

openSX70 assembly instructions

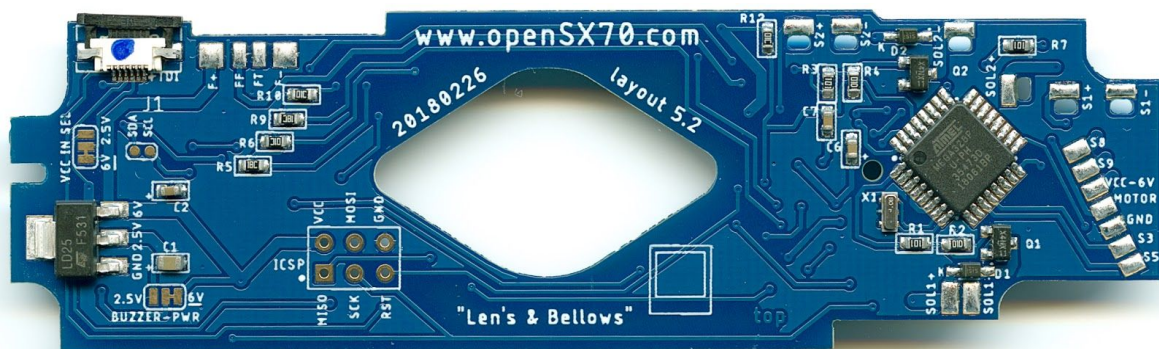
v 1.0

We are going to assume that you know how to disassemble the camera and remove the original PCB. Please use the right tools, I find it simpler to remove the center pins to expose the screws and easily remove them with a proper screwdriver.

Also be very careful, especially with the FFA contacts as the flex pcb inside the FFA can be very easily damaged. Also be careful not to break the tracks on the camera in case you might want to go back to your original pcb, and extra careful with all the pins from the camera that you will later solder to the new pcb. Do not use excessive temperature on your iron.

The kit comprises:

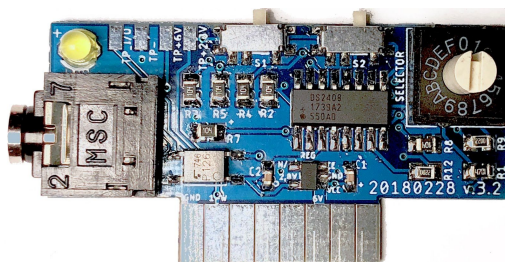
the main PCB, comes pre-programmed with the latest sketch (firmware in Arduino lingo) The current version is layout 5.2 aka "Len's & Bellows" manufactured by SeeedStudio Fusion.



the FTDI USB adapter (type A)



the uDongle:



A couple of FPC cables of the necessary type.

An adhesive "cheat sheet" that has to match with the firmware

A very small piece of plastic packaging that I use to protect the FPC next to the main pcb.

NOTE 1: Please make sure that the camera is working 100%, that the shutter works, is fast and clean and that the motor works fine. DO NOT TRY TO FIX A CAMERA WITH THIS, at least unless you know what you are doing.

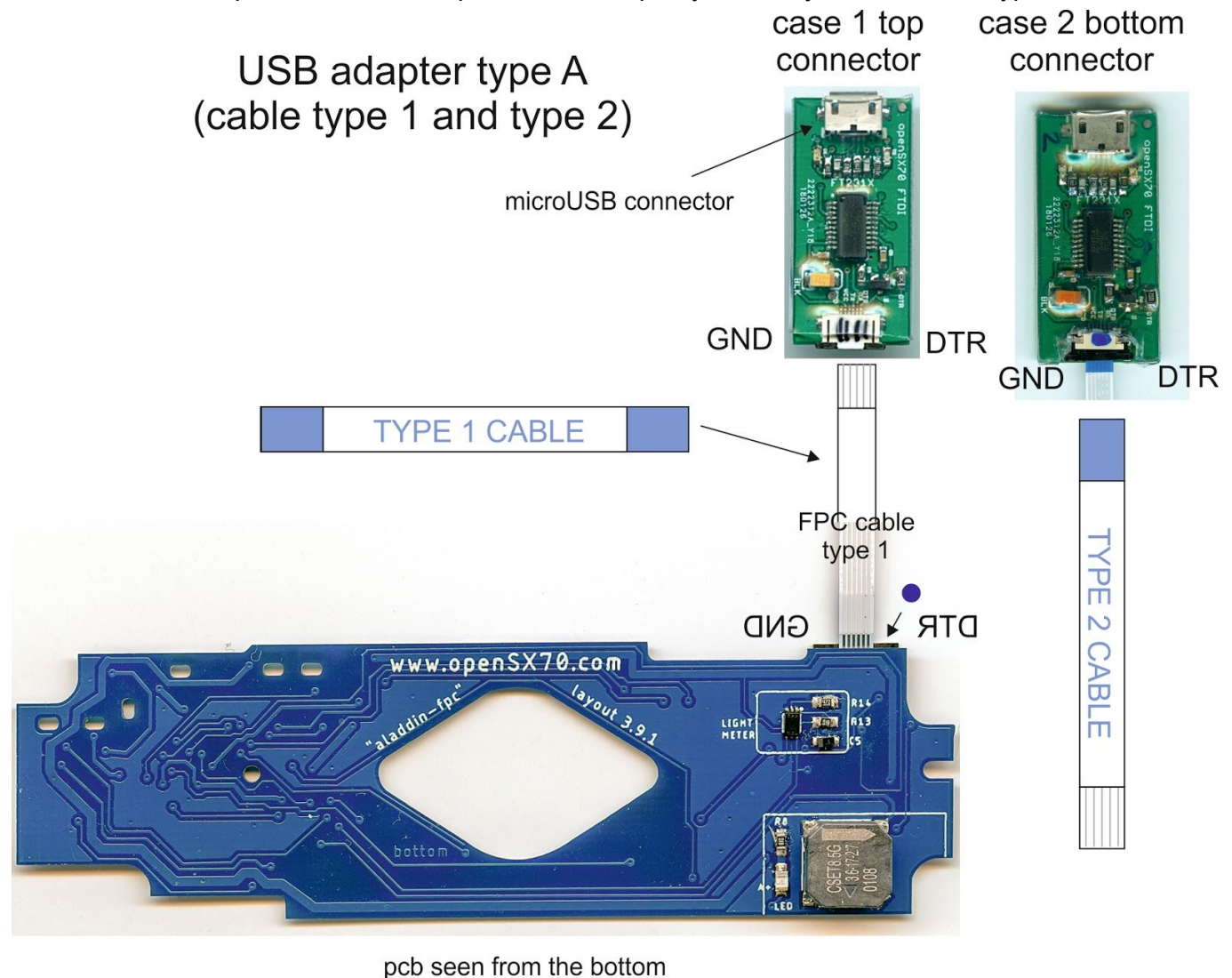
NOTE 2: this modification has been tested on a "perfectly working" Alpha camera. For me it does not work in Model 1 or Model 2s. Of course no Sonars. I don't know why, but my Model 2 seems significantly slower. It might be this particular one.

The main PCB that I sent is programmed so in theory you can just install it on the camera. Connect the uDongle and play. That simple. Without the dongle or a flash inserted the camera will not shoot. It will eject the dark slide though.

The FPC and the FTDI

Even though you don't have to, part of the fun of the openSX70 is upgrading the camera when new software comes out.

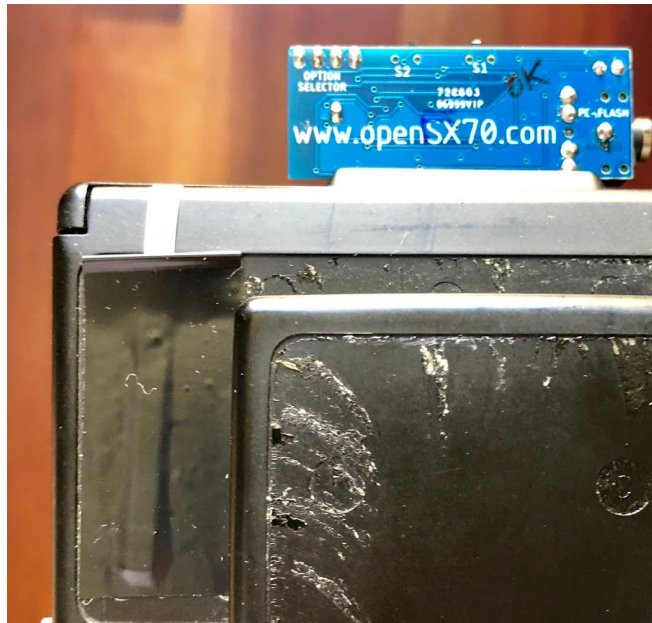
There are several options for FTDI adapter, but for simplicity I will only mention here "type A"



As for the installations of the FTDI you have a few options:

Clean option: you open the camera (remove the rear screws etc...) every time you need to program the camera with a new sketch.

Minimalistic option: you insert the cable in the main pcb and tape it to the camera with electricians tape. In this case I recommend to make a tap with the tape and place it looking outwards of the camera:



Full option:

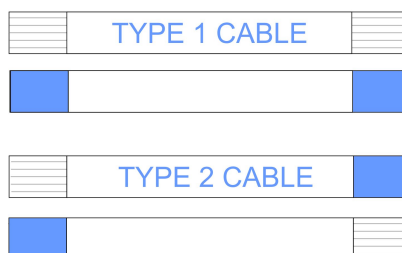
In this case you can stick the FTDI board to the side of the camera. I recommend using 3M command to avoid damage to the camera or to the leather. In that case put the tap facing the front of the camera and connect and disconnect the FPC cable once it has been secured. This is practical in case of intensive debugging as you can be connected to the PC without being afraid of damaging the FPC or the pcb.



About the FPC

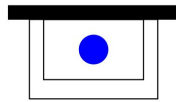
There are two types of FPC cables type 1 (contacts are on the same side on both ends) and type 2 (contacts are on opposite sides on each end)

FPC cables types



There are two types of connector with contacts on top or bottom. I have rudimentarily marked them with either a blue dot (connector on the bottom) or a few black strips (connector on top)

FPC socket types



contacts on the bottom, insert with blue tab facing forward.



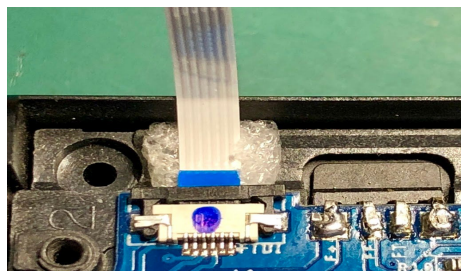
contacts on the top insert with blue contacts facing forward.

You will get on your kit of either kind. Depends on the FPC connectors that you have on your kit: Normally, always, the main pcb FPC connector will be “contacts on the bottom” so you will have to insert it with the blue side facing upwards. I mark the connector on the pcb with a blue dot to indicate that:



To insert the cable you have to pull the black tab very carefully and insert the cable, then push the black tab until the cable is secure.

I usually here put the plastic bit (or something you might consider).



Keep in mind that the cable is very fragile, and the stress of the hinge of the camera does not help. I have included extra cables in case it breaks.

If both connector on your kit are on the same side you need a type 2 cable. If they are different then you need a type 1 cable.

Always be very careful when inserting and removing the cable and handling the tabs on the connector as they are not prepared for intensive use and break easily.

WARNING:

I have been testing and testing, but I cannot warranty any of this, you install it at your own risk: you may damage your camera or spoil precious film. That it has worked for me does not mean that it has to work for you, but I sincerely hope so. Keep in mind that is early early in the game.

But if it works I encourage you to use it and even loan it to friend photographers. I only ask that you use the #openSX70 hashtag.

I will do another document regarding upgrading/programming the camera.