with GM Arts firmware version 4.0
Footswitches
MIDI
MFC Patches
Effects
Pedals
Stepper
Patch Select
Overrides
Library
Select Effect
Effect 1
CC Number
Off Book #
On Book #
or Library
2
4
CC Number
Off Value
On Value
or Library
or Relays
Effect Name:
Fx1
Abbreviation:
1
Footswitch Type:
Toggle
Group:
None
Switch Pedal X ↔ Y:
None
Always send initial effect state with patch change
For All Toggle Effect Footswitches
Held down toggle acts as momentary


* GM Arts EEP Editor
File
Settings
Help
Advanced Options
TB-11P
Editor for BJ Devices TB MFC models with GM Arts firmware version 4.0
Footswitches
MIDI
MFC Patches
Effects
Pedals
Stepper
Patch Select
Overrides
Library
Select Up/Down
Stepper 1
Stepper allows you to use 2 footswitches (Up and Down) to step between a lower limit and an upper limit.
The upper limit can be less than the lower limit if you want the stepper to work in reverse.
CC Number
1
or Library Book
Up Limit:
3
Down Limit:
1
Step Amount:
1
Start Value:
2
Send start value with patch change
Wrap around between Up and Down limits


* GM Arts EEP Editor
File
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Editor for BJ Devices TB MFC models with GM Arts firmware version 4.0
Footswitches
MIDI
MFC Patches
Effects
Pedals
Stepper
Patch Select
Overrides
Library
Patch Selection
Default
This mesage is sent when a patch is selected.
CC Number
CC Value
or Library
or Relays
After Selecting a Patch
Wait for how many milliseconds after selecting a patch?
Go to page:
(no change)
Patch Change Events ...