



Texas Instruments electronic online challenge 2018

sony CD/DVD player DVP-SR200P

vex[®]
ROBOTICS
COMPETITION

Team Number #278T

Team Name: Titans

School: West Salem High School

Contributors:

Beau Randall, 11th Grade

Ethan Weathers, 10th Grade

Ashton Valentine, 11th Grade

Final report:

Every one of us tried to remember if we had any electronics that we didn't need or use and that we wanted to take apart at our homes. We had thought of dismantling the sony DVD player, an old phone, a texas instrument calculator, a computer tower, and an original Xbox. We chose the DVD player because it was readily on hand, not needed at all, and because we were interested in how it worked, what was inside it, and how it was made.

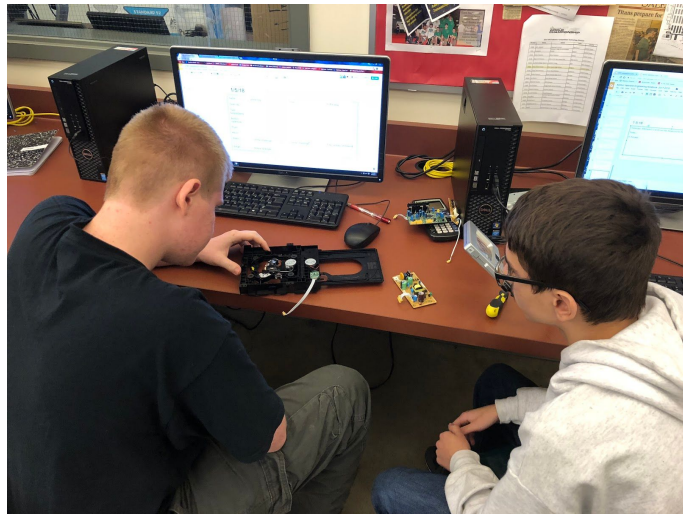
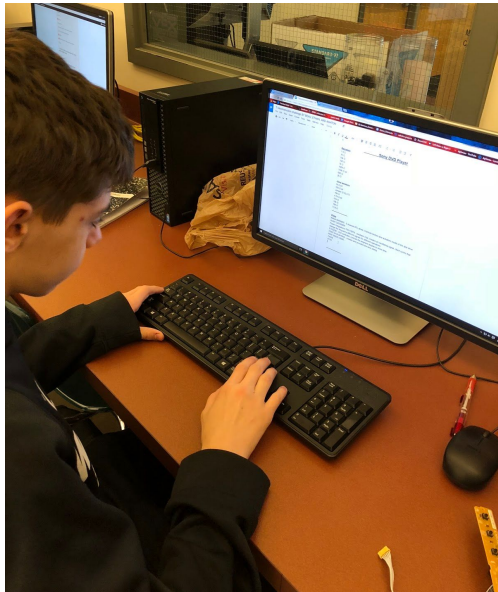
First, we scouted for any screws, joints, or cables that needed to be undone to be able to get inside the DVD player. The casing was then taken off by getting rid of the screws and joints to get to the insides, we had taken off the top and disconnected wires. Once we were inside we had a better view of the components and boards. After locating every board and component, we carefully removed them from their housing. Once out we carefully examined the chips and the other electrical components and documented the manufacturers and part numbers that were on them, and by using that information we were able to find their datasheets to find out their purpose.

Inside the DVD player we found 3 motors and the disk reader. One motor controlled the disk tray, one spun the dvd, and one moved the disk reader. The disk reader is a laser that gets info from dvds and sends that to the main control to be interpreted. We had found 2 major PCBs (printed circuit board) inside the DVD player. One was the main control that read the disks data, turned it into video and audio, and sent it out to the display via the A/V ports, the other one was the power supply board which regulates and controls the flow of electricity, and converts it from AC (alternating current) to DC (direct current). On the boards we saw a motor controller chip, a power integrations chip, and RAM, however we could not find the datasheet for the CXD9990R

chip so that information is unavailable as of now. We were expecting there to be more PCBs inside of the DVD player and we were surprised by how little there really were that actually were important. Some of the chips writing were so small or faded that we had to use a magnifying glass with a flashlight to read them. We also Noticed that there were no TI components.

Our team had learnt quite a lot. We chose the DVD player because it had participated in each of our lives and has given us happy memories with our families. We had expected the DVD player to be more complex and jam packed with more circuits and components, but was surprisingly compact. Our team now holds a greater understanding on how electrical components function in a larger scale and this has sparked our interests in learning more about electrical systems which are used in our daily lives.

Word count: 500 words



for the DVD player, we had taken it apart, inspected the parts inside, and documented



what we
found to a
parts list







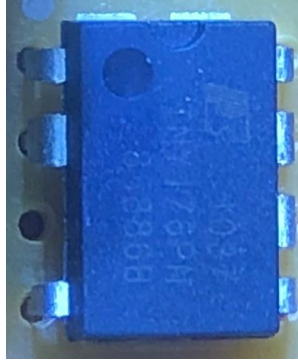
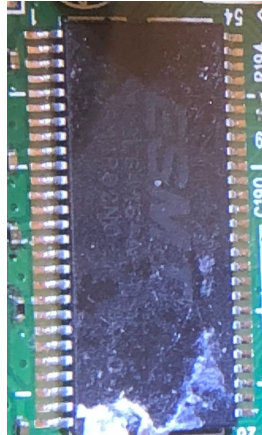



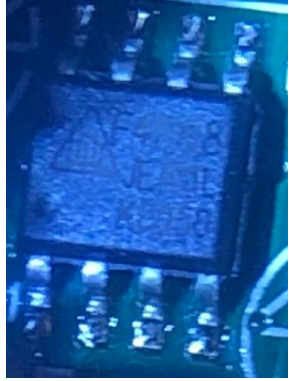
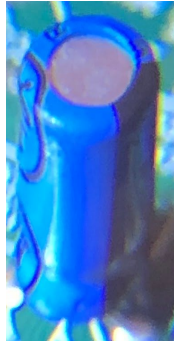

this is the major pcb that we believe is used to regulate or change the electrical input/output



we believe this major pcb is the main unit for controlling the output and conversion of audio/video and interpreting the data

name	Amount	usage	picture
resistors	10	Restricts the flow of electrictity	
Smd resistors	30	Restricts the flow of electricity on a minor scale	
AMtek AM5890S <i>5 channel BTL driver</i>	1	Controls motors and actuators inside of the disk drive	
Sony CXD9990R	1	No datasheet found	

Power Integrations TNY176PN <i>Oscillator chip</i>	1	creates an oscillating signal, clock cycles that change the frequency different signals for different operations	
ET6220B <i>LED controller</i>	1	controls the segment display to show time	(no picture made)
ESMT M12L64164A	1	creates and provides the time stamp	
MXIC MX25L1606E <i>Single input dual output</i>	1	it splits the audio into two through the dual output to allow it to be used in the F4558	

F4558	1	it amplifies the audio by taking two inputs and combining them	
capacitors	23	Stores electrical charges	
diodes	6	directs current into a one-way area	
Hour minute second 7 segment display	1	Shows time stamp	(no picture)
button	4	Blocks flow of electricity unless pressed	(no picture)
jumper	2	Wire that connects to circuits	(no picture)
fuse	1	Prevents short circuits	(no picture)
8550 transistor	4	amplifies electrical charge and sends out 1's and 0's	(no picture)

Crystal Oscillator J27M1047	1	creates an electrical signal with a precise frequency	(no picture)
044021 Transistor	1	Same as 8550 transistor	(no picture)
motors	3	Moves disk tray and disk reader	