SwitchStat

Electrochemical Multiplexing Board

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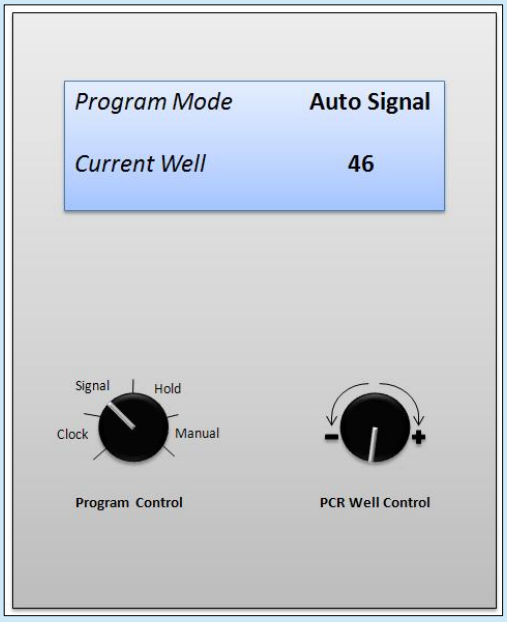
The purpose of our device will be to facilitate and make electro-analytical experiments much more efficient for biochemists. The current experiment process involves manually connecting the three electrodes to the sample in a shot glass, one experiment at a time. Our device would allow 96 experiments to be carried out in a standard 96 well dish with minimal operation from the user. The device would be useful to any electrochemists who wish to quickly test many samples for a target impurity. There will be four modes of operation that control the behavior of the microcontroller and the multiplexer switching circuit. In order to change the mode of operation, the user simply turns a 4-position rotary switch which selects one of the four modes of operation. The selections are arranged in such a way so that program flow is natural. Manual mode is the first selection, and is always used first to select either the active or starting PCR Well. Once selected, the mode switch can then be turned to the next mode, which is the Hold mode. This locks in the active PCR Well so that it is not accidentally changed during testing.



Additionally, the Hold mode activates the PCR Well via the analog multiplexers so that a physical connection between the testing computer and PCR Well is created. From this mode, the user can either run their test on a single well or the user may continue to rotate the mode switch and choose one of the automated program modes, Auto Signal or Auto Clock. At any time, the user can turn the mode switch and any current operations will be canceled as the mode switch has priority.