



The Realtime Group of Companies

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Case Study – Seismograph

The Challenge:

Design and build a seismograph that is accurate to 14-bits, has 8 input channels, has selectable frequency ranges up to 16kHz, and will last 60 days on a one battery in the field exposed to all natural elements.

The Solution:

A small ARM MCU was picked for its processing power vs. power usage along with dual (two ADCs per chip) 16bit ADC chips. This gave the device 2-bits to handle noise and adjustments and also keep the power usage down.

The MCU has Flash for the storage of the code and enough SRAM to handle stacks and variables that are needed by the code. An External SRAM was added to store the collected data, until it is uploaded to a computer.

A local LCD and keyboard was added so the user could configure the unit's MMC card slot in case the user needed more storage on the device itself, have longer periods between uploads of the data. An RS232 port was installed for uploading data, communicating to a computer, a modem, or other external units.

A battery charger was needed and a Real-time clock was used to tag data. Software compresses event data before storing it, so SRAM space is conserved. Summary data of each event and the current configuration can be viewed at anytime from the LCD. After data is uploaded, it can have numerous post-processing algorithms preformed on it.



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**To Learn More
About the
Seismograph:**

The Seismograph device that The Realtime Group (TRG) developed could be used in many locations around the world in both industrial and research applications.

The Realtime Group is continuing research and development on this seismograph device and is hoping for a release soon. For more information regarding this device development please contact The Realtime Group.

