COMPUTER AIDED ENGINEERING GRAPHICS
TERM PROJECT

LEAD BATTERY LEVEL INDICATOR BOARD

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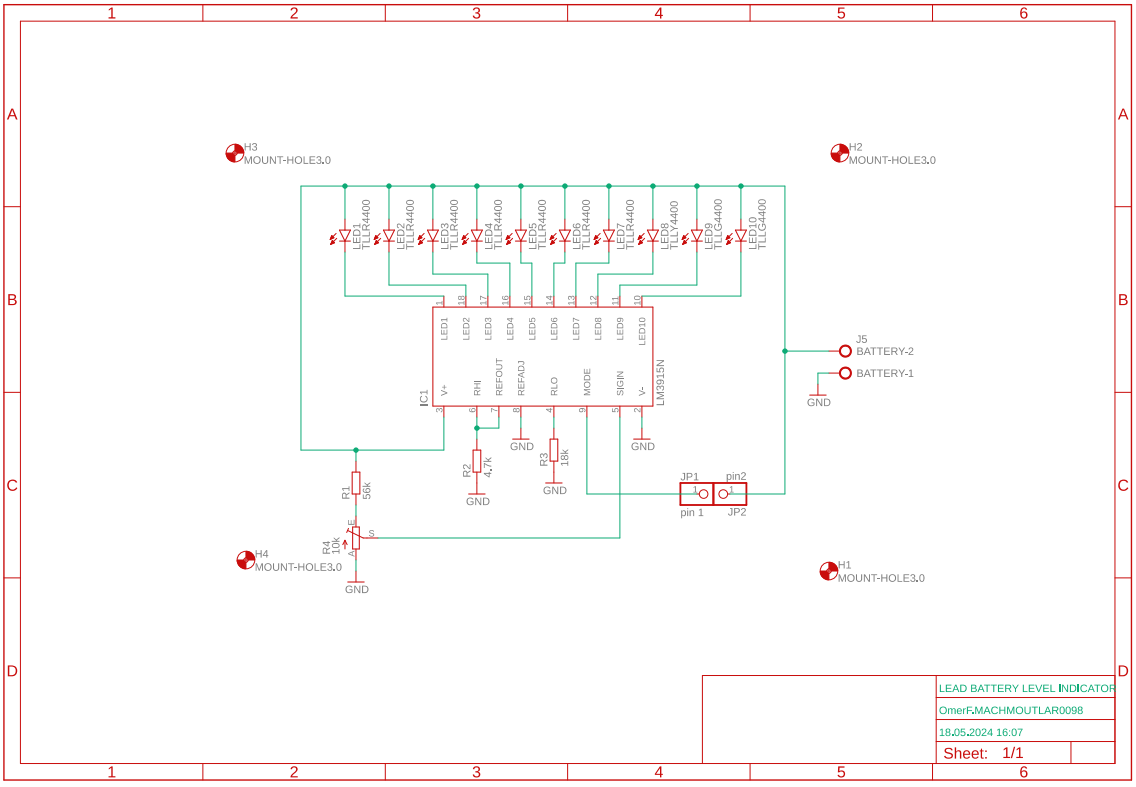
PROJECT SUMMARY

With this circuit, we can see the remaining energy in a lead car battery through LEDs. This process is carried out with the integrated circuit named LM3914N. This IC is a monolithic integrated circuit that senses analog voltage levels and drives 10 LEDs, providing a linear analog display. The source of this project is a YouTube channel called (Creative Techos).After I decided to make the PCB with a CNC machine, it was quite difficult for me to learn how to use it. However, thanks to people in the Electrical Engineers chamber, I learned to use the CNC machine and printed the PCB successfully. While making this project, I had a hard time with the soldering part and I think that I did not solder the PCB in a right way. I will do a lot of soldering practice in my spare time.

BOM LIST

Part	Value	Device		
BATTERY J5	AK500/2	AK500/2 CONNECTOR		
H1	MOUNT-HOLE3.0	MOUNT-HOLE3.0 3,0		
H2	MOUNT-HOLE3.0	MOUNT-HOLE3.0 3,0		
H3	MOUNT-HOLE3.0	MOUNT-HOLE3.0 3,0		
H4	MOUNT-HOLE3.0	MOUNT-HOLE3.0 3,0		
IC1	LM3915N	LM3915N	DIL18	Dot/Bar Display Driver
JP1	pin 1	PINHD-1X1	1X01	PIN HEADER
JP2	pin2	PINHD-1X1	1X01	PIN HEADER
LED1	TLLR4400	LED3MM	Low Current (2mA) LED 3 mm	
LED2	TLLR4400	LED3MM	Low Current (2mA) LED 3 mm	
LED3	TLLR4400	LED3MM	Low Current (2mA) LED 3 mm	
LED4	TLLR4400	LED3MM	Low Current (2mA) LED 3 mm	
LED5	TLLR4400	LED3MM	Low Current (2mA) LED 3 mm	
LED6	TLLR4400	LED3MM	Low Current (2mA) LED 3 mm	
LED7	TLLR4400	LED3MM	Low Current (2mA) LED 3 mm	
LED8	TLLY4400	LED3MM	Low Current (2mA) LED 3 mm	
LED9	TLLG4400	LED3MM	Low Current (2mA) LED 3 mm	
LED10	TLLG4400	LED3MM	Low Current (2mA) LED 3 mm	
R1	56k	R-EU_0204/7	0204/7	RESISTOR
R2	4.7k	R-EU_0204/7	0204/7	RESISTOR
R3	18k	R-EU_0204/7	0204/7	RESISTOR
R4	10k	TRIM_EU-S64W	S64W	POTENTIOMETER

CIRCUIT SCHEMATIC



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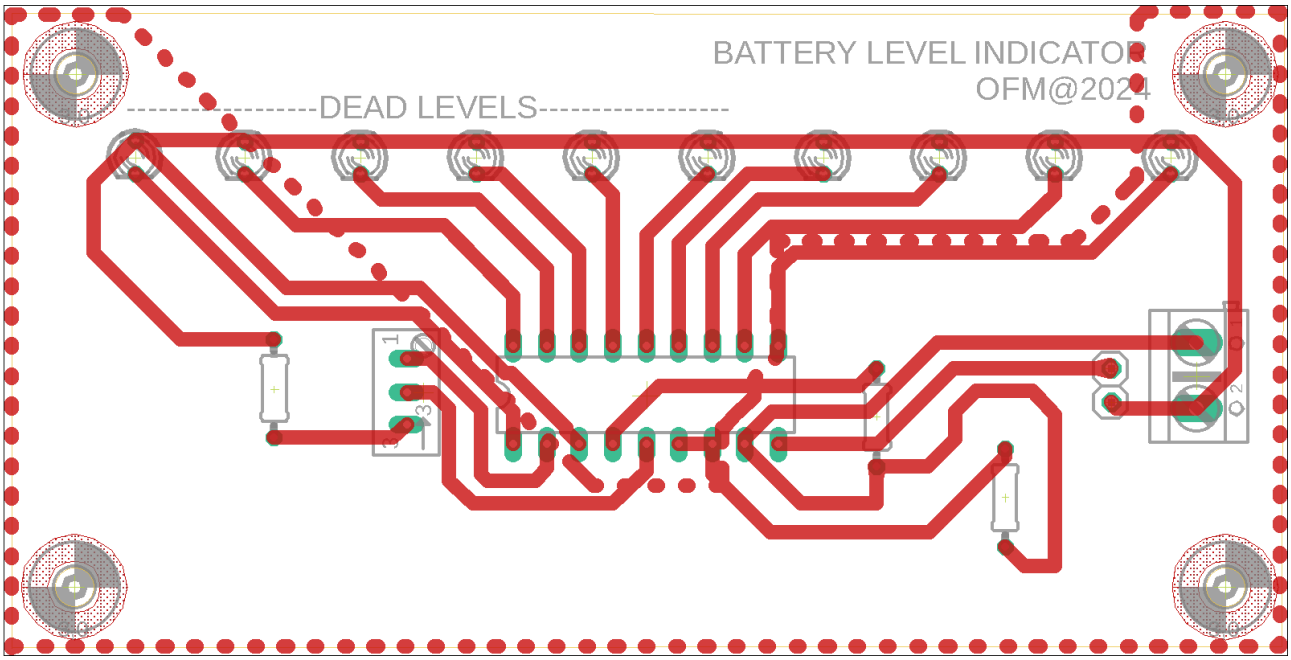
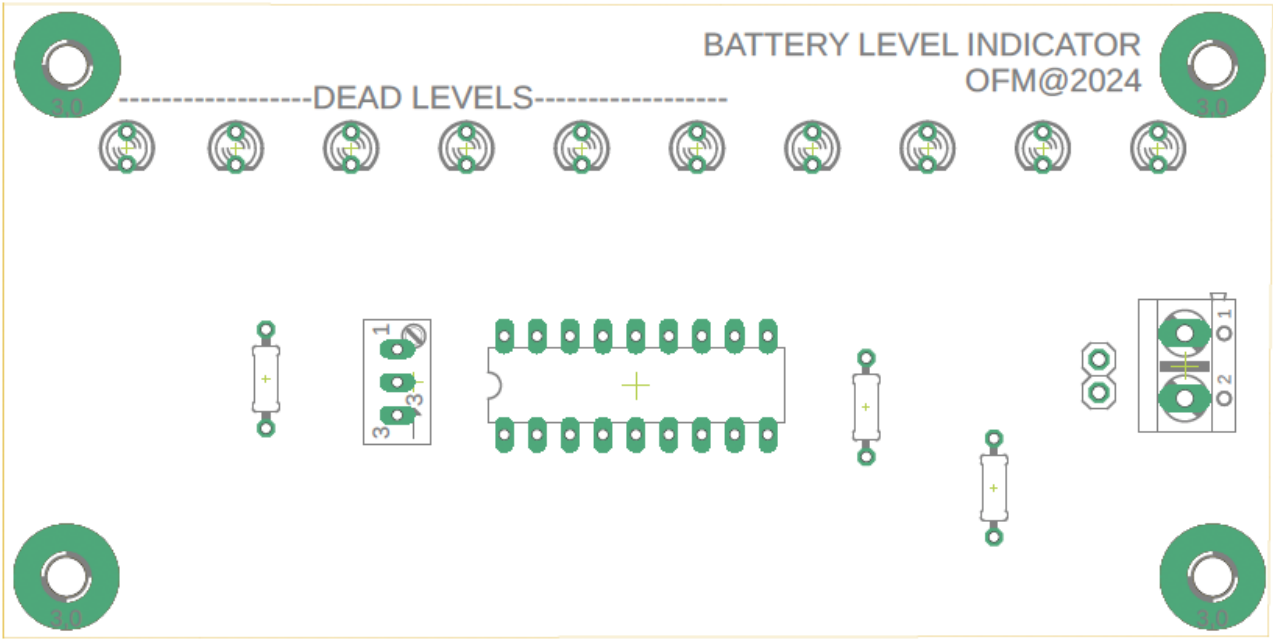
PRINTED CIRCUIT BOARD

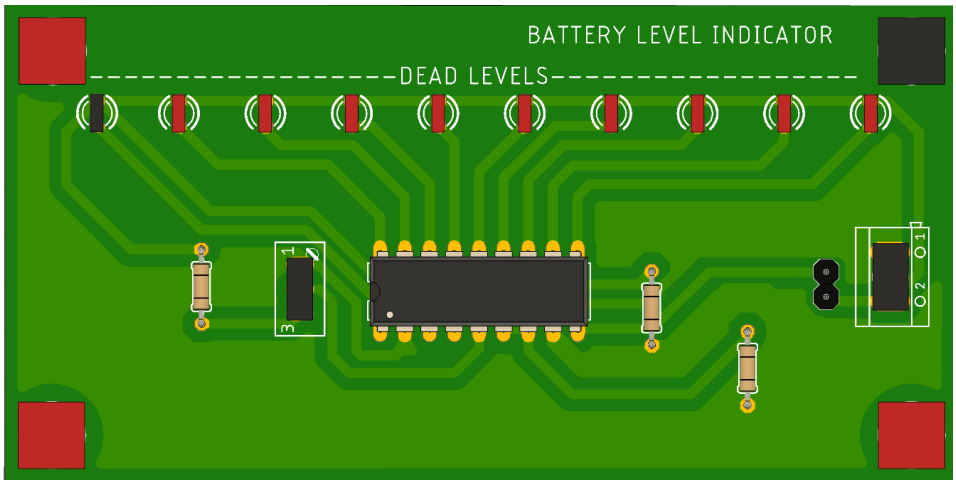


Top view of the PCB(layer 1,17,21,22,23,24,25,26,51 and 52 are on)

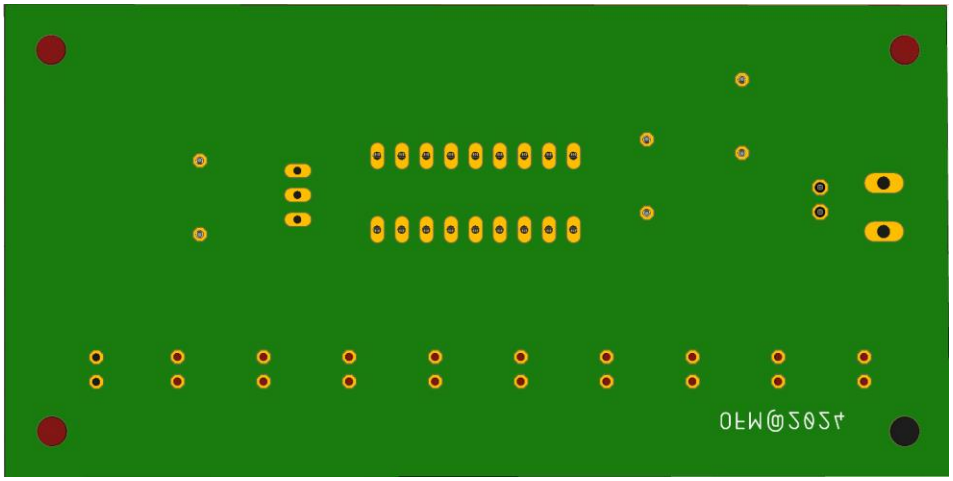


Top view of the PCB (layer 17,21,23,25,26 and 51 are on)

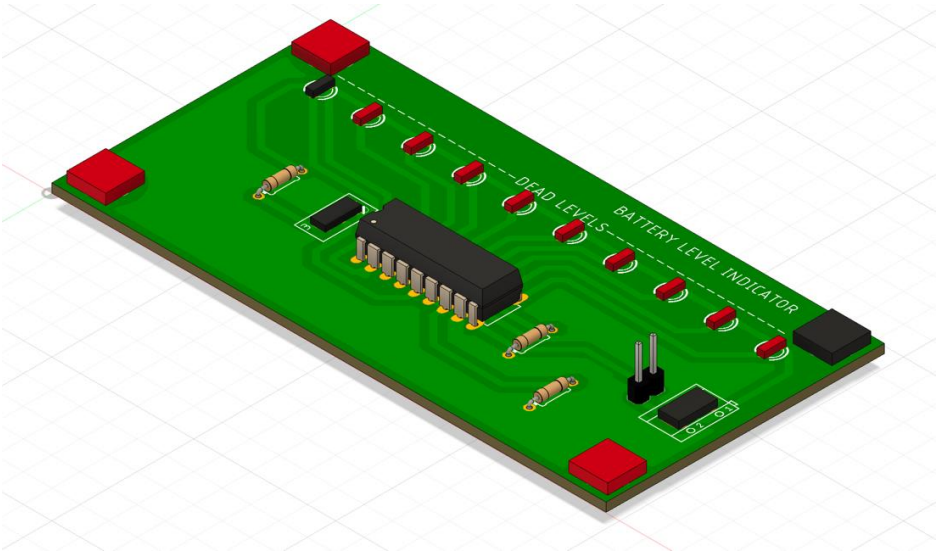
3D VIEW OF THE PCB



Top view of the PCB

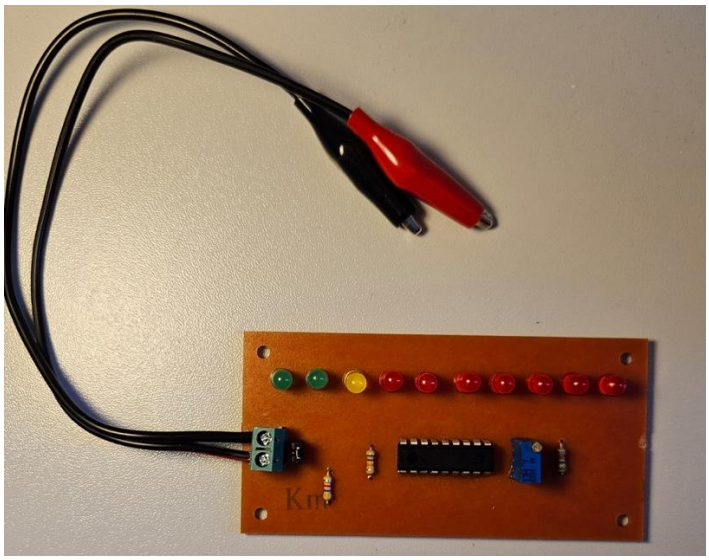


Bottom view of the PCB

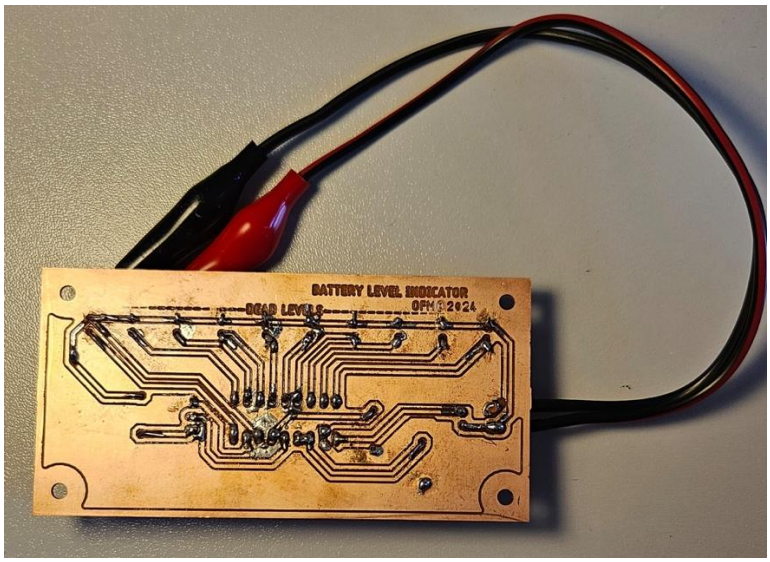


Isometric view of the PCB

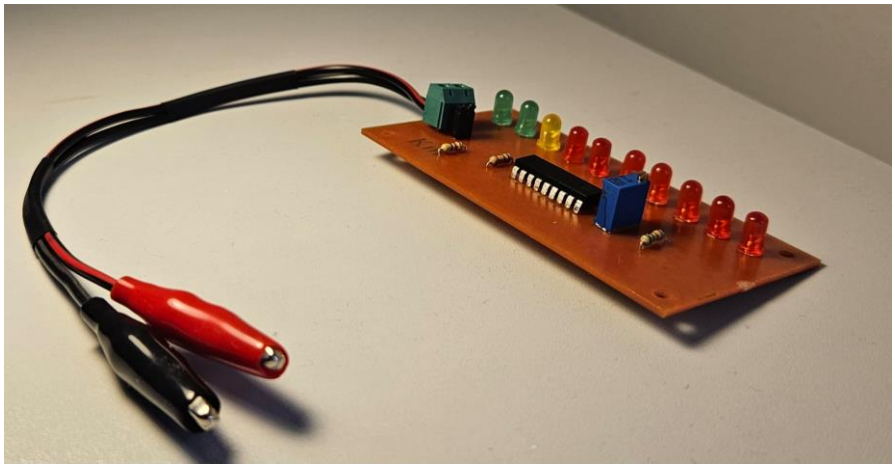
PHOTOGRAPHS OF THE PCB



Top view of the PCB



Bottom view of the PCB



Isometric view of the PCB

SOURCES

https://www.youtube.com/watch?v=6A4N8pADOQw&t=1s
https://circuitdigest.com/electronic-circuits/simple-battery-level-indicator-using-op-amp
https://www.youtube.com/watch?v=ibZcQLIbets
https://www.makerspaces.com/how-to-solder/
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