# USB PORT Module Kit Construction Manual

Part List

You will find that most of the components for the kit comes packed in separate sections on a long piece of plastic sleeve. It is advisable that you only take the components out of the pack just before you solder them to avoid losing them.

QTY	PART TYPE	DESIGNATOR	DESCRIPTION
1	PCB	**USBP V2.0**	
2	Wire Links	U1, PROG	0.7mm tinned
4	10 Pin Socket with shroud	PORTA	Insert with slots of
		PORTB	socket towards edge
		PORTC	of PCB with the
		PROG	label "PROG"
1	LED	D14	Yellow 5mm
1	16 Pin IC Socket	U2	
1	28 Pin IC Socket	U1	Skinny DIP
6	1N5819 Diode	D1, D2, D3, D4	Schottky Diodes
		D5, D6	
4	100n Capacitor	C1, C2, C5, C8	Monolithic
2	220n Capacitor	C6, C7	Monolithic
2	22pf Capacitor	CA, CB	Monolithic
1	10uf/35V Electrolytic	C3	Capacitor
1	47uf/25V Electrolytic	C4	Capacitor
1	6.000MHz Crystal	Y1	
1	390R Resistor	R18	Metal Film 1%
1	1k5 Resistor	R16	Metal Film 1%
1	5k6 Resistor	R11	Metal Film 1%
1	10k Resistor	R10	Metal Film 1%
1	68k Resistor	R2	Metal Film 1%
1	120k Resistor	R1	Metal Film 1%
1	4050 CMOS IC	U2	16pin
1	PIC16C745-I/SP IC	U1	28pin skinny
	Preprogrammed by eLabtronics		
1	USB-B Connector	J1	PCB mount
1	Pack of 4 rubber feet		Peel and Stick

Construction Guide
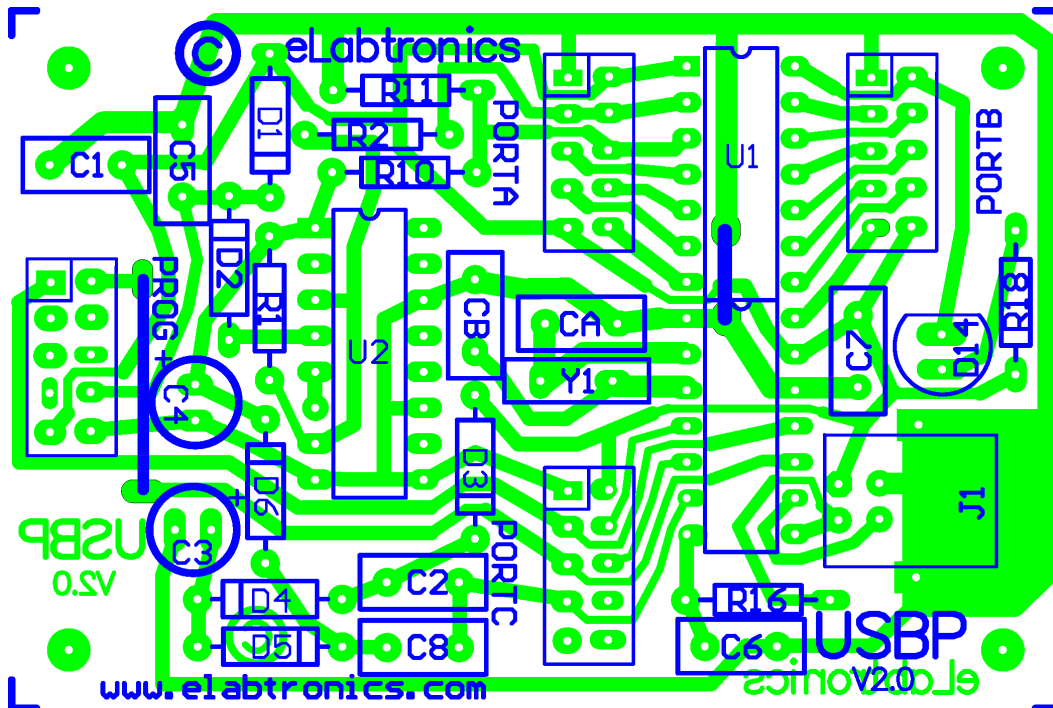
Solder in the resistors

1. 390Ω *(orange, white, black, black, brown)* into R18.
2. 1k5 *(brown, green, black, brown, brown)* into R16.
3. 5k6 *(green, blue, black, brown, brown)* into R11.
4. 10k *(brown, black, black, red, brown)* into R10.
5. 68k *(blue, violet, black, brown, brown)* into R2.
6. 120k *(brown, red, black, orange, brown)* into R1.

Note: If you have trouble identifying the resistors use a digital multimeter (DMM) to confirm the values.

Solder in the diodes

7. Solder the 1N5819 diodes into D1, D2, D3, D4, D5 and D6.
Make sure the white stripe on the diode matches the white strip marking on the board.

Solder in the wire links

8. Solder a short length of tinned wire across the thick line marked on U1.
9. Solder a longer length of tinned wire on the thick line marked next to PROG.
(next to C4).

Solder in the capacitors

10. Solder the 22pf (marked 22) capacitors into CA and CB.
11. Solder the 100n (marked 104) capacitors into C1, C2, C5, C8.
12. Solder the 220n (marked 224) capacitors into C6 and C7.

Solder in the crystal

13. Solder the 6.000MHz crystal into Y1. ***Do not to hold the soldering iron on the crystal too long, as this will overheat and damage the crystal.***

Solder in the IC sockets

14. Solder the 28 pin IC socket into U1.
15. Solder the 16 pin IC socket into U2.
*Note the direction: **There is a notch on one end of the socket.***

Solder in the LED

16. Solder the yellow LED into D14. ***Take note of polarity direction: Flat side of LED or the shorter leg is negative.***

Solder in the Electrolytic capacitors

17. Solder the 10uf / 35V electrolytic capacitor into C3.
18. Solder the 47uf / 25V electrolytic capacitor into C4.
Note the direction: There is a white (light colour) stripe on one side of each capacitor. The lead next to this white stripe must go in the hole *away* from the + marking.

Solder in the 10 pin Headers

19. Solder the 10 pin header sockets into PORTA, PORTB, PORTC and PROG.
*Note of the direction: **The slots of sockets should all be towards the edge of the PCB that has the label "PROG".***

Solder in the USB connector

20. Solder the USB-B connector into J1.
*Note: **Make sure it is pressed all the way firmly onto the PCB. It will be a tight fit so that it is mechanically secured.***

Attach the PCB feet

21. Peel and attach the 4 rubber feet onto the corners of the PCB.

Plug in the ICs

22. Plug the 28 pin PIC16C745 USB Controller IC into U1.
23. Plug the 16 pin 4050B IC into U2.
*Note the direction: **The notch must match up with the symbol on the PCB!***