**Datalogger Bullet Points**

Accurate as of 2011-04-03

**Summary**

Datalogger does exactly what the name implies - it logs data, much like aircraft black boxes. More specifically, it reads CAN frames from the car CANbus and stores them to a SD Card for later analysis. This is primarily intended to be used as a debugging tool.

**Hardware Overview**

* dsPIC33FJ128MC802 microcontroller - this chip has an integrated CAN module and DMA which allows for better write throughput while consuming less processing time. A standard BRAIN was considered, but did not meet SD write performance targets when tested with the available Roland-Riegel SD Card library (http://www.roland-riegel.de/sd-reader/).

**Hardware Capabilities**

* CAN interface, up to 1Mbit/s
* 12v bus measuring equipment, aka "the resistive divider"
* USB debugging console
* Maintains power several seconds after power down - this is to log any residual data on the CAN network and to cleanly dismount the SD card.
* SD Card interface through SPI
* 6 status LEDs and 4 push button switches
* External data interface - including a reconfigurable 4-line bus, an protected analog input, and access to the internal I2C bus
* External bench power - 12v barrel jack interface with bridge rectifier
* RFC 1149 / 2549 / 6214 - not implemented (yet...)

**(Proposed) Firmware Capabilities**

* CAN library - using the onboard CAN module so CAN packets can be read and buffered into main memory without foreground processor intervention
* DMA SD Card library - using the onboard DMA module so communications with the SD Card (a significant chunk of time) can happen in the background, freeing the processor for other tasks
* FAT32 library - so that the output files can be read from a standard PC without specialized software
* Data logger functionality - saving all CAN frames received (and other data as necessary) to the SD Card