



# Developing racing car with support from JLCPCB

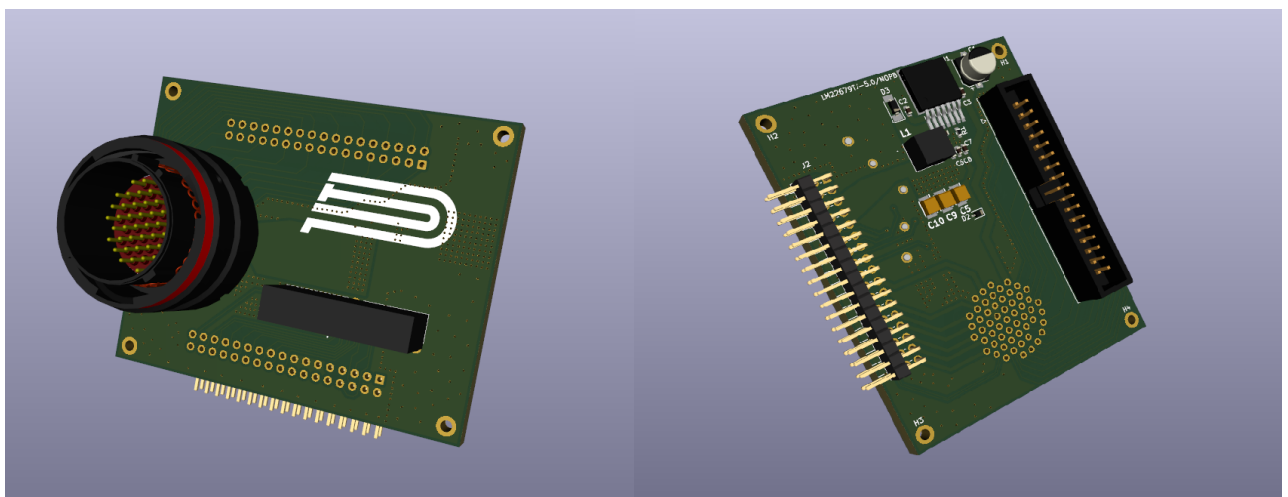
## Introduction

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.

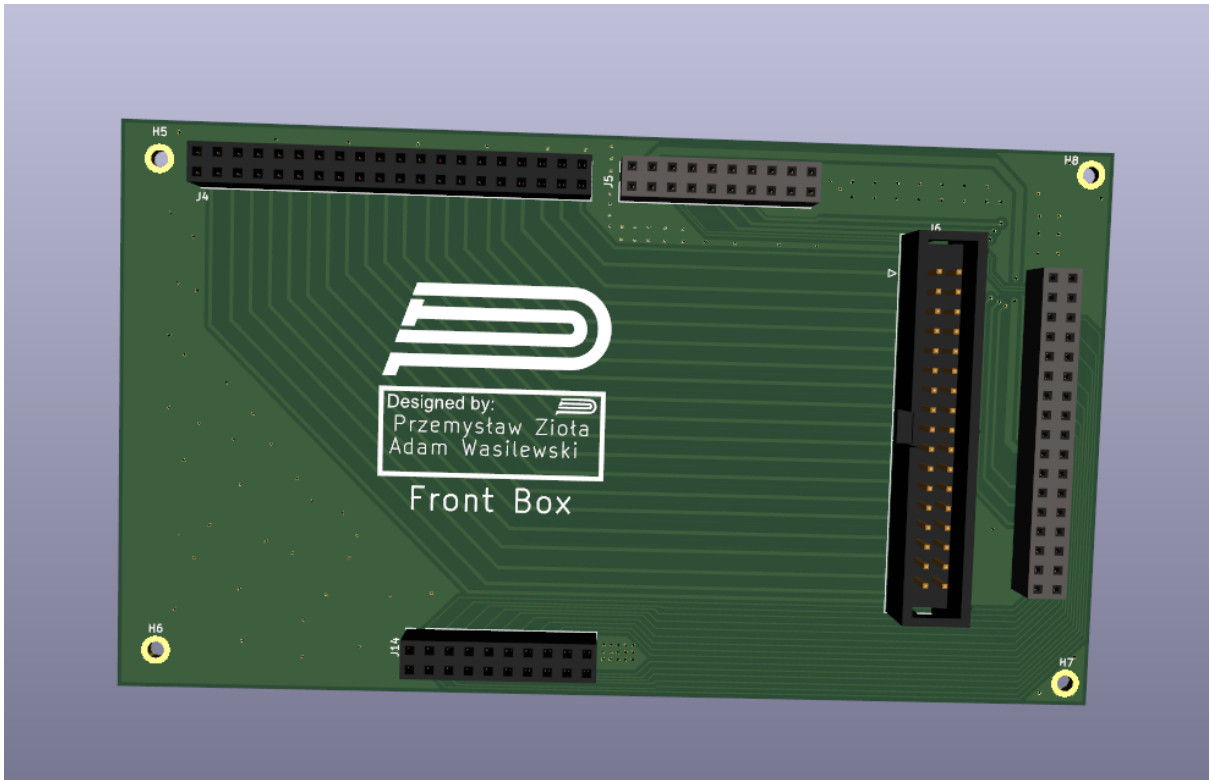
Electric vehicles require a lot of specialized and custom made electronics to control them. Some of them might be simple, but are necessary because other components rely on them. Example of such a component is, developed by PUT Motorsport and manufactured by JLCPCB, Front Box.

## Front Box

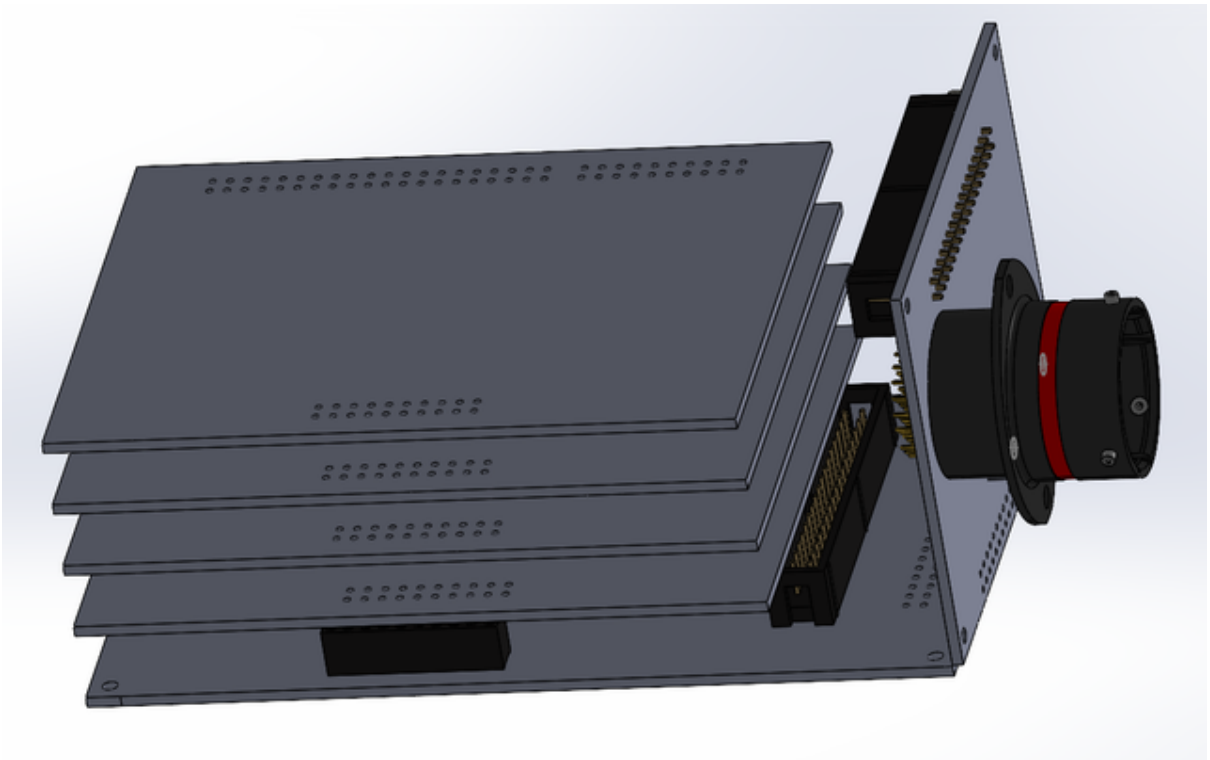
Front Box is a component that acts like a motherboard. It provides power and connection to car buses for other PCBs. Circuit boards are stacked on top of each other creating a 'PCB sandwich'. Front box is actually made from two separate PCBs connected via IDC cable and goldpin connectors, in order to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



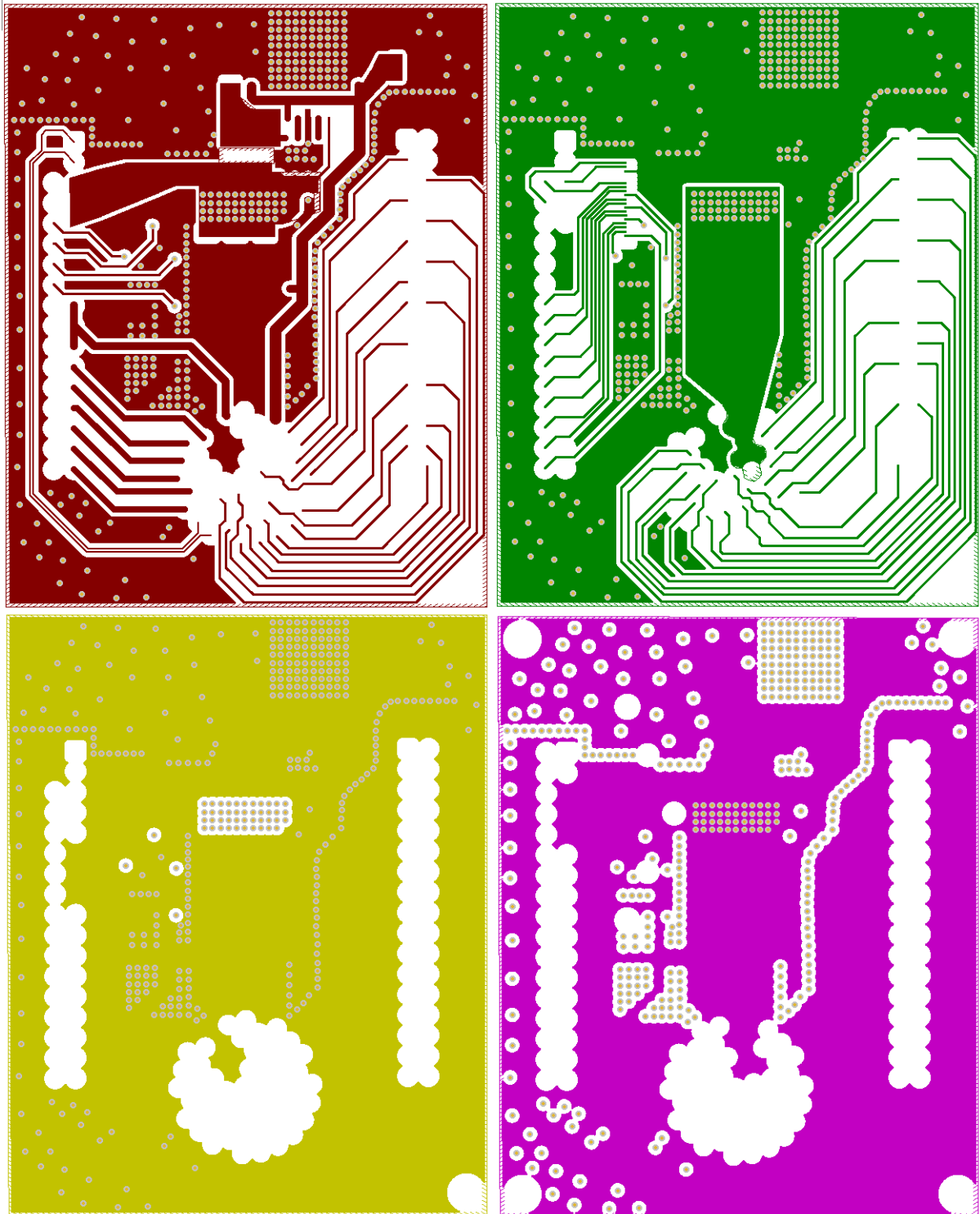
*Second PCB, 'Horizontal one'. It's used to connect other boards to it, and to pass them supply and signals.*



*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

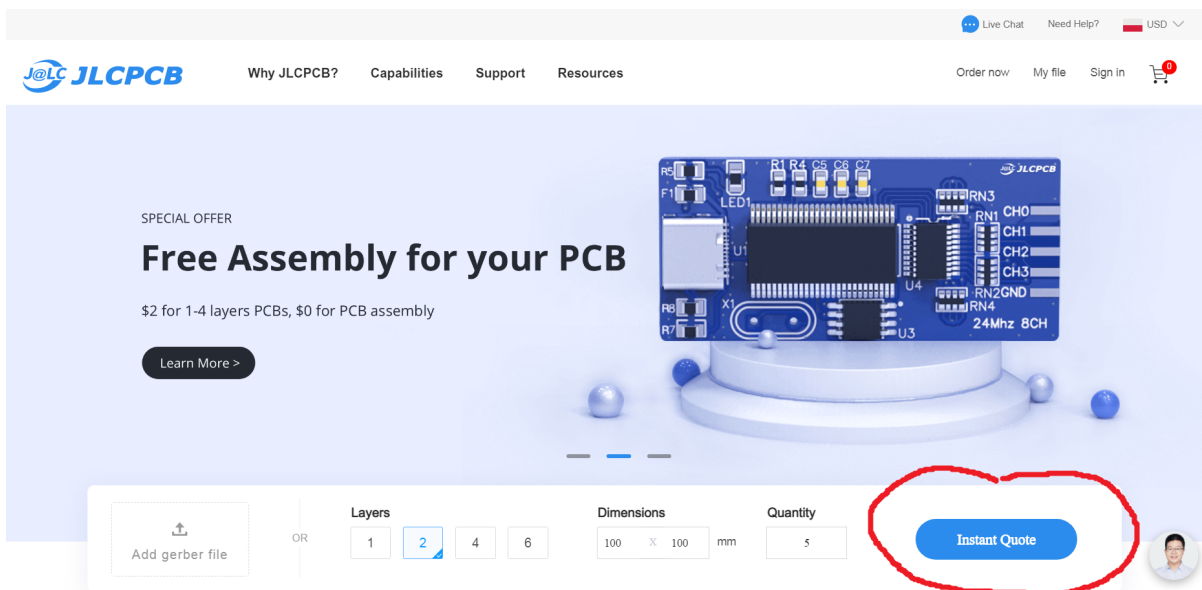
There is not a lot of available space when it comes to designing a race car. Everything has to be as small and light as possible. One of many challenges of designing a Front Box PCB was to fit a lot of traces and components on a PCB, while making sure supply rails can handle a lot of current that is 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](http://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	<input checked="" type="radio"/> FR-4	<input type="radio"/> Aluminum					
Layers	<input type="radio"/> 1	<input type="radio"/> 2	<input checked="" type="radio"/> 4	<input type="radio"/> 6			
Dimensions	<input type="text" value="60"/>	*	<input type="text" value="75"/>	<input type="text" value="mm"/>			
PCB Qty	<input type="text" value="5"/>						
Different Design	<input checked="" type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4			
Delivery Format	<input checked="" type="radio"/> Single PCB	<input type="radio"/> Panel by Customer	<input type="radio"/> Panel by JLCPCB				
PCB Thickness	<input type="radio"/> 0.4	<input type="radio"/> 0.6	<input type="radio"/> 0.8	<input type="radio"/> 1.0	<input type="radio"/> 1.2	<input checked="" type="radio"/> 1.6	<input type="radio"/> 2.0
Impedance	<input checked="" type="radio"/> No	<input type="radio"/> Yes	<a href="#">Impedance calculator &gt;</a>				
PCB Color	<input checked="" type="radio"/> Green	<input type="radio"/> Purple	<input type="radio"/> Red	<input type="radio"/> Yellow	<input type="radio"/> Blue	<input type="radio"/> White	<input type="radio"/> Black
Silkscreen	<input checked="" type="radio"/> White						
Surface Finish	<input checked="" type="radio"/> HASL(with lead)	<input type="radio"/> LeadFree HASL-RoHS	<input type="radio"/> ENIG-RoHS				
Outer Copper Weight	<input checked="" type="radio"/> 1 oz	<input type="radio"/> 2 oz					
Inner Copper Weight	<input checked="" type="radio"/> 0.5 oz	<input type="radio"/> 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 <sup>+</sup>	20,000 <sup>+</sup>	450,000m²	620,000m²
Customers	Orders Daily	Factory Area	Production Capacity/Month
6 Million <sup>+</sup>	170 <sup>+</sup>	3000 <sup>+</sup>	15
PCBs Produced/Year	Countries Covered	Employees	Years Founded
>99.97%	<0.23%	1 Day	24/7
On-time delivery	Quality Complaint Rate	PCB Prototype	Online Service

\* As of January 2021

