Raspberry Pi Pico Starter Kit

Prezzo: 45.90 €

Tasse: 10.10 €

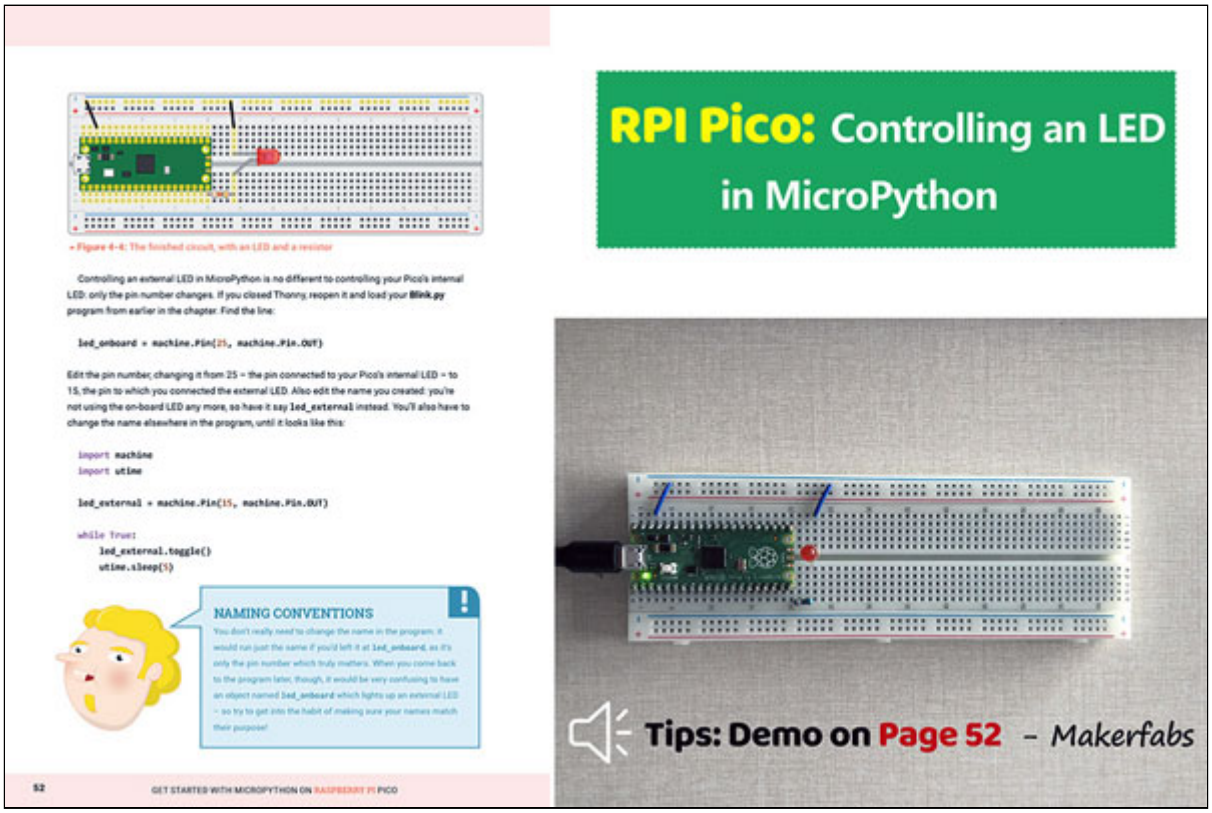
Prezzo totale (con tasse): 56.00 €

Raspberry Pi Pico

Starter Kit

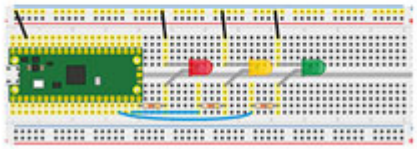
Starter kit con Raspberry Pi Pico. La confezione comprende una serie di componenti elettronici necessari per realizzare alcuni degli esperimenti descritti nella guida “Get Started with MicroPython on Raspberry Pi Pico”. Contenuto del kit:

- 01Pz Raspberry Pi Pico
- 01Pz Display LCD seriale
- 01Pz Buzzer
- 01Pz Anello con 12 LED RGB WS2812 e driver integrato LED WS2812B
- 01Pz Breadboard 830 contatti (16,5x5,5 cm)
- 01Pz Set di jumper assortiti per breadboard (140 pezzi)
- 01Pz Potenziometro
- 02Pz Sensore infrarossi HC-SR501
- 02Pz Interruttore a pulsante
- 05Pz Mini pulsante
- 10Pz Resistenze ¼ w 330 ohm
- 10Pz Resistenze ¼ w 10 kohm
- 10Pz Jumper maschio-maschio
- 10Pz Jumper maschio-femmina
- 20Pz LED vari colori
- 01Pz Cavo USB



A simple traffic light

Start by building a simple traffic light system, as shown in **Figure 5-1**. Take your red LED and insert it into the breadboard so it straddles the centre divide. Use one of the 330 Ω resistors, and a jumper wire if you need to make a longer connection, to connect the longer leg – the anode – of the LED to the pin at the bottom-left of your Pico as seen from the top with the micro USB cable uppermost, GP15. If you're using a numbered breadboard and have your Pico inserted at the very top, this will be breadboard row 20.



▸ Figure 5-1: A basic three-light traffic light system

WARNING

Always remember that an LED needs a current-limiting resistor before it can be connected to your Pico. If you connect an LED without a current-limiting resistor in place, the best outcome is the LED will burn out and no longer work; the worst outcome is it could do the same to your Pico.

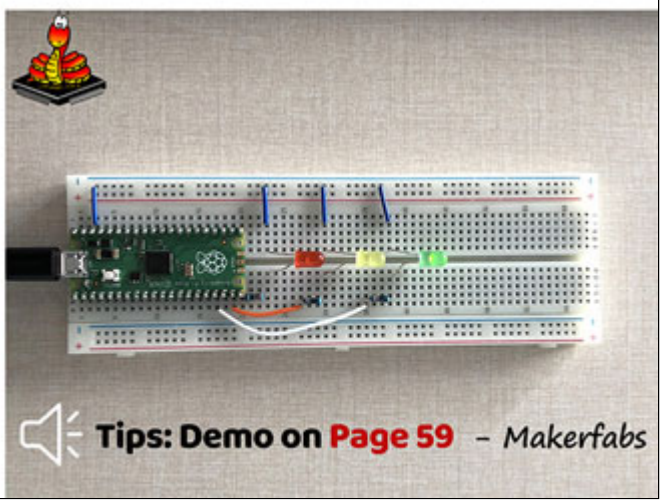
Take a jumper wire and connect the shorter leg – the cathode – of the red LED to your breadboard's ground rail. Take another, and connect the ground rail to one of your Pico's ground (GND) pins – in **Figure 5-1**, we've used the ground pin on row three of the breadboard.

You've now got one LED connected to your Pico, but a real traffic light has at least two more for a total of three: a red light to tell the traffic to stop, an amber or yellow light to tell the traffic the light is about to change, and a green LED to tell the traffic it can go again.

Take your amber or yellow LED and wire it to your Pico in the same way as the red LED, making sure the shorter leg is the one connecting to the ground rail of the breadboard and that you've got the 330 Ω resistor in place to protect it. This time, though, wire the longer leg – via the resistor – to the pin next to the one to which you wired the red LED, GP14.

Finally, take the green LED and wire it up the same way again – remembering the 330 Ω resistor – to pin GP13. This isn't the pin right next to pin GP14, though – that pin is a ground (GND) pin, which you can see if you look closely at your Pico: the ground pins all have a square shape to their pads, while the other pins are round.

RPI Pico: Basic 3-light Traffic Light System

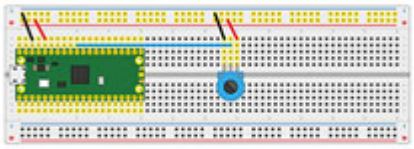


Tips: Demo on Page 59 – Makerfabs

to it. That's because a 10 kΩ resistor isn't strong enough to drop the 3V3 pin's output to 0 V. You could look for a bigger potentiometer with a higher maximum resistance, or you could simply wire your existing potentiometer up as a voltage divider.

A potentiometer as a voltage divider

The unused pin on your potentiometer isn't there for show: adding a connection to that pin to your circuit completely changes how the potentiometer works. Click the Stop icon to stop your program, and grab two male-to-male (M2M) jumper wires. Use one to connect the unused pin of your potentiometer to your breadboard's ground rail as shown in **Figure 8-3**. Take the other and connect the ground rail to a GND pin on your Pico.



▸ Figure 8-3: Wiring the potentiometer as a voltage divider

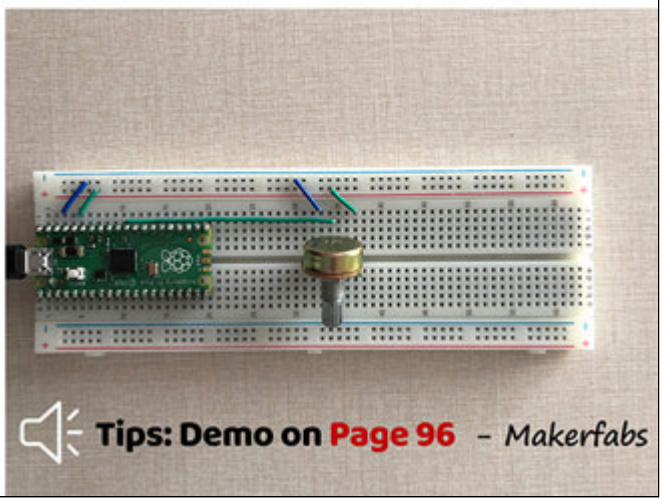
Click the Run icon to restart your program. Turn the potentiometer knob again, all the way one direction then all the way the other. Watch the values that are printed to the Shell area: unlike before, they're now going from near zero to nearly a full 65,535 – but why?

Adding the ground connection to the other end of the potentiometer's conductive strip has created a voltage divider, whereas before the potentiometer was simply acting as a resistor between the 3V3 pin and the analogue input pin, it's now dividing the voltage between the 3.3 V output by the 3V3 pin and the 0 V of the GND pin. Turn the knob fully one direction, you'll get 100 percent of the 3.3V; turn it fully the other way, 0 percent.

ZERO'S THE HARDEST NUMBER

If you can't get your Pico's analogue input to read exactly zero or exactly 65,535, don't worry – you haven't done anything wrong! All electronic components are built with a tolerance, which means any claimed value isn't going to be precise. In the case of the potentiometer, it will likely never reach exactly 0 or 100 percent of its input – but it will get you very close!

RPI Pico: A Potentiometer as a Voltage Divider



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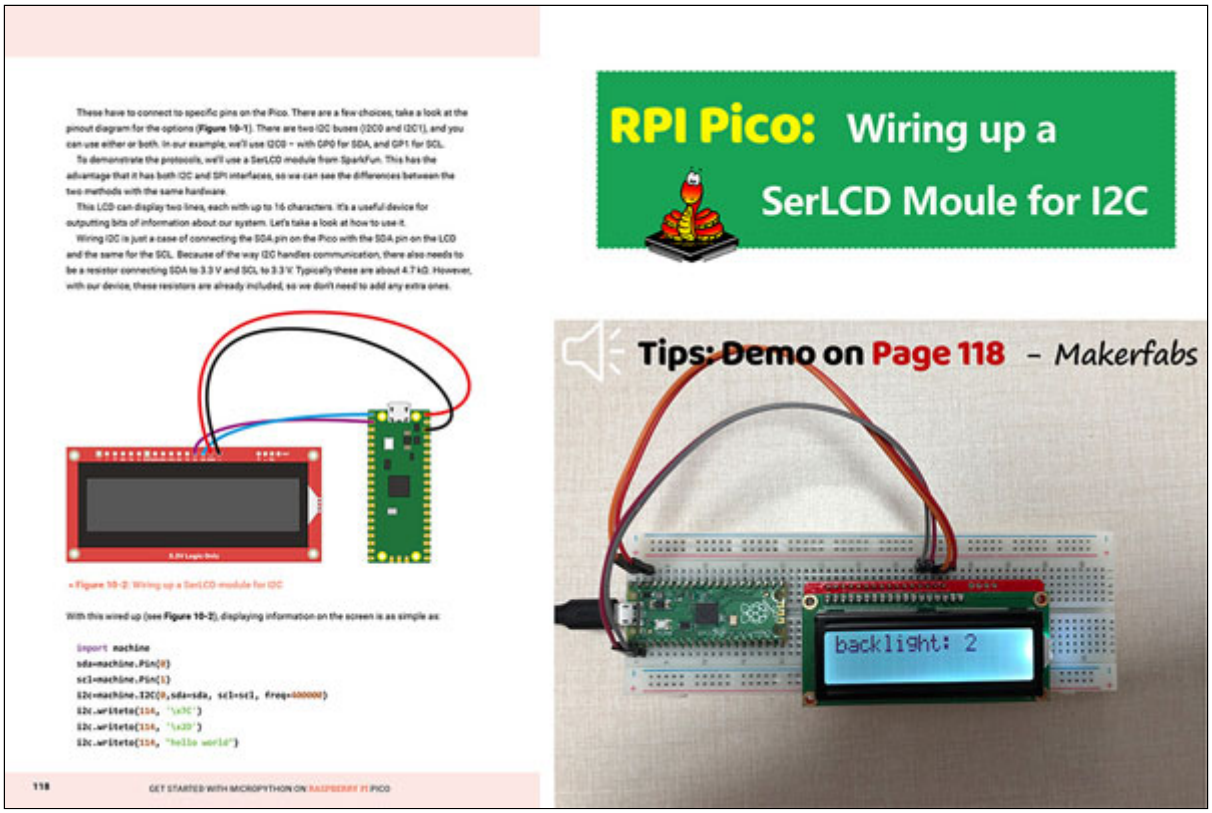
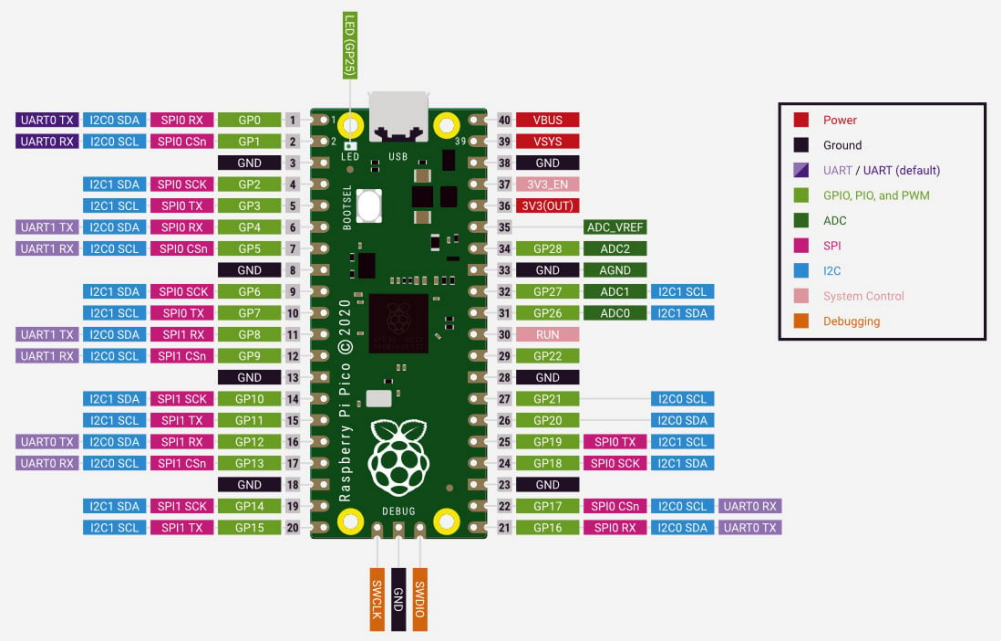


Raspberry Pi Pico

Raspberry Pi Pico è una piccola scheda, veloce e versatile costruita utilizzando il chip RP2040, un nuovissimo chip progettato dalla Raspberry Pi Foundation nel Regno Unito. L'RP2040 è dotato di un processore Arm Cortex-M0 + dual-core con 264 KB di RAM interna e supporta fino a 16 MB di Flash. Dispone di diversio GPIO che includono I2C, SPI e altre funzioni speciali. Programmabile in C e MicroPython può essere utilizzata in varie applicazioni, dal controllo di un elettrodomestico al funzionamento di un display luminoso.

Specifiche tecniche di Raspberry Pi Pico

- Chip microcontrollore RP2040 progettato da Raspberry Pi Foundation (nel Regno Unito)
- Processore: ARM Cortex M0+ dual-core, clock fino a 133 MHz
- 264 kB di SRAM e 2 MB di memoria Flash integrata
- Supporto per host e dispositivi USB 1.1
- Modalità Low-power sleep e dormant
- Programmazione drag & drop
- 26 pin GPIO multifunzione
- 2×SPI, 2×I2C, 2×UART, 3×12 bit ADC, 16 canali PWM controllabili
- Orologio e timer precisi
- Sensore di temperatura
- Accelerated floating point libraries on-chip



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Documentazione e link utili

- Raspberry Pi Pico Datasheet