Battery Life Estimates

Battery Life

The battery life of the MAT-1 logger depends on a range of factors of which the two most important are:

- Recording Intervals: The higher the logging frequency the shorter the battery life.
- Sensor Selection: Disabling sensors will extend battery life.

Table 1: Estimated Battery Life (Months) Under Various Scenarios for Continuous Use

Recording Frequency	Enabled Sensors			
	Magnetometer AND Accelerometer AND Temperature	Magnetometer AND Accelerometer	Magnetometer OR Accelerometer	Temperature Only
64 Hz	1.5	1.6	2.4	NA
32 Hz	2.3	2.6	4.2	NA
16 Hz	3.6	4.5	7.1	NA
8 Hz	5.3	7.3	11	NA
4 Hz	7.0	11	14	NA
2 Hz	8.3	14	17	NA
1 Hz	9.0	17	19	19
0.5 Hz	23	36	36	36
0.2 Hz	36	36	36	36

Other factors that impact battery life are:

- *Speed and power consumption of the microSD card*: There is a considerable amount of variability in the energy consumed by various cards and it is not obvious which cards will be best. For example, faster and more expensive cards are not always better. Check with Lowell Instruments if you plan on using an alternate card for a critical deployment.
- *Storage & operating temperature*: High temperatures will increase the self-discharge rate of the battery. Keep the logger below 25 ^{o}C when not in use. Cold temperatures, -10 ^{o}C and below, will reduce run time significantly.
- *Enabling the LED*: The LED blinks with each temperature measurement. Turning off the LED will extend deployments that have the temperature channel enabled by 5 to 10%.
- *Duty Cycle:* By using the Burst Interval, the duty cycle of the logger can be reduced. This will extend the battery life nearly proportionally to the duty cycle.

Common Settings & Battery Life

The table below describes the most common settings used with the TCM Tilt Current Meters.

Configuration	Temperature (minute)	Burst Interval (minute)	Burst Rate (Hz)	Burst Duration (seconds)	Start / Stop Time	Notes
Typical	1	1	8	20	On Next Minute / Until Stopped	Suitable for most environments, high temporal resolution with moderate filtering. **12 to 14 month typical battery life**
Swells	2	2	8	45	On Next Minute / Until Stopped	Recommended for locations with swells with a period of up to 10 seconds. **10 to 12 month typical battery life**
Energetic / Turbulence	1	1	16	30	On Next Hour / Until Stopped	Recommended for areas near surf zones or other very turbulent locations. **5 to 6 month typical battery life.** Increase burst duration to 30 seconds.
Continuous Recording	1 second	1 second	16	1	Immediately / Until Stopped	Data logging at 16Hz continuously. **3 month typical battery life**
Burst Recording	5	5	16	60	On Next Quarter Hour / Until Stopped	Data logging at 16 Hz, 1 minute seconds ON, 4 minutes OFF. **12 month typical battery life**

Additional Information

Lowell Instruments has made a good faith effort to make sure that the information in this application note is accurate and complete. However, we are not perfect and this document may contain errors. We also reserve the right to change these instructions at any time and without notice.

Please contact your local distributor for support or check www.lowellinstruments.com for the most up-to-date documentation including software, manuals, FAQs, firmware updates, and application notes.

You may contact us at support@lowellinstruments.com or (US) 508-444-2616. Our physical address is:

Lowell Instruments, LLC
82 Technology Park Drive
East Falmouth, MA 02536
USA