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Design of the Open Control System V1

Overview:

The control system is modeled after UNIX based operating systems where peripheral devices are treated like files with only two operations: Read and Write. This greatly simplifies the communication layer and the microcontroller code. These read and write operations must also specify a location. Each device has a set of functions it can perform and there is a mapping between the data these functions use and the location it is stored on the device. Each device is also equipped with a manifest file that contains this mapping and the datatypes used/returned by these functions. During initialization the main controller reads the manifest files of all the connected cards in order to build a mapping from all available functions on the system to a set of addresses these functions are located at.

The first version-V1 of the system will be asynchronous. The main controller will issue commands one at a time and the cards will respond and possibly return data.