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MEMS - Portable Data Logger

Introduction

Advancement in digital technology has brought remarkable progress in Data logging and analysis. Latest in digital technology made Data Loggers smaller, less expensive, more accurate and more reliable. Most of the Data acquisition systems that are available today require a D-A Card in a PC (Lap top PC at the least) and further wiring from the sensors. Necessity for appropriate Power supply still makes them suitable, only for permanently configured, on-line laboratory applications.

G-Logger

Silicon Designs Inc, USA, the world leader in MEMS has developed a unique Data acquisition system that would significantly remove the above said limitations.

The system once configured, is fully stand alone with inbuilt sensors and internal battery power. It comes at an amazing size of 115x90x55mm, weighing Just about 825 grams, includes the battery. The system will record vibration as well as temperature simultaneously.

G-Logger was originally designed for Space Shuttle Program at NASA. It is further modified for general data logging applications with ease of use, reliability and accuracy.

Functions of G-Logger

The G-Logger can collect acceleration data for vibration or shock analysis. Its compact size is ideal for use in experimental applications, crash testing, or to provide data for complex motion analysis.

Each unit provides up to three axis of sensitivity for acquiring, storing and analyzing AC/DC acceleration, AC velocity , shock, vibration, and temperature data. Self-contained and sealed from the weather, individual units can operate unattended for up to **three weeks** on two D-cell alkaline batteries.

G-Logger Features

* 1, 2 or 3 Axis Remote Acceleration
* 8 Mbytes Non-Volatile Flash Memory
* Portable Battery Operation
* -20 to +60°C Operation for System & 125°C for Accelerometers
* Works with Single & Triaxial MEMS Accelerometers
* Simple PC Based Programming
* Standard Ranges:
  –2G, –5G, –10G, –25G, –50G, –100G
* Other Ranges Available upon request
* 115.2 k Baud Serial Data Link
* Logs Various Data Types:
  AC and DC Acceleration
  AC and DC Peak Acceleration
  Acceleration Peak Events
  RMS Acceleration
  AC Velocity, AC Peak Velocity
  RMS Velocity, Temperature

Initialising the G-Logger

The G-Logger is easily programmed through a serial link to PC or notebook computer running Windows 95/98/NT4.0/2000 and can be set to record continuously, at set intervals, or in a variety of event triggered scenarios. Once programmed, the unit can be disconnected and securely bolted in place to provide hands free, unattended, data acquisition for the length of the desired mission. The availability of an external power source (5-18 V DC @ 300mA, Max.) extends mission life indefinitely within the memory restrictions.

Hardware Capabilities

When active, the G-Logger stores up to **4 million samples** of acceleration and temperature data in nonvolatile flash memory. The unit can store sampled, peak or RMS acceleration or velocity from 1 to 4000 samples per second over various intervals or set trigger conditions. Upon completion of the mission, the data is downloaded via the serial connection to PC or notebook for display and analysis.

Portable Solution

The G-Loggers are supplied complete with an RS-232 interface cable and the G-Logger Software Program. No data acquisition card is needed because all communication is handled via the RS-232 COM port. The G-Logger Software program is meant to be used in conjunction with the optional EasyPlot data graphing and plotting program. Should you already own or choose to provide your own plotting software, the G-Logger Software Program can be set to output the data in an ASCII comma delimited format which is readable by most data graphing software packages.

Portable versions

Two types of G-Loggers are normally available to suit any application, one applied with single Triaxial Accelerometer with the complete accessories and the other one with three single axis accelerometers with weather tight adapters, cables and connectors. The G-Loggers are supplied with complete accessories and the G-logger machine programming software with an option of EasyPlot Analysis Software.

Key features of G-Logger Software

* Calibrate & continuous update
* G-Logger Diagnostics
* Editing Functions
* Start, Stop, Upload & download
* Plot through EasyPlot
* Data Acquisition & Logging
* Clock/store/calculate sample
* Select Data (average, peak, RMS, Velocity, Events)
* Multiple steps mission
* Temperature (time & relative mode)
* Battery Life
* Preview, Upload & Download
* Plotting Binary Files

Key Features of EasyPlot

* **Plotting of Graphs**
* **Graphic choices** XY plots, polar plots, contour maps and 3D fishnet surfaces
* **Powerful analysis** Linear and non-linear curve fits, cubic and surface splines, smoothing, FFT and inverse FFTs, histograms, calculus, statistics and error bar displays
* **Full labeling** create multi-line graph and axis titles
* **Professional output** copy graph to the windows clipboard for export to word processor or spreadsheet
* **Automation** automatic printing and plotting of graphs
* **Easy Entry** grab data from the clipboard or call up any Windows file
* **Compact** occupy 1mb hard disk space max

Applications of G-Logger

* Automotive suspension testing
* Bump recorder
* Crash event recorder
* Flight vibration monitor
* Military/space/aerospace recorder
* Motion Analyser
* Rotating machinery monitor
* Shock event recorder
* Transportation data recorder
* Vehicle testing instrumentation

Silicon Design Inc, USA, also offers various types of Analog and Digital, single axis and tri-axial MEMS based Accelerometers for vibration and seismic measuring applciations.

For further product, price, application details please contact:

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