**Hoektron CNC Design Spec Rev. B**

**Overall Design Specifications**

* Total Weight < 30lbs
* Fixed Gantry System (Z on X, separate Y)
* Aluminum slab (or better) construction
* Fully enclosed operation with door + interlock.
* Enclosure of metal or high impact plastic (safety)
* Fully automated with XYZ + Tool Height endstops.
* E-Stop and Power Switch on front of machine.
* Good spindle with low runout, easy to change bits.
* NEMA23 stepper motors.
* Quality guide rails and bearings.
* Capable of milling wide range of items:
  + foam
  + wax
  + plastics
  + aluminum
  + brass
  + PCBs
* Main interface is over over USB
  + Optional connection via Bluetooth serial
  + Optional connection via Wifi serial
* Some way of human powered transportation (handles)

**Positioning System**

* X axis travel of 190mm and speed of 2000mm/min
* Y axis travel of 200mm and speed of 2000mm/min
* Z axis travel of 60mm and speed of 2000mm/min
* XYZ Accuracy of <= 0.05mm
* XYZ Backlash of <= 0.05mm

**Electronics System**

* Accepts 100-230VAC from standard wall power.
* 3 axis control of external step/dir/enable style stepper drivers.
* stepper drivers: 4A/phase @ 24VDC
* Relay capable of controlling spindle on/off (DC / AC?)
* Relay capable of controlling vacuum on/off (DC / AC?)
* Power MOSFET for extra devices (fluid pump, heater, etc.)
* microSD card slot (not user-accessible)
* USB mini connector (High Speed / USB2.0)
* Support for min/max endstops, tool zeroing, and door interlock w/ endstop detection.
* On/Off switch to cut all system power.
* Support for spindle speed control (voltage output + tachometer)
* PWM control of RGB LED strips operating at 24v
* Fuse and diode protected power inputs