WAVESHARE JETSON-NANO-DEV-KIT 2GB Developer Kit User Manual

Waveshare

JETSON-NANO-DEV-KIT – Waveshare Wiki
JETSON-NANO-DEV-KIT
From Waveshare Wiki
Jump to: navigation, search

Contents

Overview

JETSON NANO DEV KIT made by Waveshare, based on AI computers Jetson Nano and Jetson Xavier NX, providing almost the same IOs, size and thickness as the Jetson Nano Developer Kit (B01), more convenient for upgrading the core module. By utilizing the power of the core module, it is qualified for fields like image classification,

object detection, segmentation, speech processing, etc., and can be used in sorts of AI projects.

Jetson Nano Module

(**https://www.waveshare.com/jetsonnano-module.htm**)

NVIDIA Jetson Nano Module with 16G EMMC
JETSON-NANO-DEV-KIT

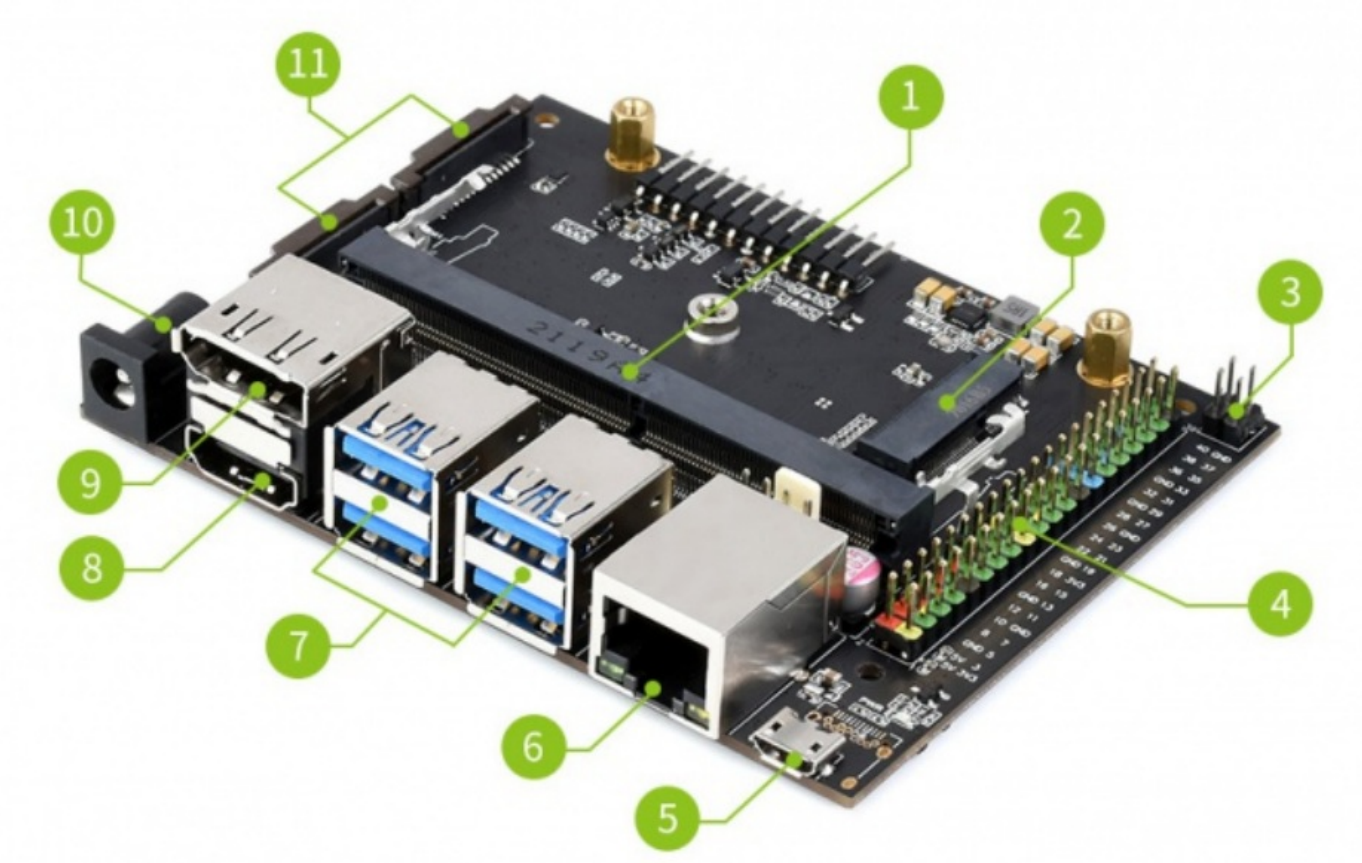
(**https://www.waveshare.com/jetsonnano-dev-kit-a.htm**)

Jetson Nano dev kit.

Jetson Nano Module Parameter

GPU	NVIDIA Maxwell' architecture with 128 NVIDIA CUDA® cores and 0.5 TFLOPS (FP16)
CPU	Quad-core ARM® Cortex®-A57 MPCore processor
Memory	4 GB 64-bit LPDDR4 1600 MHz — 25.6 GB/s
Storage	16 GB eMMC 5.1 Flash
Video Encode	250 MP/s 1 x 4K @ 30 (HEVC) 2 x 1080p @ 60 (HEVC) 4 x 1080p @ 30 (HEVC)
Video Decode	500 MP/s 1 x 4K @ 60 (HEVC) 2 x 4K @ 30 (HEVC) 4 x 1080p @ 60 (HEVC) 8 x 1080p @ 30 (HEVC)
Camera	12 lanes (3×4 or 4×2) MIPI CSI-2 D-PHY 1.1 (18 Gbps)
Connectivity	Wi-Fi requires external chip 10/100/1000 BASE-T Ethernet
Display	eDP 1.4I DS! (1 x 2) 2 simultaneous
UPHY	1 x 1/2/4 PCIE, 1 x USB 3.0, 3 x USB 2.0
I/O	1 x SDIO / 2 x SPI / 4 x I2C / 2 x I2S / GPIOs -> 12C, 125

Onboard Resources

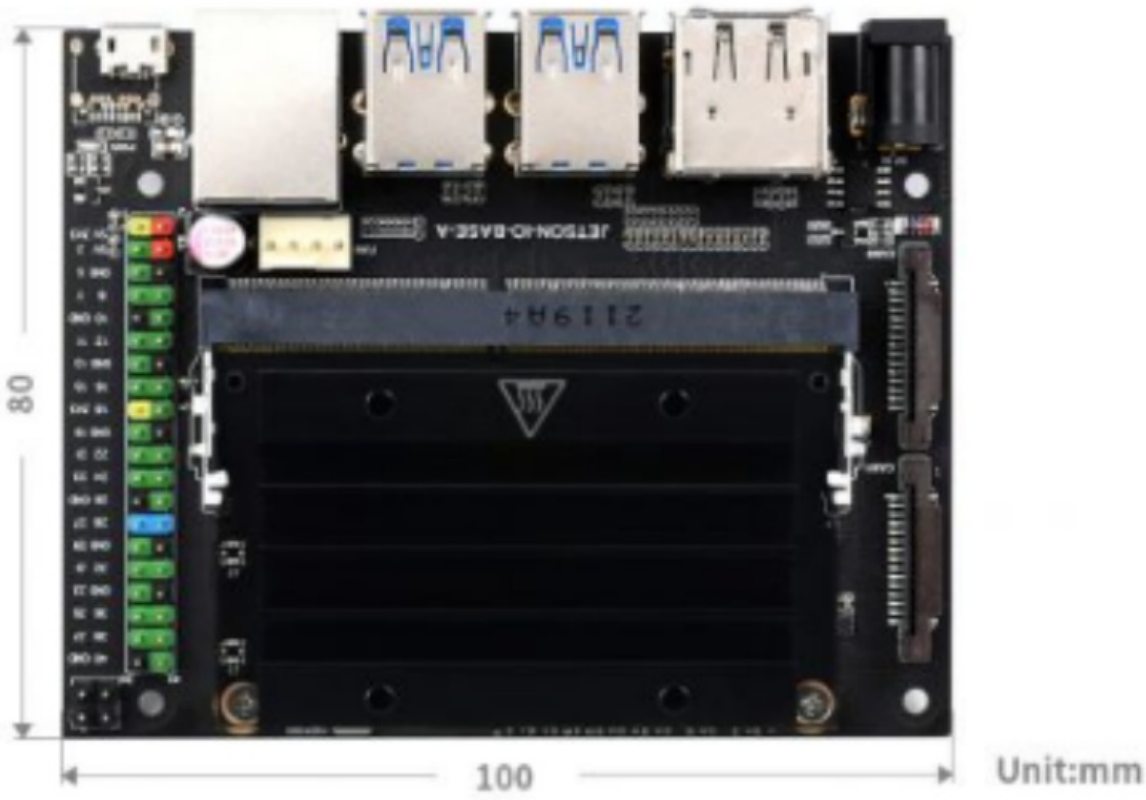


(/wiki/File:JETSON-IO-BASE-A-details-intro.jpg)

1. Core module socket

2. M.2 Key E connector
3. PoE pins: PoE module is not included
4. 40PIN GPIO header
5. Micro USB port: for 5V power input or for USB data transmission
6. Gigabit Ethernet port: 10/100/1000Base-T auto-negotiation, supports PoE if external PoE module is connected.
7. 4 x USB 3.0 port
8. HDMI output port
9. DisplayPort connector
10. DC jack: for 5V power input
11. 2 x MIPI CSI camera connector

Dimension



(/wiki/File:Dimension.png)

User Guide
Please refer to Jetson Nano Dev Kit Manual (https://www.waveshare.com/wiki/JETSON-NANO-DEV-KIT-MANUAL) for more details.

Write OS

The JETSON-NANO-DEV-KIT uses the production Jetson Nano version, which has 16 EMMC for OS instead of the SD card slot.
In this case, to write the Jetson nano, you need to use a Ubuntu 18.04 PC and the SDK Manager tools.

Setup software

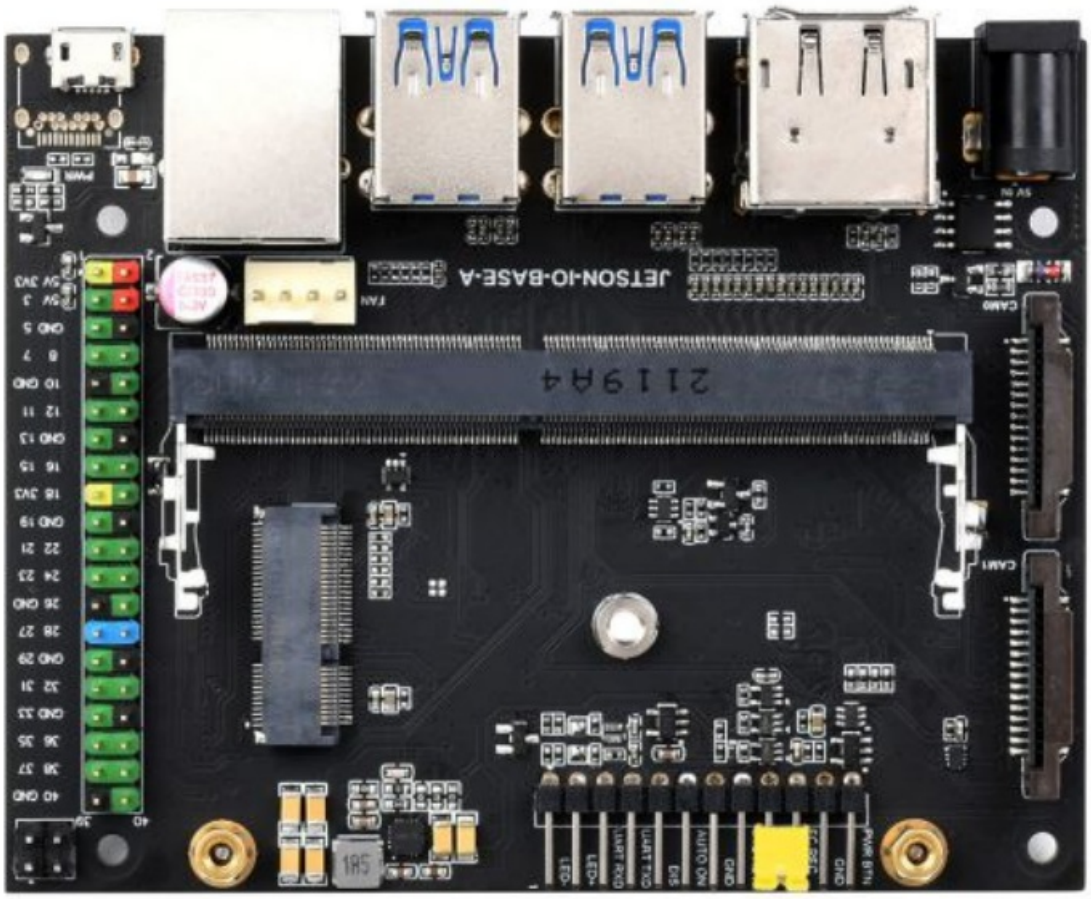
- Environment Ubuntu18.04 PC (virtual machine is OK) For download resources, you need to leave 100G memory for the ubuntu18.04 PC
- SDK Manager download link (**https://developer.nvidia.com/nvidia-sdk-manager**)

For downloading resources and logging in to the SDK Manager, please create an account of the NVIDIA DEVELOPER website first.

- Download the deb file to the Ubuntu PC, and copy the file to the user directory.
- Open a terminal and run the following command to install the SDK manager

sudo apt install ./sdkmanager_[version]-[build#]_amd64.deb
Note: you need to modify the [version]-[build#] to the actual file name.

Configure Hardware



(**/wiki/File:Jetson-nano-Force_recovery.jpg**)

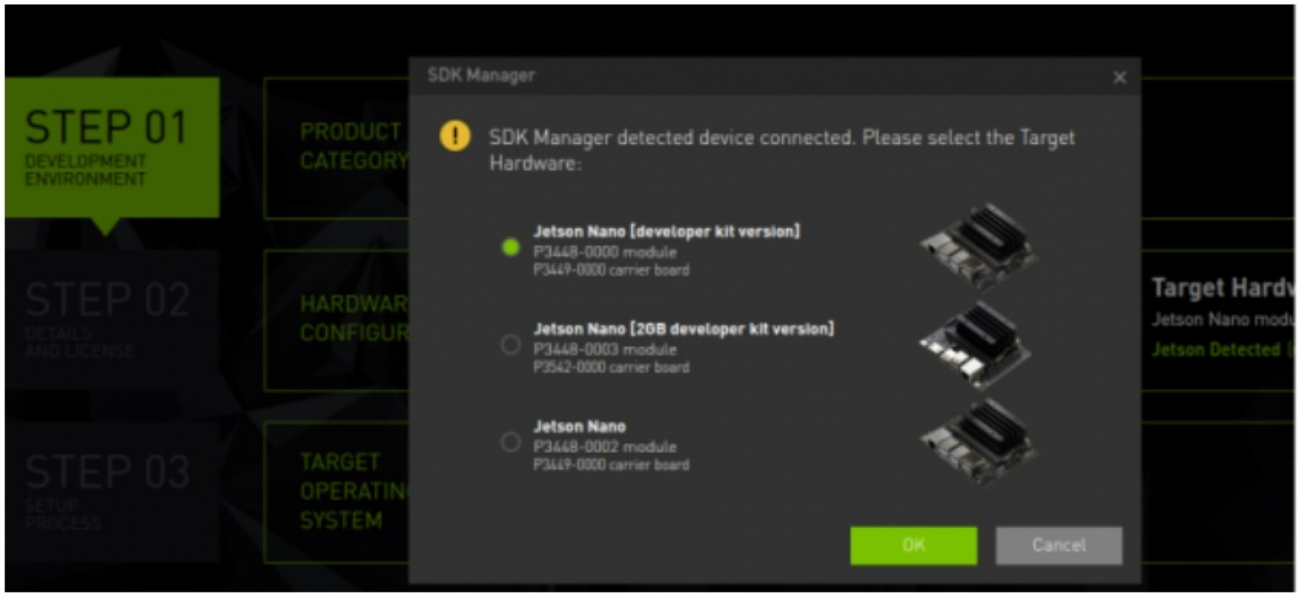
- Connect FC REC and GND pins by jumper or cable, the pins are located under the Jetson Nano module board
- Connect power to the DC port of the Jetson Nano to power on.
- Connect an USB cable (data available) to the Micro USB port and connect it to Ubuntu PC.

Write OS

- Open a terminal in ubuntu PC, run command sdkmanager to oepn the tool.

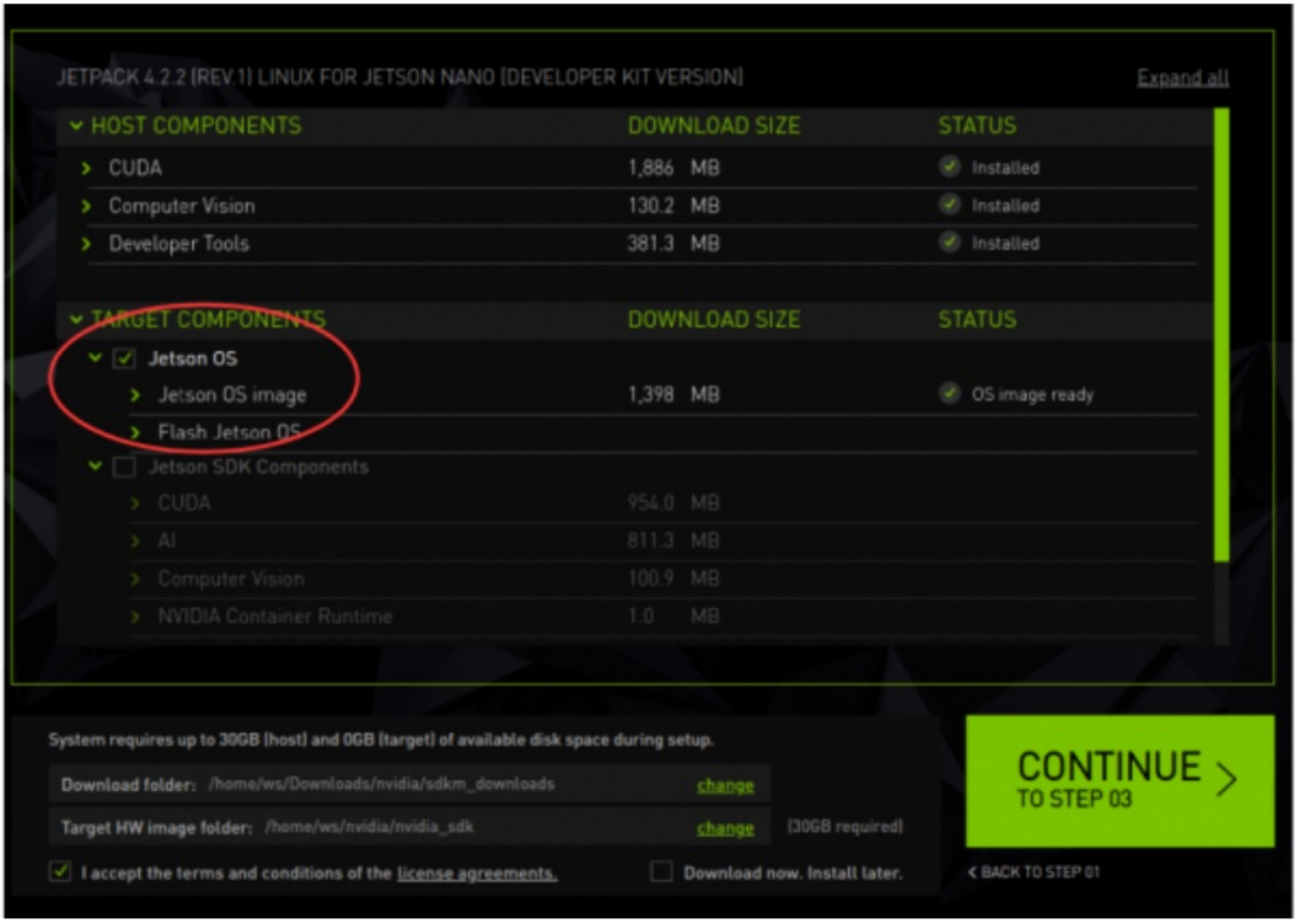
- Log in SDK Manager.
- If the Jetson Nano is recognized normally, it will prompt the options.

19/08/2022, 14:57



(/wiki/File:Jetson-nano-sdkmanger-1.png)

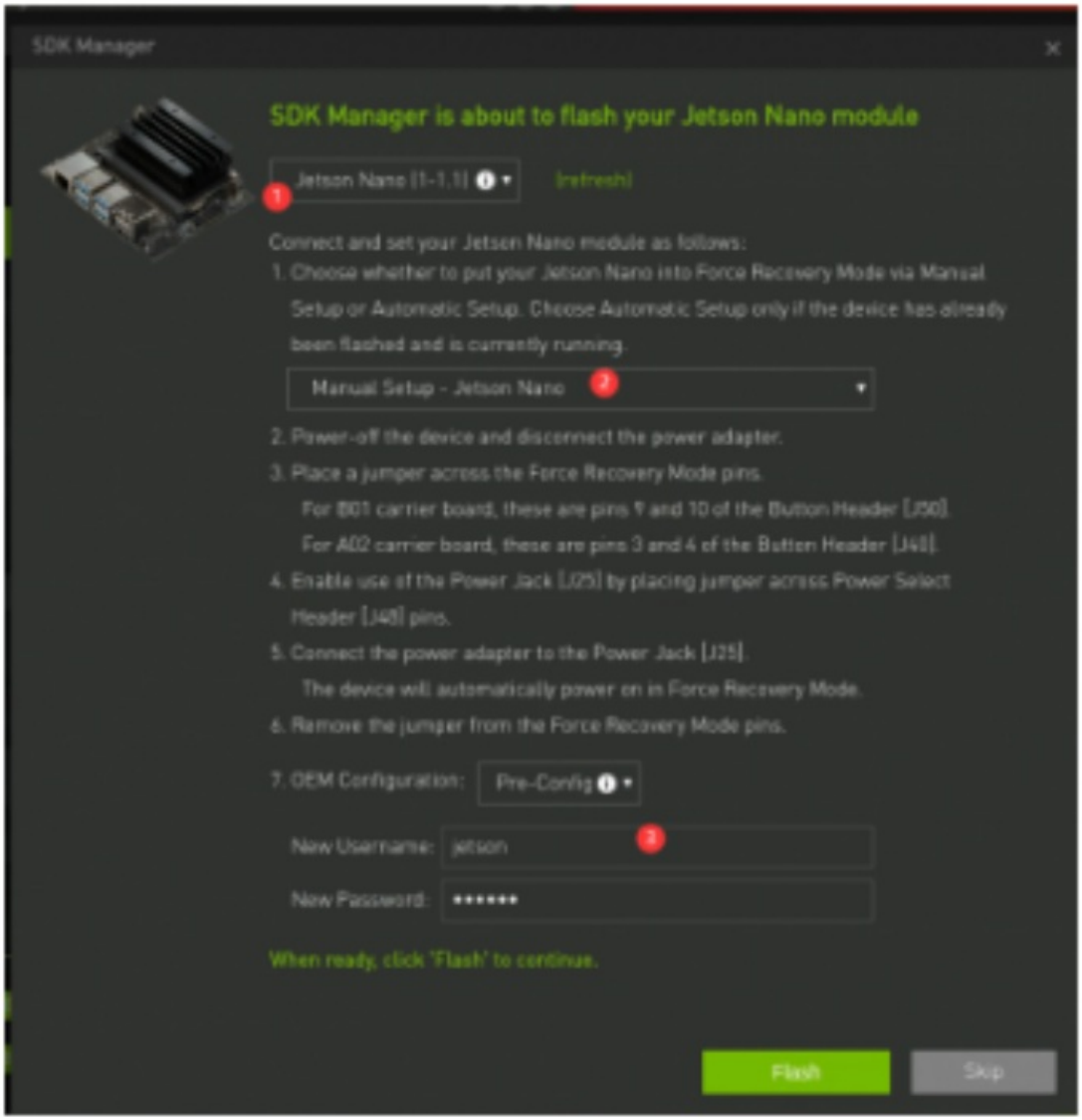
- Choose the Jetson Nano.
- In the JetPack options, please choose the newest JetPack and then Continue. Do not choose another SDK.
- Check Jetson OS option and remove Jetson SDK Components, check the first protocol.



(/wiki/File:Jetson-nano-sdkmanger-2.png)

- Continue and wait for flashing.
- Starting from JetPack 4.6.1, the preconfig window will pop up when using SDK Manager to burn the system.

1. The type of the development board is selected by default. Be careful not to make a mistake when selecting the type of development board earlier.
2. Select Manual Setup-Jetson Nano
3. You can choose runtime or preconfig. If you choose runtime, you need to configure the system by yourself (username, password, language, etc.) later. If you choose preconfig, you can fill in the username and password (you can define it yourself), and nano will be automatically configured during the startup process.



(/wiki/File:Jetson-os.png)

- After programming, please remove the jumper cap of the baseboard, connect to the monitor, power on again, and follow the prompts to power up and config(if pre-config is set, it will directly enter the system after power on).

Camera

View the first connected camera screen: nvgstcapture-1.0
View the picture of the second camera connected: nvgstcapture-1.0 –sensor-id=1
The default camera model is IMX219. If you need to change the camera of other models, execute sudo /opt/nvidia/jetson-io/jetson-io.py
Select Configure Jetson Nano CSI Connector –>> Configure for compatible hardware Select the corresponding camera model
| Camera IMX219 Dual |
| Je Camera IMX477 Dual or: |
| Camera IMX477-A and IMX219-B |
|ConfigurCamera IMX219 Dualardware |

After selecting Save pin changes –>> Save and reboot to reconfigure pins Just wait for restart

FAN

Fan speed adjustment requires 4 wires sudo sh -c 'echo 255 > /sys/devices/pwm-fan/target_pwm'
#Where 255 is the maximum speed, 0 is stop, modify the value can change the speed cat /sys/class/thermal/thermal_zone0/temp
#Get the CPU temperature, you can intelligently control the fan through the program
#The system comes with a temperature control system, and manual control is not required in unnecessary situations

WIFI
There is no WIFI function in the module, it need to connect wifi Module (**https://www.waveshare.com/wireless-ac8265.htm**).
Just connect to the M.2 E KEY socket at the bottom

Resources

Software

- Panasonic_SDFormatter (**http://www.waveshare.com/w/upload/d/d7/Panasonic_SDFormatter.zip**)
- Win32DiskImager (**http://www.waveshare.com/w/upload/7/76/Win32DiskImager.zip**)
- putty (**http://www.waveshare.com/w/upload/5/56/Putty.zip**)onnect to the M.2 E KEY socket at the bottom

Learning Tutorial

- Jetson nano to boot the system from a USB Flash Disk (**https://www.waveshare.com/wiki/Setting_up_Jetson_nano_to_boot_the_system_from_a_USB_Flash_Dis**
- Jetson Nano Case (C) (**https://www.waveshare.com/wiki/Jetson_Nano_Case_(C)**)

Jetson Official Resources

- Jetson Nano Developer Kit User Guide (**https://www.waveshare.com/w/upload/6/6f/Jetson_Nano_Developer_Kit_User_Guide.pdf**)
- Jetson Nano Get Start (**https://www.nvidia.com/JetsonNano-Start**)
- Jetson Nano 3D Drawing (**https://developer.nvidia.com/embedded/dlc/jetson-nano-3D-CAD-Step-Model**)
- Jetson Nano Deverloper Kit 3D Drawing (**https://developer.nvidia.com/jetson-nano-developer-kit-b013d-cad-step-model**)
- Jetson Download Center (**https://developer.nvidia.com/embedded/downloads**)
- Jetson Nano Forum (**https://forums.developer.nvidia.com/c/agx-autonomous-machines/jetson-embedded-systems/jetson-nano/76/**)
- Jetson Github (**https://github.com/dusty-nv**)
- NVIDA futher stufy (**https://www.nvidia.cn/deep-learning-ai/education/**)
- NVIDIA Multimedia Description (**https://docs.nvidia.com/jetson/l4t/index.html#page/Tegra%2520Linux%2520Driver%2520Package%2520D**

Courses
Free AI courses based on Jetson Nano (**https://courses.nvidia.com/courses/course-v1:DLI+C-RX-02+V1/about**)

3D
JETSON-NANO-DEV-KIT-3D (**https://www.waveshare.com/w/upload/7/75/JETSON-NANO-DEV-KIT-3D.zip**)

FAQ

Question:What is the account name and password of the image pre-burned in the SD card?

– Answer:
– Generally, only when the customer has a remark in advance and needs to help burn the image, the image will be pre-burned in the SD card purchased by the customer. The user name and password of the image are waveshare.

Question:How to connect and use DC power?

– Answer:
– To connect the DC power supply, you need to use a jumper cap to short the J48 interface, and then insert the DC power supply into the circular power supply interface.

Question:After the image is programmed normally, the Jetson Nano can be powered on normally, but the HDMI does not display?

– Answer:
– 1. The Jetson Nano Developer Kit supports HDMI and DP interface output. If you use the HDMI to other interface connection method, there may be compatibility problems. It is necessary to switch to the screen of the HDMI interface or the screen test of the DP interface.
– 2.The Jetson Nano Developer Kit (B01) version can only use the image of JetPack 4.3 or later. It may be that the image version you are using is too old. You need to go to NVIDIA's Jetson download center, download the latest Jetson nano image, and re-burn the image.

Question:After programming the image of Jetson Nano, the TF card cannot be recognized on Windows computer?

– Answer:
– Due to the partition, the TF card with the image of the Jetson Nano programmed cannot recognize the drive letter normally on the Windows computer. If you need to reformat it, search for Disk Management in the search bar of widnows and open the Disk Management interface. Find the removable disk where the TF card is located (be careful not to mistake it for another disk), right-click and select Delete Volume, then create a new volume and format it by default. After the default format, the drive letter of TF will be recognized again. At this time, the space and memory of the TF card are incorrect. Note that you need to use the formatting software to quickly format the new drive letter again. After formatting, if the memory space of the TF card is normal, the new image can be re-programmed normally.

Support

If you require technical support, please go to the Support (**https://support.waveshare.com/hc/en-us/requests/new**) page and open a ticket.
Retrieved from "**https://www.waveshare.com/w/index.php?title=JETSON-NANO-DEV-KIT&oldid=45665** (**https://www.waveshare.com/w/index.php?title=JETSON-NANO-DEV-KIT&oldid=45665**)"

https://www.waveshare.com/wiki/JETSON-NANO-DEV-KIT

Documents / Resources

	WAVESHARE JETSON-NANO-DEV-KIT 2GB Developer Kit [pdf] User Manual JETSON-NANO-DEV-KIT 2GB Developer Kit, JETSON-NANO-DEV-KIT, JETSON-NANO-DEV-KIT Developer Kit, 2GB Developer Kit, Developer Kit

References

- are.com/hc/en-us/requests/new
- Courses – NVIDIA
- Courses – NVIDIA
- Log in | NVIDIA Developer
- Jetson Download Center | NVIDIA Developer
- Log in | NVIDIA Developer
- SDK Manager | NVIDIA Developer
- Welcome — Jetson Linux Developer Guide 34.1 documentation
- Welcome — Jetson Linux Developer Guide 34.1 documentation
- Jetson Nano - NVIDIA Developer Forums
- dusty-nv (Dustin Franklin) · GitHub
- NVIDIA DLI |
- Getting Started With Jetson Nano Developer Kit | NVIDIA Developer
- Jetson Nano Development / Expansion Kit, Alternative Solution Of B01 Kit | JETSON-IO-BASE-A | JETSON-NANO-DEV-KIT
- NVIDIA Jetson Nano Module (B01), Production-ready AI System on Module (SOM), with 16GB EMMC
- JETSON-NANO-DEV-KIT - Waveshare Wiki
- File:Dimension.png - Waveshare Wiki
- File:JETSON-IO-BASE-A-details-intro.jpg - Waveshare Wiki
- File:Jetson-nano-Force recovery.jpg - Waveshare Wiki
- File:Jetson-nano-sdkmanger-1.png - Waveshare Wiki
- File:Jetson-nano-sdkmanger-2.png - Waveshare Wiki
- File:Jetson-os.png - Waveshare Wiki
- Jetson Nano Case (C) - Waveshare Wiki
- JETSON-NANO-DEV-KIT - Waveshare Wiki
- JETSON-NANO-DEV-KIT-MANUAL - Waveshare Wiki
- Setting up Jetson nano to boot the system from a USB Flash Disk - Waveshare Wiki
- AC8265 Wireless NIC, 2.4G / 5G WiFi, Bluetooth 4.2, Applicable for Jetson Nano

Manuals+.