

DATA ACQUISITION AND STORAGE SYSTEM (DASS)

System Overview

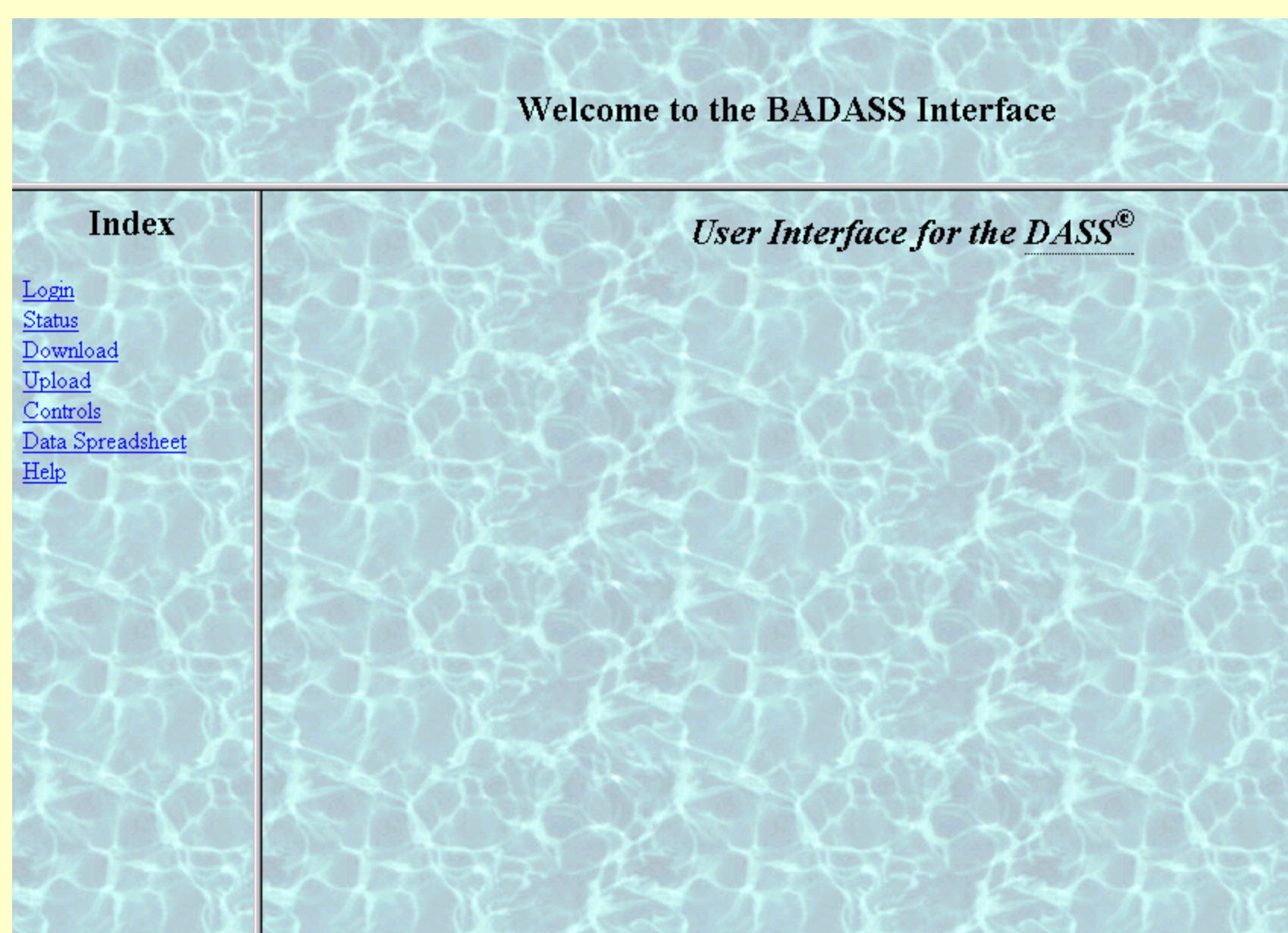
The inspiration for this project came from our group leader, who worked at Davidson Laboratory for several semesters. His work with the Campbell Dataloggers and the staff at Davidson Laboratory gave the group an opportunity to build on the existing product to create a tool that the scientists at Davidson could use for furthering their research in the oceanographic world.

The DASS is an upgrade to the Campbell Scientific CR10X data logger. Additional memory for data storage and Ethernet connectivity will be added to enhance the CR10X's ability to serve the user's need. The prototype that will be issued to Davidson Laboratories is expected to collect data and issue Campbell Scientific command listings to the CR10X via the Ethernet connection, whether remotely or locally.

This is the most basic functionality that the system can offer and meeting these minimum requirements is the team's top priority. The User Interface for this system will be done through a web browser. An easy method for the user to download data and upload command files, the webpage interface will be the key method for communication to the DASS. The DASS will connect to the CR10X via a RS-232 DB-9 style connection. An optical isolator will also be built into the system so that connecting the CR10X to the DASS requires no additional equipment. The battery backup system is made up of a simple device called a DC/DC Converter which will convert the voltage provided by the battery in the datalogger's enclosure from 12VDC to 5VDC in one step.

System Layout

User Interface



A User Interface is an ideal way to create a way for any user to be able to perform functions without much complicated programming. Most of that programming was completed by this group in order to provide a tool that could perform like any skilled programmer with many fewer steps. After discussions with the scientists at Davidson Laboratory about how the interface should be structured, this interface was made in HTML and CGI scripts and is only the bare bones so far, but it provides a convenient way to gain access to the SBC, program and collect data from it.

Our group wanted to originally name the project so that the device could have the acronym "BADASS", but neither the B nor the A made it into the device's name. So, the User Interface was the next best place to use the acronym.

The site is broken up into 3 frames. On the left is an index of links all leading to their own pages. A user must be successfully logged into the SBC through this browser before they may gain access to any of the other pages. Once connected, a user may upload files, download data files, and will eventually allow the user to display data that has been downloaded. There is also the Help file, which is currently in progress.

Cost Analysis

Campbell Scientific Cr10X Datalogger		
Feature	Capability	Cost
Rs232 Connector (S)	9600kbps	Included
Ethernet Connection (A)	10Mbps	\$395.00
RS-232 to USB Adapter (A)	1Mbps, 9.8ft	\$40.00
Flash Storage Memory (S)	16MB	Included/ \$600 to upgrade
Compact Flash Memory Unit (A)	1GB	\$540.00
Total Cost of Upgrades from Campbell Scientific		\$1575.00

Data Acquisition and Storage System (DASS)		
Feature	Capability	Cost
Technologic Systems TS-7200 SBC (w/ Power Supply and Extended Temp Range)	See Below	\$217.00
USB 2.0 Connector (S)	480Mbps	Included
Ethernet Connection (S)	10/100 Mbps	Included
USB 2.0 Network Cable (A)	480Mbps, 16ft	\$34.00
Flash Storage Memory (A)	1GB	Included
Compact Flash Memory Unit (A)	1GB	(as low as) \$55.00
Total Cost of Upgrades from the DASS		\$306.00

(S) = Standard Feature; (A) = Accessory Feature
*All features for the TS-7200 are standard except where indicated.