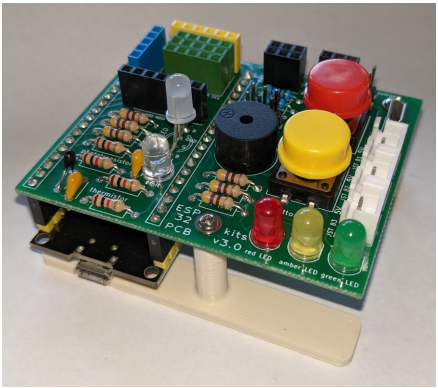
Getting started with your ESP32 Maker PCB

Required component summary:

1x printed circuit board (PCB)	4x 1kΩ resistors
1x red LED	2x 330nF capacitors
1x amber LED	1x Thermistor 10kΩ NTC
1x green LED	1x Phototransistor
1x RGB LED	2x tactile buttons
6x 470Ω resistors	2x button coloured caps
1x passive buzzer	2x 4.7kΩ (pull-up) resistors
1x 1row x 6P female yellow header	3x 1row x 5P female green headers
1x 1row x 5P female blue header	3x 1row x 3P female black headers
1x 1row x 7P female black header	2x 1row x 19P female black header
2x 1row x 3P male black header	1x USB type B micro socket
1x 3D printed PCB centre leg 'stand' + 1x 6mm M2 self-tap screw	1x 1row x 2P male black header + jumper
1x 3D printed PCB side leg 'stand' + 1x 6mm M2 self-tap screw	3x JST sockets + plugs with leads

The aim of this evolving project is to provide access to an expanding library of example code to allow a digital maker to explore and control many different components and devices.

This is achieved, as shown on the right, by using a custom PCB with the other components listed above, to create an assembly that can connect to a 38-pin ESP32 microcontroller module with the pair of custom 3D printed 'stands' used to create a stable arrangement.



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Software & documentation:

To get started: ***ESP32_Maker_PCB_v4_support_material.zip***, that contains all the software and documentation, can be downloaded from: *https://onlinedevices.org.uk/dl1919*
- where the last set of characters are lower case DL1919

The ***ESP32_maker_PCB_usage_documentation_v3-0.pdf*** file in the .ZIP provides assembly and detailed usage instructions, and a separate ***ESP32_code*** folder contains example software. All the software is C/C++ for use with the Arduino IDE with individual code 'sketches' available to control the components directly fitted to the Maker PCB as well as a wide variety of additional components that can be connected to the PCB.

To manage code changes and to upload individual code 'sketches' to the ESP32 microcontroller, a separate computer is needed to run the Arduino IDE which can be installed on a variety of machines (Windows PC, Mac, Raspberry Pi, etc).

It should be noted that only low voltage DC power supplies, e.g., 5V rechargeable battery banks/PSUs, or 4xAA battery packs, should be connected to the PCB's separate 'power bus'.

In addition the 'power bus' should only be interconnected to the PCB's main 5V power line, using the 'jumper' connection point, if the supply to the 'power bus' is at a safe maximum 5V level for the ESP32.

For each of the projects/methods described in the main documentation you should ensure that the ESP32 is <u>not</u> powered when connecting the PCB to the ESP32 or devices are connected to the PCB.

Assembling a complete PCB is a significant soldering task for which some experience at soldering is needed. However with some adult supervision, the soldering could be carried out by ages 10 and above. In addition, with an adult carrying out the soldering of components onto the PCB, ages as young as 7 should be able to run the projects, although at this early age not all the physics and maths associated with the projects may be fully understood.

