

Remote Temperature Monitoring: Basic Troubleshooting



Reset the CT5

RESET is used in following situations:

1. After replacing the sensor(s)
2. This is the primary step in clearing any sort of errors on the display of the CT5 – e.g. SD card error.

Steps:

Use a pin to push the RESET button or the power switch.



Restore Factory Settings on the CT5

Restore the factory settings on the CT5 when:

- A new SIM card is being added or replacing an old one.
- Secondary attempt at clearing errors e.g. SD card error, if primary RESET did not work.

Steps:

- Ensure the SD card and SIM card are properly inserted into the CT5.
- Switch OFF the CT5. Hold the function button down while switching ON the CT5.
- Continue holding the function button until the display screen shows 'Service Mode.'
- Let go of the function button.
- CT5 will show 'Buzzer test'. Press the stop alarm button.
- RESET when normal screen is restored.

Note: *Restoring Factory Settings clears all configuration from the CT5. E.g. alarm settings, phone number etc. Go on dashboard after you change the SIM cards and send configuration settings again to the CT5.*

Remote Temperature Monitoring: Advanced Troubleshooting



Possible Issues with CT5

- **Issue 1:** Display screen is blank (back light off)
- **Issue 2:** Display screen is blank (back light on)
- **Issue 3:** Data not uploading to Nexleaf dashboard
- **Issue 4:** CT5 display shows 'reg denied'
- **Issue 5:** Display is blank but data is uploaded to dashboard
- **Issue 6:** Display shows 'SD Card Failure/Error'
- **Issue 7:** Device alerts
- **Issue 8**
 - **8a:** Abnormal temperature reading on one or all of the sensors
 - **8b:** One or more temperature reading not displayed
 - **8c:** Sensor Replacement (step 1-5)
- **Issue 9:** Battery Replacement (step 1-9)
- **SOPs**

Issue 1:
Display screen is blank
(back light off)



Power Supply (1/3)

Analysis

- CT5 is not getting power.

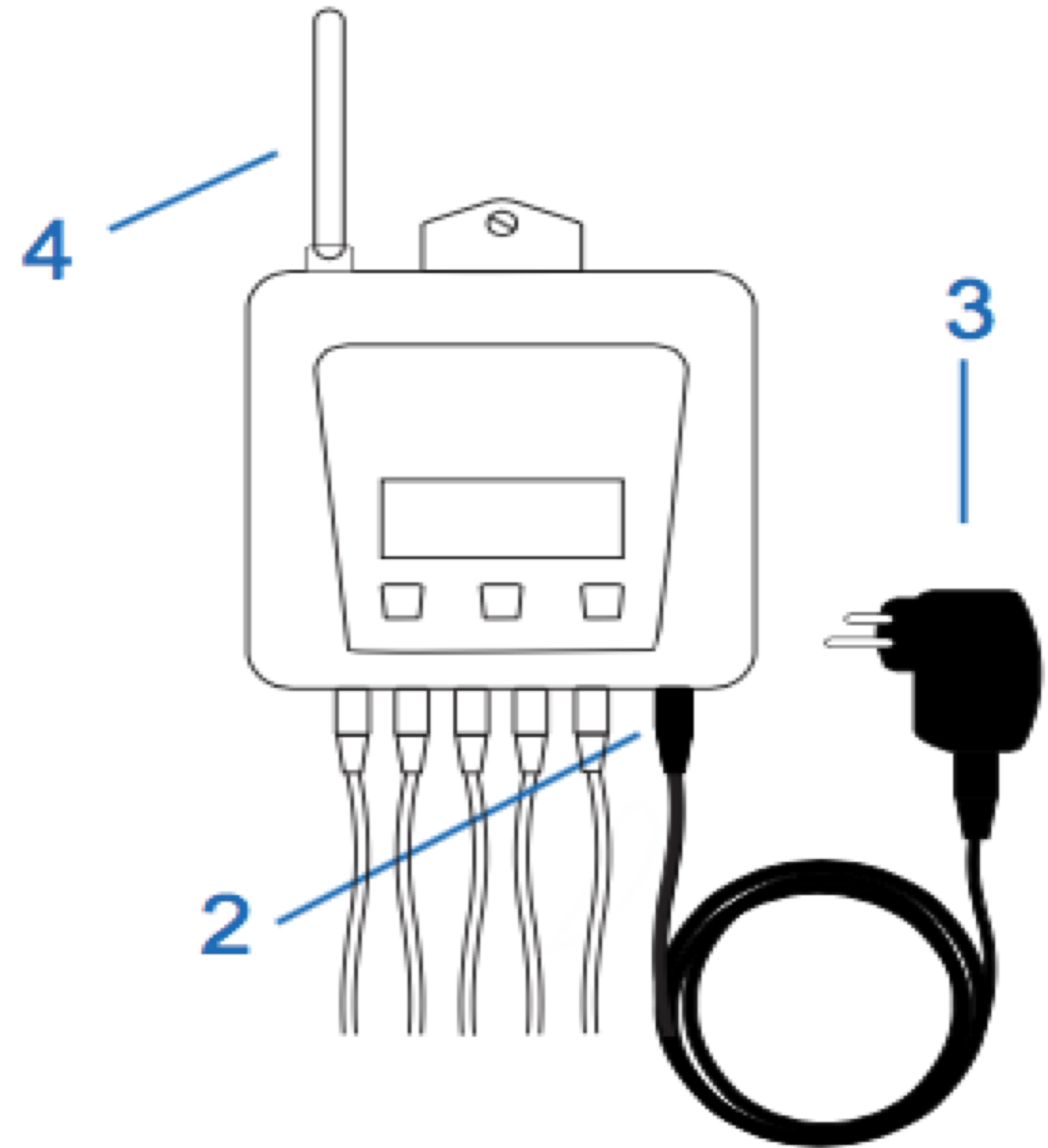
Verify

- Power adaptor is well connected to the CT5.
- Power adapter is plugged in the stabilizer correctly.
- Check if voltage stabilizer is working.
- Make sure the plug point is working. Plug in a phone charger or any other electronic device into the plug point to see if its working.
- Replace CT5 charger with android phone charger to check if CT5 is getting charged.
- Dust off / clean CT5 if dusty and/or dirty.

Charger (2/3)

How to check if the charger is faulty?

1. An android phone charger can be used in place of the device charger to check if the charger is faulty or not.
2. If the charger is not working, then contact your RTM Deployment Advisor
3. You will receive a spare charger.
4. Replace the faulty charger with the new.
5. Use the cycle display button to cycle through the displays. The screen after showing sensor D's temperature will show either the words 'charging' or 'Power Out'.



Charger (3/3)

Corrective action required:

- Repair power source,
- Order spare charger for CT5, or
- Send CT5 for repair if the problem is with CT5 charger port.

NOTE: *If the problem was with the power source and it has been rectified, CT5 will require 10 minutes to recharge before it starts working again.*

Issue 2: Display screen is blank (back light on)



LCD (1/2)

Analysis

- LCD display is not working

Action

- Reset the CT5 by taking a push pin and holding the RESET button on the side of the CT5 down for a few seconds.



LCD (2/2)

Analysis

- LCD display is not working

Verify

Check power supply

- Power adaptor is well connected to the CT5.
- Power adapter is plugged in the stabilizer securely.
- Check if voltage stabilizer is working.
- Check the plug point is working by plugging in a phone charger or any other electronic device.
- Replace CT5 charger with android phone charger to check if CT5 is getting charged.

Issue 3: Data not uploading to Nexleaf dashboard



Power Supply (1/5)

Analysis

- CT5 is out of charge

Verify

Check power supply

- Power adaptor is well connected to the CT5.
- Power adapter is plugged in the stabilizer securely.
- Check if voltage stabilizer is working.
- Check the plug point is working by plugging in a phone charger or any other electronic device.
- Replace CT5 charger with android phone charger to check if CT5 is getting charged.

Reset (2/5)

Analysis

- Any error on screen, e.g. 'SD card error' etc.

Action

- Reset the CT5 by taking a push pin and holding the RESET button on the side of the CT5 down for a few seconds.



How to Restore Factory Settings (3/5)

1. Ensure the SD card and SIM card are properly inserted into the device
2. Switch OFF the device and press the function button down
3. While holding the function button, switch ON the device.
4. Continue holding the function button till the display screen shows 'Service Mode'
5. Release the function button.
6. CT5 will show 'Buzzer test'. Press the stop alarm button.
7. RESET when normal screen is restored.

This is used in following situations:

A. Replace or add a SIM card

B. Secondary attempt at clearing errors e.g. SD card error, if primary RESET has not worked.

NOTE: Restoring Factory Settings clears all configuration from the dashboard. E.g. alarm settings, phone number etc. Go onto ColdTrace dashboard after SIM card is changed and send configuration settings again to the device.

Network and Data Services (4/5)

Analysis

- Network and data service issues

Verify

- Check CT5 display for current date & time
- If date & time is normal, switch off the device and remove the SIM
- Insert SIM in primary slot in mobile phone
- Check browser by opening Nexleaf dashboard site.
- If website does not open replace SIM
- Insert SIM and switch on CT5
- Restore Factory Settings after new SIM is inserted in the CT5.

Resolution (5/5)

Corrective action required:

- If problem was with CT5 charger, then change the charger.
- If SIM card was not working, replace SIM.

Push configuration settings on CT5 from Nexleaf dashboard after the SIM is replaced. Please see the dashboard guide for more information.

Issue 4: CT5 Display Shows 'reg denied'



Reset (1/3)

Analysis

- Data services on SIM not available

Action

- Reset the CT5 by taking a push pin and holding the RESET button on the side of the CT5 down for a few seconds.



Network and SIM Card (2/3)

Analysis

- Check network percentage and SIM card

Verify

- Check CT5 display for current date & time
- If date & time is normal, switch off the device and remove the SIM
- Insert SIM in primary slot in mobile phone
- Check browser by opening Nexleaf dashboard site.
- Check that the SIM card is not dusty/dirty and clean if need be.
- If website does not open replace SIM
- Insert SIM and switch on CT5
- Restore Factory Settings after new SIM is inserted in the CT5.

Resolution (3/3)

Corrective action required:

- Insert new SIM in SIM slot 1.
- Restore Factory Settings after new SIM is inserted in the CT5.
- Push configuration settings on CT5 from Nexleaf dashboard after SIM is replaced.

Issue 5: Display is blank but data is uploaded to dashboard

Analysis

- CT5 software or hardware issue

Action

- Reset the CT5 by taking a push pin and holding the RESET button on the side of the CT5 down for a few seconds. If the display returns to normal then this was a software issue. If issue persists after RESET, contact Nexleaf.



Issue 6: Display shows 'SD Card Failure/Error'

Analysis

- SD card not inserted firmly in slot

Verify

- Insert SD card securely in SD card slot.

Action

- Switch OFF CT5, remove SD card from the slot, re-insert SD card. Ensure click sound was there to confirm correct insertion.
- Switch ON CT5 and RESET.

Issue 7: Device Alerts



No Alerts (1/3)

- Verify through Nexleaf dashboard that the correct phone numbers are registered to receive alerts from the device.
- If phone numbers have been added, click on 'send config by GPRS'.
- The device is on and sampling temperature data. This can be verified by looking at the display and pressing the center button to cycle through all sensor readings.
 - If the device has no power, please see section on 'charger'.
- Check the signal strength of the SIM (press the center button).
 - If the SIM shows G 20% or any lower number, the connectivity may not be good enough to send an SMS.
- Check the SIM is active:
 - Dust off/clean if dirty
 - Open the back cover, switch OFF CT5, take out the SIM and insert it in another phone to check
 - Check if bill has been paid for the SIM card

Connectivity (2/3)

The SIM card can show connectivity, i.e. there can be a number % in front of G but the data and SMS service may be de-activated if bill has not been paid.

To check this:

1. Switch OFF the device and take out the SIM card by pushing it and pulling it out of SIM slot 1.
2. Insert SIM in a phone, test the browser and send an SMS to check these services.

NOTE: Check browser with a website other than google. You can try to log onto the dashboard.

SD Card 3/3

NONE !!

If the device display shows 'SD card failure', contact your RTM Deployment Advisor for device replacement.

Please **DO NOT** remove the SD card. Each SD card is pre-loaded with encrypted software and is useless in any other device.

Issue 8: Sensors



Issue 8a: Abnormal temperature reading on one or all of the sensors

Analysis

- Sensor cable is improperly connected to the CT5.

Action

- The sensor cable(s) is/are well connected to the CT5 and the sensor probe is secured on the wall of the CCE by the clips and NOT getting pressed by the baskets, etc.
- Unplug a sensor that shows correct temperature and the suspected faulty sensor.
- Plug the working sensor into the port of the faulty sensor.
- The function button will force the CT5 to update the temperature readings. Press the function button and wait 1 minute.
- Cycle through the display and check if the faulty sensor now shows correct temperature. (If the device shows transmitting wait until you see the time to press the function button.)

Issue 8a cont.: Abnormal temperature reading on one or all of the sensors

Analysis

- Sensor cable or sensor probe is damaged

Action

- Inspect the sensor cable and sensor probe to make sure there are no cuts or damage of any kind. If found damaged or broken, raise a ticket.
- Unplug a sensor that shows correct temperature and the suspected faulty sensor.
- Plug the working sensor into the port of the faulty sensor.
- The function button will force the CT5 to update the temperature readings. Press the function button and wait 1 minute.
- Cycle through the display and check if the faulty sensor now shows correct temperature. (If the device shows transmitting wait until you see the time to press the function button.)

Issue 8a cont.: Abnormal temperature reading on one or all of the sensors

Corrective action required:

- If it shows correct temperature, sensor needs to be replaced.
- If it continues to show incorrect temperature reading then CT5 needs to be replaced.

NOTE: *All sensors do not need replacing if a single sensor is showing abnormal temperature (e.g. $56^{\circ} C$ or $-56^{\circ} C$). If all the sensors are showing abnormal temperature then order a spare and then perform the steps above.*

Issue 8b: One or more temperature reading not displayed

Analysis

- Ensure that the sensor is connected properly to the CT5 and is not damaged in any way

Verify

- The sensor cables are securely inserted into the CT5.
- Take the sensor that shows correct temperature reading and plug it in the port of the sensor which has no reading. The function button will force the CT5 to update the temperature readings. Press the function button and wait 1 minute.
- Cycle through the display and check if the faulty sensor now shows correct temperature. (If the device shows transmitting, wait until you see the time to press the function button.)

Issue 8b cont.: One or more temperature readings not displayed

Corrective action required:

- If it shows correct temperature, sensor needs to be replaced.
- If it continues to show incorrect temperature reading, then CT5 needs to be repaired.

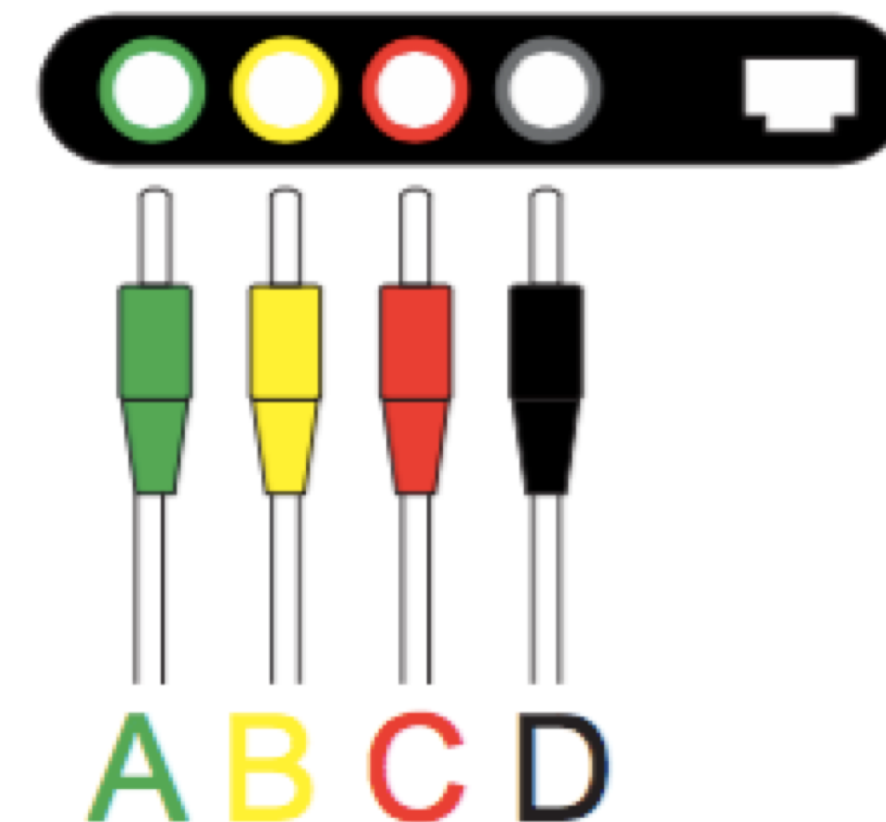
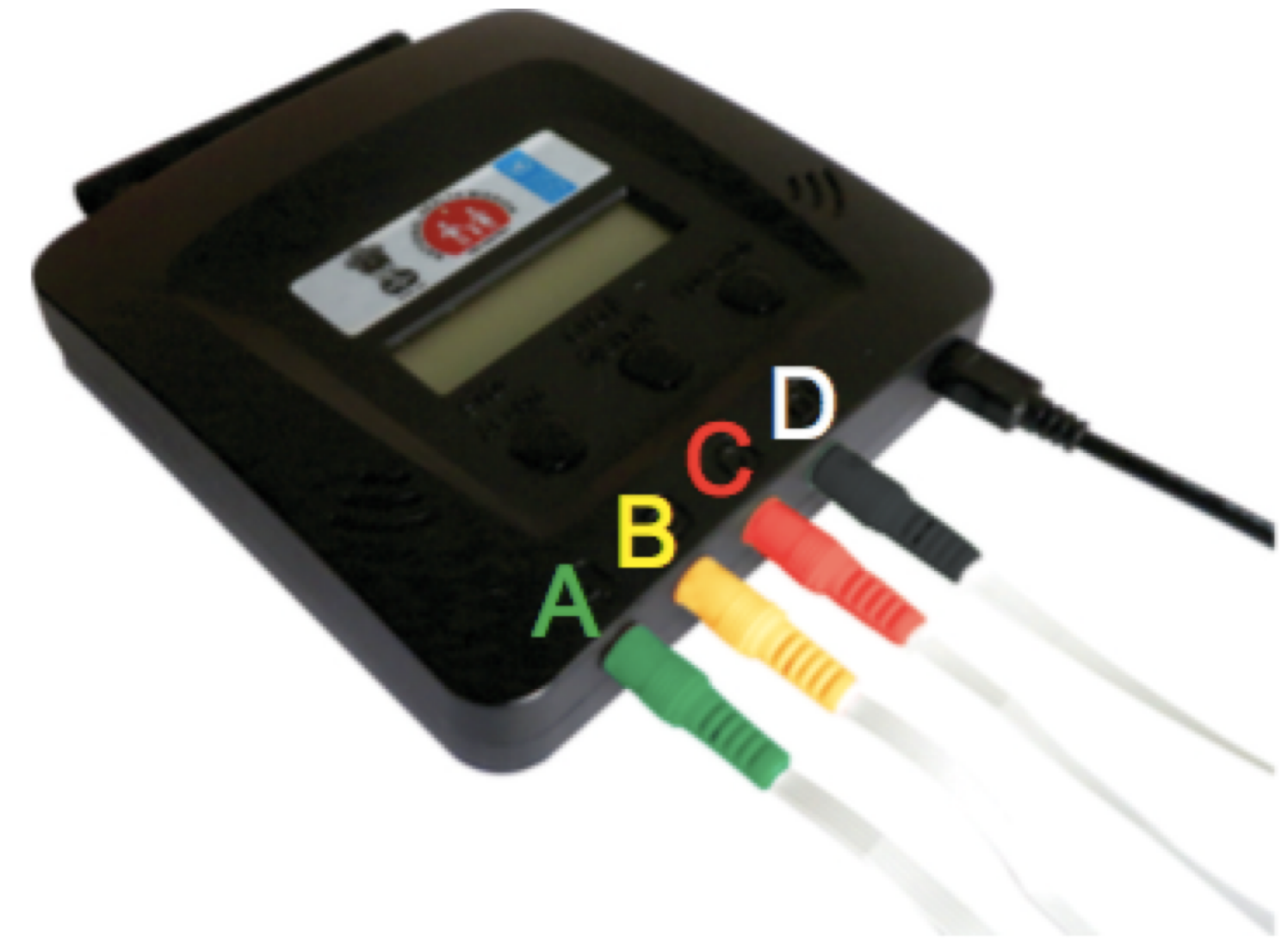
Issue 8c: Sensor Replacement

After ordering the spare sensors from Nexleaf,
please follow the steps listed for sensor
replacement.



Sensor Replacement

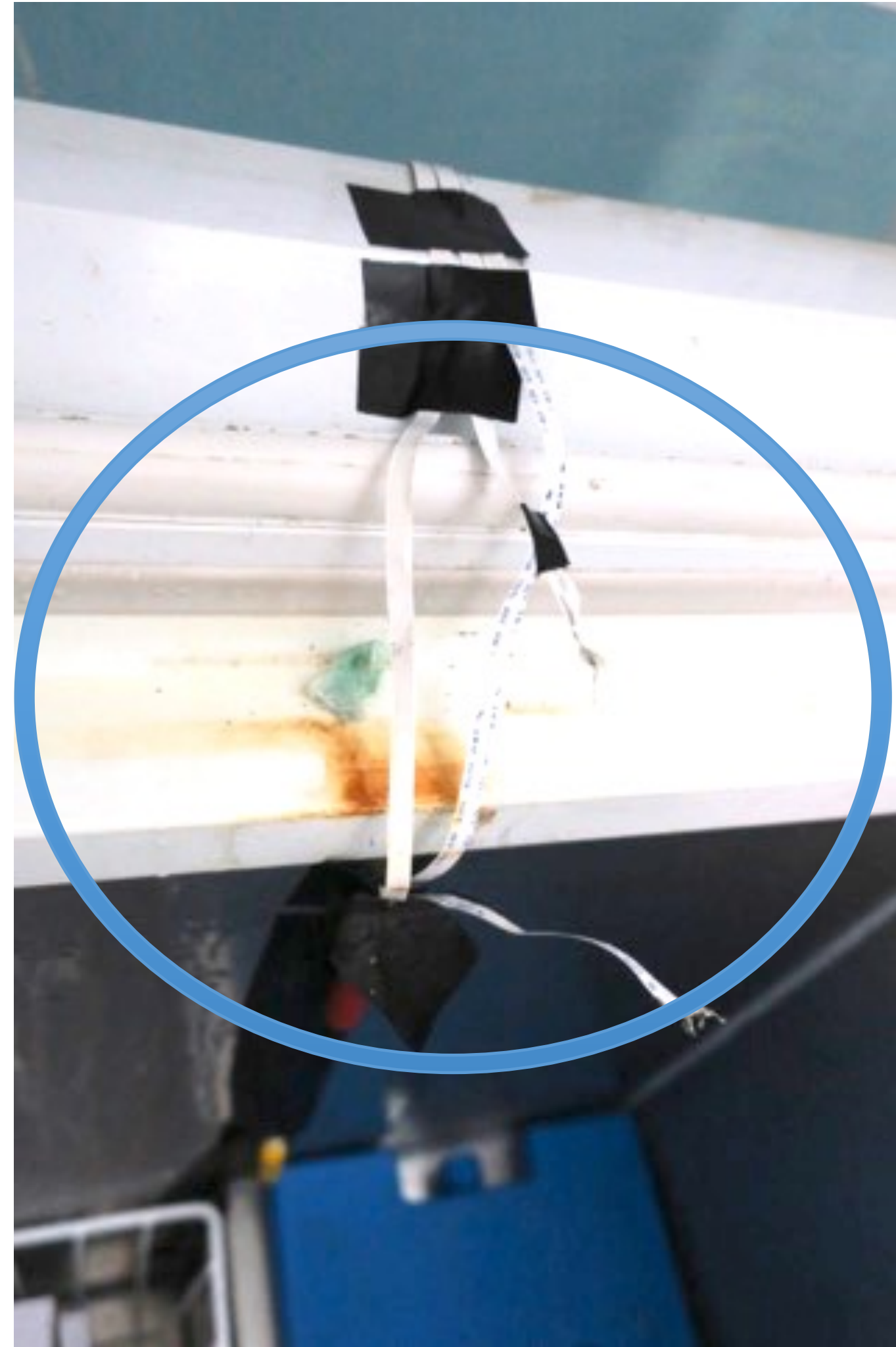
1. Locate SENSOR CABLES. Look at the SENSOR PORTS on the device.
2. Match each SENSOR CABLE to the SENSOR PORT of the same color if SENSOR CALBE has colored plastic strip around it.



Sensor Replacement (1/5)

- Identify and unplug the damaged or broken sensor cable from the CT5.

In this example, it's the middle (B/yellow) sensor



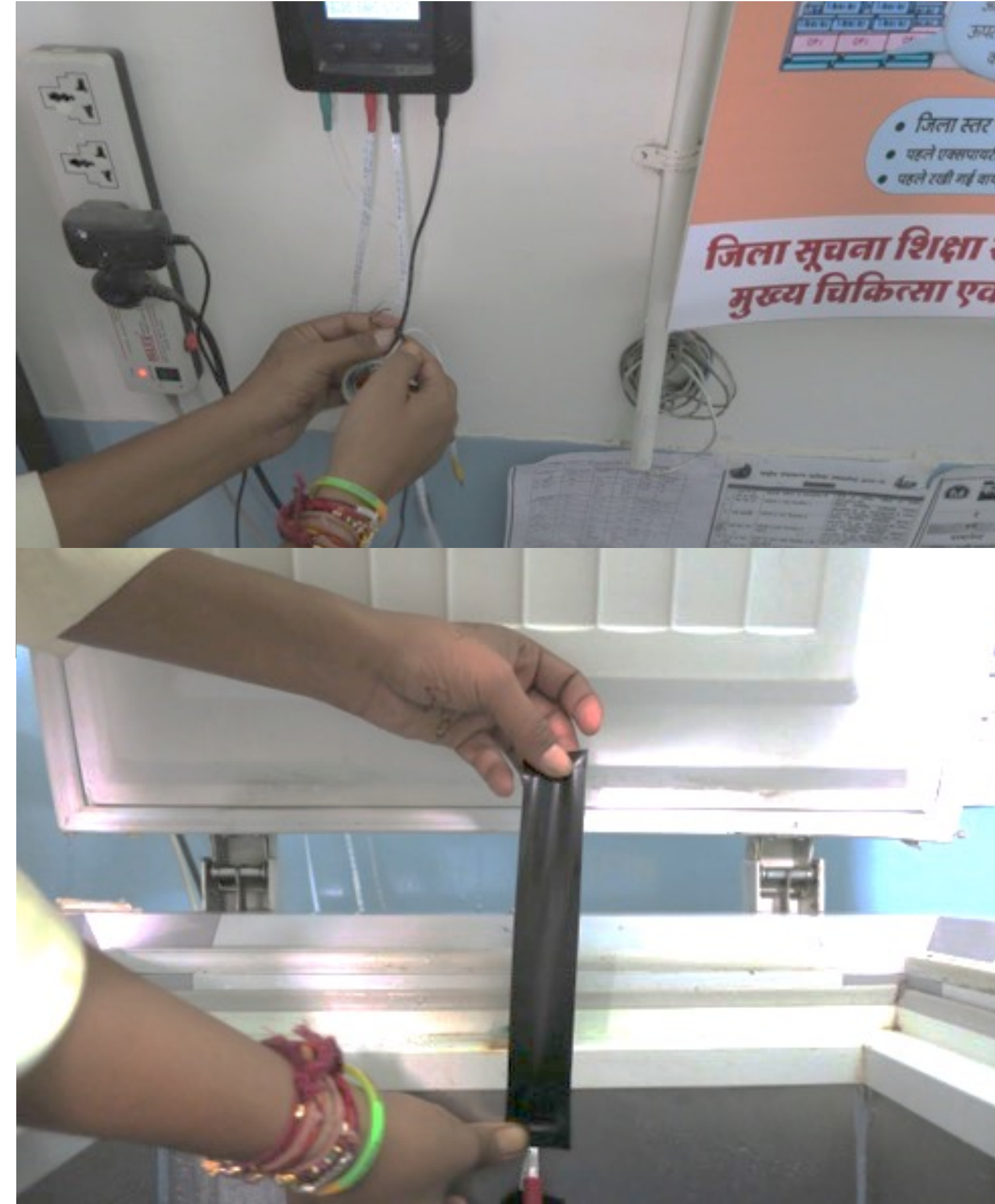
Sensor Replacement (2/5)

- Plug in the new sensor without unwinding the cable.
- Press the function button for new readings to confirm 'new sensor' is working.



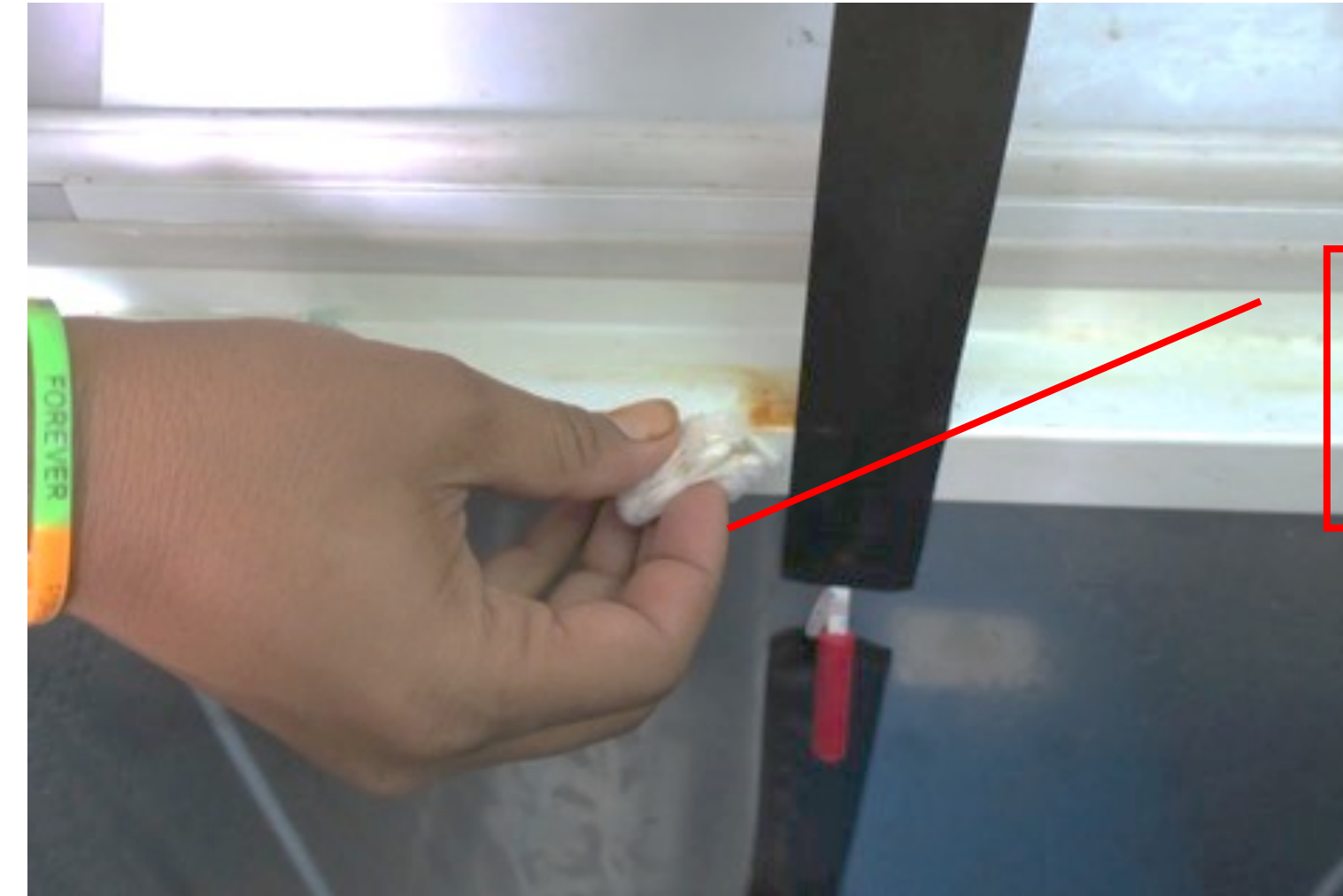
Sensor Replacement (3/5)

- Take out the damaged/ broken sensor cable both from the temp CT5 and the CCE by removing the black tape.
- Open the clip and remove the sensor cable.



Sensor Replacement (4/5)

- Put the new sensor cable at the correct position inside the CCE, securing with clip and tape.
- Ensure that the CCE surface is dry before putting the tape and clip by wiping it with cloth/cotton.



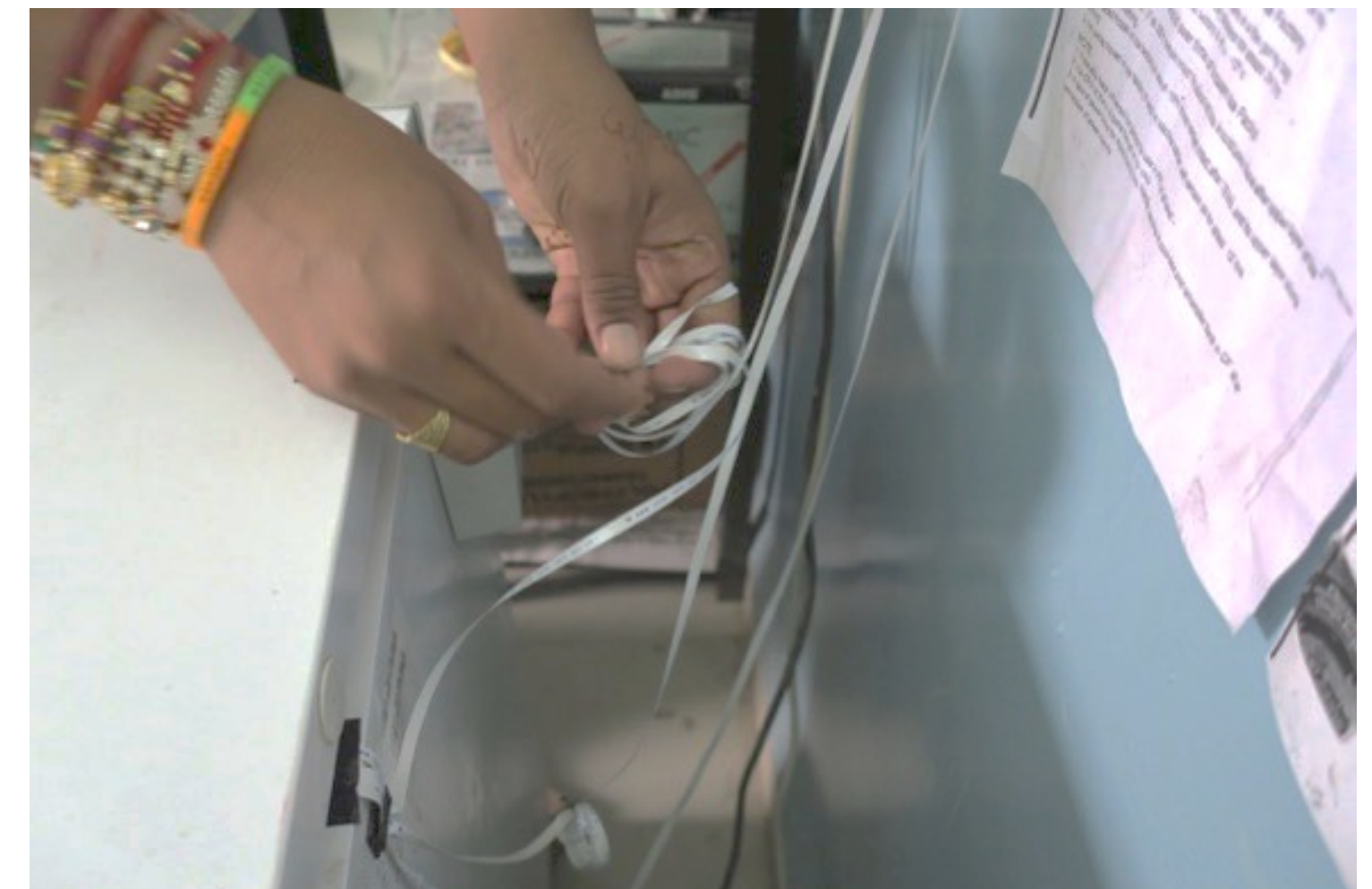
Dry the surface of the CCE thoroughly before putting clip or tape.

Suggestion: Ensure that the clip is little away from the probe. (see pic of red sensor) let it dangle a little bit to avoid putting pressure so close to the probe.



Sensor Replacement (5/5)

- Reset the device using a pin.
- Confirm all temperature readings by cycling through the display.
- Wind up & tie the additional sensor cable behind the CCE.



Issue 9: Battery Replacement



Battery Replacement (1/9)

- Remove the back screws of the back panel using the special triangle screwdriver.



Battery Replacement (2/9)

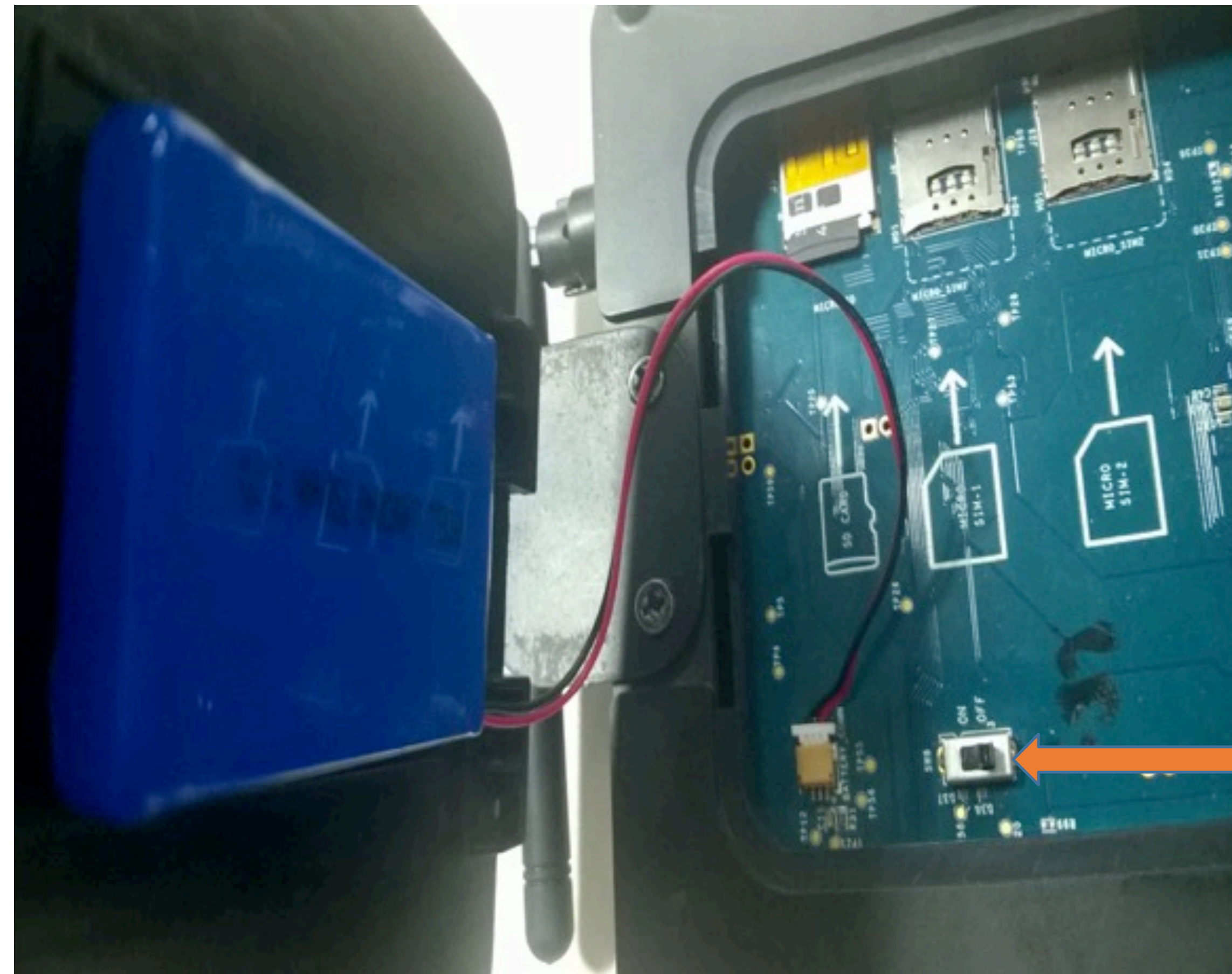
- Gently open the back panel away from the case without pulling it.



Battery Replacement (3/9)

- Turn the power switch OFF.

The Screen Display should not be lit up.



**Switch
OFF**

Battery Replacement (4/9)

- To disconnect the old battery, press gently on the batter connector and pull the wire away from the battery plug.

Gently pull it out.



Battery Replacement: Step 5

- Use a flat tool to help pry the battery off of the back panel.
- Be careful not to bend or break the back panel.



Battery Replacement (6/9)

- The new battery comes with double sided tape already attached to it. Peel off the backing from the tape and reattach to the battery panel.
- When sticking the NEW battery on the back panel, ensure its in the same orientation or else the wire can fall short or get pulled at.



Battery Replacement (7/9)

- Using the correct orientation of the plug, gently push the battery connector of the new battery back into the battery plug.



Gently push it inside.

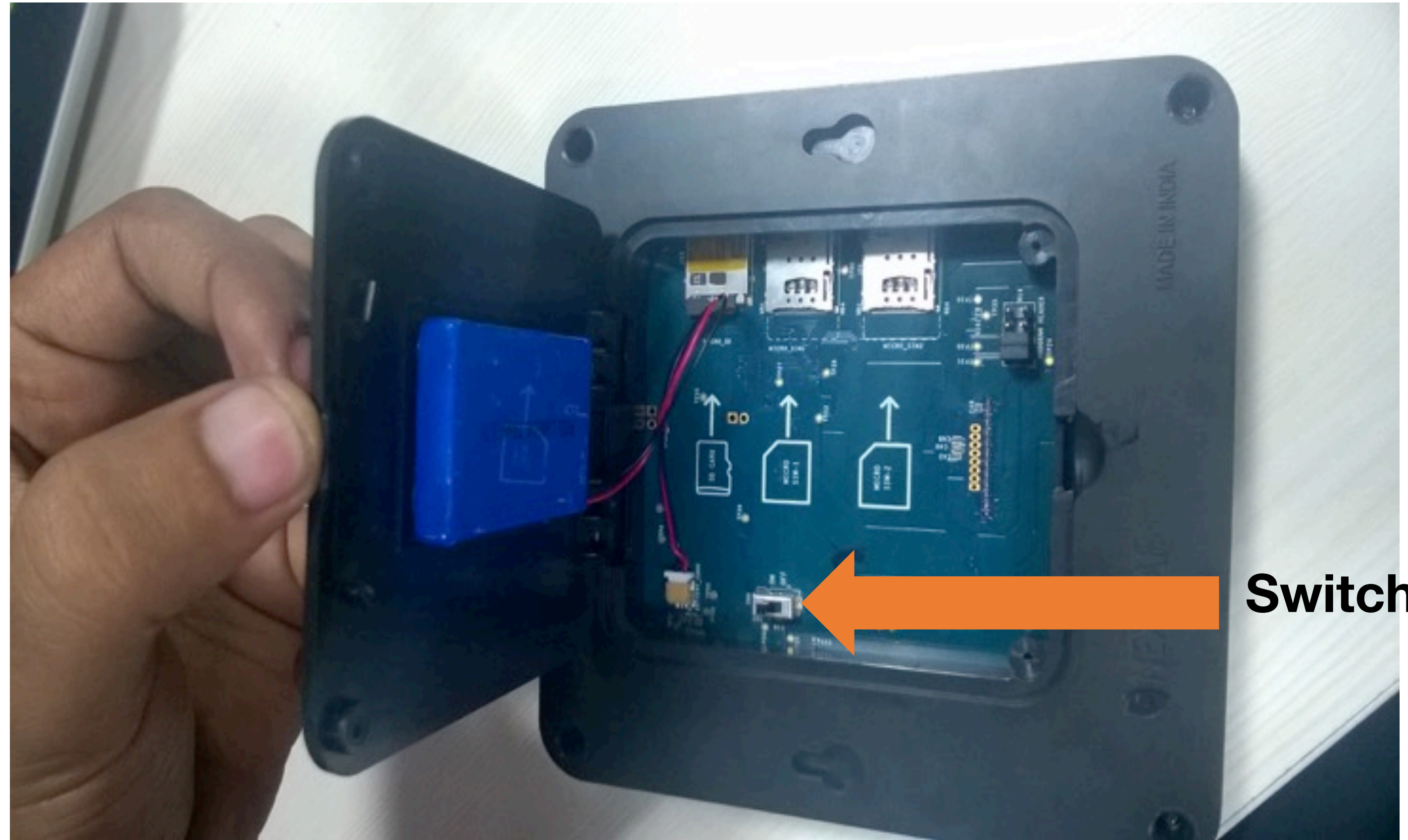


The battery is now connected to the plug and the back cover.

Battery Replacement (8/9)

- Turn the power switch back ON.

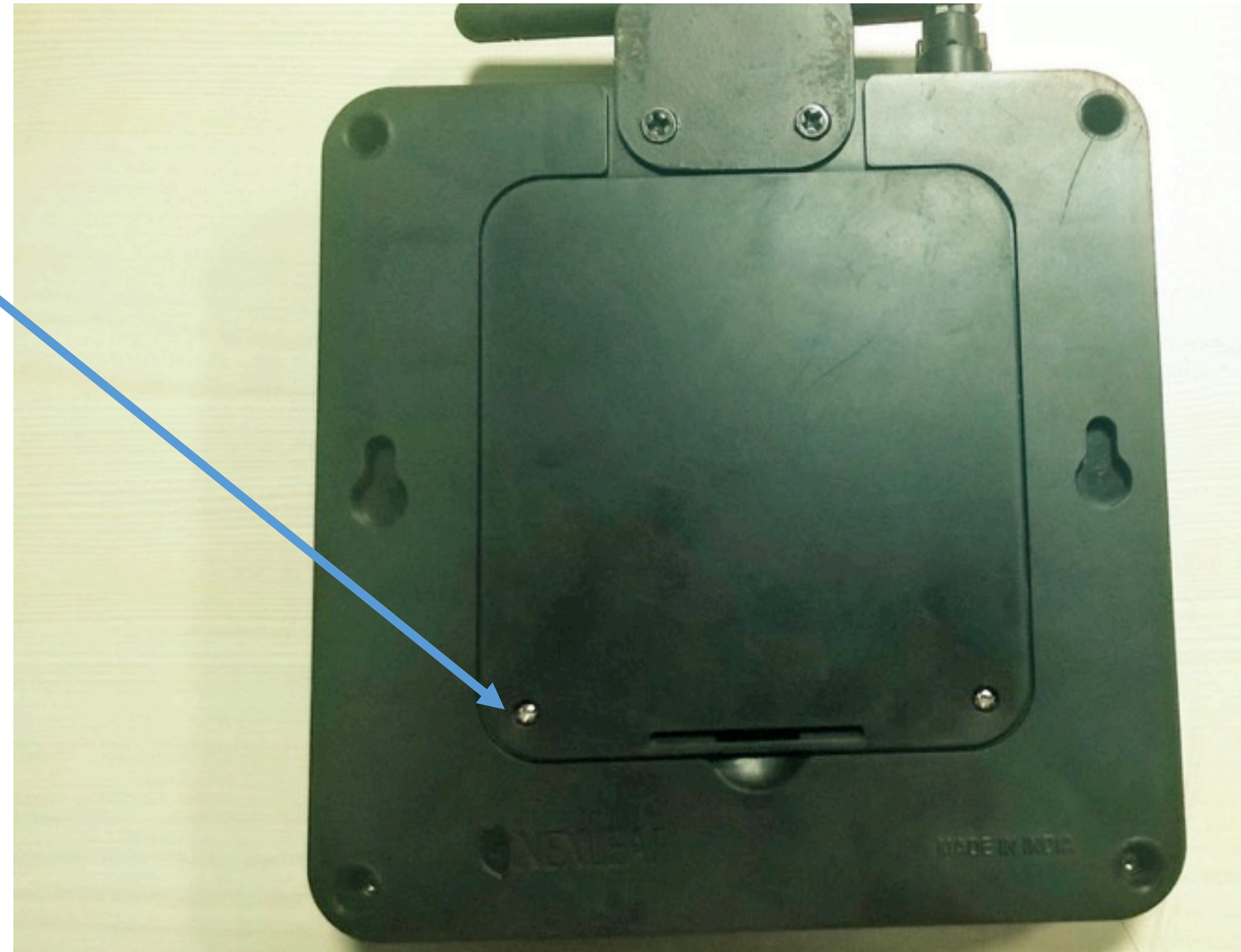
The Screen Display should be lit up.



Battery Replacement (9/9)

- Use the special screwdriver to close the back panel.
- This is the last step. Please connect the sensors and place the CT5 back on the wall.

NOTE: *New battery will require 15 minutes of power before the CT5 light comes on.*



SOPs

- SOPs should be laminated and given to each HF personnel on the day of training.
- The nurses should be trained on how to respond to SMS alerts by following their SOPs.
- Best to hang the SOPs on the wall next to the fridge.
- Managers should also have SOPs if applicable so they know how to respond to escalated alarms and how and when to engage the technicians.

Thank You!

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