

# tCam Firmware Update (rev 0.20)

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This document describes using the Espressif download tool on a Microsoft Windows based computer to initially program or update gCore with tCam firmware.

## Store firmware files

Store the four binary files from the `firmware_rev0_20` folder to a known location ("0\_20" is the specific firmware version number). All four are required by the Espressif download tool.

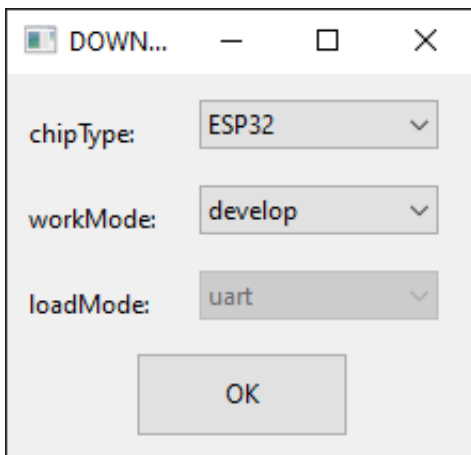
```
firmware_rev0_20\bootloader.bin
firmware_rev0_20\partition-table.bin
firmware_rev0_20\ota_data_initial.bin
firmware_rev0_20\tCam.bin
```

## Note for OTA Updates

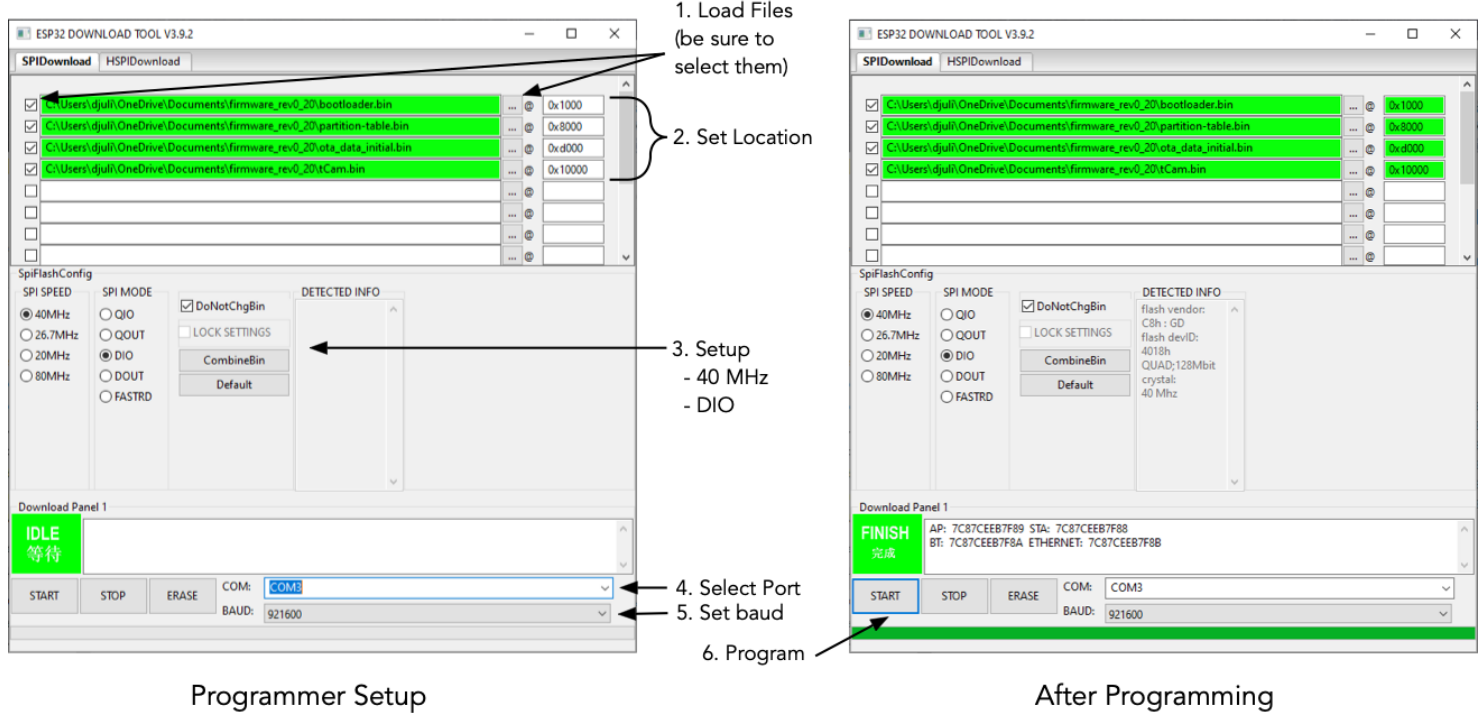
The `tCam.bin` file is the only file needed for over-the-air updates done by the Desktop app. See the [update instructions](#) for the Desktop app in the github repository for more information.

## Install the Espressif download tool

Download the `flash_download_tools_v3.9.2.zip` file to a Windows computer. Unzip it in a known location. It will unzip a directory named `flash_download_tools_v3.9.2`. Execute the `flash_download_tools_v3.9.2` binary from within that directory. A shell window will appear and then after a few seconds a selection window will appear.



Select `ESP32` chipType, `develop` workMode and click the `OK` button. The ESP32 Download Tool program runs and displays a new window. The window is shown below both before and after programming.



## Programmer Software Setup

1. Load the four firmware files from the location you stored them by clicking on first four `...` buttons as shown above under the `SPIDownload` tab.
2. Set the location in ESP32 memory for each file as shown above by clicking in the text fields to the right of each filename (see the table below). Be sure all four files are selected.
3. Configure the programming parameters in the `SpiFlashConfig` area. Select SPI SPEED: 40 MHz, SPI MODE: DIO. Other options may be left with default settings.
4. Select the COM port associated with the camera to program (this is done for each gCore plugged into the computer).
5. Set a fast baud rate of 921600 baud to reduce programming time.

Section	Location in Flash
bootloader.bin	0x1000
partition-table.bin	0x8000
ota_data_initial.bin	0xd000
tCam.bin	0x10000

## Programming

1. Make sure gCore is connected to its battery and switched on.
2. Connect the gCore USB port and verify Windows recognizes it as a COM device. This may take a few moments the first time the board is connected as the computer loads the device driver. There is a hardware problem (bad connection, etc) if this does not occur. Subsequent connections should occur much more quickly.
3. Select the board's COM port in the programming software.
4. Press **START** . Programming should take approximately 10-20 seconds. The programmer software will display "FINISH" above the START button when complete.
5. Press the **RESET** button on the back of gCore to start the new firmware running. Alternatively, power it down by pressing and holding the power button for more than five seconds, release and then turn it back on.
6. Repeat for each gCore. Only the COM port will change.