



# Gamma Scout Geiger Counter Battery Replacement

This guide shows you step by step how to replace the internal lithium battery of your Gamma Scout geiger counter.

Written By: Bela Sajgo



# INTRODUCTION

The Gamma Scout geiger counters are one of the most known geiger counters in Europe. These geiger counters are made in Germany. They have a built in long lasting (up to 10 years) lithium battery. Because of the extremely low power consumption of the device (10 microamps), the battery has to be soldered directly onto the PCB. This guide shows you step by step how to replace the internal lithium battery of your Gamma Scout geiger counter (applicable only for the non-rechargeable models).

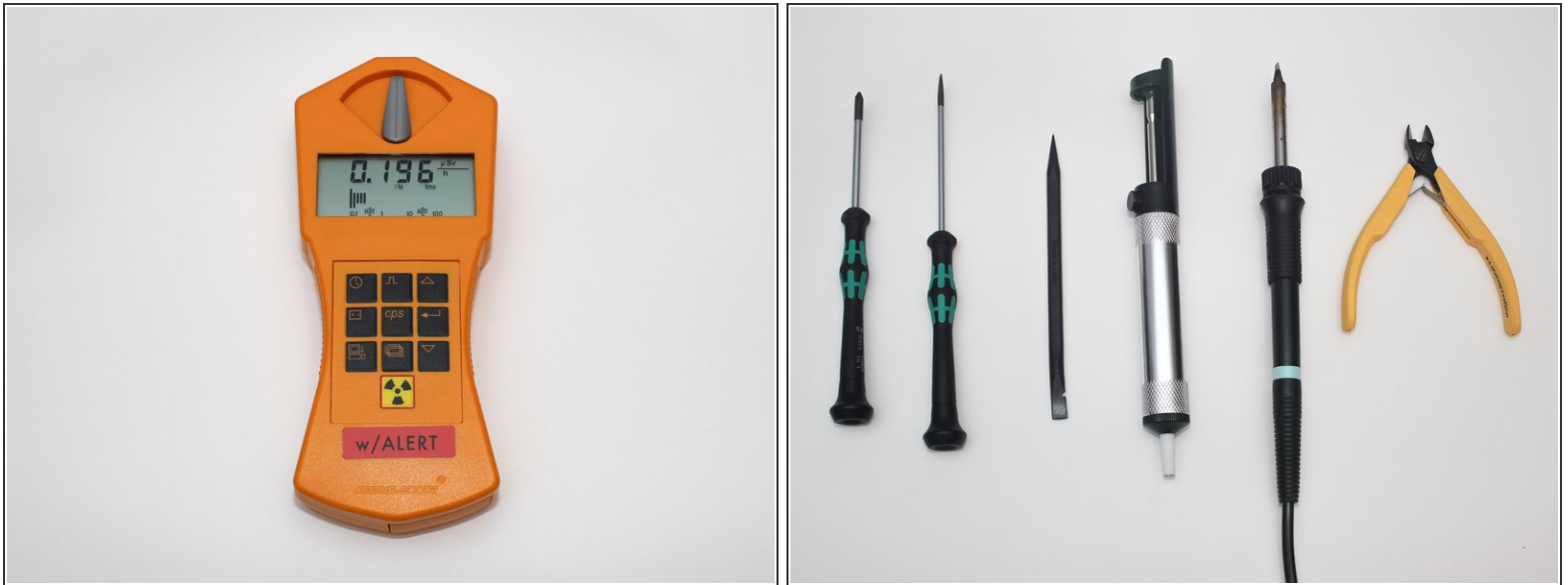
## TOOLS:

- [Phillips #1 Screwdriver](#) (1)
- [Spudger](#) (1)
- [Desoldering Pump](#) (1)
- [Soldering Iron](#) (1)
- [Flush Wire Cutters](#) (1)
- [Solder](#) (1)

## PARTS:

- [3.6V 2400mAh AA Lithium Battery](#) (1)  
[XL-060F](#)
- [Small Cable Tie](#) (1)

## Step 1 — Preparation



- Prepare your Gamma Scout geiger counter for the battery replacement.
- If your geiger counter is in a holster, remove the holster from the geiger counter.
- Prepare the necessary tools: a Phillips #1 screwdriver, a thin flathead screwdriver or a plastic spudger, a desoldering pump, a soldering station or a soldering iron, a wire cutter.

## Step 2 — Removing the USB port cover



- Locate the cover of the USB port on the bottom side of the geiger counter.
- Remove the USB port cover using a thin flathead screwdriver or using a spudger.

### Step 3 — Locating the screws



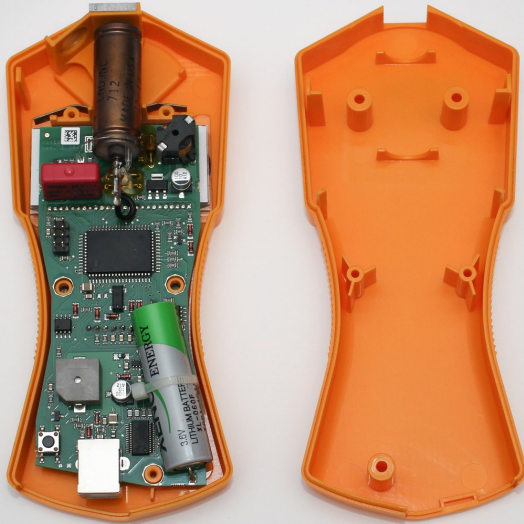
- Locate the three screws on the back side of your device.
- Notice that two of your screws are covered by the serial number sticker.
- You either have to partially lift up this sticker to get access to the screws, or you can choose to cut two round holes into the sticker.

### Step 4 — Removing the screws



- Remove the three screws using a Phillips #1 screwdriver.

## Step 5 — Opening the case

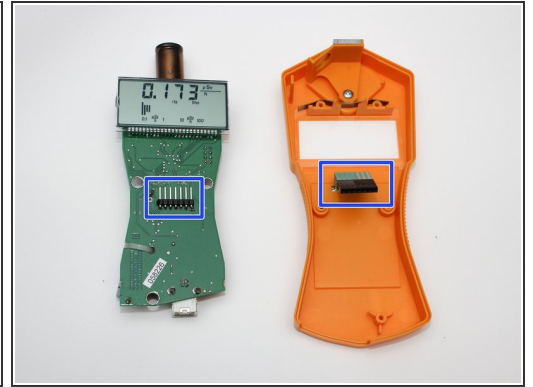
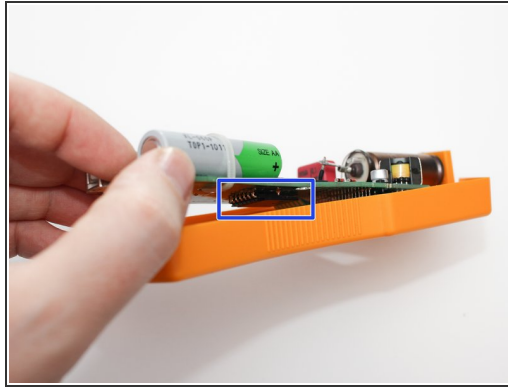
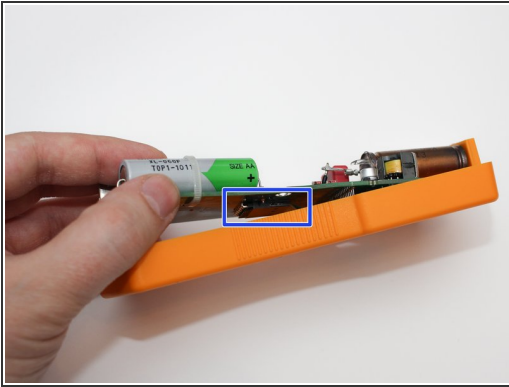


- After you have removed all the three screws, the case should easily come apart.
- For this step you will not need any tools, because the front and back parts of the case will get apart easily.
- Notice that the PCB will remain attached to the front side of the case, so it is recommended to lift up the back side of the case while holding the device upside-down.

**⚠ Make sure not to touch the upper part of the PCB or the geiger tube, because these parts of the device are under high voltage.**

**⚠ Be careful not to hit or touch the front end window of the geiger tube, because it is made out of a very thin and very fragile material.**

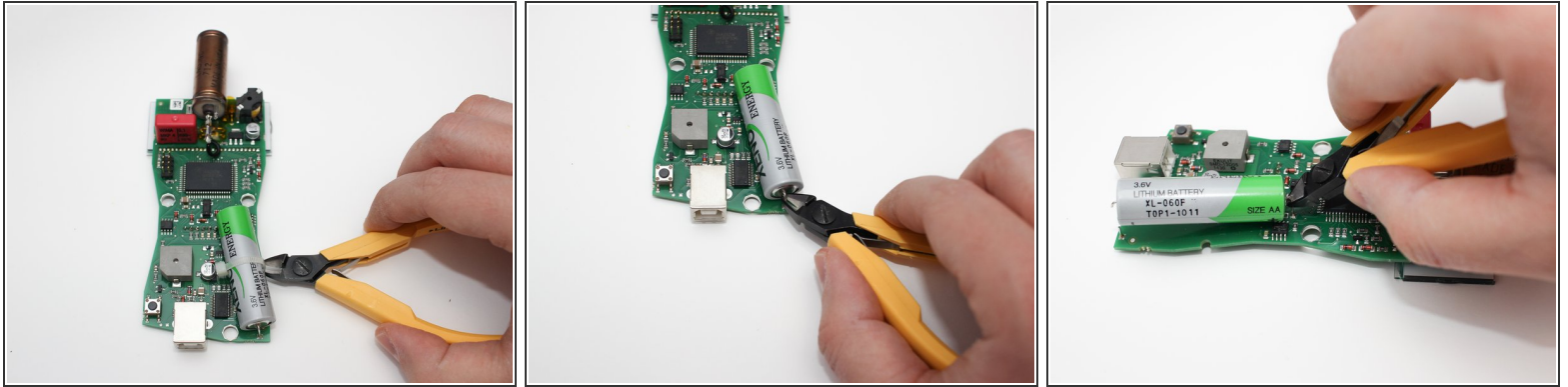
## Step 6 — Disconnecting the keyboard



- To be able to remove the PCB from the case, you will need to disconnect the flat-flex cable that goes to the keys located at the front side of the device.
- For this step you will need a spudger or a pair of nonconducting pliers, to push off or to pull down the connector from the pin header.
- **This step requires some force to remove the connector from the pin header, but be careful not to tear apart or rip off the connector from the flat-flex cable.**
- **If you decide to use a pair of pliers for this step, make sure it is made out of plastic or some other non-conducting material, because it will touch the PCB and it could create a short-circuit.**

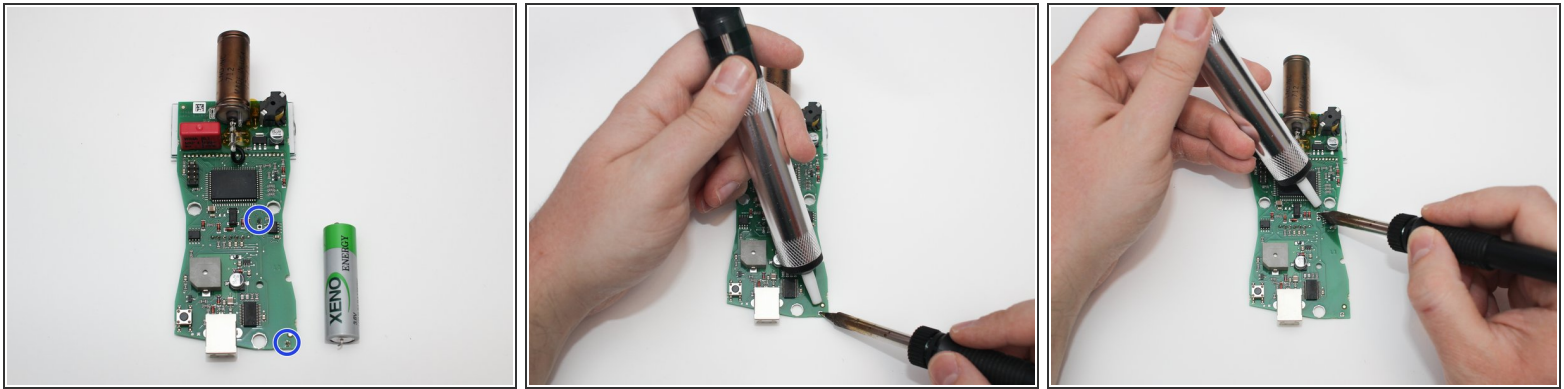


## Step 7 — Removing the old battery



- After you successfully removed the PCB from the case, the next step is to cut the cable tie that is holding the old lithium battery onto the PCB using a wire cutter.
  - Next you will have to remove the lithium battery from the PCB, by cutting its two terminals that are soldered onto the PCB, with a wire cutter.
  - As an alternative, you also can directly desolder the lithium battery, without cutting its terminals.
- ⚠ Make sure not to touch the upper part of the PCB or the geiger tube, because these parts of the device are under high voltage, until the battery is removed.**

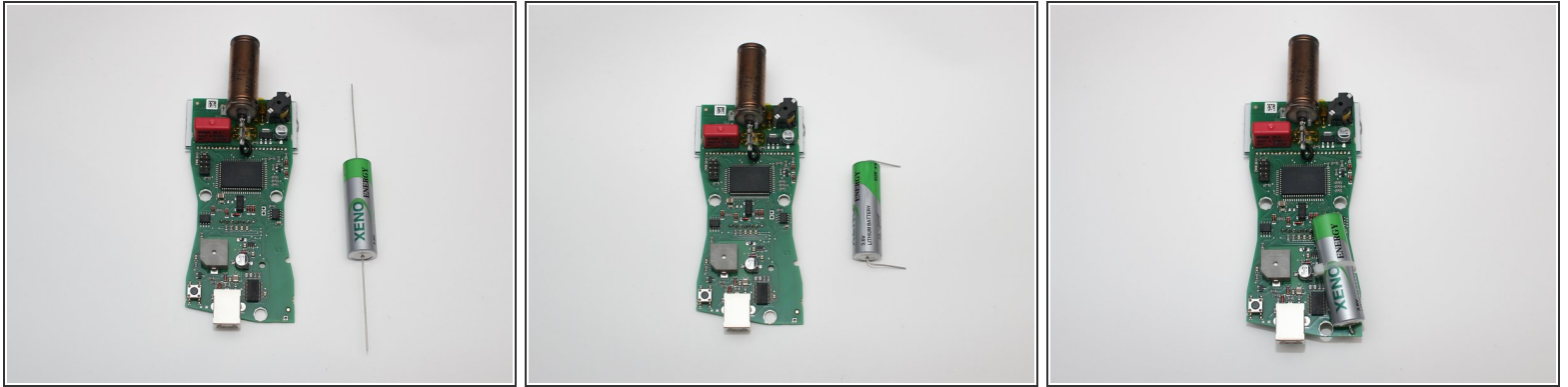
## Step 8 — Cleaning the solder joints



- Now that the battery is removed, you have to desolder the remaining parts of the battery terminals.
- After that, you have to clean the solder joints where the two terminals of the battery were soldered onto.
- For cleaning the solder joints and to remove the remaining solder, you can use a desoldering pump or a solder wick.
- If you have excess flux residue on the PCB, you can clean it with isopropyl alcohol.

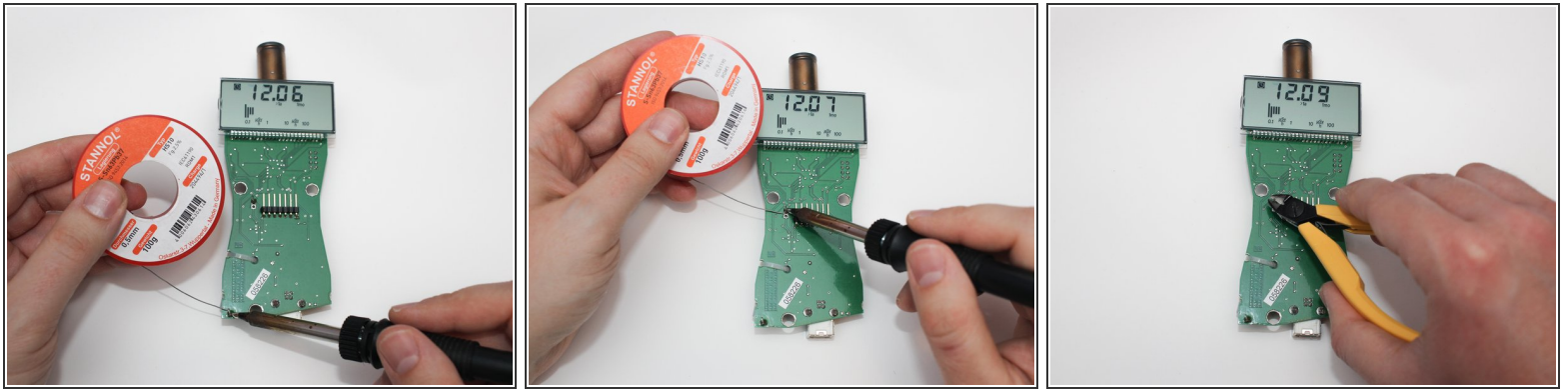


## Step 9 — Installing the new battery



- Now that your solder joints are clean, prepare the new battery by bending its terminals into the desired form.
- You can also cut down the excess part of the battery terminals to make the insertion easier, but do not cut them too short.
- After you inserted the battery terminals through the holes of the PCB (observe correct polarity), secure the new battery onto the PCB with a new cable tie.

## Step 10 — Soldering the battery to the PCB

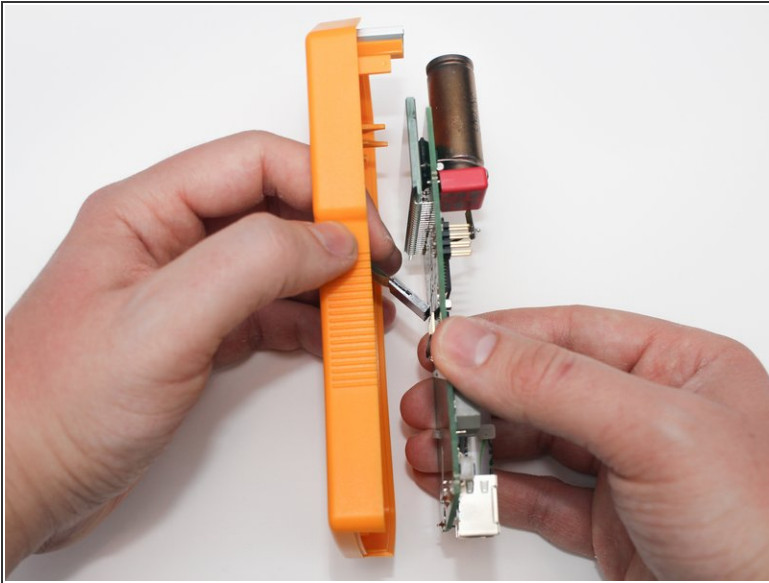


- Now that your battery is secured onto the PCB with the cable tie, turn the PCB over and start soldering the battery terminals onto the PCB.
- After the solder joints have cooled down, cut down the excess part of the battery terminals with a wire cutter.

**⚠ Be careful not to make a short-circuit with the wire cutter or with the terminal wire that will fall off after it will be cut down.**

**⚠ Make sure not to touch the upper part of the PCB or the geiger tube, because these parts of the device are under high voltage.**

## Step 11 — Installing the PCB back into the case



- After you successfully finished the soldering part, you can start to reassemble the geiger counter.
- To facilitate the reconnection of the flat-flex cable connector to the pin header of the PCB, you can temporarily remove the front glass protection window of the geiger counter, to be able to maneuver and push the connector onto the pin header.
- After the connector of the flat-flex cable is firmly connected to the pin header, reinsert the front glass protection window and insert the PCB into the case.

**⚠ Make sure not to touch the upper part of the PCB or the geiger tube, because these parts of the device are under high voltage.**

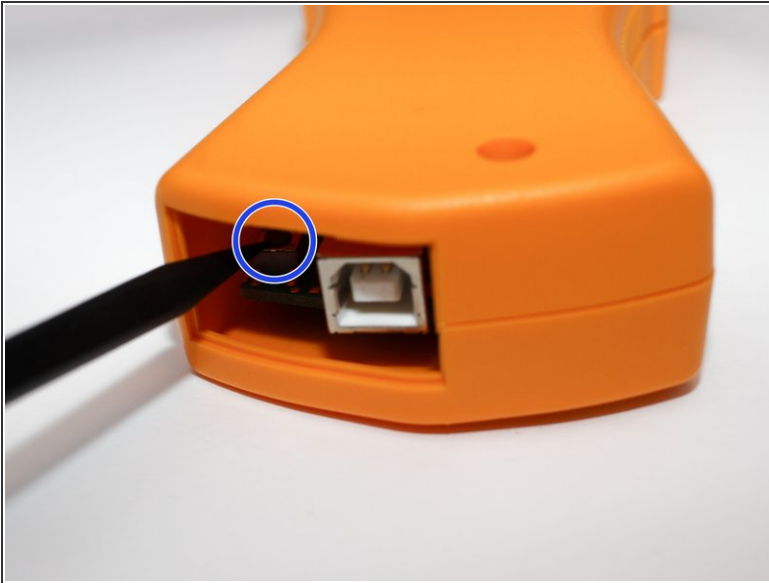
**⚠ Be careful not to hit or touch the front end window of the geiger tube, because it is made out of a very thin and very fragile material.**

## Step 12 — Reassembling the case



- After the PCB is correctly installed into the front part of the case, close the case carefully by placing the back cover onto it.
- Insert the three screws into the holes of the back case and screw them in.
- **Because the holes have no metal thread, be careful not to overtighten the screws.**

## Step 13 — Resetting the device



- After you finished the assembly of the case, look for the reset button on the PCB of the geiger counter, located near to the USB port.
- Push the reset button of the geiger counter with your finger or with a plastic spudger to reset your device to the factory defaults (this step is necessary after battery replacement).
- Reinsert the USB port cover into the bottom side of the geiger counter.
- After you set the date and time and configure the datalogging settings, your device is fully functional.
- Check the battery voltage on the screen of your device.
- **Because geiger counters are test equipments, after a battery replacement you should check the correct function of the device and you should also check the accuracy of the device with a known test source.**