



# Kitronik Discovery Kit for Raspberry Pi Pico (Pico not included)

Stock code: 5333



## Description



**Made for Raspberry Pi Pico**  
(Not Included) Just solder on your headers, and it's ready to use with our simple kit!



**Seven Fun Experiments**  
Seven experiments to take you from complete novice to simulating real-world systems.



**Detailed Tutorial Book**  
Step-by-step code and build instructions with clear pictures help you to get going quickly.

```
CREATE THIS CODE

import machine

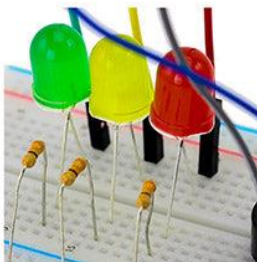
#Setup the onboard LED Pin as an output
LED = machine.Pin(10,machine.Pin.OUT)
Button = machine.Pin(6,machine.Pin.IN,machine.Pin.PULL_UP)
LEDState = False

#This IRQ Handler toggles the variable we use to light
#an LED. It should, but doesn't check which pin raised it
#as we only have 1 pin wired.
def ButtonInterrupt(pin):
    global LEDState
    if LEDState == True:
        LEDState = False
    else:
        LEDState = True

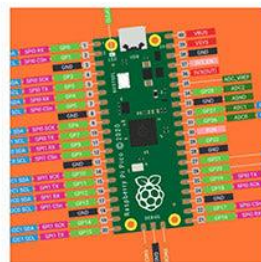
#Setup the IRQ and hook it to the handler
Button.irq(trigger = machine.Pin.IRQ_RISING,
           handler = ButtonInterrupt)

#Now loop and light the LED with the LED State
while True:
    LED.write(LEDState)
```

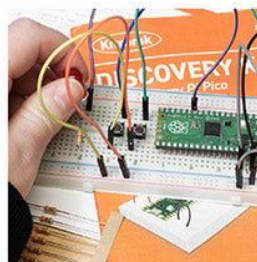
**Simple Code**  
Microsoft MakeCode Editor is as easy as 1, 2, 3! Just click, drag and drop.



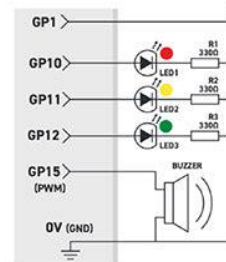
**Simple Build**  
No soldering here! Simply slot the components into the breadboard... and pull them right out again.



**Further Learning**  
Feel like you've learned it all thoroughly? Create your own challenges and push your limits.



**Build New Projects**  
Unleash your imagination and make your own circuits on the reusable prototyping system.



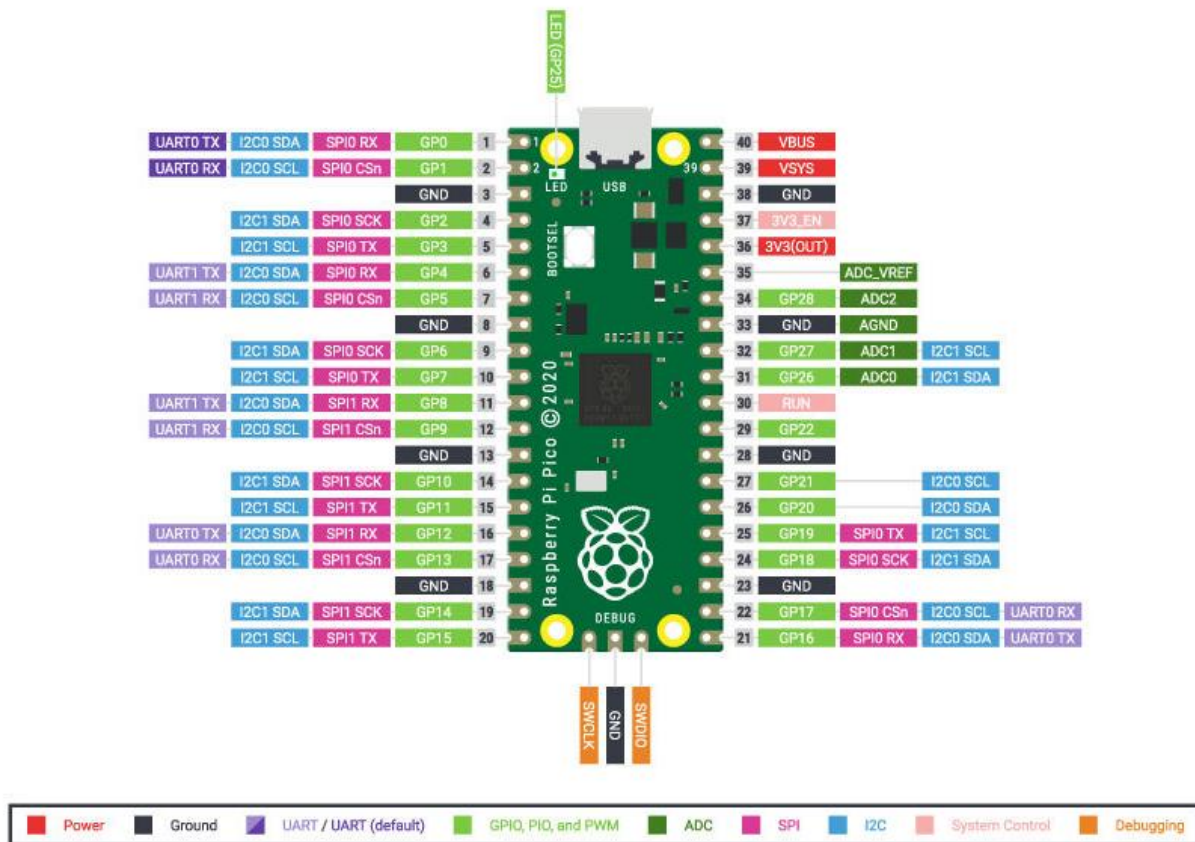
**Electronics Explained**  
Clear circuit diagrams and explanations make getting to grips with electronics easy!

# Take your first steps in Python and physical computing with the Kitronik Discovery Kit for Raspberry Pi Pico (Pico not included).

The Kitronik Discovery Kit for Raspberry Pi Pico (Pico not included) is a great way to learn about microcontrollers, Python coding, and physical computing. The kit is supplied with all of the components needed to complete the 7 included experiments, including a large-format breadboard. The kit is packaged in sturdy reusable packaging that can be used to store the kit. This version of the kit is NOT supplied with a Raspberry Pi Pico.

The seven experiments take you from the basics of using the board through to more advanced concepts and using external electronics. The experiments cover key concepts of microcontrollers, such as; basic setup, simple coding, Interrupts, Threads, Digital Inputs, and Analog and Digital Outputs.

The kit ships with a comprehensive guide booklet. The booklet covers the basic setup and then how to complete each of the 7 experiments. Each experiment is complete with detailed circuit diagrams, explanations, and a complete code run-through. This means that you can get started without having to understand too much Python.



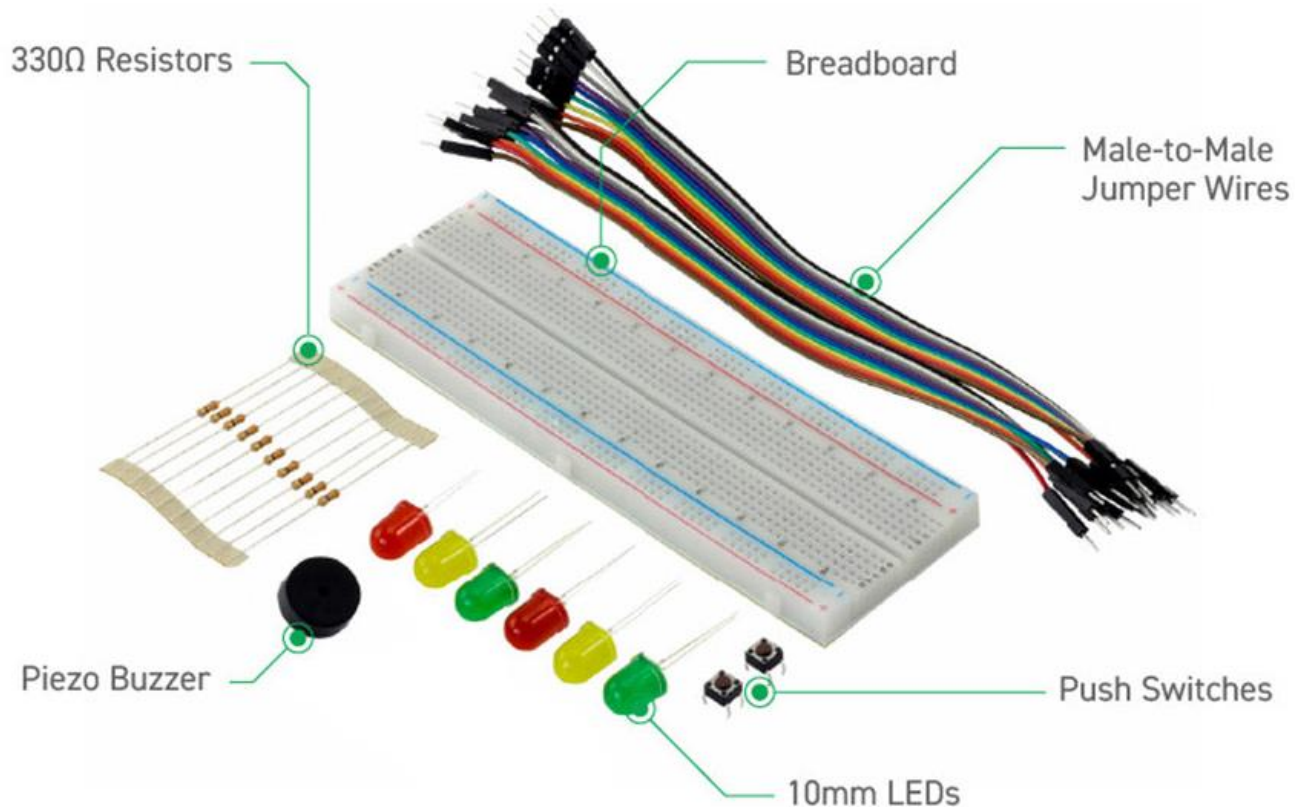
The Raspberry Pi Pico board, a new low cost, high-performance microcontroller. The board features a powerful new, Raspberry Pi designed ARM-based dual-core chip-- the RP2040. The pico also features 64KB of internal RAM and support for up to 16MB of off-chip Flash. A wide range of flexible I/O options includes I2C, SPI, and Programmable I/O (PIO). These support endless possible applications for this small and affordable board.

The kit is programmed using MicroPython. This is a full Python 3 implementation created specifically for small embedded microcontrollers, such as the Pico and the popular BBC micro:bit. You will use the Thonny editor to create your code, which can then be saved directly to the Pico from the editor via USB. Thonny is a Python Editor/IDE designed to allow beginners to get up and running with Python coding with as little fuss as possible.

A power pack is not required as power will be supplied via the USB connection to the computer that the Thonny editor is running on.

### Note:

- A USB cable is NOT supplied. USB cables capable of data transfer and power are available separately here.
- The Raspberry Pi Pico is NOT supplied with this kit. There is a version of this kit that has a Pico included, available here.



## Features:

- This kit offers a great introduction to microcontrollers, Python coding, and physical computing.
- Make the 7 experiments in the step-by-step tutorial book and learn as you go.
- All parts are included to conduct the 7 experiments.
- The kit is supplied with a detailed booklet that covers setup and then how to complete the 7 experiments.
- The experiments explore; simple coding, Interrupts, Threads, Digital Inputs, and Analog and Digital Outputs.
- Once you have completed all of the included experiments, you have the perfect prototyping system for further learning/prototyping with the Raspberry Pi Pico board.
- Included is a large format breadboard for ease of prototyping.
- The kit is supplied in re-usable packaging suitable for long term storage of the kit.

## Contents:

- 1 x Large Prototype Breadboard.
- 2 x Red 5mm LED.
- 2 x Yellow 5mm LED.
- 2 x Green 5mm LED.
- 10 x 330Ω Resistor.
- 1 x Piezo Element Buzzer.
- 20 x Male to Male Jumper Wires.
- 2 x Push Switches.
- A booklet guide containing basic setup information and the following 7 experiments;
  - Exp. 1 - Show Me The Light.
  - Exp. 2 - Control an Input.
  - Exp. 3 - Interrupt Me.
  - Exp. 4 - Making a Noise.
  - Exp. 5 - So Many Interruptions.
  - Exp. 6 - Rub Head and Pat Tummy - Threads.
  - Exp. 7 - Building a System from the Blocks we have Learnt.
- The kit is supplied in re-usable packaging suitable for long term storage of the kit.
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## Video:

[https://www.youtube.com/watch?v=mHoK79NE1uc&feature=emb\\_imp\\_woyt](https://www.youtube.com/watch?v=mHoK79NE1uc&feature=emb_imp_woyt)

## Requires:

- USB Lead.
- Raspberry Pi Pico (With headers - assembled).
- Or Pico with;
  - Pin Headers.

## Resources:

- MicroPython Code for all 7 Discovery Kit Experiments.
- Get started with MicroPython on Raspberry Pi Pico. 
- **Tech Talks** - live stream playback.
- Raspberry Pi Pico frequently asked questions.
- More information on the Pico.
- About MicroPython.
- About Python.
- The Thonny editor.
- Raspberry Pi pico Datasheet.
- RP2040 Datasheet.

## Discovery Kit Extension Experiments:

The table below contains links to extension experiments for the Pico Discovery Kit. They have been listed in the order that they should be completed, and they should only be tackled once you have completed the 7 experiments supplied with the kit. Each extension experiment is thoroughly explained and code examples are provided. Although they cover quite challenging concepts, the information is provided in such a way as to walk you through the solution.

Exp No#.	Experiment Name/Link.
1	Pico Thermometer.

2	Storing Data on the Pico.
3	Live Data Logging on the Pico.



This product is designed and manufactured in the UK by Kitronik.