



Ersa i-CON 1 soldering station display backlight replacement

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INTRODUCTION

We have about 25 of these soldering stations in my workplace, but after 5 or 6 years of use, their display backlight started to fail. Without backlight, the display is almost illegible. Since 4 stations have developed this problem so far, I've decided to investigate.

At the time Erska didn't offer standalone replacement displays; they forced you to buy a new control board costing a whopping 160 EUR, which is almost half the price of a new soldering station. Nowadays it is possible to buy replacement displays under the catalog number 3EBLCD128x64 for 33 EUR, though at the time the only option I could find was [this American e-shop](#), but shipping costs to Europe start around 100 USD. That's better, but still not exactly cost-effective (50 USD displays, 100 USD shipping). The displays are probably manufactured somewhere in China, but I couldn't identify their original manufacturer, nor I was able to find another source (Ebay, Alibaba...) for them. If someone finds them, please let me know in the comments. Here are markings that are on the back of the display:

PRE-WU2495B-01

ED-5455-LED/A ROHS

0712FJB*1094/0107/1*6

Anyway, since I couldn't get new displays for reasonable price, I decided to replace burned backlight LEDs in the displays. I used LTW-108DCG-HS10 as replacement LEDs in this guide, but any miniature white LEDs with at least 1000 mcd luminous intensity should do. See step 14 for more information.



TOOLS:

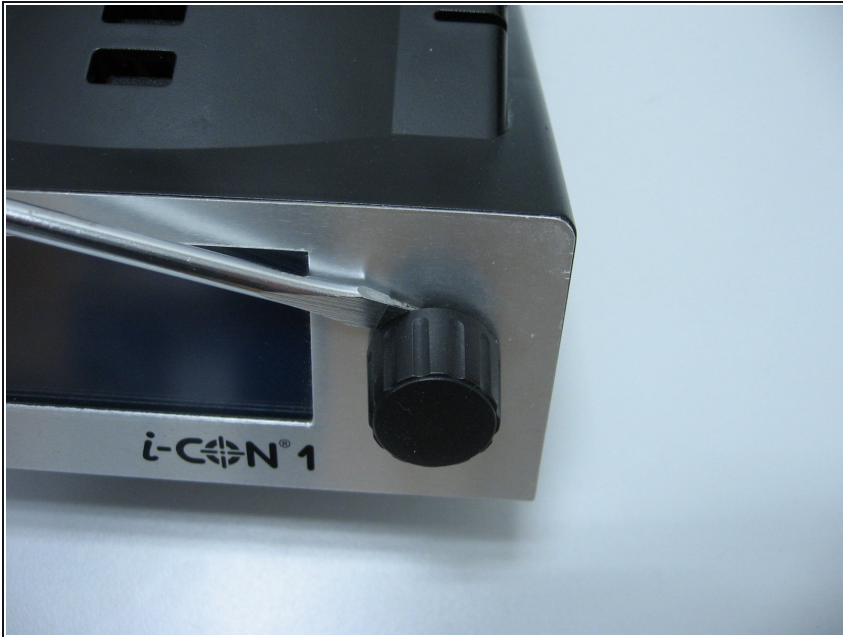
[iFixit Precision 4 mm Screwdriver Bit](#) (1)
[Spudger](#) (1)
[Small Chain Nose Pliers](#) (1)
[Soldering Iron 60w Hakko 503F](#) (1)
[Sharp knife](#) (1)



PARTS:

[SMD resistor 220R, 0603 package](#) (1)
[Replacement white right-angle LED Line-On LTW-108DCG-HS10 or similar high brightness type](#) (1)

Step 1 — Remove the control knob



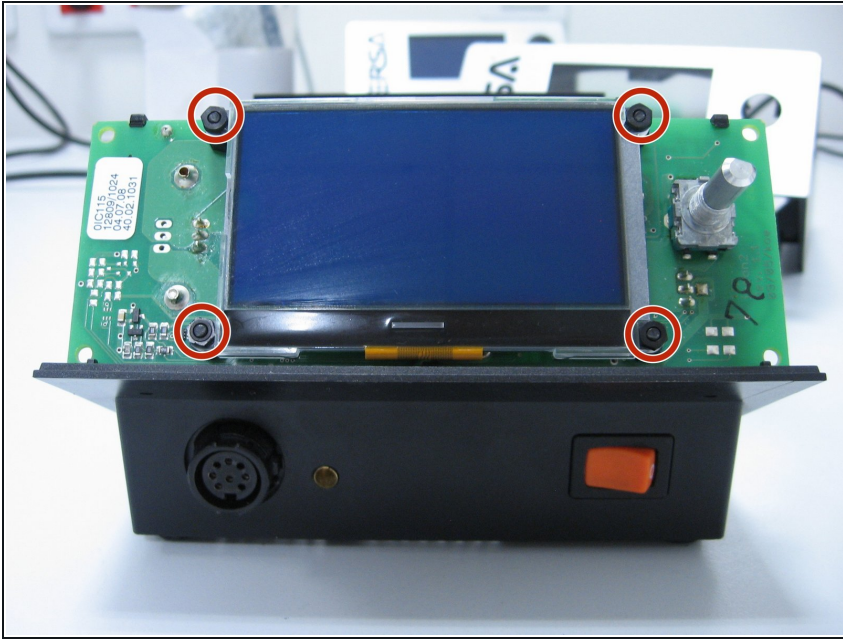
- Pull off the control knob using a [nylon spudger](#).
- ❗ Alternatively, a flat head screwdriver can be used, but be cautious of potential scratches on the metal faceplate.

Step 2 — Remove bottom screws



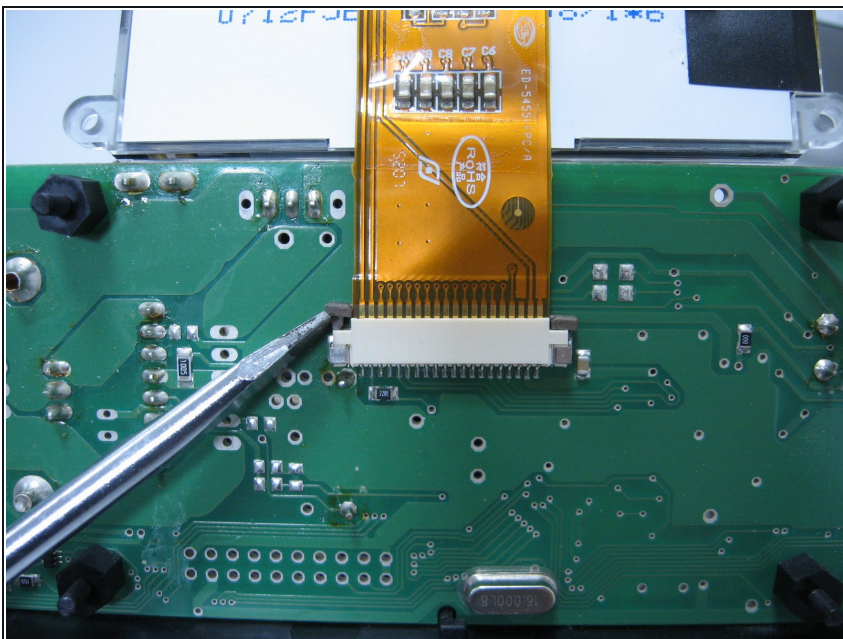
- Flip the station over and remove the four [T20](#) screws.
- Flip the station back onto its base and lift the top cover up and off the station.

Step 3 — Remove display nuts



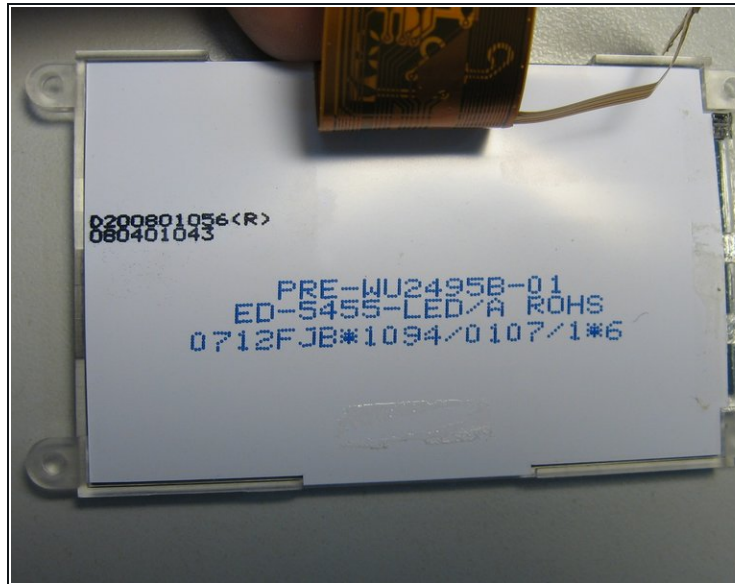
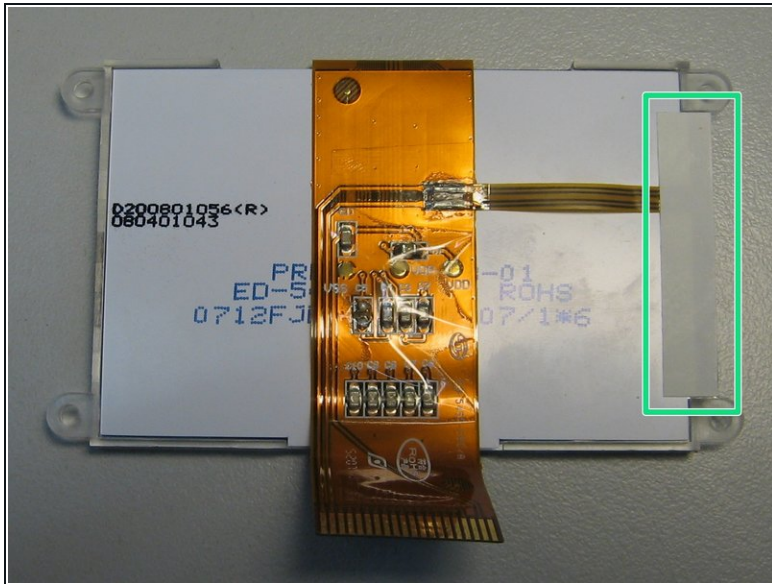
- Use pliers or a wrench to unscrew the four plastic nuts holding the display in place.

Step 4 — Disconnect the display cable



- Carefully flip the display upwards.
- Loosen the display connector by pushing up the small brown bars on both sides of the connector with a [spudger](#) or similar tool.
- Pull the ribbon cable from the connector.

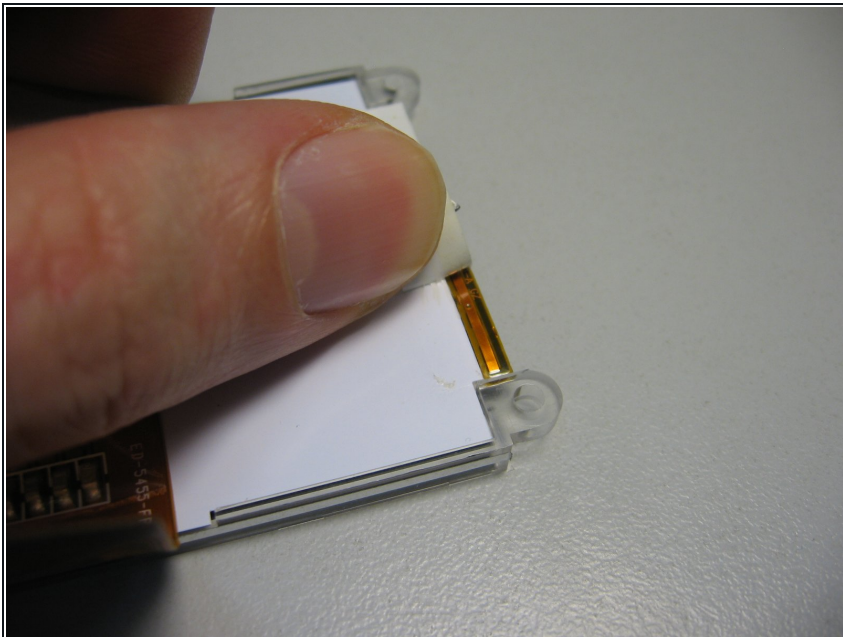
Step 5 — Locate the display backlight



- The display backlight is hidden under white tape on the right side of the display.

i The second photo shows markings on the display.

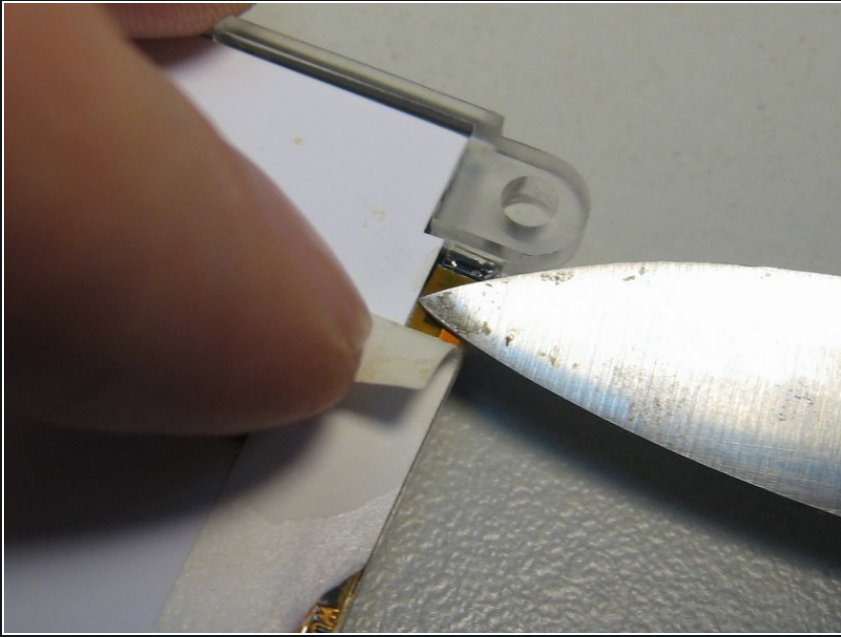
Step 6 — Remove cover tape



- Carefully remove the white cover tape using a knife or similar tool.

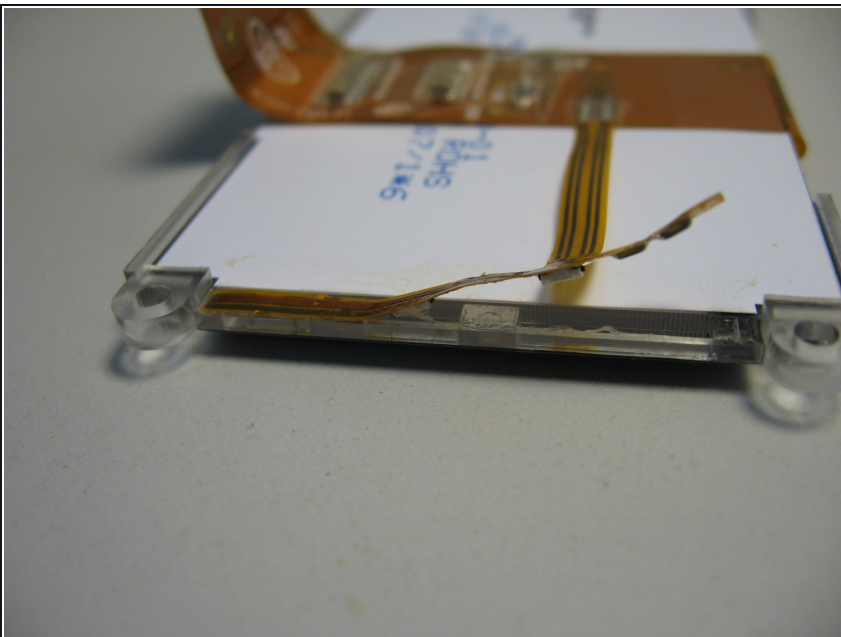
⚠ Make sure the golden flexible circuit board strip doesn't bend upwards along with the cover tape!

Step 7 — Remove cover tape



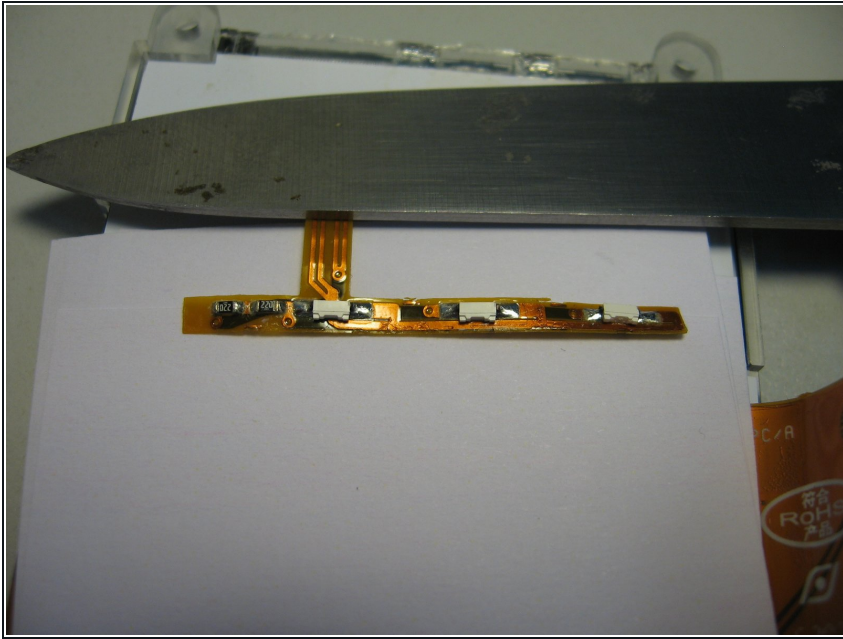
- Use a knife or similar tool to hold down the circuit strip and unstick it from the cover tape.
- ❗ If you choose to remove any strip glue residue with alcohol, be careful not to let it seep between various layers inside the display area, as this can cause unsightly spots to develop.

Step 8 — Unstick the circuit strip from the base



- Use a knife or similar tool to carefully unstick the circuit strip from the plexiglass base.
- The strip is held in place with a thin, transparent, double-sided tape. Be sure to keep the tape on the plexiglass base as you remove the strip. If the tape tears away with the strip, use the tip of the knife to push it back onto the plexiglass.
- ❗ Try to bend the strip as little as possible to make it easier to seat back in properly later.

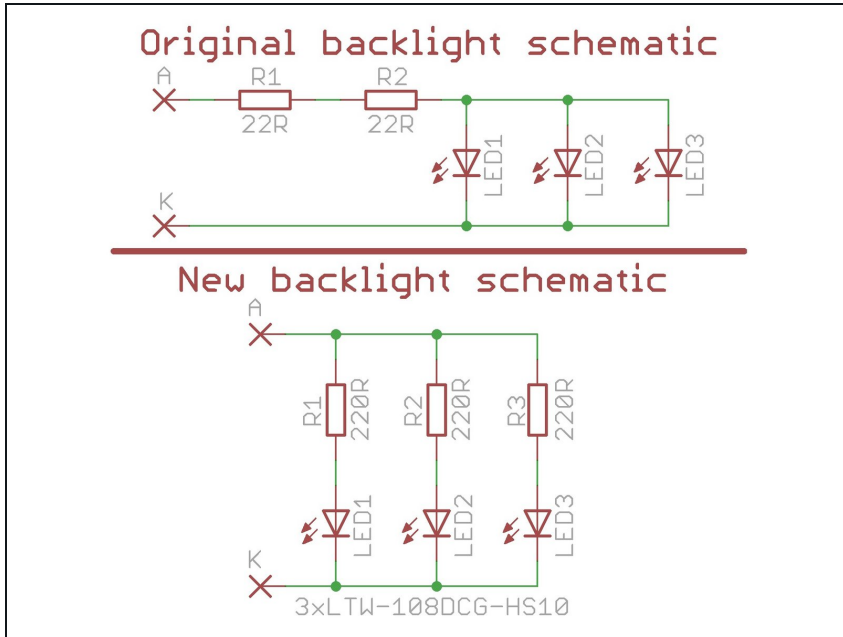
Step 9 — Desolder original backlight LEDs



- Fold the circuit strip onto the back cover of the display and weigh it down. This will expose the faulty original LEDs and some resistors.

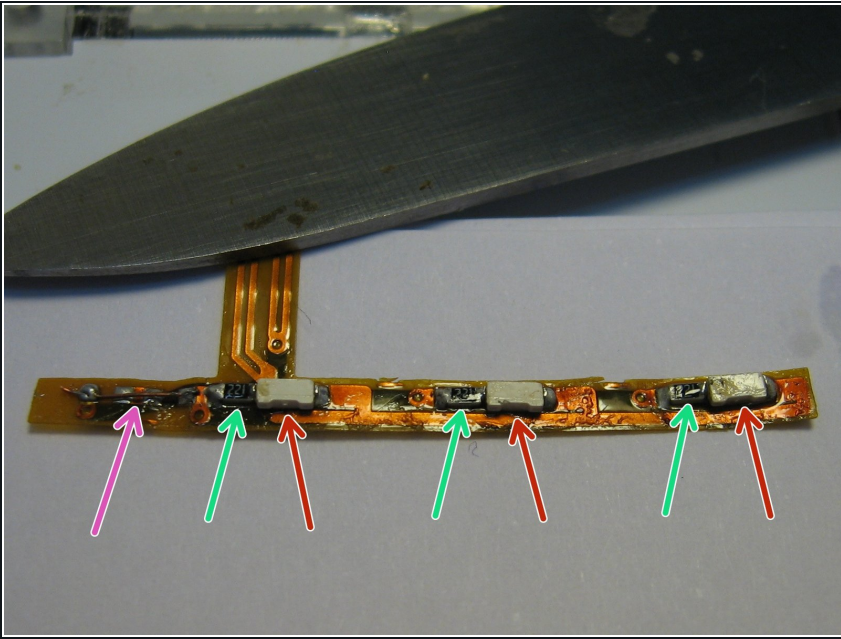
⚠ Before soldering, place heat-resistant material under the strip to prevent damage to the display's plastic back cover. If the plastic melts, it can cause unsightly spots. In the photo, several sheets of paper are used.

Step 10 — Backlight schematics



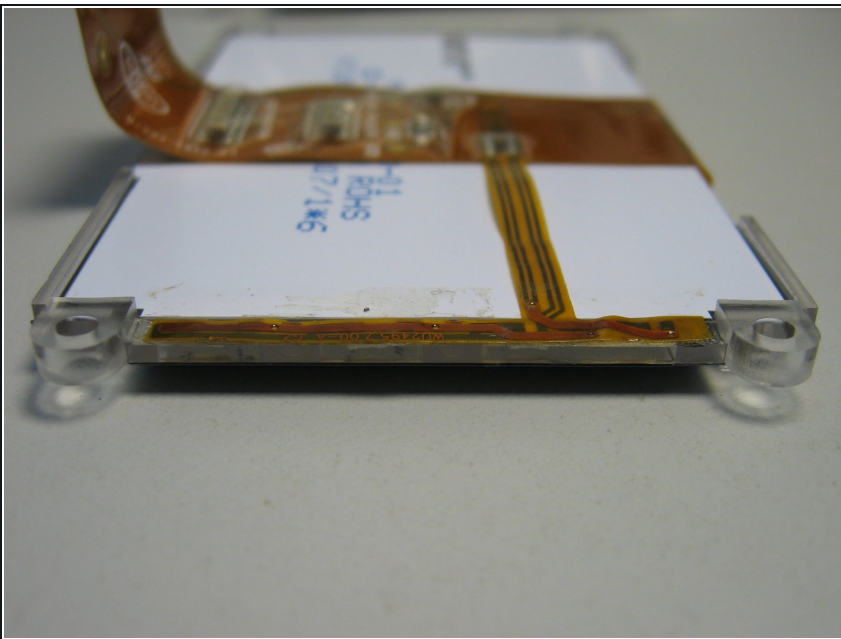
- After analyzing the original backlight connections, it became clear why it fails: the Chinese designers who created the display wanted to save space and money by connecting the LEDs in parallel.
- However, since each LED has a slightly different threshold voltage, one of them draws more current and fails prematurely. The remaining two LEDs then experience even higher currents and burn out soon afterwards.
- To address this issue, I decided to change the connection according to the lower schematic. I shorted the original 22R resistors and put a 220R resistor in series with each new LED.

Step 11 — Solder in new components



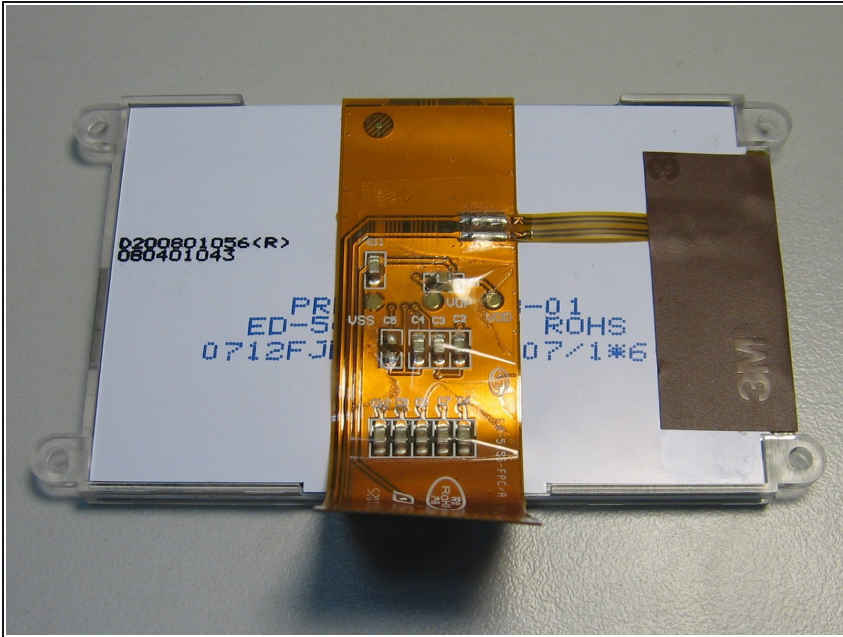
- There is enough room on the strip to solder in new LEDs (red arrows) along with their 220R resistors (green arrows) on the original solder pads.
- ⓘ Use resistors in the 0603 package to fit them into the available space.
- Desolder the original 22R resistors and short their pads with a thin wire.
- ★ Verify that all three new LEDs work by connecting a 5V power supply onto the "A" and "K" pads on the strip.

Step 12 — Seat the strip back onto the display



- Stick the circuit strip back onto the plexiglass base.
- ★ Keep in mind that the new components are slightly wider, so make sure the strip doesn't bulge or stick out anywhere. If the strip doesn't fit properly, unstick it and try a slightly different position until it sits flat and securely.

Step 13 — Secure the strip with new cover tape



- Secure the strip in place with a new tape cover, such as brown electrical tape.
- ☒ Ensure that the tape covers the strip completely and doesn't leave any gaps or exposed areas.
- Reassemble the soldering station carefully and test the display to confirm that it's working properly.

Step 14 — Final result



- Here you can see comparison of original (left) and new backlight (center). The new backlight is slightly brighter than the original; you can use larger resistors (270 or 330R instead of 220R) to lower the brightness.
- I also experimented with general-purpose VLMW11R2S2-5K8L-08 omidirectional LEDs. You can see the result on the station on the right - the display is rather dim and there is significant backlight bleed on its right edge, where the LEDs are located. Thus I recommend to use only directional, right-angle LEDs like LTW-108DCG-HS10.
- Since new LEDs need lower current to achieve similar light output, they should outlast the soldering station. This "trick" is generally applicable; high-brightness LEDs always generate more light at 2 mA than ordinary LEDs at 20 mA. At the same time, they consume less power, generate less heat and last much longer.

To reassemble your device, follow these instructions in reverse order.