**Raspberry Pi Pico W and Pico WH**

Raspberry Pi Pico W adds on-board single-band 2.4GHz wireless interfaces (802.11n) using the Infineon CYW43439 while retaining the Pico form factor. The on-board 2.4GHz wireless interface has the following features:

* Wireless (802.11n), single-band (2.4 GHz)
* WPA3
* Soft access point supporting up to four clients
* Bluetooth 5.2
  + Support for Bluetooth LE Central and Peripheral roles
  + Support for Bluetooth Classic

The antenna is an onboard antenna licensed from ABRACON (formerly ProAnt). The wireless interface is connected via SPI to the [RP2040](https://www.raspberrypi.com/documentation/microcontrollers/rp2040.html#welcome-to-rp2040) microcontroller.

Due to pin limitations, some of the wireless interface pins are shared. The CLK is shared with VSYS monitor, so only when there isn’t an SPI transaction in progress can VSYS be read via the ADC. The Infineon CYW43439 DIN/DOUT and IRQ all share one pin on the RP2040. Only when an SPI transaction isn’t in progress is it suitable to check for IRQs. The interface typically runs at 33MHz.

For best wireless performance, the antenna should be in free space. For instance, putting metal under or close by the antenna can reduce its performance both in terms of gain and bandwidth. Adding grounded metal to the sides of the antenna can improve the antenna’s bandwidth.

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| Note | The CYW43439 wireless chip is connected via SPI to the RP2040.The CYW43439 supports both 802.11 wireless and Bluetooth over this interface. | |
| Important | | By default libcyw43 is licensed for non-commercial use, but Pico W users, and anyone else who builds their product around RP2040 and CYW43439, benefit from a free [commercial-use license](https://github.com/georgerobotics/cyw43-driver/blob/195dfcc10bb6f379e3dea45147590db2203d3c7b/LICENSE.RP). |

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| Important | In addition to the [standard BTstack licensing](https://github.com/bluekitchen/btstack/blob/master/LICENSE) terms, a [supplemental licence](https://github.com/raspberrypi/pico-sdk/blob/master/src/rp2_common/pico_btstack/LICENSE.RP) which covers commercial use of BTstack with Raspberry Pi Pico W or Raspberry Pi Pico WH is provided. |

**Pinout and design files**

* Download the [Pinout Diagram](https://datasheets.raspberrypi.com/picow/PicoW-A4-Pinout.pdf) (PDF)
* Download [Design Files](https://datasheets.raspberrypi.com/picow/RPi-PicoW-PUBLIC-20220607.zip) (Cadence Allegro)
* Download [STEP File](https://datasheets.raspberrypi.com/picow/PicoW-step.zip)
* Download [Fritzing Part](https://datasheets.raspberrypi.com/picow/PicoW-Fritzing.fzpz) for Raspberry Pi Pico W

**Software Development**

[Raspberry Pi Pico C/C++ SDK](https://datasheets.raspberrypi.com/pico/raspberry-pi-pico-c-sdk.pdf)

Libraries and tools for C/C++ development on RP2040 microcontrollers

[Raspberry Pi Pico Python SDK](https://datasheets.raspberrypi.com/pico/raspberry-pi-pico-python-sdk.pdf)

A MicroPython environment for RP2040 microcontrollers

The API level Doxygen documentation for the Raspberry Pi Pico C/C++ SDK is also available [as a micro-site](https://rptl.io/pico-doxygen).

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| Note | A [one-click installer](https://github.com/raspberrypi/pico-setup-windows/releases/latest/download/pico-setup-windows-x64-standalone.exe) for the Pico C/C++ SDK for Windows 10 and Windows 11 is available. |