## 98000A FMS Robotics Electronics Online Challenge Texas Instruments



We decided to take apart a clock because it is something people use in their everyday lives. Whether it is on their phone or the wall, almost everyone uses a clock. We also chose a digital clock because we never knew what was inside of them.



When you look inside the clock there are only a few main parts: three SONY circuit boards. The first one is to convert power to the second board. When you plug in the clock, the power will go there first.

The second circuit board is where everything happens. This

board gives the clock its ability to function in all the ways that it does. Levers and buttons on



the circuit board serve many purposes.



The last circuit board is for the display. All of the information processed in the first and second boards is transferred to this last board for the display. The display circuit board is arguably the most important of all of the boards because it's the one that is going to be seen. This board is connected to the other circuit boards and

the LED display. These single-sided printed circuit boards sound basic, but with the spectrum of electronic components that are mounted on the boards, they are complex. On this circuit board, you can find resistors, capacitors, potentiometers, some integrated circuits, and inductors.

Resistors are electronic components that are used to reduce the flow of voltages and much more. They look like little beads on a wire that is color-coded depending on their purpose.





Capacitors are used for storing electronic charges and releasing some power when something else needs it. So if the alarm needs power the capacitor can emit it and collect more.

Potentiometers are practically a form of a resistor that controls a variable. In the clock that I took apart with our team, there is a linear potentiometer that turns the clock on or off.





Another modification to the circuit board in the clock was integrated circuits. An integrated circuit is a circuit that is shrunk onto these smaller chips and uses the information it knows to perform a task. The clock has two of these circuits on its big circuit board. Though it is tough to know what the circuits have built in them, we can imagine that one of them has the software to know what time it is. The last add-on to the circuit was inductors.



Inductors are used to store information/energy through a magnetic field. The clock has two inductors that are used for blocking any interference from the radio so instead of hearing a bunch of gibberish you are hearing actual noises.

After completing this project, we learned that certain everyday objects can be more complex and fascinating than they first appear.