

EP-0172

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Keywords

Pico Breadboard Kit Plus version

Description

The Pico Breadboard Kit with a 3.5-inch touch screen, mini PSP joystick, RGB light, buzzer, and two buttons is a versatile electronics kit designed for prototyping and experimentation. This compact kit combines various components to create interactive projects and offers a user-friendly interface.

Features

- **3.5-inch Capacitive Touch Screen:** The kit includes a high-resolution touch screen for displaying visual outputs and receiving user input.
- **Mini PSP Joystick:** The built-in mini joystick provides precise analog control for navigating menus and controlling movement in projects.
- **RGB Light:** The kit features an RGB light that can emit various colors, allowing for dynamic visual effects and status indicators.
- **Buzzer:** An integrated buzzer produces audible feedback, enabling sound effects or alerts in your projects.
- **Two Buttons:** The kit includes two buttons for user input, providing additional control options and



interactivity.

- **Label:** Drop the jumper, all the information is marked on the PCB and can also be disconnected by removing the OR resistor.

Specifications

- Joystick: Mini PSP joystick for analog control
- Light: RGB light for color output
- Buzzer: Integrated buzzer for audible feedback
- Buttons: Two buttons for user input
- TFT Size: 3.5 inches TFT
- TFT Resolution: 320x480 Pixels
- TFT IC: ST7796SU1 (*May vary with lot*)
- TFT Touch Type: Capacitive Touch Screen
- TFT communication protocol: SPI protocol
- TFT capacitive touch screen communication protocol: I2C protocol
- Weight: 0.25kg
- Package Size: Appro. 190mm*110mm*25mm

TFT screen Pinout

- Communicate: SPI protocol
- TFT Controller Pinout:

Raspberry Pi Pico	3.5 TFT Screen
GP2	CLK
GP3	DIN
GP5	CS
GP6	DC
GP7	RST

TFT screen demo code please refer to this URL:

[https://github.com/geekpi/pico_breakboard_kit/blob/master/lv_port_disp.c]

- Capacitive touch screen Pinout

Raspberry Pi Pico	Capacitive touch screen
I2C0 SDA GP8	SDA
I2C0 SCL GP9	SCL

I2C function please refer to this URL

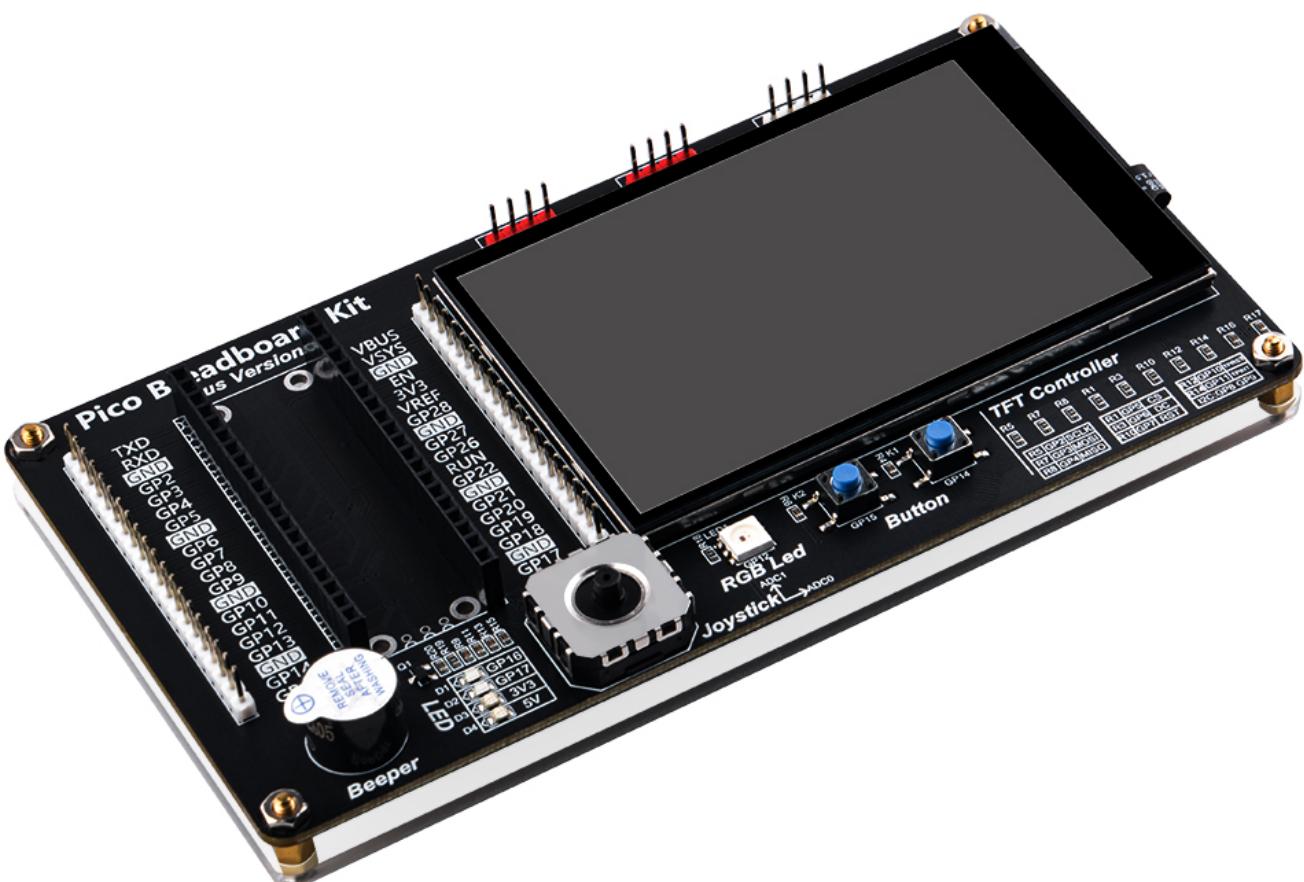
[https://github.com/geekpi/pico_breakboard_kit/blob/master/lv_port_indev.c]

Components's pinout on breadboard

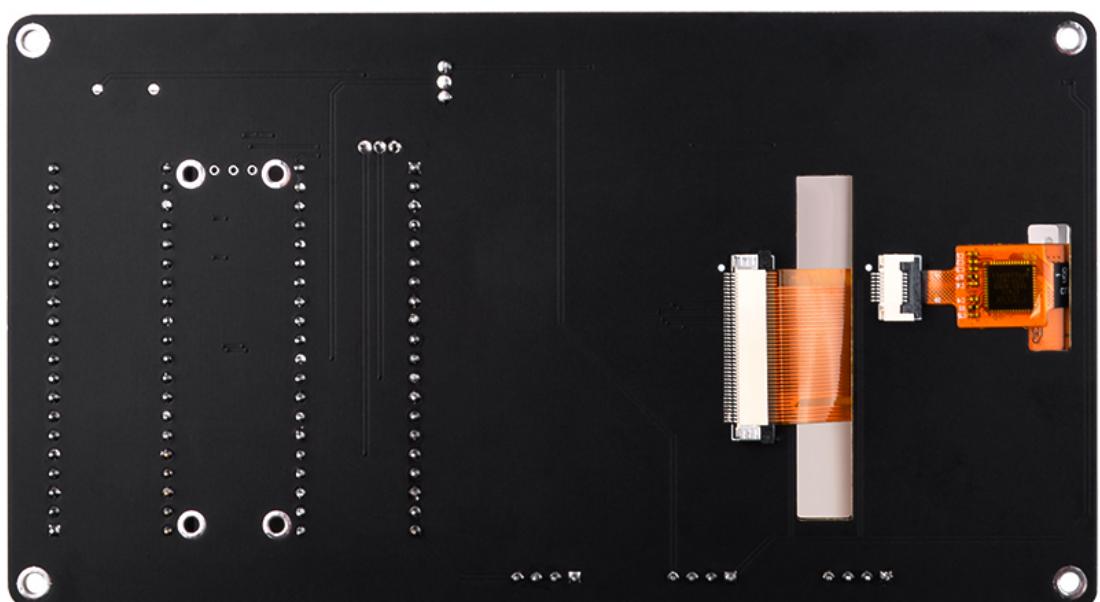
Components	Pinout
Beeper	GP13
LED	D1: GP16, D2: GP17, D3: 3V3, D4: 5V
Joystick	X-axis: ADC0, Y-axis: ADC1
RGB LED	GP12
Button	BTN1: GP15, BTN2: GP14

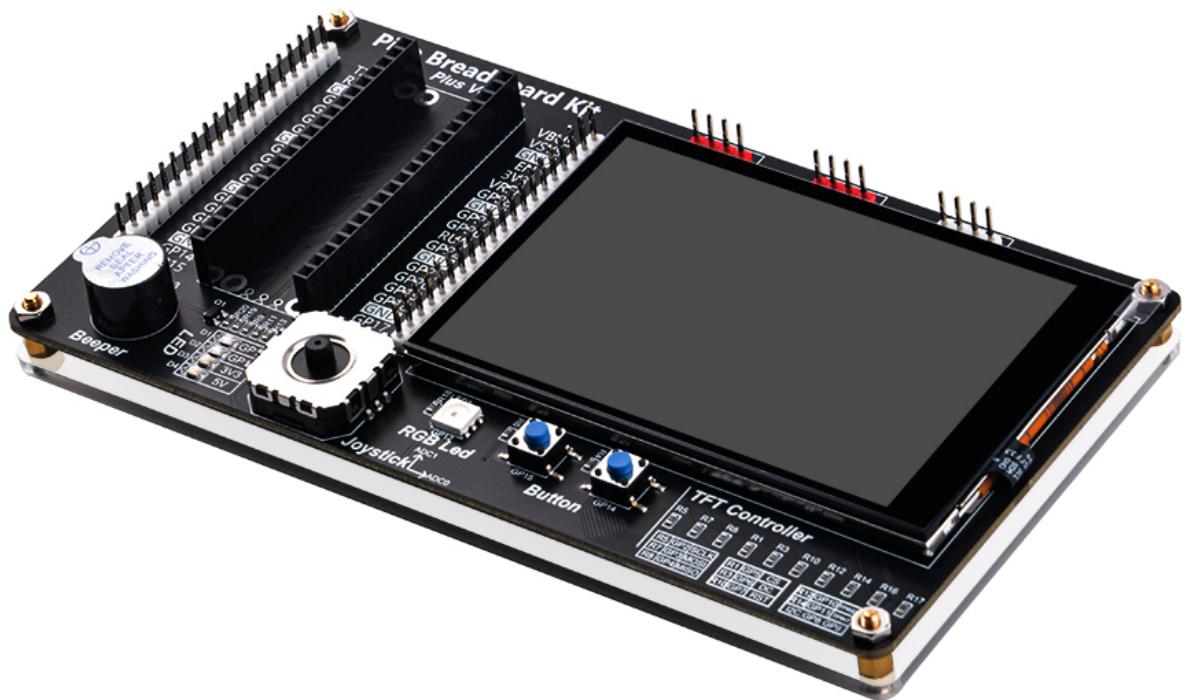
Gallery

- Product Outlook

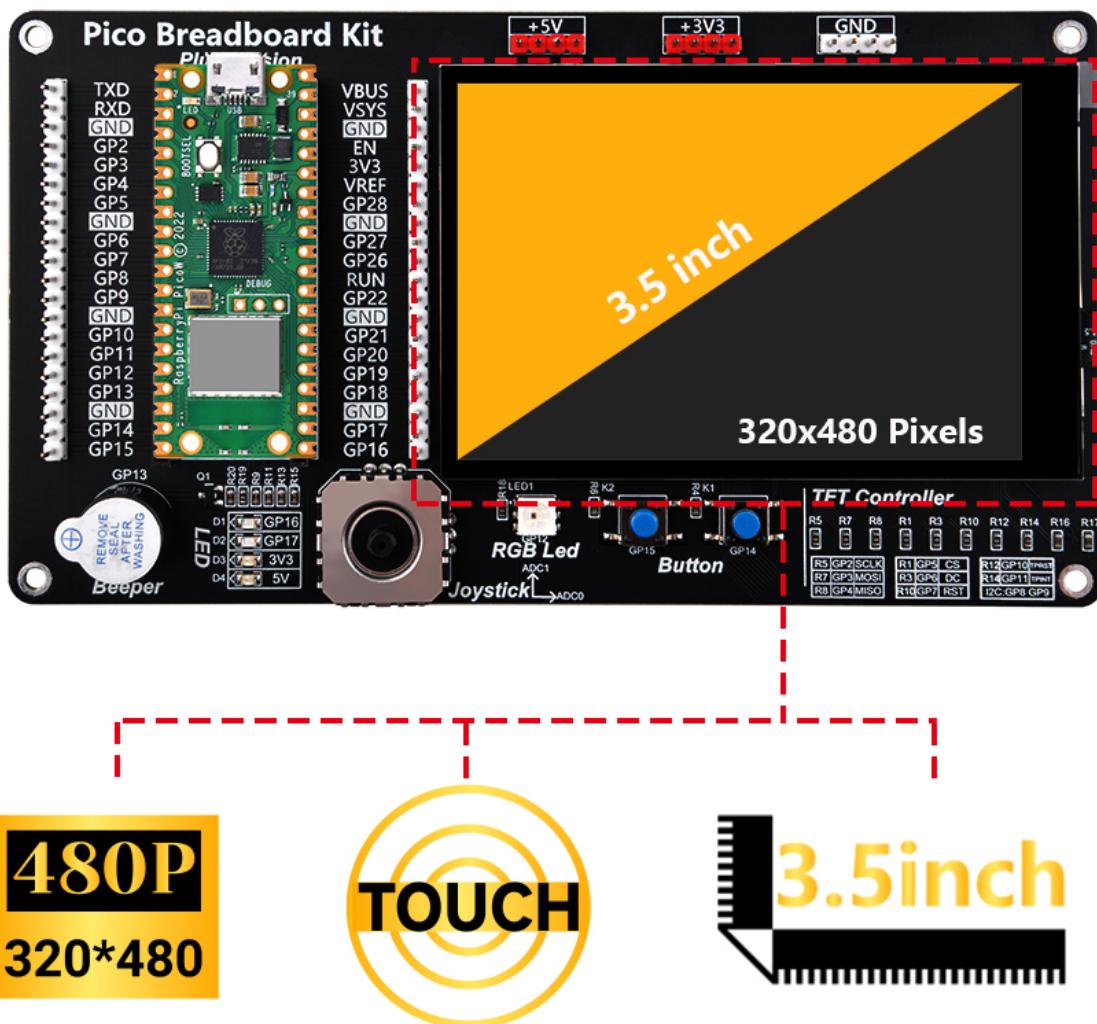






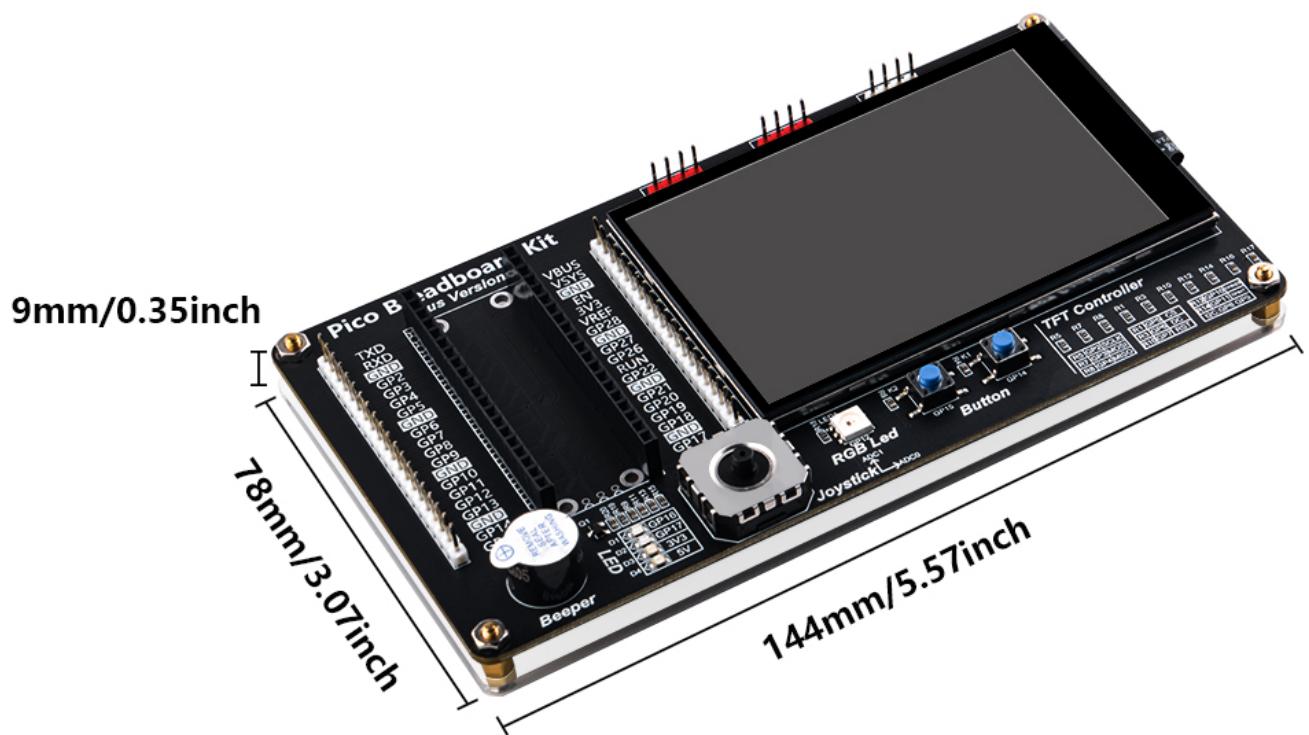


- Features

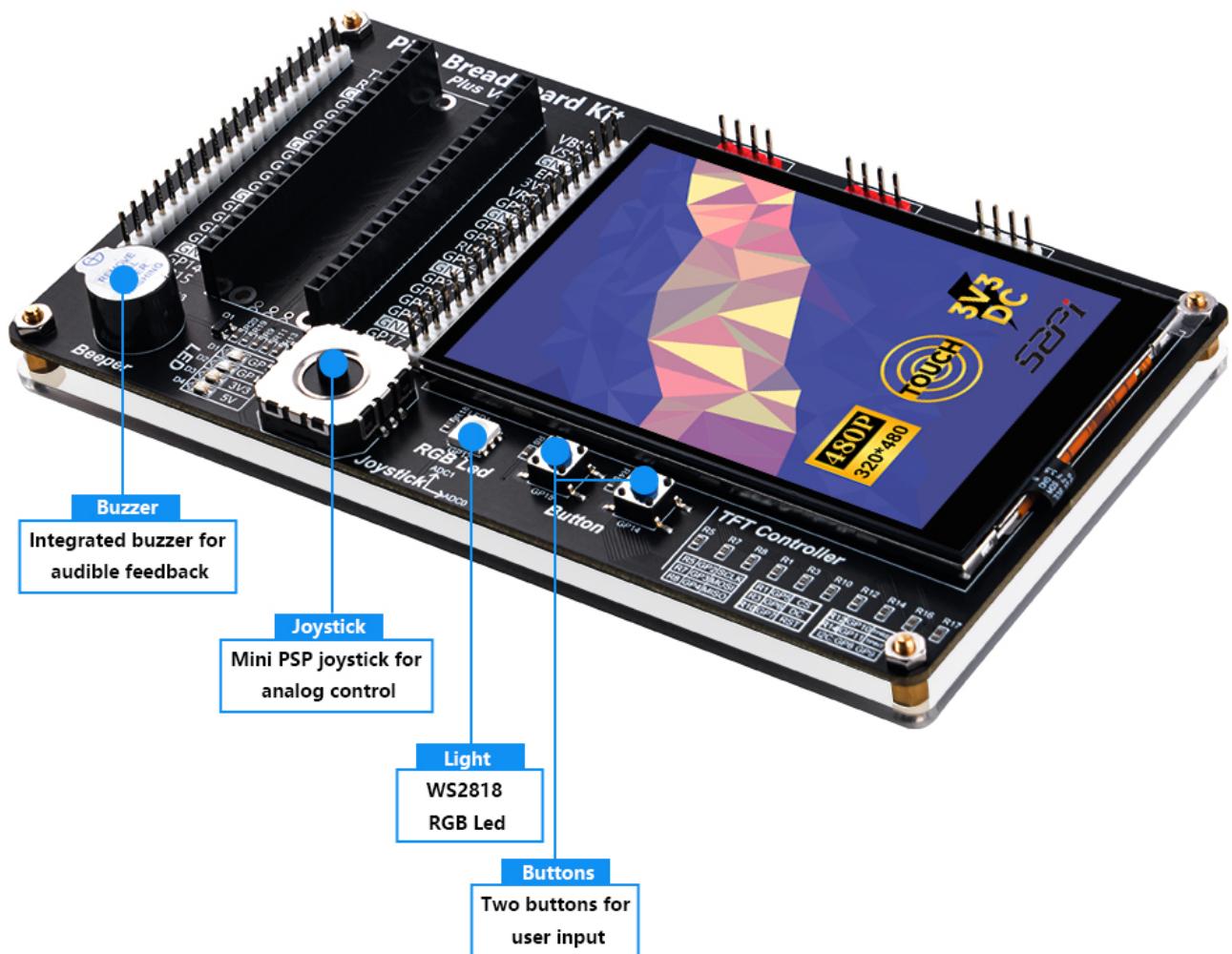


NOTE: Raspberry Pi Pico w dose not include in the package

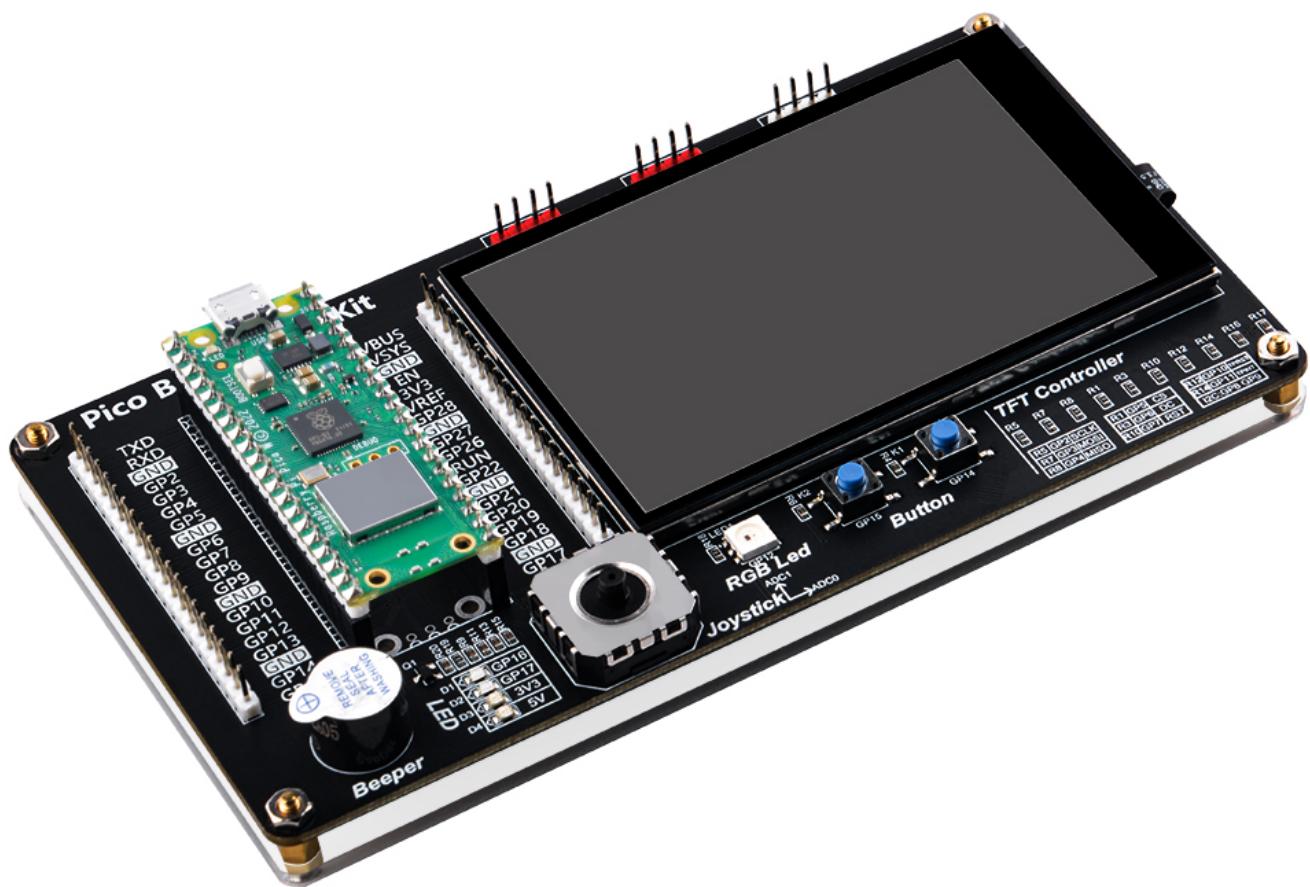
- Dimension



- Components Description

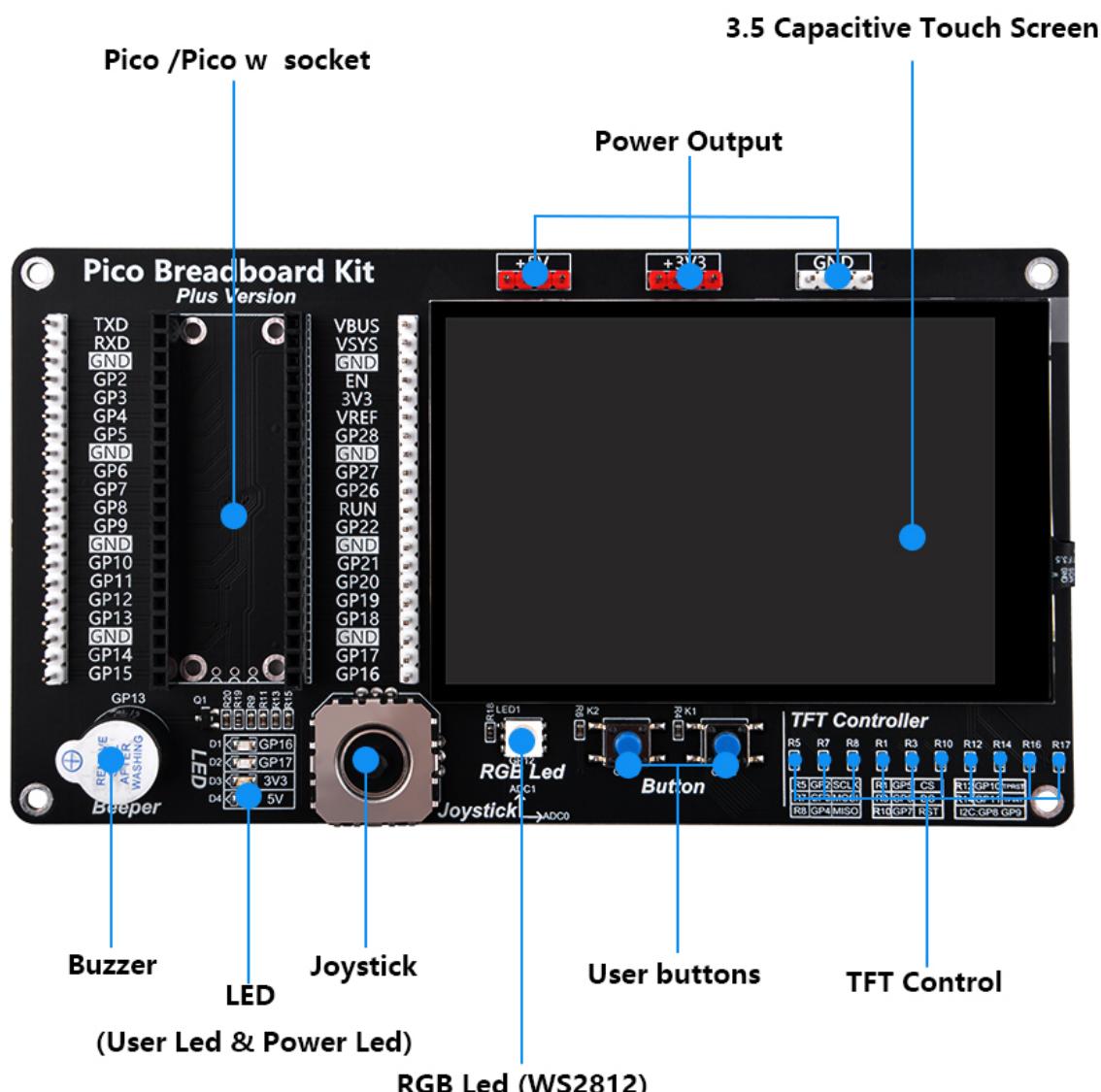


- Notification

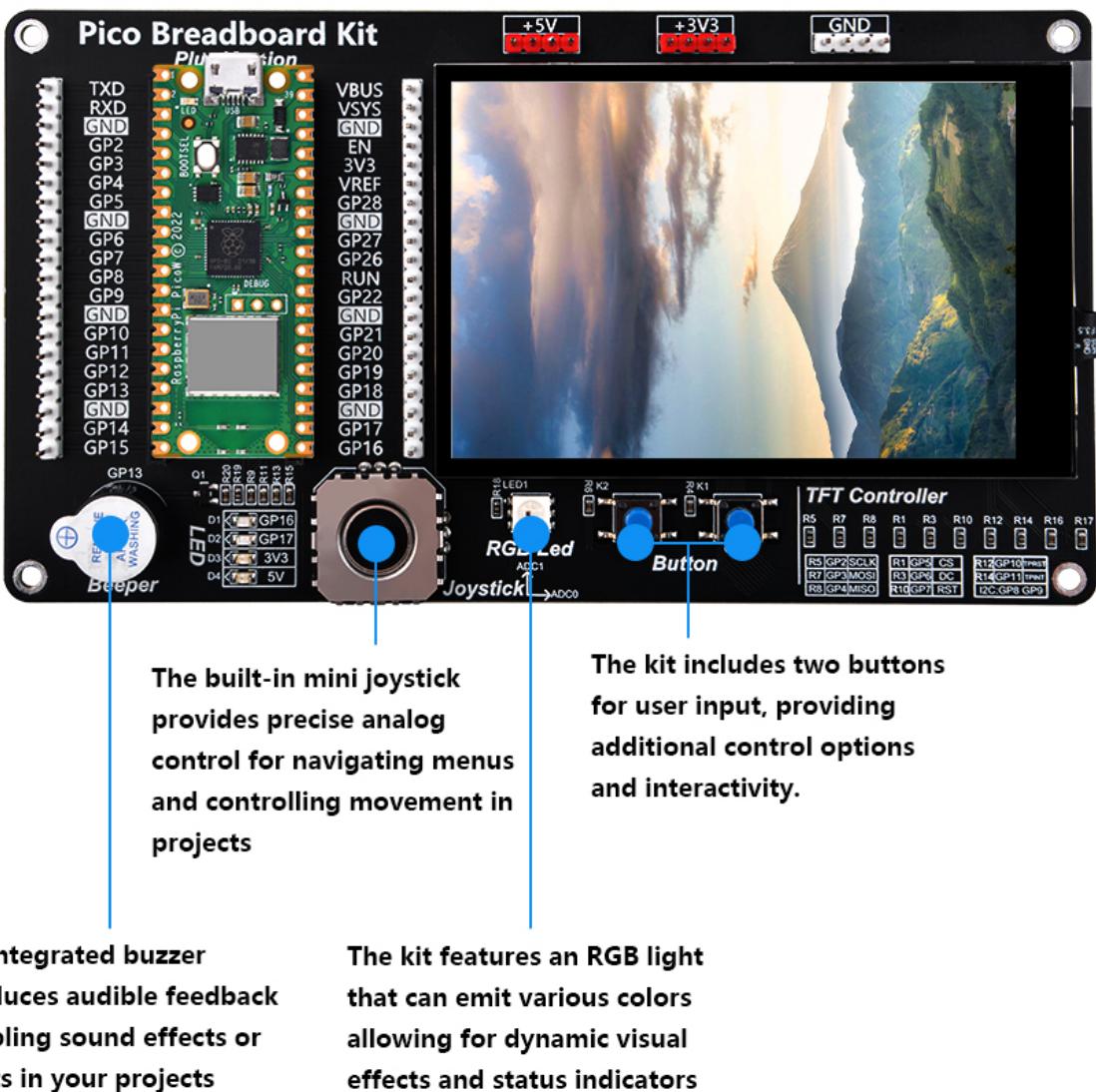


NOTE: Raspberry Pi Pico w dose not include in the package

- Board Definitions Details



- Application scenario



NOTE: Raspberry Pi Pico w dose not include in the package



Package Include

- 1 x Pico Breadboard Kit Plus version
- 1 x 3.5" Capacitive Touch TFT (already installed on the kit)
- 4 x Copper pillar
- 4 x M2.5 Screw
- 4 x M2.5 nuts
- 1 x Acrylic panel



Getting Start

- Install CMake (at least version 3.13), and GCC cross compiler (**Raspberry Pi OS is pre-installed by default, other systems please install it yourself.**)

```
sudo apt install cmake gcc-arm-none-eabi libnewlib-arm-none-eabi libstdc++-arm-none-eabi-newlib
```

- Install Pico-SDK in Your OS(like Raspberry Pi OS).

```
wget https://github.com/raspberrypi/pico-setup/blob/master/pico_setup.sh -O pico_setup.sh
chmod a+x pico_setup.sh
./pico_setup.sh
```

- Download the demo project directly and build it.

```
cd /home/pi/
git clone --recursive https://github.com/geekpi/pico_breakboard_kit.git
Build Projects
cd pico_breakboard_kit/
```

```
mkdir build
cd build/
cmake --no-warn-unused-cli -DPICO_OPTIMIZED_DEBUG=1 -DCMAKE_EXPORT_COMPILE_COMMANDS:BOOL=TRUE -
DCMAKE_BUILD_TYPE:STRING=Debug ../
make -j4
```

Upload firmware to Pico Unplug Raspberry Pi Pico from Raspberry Pi and press boot_sel button and then connect the Raspberry Pi Pico back to Raspberry Pi. Execute following command to copy the *.uf2 file to Pico.

```
cp firmware.uf2 /media/pi/RPI-RP2/
```

After a while, when the firmware has been uploaded to Pico, it will restart automatically, you can test the demo code according to the information on screen. Have fun!

If you want to do UI development, please refer to the LVGL development guide, we have implemented the screen and touch driver, you can use it directly.

Pico SDK on Windows Tutorial

- Download: [File:Pico sdk on windows guide.pdf](#)

FAQ

- Q: Why is so slow when I drag the circle ring on screen?

Because of the memory of pico is just 264KB, and graphic interface may consume a lot of memory to show the graphic widget.

- Q: Can I use MicroPython with LVGL to drive the screen?

No, it is lack of memory, so it may stack when you upload the firmware.

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Firmware Download

- Firmware Demo: [File:Pico breadboard kit Plus verison demo firmware.zip](#)

How to use it?

- Download the firmware demo and unzip it.
- Upload firmware to Pico Unplug Raspberry Pi Pico from Raspberry Pi and press boot_sel button and then connect the Raspberry Pi Pico back to Raspberry Pi.
- Copy the *.uf2 file to RPI-RP2 folder, that's it.

GitHub

- Repository on GitHub: [https://github.com/geeekpi/pico_breakboard_kit]

Keywords

- Pico Breadboard Kit, 3.5-inch touch screen, mini PSP joystick, RGB light, buzzer, buttons, prototyping, experimentation, interactive projects, user-friendly interface.
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