Cricut Personal Hardware

From Cricut Hacking Wiki

The Cricut Personal is a low end Cricut unit that accepts 6"x12" cutting mats. Here's an idea of what one of these devices has under the hood:

Cricut Personal with a cartridge loaded (no keyboard mat placed)

Cricut Personal with the main PCB exposed

Actuators:

2 Steppers – 42BYGH4418 – These are standard NEMA 17 sized steppers with 6 leads. I didn't find any specific data on this stepper most likely driven in a unipolar configuration.

1 Solenoid – The cutter head seems to be a custom solenoid setup.

Chips:

ATmega128 (/web/20130501064334/http://www.atmel.com/dyn/products/product_card.asp?part_id=2018) – Main microcontroller for the entire system.

- 128 kbytes of FLASH Program Memory
- 4 kbytes of EEPROM
- 4 kbytes of SRAM

FT232BM (/web/20130501064334/http://www.ftdichip.com/Products/FT232BM.htm) – FTDI USB to RS232 converter chip.

AT45DB041D (/web/20130501064334/http://www.atmel.com/dyn/products/product_card.asp?part_id=3806) – 4MBit Serial EEPROM – This seems to be where the built in "Goerge and Basic Shapes" cartridge data is stored.

Power:

LM317 (/web/20130501064334/http://www.national.com/mpf/LM/LM317.html#Overview) – 1.5A adjustable voltage regulator – Outputs 2.4V at power on.

LM2576 (/web/20130501064334/http://www.national.com/mpf/LM/LM2576.html) – 5Volt 3A Step Down Switching Regulator

18V 2.5A Power Brick – Labeling seems to suggest there are 16V, 20V, and 21V versions as well.

Other Parts:

BD243C (/web/20130501064334/http://www.datasheetcatalog.org/datasheet/stmicroelectronics/5053.pdf) NPN Transistors and high wattage resistors – These 8 transistors are driving the individual stepper coils. The power resistors, transistors, and diodes in the center of the motherboard above all form the stepper control for the two steppers used in the setup. The steppers are driven off of the 18V supply from the power brick.

Potentiometers – The speed, pressure, and size dials are all just connected directly to potentiometers.


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