

GPIO Zero Python library

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GPIO Zero is a Python library for beginners, used to control the GPIO interface of the Raspberry Pi; It provides a simple and easy-to-use interface for controlling peripheral devices such as LEDs, buttons, servos, motors, and various sensors.

1. Install GPIO Zero

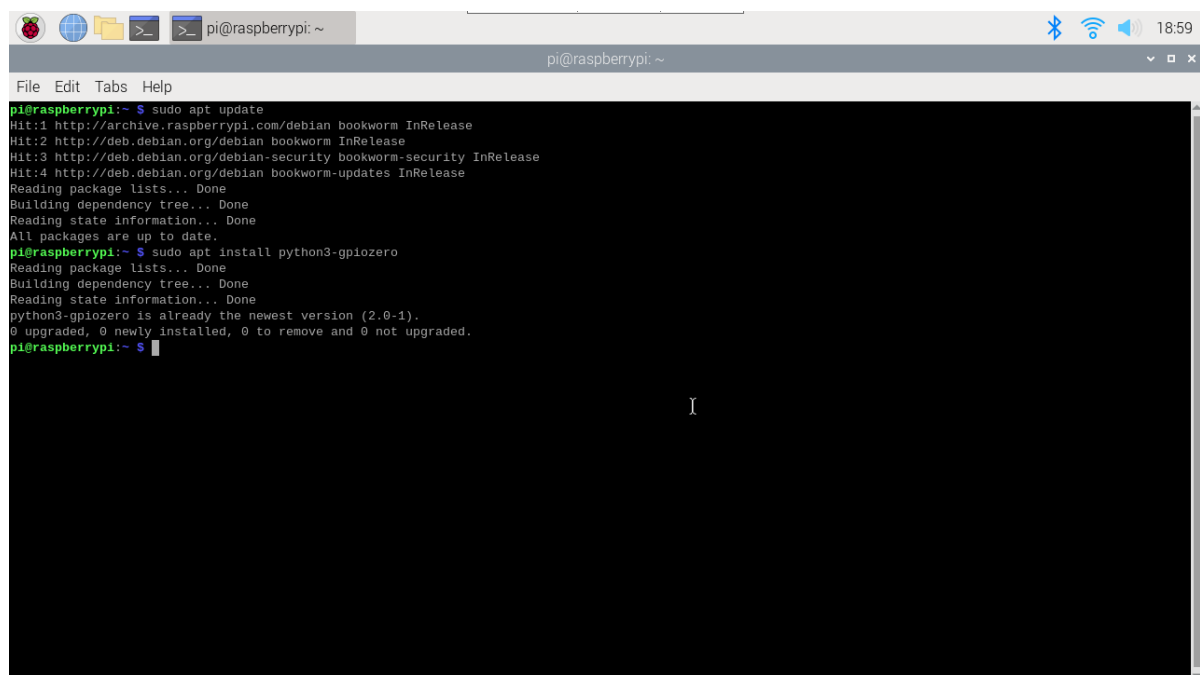
GPIO Zero is installed by default in Raspberry Pi OS desktop images and Raspberry Pi OS Lite images.

- Updated repository list and software

```
sudo apt update
```

- Install GPIO Zero

```
sudo apt install python3-gpiozero
```

A screenshot of a terminal window on a Raspberry Pi. The window title is 'pi@raspberrypi: ~'. The terminal shows the following commands and output:

```
pi@raspberrypi:~$ sudo apt update
Hit:1 http://archive.raspberrypi.com/debian bookworm InRelease
Hit:2 http://deb.debian.org/debian bookworm InRelease
Hit:3 http://deb.debian.org/debian-security bookworm-security InRelease
Hit:4 http://deb.debian.org/debian bookworm-updates InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
pi@raspberrypi:~$ sudo apt install python3-gpiozero
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
python3-gpiozero is already the newest version (2.0-1).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
pi@raspberrypi:~$
```

2. GPIO pin arrangement

Open the terminal and run the command: pinout

```
This tool is provided by the GPIO Zero Python library
```

```

pi@raspberrypi:~$ pinout
Description       : Raspberry Pi 5B rev 1.0
Revision          : c04170
SoC               : BCM2712
RAM              : 4GB
Storage          : MicroSD
USB ports        : 4 (of which 2 USB3)
Ethernet ports   : 1 (1000Mbps max. speed)
Wi-fi            : True
Bluetooth        : True
Camera ports (CSI) : 2
Display ports (DSI) : 2

```

J8:

3V3	(1)	(2)	5V
GPI02	(3)	(4)	5V
GPI03	(5)	(6)	GND
GPI04	(7)	(8)	GPI014
GND	(9)	(10)	GPI015
GPI017	(11)	(12)	GPI018
GPI027	(13)	(14)	GND
GPI022	(15)	(16)	GPI023
3V3	(17)	(18)	GPI024
GPI019	(19)	(20)	GND
GPI09	(21)	(22)	GPI025
GPI011	(23)	(24)	GPI08
GND	(25)	(26)	GPI07
GPI09	(27)	(28)	GPI01
GPI05	(29)	(30)	GND
GPI06	(31)	(32)	GPI012
GPI013	(33)	(34)	GND
GPI019	(35)	(36)	GPI016
GPI026	(37)	(38)	GPI020
GND	(39)	(40)	GPI021

J2:

RUN	(1)
GND	(2)

J7:

COMPOSITE	(1)
GND	(2)

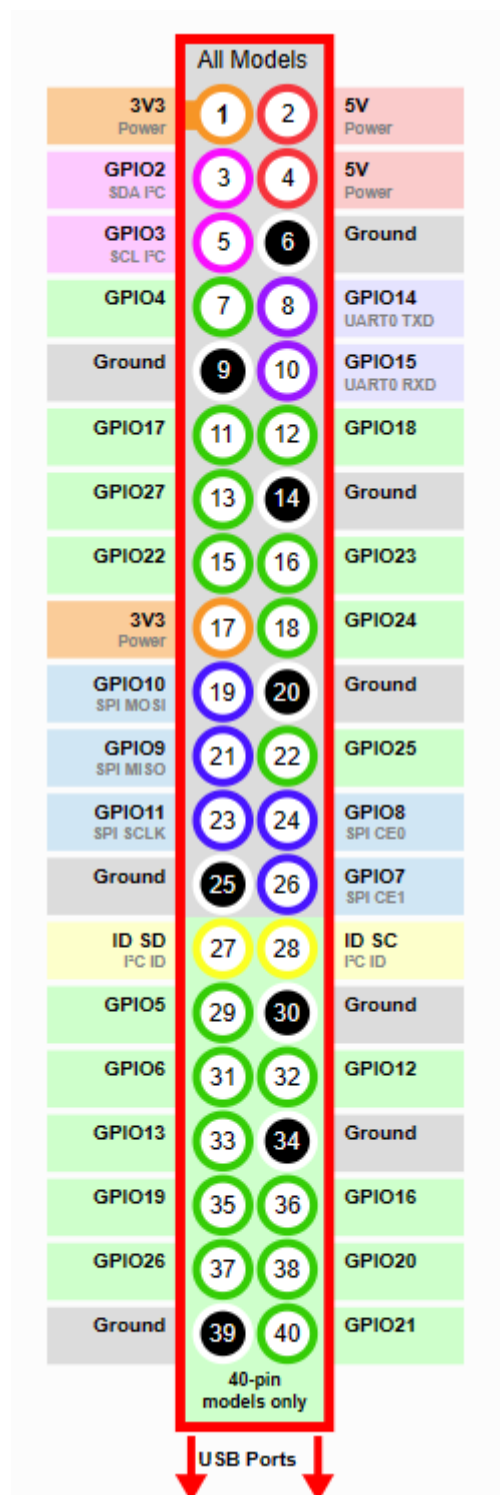
J14:

TR01 TAP	(1)	(2)	TR00 TAP
TR03 TAP	(3)	(4)	TR02 TAP

For further information, please refer to <https://pinout.xyz/>

3. Pin number

The GPIO Zero library uses Broadcom (BCM) pin numbers instead of physical (BOARD) numbers: that is, to control GPIO17, you need to specify 17 instead of 11 for the pin number in the program.



Note: When using the Raspberry Pi GPIO pins, you need to pay attention to the pin connection method between the module and the Raspberry Pi motherboard to prevent damage to the motherboard.

common problem:

LED: When using LED, a current limiting resistor should be added;

Motor: connected through the motor control board/driver board, not directly connected.

4. Import the GPIO Zero library

- Import the entire library

```
import gpiozero
```

- Import a single interface: use the Button interface in the GPIO Zero library

```
from gpiozero import Button
```

5. Reference materials

For more GPIO pin usage, please refer to the tutorial provided on the official website of the GPIO Zero library!

official website link: <https://gpiozero.readthedocs.io/en/latest/>