Flashing

Normal operation

esptool.py resets ESP32 automatically by asserting DTR and RTS control lines of the USB to serial converter chip, i.e. CP210x. The DTR and RTS control lines are in turn connected to GPIO0 and CHIP_PU (EN) pins of ESP32, thus changes in the voltage levels of DTR and RTS will boot ESP32 into Firmware Download mode. As an example, check the schematic for the ESP32 DevKitC development board.

Problems

If you run the given command and see errors such as **"Failed to connect"**, there might be several reasons for this. One of the reasons might be issues encountered by esptool.py, the utility that is called by the build system to reset the chip, interact with the ROM bootloader, and flash firmware. One simple solution to try is manual reset described below.

In general, you should have no problems with the official esp-idf development boards. However, esptool.py is not able to reset your hardware automatically in the following cases:

- Your hardware does not have the DTR and RTS lines connected to GPIO0 and CIHP_PU
- The DTR and RTS lines are configured differently
- There are no such serial control lines at all

Depending on the kind of hardware you have, it may also be possible to manually put your ESP32 board into Firmware Download mode (reset).

Enter Flash Manually

For development boards produced by Espressif, this information can be found in the respective getting started guides or user guides. For example, to manually reset an esp-idf development board, hold down the Boot button (GPIO0) and press the EN button (CHIP_PU). For other types of hardware, try pulling GPIO0 down.

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