The purpose of this application note is to describe how to re-program the Bitstream Pro without using the dedicated configuration software. Indeed, the Bitstream Pro can be programmed with sysex, this means the user can insert programming sysex into any soft or hard sequencer (able to send sysex) while playing music.

Requirements

This document only concerns owners of Bitstream Pro featuring built-in ROM V1.3 or higher, for older versions, please contacts Wave Idea in order to know how to get an up to date firmware version.
The Bitstream Pro configuration software version must be equal or higher than 3.11

Purpose of this feature

Some people interested in the Bitstream Pro told us "yes the Bitstream pro seems excellent, anyway it features only 3 different groups". We will try to explain here how to override this, and demonstrate them the Bitstream Pro features in reality an infinite number of groups.
Indeed, the user can access directly from the front panel to 3 different groups for each potentiometer and switch, what the user has to keep in mind is the fact that all these 3 groups can be dynamically re-programmed using sysex, even while playing music.
This results virtually in an infinite number of groups, since each knob, slider and switch can be mapped to a new MIDI event without the help of the dedicated configuration software.

Principe of operation

The idea is to send programming sysex to the Bitstream with the help of any soft or hard sequencer (able to send sysex), even while playing music.
The user must have these programming sysex available and decides to send them to the Bitstream once he desires to change the actual configuration.
Both MIDI events and LCD strings can be dynamically re-programmed, independently for each control and group.
The user can decide to re-program all controls on all groups, or simply one or several control on a dedicated group.

Creating programming SYSEX

The programming sysex are fully described in the configuration software manual, they therefore can be created by hand, as well as generated using the configuration software. Once generated, the configuration software is no more required; the sysex can be inserted into any sequencer such as cubase or any other soft or hard able to send sysex.
Here is a description on how to generate programming sysex using the configuration software:

From the above window, there are two ways to generate programming sysex:

Checking "**create sysex file**" option

This allows generating a sysex file which contains all programming sysex corresponding to all controls on all groups of the Bitstream Pro, as well as a MIDI file featuring the same content.
The first file generated (with **.syx** extension) is compatible with applications such as midiox or any other MIDI tool.
The second file generated (with **.mid** extension) is a standard MIDI file (format 0), that can be used in any sequencer.
One of these files, once sent to the Bitstream Pro, will re-program all controls, all groups, for both MIDI events and LCD strings associated to the controls.
Both files **sysexout.syx** & **sysexout.mid** created are located into the software configuration folder, under the directory **/lib/**.
We will see later how to insert one of these files in a sequencer.

Checking "**create log window**" option

This allows to list in a convenient way all sysex sent to the Bitstream Pro in order to program it, the following window illustrates this option:
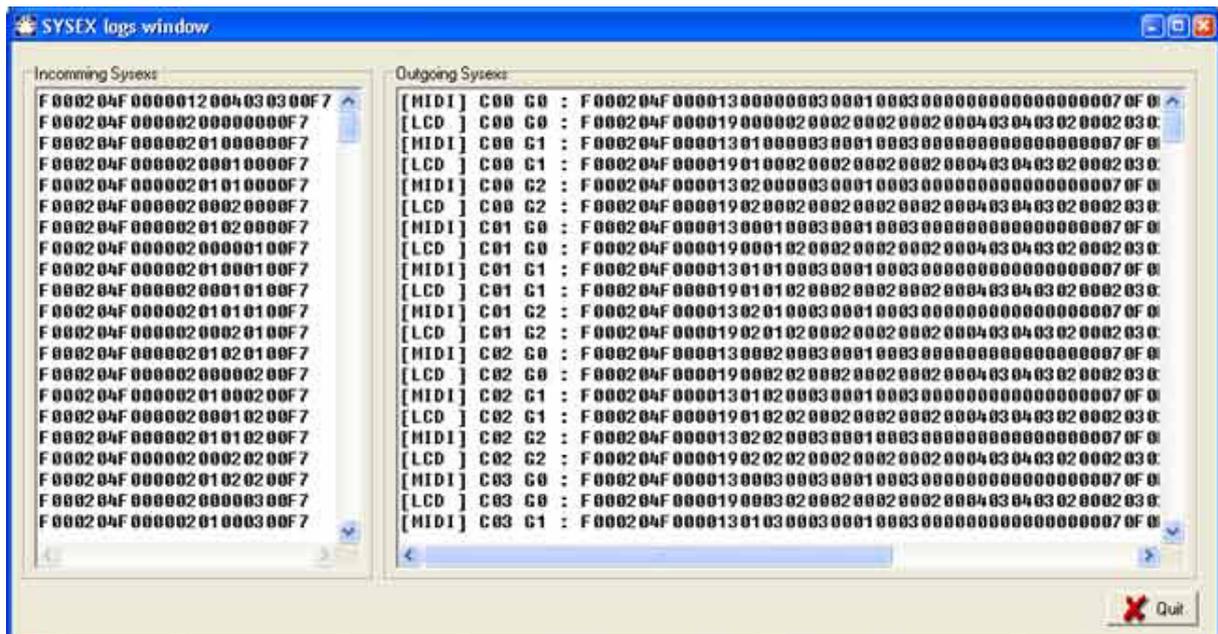
The left part of the window is not used; it simply lists the responses of the Bitstream Pro when a programming sysex has been sent.
What is useful here is the right part of the window, indeed, we can observe all the sysex sent to the Bitstream in order to program it, all controls and groups are spited here, and the user can simply copy and paste the sysex in which he is interested.
For instance, if the user wants to extract the sysex required to program the MIDI event associated to the first control on the first group, he simply has to copy the first line of the above window, the line is defined by:

[MIDI] C00 G0 : **F0 00 20 4F 00 …. F7**

The sysex to copy is the bold part of the above line, it can be copied into any sequencer in order to be sent to the Bitstream Pro.

In addition to the MIDI event associated to each control, the above window also lists the programming sysex used to reconfigure the LCD strings associated to each control of the Bitstream.
These sysex are defined as follow:

[LCD] C00 G0 : **F0 00 20 4F 00 …. F7**

Here again the user can copy and paste the sysex in which he is interested.

Inserting programming sysex in a sequencer

Once the required programming sysex generated, the user can insert them into any soft or hard sequencer able to send sysex.

It is important to insert about 80 ms between programming sysexs, time required by the Bitstream Pro to operate properly.

Since there are a lot of software sequencers able to send sysex, we will not describe here how to send sysex from each one, for that point, please refer to the documentation of your sequencer.

For example, simply drag & drop the sysex midi file generated by the configuration software to a MIDI track of cubase (track 14 on the screen below), then place your sysex at the location where you want to start re-programming the Bitstream.

It is important to control the MIDI data sent to the Bitstream while re-programming, it is therefore recommended to use a dedicated MIDI output device to send programming sysex. On the example below, we can see the Bitstream connected to a dedicated MIDI output port

Be sure to remove the option "sysex filter" from the MIDI configuration menu.

The sysex MIDI file is automatically generated by the configuration software when programming the unit. It is called **sysexout.mid** and should be located under the folder **/lib/** of the configuration software directory.
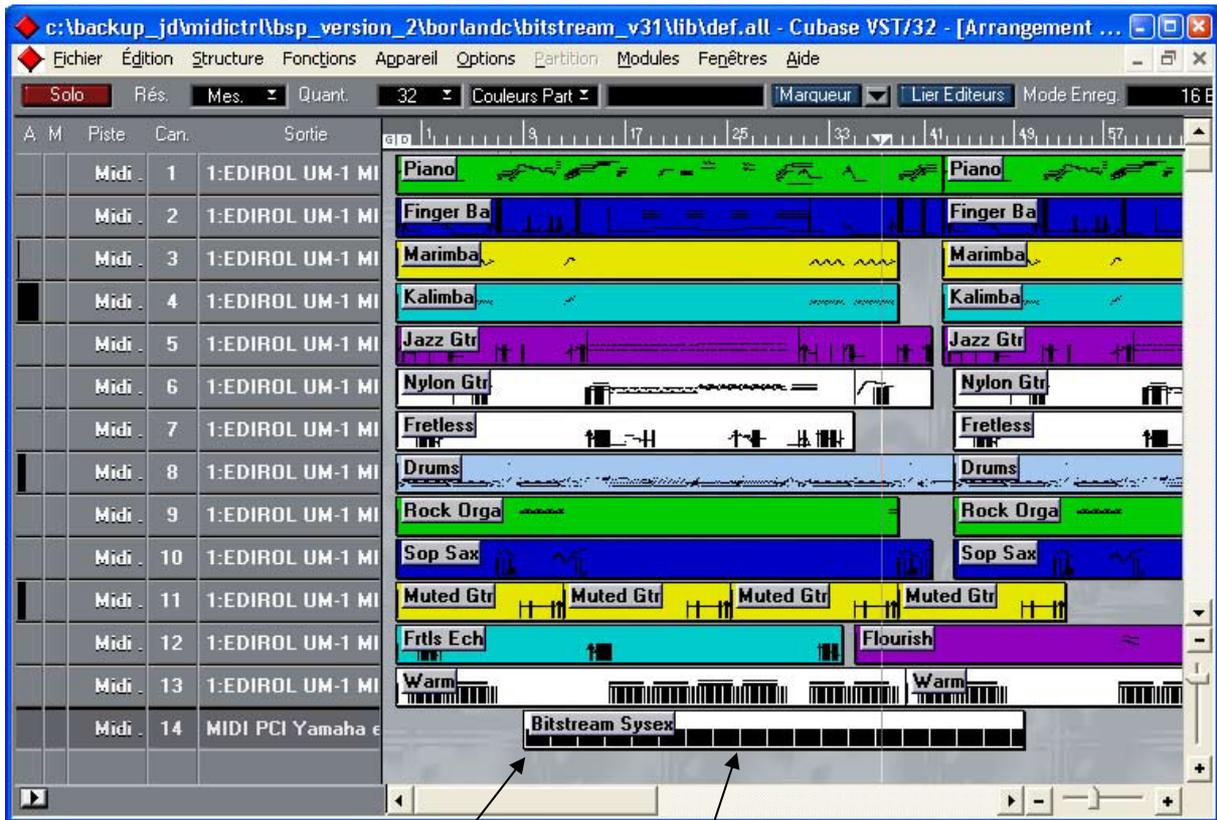
Bitstream Pro is re-programmed from there

MIDI file generated by the configuration software has been inserted into this MIDI track (simple drag & drop)