



# Lowell Instruments MAT-1 Data Logger - incl. Magnetometer, Accelerometer & Thermistor

## Product Images



# Short Description

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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.

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**The Lowell Instruments MAT-1 Data Logger contains an integrated 3-axis magnetometer, 3-axis accelerometer and a precision temperature sensor.**

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# Key Features

<b>3-axis Accelerometer</b>	Resolve static orientation to 1° Record dynamic acceleration at 64 Hz
<b>3-axis Magnetometer</b>	+/- 5° nominal compass bearing accuracy Temperature compensated
<b>Precision Temperature</b>	Accurate to +/-0.1 °C from -5 to 30 °C Accurate to +/-0.2 °C from -20 to -5, 30 to 50 °C
<b>Large Memory</b>	8 GB microSD flash card, upgradable to 32 GB
<b>Long Battery Life</b>	Hundreds of millions of records over a year+
<b>Rugged Housing</b>	O-ring sealed PVC or Titanium housing
<b>USB 2.0 Interface</b>	Connect with standard USB cables

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.

# Additional Information

Country of Manufacture	United States			
Explanation	<b>Applications</b>			
	• Oceanographic Tilt Current Meter		• Animal Tagging	
	• Underwater Vehicle Heading		• Vehicle Dynamics	
	• Equipment Monitoring		• Shipping Monitoring	
	• Vibration Analysis		• Mooring Orientation & Tilt	
	The MAT-1 Data Logger includes Windows® 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 are post-processed for filtering, plotting and analysis.			
		<b>Magnetometer</b>	<b>Accelerometer</b>	<b>Thermistor</b>
	Type	3-axis magnetoresistive sensor with 12-bit A/D Converter	3-axis MEMS Accelerometer with 12-bit A/D Converter	NTC Thermistor with 16-bit A/D Converter
	Filtering	None	1600 Hz averaging: up to 32 values per measurement	Hardware: low-pass filter
	Range	+/- 1.2 Gauss standard Custom range on request	+/- 2 g standard +/- 4 g optional	-20 to 50 °C
Accuracy	+/- 5° compass bearing typical	0.01 g	+/-0.1 °C (-5 to 30 °C) +/-0.2 °C (-20 to -5, 30 to 50°C)	
Resolution	<0.001 Gauss	<0.001 g	<0.01 °C	
Maximum Rate	64 Hz	64 Hz	1 Hz	
Explanation	<b>Environmental</b>			
	Operating Temperature	-20 to 50 °C		
	Depth Rating	PVC: 300 m	Titanium: 4500 m	
	<b>Electronics</b>			
	Memory	8 GB microSDHC flash card (upgradable to 32GB)		
	Communications	Full speed USB micro-B port		
	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		
	Explanation	<b>Operating Modes</b>		
Recording Rates		Accelerometer and Magnetometer 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		
<b>Mechanical</b>				
Dimensions		PVC: 27 mm (1.05") diameter x 213 mm (8.39") length	Titanium: 25.4 mm (1.00") diameter x 223 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)		
<b>Other</b>				
Software		Free Windows® Compatible Software		
USB	USB 2.0 compliant MSC and CDC Classes			
Firmware	Field upgradable via USB cable			
Contents	• MAT-1 Data Logger (PVC or Titanium) • 8 GB microSD Card (installed in logger) • Lithium Battery (installed in logger) • 3 ft USB A to micro-B Cable • Spare O-ring with Lubricant			
Brand	Lowell Instruments			
Typical applications	Datalogging			
Measurements	Tilt			