

# DistoX2 Assembly Manual

## Leica Disto X310 based DistoX

Version 1.1 2016/08/25

**Warning: Opening and modifying a Leica Disto will void the manufacturer's warranty and is done at your own risk!**

### Parts Needed

- A Leica Disto X310 or E7400x (US version of the X310).  
[http://www.leica-geosystems.com/en/Leica-DISTO-X310\\_98484.htm](http://www.leica-geosystems.com/en/Leica-DISTO-X310_98484.htm)
- A DistoX2 extension kit.  
<http://paperless.bheeb.ch/>  
The kit works with all current variants of the X310/E6400x (old and new Laser module, old and new LCD display).
- A non-magnetic LiPo battery PGEB-NM053040 (**not** PGEB-NM053040-PCB)  
<http://www.powerstream.com/non-magnetic-lipo.htm>  
The LiPo battery cannot be shipped with the kit because of international shipping restrictions for Lithium batteries.  
Alternatively the DistoX can be used with standard AAA batteries but this is not recommended because of the limited performance (see appendix).
- Tools:
  - A Torx T6 screwdriver
  - A Soldering Iron and solder
  - Solder Wick or another solder removing tool

### Kit Contents

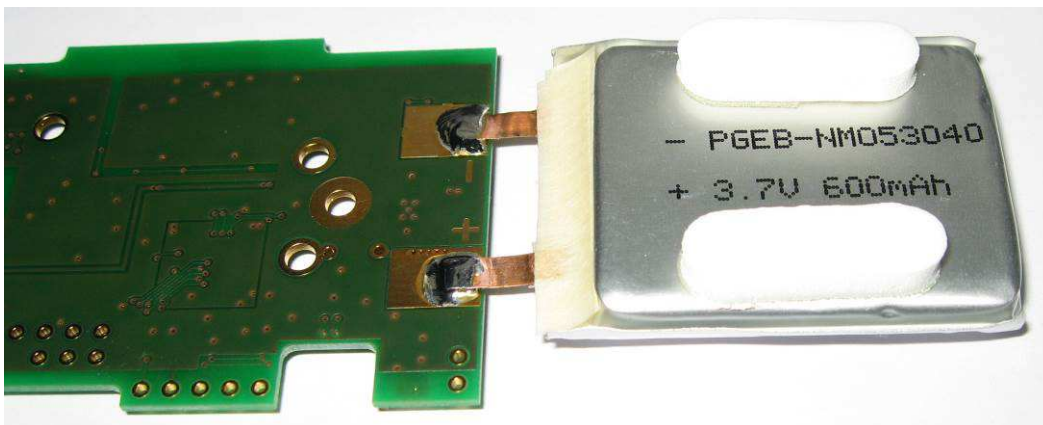
- A DistoX replacement board (replacing the main board of the original Disto).
- 9 inox replacement screws.
- A micro-USB socket breakout board and a pin header.
- Four adhesive pads to fix the battery.

### Assembly

- 1) To get rid of the magnet in the endpiece, you either have to remove the magnet or the whole endpiece. To remove just the magnet it is easiest to drill a small hole up to and slightly under the magnet using a Dremel like tool and a small drill (I am using a 0.8mm ball-drill). It can then be levered out using an ale.  
To remove the whole endpiece look at point 8).

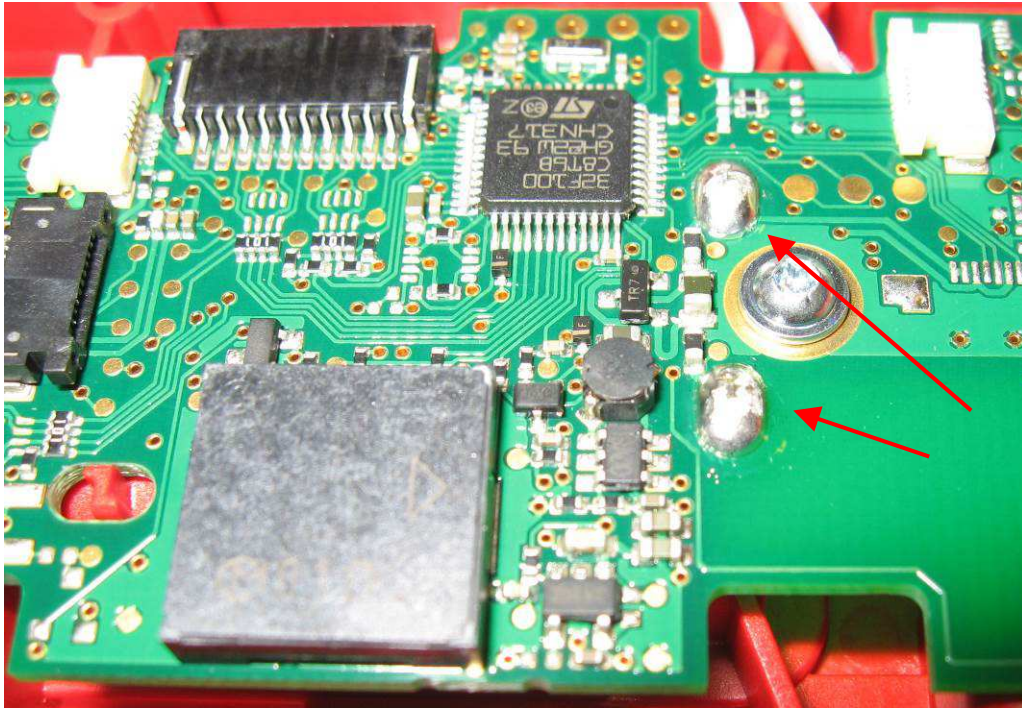


- 2) Solder the Lipo battery to the large pads on the bottom of the board. Choose the length of the leads such that the battery can be mounted on the upper side on top of the parts. Place the adhesive pads on both sides of the battery as shown.  
**Be careful:** connecting the battery with wrong polarity or shorting it destroys the battery and/or the board. Avoid contacts between the battery leads and the parts on the top of the board.

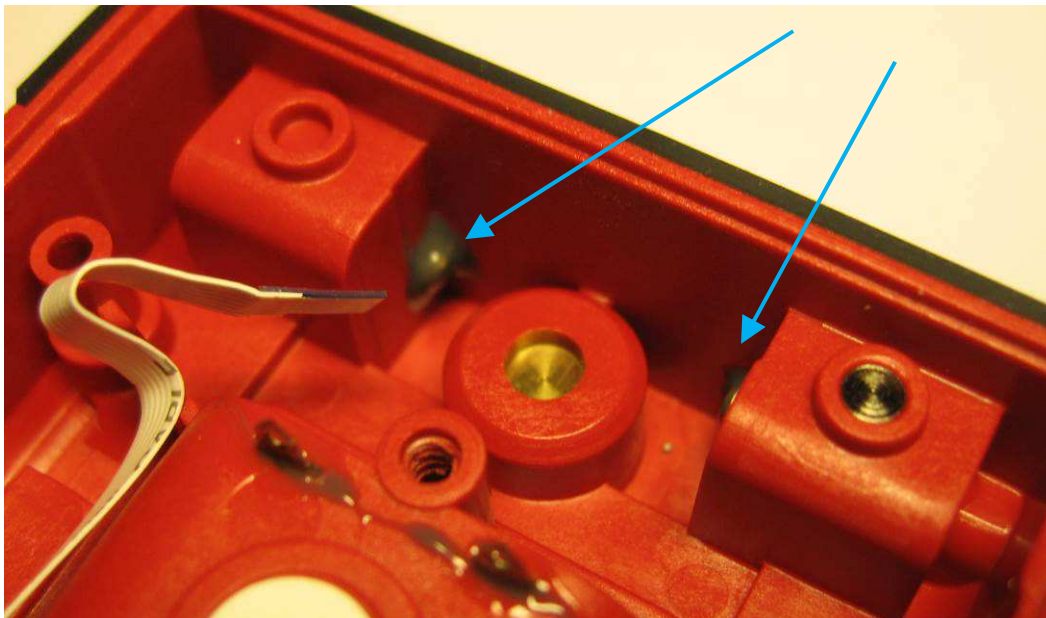


- 3) Remove the batteries from the Disto.
- 4) Remove the 6 screws to open the X310.
- 5) Remove the 4 cables from the mainboard. The connectors have no sliders, just pull. Do not manipulate the Laser module (smaller board in the device) in any way! The Laser optics may become de-adjusted.
- 6) Remove the solder from the two large oval holes holding the battery contacts. Use solder wick or another desoldering tool.



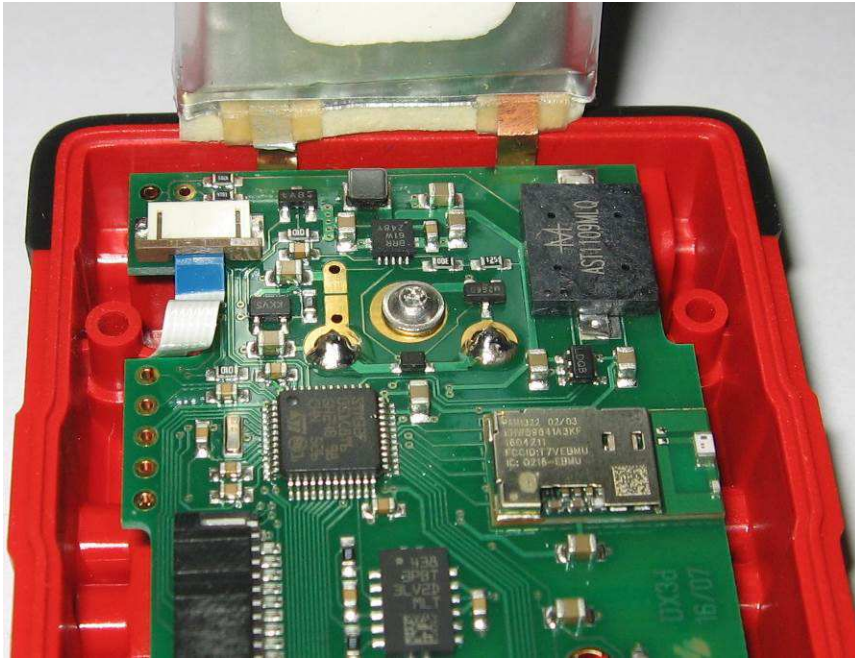


- 7) Remove the mainboard screw and the whole board.
- 8) If you like to remove the endpiece it is now time to do it. The two parts of the axis are glued to the case on the inner side below the main board. If the glue is damaged during removal you have to replace it to keep the device water proof. If you like to keep the endpiece you should remove the magnet contained in it (see 1) ).

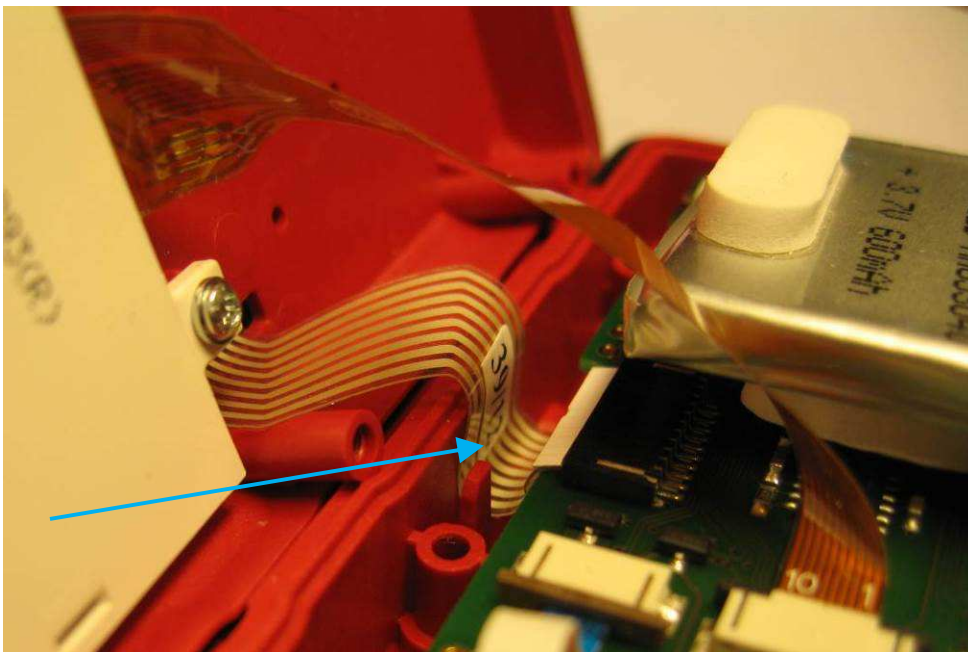


- 9) Mount the replacement board, fix it with the corresponding inox replacement screw, and solder the battery contacts.





- 10) Connect the sensor and Laser module cables. The corresponding connectors have sliders which must be pulled out and bend up.
- 11) Replace the two LCD display screws by the provided inox equivalents.
- 12) Insert the keypad cable (no slider).
- 13) Insert the LCD cable. Pull the slider, insert the cable above the slider, and use a small flat screwdriver to push the slider back under the cable.  
Remark: Some people find it easier to mount these cables before installing the board.



- 14) Close the case. Make sure the keypad cable is placed sideways below the board. Take care of the correct placement of the rubber seal.
- 15) Use the provided inox replacement screws, keep the original washers in place.
- 16) To get a charge connector, solder the USB connector breakout board to the battery contacts in the battery case. Directly solder the 5V pad to the + contact and GND to -. Do not connect D+, D-, and ID. You may use the provided pin header to enhance the mechanical stability. Alternatively, alligator clips or a similar connection method may be used to feed the 5V charging power to the contacts.



- 17) Remove the unused battery contacts at the other end of the battery case.

**The device must be calibrated before first use!**

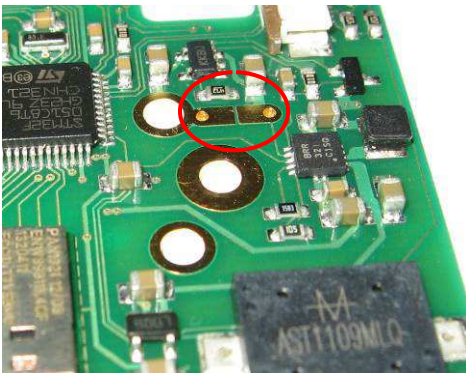
**Be aware that the device still contains some ferromagnetic material. These parts can become magnetized when the device is placed near a magnet, for instance when the Disto is stored next to a drilling machine. This has a severe effect on the precision of the measurements.**

## Appendix: Using the Device with AAA Batteries

Using Alkaline or Lithium primary batteries is not recommended because they largely influence the compass. You have to calibrate the device at least after each battery change.

If you like to build a device powered from non-rechargeable AAA batteries anyway, follow the instructions in this document with the following exceptions:

- Do not connect a rechargeable battery to the board.
- Instead, short the contacts shown below with a solder drop.



- After assembly, add fresh batteries to the battery compartment.
- Change the setting of the battery chemistry as follows:
  - Press DIST to switch on the device.
  - Press CLR to stop the Laser.
  - Press FUNC to display the battery information.
  - Press the FUNC and SMART keys for 5 seconds.The battery type display in the third line changes from “LI” (LiPo) to “AL” (Alkaline).  
“AL” must be used for all kind of AAA batteries including Lithium primary cells.

### Important:

If you later replace the AAA batteries by a rechargeable LiPo, make sure to reset the battery configuration and to remove the solder bridge.

**The LiPo battery may explode when charged with the bridge in place!**