Z604
Product Manual
# Revision History

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Reason for change</th>
<th>Applicable hardware version</th>
<th>Modifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1.1</td>
<td>2021-07-27</td>
<td>Initial release</td>
<td>V1.0</td>
<td>RT0086</td>
</tr>
<tr>
<td>V1.2</td>
<td>2021-08-15</td>
<td>Add sub-model</td>
<td>V1.0</td>
<td>RT0086</td>
</tr>
<tr>
<td>V1.3</td>
<td>2021-09-25</td>
<td>Modify the positive and negative poles of the power supply</td>
<td>V1.0</td>
<td>RT0086</td>
</tr>
<tr>
<td>V1.4</td>
<td>2022-01-17</td>
<td>Add a description of the software version</td>
<td>V1.0</td>
<td>RT0086</td>
</tr>
</tbody>
</table>
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Electronic components and circuits are very sensitive to electrostatic discharge. Although our company designs anti-static protection for the main interfaces on the card when designing circuit board products, it is difficult to achieve anti-static safety protection for all components and circuits. Therefore, it is recommended to observe anti-static safety precautions when handling any circuit board component (including Z604). Anti-static safety protection measures include, but are not limited to the following:

a) The smart box should be placed in an anti-static bag during transportation and storage, and then the board should not be taken out during installation and deployment.
b) Before touching the smart box, discharge the static electricity stored in the body: wear a discharge grounding wrist strap.
c) Operate the smart box only within the safe area of the electrostatic discharge point.
d) Avoid moving smart boxes in carpeted areas.

**Precautions and after-sales maintenance**

matters needing attention

Before using the product, please read this manual carefully and keep it for future reference;

- Please pay attention to and follow all warning and guidance information marked on the product;
- Please use matching power adapter to ensure the stability of voltage and current;
- Please use this product in a cool, dry and clean place;
- Do not use this product in cold and hot alternate environment to avoid condensation damage components;
- Do not splash any liquid on the product. Do not use organic solvent or corrosive liquid to clean the product;
- Do not use the product in dusty and messy environment. If it is not used for a long time, please pack the product;
- Do not use in the environment with excessive vibration, any dropping or knocking may damage the circuit and components;
- Do not plug and unplug the core board and peripheral modules when power is on;
- Please do not repair or disassemble the product by yourself. In case of any fault, please contact our company in time for maintenance;
- Do not modify or use unauthorized accessories by yourself, and the damage caused will not be
warranted;
After sales maintenance
1) Warranty period
   • Base plate, core plate : 3 year (non-human damage)
   • Other peripherals sold by the company : 1 year (non-human damage)
2) Warranty description
   • Within 7 days: the product (base plate, core module) is not damaged by human, our company will replace / repair it free of charge, and bear the return freight; (because the core module needs NVIDIA to confirm that it can meet the requirements of repair, it will take a long time, we will coordinate as soon as possible, please forgive for the inconvenience)
   • From 7 days to 36 months: the product (base plate, core module) is not damaged by human, our company will repair it free of charge, and bear the return freight; (because the core module needs NVIDIA to confirm that it can meet the requirements of repair, it will take a long time, we will coordinate as soon as possible, please forgive for the inconvenience)
   • Artificial damage in more than 3 year or 3 year: the product (carrier plate) shall be tested after it is sent to the customer, and the customer shall be informed of whether it can be repaired and the maintenance cost in detail. After reaching an agreement, the product shall be repaired and returned to the customer, and the company shall bear the return freight;
   • The starting time shall be subject to the date of express delivery receipt;
3) Contact information
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Taobao website: https://shop340963258.taobao.com/
Address: 11, block B, Heping Xiyuan, Heping West Street, Chaoyang District, Beijing
Attention: RMA
Tel: 010-84284669
Mailing notice: contact with the company's sales department in advance, arrange technical support personnel to check and eliminate errors caused by misoperation as soon as possible, fill in the product after-sale return to factory maintenance form after verification, and send it to rma@realtimes.cn Mail box, please attach the list of items to facilitate verification, so as to avoid loss and loss in the process of express delivery. The company does not receive any delivery

Technical support and development customization
1. Scope of technical support
   1) The company releases the electrical characteristics and use of industrial carrier boards and modules;
   2) Physical dimension of hardware, relevant structure diagram and line sequence definition of specific interface;
   3) Burn in verification of all BSP support packages provided by the company;
   4) The company released burn environment construction, entry-level use. ;
   5) Various peripheral module drivers released by the company;
   6) The company's product fault diagnosis and after-sales maintenance services;
2. Scope of technical discussion
Due to the wide range of embedded system knowledge and various types of involvement, we can not guarantee that all kinds of questions can be answered one by one. The following content is not
available for technical support, only suggestions can be provided.
1) Knowledge beyond the course published by our company;
2) Specific software program design;
3) Technical support for industrial carrier not issued by the company;
4) All kinds of driving support for industrial carrier board not issued by the company;
5) Hardware principle and drive design of peripheral module not issued by our company;
3. Technical support mode
1) Official website or email questions (recommended): https://www.realtimesai.com/cn/download.html
   techsupport@realtimes.cn
2) Official Taobao through Alibaba Wangwang consultation: https://shop340963258.taobao.com/
3) Wechat group consultation (wechat Group No. consults Taobao customer service or sales, and Taobao purchase order No. needs to be provided for verification);
4) Technical support email: techsupport@realtimes.cn
5) Tel: 010-84284669
4. Technical support time
   Monday to Friday; 8:30-12:00 am; 1:00-17:30 PM;
   The company arranges the rest according to the national legal holidays, during which it may not be able to provide technical support, please send the problem to the technical support email. We will reply to you as soon as possible on weekdays.
5. Complaints and suggestions
   If you are not satisfied with us or have suggestions, you can send an email to yu.qin @ realtimes.cn
   For feedback, please call 010-84284669 for further improvement.
6. Customized development services
   The company provides the embedded operating system driver based on NVIDIA Jetson series and the paid customized development service of hardware carrier board to shorten your product development cycle.
   Please email the request to info@realtimes.cn

Data acquisition and subsequent update

1. Access to information
   Download on our website
   The company's website contains supporting information of its products, including product user manual, NVIDIA Jetson series module data manual, BSP driver support package for carrier board, supporting peripheral driver files, interface test verification method, FAQ, system burning guide, etc. get into www.realtimesai.com, select "data download" in the navigation bar, find the data you need, and click download.
2. Subsequent updates
   Updates of subsequent documents, BSP, driver files and other official account will be updated in time. We will pay close attention to our developments in order to ensure that your information is up to date. We will push through WeChat public.
# Product presentation

## 1 Introduction

Z604 is a new Feiyun Smart Box™ based on the NVIDIA Jetson Nano/Xavier NX/TX2 NX module design. The default built-in Xavier NX module with integrated 384-core Volta™ architecture GPU, pre-installed Ubuntu 18.04 operating system, and 21 TFLOPS floating-point operations AI processing capabilities. It adopts super strong and lightweight aluminum alloy material design, conductive heat dissipation, excellent heat dissipation capacity, small and light overall size, reserved side wing structure for easy on-site installation, and 7x24-hour long MTBF stable operation capability on site. It can be applied to robots, Autonomous machines such as unmanned delivery vehicles, smart gates, and smart vending cabinets are ideal carriers for deploying AI computing power at the edge for deep learning. Working temperature: -25°C—+60°C, low power consumption, high safety level, and can meet various harsh conditions.

### 1.1 Features

<table>
<thead>
<tr>
<th>Type</th>
<th>Z604</th>
<th>Z604-TX2 NX</th>
<th>Z604-NANO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core</td>
<td>Xavier NX</td>
<td>TX2 NX</td>
<td>Nano</td>
</tr>
<tr>
<td>CPU</td>
<td>NVIDIA Carmel ARM v8.2 (6-core) @ 1.4GHz (6MB L2 + 4MB L3)</td>
<td>Dual-core Denver 264-bit CPU and quad-core Arm® Cortex®-A57 MPCore processor</td>
<td>Quad-core ARM Cortex- A57 MPCore processor</td>
</tr>
<tr>
<td>GPU</td>
<td>384-core NVIDIA Volta™ GPU with 48 Tensor Cores</td>
<td>256-core NVIDIA Pascal™ GPU</td>
<td>128-core NVIDIA Maxwell™ GPU</td>
</tr>
<tr>
<td>Memory</td>
<td>8GB LPDDR4</td>
<td>4GB LPDDR4</td>
<td>4GB LPDDR4</td>
</tr>
<tr>
<td>Storage</td>
<td>Built-in 16GB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computing power</td>
<td>21 TFLOPS</td>
<td>1.33 TFLOPS</td>
<td>472 GFLOPS</td>
</tr>
<tr>
<td>System</td>
<td>Ubuntu 18.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Z604-TX2 NX</td>
<td>Z604-NANO</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>Interface</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USB</td>
<td>4 x USB Type A ports, support usb2.0, usb3.0/usb3.1 signals, and provide 1.5A output current; 1 x Micro USB port, support usb host and usb device mode, provide 0.5A output current.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDMI</td>
<td>1 x HDMI 2.0 interface (maximum 6Gbps, 24bpp, 4096x2160@60Hz)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network Port</td>
<td>2 x Gigabit Ethernet (10/100/1000Mbps adaptive; half duplex/full duplex adaptive)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.2 interface</td>
<td>1 x M.2-KEY-B interface, internally supports USB3.1/PCIE signal switching, supports 5G module; 1 x M.2-KEY-E interface, support Bluetooth/WIFI module; 1 x M.2-KEY-M interface, support NVMe SSD.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-function Interface</td>
<td>1 multi-function interface (internal support 2 x CAN, 2 x RS485, 4 x GPIO (3.3V), 1 x Debug UART, 1 x POWER_BUTTON, 1 x RESET, 1 x RECOVERY)</td>
<td>1 multi-function interface (internal support 2 x RS485, 4 x GPIO (3.3V), 1 x Debug UART, 1 x POWER_BUTTON, 1 x RESET, 1 x RECOVERY)</td>
<td></td>
</tr>
<tr>
<td>SD interface</td>
<td>1 x Micro SD Card slot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIM interface</td>
<td>1 x Micro SIM Card slot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>155mm<em>99.94mm</em>44mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling method</td>
<td>Conductive cooling type (no fan)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>+12V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>-25℃--+60℃</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>About 659.5g</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 1.2 Ordering Information

<table>
<thead>
<tr>
<th>Model Options</th>
<th>Functional Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTSS-Z604</td>
<td>Xavier NX Feiyun Smart Box Conductive Cooling Edition, built-in Xavier NX module, pre-installed Ubuntu 18.04, built-in 16GB eMMC; 2 x GbE, 1 x M.2 KEY B, 1 x M.2 KEY E, 1 x M.2 KEY M, 1 x HDMI, 4 x USB3.0, 2 x CAN, 2 x RS485, 4 x GPIO, 1 x Debug UART, 1 x FORCE RECOVERY, 1 x SYS_RST, 1 x Micro SIM, 1 x Micro SD, 1 x Micro USB (flash interface), 5G/SSD optional, WIFI/BT optional, Provide 2 WIFI/Bluetooth antenna ports, 4 5G antenna ports, power indicator, -25——+60°C; Including cable package (Micro USB to USB TYPE-A male system programming cable *1); Power Adaptor, RTS Linux4Tegra BSP</td>
</tr>
<tr>
<td>RTSS-Z604-TX2 NX</td>
<td>TX2 NX Feiyun Smart Box Conductive Cooling Edition, built-in TX2 NX module, pre-installed Ubuntu 18.04, built-in 16GB eMMC; 2 x GbE, 1 x M.2 KEY B, 1 x M.2 KEY E, 1 x M.2 KEY M, 1 x HDMI, 4 x USB3.0, 2 x CAN, 2 x RS485, 4 x GPIO, 1 x Debug UART, 1 x FORCE RECOVERY, 1 x SYS_RST, 1 x Micro SIM, 1 x Micro SD, 1 x Micro USB (flash interface), 5G/SSD optional, WIFI/BT optional, Provide 2 WIFI/Bluetooth antenna ports, 4 5G antenna ports, power indicator, -25——+60°C; Including cable package (Micro USB to USB TYPE-A male system programming cable *1); Power Adaptor, RTS Linux4Tegra BSP</td>
</tr>
<tr>
<td>RTSS-Z604-NANO</td>
<td>NANO Feiyun Smart Box Conductive Cooling Edition, built-in NANO module, pre-installed Ubuntu 18.04, built-in 16GB eMMC; 2 x GbE, 1 x M.2 KEY B, 1 x M.2 KEY E, 1 x M.2 KEY M, 1 x HDMI, 4 x USB3.0, 2 x RS485, 4 x GPIO, 1 x Debug UART, 1 x FORCE RECOVERY, 1 x SYS_RST, 1 x Micro SIM, 1 x Micro SD, 1 x Micro USB (flash interface), 5G/SSD optional, WIFI/BT optional, Provide 2 WIFI/Bluetooth antenna ports, 4 5G antenna ports, power indicator, -25——+60°C; Including cable package (Micro USB to USB TYPE-A male system programming cable *1); Power Adaptor, RTS Linux4Tegra BSP</td>
</tr>
<tr>
<td>RTSS-NWL(optional)</td>
<td>M.2 WIFI/Bluetooth module (including antenna)</td>
</tr>
<tr>
<td>NVME-SSD-256(optional)</td>
<td>Industrial grade 256GB NVME solid state drive (2280)</td>
</tr>
<tr>
<td>Eco Capture Dual SDI M.2 (optional) Eco Capture Quad SDI M.2(optional) Eco Capture SDI 4K Plus M.2(optional)</td>
<td>M.2 Video capture card, Eco Capture Dual SDI M.2 (dual-channel SDI video input), Eco Capture Quad SDI M.2 (four-channel SDI Video input), Eco Capture SDI 4K Plus M.2 (Single channel M.2 4K SDI video input)</td>
</tr>
</tbody>
</table>

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[https://mall.jd.com/index-824786.html](https://mall.jd.com/index-824786.html)
1.3 Wiring package configuration

<table>
<thead>
<tr>
<th>Component</th>
<th>Number</th>
<th>Functional Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System flash cable</td>
<td>1</td>
<td>Micro USB to USB TYPE-A male system programming cable</td>
</tr>
</tbody>
</table>

Product specifications

1 External interface function and location
2 Connectors Description

2.1 Micro USB Interface

<table>
<thead>
<tr>
<th>Function</th>
<th>Micro USB interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marking</td>
<td>OTG</td>
</tr>
<tr>
<td>Type</td>
<td>USB 2.0 MicroType-B</td>
</tr>
</tbody>
</table>

2.2 USB3.0 Interface

<table>
<thead>
<tr>
<th>Function</th>
<th>USB Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marking</td>
<td>USB x 2</td>
</tr>
<tr>
<td>Type</td>
<td>Dual USB Type-A</td>
</tr>
</tbody>
</table>

2.3 Gigabit Ethernet

<table>
<thead>
<tr>
<th>Function</th>
<th>Ethernet connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marking</td>
<td>GbE1, GbE2</td>
</tr>
<tr>
<td>Type</td>
<td>RJ45</td>
</tr>
</tbody>
</table>

2.4 HDMI Display interface

<table>
<thead>
<tr>
<th>Function</th>
<th>HDMI Display connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marking</td>
<td>HDMI</td>
</tr>
<tr>
<td>Type</td>
<td>HDMI 2.0</td>
</tr>
</tbody>
</table>
2.5 Multi-function interface

<table>
<thead>
<tr>
<th>Function</th>
<th>Multi-function interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marking</td>
<td>Multi-function interface</td>
</tr>
<tr>
<td>Type</td>
<td>3.81mm pitch 2x10Pin double row straight pin</td>
</tr>
<tr>
<td>Pin define</td>
<td>Pin</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
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</tr>
<tr>
<td></td>
<td>9</td>
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<td></td>
<td>11</td>
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<tr>
<td></td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>19</td>
</tr>
</tbody>
</table>

Pin 1: The yellow box mark in the picture on the right.
Pin 2: The red box mark in the picture on the right.

1_RS485 mapping file in Linux system is ttyTHS1 under /dev directory.
2_RS485 mapping file in Linux system is ttyTHS0 under /dev directory.

The mapping files of GPIO1, GPIO2, GPIO3, and GPIO4 in Linux system are 436, 266, 267, 422.

Note: When matched with Nano core module, there is no CAN interface function.

2.6 Micro SD (TF) card socket

<table>
<thead>
<tr>
<th>Function</th>
<th>Micro SD (TF) card socket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marking</td>
<td>Micro SD</td>
</tr>
<tr>
<td>Type</td>
<td>Micro SD (TF)</td>
</tr>
</tbody>
</table>

2.7 Micro SIM card socket

<table>
<thead>
<tr>
<th>Function</th>
<th>SIM card socket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marking</td>
<td>SIM</td>
</tr>
<tr>
<td>Type</td>
<td>Micro SIM</td>
</tr>
</tbody>
</table>
## 2.8 Power connector

<table>
<thead>
<tr>
<th>Function</th>
<th>Power connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marking</td>
<td>DC12V</td>
</tr>
<tr>
<td>Type</td>
<td>2 pin terminal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pin define</th>
<th>Pin</th>
<th>Signal</th>
<th>Pin</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>GND (-)</td>
<td>2</td>
<td>VCC (+)</td>
</tr>
</tbody>
</table>

Pin 1: The red box mark in the picture on the right.

Input voltage range: +9V~+20V

Live connection of cables is strictly prohibited!

### 3 Product size diagram

- **Height:** 44mm
- **Length:** 155mm
- **Width:** 99.94mm

### 4 Hardware update history

<table>
<thead>
<tr>
<th>Revision</th>
<th>Reason for change</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1.0</td>
<td>Initial release</td>
</tr>
</tbody>
</table>
Software version supporting instructions

Z604 is a complete product with Jetson Nano/Xavier NX/ TX2 NX module as the core. Provide developers with one-stop terminal equipment to assist developers in application development.

Z604 Feiyun Smart Box supporting software includes:
- L4T (Linux for Tegra): L4T provides "OS" for your Feiyun Smart Box, including Linux kernel, boot loader, board support package (BSP) and sample file system. (By default, the pure system has been installed for the device, Jetpack needs to be installed by itself)
- Jetpack: Jetpack sdk is the most comprehensive solution for building AI applications. It includes software libraries and apis, examples, developer tools and documentation for the latest and previous versions of Jetson products.

1 use

1.1 Smart box power on and start
a) Make sure that the voltage of all external systems is turned off
b) Install the Jetson Nano/Xavier NX/ TX2 NX core module to the 260-pin SO-DIMM connector. Please pay attention to the alignment between the connectors during the installation process, and install the fixing screws at the same time.
c) Install necessary external cables. (Such as: the display cable connected to the HDMI monitor, the power input cable to power the system, the USB cable connected to the keyboard and mouse...)
d) Connect the power cord to the power source.
e) Z604 adopts automatic power-on design, turn on the power and the system starts to work.
f) For a system without a protective enclosure, after the system is powered on, please avoid moving the entire system, and it is strictly forbidden to touch the circuit board and its electronic components with your body.

1.2 Recovery Mode
Jetson Nano/Xavier NX/ TX2 NX core module can work in normal mode and Recovery mode. File system update, kernel update, boot loader update, BCT update and other operations can be performed in Recovery mode.

The steps to enter the Recovery mode are as follows:
a) Turn off the power supply to the system.
b) Use a USB cable to connect the Micro USB (OTG) port of the Z604 and the USB port of the Host (PC) development.
c) Press the Recovery button without releasing it to supply power to the system, keep the power supply for more than 3 seconds, then release the Recovery button.
d) The system enters Recovery mode, and subsequent operations can be performed at this time.
2 L4T（Linux for Tegra Abbreviation“L4T”）

L4T provides "OS" for your Feiyun Smart Box, including Linux kernel, boot loader, board support package (BSP) and sample file system.

Z604 Smart Box is working on a system burned with the official original version of NVIDIA Linux For Tegra (L4T). HDMI, Gigabit Ethernet, USB2.0, serial port, GPIO, SD card, I2C bus can all be supported. But Mini-PCIe, M.2, USB3.0, fan interface, etc. cannot work normally.

For all support of Z604 smart box interface, the supporting driver patch (BSP: Board Support Package) needs to be loaded. Use the flash method to program the system. SDK Manager to install all other JetPack components except L4T to make your Feiyun Smart Box up and running quickly.

For system programming documentation, please refer to "Xavier NX system programming instruction manual"

L4T and BSP can be downloaded from Ruitai Cloud Space, and L4T can also be downloaded directly from the L4T main page on the Jetson developer site.

Please contact sales for the user and password of Ruitai Cloud Space.

3 Jetpack

Nvidia jetpack sdk is the most comprehensive solution for building AI applications. It includes software libraries and apis, examples, developer tools and documentation for the latest and previous versions of Jetson products.

3.1 Jetpack Component summary

This section briefly introduces each component of JetPack. For more detailed information about these components, please refer to JetPack's online documentation.

OS Image

JetPack includes a reference file system derived from Ubuntu. (Development kit system, no need to install)

Libraries and APIs

JetPack library and API include:

• TensorRT and cuDNN for high-performance deep learning applications
• CUDA for multi-domain GPU accelerated applications
• NVIDIA Container Runtime for containerized GPU accelerated applications
• Multimedia API package for camera application and sensor driver development
• VisionWorks, OpenCV and VPI for visual computing applications
• Sample application

3.2 How to install Jetpack

Overview of process steps

Installing JetPack to your Jetson device requires you to perform the following steps:

1. Download and install the NVIDIA SDK Manager on the Linux host.
2. Connect your jetson device to the Linux host (Micro USB or network (same network segment)).
3. Test your device can connect via ssh.
4. Use SDK Manager to select and install the required components.
Download and install the NVIDIA SDK Manager on the Linux host.

You must have a Linux host with internet access to run SDK Manager and refresh the developer kit. The supported host operating systems are:

Ubuntu Linux x64 Version 18.04 or 16.04

Download and install NVIDIA SDK Manager.

sdkmanager Installation package:  sdkmanager-[version].[build#].deb

The current version is:  sdkmanager_1.2.0

sdkmanager install

$ sudo apt install ./sdkmanager-[version].[build#].deb

Connect your jetson device to the Linux host

Prepare your Jetson device for the following settings. (If the equipment system is not initialized, the system user needs to initialize after power-on)

- Connect the monitor, keyboard and mouse to the Jetson Feiyun smart box device (please refer to the interface description above).
- Use Micro USB cable to connect Linux host and Jetson Feiyun Smart Box (or network (same network segment))
- During the setup process, SDK Manager will provide Internet connection for your jetson Feiyun Smart Box via USB or network connection.
- Connect the supplied power adapter to the DC jack of the Feiyun Smart Box, and plug the AC interface into an AC power outlet.

Test that your device can connect via ssh.

If connected via Micro USB, enter lsusb under the Linux host terminal to see the nvidia crop

The device can be accessed through ping or ssh commands

$ ping 192.168.55.1

or

$ ssh <jetson_user>@192.168.55.1

If connected via a network, check whether the device ip address is in the same network segment as the Linux host on the Feiyun Smart Box, and the Feiyun Smart Box device can be accessed through the ping or ssh command.

$ ping <jetson_ip>

or

$ ssh <jetson_user>@<jetson_device_ip>
Use SDK Manager to select and install the required components

NVIDIA SDK Manager supports installing software to Jetson core (Flying Cloud Smart Box). For complete instructions, please refer to Chapter 5 of "Xavier NX System Programming Manual".
3.3 Sample application

JetPack includes several examples that demonstrate the use of JetPack components. They are stored in the reference file system and can be compiled in the developer toolkit.

<table>
<thead>
<tr>
<th>Component</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>TensorRT</td>
<td>/usr/src/tensorrt/samples/</td>
</tr>
<tr>
<td>cuDNN</td>
<td>/usr/src/cudnn_samples/</td>
</tr>
<tr>
<td>CUDA</td>
<td>/usr/local/cuda-/samples/</td>
</tr>
<tr>
<td>Multimedia API</td>
<td>/usr/src/tegra_multimedia_api/</td>
</tr>
<tr>
<td>VisionWorks</td>
<td>/usr/share/visionworks/sources/samples/</td>
</tr>
<tr>
<td></td>
<td>/usr/share/visionworks-tracking/sources/samples/</td>
</tr>
<tr>
<td>OpenCV</td>
<td>/usr/share/OpenCV/samples/</td>
</tr>
<tr>
<td>VPI</td>
<td>/opt/nvidia/vpi/vpi-/samples</td>
</tr>
</tbody>
</table>

3.4 Developer tools

JetPack includes the following development tools. Some are used directly on the Jetson system, and some run on a Linux host connected to the Jetson system.

- **Application development and debugging tools**
  - **NSight Eclipse** version for GPU accelerated application development: runs on a Linux host. Support all Jetson products.
  - **CUDA-GDB** for application debugging: Run on Jetson system or Linux host. Support all Jetson products.
  - **CUDA-MEMCHECK** debug application memory error: run on Jetson system. Support all Jetson products.

- **Application analysis and optimization tools**
  - **NSight Systems** for application multi-core CPU evaluation: run on a Linux host. Helps you improve application performance by identifying the slower parts of the code. Support all Jetson products.
  - **NVIDIA®Nsight™ compute** Kernel Analyzer: An interactive analysis tool for CUDA applications. It provides detailed performance indicators and API debugging through user interface and command line tools.
  - **NSight Graphics** for graphics application debugging and evaluation: a consolegrade tool for debugging and optimizing OpenGL and OpenGL ES programs. Run on the Linux host. Support all Jetson products.
3.5 Documentation

Documents related to developers using JetPack include:

- JetPack Documentation
- VisionWorks Documentation
- Nsight Eclipse Edition Documentation
- CUDA-GDB Documentation
- CUDA-MEMCHECK Documentation
- TensorRT Documentation
- cuDNN Documentation
- CUDA Toolkit
- NVIDIA Container Runtime
- OpenCV Documentation
- Jetson Linux Multimedia API Reference
- Nsight Systems
- nvprof
- Visual Profiler
- Nsight Graphics
- Nsight Compute CLI
- VPI–Vision Programming Interface
Terms of Warranty

Important note
Each embedded product provided by Realtimes Technology is free from any defects in material and process, fully in line with the specifications officially issued by the original factory.

Realtimes Technology warranty covers the original products. If the parts configured by the dealer are out of order, please consult with the dealer to solve the problem. All the baseplate and core modules provided by Ruitai New Era (Beijing) Technology Co., Ltd. are guaranteed for 3 years, while the other peripherals are guaranteed for 1 year (life-long maintenance service is provided if the warranty period is beyond the warranty period). The warranty period starts from the date of delivery, for the products repaired within the warranty period, the repair parts shall be extended for 12 months. Unless notified by Realtimes Technology, the date of your original invoice shall be the date of shipment.

How do I get warranty services
If the product does not work properly, Please contact Realtimes Technology or dealer for warranty service, please show invoice when product warranty (this is the proof for you getting warranty service).

Warranty solution
When you ask for warranty service, please follow Realtimes Technology warranty process, You will need to receive your first diagnosis from a technical engineer by phone or by email, at that time, we need you to cooperate with us to fill in all the questions on the RMA form provided by us. Once we accurately determine the cause of the fault and the location of the damage, we will provide the charge list for the out of warranty products, which needs your confirmation. Realtimes Technology keep the right to repair or replace the products. If the product is replaced or repaired, the replaced faulty product or the repaired and replaced faulty parts will be returned to Realtimes Technology.

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The following conditions are not covered by the warranty terms
a) Improper installation, improper use, misuse and abuse of products (Overloading, for example).
b) Improper maintenance and storage (Such as fire, explosion, etc.) or natural disasters (such as lightning stroke, earthquake, typhoon, etc.)
c) Personal unauthorized changing the product (such as changing circuit characteristics, mechanical characteristics, software characteristics, Conformal coating).
d) Other failures which are clearly due to misuse (such as overvoltage, polarity reversal, the pin bent or broken, the wrong connection, drop damage, transportation damage, damage due to over operating temperature and so on).
e) The logo and part number on the product have been deleted or removed.
f) The product is out of warranty.

Special concerns
If the same fault multiple occurrence for the products, in order to find out the reason causing the problem, we will request the users to provide the specific documents or information of peripheral equipment, such as monitor, I/O boards, cables, power supply, diagram and structure of the system, etc. If such documents or information are not available, we have the right to refuse to perform the warranty, the repairments will be charged accordingly.

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