Sequential Prophet X Battery Replacement Procedure

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Purpose of Document

Like a lot of synthesizers, the Sequential Prophet X uses a **CR2032** Lithium Cell battery to retain internal data. In this case it is on the computer motherboard inside the synthesizer, and I am not 100% sure what it is backing up, but presumably some configuration settings such as the BIOS settings.

In my long experience of Yamaha synths, these batteries tend to go for 20+ years without any problems, however with my synths that have commercial processor motherboards in them, such as the Prophet X, they do not seem to last as long.

Recently my Sequential Prophet X, that I purchased in 2019, completely refused to boot, with it displaying the dreaded "*Cannot reach audio processor*" message.

The general experience on the internet forums is that is usually due to either marginal power supply voltages or a dead CR20232 battery, so the first step was to see if the battery needed replacing.

The battery swap is extremely easy to do, but I always like to document it to help others.

Disclaimer

Whilst I have taken care in preparing this guide, I cannot be held responsible for any damage that you could do to your machine or injury to yourself and/or others as a result of you following these notes; either on your own account or by any error or omission in this guide. You do this upgrade entirely at your own risk!

Please bear in mind that during a production run of any manufactured item, a manufacturer can make changes, and I can't guarantee that all Prophet X machines are identical, as I only have the one. So, care is needed in checking that the steps advised are appropriate for your machine, as it might be different to mine. Having said that, the Prophet X had a fairly short production run, so it is unlikely to have changed much if at all.

Pre-Requisites

First of all, make sure that you're comfortable with the concept of dismantling your beloved Prophet X.

You will need the following tools to do this job:
- Posidrive screwdrivers, and a small flat blade screwdriver;
- An anti-static wrist strap is recommended;
- Optional Voltmeter (to check battery voltage before closing up, if you wish).

You need to ensure that you take anti-static precautions whilst the synth is open. If you don't have an anti-static wrist strap, then ensure that you regularly earth yourself on an earthed metal object, such as a radiator to prevent the buildup of any static charge.

Electrical Safety

Do not undertake this task with the Prophet X plugged into the mains. There is no need for this whilst doing the battery swap, although I did power it whilst measuring power supply voltages (but I am confident in doing that).

Procedure

Step 1 – Backup your Data

Removing the backup batteries whilst power is off may cause data loss, so ensure that your user data is backed up to computer before starting. Now of course I could not do this as my Prophet X was refusing to boot, so this shows the importance of regular backups. I was lucky in that I had only backuped the contents a week or so beforehand, but I could not remember if that included the last Program that I had edited!

Step 2 – Find a Good Work Area

You'll be working on this for a little while, so find somewhere comfortable and where there's plenty of light. My kitchen table was the best place for this in my house, using towels to avoid scratching the table.

Step 3 – Remove the End Cheeks

The first step is to remove the end cheeks (Note I have taken these pictures with the synth on end to get good lighting).

## Step 4 – Remove the Front Panel Securing Screws

The next step is to screws securing the front panel. There are screws on the side plates and some screws on the underside (securing the pitchbend and mod wheel assembly. (Note I have taken some of these pictures with the synth on end to get good lighting).

Front left of Synth (Modwheel / Pitchbend area) viewed from underneath
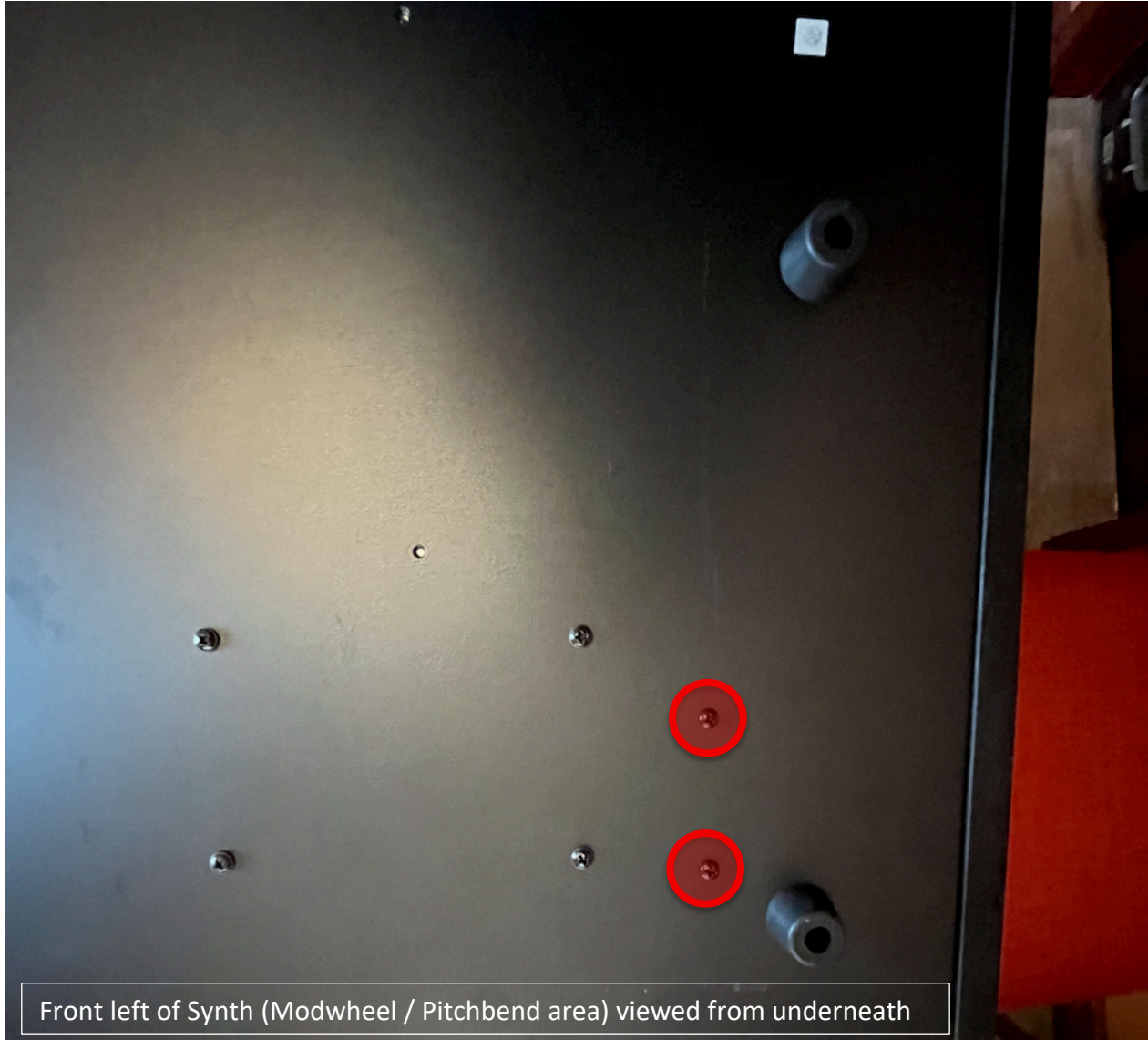
Step 5 – Lift the Synth Front Panel

With all the screws removed the front panel will lift easily. If it doesn't, check that all screws have been removed. The battery is on the processor board to the right of the synth.
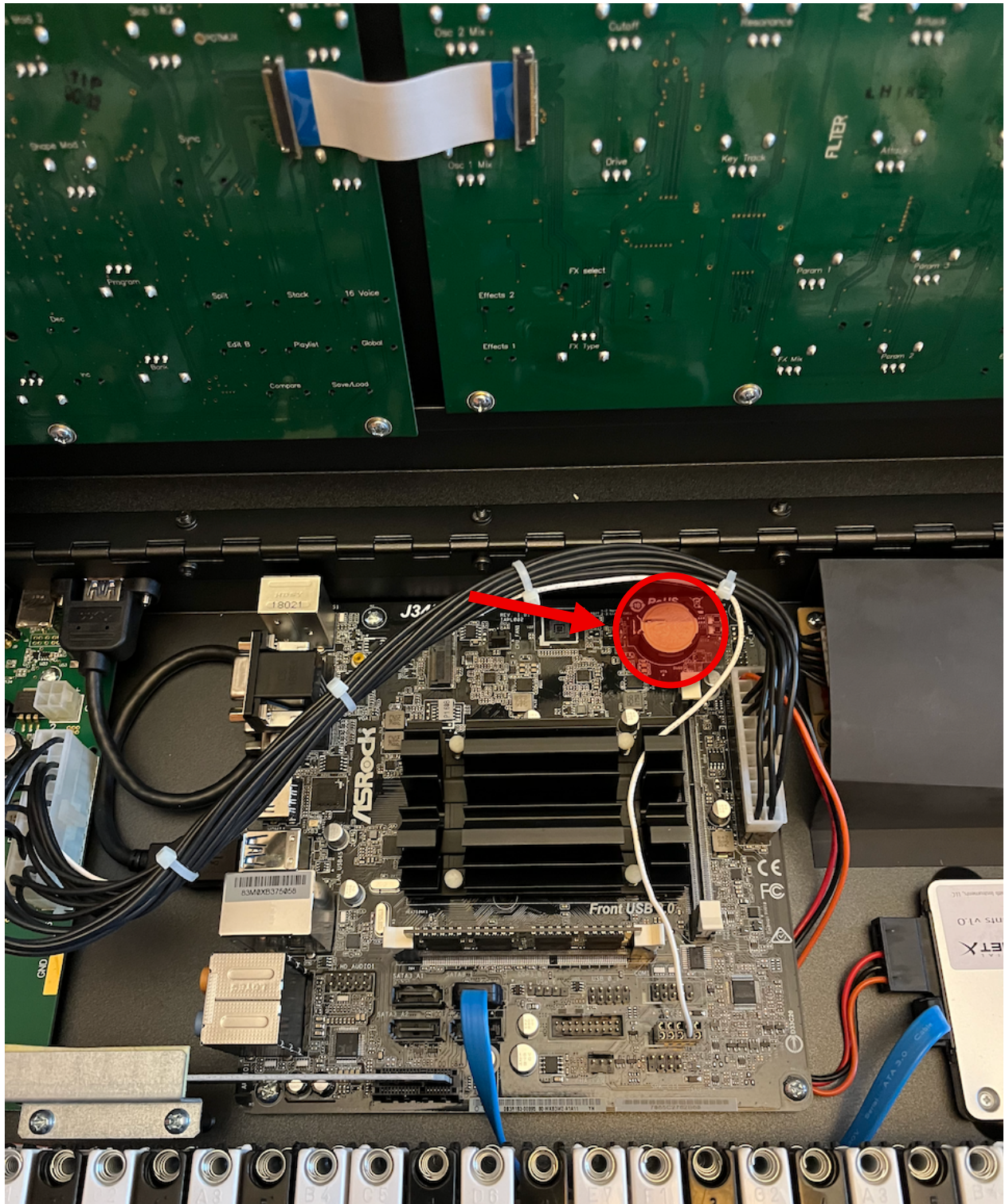
Before removing the battery, ensure that the other one is ready. Some batteries now come with a self-adhesive warning sticker that needs removing first, so you want to remove that if present, otherwise the circuit will not be made!

The battery holder in my Prophet X is spring loaded. To remove the battery, you need to gently push the battery towards the spring on the holder (so push leftwards in the picture above) and gently tilt it up as well as you do so.

Now the old battery is removed, quickly insert the new battery, with the text CR2032 facing upwards. It should slide into place quite easily as you push it in.

I measured the voltage of my old battery, and it was only reading 0.76 volts compared to the new battery reading 3.2 volts, so it definitely needed replacing!

Whilst I was inside the synth, I also measured the power supply voltages on the "molex" connector on the audio board, and whilst I do not know the tolerances that cause the Prophet X not to boot, I was getting voltages that looked OK to me (as an ex-electronics engineer), and I did not want to adjust unnecessarily; and there did not seem to many adjustment options on the PSU board anyway!

	A	B
1		0.00
2	-14.97	
3	11.96	0.47
4	0.47	0.47
5	15.43	
6		0.00
7	4.94	
8		0.00
9	4.94	0.33
10	0.00	
11		-11.97
12	3.28	3.28

Step 6 – Boot and Test the Prophet X

At this point it was time to start the Prophet X.

It did not start on first boot, and I got to the same error message which was concerning, but I waited a few minutes and tried again, and this time it started fine with all my Programs intact. Even my **Global** settings looked as they should be.

I tried a few power cycles over the next half hour or so, and it all seemed fine. I did this replacement about a month before writing this guide, and the Prophet X has booted fine since then with no problems.

Step 5 – Putting it all Back Together

Easier said than done, but you just need to reverse Steps 3, 4 and 5.

And that is it then. Your synth battery is probably good for another 5 years!

Conclusion

It's as simple as that, and I hope that you find this guide useful!