

## Product Data Sheet

# MAT-1 Data Logger

Magnetometer

Accelerometer

Thermistor



## Description

The all new MAT-1 Data Logger contains an integrated 3-axis magnetometer, 3-axis accelerometer and precision temperature sensor. The complete system includes a microSD flash memory card, a long-life lithium battery, an O-ring sealed waterproof housing and a USB communication interface. The logger is capable of recording hundreds of millions of magnetometer and accelerometer records at up to 64 Hz as well as temperature records at 1 Hz.

The MAT-1 is ideal for determining the static and quasi-dynamic orientation of vehicles, packages and assets. The MAT-1 can also be used for vibration analysis and motion studies and the internal thermistor provides a detailed record of temperature in the target environment. The logger's large memory, high recording rate, long battery life and rugged design make it ideal for a wide range of applications.

The MAT-1 Data Logger includes Windows<sup>®</sup> software to configure the logger for deployment. After the deployment is complete, the data file is transferred from the memory card via USB cable or SD card reader and the data can be post-processed for filtering, plotting and analysis.



## Applications

- Oceanographic Tilt Current Meter
- Coastal Wave Action Modeling
- Equipment Use and Health Tracking
- Animal Tagging
- Vehicle Dynamics
- Shipping Monitoring
- Vibration Analysis

## Key Features

3-axis Accelerometer	<ul style="list-style-type: none"><li>• Resolve static orientation to 1°</li><li>• Record dynamic acceleration at 64 Hz</li></ul>
3-axis Magnetometer	<ul style="list-style-type: none"><li>• +/- 1° nominal compass bearing accuracy</li><li>• Temperature compensated</li></ul>
Precision Temperature	<ul style="list-style-type: none"><li>• Accurate to +/-0.1 °C from -5 to 30 °C</li><li>• Accurate to +/-0.2 °C from -20 to 50 °C</li></ul>
Lots of Memory	<ul style="list-style-type: none"><li>• 4 GB microSD flash card, upgradable to 32 GB</li></ul>
Long Battery Life	<ul style="list-style-type: none"><li>• Hundreds of millions of records over a year+</li></ul>
Rugged Housing	<ul style="list-style-type: none"><li>• O-ring sealed waterproof housing up to 1000 m</li></ul>
USB 2.0 Interface	<ul style="list-style-type: none"><li>• Connect with standard USB cable</li></ul>

## Specifications

### Sensors

	<b>Magnetometer</b>	<b>Accelerometer</b>	<b>Thermistor</b>
Type	3-axis magnetoresistive sensor and 12-bit A/D Converter	3-axis MEMS Accelerometer and 10-bit A/D Converter	NTC Thermistor and 16-bit A/D Converter
Filtering	None	1600 Hz averaging: up to 32 values per measurement	Hardware: low-pass filter
Range	+/- 1.3 Gauss Additional ranges available	+/- 2 g Optional to +/- 16 g	-5 to 30 °C (standard) -20 to 50 °C (extended)
Accuracy	+/- 1° nominal compass bearing, contact LI for info	0.01 g, enables 1° inclination determination	+/-0.1 °C (standard) +/-0.2 °C (extended)
Resolution	<0.001 Gauss	<0.001 g	<0.01 °C
Maximum Rate	64 Hz	64 Hz	1 Hz

### Logger

#### Environmental

Operating Temperature	-20 to 50 °C
Depth Rating	PVC: 300 m Titanium: 2500+ m

#### Electronics

Memory	4 GB microSDHC flash card, FAT32 format
Communications	Full speed USB micro-B port
Battery Type	3.6 V, 3.5 Ah, size "A", user replaceable lithium
Timekeeping	+/- 1 minute per month

#### Operating Modes

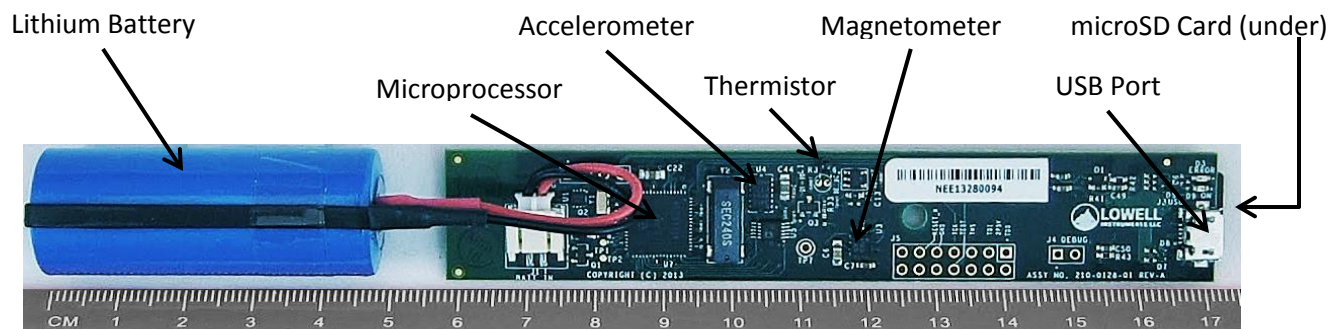
Start and Stop	Start and Stop on command or at user defined times
Burst Mode	Variable rate logging at user defined interval

#### Mechanical

Dimensions	27 mm diameter x 213 mm length
Weight	PVC 150 g, Titanium 225g
Construction	Housing: Grey PVC or Titanium O-ring: EPDM
Mounting	5/16-18 x 3/8" threaded mounting hole in base

#### Other

Software	Free Windows® Compatible Software
USB	USB 2.0 compliant MSC and CDC Classes
Firmware	Field upgradable via USB cable



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