

Bill Of Materials February 20,2023 20:10:06							Total Prototype Unit Cost:	\$65.12
Automatic Switch Team Schematic, Team 202 Revised: Monday, February 21, 2023							Total Production Unit Cost:	\$44.07
Revision: 1								
Team 202: Miguel Chacon Cuesta, Carlos Chacon Cuesta, Wyatt Ricks, Lukas Severinghaus								
		Production batch 1000 units						
Part name	Unit Qty	Unit Prototype Cost	Total Prototype Cost	Unit Production Cost	Total Production Cost	Manufacturer	Manufacturer Part #	Supplier
6.2pF 10V Capacitor	1	\$0.24	\$0.24	\$0.051	\$0.051	Kyocera AVX	08051A6R2CAT2A	Digikey
10uF 10V Capacitor	3	\$0.10	\$0.30	\$0.017	\$0.050	Samsung Electro-Mechanics	CL21A106KOQNNNE	Digikey
4.7uF 10V Capacitor	1	\$0.10	\$0.10	\$0.020	\$0.020	Samsung Electro-Mechanics	CL21A475KAQNNNE	Digikey
0.1uF 10V Capacitor	9	\$0.10	\$0.90	\$0.011	\$0.098	Samsung Electro-Mechanics	CL21B104KBFNNNE	Digikey
100uF 10V Capacitor	1	\$0.31	\$0.31	\$0.121	\$0.121	Aishi Capacitors	SVF1EM101E09E00REX	Digikey
Blue LED	1	\$0.32	\$0.32	\$0.084	\$0.084	Lite-On Inc.	LTST-C171TBKT	Digikey
Red LED	6	\$0.10	\$0.60	\$0.086	\$0.519	Harvatek Corporation	B1701USD-20D000114U	Digikey
1N4148 Diode	3	\$0.10	\$0.30	\$0.017	\$0.050	Micro Commercial Co.	1N4148W-TP	Digikey
Female Micro USB Connector	1	\$0.43	\$0.43	\$0.27	\$0.27	Amphenol ICC (FCI)	10118192-0002LF	Digikey
2.2uH 5V Inductor	1	\$0.64	\$0.64	\$0.27	\$0.27	Pulse Electronics	PA4332.222NLT	Digikey
DRV8830GQDR Motor Driver	1	\$2.41	\$2.41	\$1.18	\$1.18	Texas Instruments	DRV8830DGQR	Digikey
S8050 SOT23 Transistor	2	\$0.22	\$0.44	\$0.05	\$0.09	UMW	S8050	Digikey
249kOhm 1/4W Resistor	1	\$0.10	\$0.10	\$0.01	\$0.01	KOA Speer Electronics, Inc.	RK73H2ATTD2493F	Digikey
54.9kOhm 1/4W Resistor	1	\$0.10	\$0.10	\$0.01	\$0.01	KOA Speer Electronics, Inc.	RK73H2ATTD5492F	Digikey
180-Ohm 1/4W Resistor	1	\$0.10	\$0.10	\$0.01	\$0.01	Stackpole Electronics Inc	RNCP0805FTD180R	Digikey
130-Ohm 1/4W Resistor	6	\$0.10	\$0.60	\$0.01	\$0.06	KOA Speer Electronics, Inc.	RK73H2ATTD1300F	Digikey
1kOhm 1/4W Resistor	5	\$0.10	\$0.50	\$0.01	\$0.05	Stackpole Electronics Inc	RNCP0805FTD1K00	Digikey
10kOhm 1/4W Resistor	14	\$0.07	\$0.98	\$0.01	\$0.14	Stackpole Electronics Inc	RNCP0805FTD10K0	Digikey
470-Ohm 1/4W Resistor	1	\$0.10	\$0.10	\$0.01	\$0.01	Stackpole Electronics Inc	RK73H2ATTD4700F	Digikey
4.7kOhm 1/4W Resistor	4	\$0.10	\$0.40	\$0.01	\$0.02	Stackpole Electronics Inc	RK73B2ATTD472J	Digikey
0.4Ohm 1/4W Resistor	1	\$0.41	\$0.41	\$0.06	\$0.06	Eaton - Electronics Division	MFLA0805R4000FA	Digikey
Pushbutton	5	\$0.42	\$2.10	\$0.16	\$0.82	E-Switch	TL3305BF260QG	Digikey
RT8059GJ5 Power Regulator	1	\$0.42	\$0.42	\$0.16	\$0.16	Richtek USA, Inc.	RT8059GJ5	Digikey
PIC24FJ64GA702 Microcontroller	1	\$1.90	\$1.90	\$1.59	\$1.59	Microchip Technology	PIC24FJ64GA702-I/SO	Digikey
ESP32-WROOM-32E WiFi Module	1	\$3.15	\$3.15	\$3.15	\$3.15	Espressif Systems	ESP32-WROOM-32E-H4	Digikey
HIH6030 Humidity Sensor	1	\$13.98	\$13.98	\$7.85	\$7.85	Honeywell Sensing and Productivity Solutions	HIH6030-021-001	Digikey
TC74 Temperature Sensor	1	\$1.09	\$1.09	\$0.87	\$0.87	Microchip Technology	TC74A4-3.3VCTTR	Digikey
TX Test Point (pad only)	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	N/A
RX Test Point (pad only)	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	N/A
Fault Test Point (pad only)	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	N/A
3A fuse	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	Peralta Labs
I2C Header	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	Peralta Labs
OLED Header	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	Peralta Labs
Debug UART Header	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	Peralta Labs
ICSP Header	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	Peralta Labs
Programming Jumper Header	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	Peralta Labs
ESP Programming Header	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	Peralta Labs
Power In Header	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	Peralta Labs
USB Debug Header	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	Peralta Labs
Motor Connector Header	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	Peralta Labs
Servo Header	1	\$0.00	\$0.00	\$0.00	\$0.00	N/A	N/A	Peralta Labs
External Parts:								
USB Power Supply	1	\$12.42	\$12.42	\$10.63	\$10.63	Phihong USA	AQ15A-050A	Digikey
Micro USB Cable	1	\$1.47	\$1.47	\$0.82	\$0.82	Cvillux	DH-20M50055	Digikey
Servo Motor	1	\$5.95	\$5.95	\$5.95	\$5.95	Adafruit Industries LLC	SERVOMOTOR RC 4.8V	Digikey
Fan	1	\$12.36	\$12.36	\$9.06	\$9.06	Orion Fans	OD4010-05HB	Digikey

Supplier Part #	Quantity Ordered	Date Ordered	Quantity Received	Surplus	Reference Desig	Notes	
478-10412-1-ND	3	2/14/23			2	C2	
1276-1096-1-ND	6	2/14/23			3	C4,C12,C18	
1276-1244-1-ND	3	2/14/23			2	C5	
1276-1180-1-ND	18	2/14/23			9	C7,C8,C9,C10,C11,C13,C15,C16,C17	
3222-SVF1EM101E09E00REX24CT-ND	3	2/14/23			2	C14	
160-1645-1-ND	3	2/14/23			2	D2	
3147-B1701USD-20D000114U1930CT-ND	12	2/14/23			6	D7,D8,D9,D13,D14,D15	
1N4148WTPMSCT-ND	9	2/14/23			6	D10,D11,D12	
609-5379-1-ND	4	2/14/23			3	J1	
553-3290-1-ND	3	2/14/23			2	L1	
296-28165-1-ND	3	2/14/23			2	M1	
4518-S8050CT-ND	6	2/14/23			4	Q2,Q3	
2019-RK73H2ATTD2493FCT-ND	3	2/14/23			2	R1	
2019-RK73H2ATTD5492FCT-ND	3	2/14/23			2	R2	
RNCP0805FTD180RCT-ND	3	2/14/23			2	R3	
2019-RK73H2ATTD1300FCT-ND	12	2/14/23			6	R4,R5,R6,R25,R33,R34	
RNCP0805FTD1K00CT-ND	15	2/14/23			10	R7,R12,R17,R19,R20	
RNCP0805FTD10K0CT-ND	45	2/14/23			31	R8,R9,R10,R11,R13,R15,R16,R18,R21,R22,R23,R24,R26,R27	
2019-RK73H2ATTD4700FCT-ND	3	2/14/23			2	R14	
2019-RK73B2ATTD472JCT-ND	12	2/14/23			8	R28,R29,R30,R31	
MFLA0805R4000FA	4	2/14/23			3	R32	
EG5354CT-ND	15	2/14/23			10	SW1,SW2,SW3,SW4,SW5	
1028-1493-1-ND	3	2/14/23			2	U1	
PIC24FJ64GA702-I/SO-ND	7	2/14/23			6	U2	3 samples ordered from Microchip 2/15
1965-ESP32-WROOM-32E-H4CT-ND	3	2/14/23			2	U3	
480-5704-1-ND	4	2/14/23			3	U4	
TC74A4-3.3VCTTR	4	2/14/23			3	U5	
N/A	N/A	N/A	N/A	N/A		TP1	
N/A	N/A	N/A	N/A	N/A		TP2	
N/A	N/A	N/A	N/A	N/A		TP3	
N/A	N/A	N/A	N/A	N/A		F1	
N/A	N/A	N/A	N/A	N/A		J2	
N/A	N/A	N/A	N/A	N/A		J3	
N/A	N/A	N/A	N/A	N/A		J4	
N/A	N/A	N/A	N/A	N/A		J5	
N/A	N/A	N/A	N/A	N/A		J6	
N/A	N/A	N/A	N/A	N/A		J7	
N/A	N/A	N/A	N/A	N/A		J8	
N/A	N/A	N/A	N/A	N/A		J9	
N/A	N/A	N/A	N/A	N/A		J10	
N/A	N/A	N/A	N/A	N/A		J11	
993-1376-ND	2	2/22/23					
2987-DH-20M50055-ND	2						
1528-1110-ND	2						
OD4010-05HB	2						