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VEX Robotics

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Taking Apart a Medical Oximeter Final Summary Report

The device we decided to take apart was an oximeter, the reason we decided to take apart this device is because not only was it outdated, so had no function in the hospital where we got it from for free, but also because we wanted to take apart a device that can **help** in the medical field, and this device also fulfilled that category, as its purpose is to read the oxygen levels in a patient's blood, which is a very important reading.

The components found inside were a PCB, a secondary circuit board, a front panel circuit board, a display circuit board, a 12V battery, a battery tray, a back panel, a front panel, a bottom lid, and a top lid. In terms of the parts of the components, the PCB had nine total capacitors, five 10V capacitors, one 20V capacitor, and three 35V capacitors, a multitude of resistors, a few integrated circuits, a fuse, and a relay. The secondary circuit board had a myriad of integrated circuits and relays. The front panel circuit board had only two integrated circuits, and the display circuit board had four integrated circuits. This device contained no Texas Instruments components.

As for the function and system role of these parts, the capacitors store extra power, and help to make sure that there is not a short circuit, resistors control power, and help to make sure there is not a short circuit in the system, relays control when circuits are active, and play the role of system power management, making sure

circuits aren't used excessively, integrated circuits are a jack of all trades component, doing most of the thinking but filling multiple positions, the battery provides power for all the parts, making sure the system can run, and finally fuses are the final failsafe to prevent a short circuit, breaking the connection if excessive voltage is sensed.

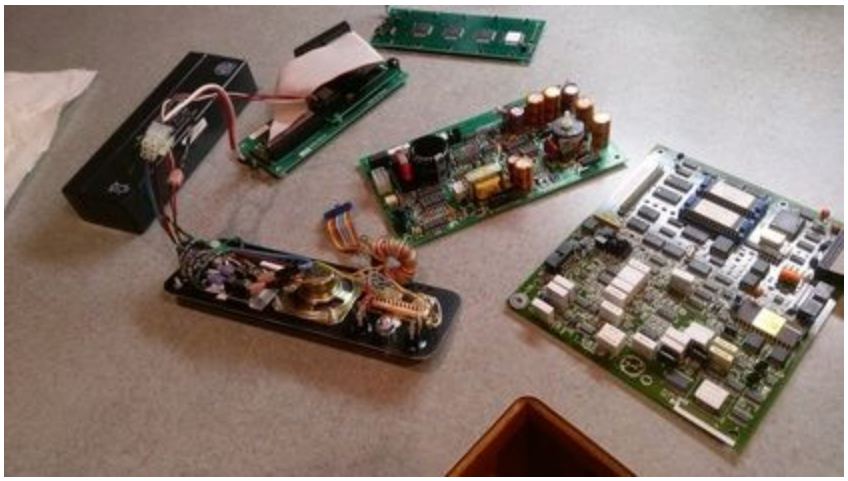
In total, this project taught me the components of a circuit board, what each of those components do in the big picture, and most importantly to me, to prevent my looking dumb, the difference between a PCB and motherboard.

All of the parts of the device.

The first view upon removing the top lid.

The main battery.

The back panel.



All of the circuit boards and the main battery.