

Schematic	Series/Type/Package	Manufacturer	Description	Part Number	DigiKey Part	Qty	Notes	
<b>Transistors/MOSFETS</b>								
Q1-8	SOT-23-3	International Rectifier	MOSFET N-CH 20V 4.2A SOT-23	IRLML2502TRPBF	<a href="#">IRLML2502PBFCT-ND</a>	8	Aux, headlight, brake, machine gun, IR transmit, hit-notify LEDs, AND recoil motor driver.	
O9	SOT-23	Diodes, Inc	TRANS PNP 60V 1A SOT23-3	DPBT8105-7	<a href="#">DPBT8105DICT-ND</a>	1	PNP for High Intensity Muzzle Flash trigger	
O10	SOT-23-3	Diodes, Inc	TRANS NPN 30V 0.1A SOT23-3	BC848C-7-F	<a href="#">BC848C-7FDICT-ND</a>	1	NPN to invert SBUS signal	
O11	TO-252-3 (DPAK)	Fairchild Semi	MOSFET N-CH 25V 35A TO-252AA	FDD8780	<a href="#">FDD8780CT-ND</a>	1	35A logic-level MOSFET, SMD, for Heng Long Smoker	
<b>Switches</b>								
S1	JS	C&K Components	SWITCH SLIDE DPDT 300MA 6V	JS02011CON	<a href="#">401-2001-ND</a>	1	DPDT slide switch - for Fight/Repair selection	
S2	SMD	CTS Electrocomponents	SWITCH TAPE SEAL 5 POS SMD 50V	219-SMST	<a href="#">CT1219SMST-ND</a>	1	5 pos dipswitch	
S3	TL3342	E-Switch	SWITCH TACTILE SPST-NO 0.05A 12V	TL3342F1400Q/TR	<a href="#">EG2531CT-ND</a>	1	Square tactile input button switch.	
S4	KMR2	C&K Components	SWITCH TACTILE SPST-NO 0.05A 32V	KMR231NG ULC LFS	<a href="#">CKN10284CT-ND</a>	1	Reset switch	
<b>Resistors, Arrays</b>								
RN1	SMD	0805 Series 743	CTS Resistor Products	RES ARRAY 150 OHM 4 RES 2008	743C083151JP	<a href="#">743C083151JPCCT-ND</a>	1	150 ohm - 4 package. Aux, headlight, machine gun, and IR transmit notify MOSFET gate current limiters. 5w/150 ohm = 33mA max pin current (pins can handle up to 40 mA)
<b>Resistors, Individual</b>								
R1-7	ERJ	0805	Panasonic - ECG	RES SMD 150 OHM 1% 1/8W 0805	ERJ-6ENF1500V	<a href="#">P150CCT-ND</a>	7	150 ohm base resistors MOSFETs/transistors
R8-15	ERJ	0805	Panasonic - ECG	RES 1.00K OHM 1/8W 1% 0805 SMD	ERJ-6ENF1001V	<a href="#">P1.00KCT-ND</a>	8	1k
R16	ERJ	0805	Panasonic - ECG	RES SMD 4.7K OHM 1% 1/8W 0805	ERJ-6ENF4701V	<a href="#">P4.70KCT-ND</a>	1	4.7k resistor for one-half of voltage divider
R17	ERJ	0805	Panasonic - ECG	RES SMD 8.2K OHM 1% 1/8W 0805	ERJ-6ENF8201V	<a href="#">P8.20KCT-ND</a>	1	The blue is too bright. 8k tones it down.
R18-29	ERJ	0805	Panasonic - ECG	RES 10.0K OHM 1/8W 1% 0805 SMD	ERJ-6ENF1002V	<a href="#">P10.0KCT-ND</a>	12	10k - various, including MOSFET GND hold-downs
R20	ERJ	0805	Panasonic - ECG	RES SMD 18K OHM 1% 1/8W 0805	ERJ-6ENF1802V	<a href="#">P18.0KCT-ND</a>	1	18k - for SBUS inverter
R21	ERJ	0805	Panasonic - ECG	RES SMD 47K OHM 1% 1/8W 0805	ERJ-6ENF4702V	<a href="#">P47.0KCT-ND</a>	1	47k - for SBUS inverter
R32	ERJ	2512 (6432 metric)	Panasonic - ECG	RES SMD 3.3 OHM 5% 1W 2512	ERJ-1TYJ3R3U	<a href="#">PT3.3XCT-ND</a>	1	3.3 ohm resistor, 1 watt, for IR emitter.
<b>Capacitors</b>								
C1-2		0805	AVX Corp	CAP CER 18PF 50V NP0 0805	08055A180JA72A	<a href="#">478-1307-1-ND</a>	2	18pf for SMD crystal
C3-4	C	0805	TDK Corp	CAP CER 10000PF 100V X7R 0805	C2012X7R2A103K0085AA	<a href="#">445-1343-1-ND</a>	2	(0.01uF = 10,000 pf) For rc filter on trigger input, and batt voltage monitor
C5-12	C	0805	TDK Corp	CAP CER 100UF 50V X7R 10% 0805	C2012X7R1H104K1T5	<a href="#">445-8095-1-ND</a>	8	0.1uF
C13	FF3	1206 (3216mm)	AVX Corp	CAP TANT 10UF 16V 10% 1206	F931C106KAA	<a href="#">478-8235-1-ND</a>	1	10uF cap, for 5v input from USB. Tantalum 1206.
C14	S	5.3x5.3 mm (0.209")	Panasonic - ECG	CAP ALUM 10UF 35V 20% SMD	EEE-1VA1005R	<a href="#">ECE3947CT-ND</a>	1	10uF cap, for output of 5V LDO (as per Micrel spec sheet), Panasonic Size "C"
C15	S	6.6x6.6 mm (0.26")	Panasonic - ECG	CAP ELECT 100UF 35V 5% SMD	EEE-1VA101XP	<a href="#">EEE-1VA101XP</a>	1	100uF cap, for input to 5V LDO. Panasonic Size "D"
<b>Crystal</b>								
XT1	ABM8G	ASE	Abracon	Crystal 16.000MHz 20ppm 18pf 80 Ohm	ABM8G-16.000MHZ-18-D2V-T	<a href="#">535-10267-1-ND</a>	1	SMD Crystal, 18pf
<b>Diodes</b>								
D1-8	SMA	DO214-AC (SMA)	ON Semi	DIODE SCHOTTKY 40V 1A SMA	MBRA140T3G	<a href="#">MBRA140T3GOSCT-ND</a>	8	Back-EMF protection for L298 motor driver
D9	SMB	DO-214AA (SMB)	ON Semiconductor	DIODE SCHOTTKY 40V 2A SMB	MBR52040L13G	<a href="#">MBR52040L13GOSCT-ND</a>	1	Schottky, for HL Smoker MOSFET flyback diode. SMB is slightly wider than SMA (SMA is even wider), but same pads.
D10-11		1206 (SOD-123)	AVX Corp	DIODE SCHOTTKY 40V 1A 1206	SD1206S040S1R0	<a href="#">478-7805-1-ND</a>	2	Schottky, recoil motor and Aux output flyback diodes
D12	eSMP, TMB	TO-277 (SMP)	Vishay	DIODE SCHOTTKY 12A 100V SMP	V12P10-M386A	<a href="#">V12P10-M386AGICT-ND</a>	1	Input polarity diode, 12A schottky. 0.35-0.6 forward voltage drop depending on current, so very low.
D13		SOT23-3	Diodes Inc	DIODE ARRAY SCHOTTKY 30V SOT23-3	BAT54S-7-F	<a href="#">BAT54S-FDICT-ND</a>	1	Dual schottky diode - input protection for recoil trigger
<b>LEDs</b>								
D14		0805	Lite-On, Inc	LED RED CLEAR 0805 SMD	LTST-C170CKT	<a href="#">160-1176-1-ND</a>	1	<b>NOTE!</b> Cathode is opposite of other color LEDs! Green dots represent ANODE. Red, 1.8fv, 10mA, 10mcd. Board light.
D15		0805	Lite-On, Inc	LED GREEN CLEAR 0805 SMD	LTST-C170GKT	<a href="#">160-1179-1-ND</a>	1	Green, 2.1fv, 10mA, 6mcd. Board light. Green dots represent cathode (bar side).
D16-17		0805	Lite-On, Inc	LED YELLOW CLEAR 0805 SMD	LTST-C170YKT	<a href="#">160-1175-1-ND</a>	2	Yellow 2.1fv, 10mA, 6mcd. USB serial indicator. Green dots represent cathode (bar side).
D18		0805	Lite-On, Inc	LED BLUE CLEAR 0805 SMD	LTST-C170BKCT	<a href="#">160-1579-1-ND</a>	1	Blue, 3.3fv, 20mA, 104mcd. Motor serial indicator. Green dots represent cathode (bar side).
<b>PTC</b>								
F1	MF-MSMF	1812 (4532 Metric)	Bourns	PTC RESETTABLE .50A 15V 1812	MF-MSMF050-2	<a href="#">MF-MSMF050-2CT-ND</a>	1	500mA protection for USB port
<b>ICs</b>								
U1	AVR Atmega	100-TOFP	Atmel	ATMEGA2560-16AU	ATMEGA2560-16AU	<a href="#">ATMEGA2560-16AU-ND</a>	0	Atmega 2560
U2		28-SSOP	FTDI	IC USB FS SERIAL UART 28-SSOP	FT232RL-REEL	<a href="#">748-1007-1-ND</a>	0	
U3	SMT	PowerSO20	STMicro	IC DRIVER FULL DUAL 20-PWR/SOIC	L298P013TR	<a href="#">497-3624-1-ND</a>	1	Dual bridge motor driver, 2amps per channel.
U4	SMD	TO-263-3	Micrel	IC REG LDO 5V 3A TO263-3	MIC29300-5.0UW	<a href="#">576-1122-ND</a>	0	5V LDO. Only 0.37v voltage drop.
<b>Connectors</b>								
JP1-JP5	PH	Header	JST	CONN HEADER PH TOP 2POS 2MM	B2B-PH-K-S(LF)(SN)	<a href="#">455-1704-ND</a>	5	Top entry through hole 2 position. Aux, Light 1, Light 2, Brake/light, Machine gun LED connectors
JP6	PH	Header	JST	CONN HEADER PH SIDE 3POS 2MM SMD	S3B-PH-SM4-TB(LF)(SN)	<a href="#">455-1750-1-ND</a>	1	Surface mount side entry for Serial 2
JP7	PH	Header	JST	CONN HEADER PH TOP 3POS 2MM	B3B-PH-K-S(LF)(SN)	<a href="#">455-1705-ND</a>	1	Top entry through hole 3 position. For LCD connector.
JP8, 9, 10	XH	Header	JST	CONN HEADER XH TOP 3POS 2.5MM	B2B-XH-A(LF)(SN)	<a href="#">455-2247-ND</a>	3	2 position header. Power, Heng-Long Smoker, IR Transmit.
JP11, 12	XH	Header	JST	CONN HEADER XH TOP 3POS 2.5MM	B3B-XH-A(LF)(SN)	<a href="#">455-2248-ND</a>	2	3 position header. Mechanical recoil, High-intensity flash unit.
JP13	XH	Header	JST	CONN HEADER XH TOP 3POS 2.5MM	B5B-XH-A(LF)(SN)	<a href="#">455-2270-ND</a>	1	5 position header. Apple connector (IR receiver, hit-notify LEDs)
JP14 (1,2,3)		Header	Banggood	2.54mm 3x40P Male Pins Three Row Right Angle Pin Header		<a href="#">972983</a>	1	3x8 servo connectors, right angle. DigiKey doesn't have - buy from Banggood
JP15		Header					3x2 SPI connector - not populated	
JP16-19		Header	Sullins Connector	CONN HEADER .100" SNGL STR 20POS	PRPC00205AAN-RC	<a href="#">S1011EC-20-ND</a>	1	20 position header - break apart for J15, J16, J17, J18
JP16		Header		Construct from above			1x4 I2C connector	
JP17		Header		Construct from above			1x3 Serial 1 connector	
JP18,19		Header		Construct from above			1x3 Aux A and Aux B connectors	
JP20		Header	Sullins Connector	CONN HEADER .100" DUAL STR 6POS	PRPC0030AAN-RC	<a href="#">S2011EC-03-ND</a>	1	2x3 radio input header. Sandwich board between pins (one row on board top, one row on board bottom)
JP21, 22	OSTTE	Terminal	On Shore Tech	TERM BLOCK 3.5MM VERT 2POS PCB	OSTTE020161	<a href="#">ED2635-ND</a>	2	3.5mm dual screw terminals for motor outputs.
X1		USB Micro-B Jack	Amphenol FCI	USB - micro B USB 2.0 Receptacle Conne	10118194-0001LF	<a href="#">609-4618-1-ND</a>	1	USB Micro-B jack