Getting Started with LattePanda Alpha

To get started, you will need the following hardware:

- The supplied USB Type C wall adapter or other power supply ** Please see the Powering LattePanda Alpha section for other available methods to power on your LattePanda

- Display cable (HDMI, eDP display)

- Display (TV, monitor, or eDP display)

- Input devices (Keyboard, mouse, etc.)

- Boot Drive

Note

In some countries, the LattePanda Alpha comes without a wall adapter and has to be bought separately.

Note

If your device is the **LattePanda Alpha 800**, which comes without eMMC storage onboard, you will need a boot drive with an operating system installed on it. See the Operating Systems page for different acceptable media for booting the operating system of your choice and installation instructions.

Instructions¶

Warning

LattePanda has a relatively special product form design, and the PC technology provided can offer you more possibilities for hardware development and IoT innovation.

However, CPU-related products are all **electrostatically sensitive**, so, although the LP SBC adopts an **anti-static design**, users will still need to be careful when using this device.

BE SURE TO REMOVE the static electricity from your body before touching the LattePanda board! Otherwise, you may cause a potential static discharge and damage your LattePanda SBC!

Connect Wi-Fi antennas to their respective sockets.

Antenna and connector specs - IPEX4 2.4 & 5G Dual band

Tip

You can purchase enhanced antennas to boost the Wi-Fi and Bluetooth signal strength!

- Connect the display cable to the LattePanda. Please see the [Display and Touch Connections](#) section for instructions on how to use different displays with your LattePanda.

- Connect the power supply to the LattePanda. Please see the [Powering LattePanda Alpha](#) section for instructions on how to use different power supplies to power your LattePanda.

- A red and blue LED indicator light will blink when the power supply is connected. The LattePanda is initializing during this time. Wait until the red LED light powers off and then turns back on again. This typically takes a few seconds.

- Once the red LED light powers on and stops blinking, press and hold the power button for approximately 3 seconds and the device will power on.

4 Ways to Power On Your Alpha:

1. Official PD adapter which comes with the LattePanda Alpha
2. External PD power bank
3. [12 volt input from JST PH2.0 - 4P connector](#)
4. [LiPo battery from 10p power connector](#)

Forum Discussion Threads Regarding the Power Supply:

- [Forum Discussion - Suggest an on/off/reset button for Alpha](#)

Type-C PD Adapters and Battery Banks¶

Input Power Specification¶

- Supports PD protocol
- Accepts devices with 45W output (15V3A).

What You Will Need¶

- USB Type C Power Delivery power supply or battery

Installation Steps¶

1. Connect the USB Type C power supply to the outlet.
2. Connect the USB Type C connector to the LattePanda Alpha USB Type C port or to an attached USB Type C hub with Power Delivery passing current through the device.
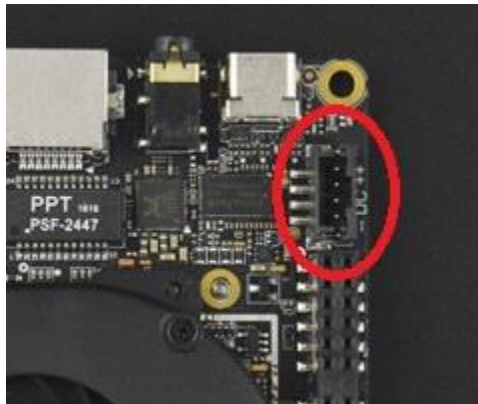
Recommended Power Banks¶

- [ZMI 20000mAh PD battery.](#)
- [More options recommended and tested](#) by ccs_hello (community member).
- Or any other brand of power bank which supports PD protocol with up to 36 watts of output.

JST 4p DC Input Connector¶

Warning

Please make sure that the positive and negative pins are connected correctly! Double-check the power connection before powering on the system.

The voltage range of the Alpha power input connector is 11~15 volts. So if you're choosing the LiPo battery, it should be 3~4 cells. The standard power source is 3A @ 12 volts. The booting power is about 10 watts and operating power is about 5 watts with a limited electrical load.

Input Specification¶

- 11-15 volts
- Up to 36 watts is recommended
- Standard power - 3A @ 12 volts
- JST PH2.0 - 4p connector (pin mapping is marked on the board, as well: -- DC ++, which means two negative pins and two positive pins)

You can also check out this [more detailed pinout diagram](#).

LiPo Battery Connector¶

Warning

Please make sure that the 10 pin sequence of the LiPo battery is connected correctly. **Many vendors provide LiPo batteries with 10pin connectors. You may need to change the pins' sequence carefully based on the battery you purchased!**

Any improperly connected power supply could damage your LattePanda Alpha!!!
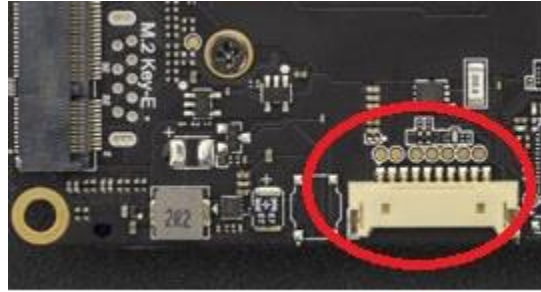
Recommended Batteries¶

We haven't officially released the list of batteries which are confirmed to work with the LattePanda Alpha yet. It can be difficult to find and ship even standard batteries globally. But You can check the Here is a forum discussion regarding this topic.. Community members have already found some alternatives from local battery vendors.

Tips

This 10-pin Li-Po connector is meant to be a well-protected (BMS + balancer at minimum) battery pack, and is not intended for raw Li-Po/Li-Ion/LiFePO4 cells.
(e.g., the latter setup will drain energy until it is below the minimum Li-Po cell voltage required, which will significantly/irreversibly degrade the life expectancy of the cell.) Also, charging without the proper CI (then later CV) charging circuit is outright dangerous. Check out the original post for more details. This post was contributed by community member ccs_hello.

Input Specification¶

- **7.4 - 8.2 V**, means 2-cell LiPo battery
- 5 Ah battery, where 5 Ah is the minimum recommended power rating
- LiPo battery must be able to charge at a CCCV rating of 1.9! Please check battery specification for charging current before using the battery.
- Feel free to post a commit or suggestion via ourGithub official repository

Drawing and Pin Diagram¶

Molex 10p Panelmate Connector

Poles	DIM.A	DIM.B
10P	11.25	17.65
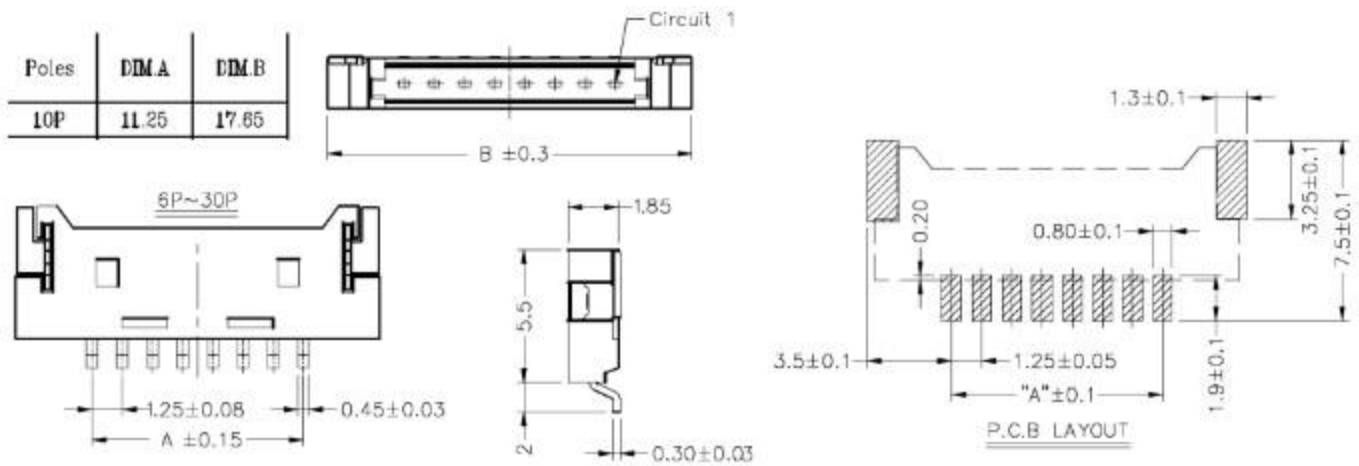
CONN	Description
10	GND
9	GND
8	GND
7	NC
6	NTC (Connect to GND through a 10kΩ thermistor)
5	NC
4	NC
3	VCC
2	VCC
1	VCC

Installation Steps

1. Align the 10p battery connector with the LattePanda Alpha battery connector. Make sure the positive red wires align with the pins 1-3 on the diagram above.
2. Connect the 10p battery connector to the LattePanda Alpha battery connector.

Considerations When Using Battery Connector

When using only the 10p battery connector to power LattePanda Alpha, the red and blue initializing lights will not turn on. Hold the power button for 3 seconds and the LattePanda Alpha will boot.

Warning

We only recommended this procedure for advanced makers who have accumulated a vast amount of experience working with hardware...

4 Ways to Extend Displays on the LattePanda Alpha

1. HDMI - Standard desktop usage
2. Type C to HDMI / DP converter - Standard desktop usage
3. Connect to Macbook Pro or any other development PC via Streaming Cable - **Designed for Developers**
4. eDP displays - **Designed for embedded applications**

4K Capability¶

Max resolution from different physical display output channels on Alpha: 1. HDMI 4096x2304 @24 Hz (1.4a) 2. DP 4096x2304 @60 Hz (1.2) 3. eDP 4096x2304 @60 Hz (1.4)

HDMI¶

What You Will Need¶

- HDMI cable
- TV or monitor with HDMI port

Installation Steps¶

1. Connect an HDMI cable to the LattePanda's HDMI port.
2. Connect the other end of the HDMI cable to a TV or monitor.

DP / DVI / VGA¶

What You Will Need¶

Note

In order to power on the LattePanda Alpha/Delta with the USB Type C port while using a USB Type C adapter, the adapter must have Power Delivery passing current through.

- USB Type C to DVI / VGA / DP adapter or hub
- Display cable (Depending on adapter type)

Installation Steps¶

1. Connect the USB Type C adapter to the LattePanda Alpha/Delta's USB Type C port.
2. Connect the display cable (DVI, VGA, DP) to the USB Type C adapter.
3. Connect the other end of the display cable to the TV or monitor.

Embedded DisplayPort (eDP)¶

Note

The LattePanda may not have driver support for 3rd party eDP displays. In order to use a 3rd party display, it may require the installation of other development drivers.

What You Will Need¶

- LattePanda Alpha/Delta eDP Display

Installation Steps¶

Warning

Make sure the LattePanda is disconnected from its power source before connecting the display. Make sure the cable is installed correctly before turning the power on. Failure to follow these instructions below may cause a short circuit and damage the LattePanda or display.

1. Make sure the LattePanda is powered off and the power supply cable is disconnected.
2. Open the eDP latch on the LattePanda board.
3. Align the eDP cable with the LattePanda cable connector. Make sure the copper cable connection pads face the LattePanda connection pads.
4. Connect the eDP cable.
5. Press down on the latch to secure the cable.

Additional eDP Displays from Community¶

While the LattePanda Alpha/Delta eDP display is officially supported, here are some other displays community members have gotten working.

- 15.6" Samsung Display
- 17.3" Display--no bios update needed

Touch Panel¶

What You Will Need¶

- Official eDP display for LattePanda Alpha and Delta.

Warning

The MIPI display design for the LattePanda 1st generation is not compatible with the eDP display connectors designed for the Alpha and Delta. This compatibility issue is caused by the different CPU architectures and positioning of circuit elements.

Installation Steps¶

Warning

Make sure the LattePanda is disconnected from its power source before connecting the touch screen. Make sure the cable is installed correctly before turning the power on. Failure to follow these instructions below may cause a short circuit and damage the LattePanda or display.

1. Make sure the LattePanda is powered off and the power supply cable is disconnected.
2. Open the touch panel latch on the LattePanda board.
3. Align the touch panel cable with the LattePanda touch panel connector. Make sure the copper cable connection pads face the LattePanda connection pads.
4. Connect the touch panel cable.
5. Press down on the latch to secure the cable.

The LattePanda Alpha is, in fact, globally recognized as the **FIRST development device supporting 4 different operating systems.**

1. Windows 10 and other versions
2. Linux and other versions
3. Android for x86 (Phoenix OS)
4. Hackintosh (MacOS) - Contributed by the LP Community

Tips

Please feel free to contribute or request new content via the [Official Docs Repository](#)

Windows¶

Bootable Drive¶

- eMMC
- M.2 M-key NVMe or SATA SSD

What You Will Need

- 1 x Blank USB flash drive (8 GB or larger)
- [LattePanda Alpha Windows 10 Image](#).

Installation Steps

- Download the Windows 10 disc image file for the LattePanda Alpha.
- Configure your USB drive to be a bootable device. Instructions can be found [here](#).
- Copy and paste the Windows 10 disc image file contents to the USB drive.
- If you are using the LattePanda to create the USB installation media, restart the LattePanda. Otherwise, insert your USB drive into the LattePanda and turn it on.
- Press 'Esc' continuously to enter BIOS.
- Navigate to the "Boot" tab and change the "Boot Option Priorities" so that the USB drive is "Boot Option #1".
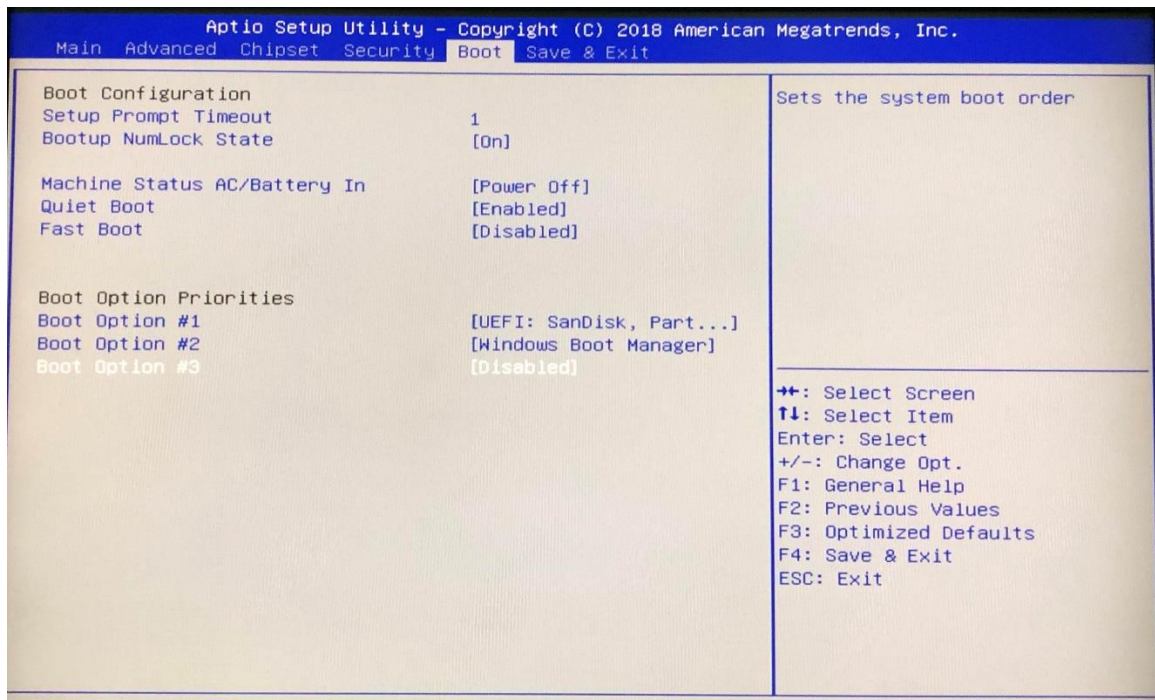
- Navigate to the "Save & Exit" tab and select "Save Changes & Reboot".

You will enter the installation GUI.

Ubuntu

Bootable Drive¶

- eMMC
- M.2 M-key NVMe or SATA SSD

Tips

This tutorial is for the LattePanda Delta and Alpha. If you are using the 1st edition LattePanda, please refer to the 1st edition documents.

What You Need¶

- 1 x Blank USB Flash Drive (8 GB or larger)
- Ubuntu 16.04 LTS image (64 bit Desktop disc image file is recommended)

Installation Steps¶

- Download the Ubuntu 16.04 LTS image.
- Create a USB installation media for Ubuntu. We recommend Rufus for creating installation media. You can download it here.
- Restart the LattePanda. Press 'Esc' continuously to enter BIOS.
- Navigate to the "Boot" tab and change the "Boot Option Priorities" so that the USB drive is "Boot Option #1".
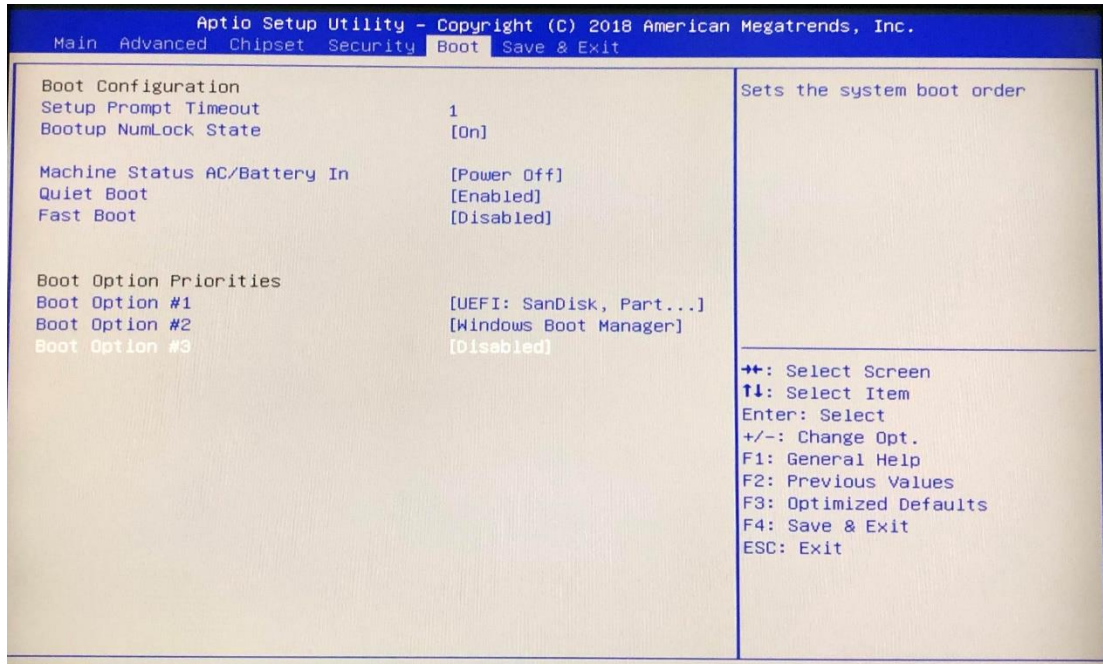
- Navigate to the "Save & Exit" tab and select "Save Changes & Reboot".

You will enter the installation GUI.

Once your USB is inserted into your LP, turn on your LP. Hold the Esc button on your connected keyboard, and the following screen should show.
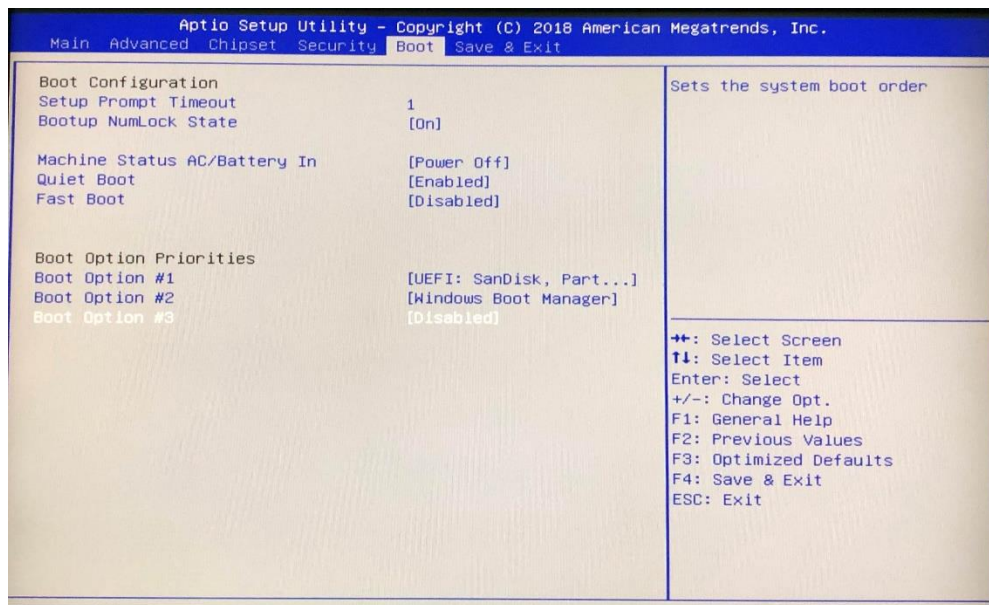
The BIOS menu should appear. Select the appropriate Boot option using the arrow buttons. Choose your USB drive to become your first Boot Option #1. You can do so like this:
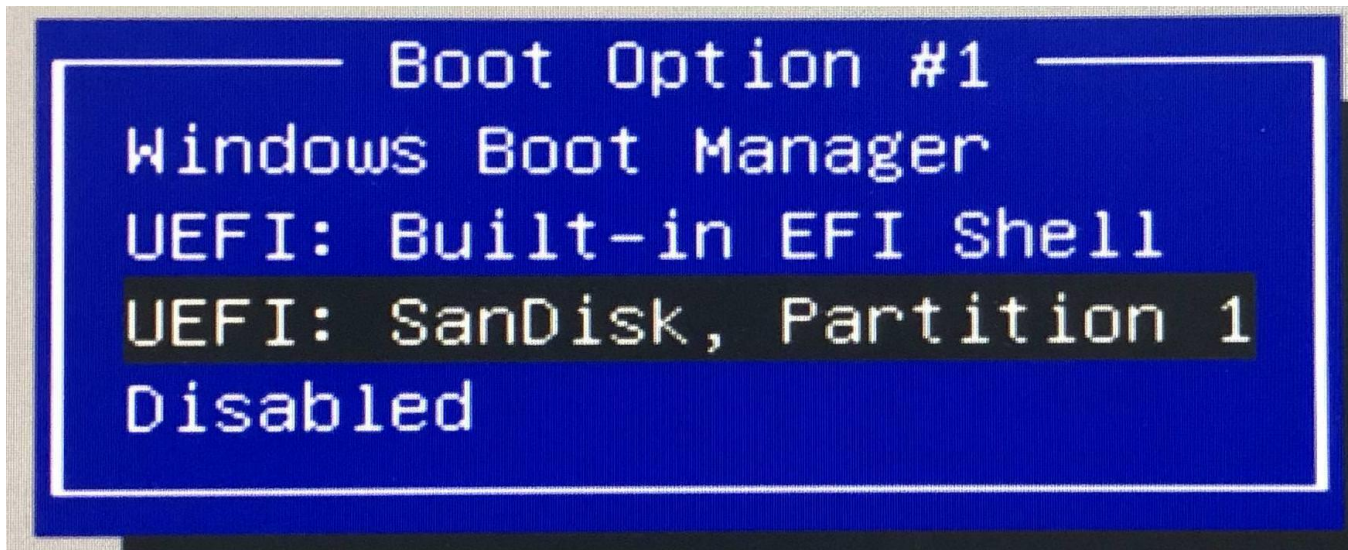
Make sure to select your USB. Then go to the 'Save and Exit' tab on the top right. Choose the 'Save Changes and Exit' option. Your LP should restart, and it should boot directly from your USB.

1. Install and set up Ubuntu 16.04 LTS on your LP.

Once your LP restarts, the following page should appear.
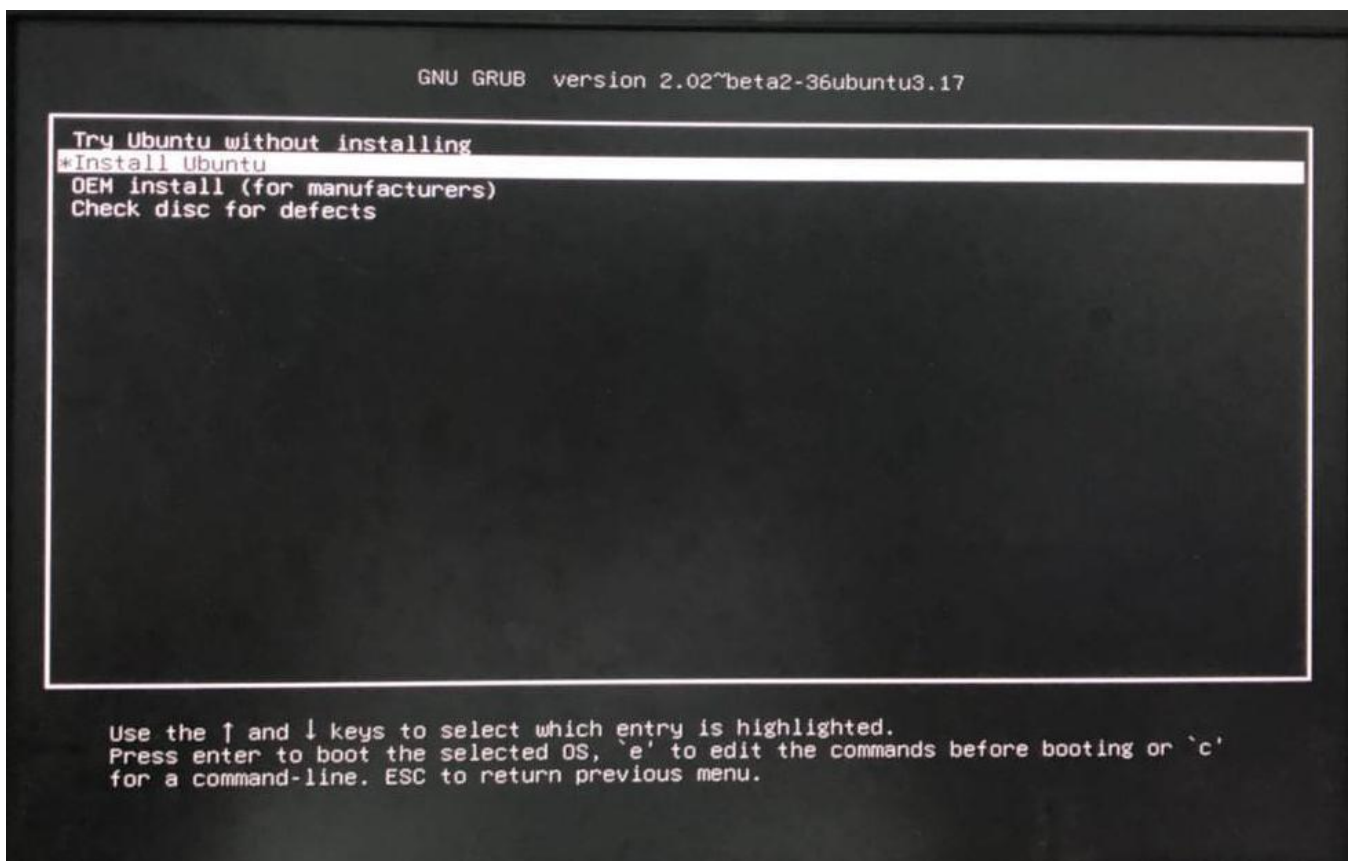
There will be two options:

- Try Ubuntu without installing
- Install Ubuntu

Both options should work, but in this tutorial we will install Ubuntu. We recommend proceeding with this option.

After this option is selected, the installation will begin. A screen like the picture below will appear. This process may take a while. Please be patient while leaving your LP on for the installation to take place.
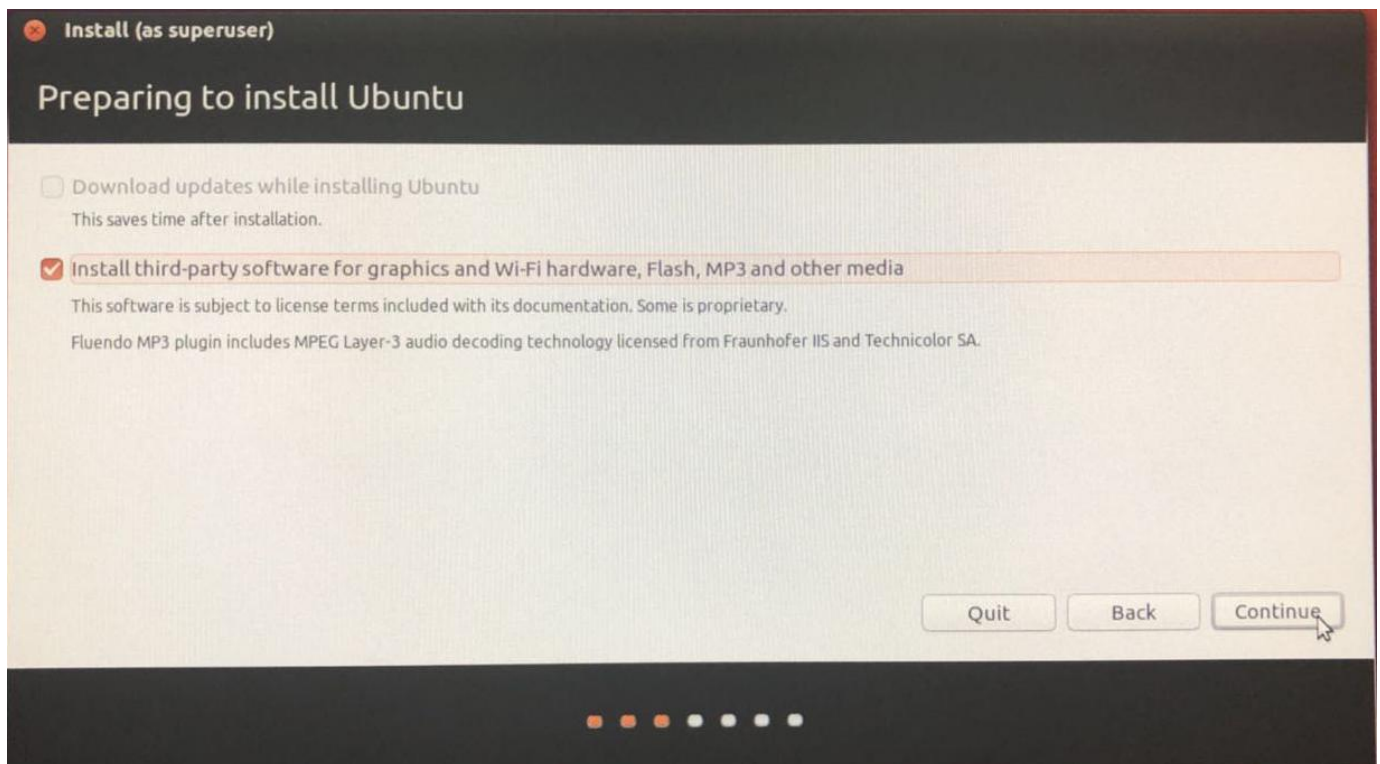

Once the installation is finished, a few more setup options for your Ubuntu OS will appear, and then it will be ready to use.

Note

During this process, the screen may turn black. Please be patient as you wait for the screen to start displaying again. Do not do anything until your laptop displays the following screen:
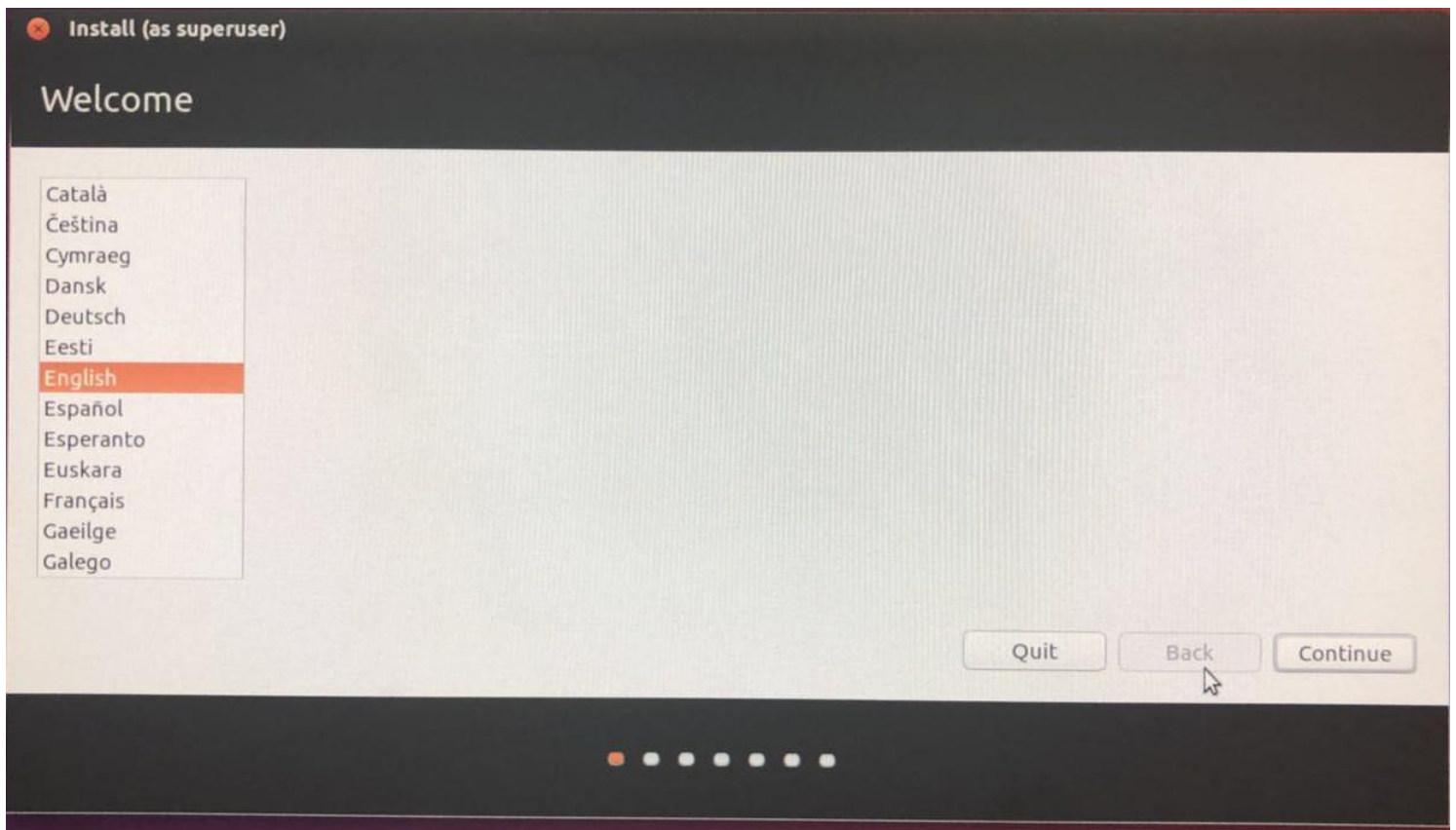
Choose your default language and continue.

Check the box to install third-party software, and then continue. This will ensure that the common plugins are installed so everything can run smoothly.
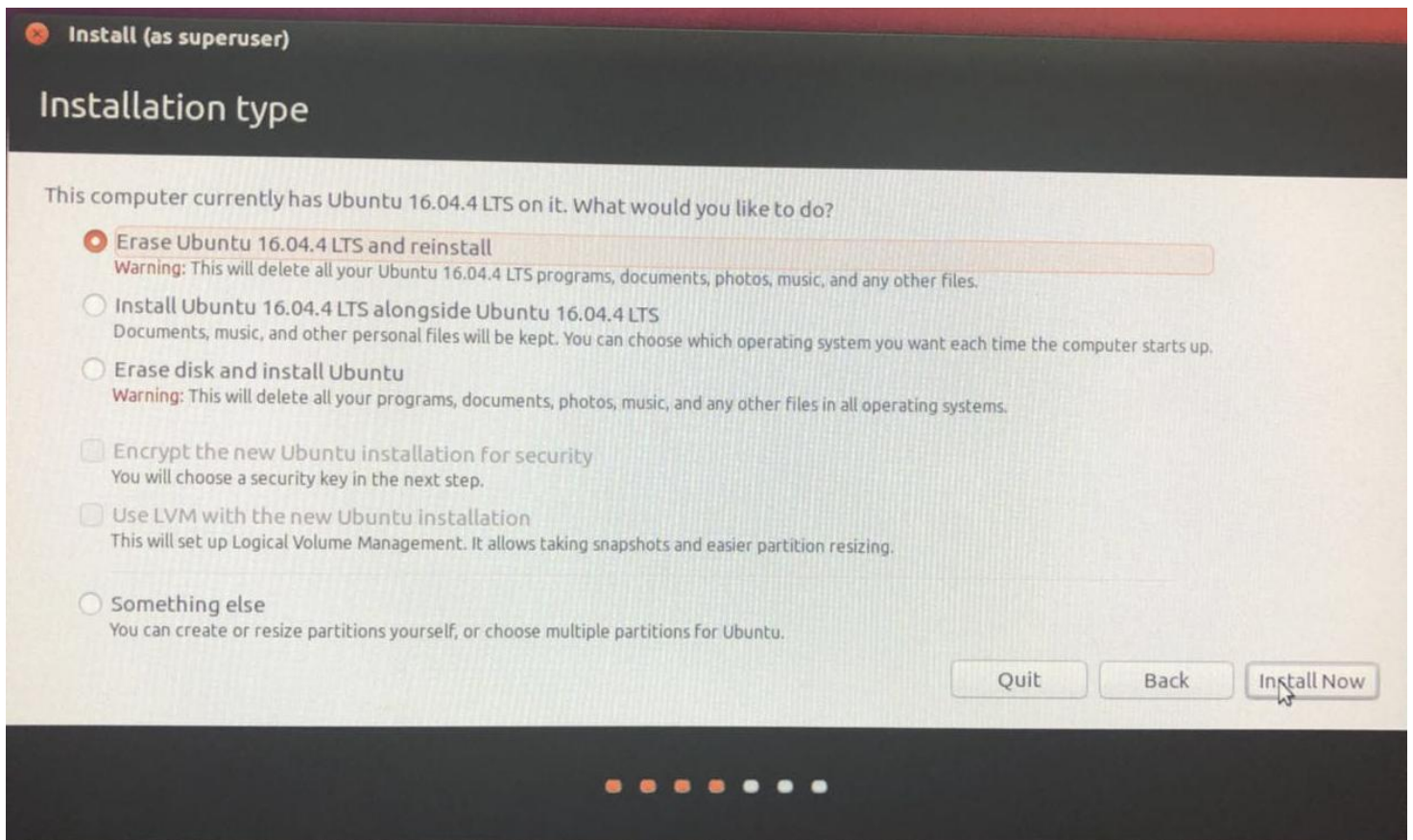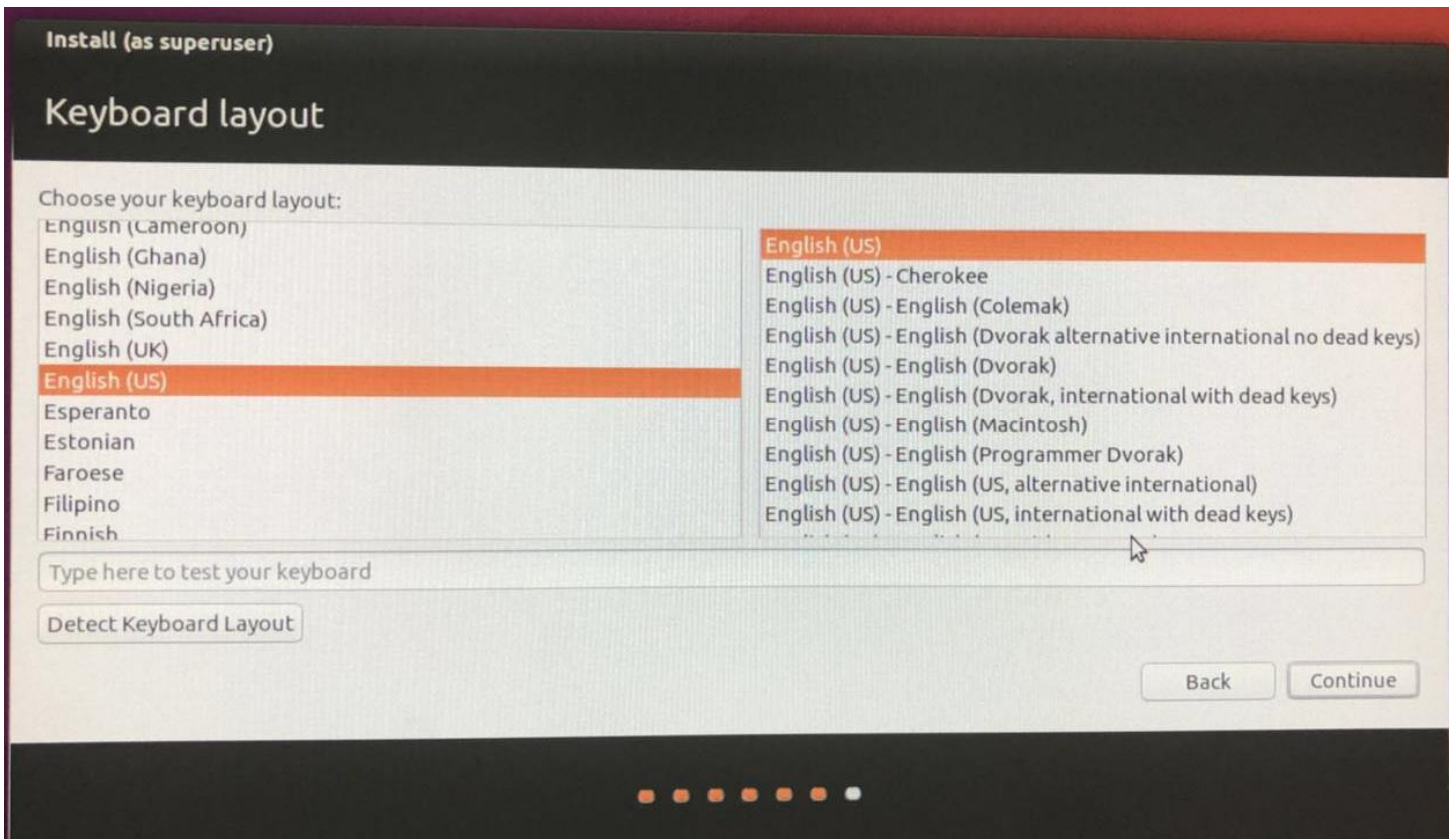
Choose the best option for you. These options may look slightly different on your screen, but normally the third option (Erase disk and install Ubuntu) would be the most appropriate. There will be a small window to confirm that changes can be made to your disk. Please click continue.
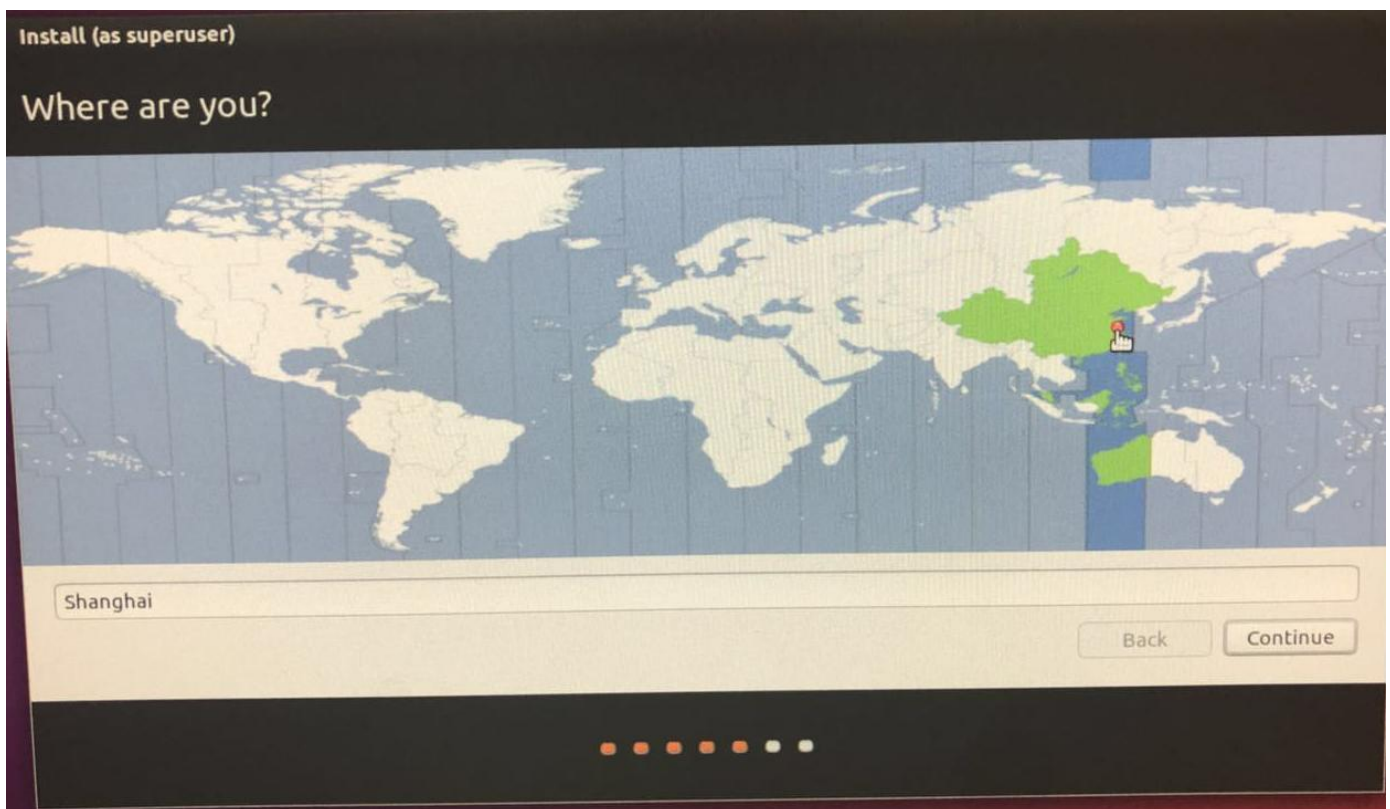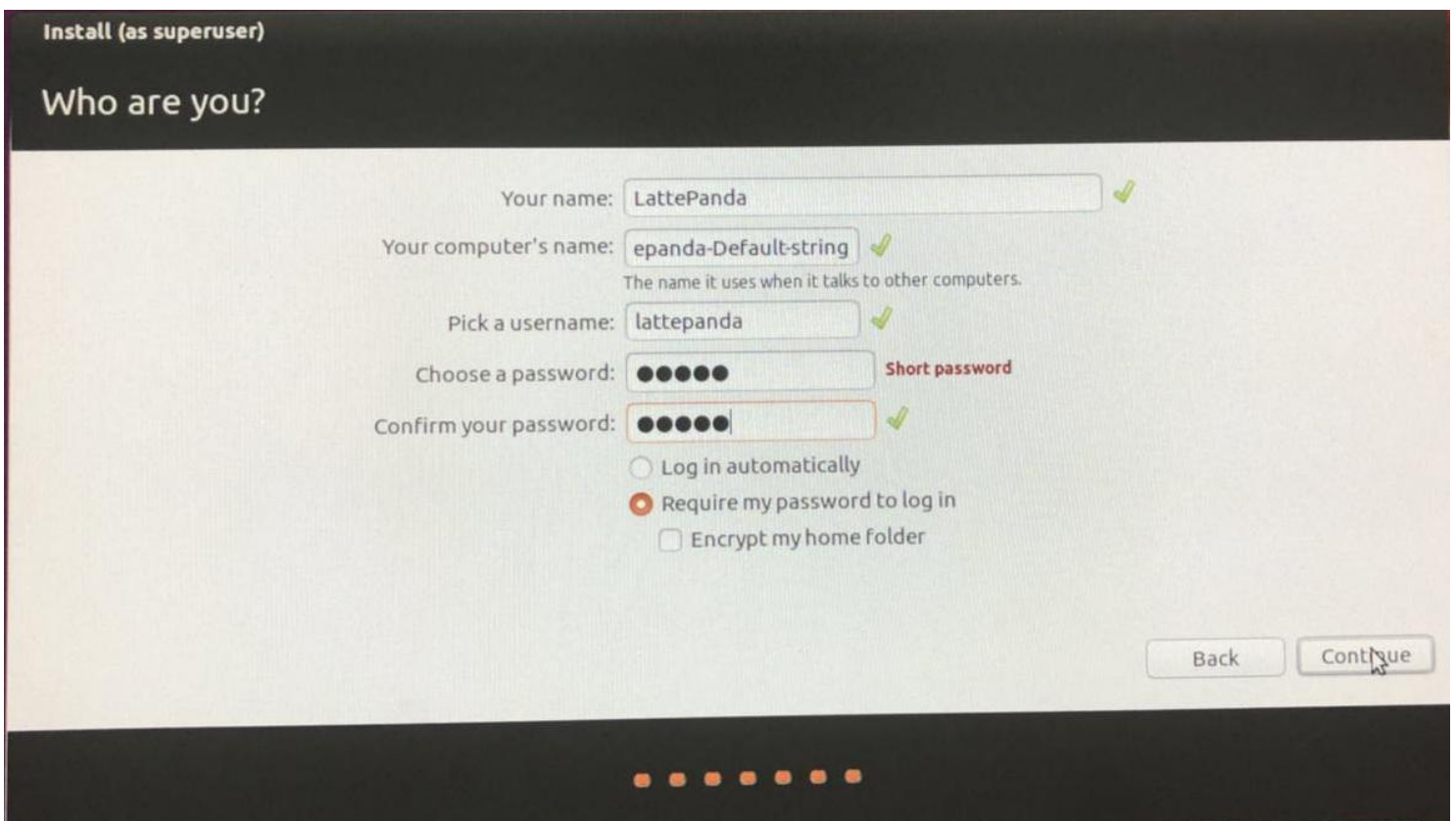
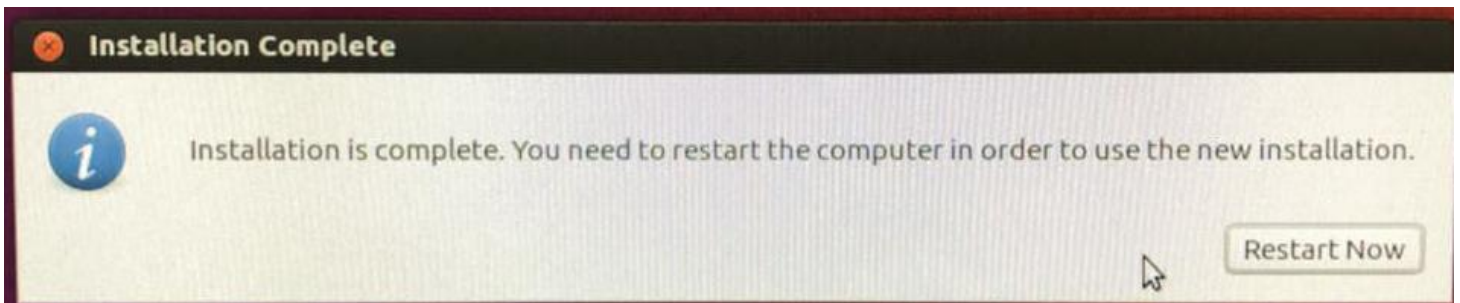Choose your time zone and click continue to proceed.

Select your keyboard layout. If you're unsure of what this is, you can use the "detect keyboard layout" option. Follow the instructions on screen and it should be relatively simple. Click continue.

Fill out your details to continue. You will be asked to restart your LP in order to complete installation.

Wait for your LP to restart and then enter your password to log in. Your Ubuntu 16.04 LTS should be fully functional on your LattePanda. Enjoy!

Android (Phoenix OS)¶

The LattePanda Alpha is also capable of using x86 versions of Android. One such version, is Phoenix OS. This version provides a desktop like Windows for an android system while also allowing access to the Google Play store.

Bootable Drive¶

- eMMC
- M.2 M-key NVMe or SATA SSD
- USB Drive (We recommend using the USB 3.0 slot for optimal results)

What You Will Need¶

- Phoenix OS Installer
- Bootable Partition (with drive letter assigned) and at least 4 GB of free space

Installation Steps¶

1. Download the Phoenix OS Installer.
2. Launch the installation exe.
3. There are two options: Install and U Install. Select U Install for installing from the USB drive. Select "Install" for installing on eMMC or SSD partition.

Hackintosh (macOS)¶

Since the LattePanda Alpha shares similar hardware as some Macbooks, it is possible to install macOS Mojave on the LattePanda Alpha. In fact, some community members have already done this and posted installation tutorials. One such member, Novaspirit, created a very detailed tutorial video along with some installation files.

Note

MacOS is not an officially supported operating system. Some functionality may not work, or may require additional hardware to work. For example, the provided LattePanda Wi-Fi card is not supported. A USB or M.2 E-key Wi-Fi card is required to receive Wi-Fi on macOS.**

What You Will Need¶

- 1 x Blank USB Flash Drive (8GB or larger)
- macOS Mojave Image
- NovaSpirit support installation files

Installation Steps¶

The NovaSpirit video tutorial can be found

below.

Community discussions regarding this topic!

Regular Drivers¶

You can utilize the Intel Driver & Support Assistant (Intel DSA) to install and update your Alpha drivers.

Intel DSA can auto-detect the relevant drivers and updates you need according to your CPU model, which is very simple and convenient. Let's start using it!

1) First, download the Intel Driver & Support Assistant application on Intel's website.

2) Run Intel DSA, and it will start to auto-detect drivers and updates for you. (Please use the Google Chrome browser to open the DSA, as other browsers may cause an Intel DSA detection error.)

https://www.intel.com/content/www/us/en/support/intel-driver-support-assistant.html

3) Follow the on-screen prompts to download and install the drivers and updates.

Touch Panel Drivers¶

The touch panel driver for Alpha is the same as that for LattePanda V1.0.

[Windows 10 Drivers (V1.1) - 32Bit](#)

[Windows 10 Drivers (V1.1) - 64Bit](#)

PLEASE NOTE:

"install.bat" must be run as administrator to update the driver correctly.