

EMW JuiceBox BOM - matching PCB and Manuals for V8.0 (July 22 PCB edition)						# of Units	
Part ID	Value	Description / Functions	Manufacturer	Mfr part number	Distributor Part number	base	premium
On board						47 (32 unique)	57 (36 unique)
PCB set		8.0" x 2.4", 0.062" thick, 2oz copper	Elconnect			1	1
U4	OPA171 (LM7321MA as alt)	high-speed rail-to-rail op amp to drive pilot signal	DigiKey	LM7321MA	LM7321MA/NOPB-ND	1	1
U5	12V LDO	precision, low-dropdown voltage reg for +12 pilot level	DigiKey	BDJ2A3WEFJ-E2	BDJ2GA3WEFJ-E2CT-ND	1	1
U2	PC817	input voltage measurement opto - 1.2x at 1mA, 3x at 5mA	DigiKey	PC817	425-2763-ND	1	1
U1	MCP6231 (MCP601 as alt)	Op amp, process GFCI coil signal	DigiKey	MCP6231	MCP6231-E/P-ND (MCP601-I/P-ND)	1	1
R2	390R	CT shunt resistor for GFCI	DigiKey		CF18JT390RCT-ND	1	1
R3*, R19	1k	GFCI, output pilot	DigiKey		CF18JT1K00	2	2
R5*	470-680k	GFCI op-amp negative feedback	DigiKey		CF18JT470KCT-ND	1	1
R9, R17, R18, R21*, R23	10k	various	DigiKey		CF18JT10K0CT-ND	5	5
R15, R16	10k	button pull-down - needed only if using buttons	DigiKey		CF18JT10K0CT-ND	0	0
R6, R7	120R	CT shunt for current measurement	DigiKey		CF18JT120RCT-ND	1	2
R14	100k	pilot voltage sensing	DigiKey		CF18JT100KCT-ND	1	1
R8, R11, R12, R13	27k	RC filter for analog inputs, pilot voltage sensing	DigiKey		CF18JT27K0CT-ND	3	4
R10	10k potentiometer	set max output current	DigiKey		D4AA14-ND	1	1
R22	10k potentiometer	OPTIONAL RIGHT_ANGLE - set max output current	DigiKey		PTV09A-2025F-B103-ND	0	0
R4	200k 1W	voltage sensing resistor	DigiKey		200KZCT-ND	1	1
D1	100V 1A fast rec diode	anti-kickback diode for relays	DigiKey	1N4934	1N4934FSCT-ND	1	1
D2*, D3*, D4, D5, D6	signal diode	signal diode	DigiKey	BAW76	BAW76-ND	4	5
C4, C9, C10, C11 (on first kits, may be marked C3)	104 ceramic	supply decoupling	DigiKey		490-3810-ND	4	4
C7	104 ceramic	supply decoupling - only if RTC is used	DigiKey		490-3810-ND	0	0
C2	330pF ceramic	noise suppression for GFCI	DigiKey		445-4385-ND	1	1
C5, C6, C8	335 ceramic	RC filter for analog inputs	DigiKey		445-8294-ND	2	3
J1	DPDT switch	switch for LCD / WiFi	DigiKey		401-2001-ND	0	1
long-lead sockets	2x 6-pin, 2x 8-pin	for shield mounting (WiFi or others)	china		Direct from China factory	0	1
Q2	-12v 0.1a regulator	-12v rail for pilot signal	DigiKey	MC79L12	296-9605-1-ND	1	1
Q1	30V 6.9A N-channel	relay driver transistor		NTD4815N-35G	NTD4815N-35GOS-ND	1	1
C3	476 elcap	+5V supply decoupling	DigiKey		399-6098-ND	1	1
C1	330-1000uF 25V	anti-kickback cap for relay	DigiKey		399-6603-ND	1	1
A1	Arduino Pro Mini 5V	Ze Brainz			Direct from China factory	1	1
RF transmitter + receiver	2+ channel, momentary	button emulation	China		Direct from China factory	0	1
LCD	4D systems uLCD-144	The main Display	4D systems		Direct from Australian factory	0	1
CS1, CS2	AC-1075	current transformer	DigiKey	AC1075	1295-1094-ND	1	2
U3	DS1307	RTC chip for non-volatile timekeeping	DigiKey	DS1307	DS1307Z+T&RCT-ND	0	0
CZ1	32khz quartz	resonator for RTC	DigiKey		300-8303-ND	0	0
CR1220	3V lithium battery	battery for RTC	DigiKey			0	0
Off-board							
relay	80A DPDT	main contactor	China		JQX-62F-2Z	1	1
power adapter	+15V, +5V	main power supply, universal input	China	JDM20-B	JDM20-B	1	1
terminal strip	4-position 60A rated	power entry / exit	China			1	1
input cable gland	18-25mm cable		China			1	1
output cable gland	18-25mm cable		China			1	1
wiring	AWG 6		China			2	3
case - full		battery - shape	USA - custom		custom made	0	1
case - base		box	Hammond		standard	1	0
WiFi shield						12 (9 unique)	12 (9 unique)
PCB		1.55x2.2", 0.062" PCB	Elconnect			1	1
WiFi module	RN171XVW-I/RM	fully contained, UART WiFi module	Roving Networks		http://www.microchipdirect.com/ProductDetails.aspx?ProductID=10822	0	0
					https://www.sparkfun.com/products/10822	1	1
R1	200k	200k	DigiKey		CF18JT200KCT-ND	1	1
R2, R3, R4, R5	1k		DigiKey		CF18JT1K00	4	4
C2, C3	104 ceramic	supply decoupling	DigiKey		490-3810-ND	2	2
U1	PCA9306	level translator	DigiKey		568-4215-1-ND	1	1
Q1	MCP1700	3.3v regulator	DigiKey		MCP1700-3302E/TO-ND	1	1
J1	DPDT switch	switch for LCD / WiFi	DigiKey		401-2001-ND	1	1
long-lead sockets	2x 6-pin, 2x 8-pin	for shield mounting (WiFi or others)	china		Direct from China factory	1	1