Development of a Serial Signal Monitoring Program for Educational Purposes

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Abstract : This paper introduces a signal monitoring program developed with a view to helping electrical engineering students get familiar with sensors with digital output. Because the output of digital sensors cannot be simply monitored by a measuring instrument such as an oscilloscope, students tend to have a hard time dealing with digital sensors. The monitoring program runs on a PC and communicates with an MCU that reads the output of digital sensors via an asynchronous communication interface. Receiving the sensor data from the MCU, the monitoring program shows time and/or frequency domain plots of the data in real time. In addition, the monitoring program provides a serial terminal that enables the user to exchange text information with the MCU while the received data is plotted. The user can easily observe the output of digital sensors and configure the digital sensors in real time, which helps students who do not have enough experiences with digital sensors. Though the monitoring program was programmed in the Matlab programming language, it runs without the Matlab since it was compiled as a standalone executable.

Keywords : digital sensor, MATLAB, MCU, signal monitoring program

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