Dn board PCB set J4 J5 J2 J1 R2 R3*, R19 R5* R9, R17, R18, R21*, R23 R15, R16 R6, R7 R14 R8, R11, R12, R13 R10 D2*, D3*, D4, D5, D6 C4, C9, C10, C11 (on first kits, may be marked C3) C7 C2 C5, C6, C8 J1 ong-lead sockets	Value OPA171 (LM7321MA as alt) 12V LDO PC817 MCP6231 (MCP601 as alt) 390R 1k 470-680k 10k 10k 120R 100k 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode signal diode	Bescription / Functions 8.0" x 2.4", 0.062" thick, 2oz copper high-speed rail-to-rail op amp to drive pilot signal precision, low-dropdown voltage reg for +12 pilot level input voltage measurement opto - 1.2x at 1mA, 3x at 5mA Op amp, process GFCI coil signal CT shunt resistor for GFCI GFCI, output pilot GFCI op-amp negative feedback various button pull-down - needed only if using buttons CT shunt for current measurement pilot voltage sensing RC filter for analog inputs, pilot voltage sensing set max output current	Manufacturer Elconnect DigiKey	Mfr part number LM7321MA BDJ2A3WEFJ-E2 PC817 MCP6231	Distributor Part number LM7321MA/NOPB-ND BDJ2GA3WEFJ-E2CT-ND 425-2763-ND MCP6231-E/P-ND (MCP601-I/P-ND) CF18JT390RCT-ND CF18JT1K00 CF18JT470KCT-ND CF18JT10K0CT-ND	1 1 1 1 1 1 2	
U5 U2 U1 R2 R3*, R19 R5* R8, R17, R18, R21*, R23 R15, R16 R6, R7 R14 R8, R11, R12, R13 R10 R22 R4 D1 D2*, D3*, D4, D5, D6 C4, C9, C10, C11 (on first kits, may be marked C3) C7 C2 C5, C6, C8 U1 long-lead sockets	12V LDO PC817 MCP6231 (MCP601 as alt) 390R 1k 470-680k 10k 10k 10k 120R 100k 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	high-speed rail-to-rail op amp to drive pilot signal precision, low-dropdown voltage reg for +12 pilot level input voltage measurement opto - 1.2x at 1mA, 3x at 5mA Op amp, process GFCl coil signal CT shunt resistor for GFCl GFCl, output pilot GFCl op-amp negative feedback various button pull-down - needed only if using buttons CT shunt for current measurement pilot voltage sensing RC filter for analog inputs, pilot voltage sensing	DigiKey	BDJ2A3WEFJ-E2 PC817	BDJ2GA3WEFJ-E2CT-ND 425-2763-ND MCP6231-E/P-ND (MCP601-I/P-ND) CF18JT390RCT-ND CF18JT1K00 CF18JT470KCT-ND	unique) 1 1 1 1 1 1 1 2 1 1	
CB set 14 15 15 12 11 12 13*, R19 15* 189, R17, R18, R21*, R23 115, R16 16, R7 114 188, R11, R12, R13 100 122 134 11 127 134 145 154 165 17 17 17 17 17 185 186 187 187 188 188 188 188 188	12V LDO PC817 MCP6231 (MCP601 as alt) 390R 1k 470-680k 10k 10k 10k 120R 100k 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	high-speed rail-to-rail op amp to drive pilot signal precision, low-dropdown voltage reg for +12 pilot level input voltage measurement opto - 1.2x at 1mA, 3x at 5mA Op amp, process GFCl coil signal CT shunt resistor for GFCl GFCl, output pilot GFCl op-amp negative feedback various button pull-down - needed only if using buttons CT shunt for current measurement pilot voltage sensing RC filter for analog inputs, pilot voltage sensing	DigiKey	BDJ2A3WEFJ-E2 PC817	BDJ2GA3WEFJ-E2CT-ND 425-2763-ND MCP6231-E/P-ND (MCP601-I/P-ND) CF18JT390RCT-ND CF18JT1K00 CF18JT470KCT-ND	1 1 1 1 1 1 2	
194 195 192 191 192 193*, R19 195 195 195 196 197 197 197 197 197 197 197 197 197 197	12V LDO PC817 MCP6231 (MCP601 as alt) 390R 1k 470-680k 10k 10k 10k 120R 100k 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	high-speed rail-to-rail op amp to drive pilot signal precision, low-dropdown voltage reg for +12 pilot level input voltage measurement opto - 1.2x at 1mA, 3x at 5mA Op amp, process GFCl coil signal CT shunt resistor for GFCl GFCl, output pilot GFCl op-amp negative feedback various button pull-down - needed only if using buttons CT shunt for current measurement pilot voltage sensing RC filter for analog inputs, pilot voltage sensing	DigiKey	BDJ2A3WEFJ-E2 PC817	BDJ2GA3WEFJ-E2CT-ND 425-2763-ND MCP6231-E/P-ND (MCP601-I/P-ND) CF18JT390RCT-ND CF18JT1K00 CF18JT470KCT-ND	1 1 1 1 1 1 2	
155 122 131 141 142 1431 144 145 145 146 146 147 147 148 148 148 148 148 148 148 148 149 149 149 149 149 149 149 149 149 149	12V LDO PC817 MCP6231 (MCP601 as alt) 390R 1k 470-680k 10k 10k 10k 120R 100k 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	precision, low-dropdown voltage reg for +12 pilot level input voltage measurement opto - 1.2x at 1mA, 3x at 5mA Op amp, process GFCI coil signal CT shunt resistor for GFCI GFCI, output pilot GFCI op-amp negative feedback various button pull-down - needed only if using buttons CT shunt for current measurement pilot voltage sensing RC filter for analog inputs, pilot voltage sensing	DigiKey	BDJ2A3WEFJ-E2 PC817	BDJ2GA3WEFJ-E2CT-ND 425-2763-ND MCP6231-E/P-ND (MCP601-I/P-ND) CF18JT390RCT-ND CF18JT1K00 CF18JT470KCT-ND	1 1 1 1 2 1	
J2 J1 R2 R3*, R19 R5* R9, R17, R18, R21*, R23 R15, R16 R6, R7 R14 R8, R11, R12, R13 R10 R22 R4 D1 J2*, D3*, D4, D5, D6 C4, C9, C10, C11 (on first kits, may be marked C3)	PC817 MCP6231 (MCP601 as alt) 308 1k 470-680k 10k 10k 10k 120R 100k 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	input voltage measurement opto - 1.2x at 1mA, 3x at 5mA Op amp, process GFCI coil signal CT shunt resistor for GFCI GFCI, output pilot GFCI op-amp negative feedback various button pull-down - needed only if using buttons CT shunt for current measurement pilot voltage sensing RC filter for analog inputs, pilot voltage sensing	DigiKey	PC817	425-2763-ND MCP6231-E/P-ND (MCP601-I/P-ND) CF18JT390RCT-ND CF18JT1K00 CF18JT470KCT-ND	1 1 1 2 2 1	1
D11 R2 R3*, R19 R5* R8, R17, R18, R21*, R23 R15, R16 R6, R7 R14 R8, R11, R12, R13 R10 R22 R4 D1 D2*, D3*, D4, D5, D6 D4, C9, C10, C11 (on first kits, may be marked C3) C7 C2 C5, C6, C8 D1 Dong-lead sockets	MCP6231 (MCP601 as alt) 390R 1k 470-680k 10k 10k 10R 10R 100R 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	Op amp, process GFCI coil signal CT shunt resistor for GFCI GFCI, output pilot GFCI op-amp negative feedback various button pull-down - needed only if using buttons CT shunt for current measurement pilot voltage sensing RC filter for analog inputs, pilot voltage sensing	DigiKey DigiKey DigiKey DigiKey DigiKey DigiKey DigiKey DigiKey DigiKey		MCP6231-E/P-ND (MCP601-I/P-ND) CF18JT390RCT-ND CF18JT1K00 CF18JT470KCT-ND	1 1 2	1
R2 R3*, R19 R3*, R19 R5*, R17, R18, R21*, R23 R15, R16 R6, R7 R14 R8, R11, R12, R13 R10 R22 R4 R5	390R 1k 470-680k 10k 10k 120R 100k 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	CT shunt resistor for GFCI GFCI, output pilot GFCI op-amp negative feedback various button pull-down - needed only if using buttons CT shunt for current measurement pilot voltage sensing RC filter for analog inputs, pilot voltage sensing	DigiKey DigiKey DigiKey DigiKey DigiKey DigiKey DigiKey	MCP6231	CF18JT390RCT-ND CF18JT1K00 CF18JT470KCT-ND	1 2	2
R3*, R19 R5* R9, R17, R18, R21*, R23 R15, R16 R6, R7 R14 R8, R11, R12, R13 R10 R22 R4 D1 D2*, D3*, D4, D5, D6 D4, C9, C10, C11 (on first kits, may be marked C3) C7 C2 D5, C6, C8 L1 ong-lead sockets	1k 470-680k 10k 10k 120R 100k 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	GFCI, output pilot GFCI op-amp negative feedback various button pull-down - needed only if using buttons CT shunt for current measurement pilot voltage sensing RC filter for analog inputs, pilot voltage sensing	DigiKey DigiKey DigiKey DigiKey DigiKey		CF18JT1K00 CF18JT470KCT-ND	2	2
R5* R9, R17, R18, R21*, R23 R15, R16 R6, R7 R14 R8, R11, R12, R13 R10 R22 R4 D1 R2*, D3*, D4, D5, D6 R4, C9, C10, C11 (on first kits, may be marked C3) R7 R2 R2 R3 R4 D1 R5 R5 R6 R6 R6 R7 R6	470-680k 10k 10R 120R 100k 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	GFCI op-amp negative feedback various button pull-down - needed only if using buttons CT shunt for current measurement pilot voltage sensing RC filter for analog inputs, pilot voltage sensing	DigiKey DigiKey DigiKey DigiKey		CF18JT470KCT-ND	1	
89, R17, R18, R21*, R23 215, R16 86, R7 214 88, R11, R12, R13 210 222 244 01 102*, D3*, D4, D5, D6 24, C9, C10, C11 (on first kits, may e marked C3) 27 22 25, C6, C8 1 1 1 1 1 1 1 1 1 1 1 1 1	10k 10k 10k 10k 10k 10oR 10oR 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	various button pull-down - needed only if using buttons CT shunt for current measurement pilot voltage sensing RC filter for analog inputs, pilot voltage sensing	DigiKey DigiKey DigiKey				
R15, R16 R6, R7 L14 R8, R11, R12, R13 L10 R22 R4 L1 L1 L2*, D3*, D4, D5, D6 L4, C9, C10, C11 (on first kits, may be marked C3) L2 L2 L3 L4 L5	10k 120R 100k 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	button pull-down - needed only if using buttons CT shunt for current measurement pilot voltage sensing RC filter for analog inputs, pilot voltage sensing	DigiKey DigiKey		CF18JT10K0CT-ND		
16, R7 114 18, R11, R12, R13 110 122 14 11 122*, D3*, D4, D5, D6 14, C9, C10, C11 (on first kits, may e marked C3) 17 19 19 19 19 19 19 19 19 19 19 19 19 19	120R 100k 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	CT shunt for current measurement pilot voltage sensing RC filter for analog inputs, pilot voltage sensing	DigiKey			5	5
214 4 8, R11, R12, R13 110 110 110 110 110 110 110 110 110 1	100k 27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	pilot voltage sensing RC filter for analog inputs, pilot voltage sensing			CF18JT10K0CT-ND	0	,
214 4 8, R11, R12, R13 110 110 110 110 110 110 110 110 110 1	27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	pilot voltage sensing RC filter for analog inputs, pilot voltage sensing			CF18JT120RCT-ND	1	
18, R11, R12, R13 110 1222 14 11 12*, D3*, D4, D5, D6 14, C9, C10, C11 (on first kits, may e marked C3) 17 12: 55, C6, C8	27k 10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode	RC filter for analog inputs, pilot voltage sensing			CF18JT100KCT-ND	1	
10 22 4 1 1 2*, D3*, D4, D5, D6 4, C9, C10, C11 (on first kits, may e marked C3) 7 2 5, C6, C8 1 ung-lead sockets	10k potentiometer 10k potentiometer 200k 1W 100V 1A fast rec diode		DigiKey		CF18JT27K0CT-ND	3	-
222 44 11 122*, D3*, D4, D5, D6 44, C9, C10, C11 (on first kits, may e marked C3) 77 125, C6, C8 1 1 1019-lead sockets	10k potentiometer 200k 1W 100V 1A fast rec diode	set max output current			D4AA14-ND	1	
4 1 2*, D3*, D4, D5, D6 4, C9, C10, C11 (on first kits, may e marked C3) 7 2 5, C6, C8	200k 1W 100V 1A fast rec diode	OPTIONAL PICHT ANCLE not may output assess	DigiKey			-	
1 2*, D3*, D4, D5, D6 4, C9, C10, C11 (on first kits, may e marked C3) 7 2 5, C6, C8 1 ung-lead sockets	100V 1A fast rec diode	OPTIONAL RIGHT_ANGLE - set max output current	DigiKey		PTV09A-2025F-B103-ND		1
2*, D3*, D4, D5, D6 4, C9, C10, C11 (on first kits, may e marked C3) 7 22 55, C6, C8 1 ong-lead sockets		voltage sensing resistor	DigiKey		200KZCT-ND	1	
24, C9, C10, C11 (on first kits, may e marked C3) 7 22 55, C6, C8 1 ong-lead sockets	signal diode	anti-kickback diode for relays	DigiKey	1N4934	1N4934FSCT-ND	1	
.7 .2 .5, C6, C8 1 ong-lead sockets	orginal diodo	signal diode	DigiKey	BAW76	BAW76-ND	4	
2 5, C6, C8 1 ing-lead sockets	104 ceramic	supply decoupling	DigiKey		490-3810-ND	4	į .
55, C6, C8 1 ong-lead sockets	104 ceramic	supply decoupling - only if RTC is used	DigiKey		490-3810-ND	0)
5, C6, C8 1 ing-lead sockets	330pF ceramic	noise suppression for GFCI	DigiKey		445-4385-ND	1	_
1 ong-lead sockets	335 ceramic	RC filter for analog inputs	DigiKey		445-8294-ND	2	
ng-lead sockets	DPDT switch	switch for LCD / WiFi	DigiKey		401-2001-ND	0	
						0	
	2x 6-pin, 2x 8-pin	for shield mounting (WiFi or others)	china	14070140	Direct from China factory		
	-12v 0.1a regulator	-12v rail for pilot signal	DigiKey	MC79L12	296-9605-1-ND	1	
	30V 6.9A N-channel	relay driver transistor		NTD4815N-35G	NTD4815N-35GOS-ND	1	
	476 elcap	+5V supply decoupling	DigiKey		399-6098-ND	1	
	330-1000µF 25V	anti-kickback cap for relay	DigiKey		399-6603-ND	1	1
.1	Arduino Pro Mini 5V	Ze Brainz			Direct from China factory	1	
RF transmitter + receiver	2+ channel, momentary	button emulation	China		Direct from China factory	0	
CD	4D systems uLCD-144	The main Display	4D systems		Direct from Australian factory	0	
	AC-1075	current transformer	DigiKey	AC1075	1295-1094-ND	1	
	DS1307	RTC chip for non-volatile timekeeping	DigiKey	DS1307	DS1307Z+T&RCT-ND	0	,
	32khz quartz	resonator for RTC	DigiKey	DO 1001	300-8303-ND		-
	3V lithium battery	battery for RTC			300-0303-ND	0	
rff-board	ov illillum ballery	pattery for KTC	DigiKey			-	
	OOA DDDT	lucia contestas	Ohin-		10V 00F 07	1	
,	80A DPDT	main contactor	China		JQX-62F-2Z	1	
	+-15V, +5V	main power supply, universal input	China	JDM20-B	JDM20-B	1	
	4-position 60A rated	power entry / exit	China			1	
nput cable gland	18-25mm cable		China			1	1
utput cable gland	18-25mm cable		China			1	1
viring	AWG 6		China			2	2
ase - full		battery - shape	USA - custom		custom made	0	
ase - base		box	Hammond		standard	1	
ViFi shield						12 (9 uni	
CB		1.55x2.2", 0.062" PCB	Elconnect			1	
	RN171XVW-I/RM	fully contained, UART WiFi module	Roving Networ	ke	http://www.microchipdirect.com/ProductDe		
ii i iiiouule	1714 17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	runy contained, OAIXT WII I Module	TOVING NEWOI	NO.		1 1	
4	2001-	2001	Divite		https://www.sparkfun.com/products/10822		
	200k	200k	DigiKey		CF18JT200KCT-ND	1	_
	1k		DigiKey		CF18JT1K00	4	
	104 ceramic	supply decoupling	DigiKey		490-3810-ND	2	!
1	PCA9306	level translator	DigiKey		568-4215-1-ND	1	
21	MCP1700	3.3v regulator	DigiKey		MCP1700-3302E/TO-ND	1	
	DPDT switch	switch for LCD / WiFi	DigiKey			1	
ing-lead sockets	DI DI OWILLII	and the second of the second o			401-2001-ND	1	1