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## AN011 : Bitstream 3X – Logic Pro 8 control

The purpose of this application note is to describe how to configure Logic Pro 8 and the Bitstream 3X.

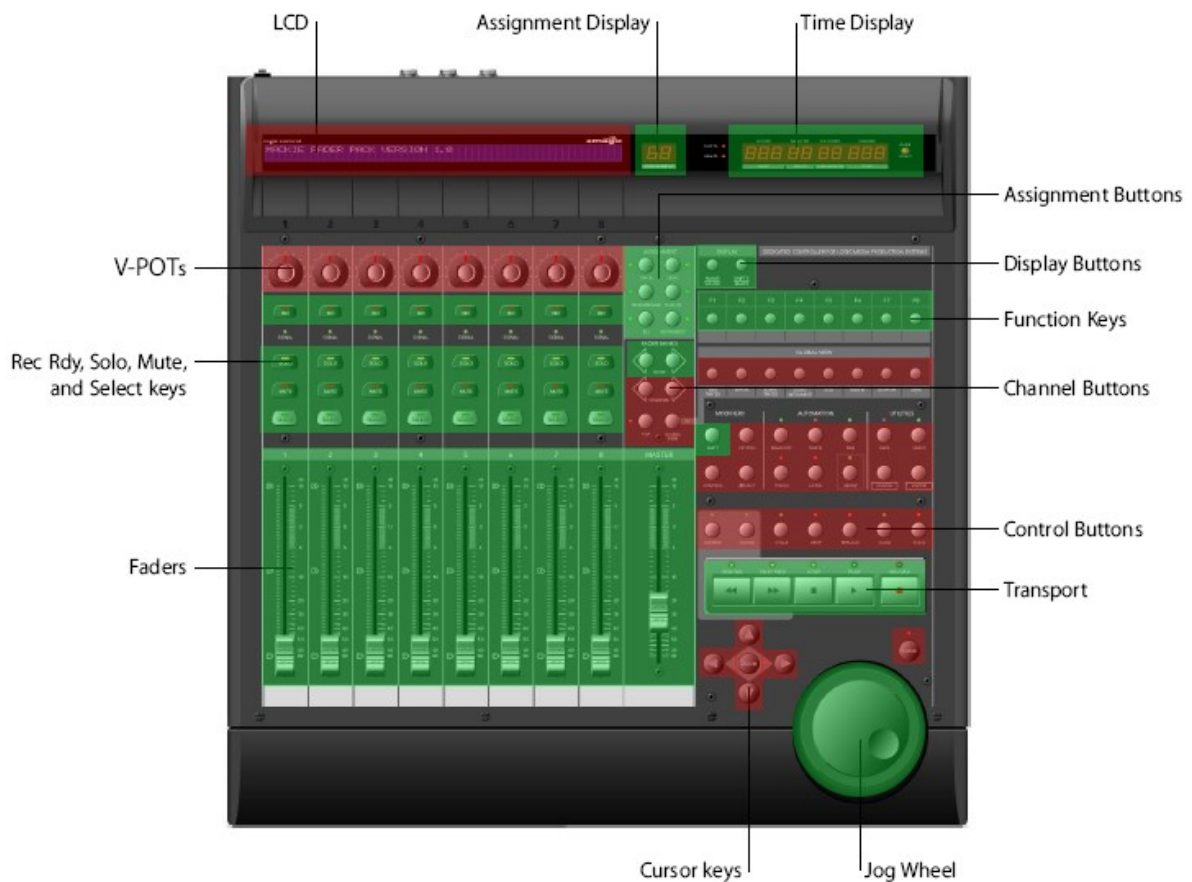
### Requirements

This document only concerns owners of Bitstream 3X featuring built-in **ROM V1.6 or higher**, for older versions, please contact Wave Idea in order to know how to get an up to date firmware version.

To check Bitstream 3X ROM version, please refer to the user's manual.

It is also necessary to download the *Logic\_Pro\_8.bs3* library file to the Bitstream 3X (download is done using the Bitstream 3X configuration software)

### Overview of the Logic control emulation



The red areas are currently not emulated by the Bitstream 3X (some of them should be emulated in future firmware versions).

The green areas are emulated by the Bitstream 3X.

**List of controls emulated by the Bitstream 3X**

Logic control	Bitstream 3X control	Emulation
LCD	-	-
Assignment display	Display	√
Time display	Display	√
V-pots	-	-
V-select buttons	Programmable buttons (group 4)	√
Assignment buttons	Programmable buttons (group 5)	√
Display buttons	Programmable buttons (group 6)	√
Function keys	Programmable buttons (group 7)	√
Fader banks L/R	Group buttons	√
Channel buttons	-	-
Control buttons	-	-
Transport buttons	Transport buttons	√
Jog wheel	Endless encoder (while encoder button pressed)	√
Cursor keys	-	-
Faders 1-8	Faders	√
Rec/Rdy buttons	Programmable buttons (group 0)	√
Solo buttons	Programmable buttons (group 1)	√
Mute buttons	Programmable buttons (group 2)	√
Select buttons	Programmable buttons (group 3)	√
Master fader	Cross-fader	√
Faders feedback	Faders with hook mode enabled	√

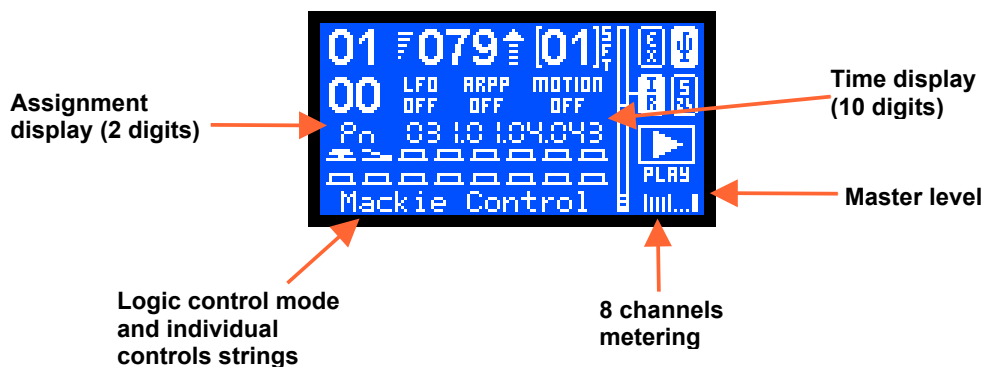
In addition to the above controls, the Bitstream 3X emulates the different SYSEXs received and transmitted by the Logic Control to perform connection with the Host computer.

From the firmware version 1.6 and higher, the Logic control communication is done on MIDI Out 1 and USB Out 1, while all other controls of the Bitstream 3X are generating standard Ccs on MIDI Out 2 and USB Out 2.

**Entering the Logic control mode**

To Enter into the Logic control emulation operating mode, simply press the Bitstream 3X “mode” button until the LCD displays “Logic Control”.

The following screen copy indicates the new displayed parameters while the Bitstream 3X is in Logic control mode



All the other information displayed on the above screen are common to the other Bitstream 3X operating modes, these other displayed parameters are described in the Bitstream 3X user manual.

Please note the Bitstream 3X must contain the Logic\_Pro\_8.bs3 library file to properly emulate the Logic control.

### Leaving the Logic control mode

To exit from the Logic control emulation operating mode, simply press the Bitstream 3X “mode” button until the LCD displays another operating mode of the Bitstream 3X.

### Emulation in details

Here is a list and explanation of the Logic control emulation by the Bitstream 3X.

All the following controls are sent/received on MIDI Out 1 and USB Out 1.

The others controls of the Bitstream 3X that are not emulating Logic controls are sent on MIDI Out 2 and USB Out 2, these controls send standard Ccs, please refer to the Logic Pro 8 library file to know what Ccs are assigned to these controls.

#### *MIDI exclusive systems*

The Bitstream 3X emulates the Logic control Sysexs used to communicate with the host computer. Among these Sysexs, the following Ids have been implemented:

Received      Host Connection Reply  
                    Go Offline  
                    Firmware Version request

Transmitted    Host Connection Query  
                    Host Connection Confirmation  
                    Firmware Version reply

#### *Display information*

The Bitstream 3X emulates the Logic control displays as follow:

##### Time display

Fully implemented, the Bitstream 3X displays the timing information sent by the host. The format displayed is similar to the Logic control :

**000.00.00.000**

##### Assignment display

Fully implemented, the Bitstream 3X displays the assignment display of the Logic control. The format is

similar to the Logic control, 2 digits 7 segments are displayed on the Bitstream 3X LCD

### **Pn**

#### LCD display

Not implemented in the current firmware version

#### Channels metering

The Bitstream 3X displays all 8 channels metering information. These information represent the peak level information sent by the host.

The Bitstream 3X decrease these peak levels information with a decay time of 300ms, as mentioned in the Logic control specification.

#### Master fader level

The Bitstream 3X displays the master fader level. It is not a part of the Logic control specification but very useful. This information is displayed on the bottom right of the Bitstream 3X LCD.

#### Leds information

Not implemented in the current firmware version

#### V-pots led rings

Not implemented in the current firmware version

### ***Emulated controls***

The Bitstream 3X emulates the Logic control controls as follow:

#### V-pots

Not implemented in the current firmware version

#### Channel faders 1-8

The Bitstream 3X faders 1-8 emulate these controls. This emulation is available on the 21 groups of the Bitstream 3X.

#### Master fader 9

The Bitstream 3X crossfader emulates this control. This emulation is available on the 21 groups of the Bitstream 3X.

Please note the crossfader generates a single MIDI event while the Bitstream 3X is in Logic mode.

### Rec-Rdy buttons 1-8

The Bitstream 3X programmable buttons emulate these controls. This emulation is available on the group 0 of the Bitstream 3X.

The behavior of the Bitstream 3X programmable buttons has been set to “push” mode as the Logic control buttons (as opposed to the “toggle” button behavior)

### Solo buttons 1-8

The Bitstream 3X programmable buttons emulate these controls. This emulation is available on the group 1 of the Bitstream 3X.

The behavior of the Bitstream 3X programmable buttons has been set to “push” mode as the Logic control buttons (as opposed to the “toggle” button behavior)

### Mute buttons 1-8

The Bitstream 3X programmable buttons emulate these controls. This emulation is available on the group 2 of the Bitstream 3X.

The behavior of the Bitstream 3X programmable buttons has been set to “push” mode as the Logic control buttons (as opposed to the “toggle” button behavior)

### Select buttons 1-8

The Bitstream 3X programmable buttons emulate these controls. This emulation is available on the group 3 of the Bitstream 3X.

The behavior of the Bitstream 3X programmable buttons has been set to “push” mode as the Logic control buttons (as opposed to the “toggle” button behavior)

### Cursor keys

Not implemented in the current firmware version

### Jog wheel

The Bitstream 3X endless encoder emulates this control while the Bitstream 3X encoder button is pressed. This emulation is available on the 21 groups of the Bitstream 3X.

Please note the endless encoder generates a MIDI event while the Bitstream 3X is in Logic mode and while the Bitstream 3X encoder button is pressed (as opposed to all other modes)

*Bitstream 3X encoder button pressed and encoder turned* : The Bitstream 3X will emulate the Logic control jogwheel.

*Bitstream 3X encoder button NOT pressed and encoder turned* : The Bitstream 3X will NOT emulate the Logic control jogwheel, the Bitstream 3X encoder will be used as a selector function, as all other Bitstream 3X operating modes.

### Transport buttons

The Bitstream 3X transport buttons emulate these controls. This emulation is available on the group 0 of the Bitstream 3X.

### Display buttons

The Bitstream 3X programmable buttons emulate these controls. This emulation is available on the group 6 of the Bitstream 3X.

The behavior of the Bitstream 3X programmable buttons has been set to “push” mode as the Logic control buttons (as opposed to the “toggle” button behavior)

### Function keys

The Bitstream 3X programmable buttons emulate these controls. This emulation is available on the group 7 of the Bitstream 3X.

The behavior of the Bitstream 3X programmable buttons has been set to “push” mode as the Logic control buttons (as opposed to the “toggle” button behavior)

### V-select buttons

The Bitstream 3X programmable buttons emulate these controls. This emulation is available on the group 4 of the Bitstream 3X.

The behavior of the Bitstream 3X programmable buttons has been set to “push” mode as the Logic control buttons (as opposed to the “toggle” button behavior)

### Assignment buttons

The Bitstream 3X programmable buttons emulate these controls. This emulation is available on the group 5 of the Bitstream 3X.

The behavior of the Bitstream 3X programmable buttons has been set to “push” mode as the Logic control buttons (as opposed to the “toggle” button behavior)

### Fader Left-Right bank buttons

The Bitstream 3X Up and Down buttons emulate these controls while the Bitstream 3X current function is 'MIDI Channel'.

When changing MIDI channel on the Bitstream 3X, Fader Left right bank change MIDI events are sent by the Bitstream 3X (Left = Down / Right = Up)

### Channel bank buttons

The Bitstream 3X programmable buttons emulate these controls. This emulation is available on the group 6 of the Bitstream 3X.

The behavior of the Bitstream 3X programmable buttons has been set to “push” mode as the Logic control buttons (as opposed to the “toggle” button behavior)

### Control buttons

Not implemented in the current firmware version

### Shift button

The Bitstream 3X SHIFT button emulates this control

### Faders feedback

The Bitstream 3X emulates faders feedback feature of the Logic control.

When faders are updated directly from the software (Logic, Ableton Live, ...) the new value is sent to the Bitstream 3X. The controller will update the new fader position and set the fader as unhooked so there will be no jump in value as soon as the physical fader will be updated again.

This feature can be enabled/disabled from the configuration software as well as from the controller menus.

## Configuration of Logic Pro 8

Please note the V-pots of the Logic control are not emulated by the Bitstream 3X because of the different nature of the controls (Bitstream pots are analog potentiometers, on the other hand, Logic pots are endless encoders). The Bitstream cannot emulate these V-Pots.

When using the Bitstream 3X in Logic mode and connected to Logic, the parameters mentioned in this document are already programmed, while the other parameters need to be assigned directly from Logic (Controller assignments window).

In this way, the Bitstream 3X will emulate several controls of the Logic control, it will also generate standard Ccs to control the other non-assigned parameters in Logic.

Another advantage of using the Logic mode to control Logic is the audio channels metering and time information that are displayed on the Bitstream 3X LCD.

### Logic configuration

Go to the control surface setup windows, if the Logic control is not listed in the auto-detected surface, simply press the Bitstream 3X mode button until you reach the Logic control mode.

Logic should automatically recognizes the Bitstream 3X as a Logic control surface.

Now the Logic control configuration is done, and all sliders, buttons, transport buttons, master fader, channel metering, time code and so on should work properly.

To manually assign the other controls of the Bitstream 3X that are not emulated (rotary knobs for instance), simply open the control surface controller assignments windows, click "learn" and move one of the controls of the Bitstream 3X.

Repeat the above operation for all controls you want to assign and save your configuration.





On the above windows, the Logic control has been found by Logic Pro 8, it has been connected to input port 1 and output port 1.

The Bitstream 3X firmware version is properly displayed (V1,70 in the above example) as well as the serial number (6-3-3-1157 in the above example)

### Synchronization with Logic Pro 8

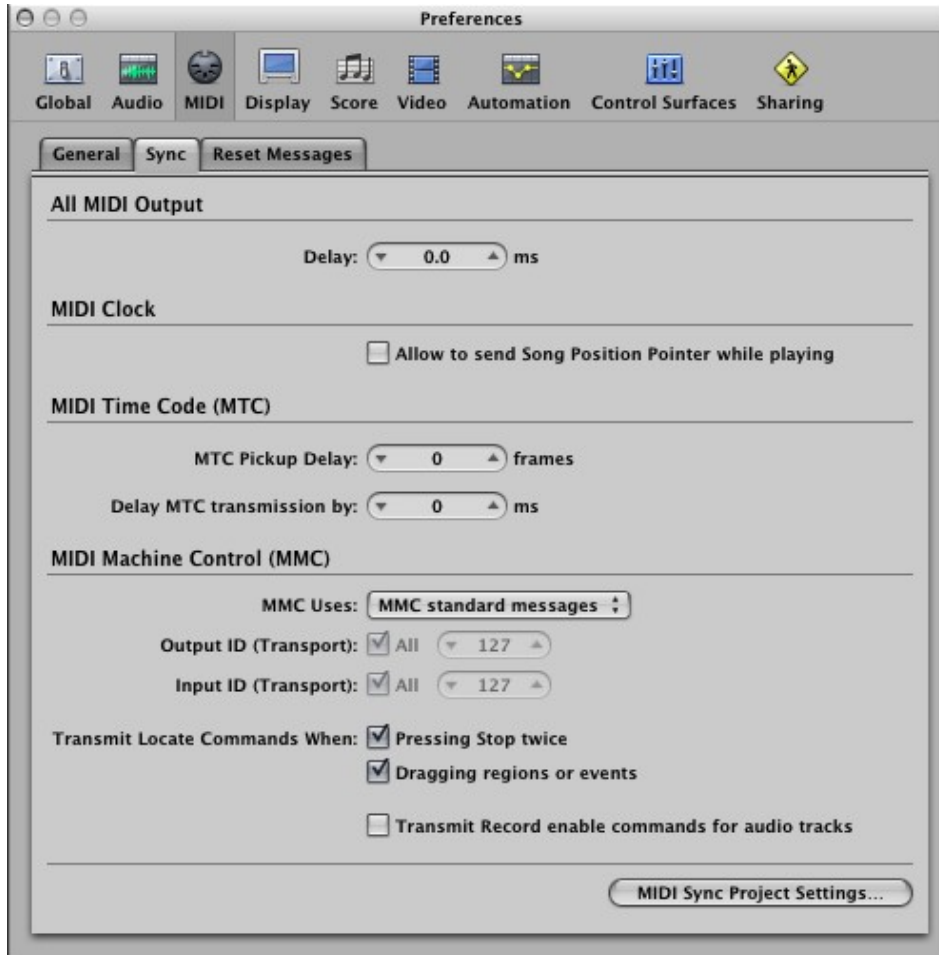
Logic Pro version 8 is not able to be slave to an external MIDI clock, the idea is therefore to use Logic Pro 8 as the master sequencer and configure Logic Pro 8 to Start/Stop from an external MMC signal (generated by the Bitstream 3X).

The Logic\_pro\_8.bs3 library has been programmed to allow the transport bar (PLAY, STOP, REWIND, ..)

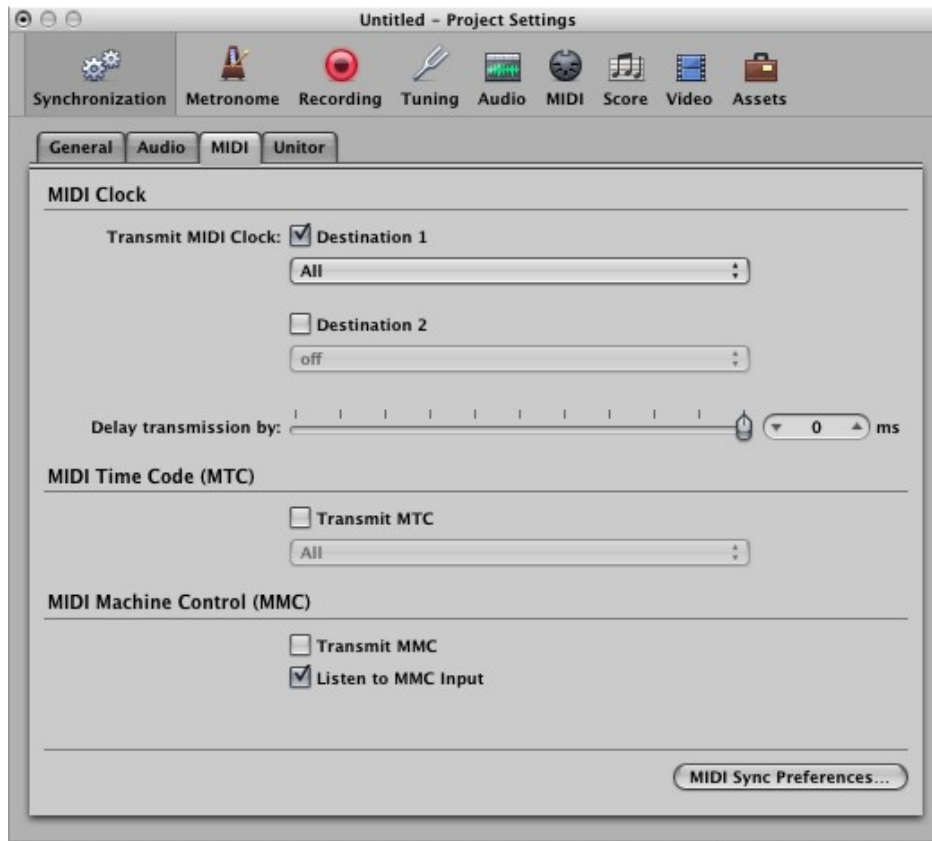
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buttons to generate MMC (MIDI Machine Control) events.

To configure Logic Pro 8 synchronization, open the MIDI Sync preference panel as follow :



The different options in the above window can be left in their default state, then click on the bottom right button 'MIDI Sync Project Settings ...'



On the above windows, Logic Pro 8 is configured to transmit a MIDI clock on all outputs ports (more efficient than selecting individual ports, as mentioned in the Logic Pro 8 documentation), this allows all Bitstream 3X automations to be synchronized with Logic).

The Logic Pro 8 library has been created with all automations synchronized externally, and the external sync source has been set to USB Input. If you are using MIDI instead of USB, you can modify the Logic Pro 8 library and select 'MIDI In' as the external sync source.

The bottom part of the above window configures Logic to listen MMC events generated by the Bitstream 3X in order to START/STOP the song. This option must be checked in order to properly synchronize the Bitstream 3X with Logic Pro 8.

## Downloading the Logic control library

You need to use the configuration software to download the Logic control library to the Bitstream 3X. This step by step guide is not specific to the Logic control library but can be used to download any library to the Bitstream 3X.

### **Download and Install the configuration software**

The configuration software can be downloaded for free from the Waveidea website, at the Bitstream 3X download area : [http://www.waveidea.com/en/products/bitstream\\_3x/downloads.php](http://www.waveidea.com/en/products/bitstream_3x/downloads.php)

Depending on your computer, you can download the Mac, Win, or Linux version.

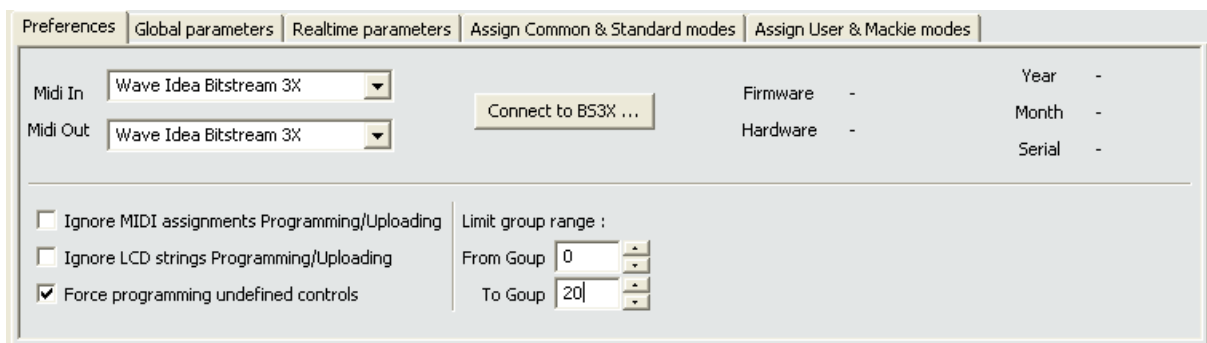
For further information regarding how to install the software, please refer to the documentation.

### **Setup the configuration software to communicate with the Bitstream 3X**

The configuration software can be launched from the Start menu on Windows, or clicking the application file on Mac.

Once launched, go to the preference panel and configure the different fields as follow :

MIDI In and Out devices where the Bitstream is currently attached must be selected.



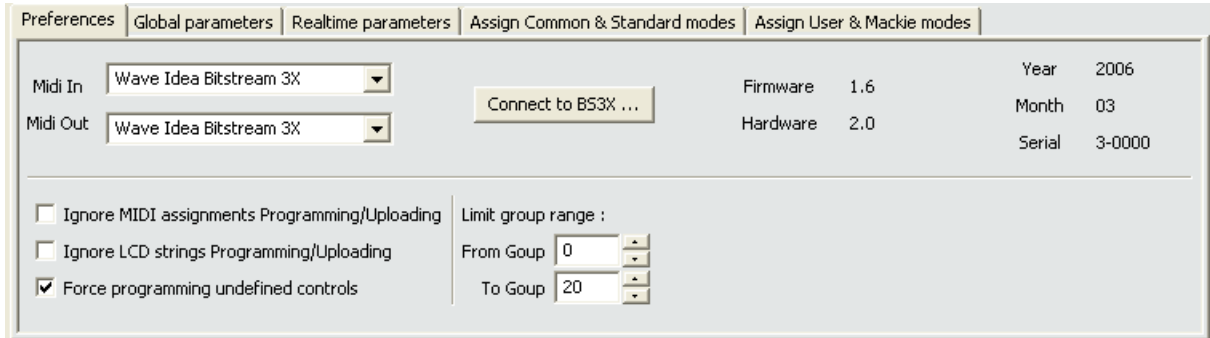
If you have installed the Bitstream 3X Xp drivers, you will see the above MIDI peripherals, otherwise you will see “USB audio device” strings.

Be sure the “Ignore MIDI assignments ...” and “Ignore LCD strings ...” are **UNCHECKED** before you start programming or uploading. (These two options are used to prevent the software from downloading/uploading MIDI or LCD assignments), they should be left unchecked by default.

In addition, be sure the group range is not limited (from 0 to 20 for 21 groups), so all 21 groups of the Bitstream 3X will be properly programmed/uploaded.

As soon as the above configuration is done, click on “connect to bs3x” button, if the communication is properly set, the Bitstream 3X information will be displayed as follow :

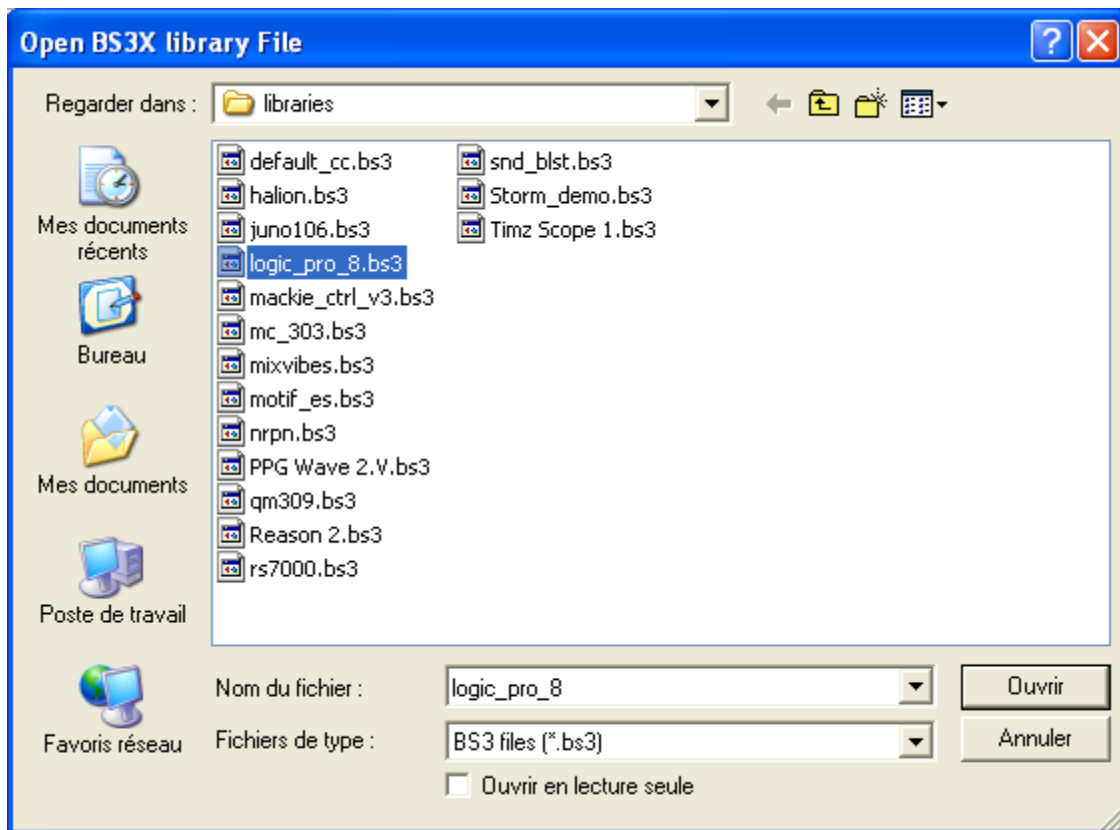
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You can now load the library file you want to download to the Bitstream 3X. All the available libraries are located under the Bitstream 3X configuration software folder, under the sub folder “lib”.

To load the library file, click on the **library file** menus and select open.

Please note you can select any library file .bs3 to be downloaded to the Bitstream 3X.

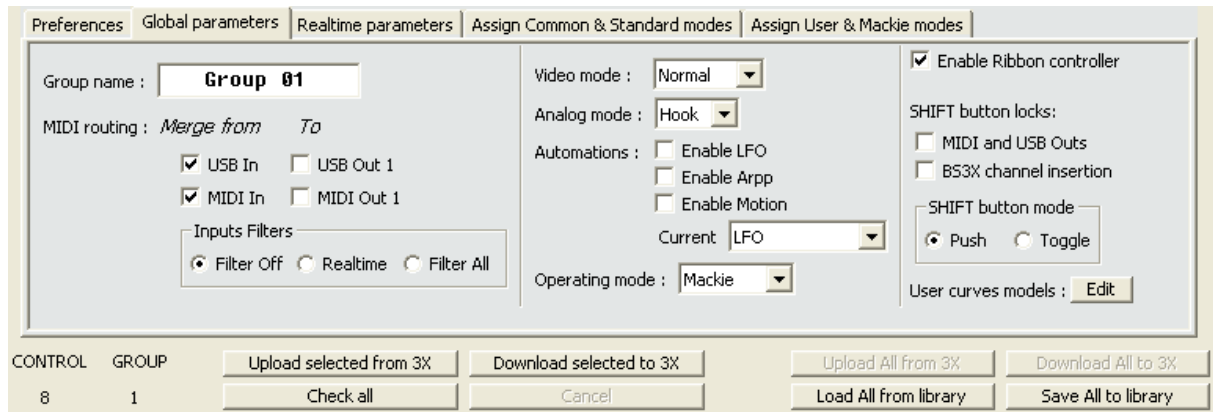


### ***Download the global and realtime parameters to the Bitstream 3X***

Once the communication is properly established, you can download the global and realtime parameters to the Bitstream 3X.

Select the Global or Realtime parameters panel and click “**Download selected to 3x**”

Once the button is clicked, all realtime and global parameters will be downloaded to the Bitstream 3X, please note the Bitstream 3X display indicates the global and realtime parameters are being programmed.



### ***Download the whole assignments to the Bitstream 3X***

Once the global and realtime parameters have been downloaded, you can download the MIDI and LCD assignments to the Bitstream 3X.

MIDI and LCD assignments are the configuration of all controls of the Bitstream 3X, as opposed to the configuration of global and realtime parameters, these assignments are available and independent for each of the controls of the Bitstream 3X.

Select the “**Assign common ..**” or “**Assign User & Mackie ..**” panel and click “**Download All to 3x**”

Once the button is clicked, all assignments for all the 21 groups will be downloaded to the Bitstream 3X, please note the Bitstream 3X display indicates the assignments are being programmed.

Downloading the whole assignments on all 21 groups requires about 1 minute.

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Preferences | Global parameters | Realtime parameters | Assign Common & Standard modes | Assign User & Mackie modes

Use preset  Use standard template User Defined

Midi delay (milliseconds) None MIDI channel position (N) 0 0=Fixed

Chained control None Control value position 1 (V1) 3 0=None  Insert Sysex checksum

Crossfade chained Control value position 2 (V2) 0 0=None Calculate from byte

Min value 0 Control Curve model Linear Edit 0

Max value 127  Send value as 2 nibbles

MIDI string E00000 Length 3 LCD string Fader 1

CONTROL	GROUP	Upload selected from 3X	Download selected to 3X	Upload All from 3X	Download All to 3X
40	1	Check all	Cancel	Load All from library	Save All to library

Alternatively you can download a single control to the Bitstream 3X, simply select it using your mouse and click **“Download selected to 3x”**

Please note the Logic control library can be updated with your own assignments, the provided file corresponds to a minimal library that can be updated by your own requirements.