

# A QUICK GUIDE ON HOW TO INSTALL PS/2 MOUSE AND KEYBOARD CONNECTIONS TO YOUR Libretto 50ct Standard Port Replicator

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Best viewed at resolution 1152\*864.

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***DISCLAIMER: I will not be held responsible for any damage caused to any item when doing this modification. You have been warned!***

**20/05/2006:** Added [Survey form](#) and updated [Survey](#) with other peoples comments and photos! I've lost a lot of old emails so I couldn't find a lot of emails of survey posts. Please repost if you can remember! I've also removed sponsorships. Anyone know good ways of generating income via web page visits?

**06/07/1999:** Updated [FAQ](#)!

**19/06/1999:** Updated FAQ and survey! Also added some sponsorship! Please do click on the banners.

**20/03/1999:** New photos and a [step by step guide](#) has been added to show you how to install the PS/2 connector into the port replicator. These photos were taken by Tom Stangl and were emailed to me. He's done a brilliant job of the connection! I've also added a [FAQ](#) section where people have emailed me and asked me questions regarding the upgrade. A [disclaimer](#) has also been added!! ;-)) I would like to add a [survey](#). If you could answer the questions in the [survey](#) section and email me it, it would be brilliant!

**6/03/1999 :** People have been trying to find a place for the PS/2 connector inside the port replicator. [One my friends has found a place to put it!](#) You have to cut back a few bits inside but when it's done it fits snugly. No more complaints about having a lead hanging out! You can see the photos below! The photos are from my port replicator. As you can see I had to try and guess where the hole was so I made the hole bigger than required. It's messy but it still sits very snugly as I used the glue gun to hold it in. Hopefully this will help you to position the hole in the right position. Also updated the photos so when you click on them you get can see a bigger version of them.

**26/02/1999 :** I've had a few emails from someone complaining about the colour scheme I used previously and the size of the images, illegibility of text in the photos etc. I've changed a few of the photos so the text is easier to read, changed from white text to black, resized a few images. Also I've added a diagram of the PS/2 connections if you are planning to make your own PS/2 splitter cable. This is now a more printer friendly version!

[Click on the photos/diagrams for a bigger version!](#)

I've successfully installed a PS/2 connection for a keyboard and a mouse to my Libretto 50ct port replicator! It works 100%! Both the external PS/2 keyboard and PS/2 mouse work. I had a problem with the PS/2 mouse not working at the beginning, then I plugged in a genuine MS mouse, and it works perfectly now.

I've scanned the photos of the soldered port replicator. I've also found PS/2 sockets so it is sealed now! I've got new photos of these below also and also a new diagram for the splitter cable if you are planning to make a

new one yourself!

Before you start, get a friend to help you. I did - you'll need help to hold things, etc. The pins are very small and hard to solder to, it takes time and patience. Since I've done one, I'll be helping my friends to do theirs as well. This time it shouldn't take more than 30 mins at the most! (I found it takes about 2-3 hrs to do a good job of it!)

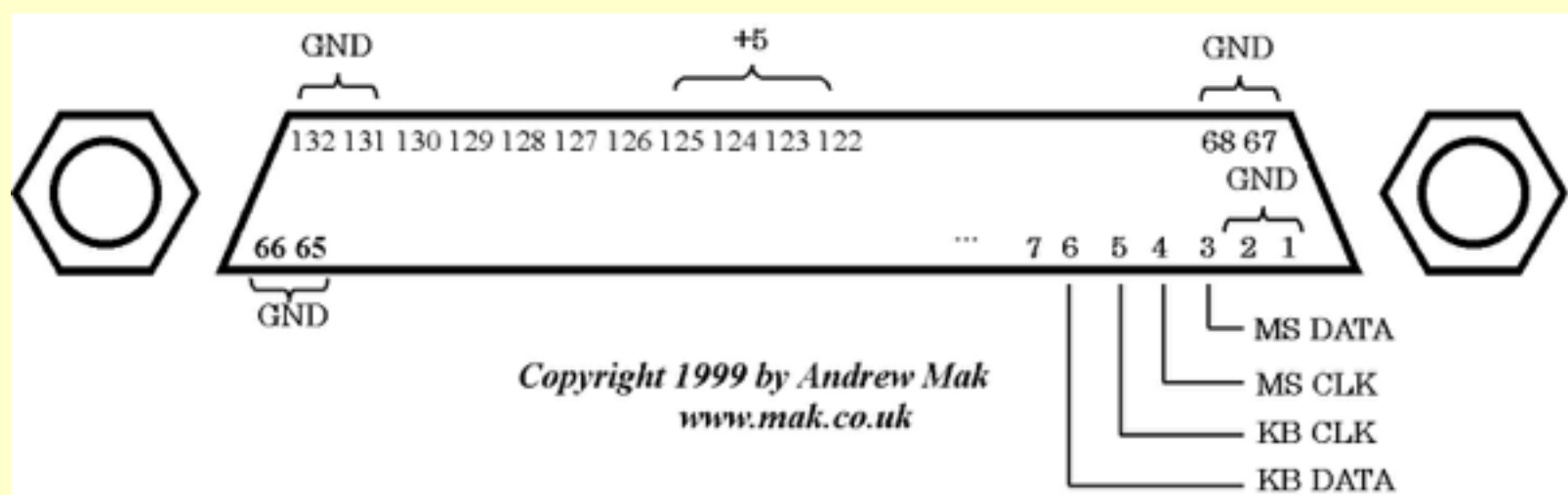
The following diagrams, etc. below should be enough for you to do the same. Email me if you have any comments. [ps2lib@mak.co.uk](mailto:ps2lib@mak.co.uk)

A few people have emailed me and asked how I've gotten such good quality images. I used a flatbed scanner to get the photos. It's the best method I've tried.

**USE A DIGITAL VOLTMETER TO CHECK YOUR CONNECTIONS FOR SHORTS! DON'T PLUG ANYTHING IN BEFORE YOU'VE CHECKED!**



As you can see from the photo diagram below and above, these are the actual pins you solder to. These photos have the RIGHT PIN NUMBERS for the replicator. You can solder the ground to any 2 pins in the corners, or any ground connection on the board.



I bought a PS/2 splitter cable from Maplin for UK£ 6.99 and a 6 pin miniature din socket. Photos of them are below.



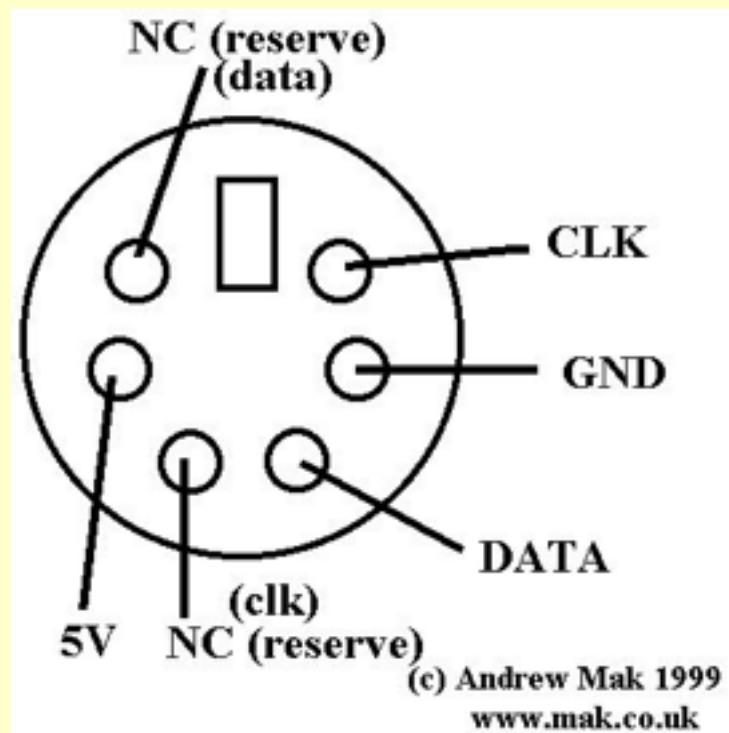
Din socket (left),



PS/2 Splitter (right)



The above diagram shows the connection to each of the connectors of the PS/2 splitter cable. So just do the mirror image of them for the din socket. I've also forgot to put the diagram for the connections of the PS/2 keyboard and mouse ports if you are making your own cables instead of using the PS/2 splitter cable! The diagram is now below!



As you can see in the diagram above for the PS/2 mouse and keyboard connections. The NC (reserve channels) also takes the data and clk signals of the opposite ps/2 connections in the PS/2 splitter cable. I see no use for it but it must be there for a reason.

The photo below shows the soldered job. The white bits you see is "zip kicker" (catalyst for super glue so it dries instantly!). I used the super glue to hold down the cables.





A couple of photos of the finished jobs are below. As you can see I've taken a nick out of the case in the middle for the cable.





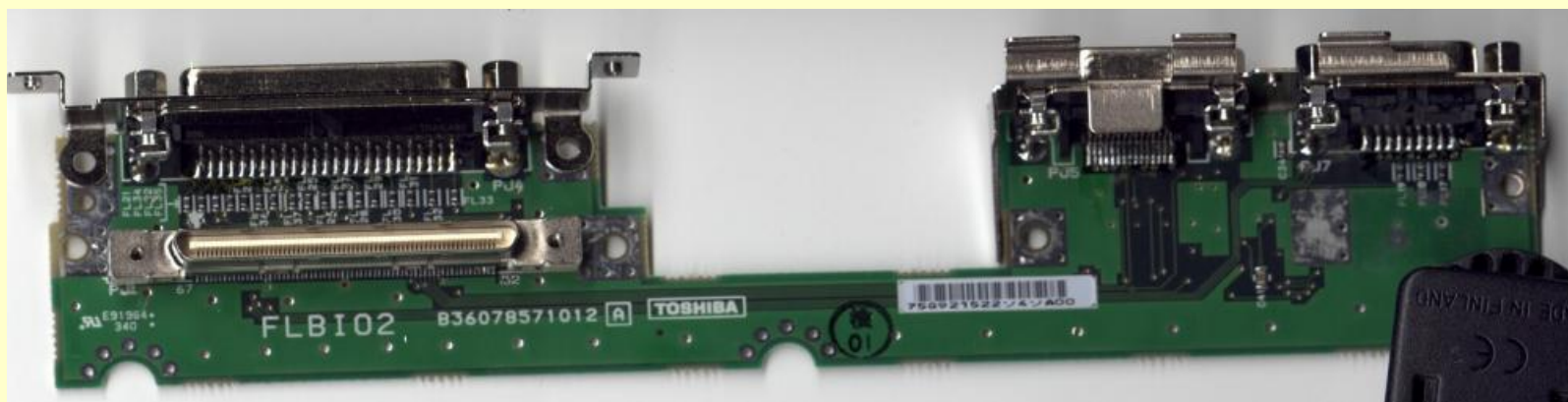
Here are the photos of the PS/2 connector inside the port replicator. No more leads hanging out! As you can see it looks quite good as it is flush and it sits in. I've used a glue gun to glue down the connector inside. It doesn't budge a millimetre now. You have to cut out a hole for the connector. Then inside you will have to cut back two bits of metal and cut away a piece of plastic. It is quite easy to see which bits needs to be cut away. The PS/2 connector I've used is the same one as the connector shown above. I've removed the plastic that was round it and it is the smallest PS/2 connector you can get. (I've seen) My friend will be installing his the same way but he knows exactly where to make the hole from looking at mine (I will scan the photos in and put them on the web page when he's done the job). Also a tip is to get needle files to file away the metal and plastic. It makes a better job. As you can see I didn't! I've bought a pack of 10 now for £5.49 from Maplin so I can do a better job of my sisters port replicator.







A full photo of the port replicator is shown below without any soldering. BTW I used super glue to stick down the cables to the board so they don't move. If you're wondering what that black thing in the bottom right hand corner of the photo is. It's my belt clip for my mobile phone. I used it to hold up my port replicator.



## THE STEP BY STEP internal PS/2 Guide! Well not all steps!

The photos below were taken by Tom Stangl

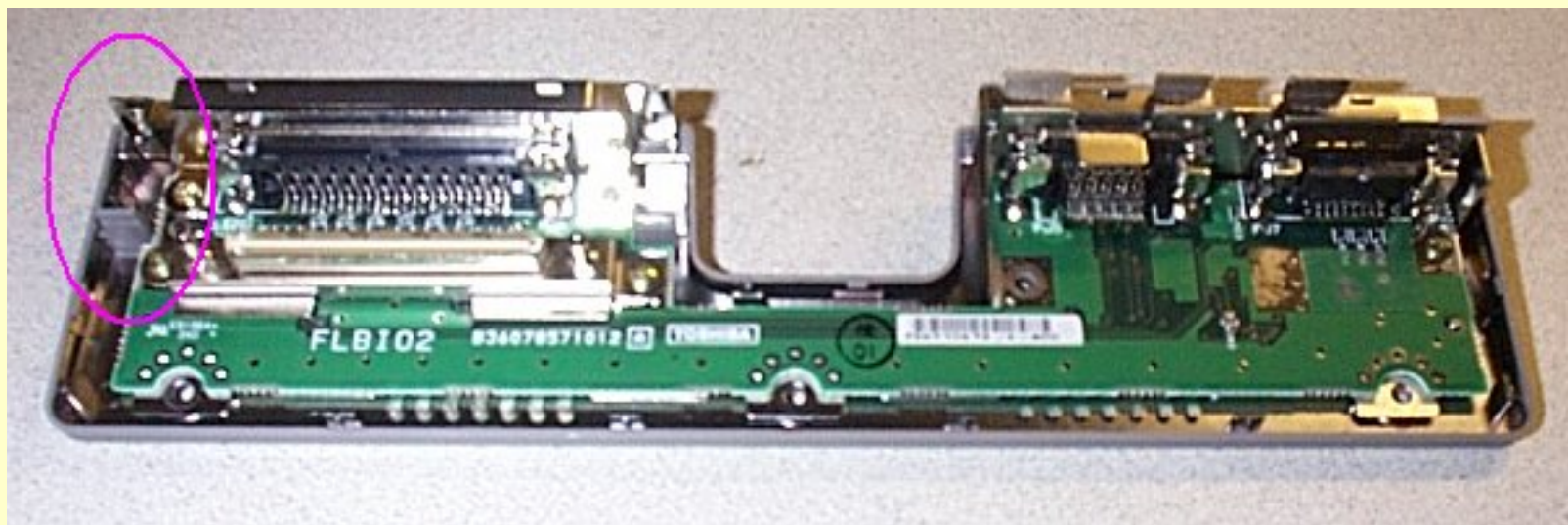
Most of the steps missed out are self explanatory. You will be able to figure the missing steps out yourself. The main steps are shown below and the circuit diagrams required are above.



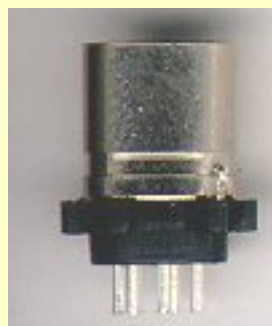
The photo above shows the bottom of the port replicator. There are a few different types of screws. Some longer than others. The long one goes into the hole indicated above. These screws are small and easy to loose so put them in a container of some sort.



The bottom half and top half are connected with connector tabs as well. They are equally spaced around the port replicator so all you need to do is get a small flat headed screwdriver and wedge it open.

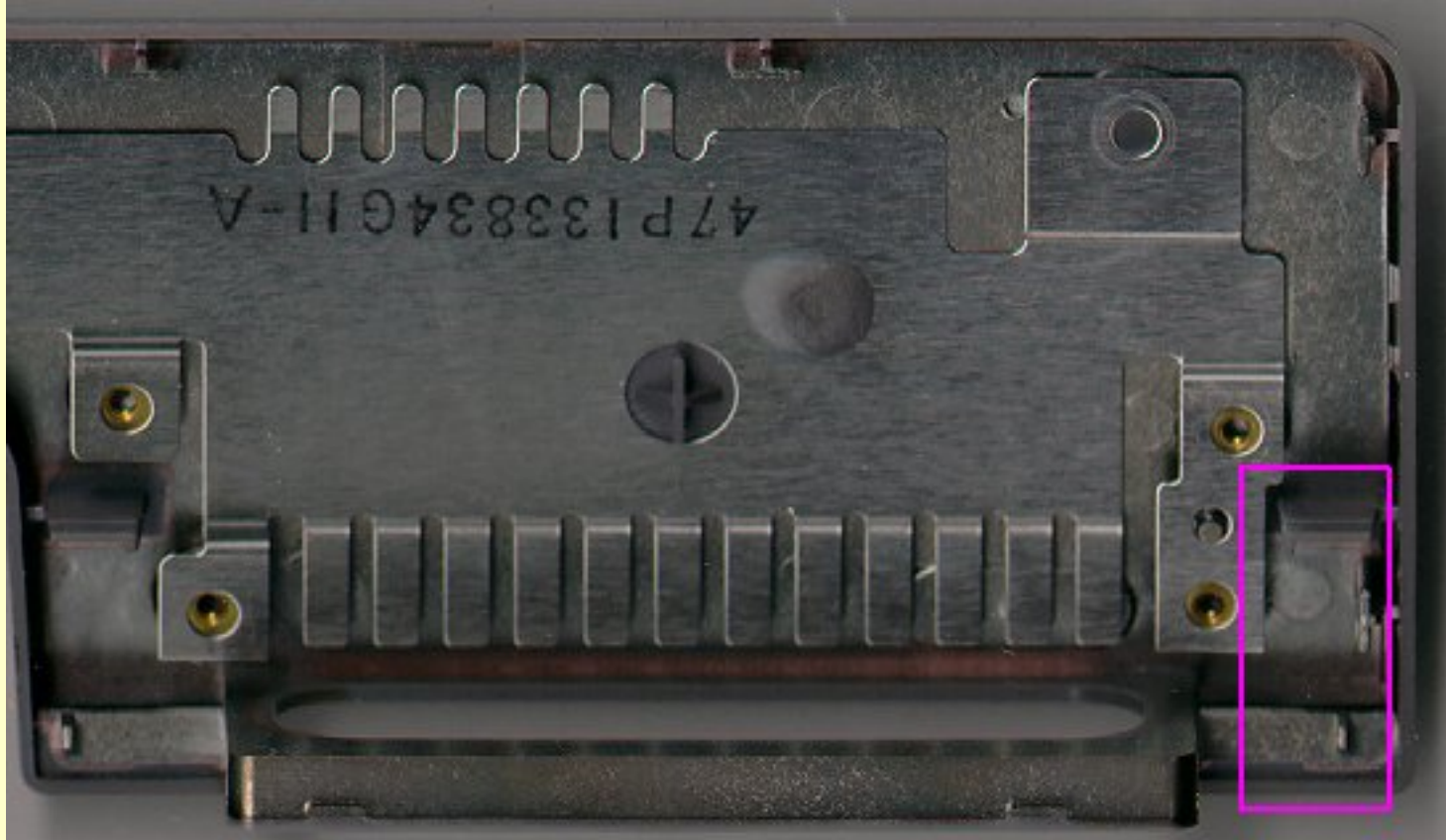


Now you can see the inside of the port replicator. The area to be modified is circled above. In this area you will have to remove a few bits of plastic and cut back a couple of bits of metal. You can see clearly which bit of plastic/metal needs to be filed back when you try to sit in the PS/2 connector!



This is the PS/2 connector used.





The above photo shows a top down view of the area to be modified.

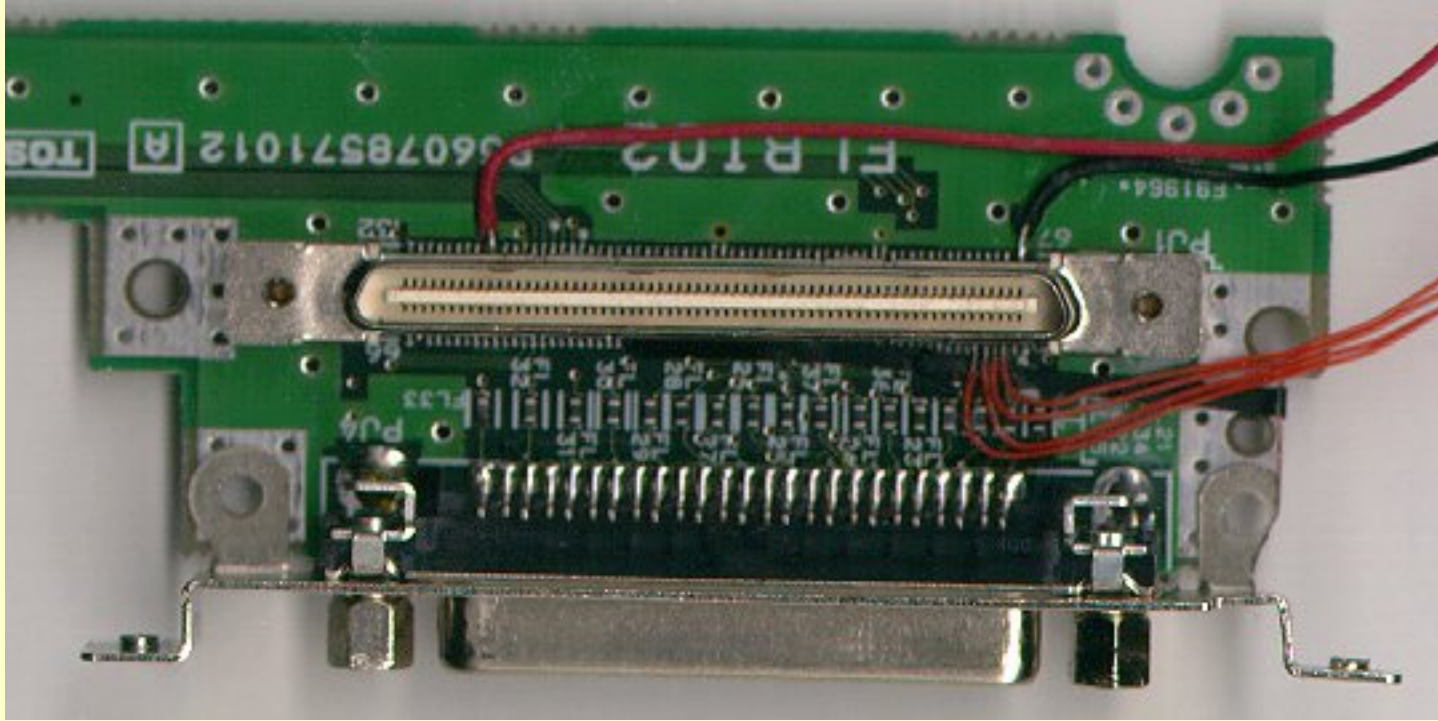


You will have to cut the above circle out on the port replicator casing. Mark it out and get a drill to make a pilot hole. Then use needle files to file out the circle. This will make the job neat.

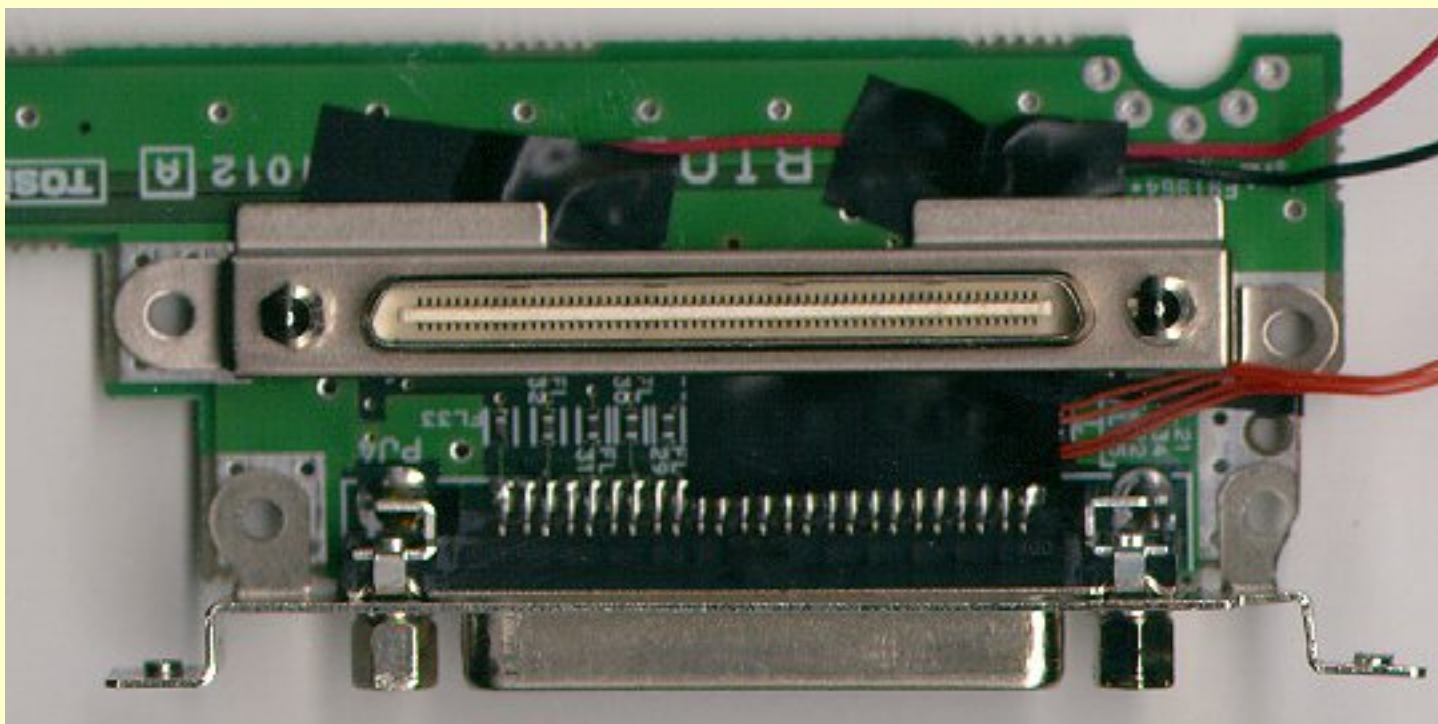


You will need to cut out the above right metal bit of the parallel port. Just compare it with you own one and file back the area using needle files.

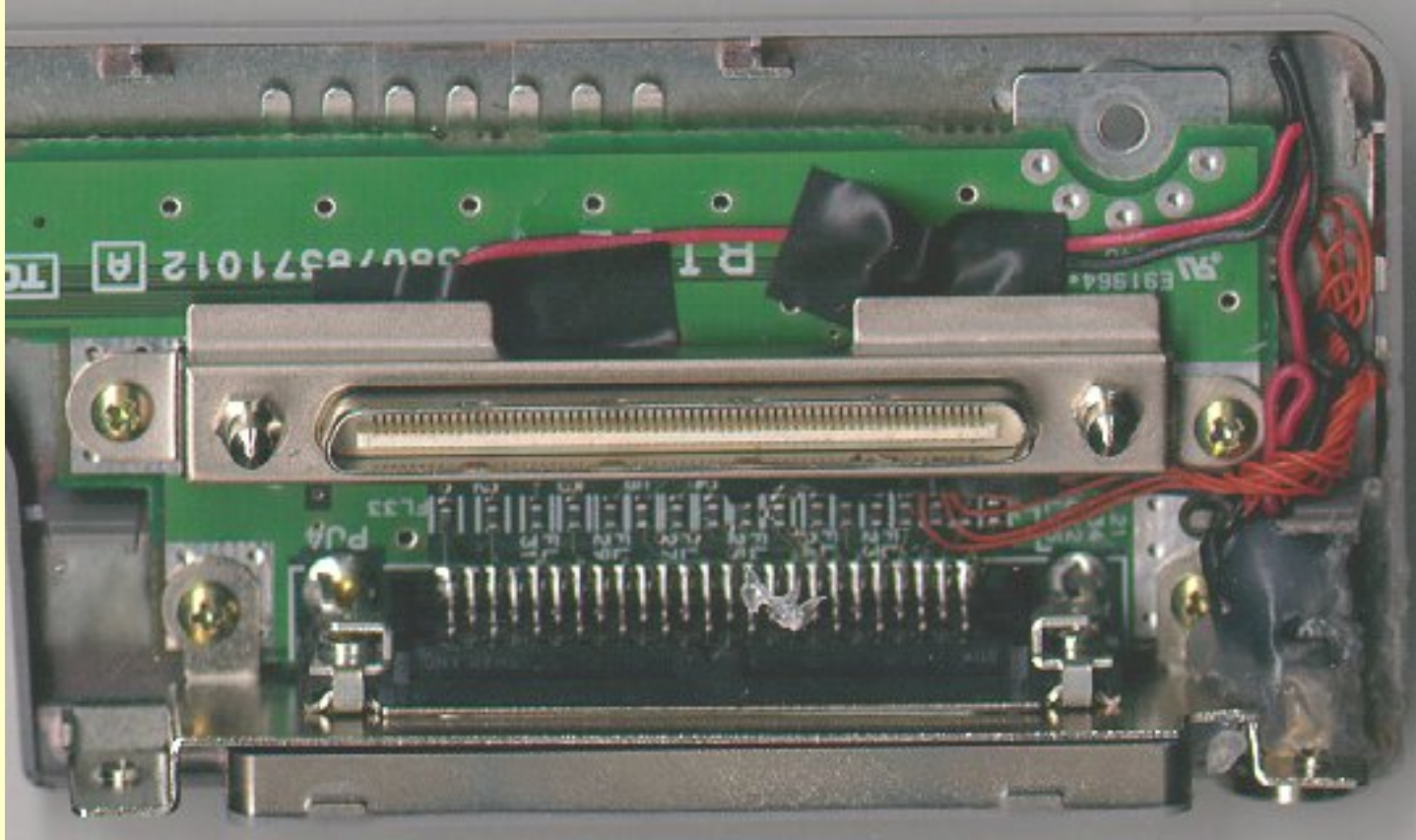




Now you can see the wires soldered into position. Just follow the circuit diagram at the top of the page to know which pins to solder to. As you can also see that the metal bracket for the connection has also been removed to make the soldering easier. This is done but unscrewing the two pins sticking out 90 degrees from the port replicator. Then you can just lift out the metal bracket.



The wires are then stuck down so they don't move. You can also use super glue which holds it more firmly!



The PS/2 connector has also been soldered up and put into position. (see top of page for circuit diagrams). It has been glued down so it won't move using a glue gun.



Photos of the finished job! In my opinion Tom's done a great job!



I hope this web page will help you do this modification easily and save you lots of money!!



# FAQ

***Q) Why won't the mouse work when I've done the modification?***

**A) Make sure to turn the BIOS to Simultaneous on Pointing Devices (and VGA if you wish). Load the MS mouse driver. Or it could be the mouse. Try a Microsoft mice because it always works! If that doesn't solve your problem check your connections.**

***Q) What kind of soldering iron did you use for this project?***

**A) I used a gas soldering iron with a standard tip. My friends used the cheapo ones and still did the job fine.**

***Q) How in the hell did you solder the big wires to the small connections?***

**A) Firstly twist the wire till you get a neat bit of wire without any strands sticking out. I've just used standard multiple core copper cable. I then put enough solder onto the copper wire (tinned it enough). Then hold the end of the cable so it is touching the pin you wish to solder, then using my standard tip of my soldering iron, touch it on top of the connection. Now it will be strong and it will be soldered to the pin! Trust me the technique works very effectively! You'll get better with practice. Then after I did all the pins I used super glue to hold down the cables. You'll think it's easy once you've got the knack of it!**

***Q) Did you solder the cables one at a time and then immediately glue them down?***

**A) I soldered them one at a time, then it could be seen that I could damage the connections so I super glued them down. At the end I used more super glue to make sure everything was held down!**

***Q) The pins are so close together, so how do I know that they are not shorting?***

**A) Firstly get a magnifying glass and that will help. Then check the wiring to the plug from the board with a continuity tester before attempting to plug anything in!**

***Q) just wondering which device you used to get the piccies of the port replicator on the web page? They're very good quality (compared to some I've seen)....***

**A) I used a flatbed scanner to scan the photos. I'm not sure what Tom used but I think it was a digital camera. You can see the quality difference.**

***Q) I have made just the internal ps2 connector and plugged in a keyboard (I didn't use a splitter). Am I suppose to use the splitter cable and connect the keyboard to this?***

**A) Did you follow the instructions directly? If you did, then you need the splitter for it to work. If you only require the keyboard to work then just resolder the points to the PS/2 connection. For example you know which pins are for the Kb data and clk. Just solder them to the particular pins of the of the ps/2 connector. You can keep your ground and 5v the same. Remove the ms data and ms clock wires and solder on the kb clk and data to the pins currently used for the ms data and ms clk of the PS/2 connector. If you need more in depth instructions get back to me. Just solder the points the same as this diagram to the socket for the keyboard data and mouse.**

**<http://mak.co.uk/kbmsconn.jpg>. The picture shows you looking at the socket from the fronts so don't flick it round. Remember don't need to change the 5v or gnd, just swap the ms data/clk and keyboard data/clk cables around and they will now work. If you plug in a mouse now before changing it, it should work. After the change the keyboard will work.**

***Q) Does this modification work on the Lib 70ct port replicator?***


**A) Yes, it is identical to the 50ct one. I've done a few 70ct port replicators as well. The method and pin outs are the same.**

# SURVEY

Which mod		Was there					
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did you do? (int PS/2 or ext PS/2 (cable hanging out))	Were the instructions easy to follow?	sufficient information for you to do the upgrade?	Did I miss anything out?	How long did it take?	How difficult was it to do?	Were you successful the first time?	Any other advice/comments you would like to add?
internal PS/2 by Ivan in Singapore	Rather informative.. Could see what you were getting at..	Yup.	Not as far as I know.	About 2 weeks.. The getting of parts in singapore here is rather difficult, I bought the wrong grade of wire .. when I found it was too thick... I had to get another roll..	na	Yep, tho I had a problem with the PS/2 mouse.. the driver had to be changed to Microsoft PS/2 mouse.. This applies to the trackpoint as well as my external mouse . (FYI I'm using a 1984 PS/2 IBM mouse .. hahah .. from a IBM PS/2 386 system I scrapped) I'm also using a generic keyboard	The soldering iron as well as the soldering bit is the worst nightmare.. I spent 2 weeks figuring out how to solder .. I suppose if you added a paragraph on how to solder them , it'd be great. I also had a problem with the liberetto shorting out.. I suppose one of the connectors touched the grounding .. so I had to insulate the whole ps/2 connector in the port replicator. Glad I had a magnifying glass and a lamp to work under .. otherwise I'd go blind. I didn't have a drill handy so I had to use a penknife to cut a square hole.. Believe me.. it also looks nice as I used some clear silicon glue to hold it in place. ( tho I wish I had a drill & the files)
Arne Herman Falch 12-10-2002  Internal connector	Yes	Yes	No, it works. The proof of the pudding...	2-3 hours, don't remember exactly	Soldering was difficult, would have been easier with a smaller iron.	No, there was a signal short	The +5V on the PS/2 connector is connected directly to the power supply in the Libretto. Any short circuit here can be fatal to the internal DC-DC in the Libretto. I added a Surface mount fuse, 0.5Amp in line with the power line, better safe than sorry.
xie lian 02-04-2002  Internal	Yes, very clear	Yes	No	about 2 hour.	the soldiering needs skill and patient.	Yes. I use a Logitech wheel mouse, the wheel also works very well	How about arrange this extra ps/2 port to the libby main body? BTW, the perfect wire for this project is taken from the original mouse cable I thought
Ben Lee - 07-05-2006  None of the above. I added a small PCB			Yes. I				



<p>to the back centre portion of the port replicator, stick there using heat glue gun. The signals are extended from a flat cable (remove from an old notebook floppy drive).</p> <p>My new ports do not block the headphone socket nor IR socket. And it can be removed completely without any holes left on the replicator</p>	Yes	Yes	<p>guess the Chipset inside had not added the pull-up resistor. That's why most of your mouse does not work. I added 4 pcs of surface mount 1206 4.7K resistor at my small PCB, and all mouse work fine.</p> <p><a href="#">Info here</a></p>	2 days, from planning to trouble-shooting, to make it works.	No	<p>No. I guessed I had shorted pin 5 &amp; 6 together at my first trial. I desoldered all 4 pins at the 132pin docking port, and resolder them on day 2.</p>	<p>My Libretto is running Win98SE. It cannot detect the mouse at first. I remove the Accupoint at Device Manager, and let the notebook reboot, then I can use both accupoint &amp; PS/2 mouse.</p> <p>See Photos: Click on the image for a larger image</p> 
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## SURVEY FORM

**Please could you answer the following survey**

**Which modification did you do? (internal PS/2 or external PS/2 (cable hanging out))**

- Internal PS/2  
  External PS/2  
  Other

**Were the instructions easy to follow?**

- Yes  
  No

**Was there sufficient information for you to do the upgrade?**

- Yes  
  No

**Did I miss anything out?**

**How long did it take?**

**How difficult was it to do?**

**Were you successful the first time?**

**Any other advice/comments you would like to add?**

**Tell me how to get in touch with you:**

Name

E-mail

Tel

FAX

Please contact me as soon as possible regarding this matter.

**If the above form doesn't work then please answer the survey questions below and email them to me at [ps2libsurvey@mak.co.uk](mailto:ps2libsurvey@mak.co.uk)**

**Which modification did you do? (internal PS/2 or external PS/2 (cable hanging out))**

**Were the instructions easy to follow?**

**Was there sufficient information for you to do the upgrade?**

**Did I miss anything out?**

**How long did it take?**

**How difficult was it to do?**

**Were you successful the first time?**

**Any other advice/comments you would like to add?**

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