Log recovery

Altimeter Cloud

The Nano saves your flight log once it has landed. If it loses power, or the save goes wrong, before the log is safely on the drive, crash recovery rebuilds the flight for you at the next power-on. You don't have to do anything.

How it works

While it records, the Nano holds the full flight in its memory, ready to save after landing. At the same time it writes a backup copy into a separate area of its flash memory, outside the USB drive, so it survives a power cut, a reset or a problem with the drive.

The backup starts the moment a launch is confirmed. It includes the seconds kept from the pad, then every fifth row of the log, so a climb logged at 417 Hz is backed up at about 83 Hz. On Revision 4 and later boards it includes the motion sensor data as well as the altitude. It has room for a full-length flight.

The backup is only cleared once the log has been saved and read back successfully, so a flight is never lost to a bad save.

When it is used

- The Nano lost power, or restarted, between launch and the end of the save.
- The battery went completely flat during the flight.
- The save didn't pass its check. You won't have seen the 20 white flashes at the end.

If the flight ends normally and the log is saved and checked, the backup is cleared and there is nothing to recover. If the Nano restarted before a launch was confirmed, there is no flight to rebuild.

Recovering a flight

Switch the Nano on as normal. During start-up it finds the unsaved flight and rebuilds it:

1. The LED turns pink and shows the usual saving colours while the flight goes through the same processing as a normal save.
2. It is written as a normal flight log and flight info page, with the next flight number, and checked.
3. The backup is cleared, the LED gives 20 fast white flashes and the Nano restarts.
4. It starts up as usual and blinks the recovered flight's number and apogee.

The recovered flight is then on the drive, ready to view or upload. If a Snapshot screen is connected, the recovery waits until the next normal start.

What a recovered log looks like

A recovered log is a normal, fully valid flight log. It is signed like any other, so it still verifies as genuine on the Altimeter Cloud. The differences are:

- It is at the backup rate of every fifth row, so the trace is a little coarser in time. The apogee and the overall shape of the flight are kept.
- It covers the flight up to the moment the power was lost. If that was around apogee, you will have the climb and the peak but not the descent.
- It is marked as recovered in the log header and on its flight info page, so you can always tell it apart. The `device_startup_diagnostics.html` file also records that a recovery ran.

Red and blue alternating

This is a different situation. If the LED alternates red and blue continuously at start-up, the Nano has found a problem with its USB drive that it can't repair, and has stopped on purpose rather than risk your logs. In this state it doesn't write anything, doesn't restart and doesn't appear as a drive.

1. Read the logs off with the flash dump tool first.
2. Then hold the button for 9 seconds. The drive is formatted and the Nano restarts.

GOOD TO KNOW

The Nano checks its drive at every start-up and repairs most problems on its own from its own backups, so you should rarely, if ever, see this. If it keeps happening, please get in touch with support and attach `device_startup_diagnostics.html`.