

Bill of Materials (BOM) - P16104 Microfluidic Spectroscopy for proteins within cubesats

> All parts seperated by color, **RED** for Development items, **GREEN** for prototype boards, **BLUE** for LED board items.

Item #	Qty	Ref Des	Manufacturer	Mfg Part #	Dist. Part #	Price Per Unit	Total Price	Description	Package	Type
9	2	U1	PJRC	IC ATMEGA32U4 TQFP		\$8.00	\$16.00	Preloaded bootloader ATMEGA32u4	TQFP	SMD
10	2	U2	Texas Instruments	INA219AIDCNR	595-INA219AIDCNR	\$2.12	\$4.24	Current Sensing IC	SOT23-8	SMD
11	2	U3	Texas Instruments	TPS55340PWPR	595-TPS55340PWPR	\$4.41	\$8.82	5V to 24V Regulator	HTSSOP-14	SMD
12	2	U4	Maxim Integrated	DS18B20+	700-DS18B20+	\$0.00	\$0.00	External Temperature Sensor	TO-92-3	Thru Hole
13	2	U5	Maxim Integrated	DS18B20Z+	700-DS18B20Z+	\$2.69	\$5.38	Board Temperature Sensor	SOIC-8	SMD
14	4	U6,U7	Linear Technology	LT1880CS5#TRMPBF	LT1880CS5#TRMPBFCT-ND	\$4.33	\$17.32	Precision Amplifier	TSOT-23-5	SMD
15	4	R1,R2	Panasonic	ERJ-6ENF2R0V	667-ERJ-6ENF2R0V	\$0.10	\$0.40	22 ohm Resistor	0805	SMD
16	10	R3-R6,R10	Vishay/Dale	CRCW08051K00FKEA	71-CRCW0805-1.0K-E3	\$0.10	\$1.00	1K ohm Resistor	0805	SMD
17	10	R7,R8,R11,R12,R16	Vishay/Dale	CRCW080510K0FKEA	71-CRCW0805-10K-E3	\$0.10	\$1.00	10K ohm Resistor	0805	SMD
18	2	R9	KOA Speer	SR732ETTDR100F	660-SR732ETTDR100F	\$0.58	\$1.16	0.1 ohm Resistor (1%)	1210	SMD
19	2	R13	Panasonic	ERJ-6ENF6042V	667-ERJ-6ENF6042V	\$0.10	\$0.20	60.4k ohm Resistor	0805	SMD
20	2	R14	Panasonic	ERJ-6GEYJ202V	667-ERJ-6GEYJ202V	\$0.09	\$0.18	2k ohm Resistor	0805	SMD
21	2	R15	Panasonic	ERJ-6ENF1873V	667-ERJ-6ENF1873V	\$0.10	\$0.20	187k ohm Resistor	0805	SMD
22	2	R17	Panasonic	ERJ-6GEYJ202V	667-ERJ-6GEYJ202V	\$0.09	\$0.18	2k ohm resistor	0805	SMD
23	2	R18	Bourns	CR0805-FX-1004ELF	652-CR0805FX-1004ELF	\$0.10	\$0.20	1M ohm Resistor (1%)	0805	SMD
24	2	R19	susumu	RR1220P-754-D	754-RR1220P-754D	\$0.10	\$0.20	750k ohm resistor	0805	SMD
25	20	C1,C4-C10,C18,C19	Vishay / Vitramon	VJ0805Y105KXQTW1BC	77-VJ0805Y105KXQTBC	\$0.05	\$1.00	1uF Capacitor	0805	SMD
26	4	C2,C3	Würth Electronics	885012007010	710-885012007010	\$0.09	\$0.36	10pF Capacitor	0805	SMD
27	4	C11,C16	Murata Electronics	GRM21BR6Y106KE43L	81-GRM21BR6Y106KE3L	\$0.33	\$1.32	10uF capacitor	0805	SMD
28	2	C12	Syfer	0805J0500104KJT	843-0805J0500104KJT	\$0.06	\$0.12	100nF (0.1uF) Capacitor	0805	SMD
29	2	C13	Würth Electronics	885012207008	710-885012207008	\$0.08	\$0.16	22nF (0.022uF) Capacitor	0805	SMD
30	2	C14	Würth Electronics	885012207008	710-885012207008	\$0.08	\$0.16	1.5nF Capacitor	0805	SMD
31	2	C15	AVX	08055C823KAT2A	581-08055C823KAT2A	\$0.10	\$0.20	82nF Capacitor	0805	SMD
32	4	C17,C18		C0805C390J5GACTU	80-C0805C390J5G	\$0.10	\$0.40	39pF Capacitor	0805	SMD
33	2	D1	Würth Electronics	150080BS75000	710-150080BS75000	\$0.29	\$0.58	Blue LED	0805	SMD
34	2	D2	OSRAM Opto Semiconductor	LS R976-NR-1	720-LSR976-NR-1	\$0.10	\$0.20	Red LED	0805	SMD
35	6	D3,D4,D8	OSRAM Opto Semiconductor	LG R971-KN-1	720-LGR971-KN-1	\$0.10	\$0.60	Green LED	0805	SMD
36	4	D5,D6	Panasonic	DB2W60400L	667-DB2W60400L	\$0.55	\$2.20	Flyback Diode		SMD
37	2	D7	ON Semiconductor	MBR120VLSFT1G	863-MBR120VLSFT1G	\$0.55	\$1.10	Regulator Diode		SMD
38	1	D9	First Sensor	PR33-2-TO8	718-PR33-2-TO8	\$71.88	\$71.88	Photodiode		Thru Hole
39	4	Q1,Q2	Fairchild Semiconductor	FDN359BN F095	512-FDN359BN F095	\$0.38	\$1.52	Solenoid Switching MOSFET		SMD
40	2	L1	TDK	VLP6045LT-6R8M	810-VLP6045LT-6R8M	\$0.58	\$1.16	regulator inductor		SMD
41	2	Y1	Epson	TSX-3225 16.0000MF09Z-AC3	732-TX325-16F09Z-AC3	\$0.60	\$1.20	crystal (16mhz)		SMD
42	2	J1	Hirose Connector	ZX62D-B-5PA8	798-ZX62DB5PA8	\$0.78	\$1.56	usb connector		SMD
43	2	B1	Sparkfun	COM-08720		\$0.95	\$1.90	button		SMD
44	4	J4,J5	Sparkfun	PRT-09914		\$0.95	\$3.80	2 pin connector/header		SMD
45	2	J6	Sparkfun	PRT-09915		\$1.50	\$3.00	3 pin connector/header		SMD
46	4	J7,J8				\$0.00	\$0.00			
47	1	PCB	OshPark			\$71.00	\$71.00	Mainboard PCB		
42	4	U1	Linear Technology	LT3465ES6#TRMPBF	LT3465ES6#TRMPBFCT-ND	\$3.38	\$13.52	LT3465		SMD
43	4	C1,C2	Vishay / Vitramon	VJ0805Y105KXQTW1BC	77-VJ0805Y105KXQTBC	\$0.05	\$0.20	1uF Capacitor		SMD
45	2	R1	susumu	RR1220Q-100-D	754-RR1220Q-100D	\$0.10	\$0.20	5,6.66,10 ohm resistor		SMD
46	1	D1	Marktech Optoelectronics	MTE280F13-UV	1125-1262-ND	\$147.30	\$147.30	280nm LED		Thru Hole
47	2	L1	Murata Electronics	LQH32CN220K23L	81-LQH32CN220K23L	\$0.32	\$0.64	Inductor		SMD
48	2	R1 option	Panasonic	ERJ-6GEYJ5R1V	667-ERJ-6GEYJ5R1V	\$0.09	\$0.18	5.1 ohm resistor		SMD
49	2	PCB	OshPark			\$2.35	\$4.70	LED Board PCB		
50	1	DEV1	Adafruit	1918	UV Light Sensor Breakout	\$6.50	\$6.50	UV sensor		Thru Hole
51	1	DEV2	Adafruit	239	Full Sized Breadboard	\$5.95	\$5.95	breadboard		Thru Hole
52	2	DEV3	Adafruit	374	DS18B20 Digital Temp Sensor	\$3.95	\$7.90	temperature sensor		Thru Hole
53	1	DEV4	Adafruit	904	INA219 DC Current Sensor	\$9.95	\$9.95	power monitor chip		Thru Hole
54	2	DEV5	Adafruit	355	NMOS power MOSFET	\$1.75	\$3.50	power toggle		Thru Hole
55	4	DEV6	Adafruit	412	Small Push Pull Solenoid	\$9.95	\$39.80	mixing solenoid		Thru Hole
56	1	DEV7	PJRC	199	Teensy 2.0 ATMEGA32U4	\$15.95	\$15.95	microprocessor		Thru Hole
57	6	PDMS				\$40.00	\$240.00	PDMS Sheets		
58	1	Filter	Edmund Optics	#86-973		\$180.00	\$180.00	357nm 12.5mm Dia, 44nm Bandwidth filter		
59	1					\$60.00	\$60.00	Aluminium		
60	1					\$39.95	\$39.95	Raspberry Pi 3		
61	1					\$0.00	\$0.00	Battery backup		
62	1					\$5.95	\$5.95	wall wart		
63	2					\$2.00	\$4.00	2.1mm jack to screw terminal block adapter		
64						\$0.00	\$0.00			

Datasheet
https://www.pjrc.com/store/ic_atmega32u4_tqfp.html
<http://www.mouser.com/ds/2/405/ina219-443183.pdf>

<http://www.linear.com/docs/3351>

Shipping Costs: \$4.94

LED's Total:
\$221.90

Power Total:
\$237.74

Recovery Total:
\$624.15

Grand Total:
\$1,088.73

Remaining Budget:
\$411.27