



Nest Temperature Sensor Teardown

Looking inside this tiny temperature sensor

Written By: Forest



 **TOOLS:**

- T7 Torx Screwdriver (1)

Step 1 — Nest Temperature Sensor Teardown



- Nest Temperature Sensor is a complementary device for the Nest Thermostat E or 3rd gen. It is created to help customers measure the temperature exactly where needed and control the thermostat accordingly
- *(i) photo credit: John Miller/CNET*
- Positioned as a premium device, this Sensor is made from quality soft-touch plastic and comes in a decent box
- The Sensor uses a single CR2 battery (included)
- Diameter: 50mm, height: 22mm

Step 2 — Opening the box



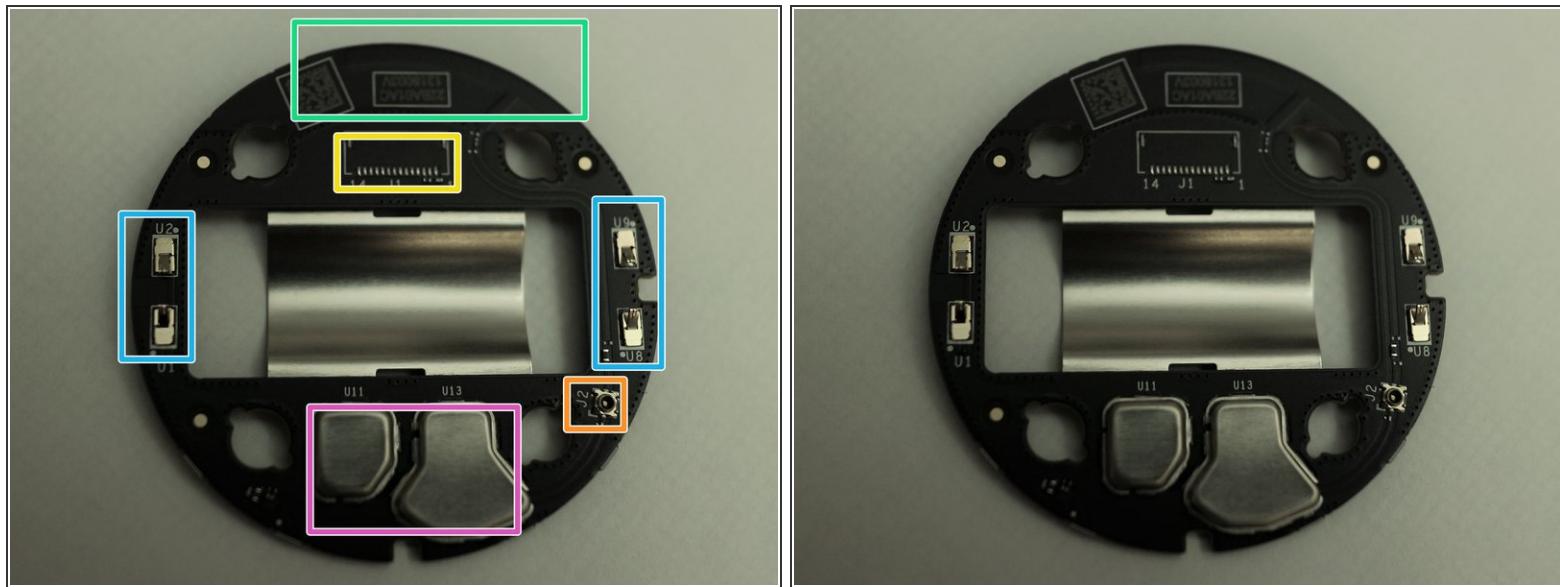
- The back of the Sensor has a simple screw, which gives us access to the battery

Step 3 — Removing the screws



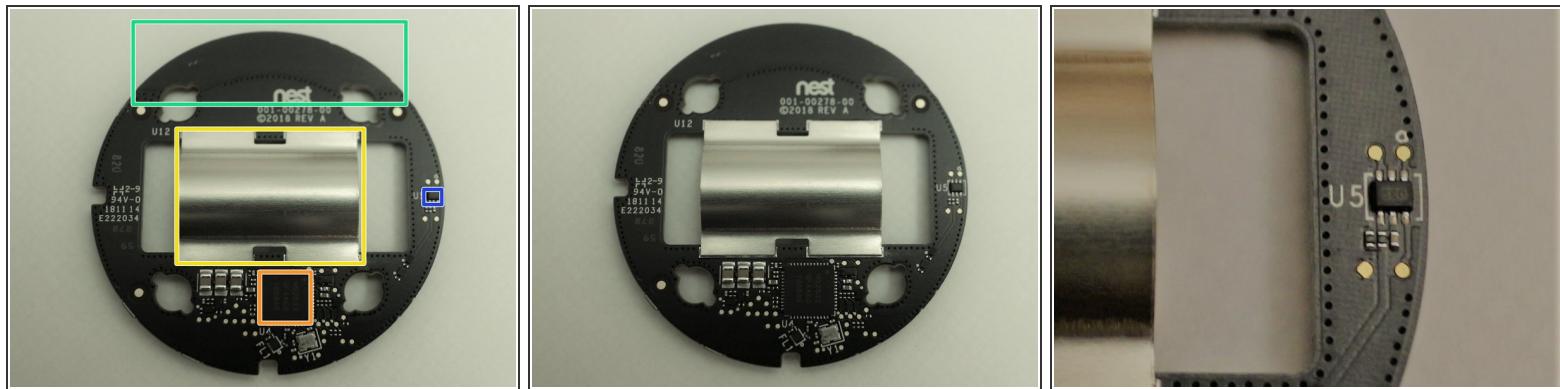
- Removing 4 Torx T7 screws - and here it is - the PCB!
- The inner side of the battery holder has 2 contacts on it's sides

Step 4 — Looking closely at the PCB



- On The front we can spot
 - Bluetooth antenna (on the board)
 - Battery connectors
 - Murata 2x2mm RF switch connector, that can be used for RF testing
- U11, U13 - probably some chips behind the shield, which is (unfortunately) firmly soldered. My guess: one of them is ultra-low power microcontroller and the other one is taking care of power delivery to the board
- J1 - place for debug connector (empty in production)

Step 5 — The other side of the PCB



- On the other side
 - This clear place on the PCB is for the antenna on the other side
 - [nRF52832](#) BLE chip (maintains the only wireless connection of this device)
 - This is a tiny temperature sensor (not sure which one exactly)
 - The metal connector is a smart way to reinforce this tiny PCB
- The sensor is on the edge, but still inside plastic case, and has no thermal channel to the outside (no vents or compound) - this fact rises a huge concern about the speed of the measurements
- No temperature + humidity combo here, as seen in the Thermostats... really, Nest?! I mean, for \$40 I had higher expectations..
- That's it. Thanks for reading! Post comments if you have any questions or suggestions