

# CAUTION, DO NOT SORT THIS DOCUMENT

27th Oct 2021, C80, C81 were shown as Inductor, corrected to 'Cap'.

28th Oct 2021, L6 was shown as T37-6 SHOULD BE T50-6

1st Nov. 2021 minor typos & added some digikey numbers

5th Nov 2021: 2k6 was shown as R19, should be R1 & 10uF: note re TP4056 module added

11th Dec 2021 V1.3x replaced all the 0603 parts with 0805 & R23 added.

Jan 24th 2022 updated to clarify 0805 version changes.

July 17th 2022 On V1.32b and V1.32c only, 2 x 5k1 fitted to USB-C socket and R23 added to ICSP-C

This BOM covers most versions of my ATU-10 from V1.1 to V1.32c. It maybe more accurate for the V1.3x versions.

**\*\* BOM FOR ATU-10 PCB USING LARGER PIC DEVICES FOR EASIER SOLDERING, BY VK3PE 5th Oct 2021 \*\***

(This BOM was initially derived from the V1.2 PCB Schematic.)

This ATU-10 is based heavily on the original by N7DDC. It was modified to allow use of easier to get and solder, PIC Micros.

!!!! Note all caps 22pF to 1nF rated 250V in tuning section, are COG/NPO types !!!!!

V1.1 or 1.2

V1.3 version PCB will use 0805 parts instead of 0603 so Digikey and other suppliers parts will change

See also vk3pe web pages on this project.

[Link here.](#)

[And suggested build procedure here.](#)

Version changes	QTY	Part type	Designator	Footprint	Changes for V1.3x (0805)	Description	Notes 1	Digikey or 'other'	Notes 2
		ATU-10 version by vk3pe	Version 1.2 (or 1.1)			PCB	some Group members have PCB's available.		Kees, K5BCQ, may have PCB's or check for Gerbers.
	1	0.1uH	L7	Toroid ATU-10		Inductor	T37-6 6t 0.5mm	kitsandparts.com etc	* TOROIDS:- various suppliers available, don't use eBay !!!
	1	0.22uH	L6	Toroid ATU-10		Inductor	T50-6 8t 0.5mm (was shown as T37)	kitsandparts.com etc	
	1	0.45uH	L5	Toroid ATU-10		Inductor	T50-2 10t 0.5mm	kitsandparts.com etc	
	1	10uH	L1	Toroid ATU-10		Inductor	T50-1 32t 0.5mm	kitsandparts.com etc	
	1	1uH	L4	Toroid ATU-10		Inductor	T50-2 14t 0.5mm	kitsandparts.com etc	
	1	2.2uH	L3	Toroid ATU-10		Inductor	T50-2 21t 0.5mm	kitsandparts.com etc	
	1	4.5uH	L2	Toroid ATU-10		Inductor	T50-2 30t 0.5mm	kitsandparts.com etc	
	1	BN43-1502 BALUN CORE	T8	'SWR'		CORE	ALT. PART BN43-202 ?	kitsandparts.com etc	0.4mm Copper WIRE required (not critical)
	1	1Amp 6v PTC	Fuse1	1206		Fuse	Farnell 2848541	DIGIKEY 507-1806-1-ND	
	1	1.25A Fast blow	Fuse 2	1206		Fuse	Farnell 2834836	DIGIKEY 507-1879-1-ND	
	3	1000pF/250V COG/NPO	C1 C2 C3	0805		Cap	Farnell 2821016 or 2834602	DIGIKEY 445-15299-1-ND	
	1	470pF/250V COG/NPO	C72	0805		Cap	Farnell 3369282	DIGIKEY 399-15869-1-ND	
	2	220pF/250V COG/NPO	C73 C74	0805		cap	Farnell 3340793	DIGIKEY 720-1347-1-ND	
	1	100pF/250V COG/NPO	C75	0805		Cap	Farnell 2896861	DIGIKEY 1284-1860-1-ND	
	1	47pF/250V COG/NPO	C76	0805		Cap	Farnell 2218866	DIGIKEY 1284-1062-1-ND	
	1	22pF/250V COG/NPO	C77	0805		Cap	Farnell 1885437	DIGIKEY 1284-1353-1-ND	
	2	49R9 (49.9 OHM)	R13 R14	1206		Resistor	Farnell 1631434	eg DIGIKEY RMCF1206FT49R9CT-ND (1%)	
	1	220k 1%	R19	0603 for V1.1 or V1.2	(0805 for V1.3x)	Resistor	Farnell 2447297 or similar		
	4	1k	R2 R3 R4 R5	0603 for V1.1 or V1.2	(0805 for V1.3x)	Resistor			
	2	220R (220ohms) 1% is better	R6 R7	0603 for V1.1 or V1.2	(0805 for V1.3x)	Resistor			
	1	22k	R20	0603 for V1.1 or V1.2	(0805 for V1.3x)	Resistor			
	5	10k	R10 R11 R12 R8 R9	0603 for V1.1 or V1.2	(0805 for V1.3x)	Resistor			
	4	47k	R15 R16 R17 R18	0603 for V1.1 or V1.2	(0805 for V1.3x)	Resistor			
V1.32b.c	2	5k1	R24, R25		<b>ONLY for V1.32b,c</b>				
	1	2K6 (2K7 OK)	R1	0603 for V1.1 or V1.2	(0805 for V1.3x)	Resistor			
V1.32b.c	not fit	short (if used on PCB)	R23	link with wire or 10R		Resistor	This link connects 3v3 to the ICSP port for programming the 16F1454 device.		
	8	100nF	C10 C11 C4 C5 C6 C7 C8 C9	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 432210 or similar		
	58	10nF	C12 C18 C19 C20 C21	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 2320802	eg DIGIKEY 399-17880-1-ND	
		10nF	C22 C23 C24 C25 C26	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 2320802		
		10nF	C27 C28 C29 C30 C31	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 2320802		
		10nF	C32 C33 C34 C35 C36	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 2320802		
		10nF	C37 C38 C39 C40 C41	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 2320802		
		10nF	C42 C43 C44 C45 C46	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 2320802		
		10nF	C47 C48 C49 C50 C51	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 2320802		
		10nF	C52 C53 C54 C55 C56	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 2320802		
		10nF	C57 C58 C59 C60 C61	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 2320802		
		10nF	C62 C63 C64 C65 C66	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 2320802		
		10nF	C67 C68 C69 C70 C71	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 2320802		
		10nF	C82 C83 C85	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 2320802		
	2	10uF / 10v X7R	C213, C14	1206		Cap	remove 10uF from TP4056 module eBay?	eg DIGIKEY 490-5848-1-ND	NOTE some TP4056 boards only have 1 x 10uF or NONE
	2	1nF	C80 C81	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 722170 or similar	eg DIGIKEY 399-17840-1-ND	

V1.32b,c

4	1uF 10v	C15 C16 C17 C84	0603 for V1.1 or V1.2	(0805 for V1.3x)	Cap	Farnell 2522396 or similar	eg DIGIKEY 311-1796-1-ND	
2	14500 Li-Ion cell	B1, B2	14500		single cell	14500 3.7V CELL	in VK only, Jaycar SB2301	eBay & others
1	2N7002	Q1	SOT-23		fet	Farnell 1859848	2N7002	
1	3.5mm STEREO SOCKET	JACK1	(3.5MM SOCKET)		SOCKET	PJ-342, PJ-311D	eBay, ALIEXPRESS ETC	straighten the pins to insert into PCB
2	470uF/6V CAP	C78 C79	DCASE		Cap	Farnell 2787443 but note long leadtime	DIGIKEY 399-4701-1-ND	vk3pe used 330uF as it was to hand.
16	A06604	SW1 SW10 SW11 SW12	SOT-23-6		DUAL FET	Farnell not stocked	AO6604 Digikey 785-1078-1-nd	(Kees, K5BCO may have some available)
	A06604	SW13 SW14 SW15 SW16	SOT-23-6		DUAL FET	Farnell not stocked		Glenn VK3PE may also have some available for VK builders.
	A06604	SW2 SW3 SW4 SW5 SW6	SOT-23-6		DUAL FET	Farnell not stocked		za
	A06604	SW7 SW8 SW9	SOT-23-6		DUAL FET	Farnell not stocked		
2	BAT41FILM diode	D1 D2	SOD		Diode	Farnell 2341646 OR 2341644	DIGIKEY 497-7669-1-ND	
2	BAT54S dual diode	D3 D4	SOT-23		Diode	Farnell 108119402	DIGIKEY 846-BAT54SHMT116CT-ND	
2	BNC Right ANGLE SKT	COAX1 COAX2	BNC RA	<b>SMA for V1.32b ONLY</b>	BNC socket	5-1634513-1	DIGIKEY A97569-ND	eBay, Aliexpress, etc TYCO 5-1634513-1
2	DUAL LED COMMON ANODE	LED1 LED2	SIP3	optional	3PIN HEADER	Farnell 2114474		OPTIONAL IF OLED NOT USED need 2 x 3 pin headers
1	HEADER 2 PINS 0.1" pitch	J1	SIP2		male pins	eg Farnell 1462888 is 40pin, cut to suit all		eBay have these in 40pin rows. Cut as required
1	HEADER 4 PINS 0.1" pitch	J3	SIP4		male pins	the headers.		eBay have these in 40pin rows. Cut as required
1	HEADER 2 PINS 0.1" pitch	J4	SIP2		male pins	OLED 0.91" 128x32	eBay and other suppliers	make short cable for OLED using 2 x 4pin header female
1	ICSP provision	J2 connector not req'd	5 holes in PCB	Note R23 in V1.32x fitted in ICSP-pin2		see my assembly information		to program PIC16545 with Pickit or equivalent
15	IM41 latching relays 3v	RELAY1 RELAY10	"IM41" footprint		latching relays	eBay have them	eBay, Digikey, Mouser etc	NOTE pins to be straightened for fitting
	IM41 latching relays 3v	RELAY11 RELAY12	"IM41" footprint		latching relays	10 for \$10	eBay, Digikey, Mouser etc	NOTE pins to be straightened for fitting
	IM41 latching relays 3v	RELAY13 RELAY14	"IM41" footprint		latching relays	buy 2 lots.	eBay, Digikey, Mouser etc	NOTE pins to be straightened for fitting
	IM41 latching relays 3v	RELAY15 RELAY2	"IM41" footprint		latching relays		eBay, Digikey, Mouser etc	NOTE pins to be straightened for fitting
	IM41 latching relays 3v	RELAY3 RELAY4 RELAY5	"IM41" footprint		latching relays		eBay, Digikey, Mouser etc	NOTE pins to be straightened for fitting
	IM41 latching relays 3v	RELAY6 RELAY7 RELAY8 RELAY9	"IM41" footprint		latching relays		eBay, Digikey, Mouser etc	NOTE pins to be straightened for fitting
1	MCP1700T-3302E/TT (3v3 Reg)	U3	SOT-23		3V3 REGULATO	Farnell 1296592 (LONG leadtime)	AP2125N-3.3TRG1DICT-ND	AP2138N-3.3TRG1DICT-ND
1	PIC16F1454-I/SL or -E/SL	U5A	SOIC-14			Farnell 2305810	PIC16F1454-I/SL or -E/SL	DIGIKEY, MOUSER, Newark, Element14/Farnell etc
1	PIC16F18877-I/PT or -E/PT	U4A	TQFP 44			Farnell 2564170	PIC16F18877-I/PT or -E/PT	DIGIKEY, MOUSER, Newark, Element14/Farnell etc
1	SWITCH PB RIGHT ANGLE	PB1				EVQ-PF106K (Farnell 2056831 )	DIGIKEY P10883S-ND	
1	TP4056 (Li-Ion charger IC)	U1	SOIC-8		Li-Ion CHGR. IC	TP4056 (REMOVED FROM eBay MODULE)		
1	USB 'C' socket	SKT1 or:-	USB C			USB 'C' smd Mitg. 12 PIN	DIGIKEY 2073-USB4105-GF-ACT-ND	
1	USB-MICRO 'SMD'	SKT1A (alternate part)	USB MICRO			Alternate 'Micro' style USB	DIGIKEY:- 732-3155-1-ND	* alternate USB-Micro type on V1.2 pcb (NOT on V1.1)
0	NOT FITTED	J5				"RESET"		
0	PIC16F1454-E/MV NOT FIT	U5 NOT FITTED	NOT FITTED					
0	PIC16F18877-E/MV NOT FIT	U4 NOT FITTED	NOT FITTED					
1	PIC16F1454-I/SL or -E/SL	U4a		this part is for VK3PE ATU-10 PCB		Farnell have this listed in different footprint	Digikey eg PIC16F1454T-I/SL-ND	
1	PIC16F18877-I/PT or -E/PT	U5a		this part is for VK3PE ATU-10 PCB			Digikey eg PIC16F18877-PTTR-ND	
1	Case 3 types suitable	1) 100x71x25mm 2) 100x82mm	3) 100x88mm			PCB must be cut to fit case options 1) & 2)	eBay, Aliexpress, Amazon etc	V1.1 pcb only fits 71mm case, V1.2 suits all cases listed. 71mm case eBay item 273929800323
2	Front and rear panels drilled and cut to suit. (NOT available from vk3pe)						N7DDC Gerbers for panels should fit but NOT tested.	
as req'd	header jumper skts for J1 & J4	caution, don't fit these parts initially.						
as req'd	External coax cables from Tx and antenna required, also if used with ICOM IC-705 then a male to male 3.5mm stereo cable is required							
2	Cell Li-P 3.7v	type 14500						