

AUTONOMY

(Team A)

Power Distribution System Final Design

16-681 MRSD Project 1

March 25, 2019
Carnegie Mellon University

Team Members

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The following tables consist of the components we placed an order for (two orders - **total cost \$63.34**), followed by the BOM generated by Eagle CAD.

Here is the link to the DFM verification report. There were no show stoppers reported.

<https://www.freedfm.com/freedfm/0030907405293252/results/summary2.htm>

The gerber files can be visualized here.

<https://www.freedfm.com/freedfm/0030907405293252/results/plots.htm>

All the files are attached.

Serial No.	Component	Product Link	Vendor	Unit Price	Quantity	Price
1	Pololu 12V Step-Up/Step-Down Voltage Regulator S18V20F12	https://www.pololu.com/product/2577	Pololu	\$14.95	1	\$14.95
2	Screw Terminal Block: 2-Pin, 5 mm Pitch, Side Entry (4-Pack)	https://www.pololu.com/product/2440		\$1.50	2	\$3.00
3	DC Power Adapter Barrel Jack	https://www.pololu.com/product/1139		\$0.85	3	\$2.55
4	0.100" (2.54 mm) Female Header: 2x5-Pin, Straight	https://www.pololu.com/product/1025		\$0.69	4	\$2.76
5	3.3V, 600mA Step-Down Voltage Regulator D36V6F3	https://www.pololu.com/product/3791		\$4.95	1	\$4.95
6	Rocker Switch: 3-Pin, SPDT, 10A	https://www.pololu.com/product/1406		\$0.75	3	\$2.25
7	5V, 600mA Step-Down Voltage Regulator D36V6F5	https://www.pololu.com/product/3792		\$4.95	1	\$4.95
8	Deans Connector - M/F Pair	https://www.sparkfun.com/products/11864	SparkFun	\$0.95	2	\$1.90
9	USB Female Type B Connector	https://www.sparkfun.com/products/139		\$1.25	4	\$5.00
10	Fuse 5mm 125VAC 5A	https://www.sparkfun.com/products/9772		\$0.50	4	\$2.00
11	ASI PTF-76-10 5 x 20 mm PCB Fuse Holder	https://www.amazon.com/PTF-76-10-Holder-Printed-Circuit-Spacing/dp/B074N1NMMX/ref=sr_1_8?keywords=20x5+fuse+holder&qid=1552424002&s=industrial&sr=1-8	Amazon	\$8.14	1	\$8.14
				Total Price		\$52.45

Serial No.	Component	Product Link	Vendor	Unit Price	Quantity	Price
1	XT60 Connector Male-Female Pair, Black	https://www.pololu.com/product/2158	Pololu	\$1.75	2	\$3.50
2	T1 (3mm) Red LED with Red Diffused Lens	https://www.pololu.com/product/1070		\$0.04	5	\$0.19
3	T1 (3mm) Green LED with Green Diffused Lens	https://www.pololu.com/product/1071		\$0.04	5	\$0.19
4	T1 (3mm) Yellow LED with Yellow Diffused Lens	https://www.pololu.com/product/1072		\$0.04	5	\$0.19
5	Capacitor: 330uF, 35V, Electrolytic, Radial	https://www.pololu.com/product/882		\$0.25	2	\$0.49
6	Aluminum Standoff: 7/16" Length, 4-40 Thread, F-F (4-Pack)	https://www.pololu.com/product/2092		\$1.79	1	\$1.79
7	Machine Screw: #4-40, 1/4" Length, Phillips (25-pack)	https://www.pololu.com/product/1960		\$0.99	1	\$0.99
8	Machine Screw: #4-40, 1/2" Length, Phillips (25-pack)	https://www.pololu.com/product/1962		\$0.99	1	\$0.99
9	DC Power Adapter Barrel Jack	https://www.pololu.com/product/1139		\$0.85	3	\$2.55
				Total Price		\$10.89

Bill of Materials (Eagle CAD)				
Part Name	Value	Device	Package	Description
3V3	YEL	LED3MM	LED3MM	LED
5V	GRN	LED3MM	LED3MM	LED
12V	GRN	LED3MM	LED3MM	LED
C1	330uF	C-US025-050X050	C025-050X050	CAPACITOR, American symbol
F1	10A	FUSEBLANK_5X20MM	FUSE HOLDER_5X20MM	Fuse
F2	5A	FUSEBLANK_5X20MM	FUSE HOLDER_5X20MM	Fuse
FUSE	GRN	LED3MM	LED3MM	LED
IC1	3V3REG	PINHD-1X4	1X04	PIN HEADER
IC2	5VREG	PINHD-1X4	1X04	PIN HEADER
IC3-1	12VREG	PINHD-1X4	1X04	PIN HEADER
IC3-2	12VREG	PINHD-1X4	1X04	PIN HEADER
J1	LiPo BATTERY	XT60	XT60	XT60
J2	JETSON	POWER_JACK	POWER_JACK_PTH	Power Jack Connector
J3	ARDUINO	POWER_JACK	POWER_JACK_PTH	Power Jack Connector
J4	RESV	POWER_JACK	POWER_JACK_PTH	Power Jack Connector
J5	POWER_JACK	POWER_JACK	POWER_JACK_PTH	Power Jack Connector
J6	USB1	USB_B_PTH	USB-B-PTH	USB Type B Connector
J7	USB2	USB_B_PTH	USB-B-PTH	USB Type B Connector
JET	RED	LED3MM	LED3MM	LED
JP1	5V PORT	PINHD-2X5	2X05	PIN HEADER
JP2	3V3 PORT	PINHD-2X5	2X05	PIN HEADER
PWR	RED	LED3MM	LED3MM	LED
R1	10K	R-US_V234/12	V234/12	RESISTOR, American symbol
R2	10K	R-US_V234/12	V234/12	RESISTOR, American symbol
R3	10K	R-US_V234/12	V234/12	RESISTOR, American symbol
R4	10K	R-US_V234/12	V234/12	RESISTOR, American symbol
R5	10K	R-US_V234/12	V234/12	RESISTOR, American symbol
R6	10K	R-US_V234/12	V234/12	RESISTOR, American symbol