Bradley University ECE Department EE451 – Sr. Capstone Project I

> CNC Etch-A-Sketch Functional Description

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The operation of this senior project is divided into two subgroups. One aspect is to construct a PC controlled Etch-A-Sketch[®]. The other subgroup is to digitize a user's handwriting from a pen pad or use a digital pen pad and send the data to a PC. The computer will then process the handwriting into actual dialogue. The PC will sift the data through a process, which the microcontroller can use to turn the dials as seen in Fig 1.1.



Figure 1.1 Shows Etch-A-Sketch®

Figure 1.2 Shows the input/output diagram of the project.

Outputs Cursive word in Etch-A-Sketch®

<u>Inputs</u> Pen pad Enter button Delete button Power Supply

The inputs and outputs of this CNC (or computer networked controlled) Etch-A-Sketch are shown in <u>Fig 1.2</u>. The Block Diagram is shown in <u>Fig1.3</u>. The digital pen pad is used with a digital pen. The user writes one word with the digital pen onto the digital pen pad. The user then presses the enter button which will be located on the PC keyboard.

The word is processed by the PC and then shared with the microcontroller. The microcontroller then moves the dials of the Etch-A-Sketch® to inscribe the word in cursive onto the Etch-A-Sketch® screen. If the user does not like the word he or she wrote, they can delete it with the delete button.

Modes of Operation:

This project has only one mode of operation, and this is to etch the user's word onto the Etch-A-Sketch® screen.



Figure 1.3 Shows the Block Diagram for the CNC Etch-A-Sketch