Steps for Booting Up Your LattePanda

• What You Will Need

To get started, you will need the following hardware:

- LattePanda 3 Delta Mainboard
- USB Type C Power Adapter(attached in the box), or Other 12V Power Adapter
- Power Supply Cable
- Display Device (TV, Monitor, or eDP Display)
- Display Cable (HDMI, USB Type C, or eDP Cable)
- Input devices (Keyboard, mouse, etc.)
- WIFI/BT Antennas
- Instructions

Warning

The LattePanda is relatively special in its pocket-sized product form and design, and it can connect multiple devices to provide endless possibilities for embedded developments and IoT innovations.

CPU-related products are all **electrostatically sensitive**. So although we have adopted the **anti-static design**, users still need to be careful when using these electronics.

Be sure to remove the static electricity from your body before touching the LattePanda! Otherwise, this may cause potential static discharge and damage your LattePanda!

• Connect Wi-Fi/BT antennas to the sockets.



Antenna and socket spec - IPEX4 2.4 & 5G Dual-band

There are two antennas sockets on the wireless module. One socket is used for 2.5G&5G Wi-Fi, and the other one is used for Bluetooth. So please insert two antennas. Both antennas are the same.

You can purchase enhanced antennas to improve the WIFI and Bluetooth signal strength.

- Connect LattePanda and the display device with the display cable. Please see the Display and Touch Connections section for instructions on using different displays with your LattePanda.
- Connect the keyboard and mouse to LattePanda.
- Connect the power adapter to LattePanda. Please see the Powering LattePanda 3 Delta section for instructions on using different power adapters to power your LattePanda.
- Press and hold the power button for approximately 1 second. The onboard blue LED indicator will light up, and LattePanda will boot into OS. The default OS is windows 10.

Related Links

- Powering LattePanda 3 Delta
- Operating Systems
- Display and Touch Connections

Operating Systems

This document will show how to install an operating systems compatible with LattePanda 3 Delta. It will also cover the acceptable bootup media, as well as instructions, resources for installing operating systems and other special considerations.

Overview[¶]

The LattePanda 3 Delta is a development device that supports two different operating systems.

- 1. Windows 10, Windows 11
- 2. Linux Ubuntu, or other Linux versions

Тір

Please feel free to contribute or request new content via our Official Docs Repository

Warning

Please back up your important files or data before OS installation.

Windows System

Тір



The following contents will take the Windows OS installation as an example to demonstrate.

- The installation steps for Windows 10 and Windows 11 are same.
- We will use the official system image file(provided by LattePanda team) with all hardware drivers pre-installed and ready to use, bringing you a fast and ultimate experience.
- The system will be installed on the eMMC by default.
- How to install the official system image to the SSD?

1.Insert your SSD into the LattePanda, then remove all other storage.

2.Enter into the BIOS setup to disable the onboard eMMC. Then save the change.

Main Advanced Chipset Security	Aptio Setup – AMI , Boot Save & Exit	
 PCH-IO Configuration SATA And RST Configuration HD Audio Configuration SCS Configuration 		Storage and Communicat. Subsystem (SCS) Config
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

3.Restart the LattePanda. Use the following installation steps to install the system image.

- What You Will Need
 - Empty USB flash drive (8 GB or larger)
 - OS Disc Image File for the LattePanda 3 Delta: Download from <u>Dropbox Link</u> or <u>Google</u> <u>Drive Link</u>
- Installation Steps
 - Download the Windows 10/11 disc image file of LattePanda 3 Delta.
 - Format your USB drive into NTFS format.
 - Unzip the Windows 10/11 disc image file. Then copy and paste them to the USB drive.

The files location on the USB flash drive should be as shown below.

■ 🖸 📑 🗧 File Home Share	Drive Tools US View Manage	B Drive (F:)		×
\leftrightarrow \rightarrow \uparrow \blacksquare \rightarrow Th	is PC > USB Drive (F:) >	v (ර Search USB Di	ive (F:) P
🛨 Quick access	Name ^	Date modified	Туре	Size
Desites A	Boot	8/21/2018 9:41 PM	File folder	
Desktop 🛛 🚿	EFI	8/21/2018 9:41 PM	File folder	
👆 Downloads 🛛 🖈	Images	8/21/2018 9:42 PM	File folder	
📋 Documents 🛛 📌	Scripts	8/21/2018 9:42 PM	File folder	
📰 Pictures 🛛 🖈	Sources	8/21/2018 9:42 PM	File folder	
Music	bootmgr	9/28/2017 9:20 PM	File	389 KB
Videos	🗋 bootmgr.efi	9/28/2017 8:59 PM	EFI File	1,005 KB
ConeDrive	ConfigWinPE	10/11/2017 2:14 PM	Application	53 KB
💻 This PC				
USB Drive (F:)				
Interview Network				

- Insert your USB drive into LattePanda, and turn on the LattePanda. (If you created the USB installation media on LattePanda, please restart the LattePanda before OS installation.)
- Press 'F7' key continuously to enter into Bootable Device Selection Menu.
- Use the 'UP' or 'Down' key to choose the USB bootable device, then press 'Enter' key.



 It will enter into the OS installation terminal. It should look like the picture below. As it's a fully automatic process, you don't need to do anything. Please wait patiently for 5-8 minutes.

```
X:\windows\system32\cmd.exe - startnet.cmd
wpeinit
Try to find usb drive contains images\install.txt
WinPESource is "C:\"
call C:\Scripts\main.cmd
Running command to active high-performance power scheme
powercfg /s 8c5e7fda-e8bf-4a96-9a85-a6e23a8c635c
Check C:\images
Find C:\images\install.wim
Try to find a fixed internal disk
 ..... X:\DET.TXT
 ..... X:\DET.TXT
  ----- X:\DET.TXT
ype : SD
  ----- X:\DET.TXT
Using disk 1
winpart.txt now contains....
```

• After 5~8 minutes, the installation will be completed. You will get the notice in the terminal like the picture below.

Then shut down the LattePanda. Unplug the USB flash drive.

```
Administrator: X:\windows\system32\cmd.exe
Copying test tool and customization files
copy C:\Scripts\Unattend.xml w:\Windows\Panther\ /y
        1 file(s) copied.
xcopy C:\OEM\* w:\RECOVERY\OEM\ /s /y
C:\OEM\resetconfig.xml
C:\OEM\Backup\csup.txt
C:\OEM\Backup\oemlogo.bmp
C:\OEM\Backup\preferences.txt
C:\OEM\Backup\Unattend.xml
C:\OEM\scripts\AfterImageApply.cmd
C:\OEM\scripts\setting.cmd
7 File(s) copied
copy C:\oem\backup\csup.txt w:\Windows\ /y
        1 file(s) copied.
copy C:\oem\backup\oemlogo.bmp w:\Windows\Panther\ /y
        1 file(s) copied.
Writing image SN to C:\RECOVERY\OEM\ImageSN.txt
 Image deployment COMPLETED. Type EXIT to reboot.
 Type WPEUTIL SHUTDOWN to shutdown the system.
(:\windows\system32>
```

- Press the power button to turn on the LattePanda. Then it will start the system initialization. After about 3 minutes, it will enter into Windows System desktop. Now enjoy it!
- Windows Activation

If you are using LattePanda 3 Delta activated model, there should be a License Key in the box as shown below.



There are 6 steps to activate your LattePanda:

- Scrape the coating off the sticker to obtain the full Product Key
- Make sure your LattePanda has an active internet connection via WiFi or Ethernet
- Right click on the Windows button and select System
- Click Activate Windows
- Click Change Product Key
- Enter the product key number
- Click Next

Ubuntu<mark>1</mark>

- Bootable Drive
 - eMMC
 - M.2 M-key NVMe SSD

Tips

This tutorial is for the LattePanda 3 Delta. If you are using other LattePanda models, please refer to the corresponding section.

- What You Will Need
 - 1 x Empty USB Flash Drive (8 GB or larger)
 - <u>Ubuntu 22.04 LTS disc image file</u> (64-bit Desktop disc image file is recommended)

Installation Steps

•

- Download the Ubuntu 22.04 LTS image.
- Create a USB installation media for Ubuntu. We recommend using 'Rufus' to create the installation media. You can download it <u>here</u>.
- Choose your USB flash drive, and load the ISO file. The GUI of Rufus will look like the picture below. Click the start button to burn the ISO file onto the USB flash drive.

Rufus 3.20.1929	- 0	\times
Drive Properties		
Device		
UBUNTU 22_0 (F:) [32 GB]		~
Boot selection		
ubuntu-22.04-desktop-amd64.iso	✓ Ø SELECT	-
Persistent partition size		
1	0 (No persistence)	
Partition scheme	Target system	
MBR ~	BIOS or UEFI	\sim
 Show advanced drive properties 		
Format Options		
Volume label		
Ubuntu 22.04 LTS amd64		
File system	Cluster size	_
FAT32 (Default)	16 kilobytes (Default)	~
 Show advanced format options 		
6		
Status —		
REA	DY	
S (i) ≇ II	START CLOSE	
device found		

- Insert your USB drive into LattePanda, and turn on the LattePanda. (If you created the USB installation media on LattePanda, please restart the LattePanda before OS installation.)
- Press 'Esc' continuously to enter BIOS menu.
- Navigate to the "Boot" tab and set the USB drive as "Boot Option #1" under "Boot Option Priorities" part.



• Navigate to the "Save & Exit" tab and select "Save Changes & Exit".

LattePanda will restart. Afterward, you will enter the installation GUI as shown below.

There will be two options:

- Try Ubuntu without installing
- Install Ubuntu

Both options should work, but in this tutorial, we will take the 'Install' option as an example. Then, the files will load. After a while, the following picture should appear.

Note

During this process, the screen may go black. Please be patient and do not do anything until you see the following screen.

Bahasa Indonesia Bosanski Català			
Ceština Cymraeg			
Dansk			
Deutsch			
English			
Español	Try Ubuntu	Install Ubuntu	
Esperanto			
Euskara	You can try Ubuntu without making an	ny changes to your computer, directly from this Cl	D.
Français	Or if you're ready, you can install Ubur	intu alongside (or instead of) your current operati	ina
Galego	system. This shouldn't take too long.	and alongside (or instead or) your current operati	ing
Hrvatski			
Íslenska			

Please double-click the 'Install Ubuntu' icon. After double-clicking, the installation will begin.(as shown below)

	Install	×
Keyboard layout		
Choose your keyboard layout:		
English (Australian) English (Cameroon) English (Chana) English (Nigeria) English (South Africa) English (UK) English (UK) Esperanto Estonian Faroese Filipino Finnish French	English (US) English (US) - Cherokee English (US) - English (Colemak) English (US) - English (Colemak-DH ISO) English (US) - English (Colemak-DH) English (US) - English (Dvorak) English (US) - English (Dvorak, alt. intl.) English (US) - English (Dvorak, alt. intl.) English (US) - English (Dvorak, intl., with dead keys) English (US) - English (Dvorak, intl., with dead keys) English (US) - English (Dvorak, right-handed) English (US) - English (Dvorak, right-handed) English (US) - English (Macintosh) English (US) - English (Norman) English (US) - English (US, Symbolic) English (US) - English (US, Symbolic)	
Type here to test your keyboard		
Detect Keyboard Layout		
	Quit Back Co	ntinue
	••00000	

Choose your default language and continue.

	Install	×
	Wireless	
	Connecting this computer to a Wi-Fi network allows you to install third-party software, download updates, automatically detect your timezone, and install full support for your language. I don't want to connect to a Wi-Fi network right now Connect to this network Intel Corporation Wi-Fi 6 AX201 160MHz	
		1
	Quit Back Continue	
Connect to a \	WiFi network.	
	Install	×
	Wireless	
	Connecting this computer to a Wi-Fi network allows you to install third-party software, download updates, automatically detect your timezone, and install full support for your language. I don't want to connect to a Wi-Fi network right now	
	Intel Corporation Wi-Fi 6 AX201 160MHz	
		1
		1 Sec
	Quit Back Continue	
	•••0000	

Choose "Normal installation".

Install
Installation type
This computer currently has Windows Boot Manager on it. What would you like to do?
Install Ubuntu alongside Windows Boot Manager Documents, music, and other personal files will be kept. You can choose which operation system you want each time the computer starts up.
Erase disk and install Ubuntu Warning: This will delete all your programs, documents, photos, music, and any other files in all operating systems. Advanced features None selected
Something else You can create or resize partitions yourself, or choose multiple partitions for Ubuntu.

Choose the best option for you. There will be a small window to confirm that changes will be made to your hard disk. Please click continue.



Choose your time zone and click continue to proceed.

Fill out all input fields to continue.

Please be patient and wait for the installation to complete. Then, you will be asked to restart LattePanda to complete the installation.

Wait for your LattePanda to restart and boot up Ubuntu, then enter your password to log in. Enjoy it!

Attention:

If you choose to install Ubuntu alongside Windows Boot Manager, LattePanda may boot into Windows instead of Ubuntu after restart, or Ubuntu doesn't show in the boot order priorities, please take the following steps:

- Select 'UEFI Hard Disk Drive BBS Priorities'
- Change the device in 'Boot Option #1/2'

Main Advanced Chipset Se	curity Boot Save & Exit
Boot Configuration Betup Prompt Timeout Bootup NumLock State Full Screen Logo Fast Boot	5 [Off] a [Enabled] D [Disabled]
FIXED BOOT ORDER Priorities Boot Option #1 Boot Option #2 Boot Option #3 Boot Option #4	[USB Device] [Hard Disk] [NVME] [Network]
	++ † EI +. F F: F:

Regular Driver

If you do not use the windows image file provided by us, you may encounter driver problems. You can use Windows Update to get the latest drivers. Most drivers can be installed correctly, such as WiFi, ethernet, and graphics drivers.

If you still find some unknown devices in the device manager, please refer to the following method.

We packaged all hardware drivers in our Windows operating system. So you could directly download the driver files. These drivers may not be the latest, but they all work fine in windows 10 and 11.

- How to install the driver of the unknown device?
 - Download the driver files from Dropbox Link or Google Drive Link.
 - Unzip the driver files. You could unzip them in the same folder.
 - Open the device manager, then select the unknown device.

Right Click -> Update driver -> Browse my computer for drivers, then select the folder where you unzip the driver files.



• Then click Next. The driver will be automatically installed.

Touch Panel Driver

The touch panel driver for LattePanda 3 Delta is the same as that for the LattePanda V1.0 and LattePanda Alpha/Delta.

Windows Touch Panel Drivers (V1.1) - 64Bit for Windows 10

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

Windows Touch Panel Drivers(V1.3.2)-64bit for Windows 11

LattePanda Leonardo Driver

The LattePanda Leonardo is different from the standard Arduino Leonardo. The IDE configuration files and drivers are not the same.

The official windows 10/11 system image provided by LattePanda team has integrated drivers and configuration files. So if you installed the Windows system by yourself, please configure the driver and IDE files according to the following steps.

- Download the Arduino IDE. Then install it on your windows 10/11 system. We use the Arduino IDE 1.8.16.
- Download the LattePanda Leonardo configuration files from Dropbox Link or Google Drive Link. Then unzip it.
- Enter into "Windows Driver" folder, and run "dpinst-amd64.exe" to install the driver. After that, you will see the LattePanda Leonardo port in the device manager.



• Enter into "Arduino IDE Files" folder, copy "avr-0.0.3" folder to "C:\Program Files(x86)\Arduino\hardware".

→ ✓ ↑ S PC → Windo	ows (C:) > Program Files (x	86) > Arduino > hardware	>		~ Ö	Search hardware	Q
🕹 Downloads 🖈 ^ 🔲 Name	^	Date modified	Туре	Size			
😫 Documents 🖈 📒 arduir	no	7/5/2018 1:03 AM	File folder				
📰 Pictures 🛷 🔂 avr-0.	.0.3	1/27/2021 1:40 AM	File folder				
📙 .homebridge 🛛 🗧 tools		7/5/2018 1:03 AM	File folder				
32u4 driver 📈 packa	age_index_bundled	10/2/2017 6:37 AM	JSON File	9 KI	3		
F1DXKSSIK4AEXI	orm.keys.rewrite	10/2/2017 6:37 AM	Text Document	8 K8	3		
GT9 windows dr	arm	10/2/2017 6:37 AM	Text Document	1 K	3		
OneDrive							
This PC							
Cesktop							
1 Documents							
🖶 Downloads							
👌 Music							
E Pictures							
📱 Videos							
Windows (C:)							

• Run Arduino IDE, Open "Tool" menu, Choose "Board : xxx" -> "LattePanda AVR Boards"->"LattePanda Leonardo". If you see "LattePanda Leonardo" board, the Arduino IDE files are correct.



Previous2x OS Support

Power Adapter Description

The recommended power adapter is undoubtedly the official USB Type-C PD adapter that comes with your LattePanda 3 Delta.

However, LattePanda 3 Delta is also designed for embedded applications, like robotic components, mobile or portable devices. So, an external power supply will be necessary: 12 Volt DC Input - JST PH2.0-4P connector.

The Specifications should be as follows:

- 11-15V(no higher than 15V)
- 24 watts or above is recommended
- Recommended power source: 12V, at least 2A

M.2 Socket

There are two M.2 sockets on LattePanda 3 Delta: M key and B key.



• M.2 M Key

The M.2 M key socket only allows PCIe 3.0 x2.

Compatible Device

STORAGE

• Compatible with M.2 NVMe SSD

OTHER DEVICES

- eGPU(you can also connect an eGPU to m.2 M key if you have a high-quality cable adapter like ADT Link) <u>Video link here to the eGPU</u>
- M.2 B Key

The M.2 B key socket allows SATA III, USB 2.0, USB3.0, and SIM.

Compatible Device

STORAGE

Compatible with M.2 SATA SSD

WIRELESS DEVICES

- M.2 4G Module (USB 2.0 lane)
- M.2 5G Module (USB 3.0 lane)

Before using the 4G or 5G module, please insert a micro-SIM card into the SIM card slot, then assemble the antennas on the module.



Then install the driver of the module after logging into the OS.

We have tested the following modules, which are working fine in the Windows 10 OS.

- Quectel EM05-E
- <u>SIMCom SIM7600G-H-M2</u>
- Quectel RM500Q-GL

USB Type-A Port

There are three USB Type-A ports on LattePanda 3 Delta. One of them is a USB 3.2 gen2 x1 port with an ultra-high bandwidth, delivers up to 10Gb/s throughput, which is twice faster than USB3.2 gen1 x1 (previously known as USB3.0). The remaining two are USB3.2 gen1 x1 ports.



USB 3.2 Gen2 x1 10Gbps

USB 3.2 Gen1 x1 5Gbps

USB Type-C Port

There is a USB Type-C port on the LattePanda 3 Delta. It can be connected to a PD power adapter or a USB-C hub to expand to more ports, like DP, DVI, USB, SD/MicroSD, etc.

The USB Type-C port supports simultaneous use of following three functions.

- Power Delivery
- DP 1.4
- USB 2.0

Female Header Pins

Status Indication Pin

The S0, S3, S4 pins can indicate the current state of operating system through different output voltages. So the OS status can be obtained by reading these voltages or connecting LED indicators.

The voltage of these pins in different states are shown as follows:

S0 Pin	High	Low	Low	Low
S3 Pin	Low	High	Low	Low
S4 Pin	Low	Low	High	Low

- High: 5V; Low: 0V
- Auto 5V Output Pin

There are two 5V output pins in the female headers. They are automatically controlled according to different states.

Other 5V & 3.3V output pins are always turned on unless you enable Deep Sleep EUP function in BIOS.

USB 3.2 Gen1 x¹ 5Gbps



The power output of these two 5V output pins is as follows:

power output of these 5V output pins Enabled Enabled Disabled Disabled

Audio Output Pin

LattePanda 3 Delta has two-channel audio output pins with audio power amplifier and the output power of each channel can be up to 2W. You can directly connect two speakers to play sound. When the headphone is inserted, the audio output automatically switches to the headphone jack.



WIFI<u>¶</u>

Before connecting to a Wi-Fi source, you should install two Wi-Fi antennas to your LattePanda board by plugging the round-shaped end of the antenna into the complementary socket.



Then, surf the internet!



There is an Ethernet port on the LattePanda board. Plug the ethernet cable, then surf the internet!

Cellular (4G/5G)

Before using the cellular network, please assemble the 4G/5G module on the M.2 B key socket first!

• Assemble the 4G/5G module on the M.2 B key socket. Then assemble the 4G/5G antennas on the module. Insert a micro-SIM card into the SIM card slot as well.





• Then install the driver of the module after logging into the OS. There should be no unknown devices in the device manager.



Now surf the internet!



We have tested the following modules, which are working fine in the Windows 10 OS.

- Quectel EM05-E
- <u>SIMCom SIM7600G-H-M2</u>
- Quectel RM500Q-GL

Installing Ubuntu Operating System

Using eDP Touch Display

Set up Auto Power-on

Operating System

Drivers & Software

<u>3D Model</u>