# Product Data Sheet MAT-1 Data Logger



Magnetometer - Accelerometer - Thermistor



### Applications

- Oceanographic Tilt Current Meter
- Underwater Vehicle Heading
- Equipment Monitoring
- Vibration Analysis

- Animal Tagging
- Vehicle Dynamics
- Shipping Monitoring
- Mooring Orientation & Tilt

Feature	Benefit	
3-axis Magnetometer	+/- 5° nominal compass bearing ac	curacy
	Temperature compensated	
3-axis Accelerometer	Resolve static orientation to 1°	
	Record dynamic acceleration at 64	Hz
Precision Temperature	Accurate to +/- 0.1 °C from -5 to 30	0 °C
	Accurate to +/- 0.2 °C from -20 to -	-5, 30 to 50 °C
Large Memory	8 GB microSD flash card, upgradab	le to 32 GB
Long Battery Life	Hundreds of millions of records ov	er a year+
Rugged Housing	O-ring sealed PVC or Titanium hou	sing
USB 2.0 Interface	Connect with standard USB cable	

# Description

The MAT-1 Data Logger contains an integrated 3-axis magnetometer, 3-axis accelerometer and a precision temperature sensor. The logger 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 orientation of vehicles, packages and assets. The MAT-1 can also be used for vibration analysis and motion studies. 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 suitable for a wide range of applications.

The MAT-1 Data Logger includes Domino for Windows<sup>®</sup> 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 are post-processed to text files for filtering, plotting and analysis.



# **Specifications**

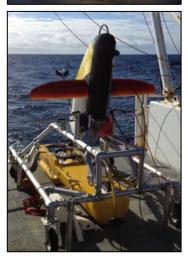
#### <u>Sensors</u>

	Magnetometer	Accelerometer	Thermistor
Туре	3-axis magneto-inductive	3-axis MEMS Accelerometer	NTC Thermistor with 16-bit A/D
			Converter
Filtering	Hardware Averaging	1600 Hz averaging: up to 32	Hardware: low-pass filter
		values per measurement	
Range	+/- 10 Gauss	+/- 2 g standard	-20 to 50 °C
		+/- 4 g optional	
Accuracy	+/- 5 degrees compass bearing	0.01 g, < 1 degrees of	+/- 0.1 °C (-5 to 30 °C)
	typical	orientation	+/- 0.2 °C (-20 to -5, 30 to 50°C)
Resolution	< 0.001 Gauss	< 0.001 g, 0.05 degrees of	< 0.01 °C
		orientation	
Maximum Rate	64 Hz	64 Hz	1 Hz

#### <u>Logger</u>

<u>=0990:</u>			
Environmental			
Operating Temperature	-20 to 50 °C		
Depth Rating	PVC: 300 m	Titanium: 4500 m	
Electronics			
Memory	8 GB micro SDHC flash card, hundreds of millions of		
	magnetometer, accelerometer and temperature		
	records		
Communications	Full speed USB micro-B port, USB cable supplied		
Battery Type	3.6 V, size "A", user replaceable lithium (from Lowell		
	Instruments)		
Battery Life	Months to years depending on operating mode		
Internal Clock	+/- 1 minute per month		
Operating Modes			
Recording Rates	Magnetometer and Accelerometer to 64 Hz Temperature to 1 Hz		
Start and Stop	Start and Stop at user defined times		
Burst Mode	Variable rate logging at user defined interval		
Mechanical			
Dimensions	PVC: 27 mm (1.05")	Titanium: 25.4 mm	
	diameter x 213 mm	(1.00") diameter x 223	
	(8.39") length	mm (8.78") length	
Weight	PVC: 143 g (5.1 oz)	Titanium: 225g (8.39 oz)	
Construction	Housing: Grey PVC or Titanium		
	O-ring: EPDM (PVC) Buna (Titanium)		
Mounting	5/16-18 x 0.5" threaded mounting hole on axis		
	-		





#### Other

Software	Domino, Windows <sup>®</sup> Compatible Software	
USB	USB 2.0 compliant MSC and CDC Classes	
Firmware	Field upgradable via USB cable	

5/16" hole in end cap for zip ties

Typically secured with hose clamps or zip ties.

Lowell Instruments, LLC 82 Technology Park Dr.

East Falmouth, MA 02536 Ph: 508-444-2616

info@lowellinstruments.com

www.lowellinstruments.com

© Copyright 2014-2023 Lowell Instruments LLC. Specifications are subject to change without notice. MAT-1 Data Logger Product Data Sheet, Version 18, April 2023