tCam-Mini Firmware Upload (rev 1.3)

There are two ways to load firmware into tCam-Mini.

1. Using the Espressif IDF command-line esptool.py.
2. Using a download tool from Espressif to load the pre-compiled firmware from this repository.

The second option is described here. It requires a Microsoft Windows computer. More information about the first option may be found at the Espressif github repository for the [tool](#).
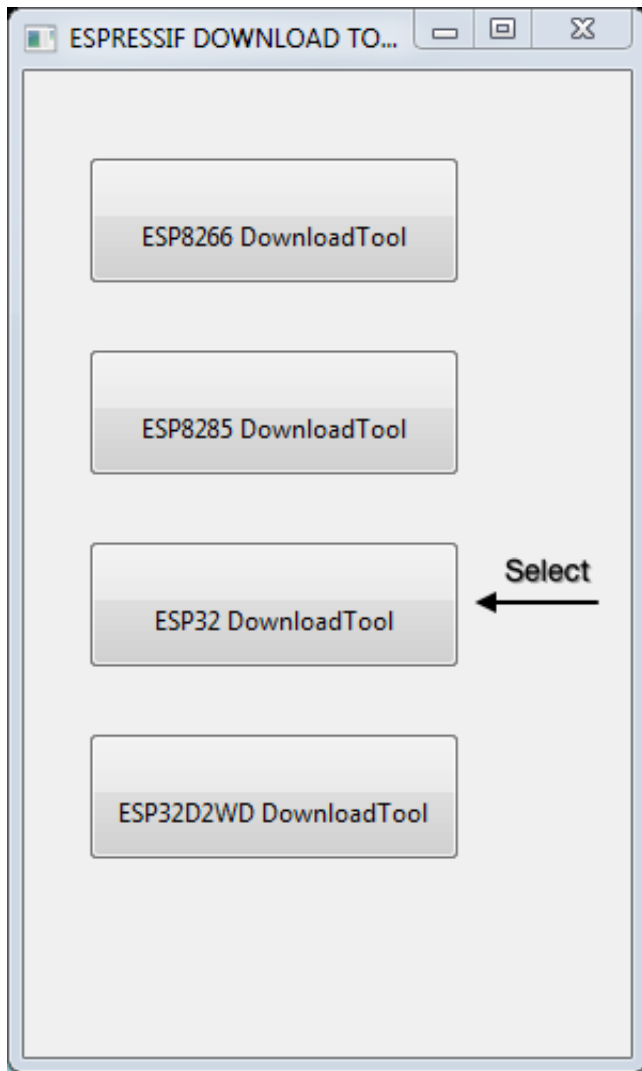
Store firmware files

Store the three binary files from the `firmware_rev1_3` folder to a known location (1_3 is the specific firmware version number). All three are required by the Espressif download tool.

```
firmware_rev1_3\bootloader.bin
firmware_rev1_3\tCam.bin
firmware_rev1_3\partitions_singleapp.bin
```

Install the Espressif download tool

Download the `flash_download_tools_v3.6.8.zip` file to a Windows computer. Unzip it in a known location. It will unzip a directory named `flash_download_tools_v3.6.8` . Execute the `flash_download_tools_v3.6.8` binary from within that directory.
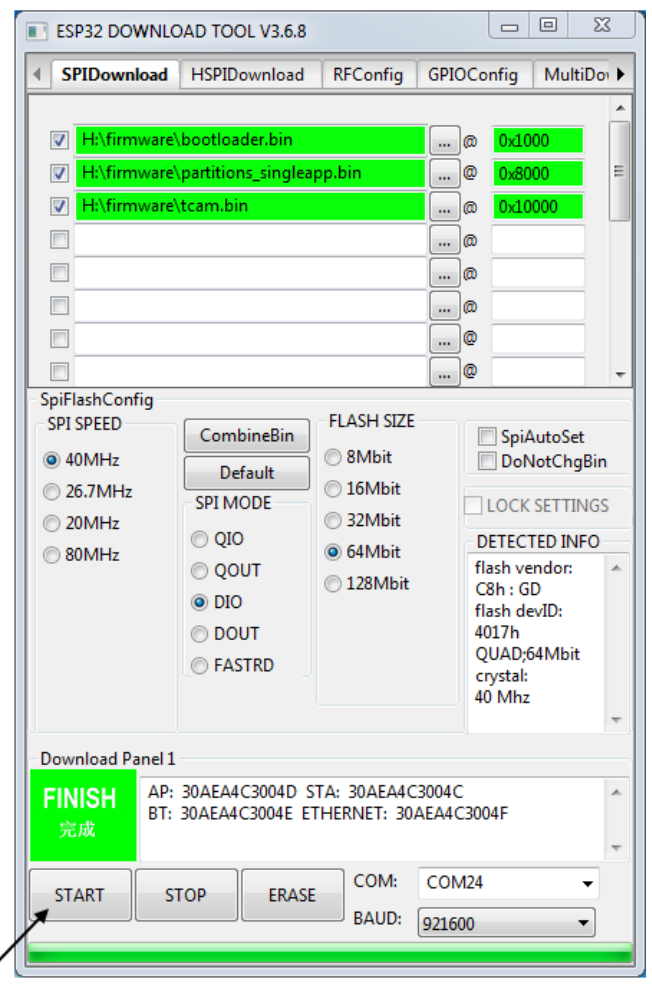
A shell window will appear and then after a few seconds a selection window will appear.

Click the `ESP32 Download Tool` button. The ESP32 Download Tool program runs and displays a new window.
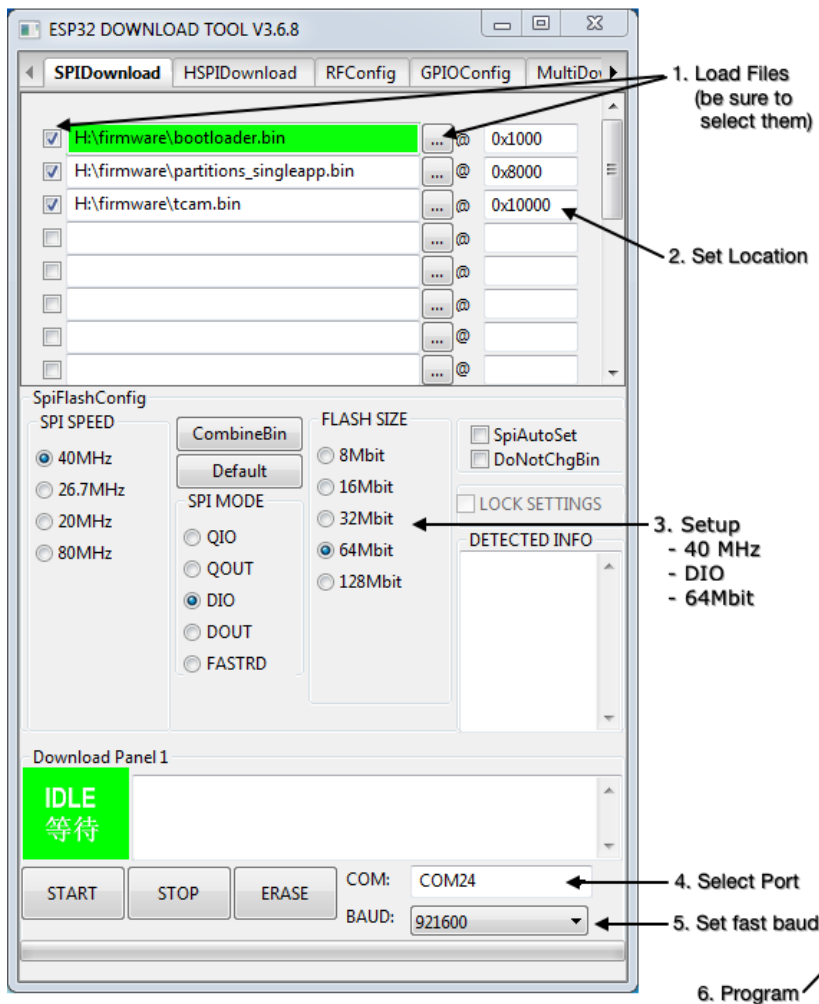
Programmer Setup

After Programming

Programmer Software Setup

1. Load the three firmware files from the location you stored them by clicking on first three `...` buttons as shown above under the `SPIDownload` tab. The tCam-Mini PCB uses firmware for Rev 3 ESP32.
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.
3. Configure the programming parameters in the `SpiFlashConfig` area. Select SPI SPEED: 40 MHz, SPI MODE: DIO, FLASH SIZE: 64 MBit.
4. Select the COM port associated with the camera to program (this is done for each camera plugged into the computer).
5. Set a fast baud rate of 921600 baud to reduce programming time.

Programming

1. Connect a camera and verify Windows recognizes its COM port. This may take a few moments the first

time a camera 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.

2. Select the camera's COM port in the programming software.
3. Press `START` . Programming should take approximately 10-20 seconds. The programmer software will display "FINISH" above the START button when complete.
4. Disconnect the camera.
5. Repeat for each camera. Only the COM port will change.

Quick Test

Reconnect the camera. The LED should light Red within a second or two and then settle into a slow yellow blink within a few seconds. There is an error if it displays a series of repeated Red blinks (for example if a Lepton has not been installed or is not fully installed, or if one of the on-board voltages is not correct due to a component error).

More detailed diagnostic information is available from the camera via the USB COM port associated with it. Contact Dan Julio for more information (dan@danjuliodesigns.com).