Development board for the PICAXE 14M2 microcontroller - “picamoo”


You’ll find the latest versions of the instructions and example code at the above address.

Thank you for purchasing the Picamoo kit! I hope you have lots of fun with it!

If you have any suggestions for future boards then please let me know. I’ll send you some free boards if I like your idea!
Kit Contents

This kit was put together by a team of highly skilled octopuses; it should contain the following items:

1) The main PCB
2) 1x PICAXE 14M2 microcontroller
3) 1x 0.1uF capacitor
4) 1x 14 pin socket
5) 1x 3.5mm LED
6) 1x 330 ohm resistor (orange orange brown)
7) 1x 10k resistor (brown black orange)
8) 1x 22k resistor (red red orange)
9) 2x 7 pin headers
10) 1x 3.5mm headphone socket
11) 4x 18mm hex spacers
12) 4x M3 screws
13) 8x washers
14) 1x 3xAA battery box

Important Things to Remember

This kit is designed to run from 5V. Do not exceed 5v or the ICs and LED components will be damaged. It will work fine from 4x 1.2V rechargeable batteries.

Do not connect the 3.5mm headphone connector while the power to the board is on! This can damage the PICAXE microcontroller.

The diode, LEDs and IC sockets (and corresponding ICs) must be placed on the board in the correct orientation or picamoo will not work.

Before soldering any components check and then double-check that they are correctly oriented.

Don’t rush, and have lots of fun!

If you need a good tutorial on soldering then SparkFun Electronics has a good one (https://www.sparkfun.com/tutorials/106) as do Adafruit Industries (http://www.ladyada.net/learn/soldering/thm.html).
Building Instructions

You will need a soldering iron, solder, an octopus (or a set of handy helper things) and wire cutters. To keep some of the large components in place while soldering you might find Blue-Tac useful to stop them moving around or falling off, but be careful not to put it on anything that will get hot (resistor leads, LED leads etc.) or you’ll end up with a hot squidgy mess on your components.

Take your time and check the placement of every component before soldering them in place!

**STEP 1 – Screw terminals**

Solder the two screw terminals on either the top or bottom of the board depending on how you plan on using this kit in future. But make sure the screw terminal openings are facing away outwards.

**STEP 2 – 14 pin DIP socket**

This socket will eventually hold the PICAXE microcontroller. Don’t put chip in until the end.

Place it on the board so that the “notch” is facing upwards, away from the “picamoo” text.

**STEP 3 – Resistors**

There are three resistors on the picamoo board. The 330 ohm resistor (orange orange brown) goes at the top of the board, the location is labelled “330”. This resistor protects the LED.

The second resistor, 22k (red red orange), goes to the left of the 8 pin socket, it is labelled 22k.

The third resistor, 10k (brown black orange), is placed towards the bottom of the 8 pin socket, and is labelled 10k.

Resistors two and three form part of the programming circuit.

**STEP 4 – The diode**

The 1N4001 diode sits on the 5v line and protects the circuit from reverse polarity – that is, it will stop the sensitive components on the board from being damaged if the GND and 5v connections are connected the wrong way around.

The diode MUST be placed so that the end with the white marking is facing towards the 14 pin IC socket.

If you are planning to run the board from 3x AA batteries, or wish to run the PICAXE at 3V then remember that the diode has a voltage drop of around 0.6V and will lower the amount available to connected components by that much. The PICAXE will run as low as 2.5V but other components may not.

Replacing the diode with a jumper wire will remove this small drop, but will remove reverse polarity protection.
STEP 5 – Headers (7 pin)

There are two 7 pin headers that can go on the top or bottom of the board. Their locations are labelled J1 and J2 on the PCB.

STEP 6 – The capacitor

There is a single capacitor (the orange or yellow disc shaped thing) that goes on to the board in location C1 just at the top end of the 8 pin socket. It is not polarised, and can go in anyway round.

STEP 7 – The LED

This is placed in the location LED on the board, the short lead goes in the bottom hole, the long lead in the top.

STEP 8 – 3.5mm headphone connector

This can only go on the top of the board. It should sit snugly with a small section overhanging the right hand side of the PCB.

This is the programming socket, used to transfer the program code from a PC/Mac to the PICAXE chip.

STEP 9 – Switch

The switch can go on either side of the board. Place it at the top edge. Switch to the left turns is OFF, to the right is ON.

Switch may not look exactly like that in the picture.

Now all of the components have been soldered to the board it’s time to place the PICAXE chip in to its socket. It should be socketed so the notch on the chip is on the same side as the notch on the socket – facing the switch and the capacitor.

Before you try to carefully slot the chip in to socket you’ll notice that the legs are spread out too much to fit. They’ll need to be bent inwards before they’ll fit. DO NOT FORCE THEM.

The way I like to do this is by very carefully pressing each side of the chip on my desk until both sets of pins are parallel. Once the legs are parallel it will take a bit of force to push the chips in to the sockets, be gentle and patient.

That’s all the hard work finished. Connect the hex spacers with a washer on each side, if required, and you should now have something that looks like this:
If you have any comments or suggestions for this kit then please let us know.

For more information, updates and details of new kits check out the following links:

- Website: [www.MaximumOctopus.com](http://www.MaximumOctopus.com)
- Twitter: [http://www.twitter.com/maximumoctopus](http://www.twitter.com/maximumoctopus)
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- YouTube: [https://www.youtube.com/user/freshneyorg](https://www.youtube.com/user/freshneyorg)

This kit was designed and manufactured in the UK.

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