SOLINST TECHNICAL BULLETIN
Understanding Battery Life

Levelogger Batteries

All Solinst Leveloggers use a lithium battery as their power source. Levelogger battery life estimates are based on standard operating conditions, with no external or internal interferences (i.e. under ideal conditions).

The estimates are based on a set sampling rate. For example, the Levelogger 5 has a battery life estimate of ten years, based on a sampling rate of one reading per minute.

Battery Life Estimates			
Levelogger & Barologger 5	Levelogger 5 Junior	Levelogger 5 LTC	Rainlogger 5
10 years based on 1 reading per minute	5 years based on 1 reading per minute	8 years based on 1 reading every 5 minutes	Approximately 10 years typical

A more rapid sampling rate will deplete the battery more quickly. For example, if a Levelogger 5 is set in Continuous Mode (loops and overwrites data when memory is full) at a sampling rate of 1 second, the battery will be drained in about 4 months. If a Levelogger 5 Junior is used at a sampling rate of 5 seconds, the battery will be depleted in approximately 2.5 months.

It is also important to note, in Event Based sampling, although the Levelogger may only log readings in memory when an "Event" occurs, the battery consumption is still mainly a function of sampling rate. This means that a smaller sampling interval (checks for an Event occurrence) will consume battery power more quickly whether readings are stored or not.

What Else Can Affect Battery Life?

In addition to sampling rate, there are other internal and external factors that can have an impact on battery life. Leveloggers have a specified operating temperature range; the Levelogger 5 has an operating range of -20°C to +80°C. Exposure to temperature extremes can adversely affect the battery life.

Loggers should always be stored or installed with the top hanger cap on (if not using a Direct Read Cable) to prevent unnecessary battery drainage and protect the optical eye.

If the Levelogger has been accidentally dropped, or otherwise physically damaged, an internal component issue could cause abnormal battery drain.

Moisture on the optical eye of a Levelogger can also be a problem during communication. Additional battery consumption will occur during any communication process, if condensation, moisture, or dirt is present on the optical eye.
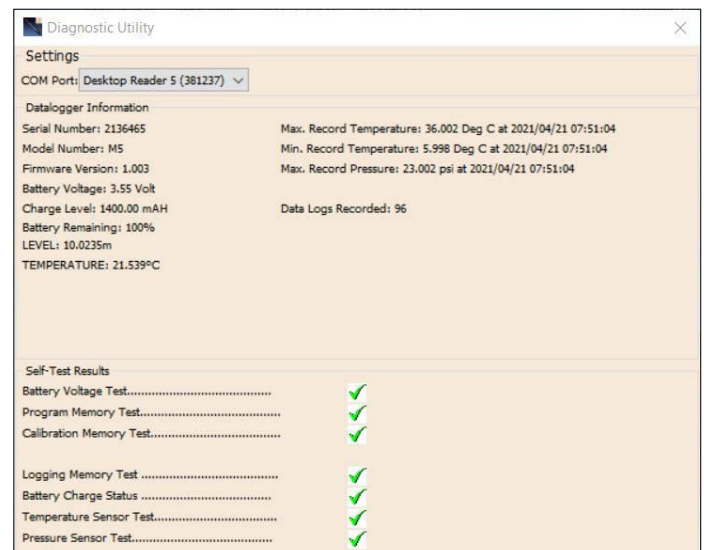
Levelogger Battery Status
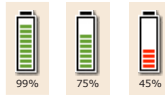
The battery % consumption display on the Datalogger Settings window of the Levelogger Software, changes based on usage, type of activity, and the power consumption of the main internal components of the Levelogger.

A significant upgrade to the Levelogger 5 Series is the addition of an internal coulomb counter, used to measure the state of charge of the Levelogger battery. It continuously records the active current draw to determine the total amount of energy leaving the battery, and quantifies this as battery capacity or Charge Level (mAh). The Levelogger 5 Series is capable of showing battery levels from 100% to less than 25% – resulting in a more meaningful indicator.

In general, a battery level of more than 50% for the Levelogger 5 is considered healthy. If near or below 50%, you should think about your sample rate frequency, deployment duration, and temperature before re-deployment.

You may be able to diagnose what has caused your battery to drain, by using the Levelogger Software Diagnostic Utility. The Utility will display the temperatures your Levelogger has been exposed to, an estimate of the number of logs that were taken, as well as the battery voltage and charge levels.

Dealing with a Drained Battery

Leveloggers can be returned to Solinst for assessment and/or battery replacement. If a Levelogger is within its warranty period, and there is no obvious misuse of the Levelogger, the repairs may be covered under warranty.

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