

Overview

If you have ever found that the display on the Behringer UB-Xa is hard to read, especially when you sit in front of the Synthesizer, you may have thought about changing the display.

This quick guide is intended to help you to do that.



DISCLAIMER:

THE AUTHOR OF THIS GUIDE IS NOT TAKING ANY RESPONSIBILITY FOR ANY DAMAGE YOU MAY DO TO YOUR SYNTHESIZER. ALSO YOU ARE GOING TO LOSE THE WARRANTY OF BEHRINGER IF YOU ARE GOING TO UNDERTAKE THIS CHANGE.

Written by Christoph Linden aka SerErris

Things you need

Here is a list of things you have at best to do the job properly:

- Solder Iron
- Desolder Gun (strongly recommended) or Desoldering Pump
- Hot Air Solder Station (strongly recommended)

- Desoldering Wick
- Solder Flux
- Some soft paper tissues
- Isopropanol Alcohol
- An old toothbrush

For an OLED display you need those additional components, otherwise the display will not fit and will sit too low in the glass window:

- 4 plastic spacers M3 x 3mm
- 4 M2 x 10mm screws (with Phillips head)
- 4 M2.5 washers

Display type you need

You need a hd44780 compatible 16 x 02 character display, that is configured in 6800 mode. There are other modes like 8080 or SPI, but you cannot use that, as the UB-Xa expects a 6800 mode display. There also exist modules that are multi mode and need configuration (solder bridges) to configure 6800 mode in hardware.

Also make sure that the pins are on the top of the display. There are versions around with pins at the bottom, which will not work, as you see all characters upside down and you have no way to change the orientation in software.

I have tried successful those displays:

1. LCD

- 1602 16x2 Black VA Lcd Display Module White backlight 1602A from ALIEXPRESS. This is a very good fit to the Synthesizer overall look. It is also the display you see in the Fotos. It is a VA display and it has a very wide angle to view it properly.



2. OLED

- JOY IT COM-OLED16x2
<https://joy-it.net/en/products/COM-OLED16x2>

This is a blue on black display, where the blue is pretty much like the color of the blue stripes on the Synthesizer. It is a multi mode module, but configured in 6800 mode in the factory.

IT also has a very wide view angle (170°)



- SURENOO SOC1602C

https://surenoo.tech/download/03_SOL/0301_SOC/SOC1602C.pdf

This should also fit very well, but I have not tested it. It also exists in multiple colors.



Accessing the inside of the UB-Xa

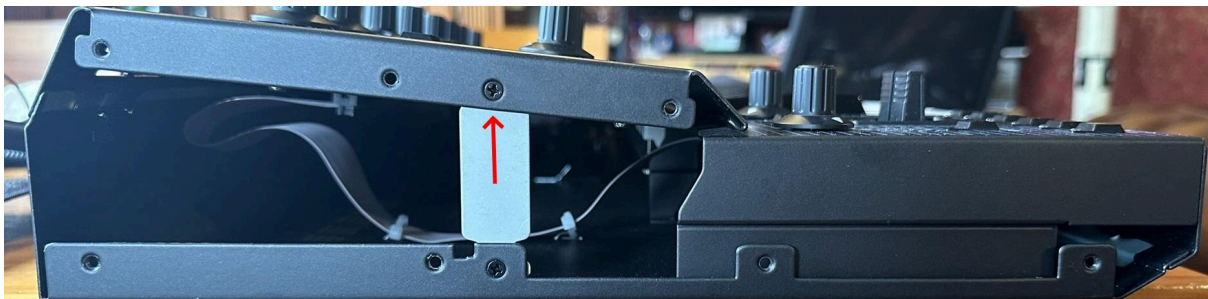
1. Remove the POT knobs. They are not very firmly attached and can be pulled off pretty easily. You can also leave the knobs on until step 8 and then remove them.



2. Unscrew the **seven** screws of the wooden side panels on both sides



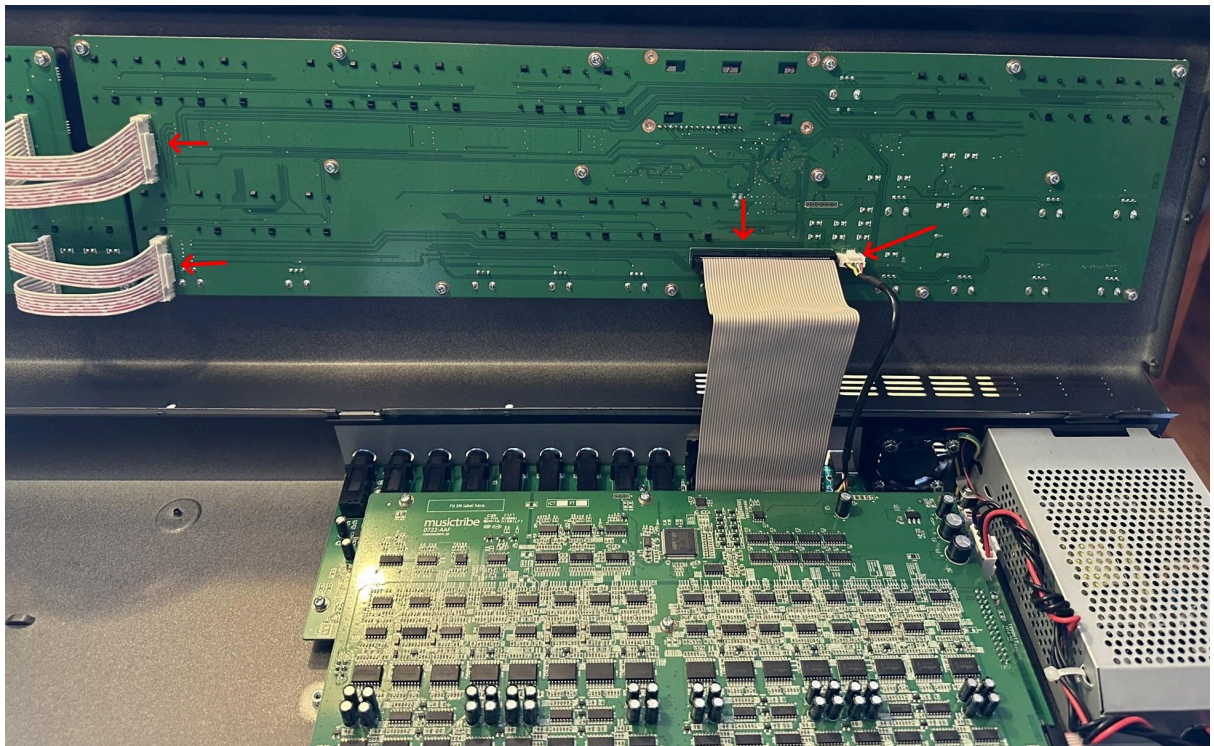
3. Remove the **two** screws with countersunk head that secures the top cover to the case on the side.



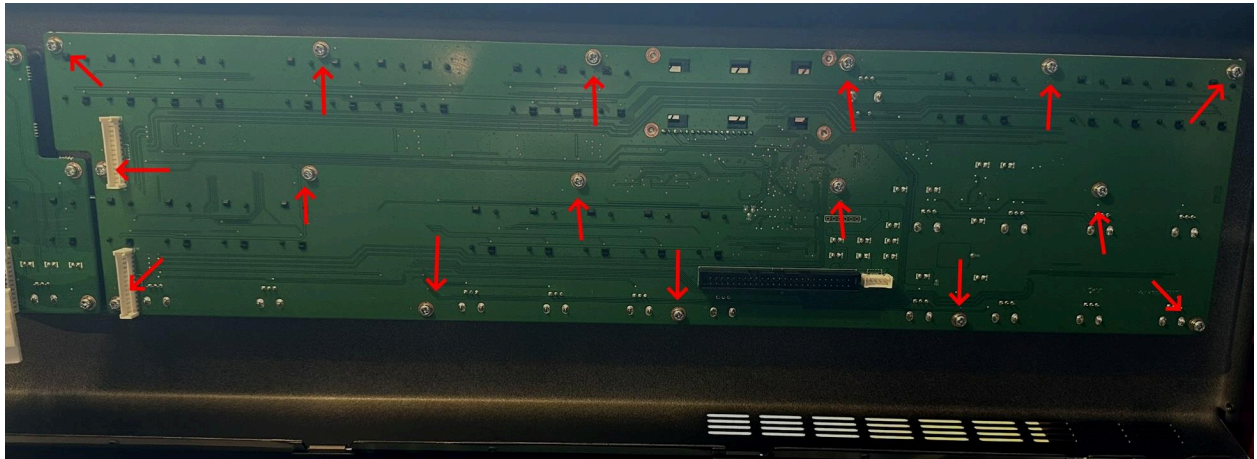
4. Remove the **seven** black screws on the back holding the top cover in place



5. You can now lift and flip the top cover to the back. The top panel is kind of hinged to make this process easier. It stays open on its own.
6. Remove the Cables, that are connecting the right panel PCB to the mainboard and to the left panel PCB.



7. Now you can access the screws to unscrew the right panel PCB. Remove all the **sixteen** silver screws.



8. Remove the right panel PCB from the case.

Unsoldering the old Display

This is now getting to be the most difficult and potentially dangerous part to the Synthesizer. You should really have some practice on soldering and desoldering things.

The way how I removed the Display was the following:

1. Unscrew the display from the panel PCB, (**Four** silver screws).
2. Apply a good amount of flux and low melt solder. If you do not know what low melt solder is, watch this video <https://www.youtube.com/watch?v=xbgrq4QdMU> on why it is important for good desoldering jobs.
3. Then use at best a desoldering gun to remove the solder as much as possible. The more you can remove the better. You can use a desolder wick or a manual desolder pump as well, but obviously the better the equipment, the better the result and the easier the task.
4. You should use a hot air solder/desolder station to heat up all the pins and then be able to pull the display off the pin header. This ensures that the solder is melted on all the pins at the same time and you can pull the display up.
5. Use some solder wick to clean the pin header of remaining solder as much as possible.
6. Use some Isopropanol and some brush (old toothbrush) and clean up any flux residue from the panel PCB. You can also clean the flux residue from the factory solder job. They did not clean up and you can take the time now to do it.

Soldering the new Display

Option 1: LCD Display with background light.

Okay the hard part is done, now it is time to put in your display of choice. Just place the new display over the pin header and screw it in place. Then solder it onto the pin header. You also should clean flux residue

Option 2: OLED Display

This display requires some more work, as those are not as high and may have components on the underside that may need the display to get raised. To mount those, you will have to

1. Remove the pin header as well and replace it with a new one that has longer pins.
The pin header originally installed has very short (maybe cut) pins.
2. Then you need some plastic spacers (M3x3mm) and some longer screws M2x10mm.
You also want to get some washers (2.5mm diameter of the hole).
3. Then you again screw the new display in place, lifting it 3 mm higher than it was before with the spacers.
4. Now solder the display in place.

Reassemble (partially) and testing.

We are now going to partially reassemble the panel PCB back in place, so that we are able to wire it up, hold it in place and then test if it works.

1. Get some paper tissues (like Tempo or any other favorite brand) and some Isopropanol alcohol. Clean the display and remove all fingerprints and other stuff that might stick on it.
2. Take another fresh paper tissue and Isopropanol and clean the inside of the glass of the top cover. Do not be me and forget that and then find out after complete assembly that there are fingerprints on the inside of the glass.
3. Put the panel PCB back into place and align it to the holes.
4. Screw some of the panel PCB screws back in (just 2 or 3) to hold the panel in place.
5. Reconnect the two cables to connect the left panel PCB and the two Cables to the main PCB.
6. Plug in the power cable in the back of the Synthesizer and turn it on. You may need to change the display contrast (Shift->Global->Miscellaneous->Contrast). I needed to set mine between 20-32 but this will vary based on the actual display you use.
7. Give it a good test. Also test sound with headphones.

If everything looks good, you can now continue to finally reassemble the Synthesizer back to its old glory.

Reassemble the rest

Put everything back into place in reverse order.

1. Put back all the silver screws and fix the panel PCB. Only tighten the screws carefully, it does not need to hold anything and the screws will not fall out. Be sure to align the panel (look at the frontside) to make the buttons of both panel parts align to the holes in the top cover.
2. Put the top cover down in its place and attach the side screws to the small metal bars connecting the top cover to the bottom metal sheet. It is one small and short black screw on each side.
3. Then put in the 7 screws (black) back into the back of the top cover.
4. Place the wooden panels back onto the side and put in the 7 screws.
5. Put all the knobs back in place. The orientation is all the same, the arrow is pointing to the round side of the pot shaft, so the flat side of the shaft is at the opposite side of the knob. Do not hammer the knobs on, they slide on pretty smooth and do not need a lot of force. If they do not slide on, you probably have not oriented it right.

Okay that's it, enjoy your new display that you can now read from any position, even in playing position ;-)

