





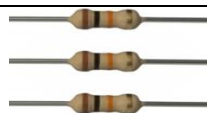













Dit Dit Dit Kit, Board ver 3:



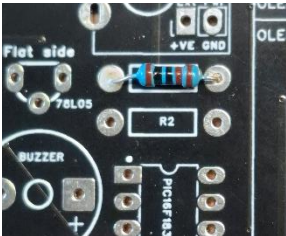

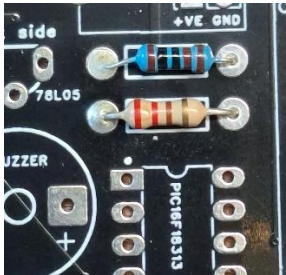

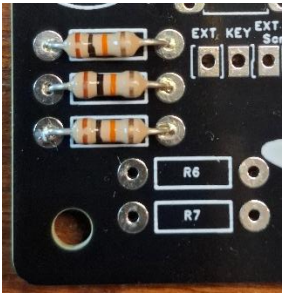

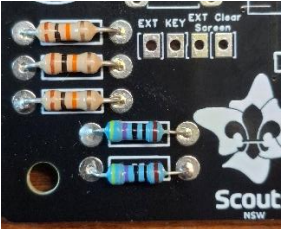

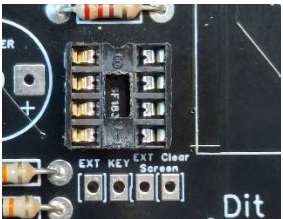


Please put all your components into the plastic tray, some are very small and easy to lose.


Clean up as you go use a separate plastic tray for the cut of component wire leads

Please take extra care when putting in the components, some are difficult to see the correct orientation, for example the small LEDs.

Morse Code (CW) Display component list.				
	Component	No req	What it should look like	Got
PCB	Circuit board and key strip	1		
IC Socket	8 Pin IC Socket for the PIC	1		
R1	1/4W 1k Ω Resistor (Brown-Brown-Red-Gold) (for a 5 band Brown-Black-Black-Brown-Tolerance)	1		
R2	1/4W 220 Ω Resistor (Red-Red-Brown-Gold) (for a 5 band Red-Red-Black-Black-Tolerance)	1		
R3,4,5	1/4W 10k Ω Resistor (Brown-Black-Orange-Gold) (for a 5 band Brown-Black-Black-Red-Tolerance)	3		
R6,7	1/4W 470 Ω Resistor (Yellow-Purple-BrownGold-) (for a 5 band Yellow-Purple-Black-Black-Tolerance)	2		
78L05	5V - Voltage regulator (78L05)	1		
Clear Screen	Momentary push button switch (B3F-1000)	1		
Buzzer	Active Buzzer 5V	1		
LED	LED diode (a light that has to be inserted the correct way)	1		
On Off Switch	Switch On Off (1212-112DB)	1		
OLED1 or OLED2	OLED Display (SSD1306) (The 5V and GND pins may be swapped around)	1		
	Solder (length 40 cm)			
	3M x 10mm bolt	1		
	3M nut (1 nut if using a nyloc nut instead of a star washer.)	2 (1)		
	Star washer Or 3M nyloc nut	1		
BT1	9V Battery holder (Collect when finished and checked)	1		
PIC	PIC16F18313-i/p (Collect once the Board has been checked)	1		

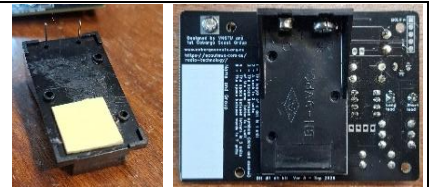
Steps: Place components as shown, then solder and trim leads before the next step.	Component:	Board images:
Check board layout. Note component locations.		
Install Resistors. R1 - 1k Ω Resistor (Brown-Brown-Red-Gold) (for a 5 band Brown-Black-Black-Brown-Tolerance)		
R2 - 220 Ω Resistor (Red-Red-Brown-Gold) (for a 5 band Red-Red-Black-Black-Tolerance)		
R3, 4, 5 - 10k Ω Resistor (Brown-Black-Orange-Gold) (for a 5 band Brown-Black-Black-Red-Tolerance)		
R6,7 - 470 Ω Resistor (Yellow-Purple-BrownGold-) (for a 5 band Yellow-Purple-Black-Black-Tolerance)		
8 Pin IC Socket- notch goes to the top, as per drawing on circuit board. Its recommended to only solder 2 opposite corner pins and then check the socket is sitting flat on the board, once checked, solder the other pins		

<p>LED – Shorter lead goes to the left, Details on the back of the board.</p> <p>The Longer LED leg goes in the right-hand pad</p>		
<p>Momentary push button switch (B3F-1000)</p>		
<p>Install 78L05 Voltage regulator</p>		
<p>Install On off switch, use double sided tape to hold the switch in place</p>		
<p>Install the Active buzzer, make sure the + pin goes to the right pad as marked</p>		
<p>Melt some solder onto the main board key pad, bottom Right hand edge.</p> <p>Do not solder the top pad with the bolt hole.</p> <p><i>This is the switch point, lever must contact this pad when pressed.</i></p> <p>Caution: this pad will get very hot and take a while to cool down.</p>		

<p>Install the OLED Display The SSD1306 is available in 2 different pinouts, There are 2 sets of pads on the board to match the different display pinouts <i>Check the Display and board for the correct location.</i> (OLED1 or OLED2.)</p>		
<p>From the Board back, put the bolt up through the solder pad hole at the top of the board</p>		
<p>Fit a nut on the Bolt to hold the bolt through the board. Do not over tighten the nut. Use a small socket or spanner and screwdriver. Please Do not over tighten.</p>		
<p>Place the Key lever onto the bolt and secure with a star washer and normal nut or a nyloc nut Use a small socket or spanner and screwdriver. The lever should be firm so it does not move. Please Do not over tighten.</p>		
<p>STOP!! Check for any mistakes Especially the component orientation and look for shorted solder pads.</p>	<p>DO NOT connect a battery until you have double-checked your work!</p>	
<p>Ask a leader to check your soldering. Test the board. If all is ok, they will give you the Battery holder.</p>		

Install the battery holder.

Battery holder goes on the board back and is soldered in place from the front, when fitting the battery holder **Before soldering**, use a piece of double-sided tape to hold in place.



Install the battery.

Try pressing the key a few times. If you hear a tone (noise) and see the LED light when you press the key, you have completed your circuit successfully!

Well done!

Write your name and group in the box on the back.



Now with the battery removed, you can install the PIC.

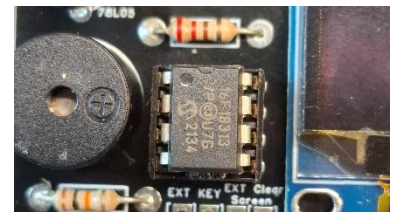
Take care that all the pins are straight and go into the socket evenly without bending. Pin 1 needs to be top left. There is a half-moon notch on the top edge of the PIC.



Ask if the PIC has been pre-programmed, **if not**, then the next step is to get the PIC programmed.

Now re install the battery and turn on, you should see text on the screen and letters if you key in the correct code.

The Morse Code timing is set to about 10 wpm and may take some practice to get it right.



Troubleshooting:

Here are a few basic steps you can take to identify the problem:

Please ask for help.

Disconnect the battery.

1. Check the key is making good contact with the solder pad, there may be some flux covering the solder pad that will need to be gently removed.
2. Carefully review all your connections, especially look for shorted solder pads.
3. Check all the components (Buzzer, LED, 78L05, OLED etc) are installed correctly. (Correct orientation, or no bent pins on the IC.)
4. If all of the above steps fail, ask for help, use the circuit diagram to help with fault finding.

Circuit diagram:

