

Milk-V Pioneer User Manual

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1. Overview1
1.1 Introduction1
1.2 Hardware 1
2. Before Start
2.1 What's in the box
2.2 Before Power on3
Step 1 Inventory of tools and accessories
Step 2 Secure the Cooler base to the Pioneer Board
Step 3 Attach the Cooler base to the Cooler
Step 4 Secure the Cooler base to the Pioneer Board
Step 5 Connect the fan5
3. Memory6
3.1 DDR4 Support List6
3.2 Memory Installation6
4. Expansion Cards
4.1 PCle expansion cards9
4.1.1 PCIe support list
4.2 M.2 E-Key Expansion Card9
5. Storage Devices
5.1 M.2 M-Key (PCle 3.0)10
5.2 SATA10
6. Power supply11
6.1 Power Supply Options11
6.2 TDP Reference Table11
6.3 Installing the power supply11
7. Known Issues
Download14

Table of contents

1. Overview

1.1 Introduction

Milk-V Pioneer is a developer motherboard based on SOPHON SG2042 in a standard mATX form factor. With PC-like interfaces and PC industrial compability, Pioneer provides native RISC-V development environment and RISC-V desktop experience. It is the first choice for RISC-V developers and hardware pioneers to experience the cutting edge technology of RISC-V. Embrace RISC-V, embrace the future.

1.2 Hardware

Pioneer Board



- Processor: SOPHON SG2042 (64 core C920, RVV 0.71)
- Memory: 4x DDR4 DIMM slots up to 128 GB RAM support
- PCI Express: 3x PCIe x16 Slot (PCIe 3.0 x8)
- Storage: 5x SATA
- Size: 24.4 x 24.4 cm
- Power: 1x standard 24 P ATX power connector

- Ethernet: 2x RJ45 2.5 G
- Wireless: 1x M.2 E KEY (PCIe 3.0 x1 + USB 2.0)
- USB:
 - o 8x USB3
 - 1x USB header for front panel (2x USB 3.0)
- Other:
 - 1x misc header for front panel power, reset, LED, etc.
 - 1x SPI Flash for BIOS
 - 1x MicroSD card for recovery or OS loading
 - o 2x M.2 M-key 2280(PCIe 3.0 x4)
 - 1x eMMC module connector

Pioneer Box



Pioneer Box is a complete ready-to-use RISC-V PC with the following:

- 1x Pioneer Board
- 64GB 3200 DDR4
- 1x 1TB PCIe 3.0 SSD
- 1x Intel X520-T2 Network Card with 2x 10Gbps RJ45 ports
- 1x AMD R5 230 Graphic Card with HDMI, VGA and DVI
- 1x MSI A350 350W Power Apply
- 1x Cooler with PWM Fan up to 2300 RPM supporting up to 160W D-TDP
- White slim PC enclosure with handle

2. Before Start

2.1 What's in the box

When you get the Pioneer Board, the package should contain:

- 1x Pioneer Board
- 1x User Manual
- 1x Cooler
- 1x Cooler base
- (Optional)DDR4 memory stick

Note : **In case of missing items, please contact us.**

2.2 Before Power on

Before powering up the unit, make sure you have properly installed the heatsink.

The Pioneer Box already has a cooler installed and you can skip the following steps.

If you find that the cooler is not installed, please follow these steps to install the cooler.

Step 1 Inventory of tools and accessories

The following tools and accessories are required for the entire installation process

- 1x Screwdriver
- 1x Cooler
- 1x Cooler base
- 1x Screw kit

Step 2 Secure the Cooler base to the Pioneer Board

Apply thermal grease to the top of the processor



Step 3 Attach the Cooler base to the Cooler

Attach the cooler base to the cooler with screws as shown.



Step 4 Secure the Cooler base to the Pioneer Board

Secure the cooler to the motherboard as shown. Please note, keep the cooler level during installation to avoid crushing the processor.



Step 5 Connect the fan

Connect the fan to the motherboard as shown in the picture.



3. Memory

3.1 DDR4 Support List

Please check the DDR Support List

Installing memory sticks that are not included in the list may prevent proper boot-up.

You can contact us to purchase original support DDR.

3.2 Memory Installation

When installing, please install the DDR slots in order from the DDR slot near the side of the PCIe slot.

Please note that when installing multiple memory sticks, make sure that the memory sticks are installed starting from the DDR4 slot near the PCIe slot and no empty slots are allowed between each two memory sticks.

Example

• When you only need to install 1 stick of memory, install it like this



• When you only need to install 2 stick of memory, install it like this



• When you only need to install 3 stick of memory, install it like this



- When you only need to install 4 stick of memory, install it like this

4. Expansion Cards

Pioneer supports expansion cards via PCIe slots and M.2 E-Key slots

4.1 PCIe expansion cards

Pioneer has 3 PCIe x16 slots (PCIe 3.0 x8)PCIe expansion cards can be installed in 3 PCIe slots.Please fasten the latch when you finish the installation.

4.1.1 PCIe support list

Please check the PCIe Support List

4.2 M.2 E-Key Expansion Card

Pioneer has 1 M.2 E-Key slot. Supports installation of WI-FI/BT modules.

5. Storage Devices

Pioneer has 5 SATA slots and 2 M.2 M-Key slots available for connecting storage devices.

5.1 M.2 M-Key (PCIe 3.0)

Pioneer supports the connection of M.2 Nvme SSDs via the M.2 M-Key. Usually when you purchase an SSD, there are mounting screws included. The installation is the same as a standard desktop.

5.2 SATA

Pioneer supports the connection of storage devices via the SATA interface. Usually when you purchase a drive, a SATA cable is included. Installation is the same as for a standard desktop.

6. Power supply

6.1 Power Supply Options

Pioneer supports a standard 24P power supply, which means you can use the vast majority of PC power supplies on the market to power him.

Nevertheless, we strongly recommend that you choose a high quality power supply to reduce the risk of power failure damaging your hardware devices.

Power supply power is related to the number and power of your peripherals, we recommend choosing a power supply with 350W or more.

TDP

Items SOPHON SG2042 120W AMD R5 230 20W Intel X520-T2 20W ASM2824 6W Cooler 6W

6.2 TDP Reference Table

6.3 Installing the power supply

• Preparation

Make sure you have a desktop power supply that is suitable for your computer's configuration and power requirements, and that it has a 24-pin motherboard power connector.

Turn off your computer

Before starting the installation, make sure your computer is completely turned off and disconnected from the power supply.

• Open the case

Look carefully at your desktop chassis to locate the power supply mounting area. Usually the power supply is located at the top or bottom of the case, and it is a rectangular metal or plastic box.

Locate the motherboard power connector

Locate a 24-pin power connector on the motherboard, located near the edge of the motherboard.

• Connect the power supply

Insert the 24-pin connector of the power supply plug into the 24-pin power connector on the motherboard. Make sure the plug is perfectly aligned with the connector, then gently push it in until the plug is fully inserted and locked to the connector.

• Connecting Other Power Cords

Depending on your computer configuration and needs, it may also be necessary to connect other power cables, such as hard drive power and graphics card power. These cables usually have specific connectors and connect to the appropriate ports on the motherboard and other hardware devices.

• Organizing the power cables

After connecting all the necessary power cables, make sure they are organized and placed inside the case to avoid blocking fans or other components and to ensure air circulation.

Close the case

After ensuring that all power cables are connected to the correct locations, reinstall the side or top panel of the chassis.

• Connect the power supply and test

Reconnect the power plug and make sure the plug is securely connected to the power outlet. Then turn on the power switch and start your computer. Check that the computer boots up properly and observe that the power supply and other hardware devices are operating properly.

7. Known Issues

This list summarizes the current known bugs of Milk-V Pioneer, and you can keep track of these Issues through this page.

Get updates via our GitHub repository.

(https://github.com/milkv-pioneer/issues/issues)

Download

For More Detail, please check the Download Center (https://milkv.io/docs/pioneer/getting-started/download)