

What is DisplayPort? Compare DisplayPort port and HDMI port

What is DisplayPort? How to distinguish between DisplayPort and HDMI ports. How to choose the appropriate DisplayPort version for the device you are using.

Today, the need to connect and transmit images and sounds from sources through everyday technology devices such as TVs, laptops, and desktop computers is increasing. Therefore, connection utilities are quite commonly used, including the DisplayPort port. So what is DisplayPort port? How is DisplayPort used and how is the DisplayPort connection different from the HDMI port? Let's equip TipsMake with useful knowledge through the article below.

What is DisplayPort?

DisplayPort port is one of the connection standards that has the function of **extracting high quality images and videos** from source devices to laptop screens, TVs, desktop computers, projectors, etc. This device is quite compact with 20 pins, each pin has a different function in data transmission.

DisplayPort is designed to replace VGA, FPD-Link and DVI. DisplayPort is backward compatible with many other connection standards such as HDMI, DVI via active or passive adapters.

DisplayPort standards

DisplayPort has two commonly used connection standards: **Mini DisplayPort** and **Thunderbolt**. Both of these connection standards are available on devices such as laptops, Macbooks, and graphics cards.

In terms of size, these two DisplayPort connectors are the same size. To be able to distinguish these two types of standards, people use separate symbols on the device. The Mini DisplayPort port has a screen icon, while Thunderbolt has a lightning icon to help users avoid confusion when connecting.

1. Mini DisplayPort

Mini DisplayPort is a miniature connection standard, launched by Apple in October 2008. Unlike other Mini connection standards, Mini DisplayPort can provide resolutions up to **2560×1600 WQXGA** such as 4K 4096×2160 Mini Displayport 1.2, DisplayPort 1.1a standards. Mini DisplayPort port can be easily converted to DVI, HDMI, VGA standards.

Mini DisplayPort is often arranged on Apple devices such as Macbook, iMac, Mac Mini, Mac Pro., and on some PC Mainboard lines, Lenovo, Asus Laptops, Dell, HP,.

However, HDCP encrypted content will not be displayed via Mini DisplayPort. Data derived via Mini DisplayPort will be displayed via projectors and TVs in formats such as videos and images.

2. Thunderbolt

Thunderbolt is also known as **Light Peak**, developed by Intel. Thunderbolt integrates two data transfer and display protocols: DisplayPort and PCIe with 10Gbps bandwidth and 10 watt DC power.

Thunderbolt port is integrated on Macbook Pro, Macbook Mini, HDD Box, HDD Docking, Docking stations, Multimedia Devices, etc. Signal transmission is easily done via HDMI, LAN, DVI, VGA conversion cables.

Distinguish features through each version

Since its inception, the DisplayPort port has been improved through many different versions. Let's distinguish the features of each version:

1. **DisplayPort version 1.0-1.1:** Provides bandwidth up to 10.8 Gbit/s (typical transmission data rate 8.64 Gbit/s) with 4 standard link lanes, using fiber optic cable for connection power to the screen for long periods of time without signal degradation.
2. **DisplayPort version 1.2:** This improved version doubles the bandwidth, up to 17.28 Gbit/s in HBR2 mode, increases resolution, increases scale and display color depth, supports resolution 4K at 60Hz, HBR2 and 30-bit primary color.

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1. **DisplayPort version 1.3:** This version increases bandwidth up to 32.4 Gbit/s in HBR3 mode with 8.1 Gbit/s per lane. The total data throughput of the instance is 25.92 Gbit/s. With this bandwidth, it is possible to serve 4K UHD screens at 120Hz at 24 bit/px RGB color, 5K screens at 60Hz with 30 bit/px RGB color or up to 8k UHD 30Hz screens with 24 bit/px RGB color. .
2. **DisplayPort version 1.4:** Supports display with a resolution of 8192 x 4320 pixels or divided into 2 4K screens, 4 Full HD screens.
3. **DisplayPort 2.0 version:** Supports data transfer rates up to 10 Gbit/s, increasing total bandwidth up to 40 Gbit/s.

The DisplayPort port supports signal transmission in multi-channel digital audio. However, unlike the HDMI port, it does not support Ethernet and ARC features on devices.

Pros and cons of Displayport

In terms of connecting and extracting video, images, and sound from source to devices, DisplayPort also has certain advantages and limitations.

Advantages of DisplayPort

Here are the advantages that DisplayPort brings to users:

1. DisplayPort has superior technical specifications compared to HDMI port such as bandwidth, customization, and conversion capabilities.
2. DisplayPort is **highly flexible**, can convert to HDMI, DVI, VGA with common adapters.
3. DisplayPort provides scanning speeds of up to **144Hz**, which is an essential element for gaming laptops.
4. DisplayPort brings high profits to manufacturers because there are no licensing fees.
5. DisplayPort is designed to best support image and audio displays, capable of supporting multiple screens.
6. Can support transmission of multi-channel digital audio signals as well.
7. Users of Macbooks and Mac desktops can use Mini DisplayPort, a port specifically designed for data connection.

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Limitations of DisplayPort

Besides the above advantages, DisplayPort still has certain limitations that you need to know:

1. The length of DisplayPort connection cables is quite limited, maximum 3 meters. Therefore you will only be able to use it in a limited workspace, near the source. When you want to connect power to a device at a distance, it is the minus point of DisplayPort.
2. DisplayPort does not support Ethernet service and ARC features like HDMI does.
3. Because there is no copyright, this may be a limitation affecting the market and quality of DisplayPort cables.

Some notes when using DisplayPort

Because there are many different versions of DisplayPort on the market with the purpose of serving basic needs such as HD1080, 2K, 4K, etc., you need to choose the appropriate DisplayPort type based on your needs.

First, before choosing a DisplayPort port, you need to learn about the compatibility between DisplayPort versions and the device you need to connect. For example, if you are using a monitor with DisplayPort 1.2 or 1.4 port, you should choose a DisplayPort cable version 1.2 or higher to be able to output normal images.

Picture 4 of What is DisplayPort? Compare DisplayPort port and HDMI port

Comparison between HDMI and DisplayPort

For those who regularly use technology devices, it is not difficult to distinguish between DisplayPort and HDMI. The most noticeable difference between these two types of connection devices is that HDMI is used for home devices such as projectors, TVs, monitors, etc. While DisplayPort is often equipped on laptops and desktop computers. and some other information technology equipment.

To clearly distinguish these two types of ports, let's compare them through the following factors.

1. Types of connectors

If we look at the connector, we will see that HDMI and DisplayPort have different sizes and structures that are easy to recognize.

HDMI connector

There are 3 most commonly used variations of HDMI ports: Type A, Type C and Type D. There are also Type B and Type E types but they are less used. Regarding the specific characteristics of the variants as follows:

1. **Type A:** Has 19 pins, used for TV devices, projectors, set-top boxes and laptops.
2. **Type C:** Has 19 pins and is more compact in size, used for tablets and laptops.
3. **Type D:** Has 19 pins with a super small size, used for mobile devices such as tablets but is now becoming less popular.
4. **Type B and Type E:** Have 29 pins, very rarely used because they are not suitable for normal needs.

Picture 5 of What is DisplayPort? Compare DisplayPort port and HDMI port

2. DisplayPort connector

DisplayPort only has two 20-pin design versions with different sizes: the standard version and the smaller Mini DisplayPort. Depending on your needs, you can choose the standard version and a smaller backup cable, Mini DisplayPort, to match the Thunderbolt port on Apple devices.

On many types of devices, people still arrange both HDMI and DisplayPort ports instead of providing only one type of port.

3. Resolution, image quality and bandwidth

DisplayPort port is designed to support video and image extraction to multiple screens with many different versions:

1. **DisplayPort 1.4a** is the most commonly used version with 25.92 Gbps bandwidth, supporting 8K UHD displays (7680 x 4320 pixels) at 60Hz or 4K UHD displays (3840 x 2160 pixels) at 60Hz. 120Hz supports HDR.
2. The latest version of **DisplayPort 2.0** is capable of providing bandwidth up to 77.4 Gbps, 4K HDR screen resolution at a maximum refresh rate of 144Hz, a maximum resolution of 16K (15360 x 8460 pixels) at 60Hz and provides Provides additional backward compatibility features.

Picture 6 of What is DisplayPort? Compare DisplayPort port and HDMI port

For HDMI ports, the most commonly used version is **HDMI 2.0b** which supports 4K, 60Hz resolution. **HDMI 2.1** version can increase 4K refresh rate to 120Hz and increase bandwidth from 18Gbps to 48Gbps.

Unlike DisplayPort, HDMI supports ARC feature, you can buy versions that include Ethernet up to 100Mbps. The HDMI standard also supports CEC allowing users to control devices remotely.

4. Sound

As for the audio extraction function, there is no big difference between these two types of ports. Both DisplayPort and HDMI support digital audio up to **24 bit and 192kHz** .

5. Cable length

HDMI cables are only 1-2m long, so you can only use them to connect over very limited distances. When you want to use it for longer distances, you need to use it in combination with **a signal booster or active cable** to amplify the signal. There is no maximum length for an HDMI cable, but it will typically be about 30m longer than DisplayPort.

DisplayPort cables can transmit 4K video at a distance of up to 2m using an active cable. Active cables can be used to transmit over a distance of 15m, but image resolution quality will be limited to 1080p (Full HD). In fact, the DisplayPort cable can handle data transmission with a resolution of 2560 x 1600 pixels up to a distance of 5m without any problems.

Frequently asked questions about DisplayPort

DisplayPort and HDMI ports are still quite commonly used with devices. There are some frequently asked questions surrounding these two types of ports as well as questions about using DisplayPort properly. We will answer some of your questions below.

Is DisplayPort better than HDMI?

Based on normal usage needs, both HDMI and DisplayPort demonstrate stable features, well supporting user requirements. In terms of the ability to display high quality images and videos, DisplayPort is considered better than HDMI. For those who need professional graphics processing and gamers who play heavy games, DisplayPort is a top choice.

Does the DisplayPort port fit into the USB port?

You cannot plug a DisplayPort cable into a USB port and vice versa. Because DisplayPort is a proprietary port designed only for DP (DisplayPort) cables. The USB connection ports on the devices are designed to be compatible with USB connectors.

Epilogue

Above is all the information to help you better understand what DisplayPort is and what the DisplayPort port is for. At the same time, you also have more basis to distinguish between DisplayPort and HDMI port. Choosing the type of DisplayPort port will depend on your intended use. If you have any questions when choosing to buy technology products, please contact TipsMake for the most dedicated advice and support.

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