

Prophet X – MIDI Edit Buffer Problem Report

Prophet Serial Number 00762

Prophet X OS Version M2.1.2; DSP 2.1.2.0.0; FPGA 1.0¹

Environment.

- OSX 10.13.6,
- Prophet X USB Port as MIDI interface
- Java 1.8.0_51
- px.factory Build 0.1.00 – ALPHA
- CoreMIDI4J Library 1.3-SNAPSHOT²

Background

I am writing a Java based [x.factory librarian](#) **px.factory** for my new Prophet X (nothing against the Sound Tower applications, but I prefer my workflow 😊), and I am currently working on MIDI integration.

I am at the point where MIDI integration is mostly working, but I am noticing a problem when using the SYSEX Edit Buffer commands, which is really noticeable on some programs more than others, and I do not believe it is a problem with my software (but happy to discuss!)

In this report I will use the F4/U4 P2 Program Hybrid Strings Factory preset as an example (the program I first noticed the issue on).

Procedure to Reproduce Symptom Observed

- Load sysex data from bank U4 into px.factory, initialise Program P2 and export to Prophet X Memory (so I have a blank voice at U4-P2 to prove memory write is fine when I rewrite the Hybrid Saws patch)
- Reload bank U4 into px.factory (or undo the initialise)
- Export U4-P2 to memory
- Play “Hybrid Saws”, comparing against F4-P2, and check it sounds good (it does!)
- Now export U4-P2 to the Program Edit Buffer and play it. You can hear a very heavy modulation going on.

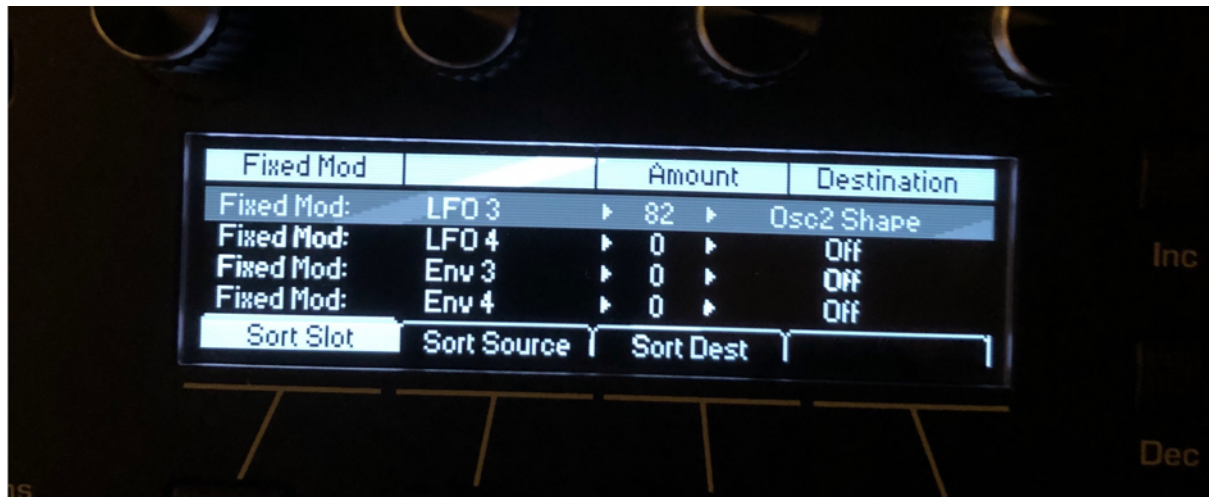
¹ Note I was running in 2.1.0.0 but updated and reran my checks to see if the problem persisted

² [CoreMIDI4J](#) is a Java “Service Provider Interface” for the Java MIDI API that I have written, because Java MIDI on OS X does not handle SYSEX with external devices. The SPI replaces the broken Java MIDI functions. CoreMIDI4J is about 3 years old now and successfully used in all of my librarians and other applications.

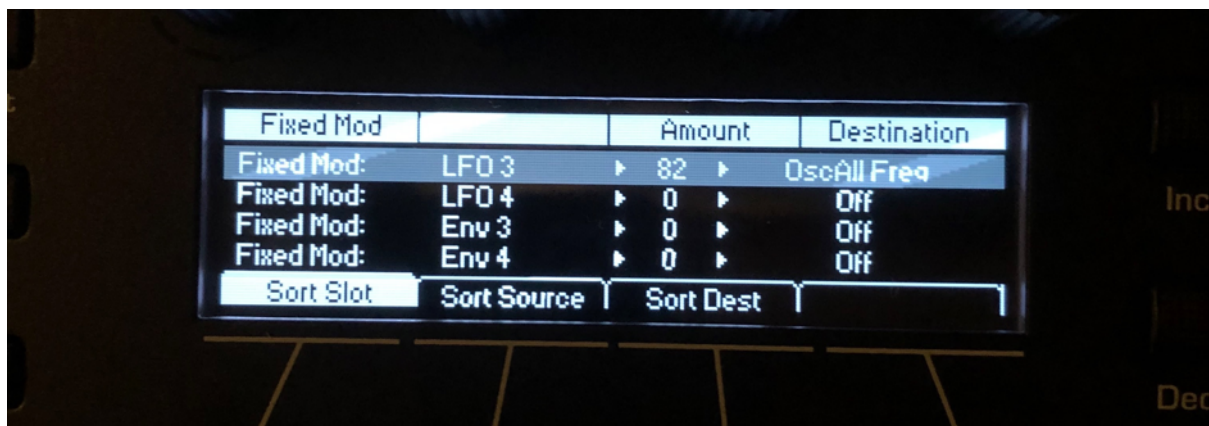
Analysis on Synth

After a bit of investigation, it looks like it is to do with OSC 3 routing. In the preset program in the synth (and the copy I took from U4-P2), LFO3 has a mod of 82 and it is modulating OSC2 shape.

If you export U4-P2 to memory, then all seems good.



If you export U4-P2 to the edit buffer then LFO3 mod destination changes to **OSC ALL FREQ**



Next Check – Is it My Software?

- Run Snoize MIDI Monitor and capture U4-P2 being sent by the Prophet X **Global/Dump Current Program** function
- Save to disk. I called it **Hybrid Saws Memory F4 P2.syx**
- Use 010 Editor (or any hex editor) to convert this to an edit buffer message (change F0 01 30 02 07 01 to F0 01 30 03)
- Save to disk. I called it **Hybrid Saws Edit Buffer.syx**
- Run Snoize Sysex Librarian, add **Hybrid Saws Edit Buffer.syx** to its Library, select the Prophet X as the destination, select the file and play it back to send it to the Prophet X Edit buffer
- Check the Program and you have exactly the same problem.

My software uses the same MIDI encoding/decoding software to do the “packed MS bit” format encoding/decoding both for SYSEX file read/write and MIDI input/output. I have run this software against a test suite of SYSEX files captured from the Prophet and files provided by the user forum community (e.g. the Replicants files). I get 100% test pass (I read each file, copy it from one “synth object” to another (to prove my internal cut/copy and paste routines as well), write it back out to do a test file (i.e. keeping the originals intact) and do a byte by byte binary compare for each file against the written test file.

So, I am pretty confident it is not a problem in my software, especially as the same routines that encode Hybrid Saws to a Program Data dump gets written to Prophet X correctly (only difference then is the message header to differentiate the message as being a program dump or an edit buffer dump).

I am assuming that the dump contents in a Program Data dump and Program Edit Buffer Data dump are 100% identical?

Hex File Compare

Next step is to look at the SYSEX files in a hex editor

Compare **Hybrid Saws Memory F4 P2.syx** against the edit buffer read back from the synth

- use SYSEX Librarian to send a Request Program Edit Buffer command
- capture the returned message in Snoize MIDI monitor and save it to **Hybrid Saws Edit Buffer - Readback.syx**
- Load both files into 010 editor
- Delete the SYSEX headers from the messages, so that both files start with the data payload
- Do a binary compare, which highlights the following (first two differences highlighted in the dump, and the file view is showing that six bytes are different)

Result	Address A	Size A	Address B	Size B
Match	0h	16h	0h	16h
Difference	16h	1h	16h	1h
Match	17h	4Ah	17h	4Ah
Difference	61h	1h	61h	1h
Match	62h	746h	62h	746h
Difference	7A8h	17Eh	7A8h	17Eh
Match	926h	15h	926h	15h
Difference	938h	1h	938h	1h
Match	93Ch	49h	93Ch	49h
Difference	985h	1h	985h	1h
Match	986h	74Ah	986h	74Ah
Difference	10D0h	17Ch	10D0h	17Ch

Selected: 1 byte (Range: 22 [16h] to 22 [16h]) Start: 22 [16h] Sel: 1 [1h] Size: 4684* ANSI LIT W OVR