



Developing racing car with support from JLCPCB

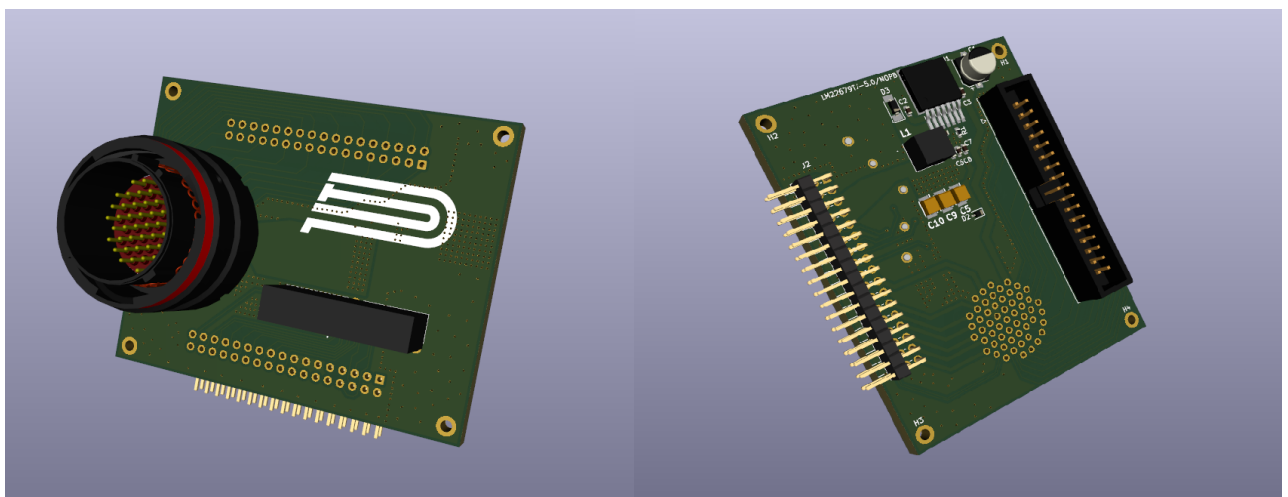
Introduction

PUT Motorsport is a racing team based in Poland, participating in an international competition called Formula Student, where teams of engineers from all over Europe compete to build the best racing car. This year we are developing our second, fully electric racing car.

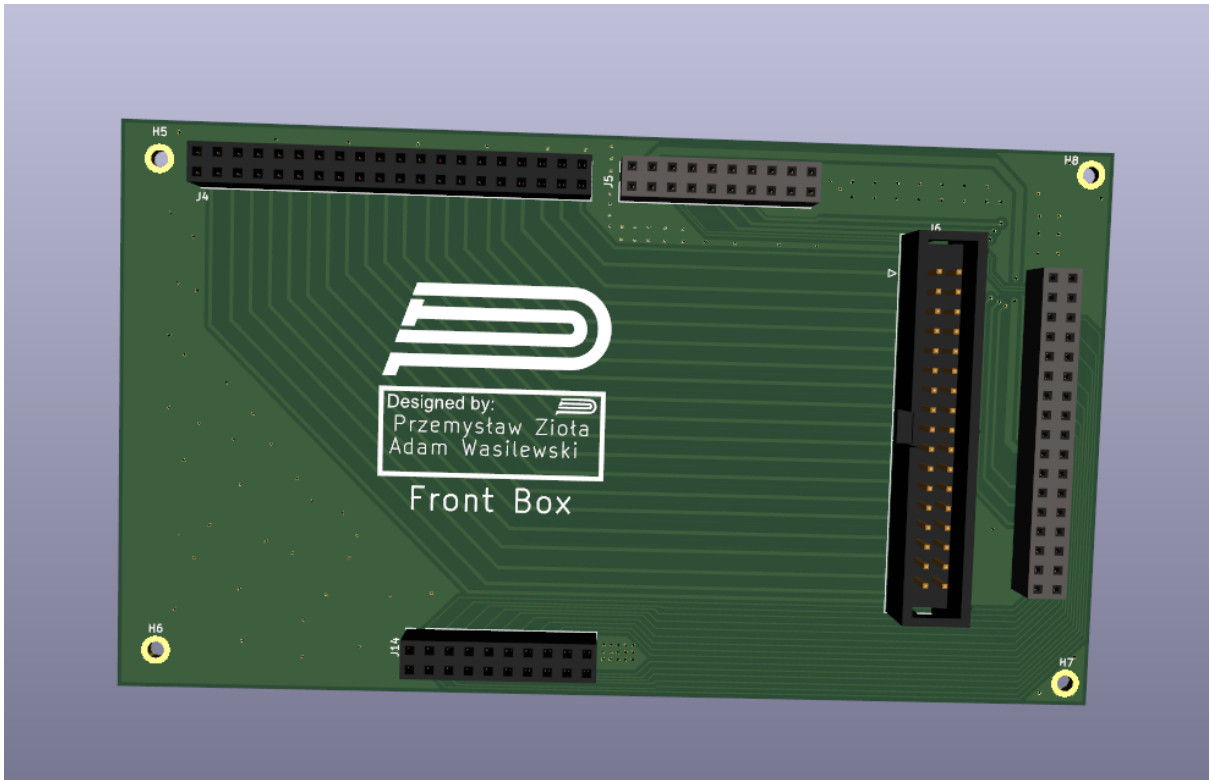
Electric vehicles require a lot of specialized and custom made electronics to control them. Some of them might be simple, but are necessary because other components rely on them. Example of such a component is, developed by PUT Motorsport and manufactured by JLCPCB, Front Box.

Front Box

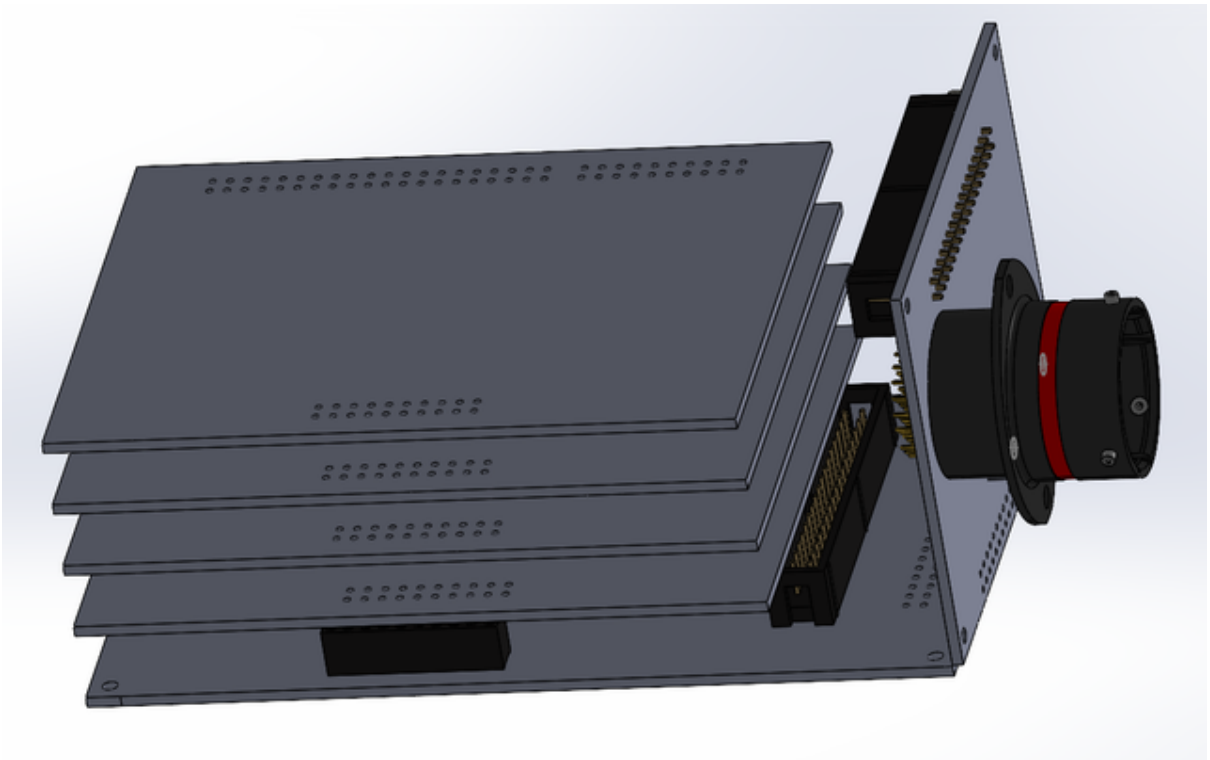
Front Box is a component that acts like a motherboard. It provides power and connection to car buses for other PCBs. Circuit boards are stacked on top of each other creating a 'PCB sandwich'. Front box is actually made from two separate PCBs connected via IDC cable and goldpin connectors, in order to maximize usable space.



First PCB 'Vertical one'. One of two PCBs that creates a Front Box. This board main task is to supply 5V, and connect other components to car buses.



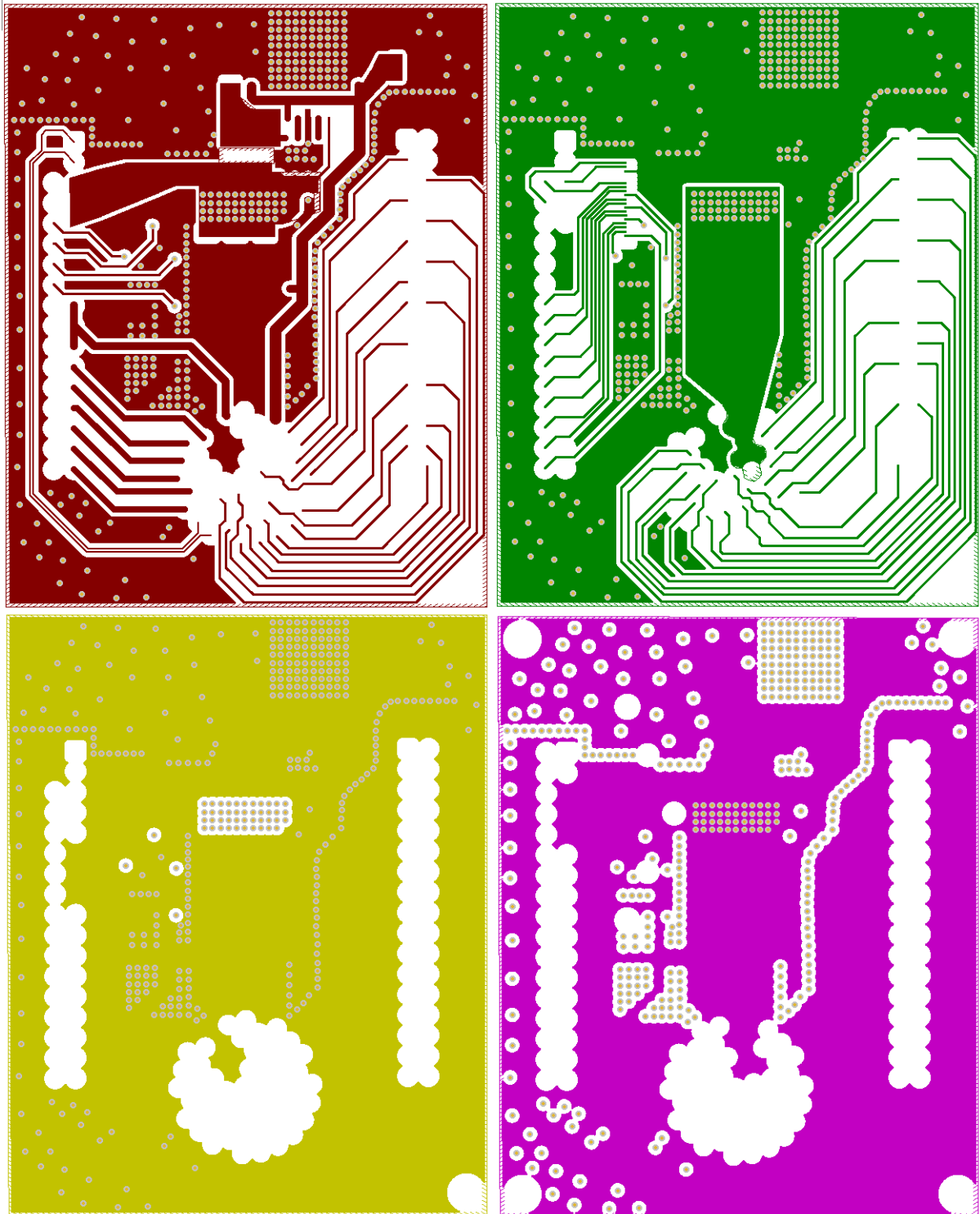
Second PCB, 'Horizontal one'. It's used to connect other boards to it, and to pass them supply and signals.



Two PCBs put together. On top of the 'horizontal board' you can see other PCBs. They are used to control the car or gather data. They all have been made by JLCPCB.

Technology behind it

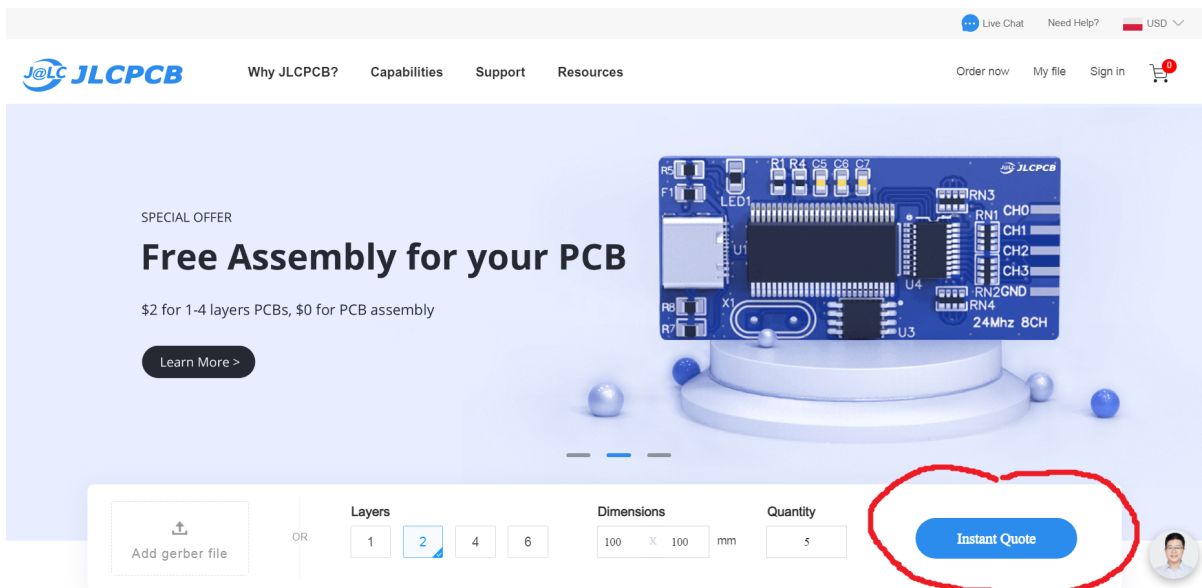
There is not a lot of available space when it comes to designing a race car. Everything has to be as small and light as possible. One of many challenges of designing a Front Box PCB was to fit a lot of traces and components on a PCB, while making sure supply rails can handle a lot of current that is needed to power components. That's why we decided to use JLCPCBs cutting edge technology. 4 layer PCB.



All four layers of our PCB. Top-left is a Front copper layer, Top-right is Bottom copper layer. Two bottoms are middle copper layers, they are used to supply 5V and GND to all electrical connections on the board.

How much does it cost?

You might think that custom made 4-layer boards are gonna cost a fortune, but thanks to JLCPCB, they are affordable by everyone! We made an example on how to order your own PCB. First, you need to go to www.jlcpb.com and click on “Instant Quote” button



In the next tab you can upload your gerber files and set your desired parameters such as number of layers, board thickness, quantity, or even a color of your PCB!

| | | | | | | | |
|---------------------|-----------------|--------------------|---|--------|------|-------|-------|
| Base Material | FR-4 | Aluminum | | | | | |
| Layers | 1 | 2 | 4 | 6 | | | |
| Dimensions | 60 | * | 75 | mm | | | |
| PCB Qty | 5 | | | | | | |
| Different Design | 1 | 2 | 3 | 4 | | | |
| Delivery Format | Single PCB | Panel by Customer | Panel by JLCPCB | | | | |
| PCB Thickness | 0.4 | 0.6 | 0.8 | 1.0 | 1.2 | 1.6 | 2.0 |
| Impedance | No | Yes | Impedance calculator > | | | | |
| PCB Color | Green | Purple | Red | Yellow | Blue | White | Black |
| Silkscreen | White | | | | | | |
| Surface Finish | HASL(with lead) | LeadFree HASL-RoHS | ENIG-RoHS | | | | |
| Outer Copper Weight | 1 oz | 2 oz | | | | | |
| Inner Copper Weight | 0.5 oz | 2 oz | | | | | |

Charge Details
Special Offer \$8.00
Build Time
PCB: 4 days \$0.00
Total Price \$8.00
Weight 0.07kg
SAVE TO CART

While adjusting all the different parameters, you can see how much it will cost. In our case, five, 60mm by 75mm, 4 layer boards will cost only 8\$, and it will take only 4 days to build. What a deal!

Our team uses JLCPCB services for all our projects and we are very satisfied with the quality of PCBs. We also like the simplicity of making an order, very fast build time, and of course great price! We sincerely recommend [JLCPCB](#) for all your projects.

Most Efficient, Economic, Innovative PCB Solutions

Founded in 2006, JLCPCB has been at the forefront of the PCB industry. With over 15-year continuous innovation and improvement based on customers' need, we have been growing fast, and becoming a leading global PCB manufacturer, who provides the rapid production of high-reliability and cost-effective PCBs and creates the best customer experience in the industry.

800,000⁺

Customers

20,000⁺

Orders Daily

450,000m²

Factory Area

620,000m²

Production Capacity/Month

6 Million⁺

PCBs Produced/Year

170⁺

Countries Covered

3000⁺

Employees

15

Years Founded

>99.97%

On-time delivery

<0.23%

Quality Complaint Rate

1 Day

PCB Prototype

24/7

Online Service

* As of January 2021

