

Chess-InkPlate - Installation Guide

Here is the installation procedure for the Chess-InkPlate application. This procedure can be adapted depending on your requirements.

The installation consists of

- Preparing an SD-Card with the appropriate information.
- Uploading the application to the InkPlate device.

The last version of the binaries for the Inkplate are located in release bundles that you will find with the application GitHub project: “<https://github.com/turgu1/Chess-InkPlate/releases>”. This procedure shows how to install it using the *esptool* upload tool. This is the simplest way to install Chess-InkPlate as it does not require to have a full development environment (VSCode + PlatformIO + ESP_IDF) to install the binary version.

(You can also compile and upload the result within a VSCode/PlatformIO development environment. The supplied `platformio.ini` file is already set up such that once the project is loaded into the IDE, you can launch the builder and the uploader.)

Prerequisite

The *esptool* is a Python program that is used to upload an application to an ESP32 (or ESP8266) device. It must be installed on your computer. It is compatible with both *Python* versions 2 and 3. Verify that you have *Python* and *pip* installed on your computer (The following link may be useful: “<https://wiki.python.org/moin/BeginnersGuide/Download>”). Then, on Windows, Linux or MacOS, to install *esptool*, the following command must be executed (in a shell window):

```
pip install esptool
```

The InkPlate device uses a CH340 USB to UART converter. If your computer doesn't have a driver installed for the CH340, you have to install one. Look at this location for the proper procedure to install it: “<https://e-radionica.com/en/blog/ch340-driver-installation-croduino-basic3-nova2/>”.

You then must retrieve the release from the Github repository. Look at this location on GitHub: “<https://github.com/turgu1/Chess-InkPlate/releases>”. The file to download is **release.VX.X.X.zip**. It is located in the **assets**, down under the description text. Extract its content. You will get two folders: **bin** and **SDCard**, the installation document, and the user's guide document in PDF format.

Preparing the SD-Card

The SD-Card must be formatted with a FAT32 (or MS-DOS or VFAT) partition. This is usually the case with brand new cards. The release's **SDCard** folder contains everything required to initialize the card's content. Simply copy the content of the folder (including the sub-folders) to the card as is.

The file `config.txt` located in the card's root folder may be edited to identify your wifi parameters (`wifi_ssid`, `wifi_pwd`, `http_port`) (as these parameters contain text information or number, they are not editable through the Chess-InkPlate application). This file is loaded at startup. This will allow for accessing the InkPlate device from a Web browser to manage the list of saved games

present on the card. This is optional as it's always possible to update the SD-Card content by inserting it into your computer.

Once done, insert the card into the device.

Uploading the application program

The release's `bin` folder contains the application, the bootloader, and the partitions binaries that must be downloaded to the device. To do so connects the device to a USB port, turn it on, change your current directory to that folder, and execute the following command:

On Linux or MacOS (in a shell window):

```
$ sh upload.sh
```

On MS Windows:

```
.\upload.bat
```

Here is an example output of the execution:

```
$ sh upload.sh
esptool.py v3.0
Serial port /dev/ttyUSB0
Connecting.....
Chip is ESP32-D0WDQ6 (revision 1)
Features: WiFi, BT, Dual Core, 240MHz, VRef calibration in efuse,
  > Coding Scheme None
Crystal is 40MHz
MAC: fc:f5:c4:1b:4e:cc
Uploading stub...
Running stub...
Stub running...
Changing baud rate to 230400
Changed.
Configuring flash size...
Auto-detected Flash size: 4MB
Compressed 25136 bytes to 15148...
Wrote 25136 bytes (15148 compressed) at 0x00001000 in 0.7 seconds
  > (effective 297.9 kbit/s)...
Hash of data verified.
Compressed 3072 bytes to 143...
Wrote 3072 bytes (143 compressed) at 0x00008000 in 0.0 seconds
  > (effective 2244.8 kbit/s)...
Hash of data verified.
Compressed 1086128 bytes to 554716...
Wrote 1086128 bytes (554716 compressed) at 0x00010000 in 24.9 seconds
  > (effective 348.5 kbit/s)...
Hash of data verified.
```

```
Leaving...
Hard resetting via RTS pin...
$
```

Once the upload is complete, the device will automatically reboot. If everything is ok, it will present the chess board, ready to play a game.

Some options on the esptool command may have to be modified depending on your computer:

- The USB device connected to the InkPlate is expected to be named `/dev/ttyUSB0` (That is the case on Linux Mint and Ubuntu) on Linux and MacOS, or `COM3` on MS Windows. If it's not the case, you must find it and modify the `upload.sh` script for Linux and MacOS, or `upload.bat` in MS Windows.
- Another issue you may have is the download speed that is too high for your computer. Again, you may change it in the `upload.sh` script (or `upload.bat`). The speed (baud rate) is **230400** in the file. You can change it to **115200** baud or lower.