



## Pico Unicorn Pack



some handy buttons - sized perfectly for the Raspberry Pi Pico!

We've resized our familiar Unicorn setup so that it fits nicely on the back of your Pico - with a tidy 7x16 matrix (that's 112 RGB LEDs!) it's surely the fanciest backpack going. The four tactile buttons can be used to switch between modes, as controls for simple games, or adjusting brightness.

It's possible to control the colour and brightness of each LED individually so you can use it to display animations, text, simple images, and more. Make a mini photo FX lamp, a smart status light for Zoom, use it to display colourful scrolling messages on your fridge, or just enjoy some pretty animations.

\*A Raspberry Pi Pico is not included

A sparkly matrix of over a hundred fantabulous RGB LEDs for all your rainbow needs and

Your Pico will need to have male headers soldered to it (with the pins pointing downwards) to attach to our add-on boards.

### Features

- 16x7 matrix of RGB LEDs (112 total)
- Individual colour/brightness control of each LED
- 4 x tactile buttons
- Pre-soldered female headers for attaching to Pico
- Compatible with Raspberry Pi Pico.
- Fully assembled
- No soldering required (as long as your Pico has header pins attached).
- Dimensions: approx 62mm x 25mm x 10mm (L x W x H, including headers and buttons)
- [C/C++ and MicroPython libraries](https://github.com/pimoroni/pimoroni-pico) (https://github.com/pimoroni/pimoroni-pico)

### Getting started

The labels on the underside of Pico Unicorn Pack will show you which way round to plug it into your Pico - just match up the USB port with the markings on the board.

The easiest way to get started with our Pico add-ons is by downloading and copying our custom MicroPython firmware to your Pico, it includes all the libraries you'll need. Visit <https://learn.pimoroni.com/tutorial/hel/getting-started-with-pico> for the beginner friendly tutorial!

### Pinout

Pico Unicorn Pack drives its display via the PIO feature of the RP2040.

The display is updated one row at a time (but very quickly, so you won't notice!) by selecting one of the **SR1..7** pins which control the row driving FETs.

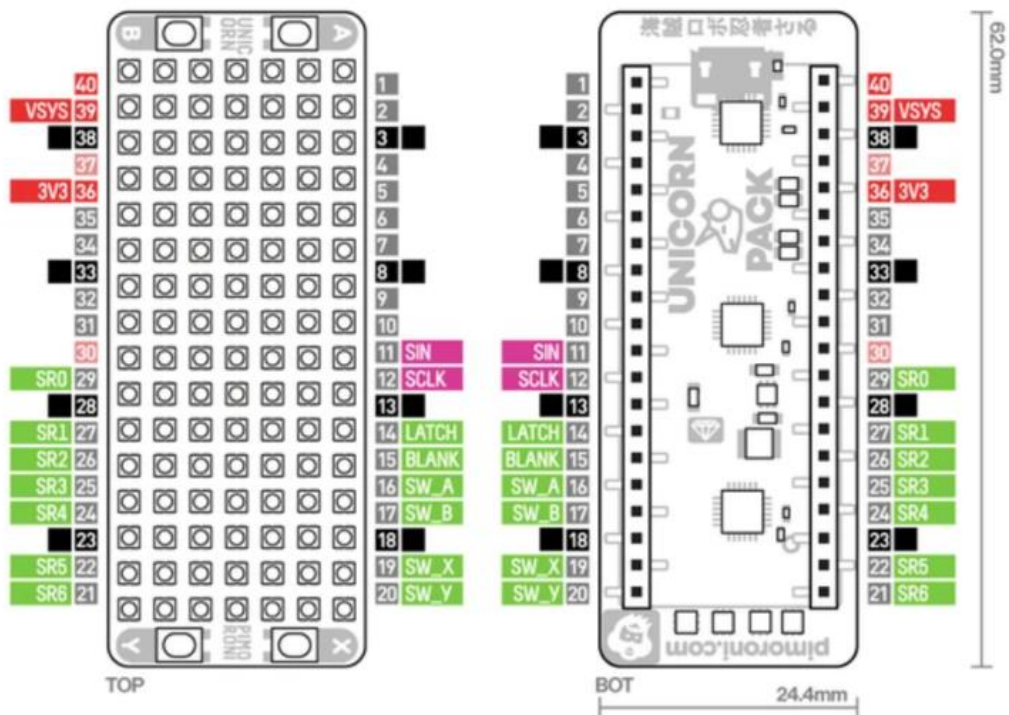
Column data is fed into shift registers via **SIN/SCLK** and then **LATCH**ed to hold during display. **BLANK** enables the column driving FETs to turn on the LEDs and produce the image.

The four switches are wired up as **SW\_A**, **SW\_B**, **SW\_X**, and **SW\_Y**.

Power is supplied through **VSYS** meaning that you can use Pico Scroll Pack both on USB power and from external supplies (so long as they can supply 3V+) making it ideal for battery powered projects.

### Pico Unicorn Pack

### Pins and Dims



### Making use of the RP2040's programmable IOs (PIOs)

What's exciting is that these LEDs are controlled by the programmable IO on the RP2040 meaning they update in the background with very little CPU usage. The programmable IOs are so fast that we can achieve 14-bits of resolution instead of the 8-bits you usually get with LED drivers.

We use these extra bits of resolution to apply gamma correction to the colours displayed meaning that gradients are smooth and linear.

This means that the LEDs perform wonderfully through their full range of brightness rather than being poor at handling lower brightness levels. You don't really need to care about the details (though we think they are interesting!) as our software library just handles it all for you in the background.

### About Raspberry Pi Pico

Raspberry Pi Pico is a flexible, low cost microcontroller development board from the folks at Raspberry Pi, based on their very own chip - the RP2040. It's easily programmable over USB with C/C++ or MicroPython, and ideal for using in all sorts of physical computing projects, devices and inventions - we're so excited to see what you make with it!

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Description	Mftr Part No.	OKdo SKU	RS SKU	Allied SKU
Pico Unicorn Pack	PIM546	XXXXXXXX	xxx-xxxx	xxxxxxxxxx