iFIXIT

Recalibrating laptop batteries

If your laptop's battery is near the end of its life, recalibration will correct the capacity so you know the current state of your battery.

Written By: Nick

BatteryInfoView	
File Edit View Options Help	
Description	**Value**
Battery Name	DELL 3VJJC56
Manufacture Name	Samsung SDI
Serial Number	37822
Manufacture Date	
Power State	Discharging
Current Capacity (in %)	99.3%
Current Capacity Value	20,024 mWh
Full Charged Capacity	20,169 mWh
Designed Capacity	65,490 mWh
Battery Wear Level	30.8%
Voltage	12,060 millivolts
Charge/Discharge Rate	-21,789 milliwatts
Chemistry	Lithium Ion
Low Battery Capacity (1)	1,976 mWh
Low Battery Capacity (2)	6,549 mWh
Critical Bias	
Number of charge/discharge cycles	0
Battery Temperature	
Remaining battery time for the current activity (Estimated)	
Full battery time for the current activity (Estimated)	
Remaining time for charging the battery (Estimated)	

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INTRODUCTION

If your laptop battery is inaccurately reporting its capacity or is older, it may be possible to recalibrate the battery to extend its life.

For help understanding what calibration is, why it's important, and how to calibrate batteries in other types of devices, check out the [Battery Calibration Wiki.](#)

Important: Battery recalibration does not save worn out batteries. This will correct the reported capacity and may extend it's runtime temporarily, but will not recover the pack.

Guide notes

- *If your battery exceeds 30-40 °C (86-104 °F), REPLACE THE BATTERY!*
- *If your battery is older, consider a ~10% discharge. These batteries may be damaged from a full discharge.*
- *In most cases, you will see a capacity decrease. This is good, not bad.*
- *Avoid using your laptop while it is charging. This may affect calibration accuracy.*
- If your laptop does not allow you to use it when the battery drops to a certain percentage, you will need to use a workaround. ***Workarounds for UEFI/Legacy BIOSes are provided.***

How to recalibrate the battery

- Charge the laptop to 100%.
- Use the laptop until it reports a 0% capacity and shuts down
    - See ***BIOS lockouts (known)*** for HP and Lenovo laptops.
- Immediately recharge the battery to recalibrate. Do not use the laptop.

BIOS lockouts (known)

- ***HP laptops have a 15% BIOS lockout and need to be bypassed*** to do a full discharge. Immediately charge the battery once the laptop shuts off.
    - ***This always happens with HP laptops unless it is bypassed.***
- Some Lenovo laptops have a 7% critical capacity lockout (0190).
    - ***This only occurs if the laptop shuts off early.***

🔧 **TOOLS:**
- [IR Thermometer](#) (1)

Optional; Useful to check the battery temperature.

⚙️ **PARTS:**
- [Replacement laptop battery](#) (1)

*Used to replace a failed or unreliable battery.*

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Step 1 — Log the original BMS data

⚠️ *This battery is too far gone for realibration.*

⚠️ *Each operating system will have a different battery discharge procedure.*

● Before recalibrating the battery, charge the battery to 100%. Take a note of the initial data.

Step 2 — Use your laptop
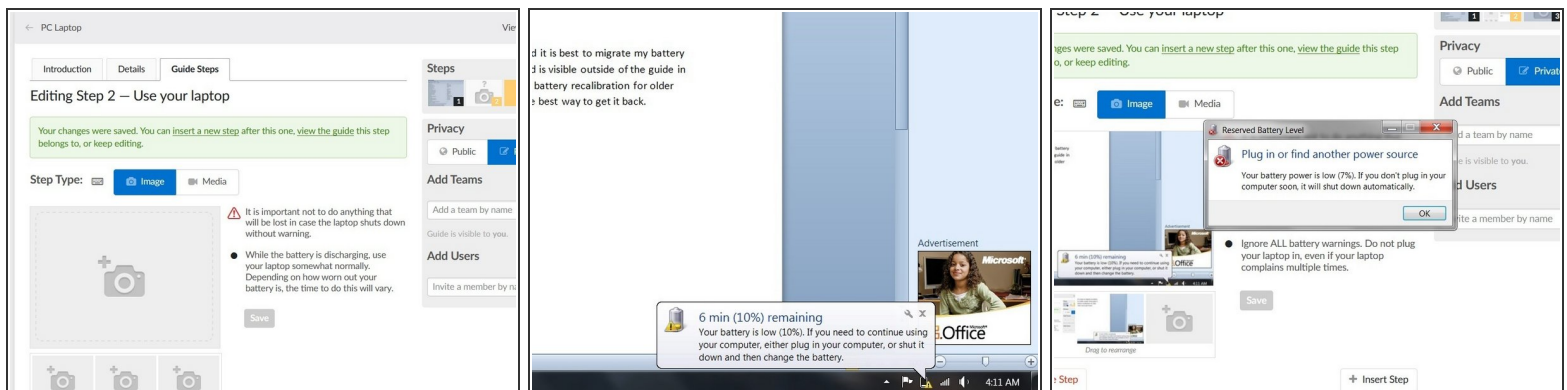
⚠️ *Do not do anything with irreplaceable data; this will be lost. Only plug the laptop in to start it from a BIOS lockout.*

● Use your laptop while it is discharging. Do this until the computer shuts down.

Step 3 — Plug your laptop in

⚠️ *While it is safe to use your laptop, the calibration accuracy may be affected.*

- *Every laptop has a different charge indicator.* When your laptop is fully discharged, plug it in *immediately.* Fully charge the laptop.
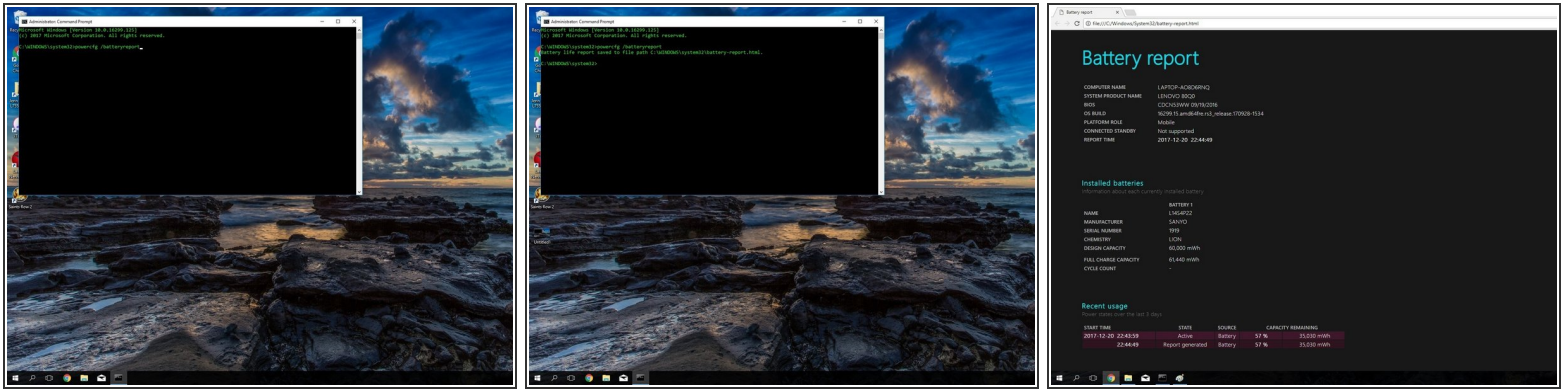
Step 4 — Post calibration results verification

⚠️ *This procedure may damage a near end of life battery.*

- Once you are finished, check the BMS data. The reported data should be corrected.
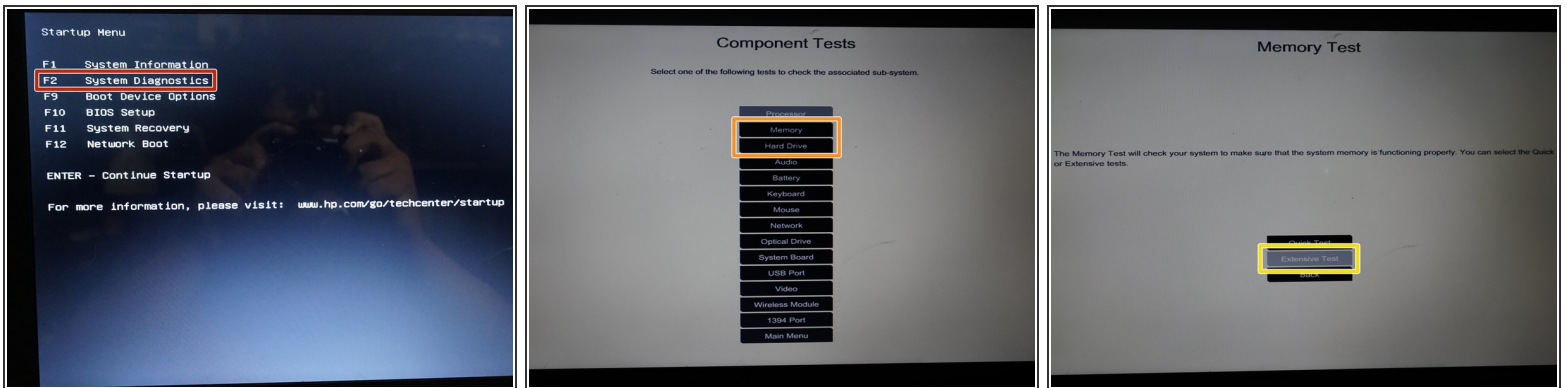
Step 5 — Battery health check (Windows 10)

⚠️ *Replace the battery if the capacity is inconsistent.*

● Run Command Prompt as an administrator. Enter this command: ***powercfg/batteryreport.***

● When the report is ready, you will receive a message stating where it is located. Check the data for consistency.

Step 6 — (UEFI BIOS) HP 15% lockout bypass

⚠️ *This will fully discharge the battery. The HP diagnostics do not check the battery charge.*

● Plug the laptop in and turn it on; unplug it once it is on. Press ***ESC*** and select ***System Diagnostics***.

● Open the ***Component tests*** submenu. Select ***Memory or Hard Drive***.

● Select ***Extensive test***. Choose ***Loop until error***.

● ***When the laptop shuts off, immediately recharge the battery.***

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Step 7 — (Legacy BIOS) HP 15% lockout bypass
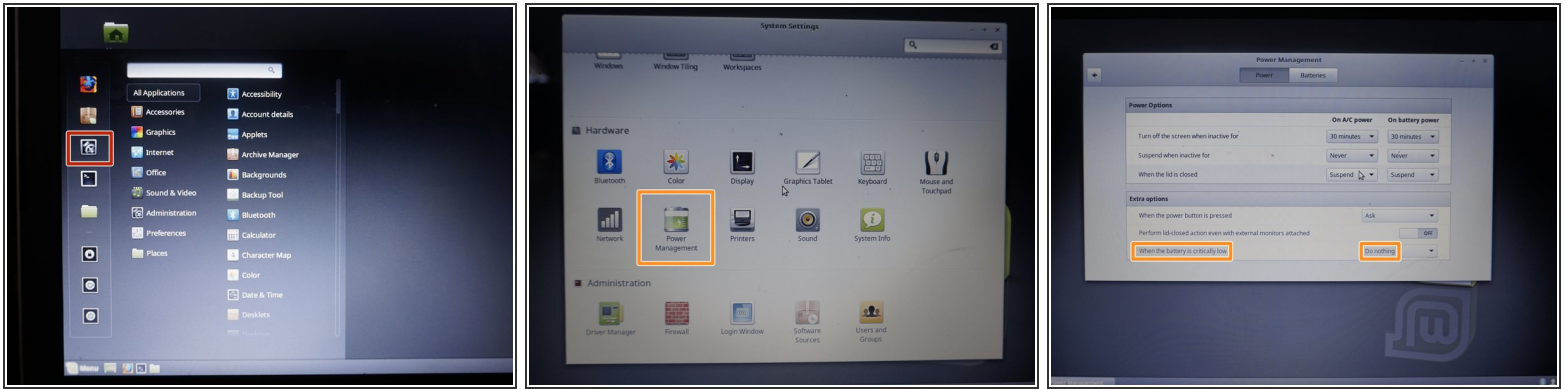
⚠️ *DO NOT apply these settings to your primary OS. They may damage your battery.*

- Boot the laptop into a live [Linux Mint Cinnamon](#) session. Open *'Settings* and make the following changes:
  - Open **Power Management**. Change **When the battery is critically low** to **Do nothing.**
- Use the laptop until it shuts down. **Everything from this session will be lost.**

Step 8 — (Error 0190) Lenovo critical low battery bypass

- Plug the power adapter into your laptop. **POST must finish for the system to boot**.
  - Disconnect the laptop once the laptop is back on. Finish discharging the battery.