M-Logger for MEMS Sensors

Applications

M-Loggers are used to monitor Slope Indicator MEMS sensors. They are also compatible with EL-SC sensors.

Simple to use and economical to deploy, M-Loggers can be placed close to sensors, enhancing reliability and keeping cable costs down.

Typical applications include:

- Top-of-hole monitoring of in-place inclinometer sensors.
- Local monitoring of beam sensors and track sensors.
- Monitoring in areas where heavy traffic or electrical noise make short signal cables necessary.
- Monitoring sensors that are too far apart to connect to a centralized data acquisition system.

Logger Components

M-Logger: Each M-Logger can monitor up to 16 sensors.

Power Supply: The M-Logger is normally powered by a 12V battery. Long-term deployment or wireless communications require a charging regulator for the battery and a power source such as an AC adaptor or a solar panel.

Multiplexer: Serial sensors eliminate the need for a multiplexer. However, a multiplexer is required to connect multiple, non-serial sensors.

Weatherproof Enclosure: Small and medium size enclosures are available. The small enclosure is suitable for a system monitoring a single sensor or a chain of serial sensors. The medium enclosure is required if a multiplexer is used.

Advantages

Simple Setup: M-Loggers are very easy to configure. The user enters a list of sensors, sets a start time, and specifies a logging interval. After that, the logger is ready for work.

Reduced Costs: M-Loggers are a cost-effective alternative to centralized data acquisition systems. They can be affordably deployed close to the sensors, enhancing reliability and reducing costs by eliminating the long, expensive, and vulnerable runs of signal cable required with centralized logging systems.

Spreadsheet Friendly: CSV files from the logger are ready for import, with dates and numbers formatted to the regional settings in Windows.

Automation-Ready: Data formats for automatic processing include the Campbell Scientific table format and the Slope Indicator ID format.

M-LOGGER

M-Logger. 58810100

Manager software and a serial interface cable are included with the logger.

Function: The M-Logger is a data logger for Slope Indicator MEMS sensors and EL SC sensors.

Capacity: One chain of 16 serial sensors, or one Campbell Scientific multiplexer with 16 standard sensors, or 1 standard sensor connected directly.

Memory: Non-volatile flash memory holds 7,900 records for each sensor. Each record includes time and date, A and B-axis tilt readings, and temperature reading.

Logger Resolution: 0.004% FS (16-bit) for tilt readings. 0.1°C for temperature readings.

Logger Accuracy: ±0.02% of tilt reading at 20 °C or ±0.06% of tilt reading at -20 to +50 °C.

Logging Interval: 30 second minimum interval; 7 day maximum interval.

Serial Ports: PC port for serial communications with PC. Interface cable is included with logger.

Power In: Nominal 12Vdc (8 to 15Vdc).

Power Out: Switched 12V output for serial sensors or multiplexer.

Environmental: Temperature rated for -20 to +50 °C. Logger normally housed in an enclosure.

Dimensions: 120 x 80 x 40 mm. (4.7 x 3 x 1.6").

M-LOGGER MANAGER

M-Logger Manager . . . . . Download

Function: Used to configure the logger. Can also
display real-time readings and retrieve data.

System Requirements: Runs on Windows XP, Vista, and Windows 7. Communicates with logger via an RS-232 serial connection. If PC has only USB ports, a USB-serial adaptor is required.

Settings: Logger ID, real-time clock, memory mode, sensor list, multiplexing mode, logging schedule, and communications parameters.

Real-Time Readings: The Manager program can display real-time readings of sensors when PC is connected to the logger.

Data Retrieval: Works with interface cable or line-of-sight radio. Retrieves new or all readings. Can clear data from logger memory.

File Formats: CSV, Campbell Scientific, and Slope ID. CSV uses Windows regional settings for date, time, and numbers and is suitable for spreadsheets. The Campbell Scientific format and Slope ID formats are useful for automation and monitoring software, such as Atlas.

MULTIPLEXER OPTION

AM16/32 Multiplexer 56702110
Terminal Board 26811615

Connection of multiple standard sensor requires a multiplexer and a terminal board. The terminal board is used to connect power wires from multiple sensors. Note that the multiplexer option is not needed when serial sensors are connected to the logger.

POWER OPTIONS

Battery, 12V 7ah 01940004
Battery Bracket 58810160
Charging Regulator 58810161
AC Adaptor. 58810165
Solar Panel, 10W 56703310
Solar Panel, 20W 56703325

A battery and battery bracket are normally ordered with every system. A 12V 7ah battery can power an M-Logger taking hourly readings for about 140 days.

For longer term deployment , the charging regulator and a power source are required.

The power source can be an AC charger or a solar panel. The AC charger includes various wall plugs. The solar panel includes hardware for mounting on pole.

WEATHERPROOF ENCLOSURES

Small Enclosure 56705005
Medium Enclosure 56705010
System Assembly 96700005

Weatherproof enclosures are required for outdoor applications. These strong fiberglass enclosures provide an internal panel for mounting components, an external grounding lug, and an opening for cable entry.

The small enclosure is suitable for systems that monitor serial sensors or a single standard sensor. Dimensions are 305 x 356 mm (12 x 14").

The medium enclosure is required for systems with a multiplexer. Dimensions are 356 x 406mm (14 x 16").

The system assembly charge is required when components are mounted in the enclosures at the factory.

ATLAS WEB SERVICE

Atlas Monthly Web Service 58851050
Atlas Prepaid Web Service 58851090
Atlas Activation Fee 58851000

Atlas web-based monitoring software is offered as a hosted web service with monthly or prepaid plans. The service includes an unlimited number of projects, graphs, reports, and users, and includes 50 sensors. More sensors can be added for an additional fee. Accounts for large scale monitoring are also available.

The web service is not only easy to use, but also cost effective. Data are stored at a secure data center that provides automatic backups and multiple connections to the internet. Users need only their web browsers, so there is no software to install and maintain. Finally, the service does not require a long-term commitment.