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## 2.1.2 Setup Operating System onto the Orange Pi 3 LTS

### Foreword

The *Orange Pi 3 LTS* hardware looks to be an interesting and *available* Single Board Computer (SBC). See

<http://www.orangepi.org/html/hardWare/computerAndMicrocontrollers/details/orange-pi-3-LTS.html> for the hardware details.

[ i ordered from

[https://de.aliexpress.com/store/group/OPI-3-LTS-8GB-EMMC/1553371\\_30000000040035.html](https://de.aliexpress.com/store/group/OPI-3-LTS-8GB-EMMC/1553371_30000000040035.html) with a plastic case for 50 EUR - including delivery in April 2022 ]

### Not working builtin components

Be aware, that following things are **NOT** working with Linux:

- Headphone Audio
- MIC recording
- TV-OUT
- Mali GPU
- Video codec

The info about that can be found - sort of hidden - in the [User Manual](#) in chapter 3.2 Linux4.9 kernel driver adaptation situation of the file `OrangePi_3_LTS_H6_User_manual_v1.0.pdf`. I realized that, when starting setup of Linux. Happily, none of these are necessary for the FMLIST-Scanner.

### Wiring

Wiring (ATX-buttons, LEDs or Piezo-buzzer) is tested meanwhile - but with **not so good** results:

### Output / LEDs

Using <https://github.com/orangepi-xunlong/wiringOP> can set output pins, e.g. LEDs. This does work.

### Tone output / Piezo buzzer

Ideally, this is done utilizing hardware PWM support - to save CPU interrupts. But i could not find any GPIO pin, capable of hardware PWM. Software/emulated PWM for the buzzer might work - haven't tested so far.

### Input / ATX-knobs

Sensing/reading GPIO input with internal pull-up/down resistors doesn't work with the WiringOP library. This, ATX-button won't give correct state - without external resistors. See <https://kalitut.com/raspberrypi-gpio-pull-up-pull-down-resistor/>, how external resistor would need to be wired. I didn't try for now.

Upload of result - by pressing the button - won't work.

But, shutdown and reboot can be performed with the builtin *power switch*.

### Resume

Happily, at least for static (non-mobile) use, you won't need any of LEDs, buzzer or ATX-knobs. Buzzer and LEDs are nice to see/hear some progress, but you can go mobile without .. and check progress through an internet connection over phone/tablet and WiFi.

## Temperature

I would recommend some heatsinks for the CPU - as temperature does temporarily rise over 80°C. Ideally, i'd also suggest a CPU fan, but couldn't find a suitable housing.

## Download the image

Orange Pi does provide an *Ubuntu Image* for the *Orange Pi 3 LTS* , labeled updated: 2021-12-27 at <http://www.orangepi.org/downloadresources/>.

There is also a *Debian Image* ; but i did only try the Ubuntu one.

Following the *Ubuntu* download link to Google Drive, choose  
Orangepi3-lts\_2.1.6\_ubuntu\_focal\_server\_linux5.10.75.7z

(as i did), cause the scanner doesn't need a desktop.

## Write to micro-SD card

Please follow the instructions in chapter 2 Instructions to use the development board of the user manual to write the image to a micro-SD card.

## First boot from micro-SD card

You should be able to boot and login with one of following user accounts as described in the user manual

| User      | Password  |
|-----------|-----------|
| root      | orangeipi |
| orangeipi | orangeipi |

i strongly recommend to change the default passwords!

Default hostname is orangepi3-lts.

You should be able to connect with

```
ssh orangeipi@orangepi3-lts
```

## Flash image to eMMC

Follow the user manual chapter 3.33 to flash the image to the builtin eMMC, to allow using the micro-SD card slot for writing scanner results. That is with the command

```
nand-sata-install
```

I would recommend to select f2fs, the flash friendly filesystem, as target filesystem.

When finished, you should be able to boot without inserted *micro-SD card*.

## System Update & Configuration

Please continue with [2.2 Setup on a pre-installed Pi or PC](#)

Last update:  
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fmlist\_scanner:setup\_orange\_pi\_3\_Its [https://codingspirit.de/dokuwiki/doku.php?id=fmlist\\_scanner:setup\\_orange\\_pi\\_3\\_Its](https://codingspirit.de/dokuwiki/doku.php?id=fmlist_scanner:setup_orange_pi_3_Its)

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