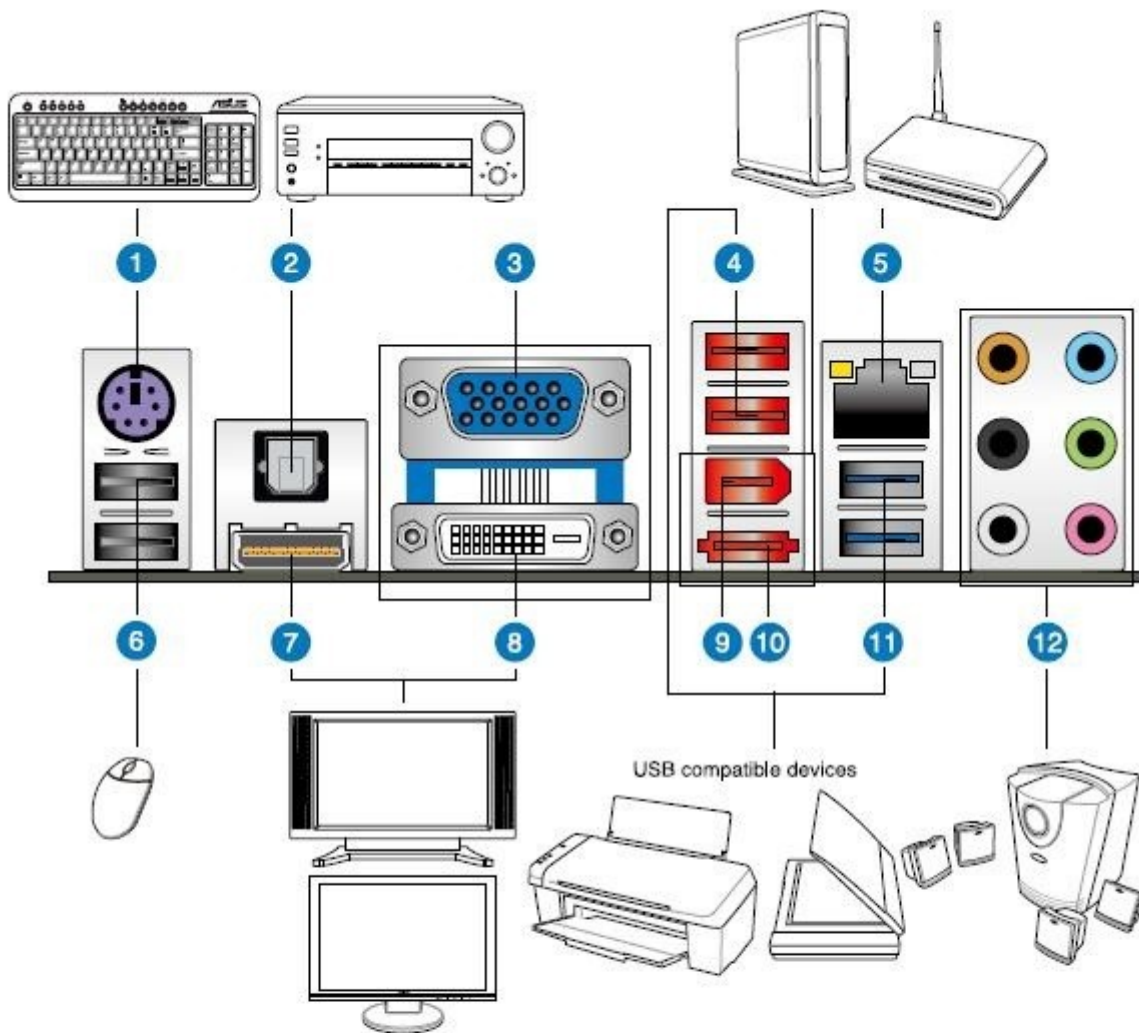


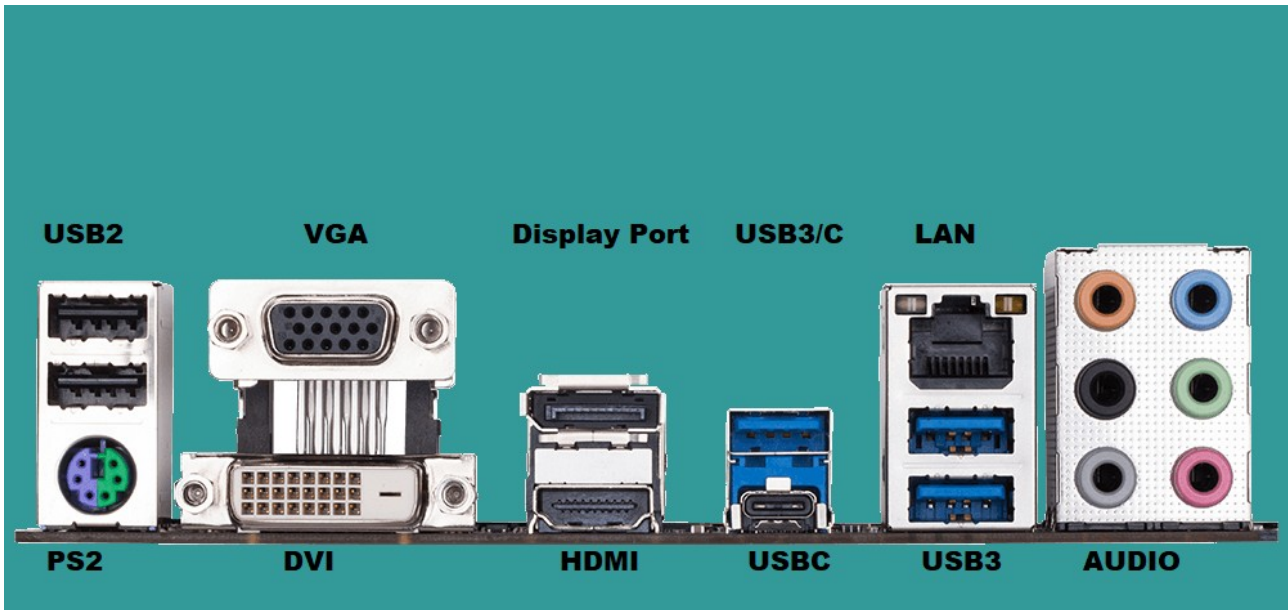
# Computer Cables & Connectors Types and Descriptions

Updated 3 April 2022.

## Rear panel connectors



Rear panel connectors	
1. PS/2 keyboard port (purple)	7. HDMI out port***
2. Optical S/PDIF Out port	8. DVI out port
3. VGA out port	9. IEEE 1394a port
4. USB 2.0 ports 3 and 4	10. External SATA port
5. LAN (RJ-45) port*	11. USB 3.0 ports 1 and 2
6. USB 2.0 ports 5 and 6	12. Audio I/O ports**



**Rear Connectors on a Modem/Router**



**Left to right:**

Power / on/off Switch / 2 USB ports / Reset button /

Four Yellow Ethernet Ports

One Blue WAN Port

ADSL/NBN Port (incoming telephone line)

Telephone Handset

## **VIDEO CONNECTORS: VGA – DVI – HDMI – USB-C – Display Port**

### **1. VGA – Video Graphics Array -**

Also known as D-Sub. Analog Video Cable used to connect PC to Monitor.



### **2. DVI – Digital Visual Interface -**

Digital Video Cable used to connect PC to Monitor.



### **3. HDMI – High Definition Multimedia Interface -**

This technology carries the same video information as DVI but adds the capacity for digital audio and control signals as well. This connector is technically described as a Type A HDMI connector.



The HDMI Micro connector is a Type D HDMI connector measuring 6.4 mm x 2.8 mm. This micro connector is the smallest of all HDMI connectors and has the same 19-pin configuration as the standard HDMI A and C connectors. Using an adaptor, this connector can be used with a standard HDMI cable.



The HDMI Mini connector is a Type-C HDMI connector measuring 10.42 mm x 2.42 mm. This mini connector has the same 19-pin configuration as the standard HDMI A connector and is intended for use with portable electronic devices. Using an adaptor, this connector can be used with a standard HDMI cable.



#### **4. Display Port:**

Display Port is the video transfer standard that most people have never heard of. At a basic level, it's nearly identical to HDMI. The current iteration of Display Port can transfer 8K video at 60 hertz and audio to TVs and monitors (HDMI 2.1 supports 10K). It comes in a large and mini form factor (like Mini HDMI).

Display Port cables are used to provide video and audio connectivity between a host device (typically a PC) and a display.



## How Does Display Port Differ from HDMI?

The Connectors are NOT the same.

Both HDMI and Display Port are digital systems, originally designed to replace older analogue systems such as VGA. They both have the same purpose – to transmit high-definition digital audio and video to a display from a source device – but this does not mean that they are the same.

There are understandably some key similarities between the two, such as image quality, but their differences should not be overlooked. Display Port and [HDMI cables](#) are intended for different purposes, feature different connectors, and cannot be used interchangeably.

Display Port is primarily used on PCs, laptops, and tablets for video transmission.

There are also several additional features that make it easier to differentiate between the two. Display Port offers the functionality to drive more than one display with a single cable, making it highly useful for professional applications. Conversely, HDMI can only drive a single display per cable. However, HDMI can support an ARC (Audio Return Channel) which allows sound to be sent from the display to the source device. Display Port does not offer this capability.



## **Display Port 2:**

The Video Electronics Standards Association (VESA) announced the newest iteration of Display Port technology: Display Port 2. This new standard will support resolutions up to 16K and use either traditional Display Port connectors or USB-C.

Unlike HDMI, Display Port has a fancy “daisy chain” feature. You can plug one monitor into your computer via Display Port, and then run Display Port cables from that first monitor to the other screens in your setup.

Display Port 2 can also work over USB-C.

USB-C is set to replace the Display Port and HDMI ports on almost all consumer-grade electronics (it’s already the standard on MacBooks). This is possible because USB-C cables support what are called alt modes. This is a little confusing, but every USB-C cable contains four data transfer lanes, and each lane has a bandwidth of 20 Gbps. In alt mode, the direction of these lanes can be altered, so a computer can send data at a rate of 80 Gbps to, say, a monitor.

## **5. Thunderbolt 2:**

Mostly seen on Apple laptops and Apple Macs these cables are high speed and are capable of carrying Data, video and other information.

There are 2 current types of Thunderbolt, the older version Thunderbolt 2 is seen below but this can also be confused with Mini Display ports as they look identical and only visual difference is the picture beside the port. Thunderbolt 2 (left) has a lightning symbol.

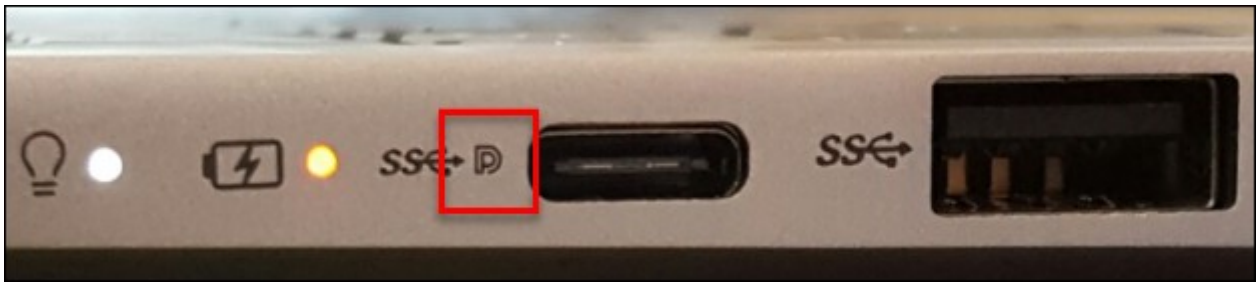


## **6. USB C and Thunderbolt 3**



In the past, the Thunderbolt and USB standards were entirely separate, leading to confusion and ultimately frustration over ports, plugs, and cables. Thankfully, with the creation of USB-C and Thunderbolt 3 technology, the two are now largely interchangeable. While there are some key differences between Thunderbolt and USB-C, there's mostly good news on this front. USB-C cables are now entirely compatible with Thunderbolt ports, and USB-C ports are compatible with Thunderbolt cables.





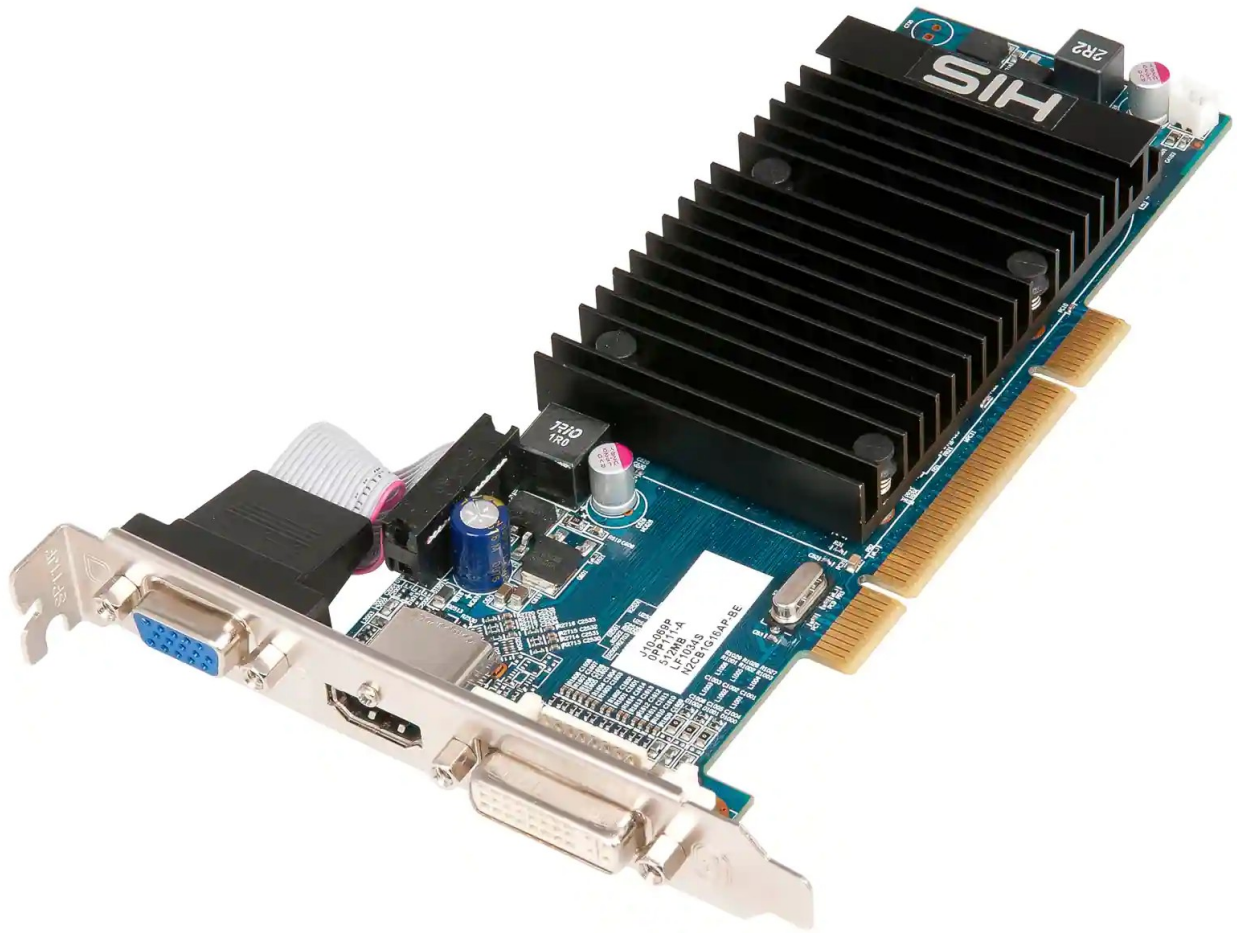
### What does the D-shaped icon next to a USB-C port mean

It is a Display Port icon, which indicates that the port supports an Alternate Mode, and a simple passive USB-C to DP cable (or a monitor that does a USB-C connection in DP mode) would work. Not all USB-C connectors support Display Port, so it is a very helpful marking to see “printed” on a device.

### What does the ‘SS’ icon next to USB ports mean

#### Super Speed

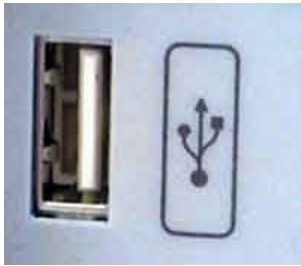
USB (Universal Serial Bus) 3.0 was released in 2008 with approximately 10x the speed of USB 2.0 and was coined “Super Speed”. Because USB 3.0 utilised some of the same connector types as USB 2.0, along with a few new connectors, it was suggested that USB 3.0 cables be made blue to differentiate them.



PC Video Card (GPU)  
VGA – HDMI – DVI ports

## USB CONNECTORS – Universal Serial Bus

A universal serial bus (USB) connector is a connector between a computer and a peripheral device such as a printer, monitor, scanner, mouse or keyboard



Plug (Male)	Socket (Female)	Name
		<b>USB Type A</b> (Standard A USB) 12mm x 4.2mm
		<b>USB Type B</b> (Standard B USB) 8mm x 7mm
		<b>Mini USB 4 Pin</b> (USB Mini-B) 4.5mm x 3.5mm
		<b>Mini USB 5-Pin</b> (USB Mini-B) 7mm x 3mm
		<b>Micro USB</b> (USB Micro-B) 7mm x 2mm

There are several different types of USB Connectors:

		<b>USB 3.0 Type A</b> 12mm x 4.2mm
		<b>USB 3.0 Type B</b> 8mm x 10.5mm
		<b>USB 3.0 Micro B</b> 12.5mm x 2mm
		<b>USB 3.1 Type-C</b> (USB-C) 8.2mm x 2.4mm

## Identifying the USB 3.0 port on your Laptop / Computer

If you have a USB 3.0 port on your system, it's good to be aware which port will give you the better performance. There are two main ways by which you can't identify your USB 3.0 port: by the logo and by the port colour.

USB 3.0 was also marketed as Super Speed USB. Most manufacturers use the Super Speed USB logo to let you know that you're dealing with a USB 3.0 port. If you see the SS prefix in front the regular USB logo, you successfully identified the USB 3.0 port.



**Note:** If you own a brand new laptop / PC, your manufacturer might have removed the SS prefix from the icon. This is common among newer systems in which every port is USB 3.0.

You might also encounter the USB logo followed by a charging icon. This means that the port is capable of utilising USB 3.0's superior transfer rates to charge your mobile devices faster.

If you're lucky, you'll find that your computer will still provide power to this charging port while the system is turned off. This will enable you to use this port similar to a wall plug and charge your mobile devices without having to turn on your computer.

USB 3.0 is Blue and this one has the power icon



More symbols you will see:



## USB Versions

There have been several major USB standards, USB4 being the newest:

- USB4:** Based on the Thunderbolt 3 specification, USB4 supports 40 Gbps (40,960 Mbps).
- USB 3.2 Gen 2x2:** Also known as USB 3.2, compliant devices are able to transfer data at 20 Gbps (20,480 Mbps), called *Superspeed+ USB dual-lane*.
- USB 3.2 Gen 2:** Previously called USB 3.1, compliant devices are able to transfer data at 10 Gbps (10,240 Mbps), called *Superspeed+*.
- USB 3.2 Gen 1:** Previously called USB 3.0, compliant hardware can reach a maximum transmission rate of 5 Gbps (5,120 Mbps), called *SuperSpeed USB*.
- USB 2.0:** USB 2.0 compliant devices can reach a maximum transmission rate of 480 Mbps, called *High-Speed USB*.
- USB 1.1:** USB 1.1 devices can reach a maximum transmission rate of 12 Mbps, called *Full Speed USB*.

Most USB devices and cables today adhere to USB 2.0, and a growing number to USB 3.0.

### **A word of Caution:**

A “Cheap” USB Cable Can Lead to Disaster.

Cheap cables have more significant problems than slow transfer speeds and a lack of power.

The problem occurs because of USB-C’s design. The cables themselves are supposed to regulate how much power can go through them. USB-A ports cannot pump out as much energy as some devices using USB-C demand.

A properly designed and licensed cable will limit the amount of power a device can draw. Regulating power output will protect the cable, the device, and the charging port. Unfortunately, many cables on the market (including some that shipped out with cellphones) don’t meet these standards.

Users should look for [USB-IF certified](#) cables to ensure their devices won’t get damaged.

## **APPLE Connectors:**

Connectors you may find on your Apple Device. (pictures are shown above)

Thunderbolt 4 (USB-C), Thunderbolt / USB-4, Thunderbolt 3, Thunderbolt 2

USB-3

USB-A

HDMI

Mini Display Port

SD Card

Ethernet

FireWire (IEEE 1394) being replaced by Thunderbolt.

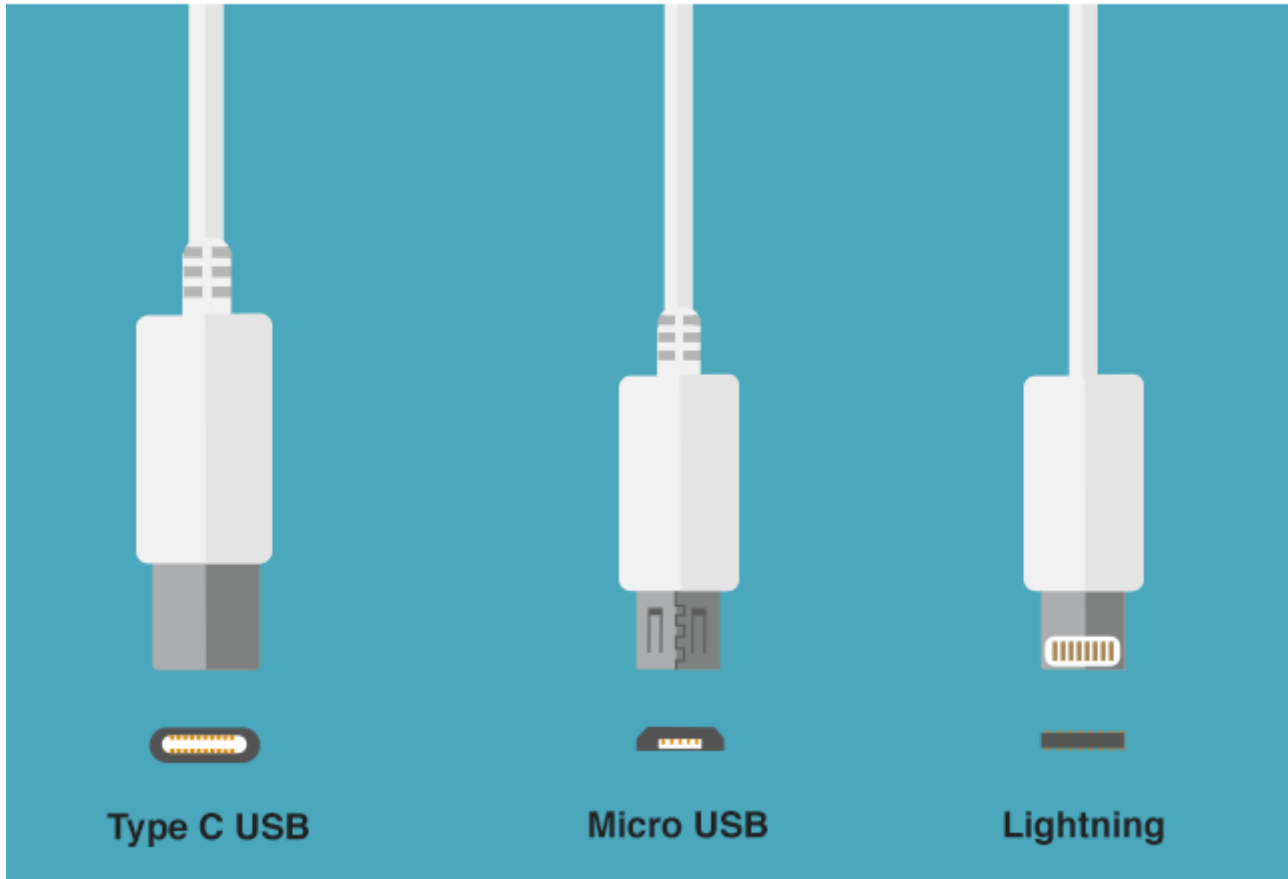
30 pin connector for older iPads

Lightning - Charging connector for Apple Telephones and iPads



Firewire port.

## The most common charging connectors

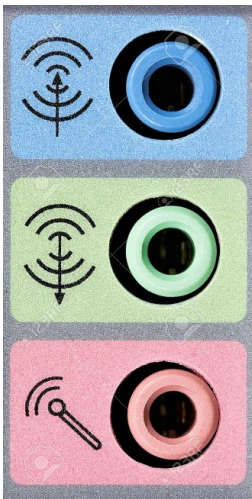




## **AUDIO Connectors:**



3.5 mm Audio Cable



•LINE IN - Blue audio port: MP3 player, CD player, DVD player, turntable, electric guitar etc (line-in port to play and record sounds from the above devices)

**LINE OUT: Green audio port: computer speakers or headphones**

•LINE IN - Pink audio port: microphone



## **SPDIF Optical Audio Cable**

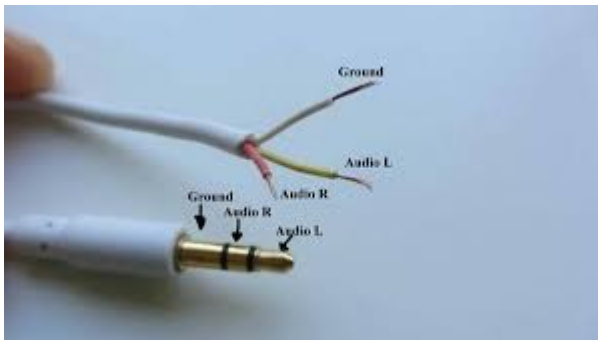
S/PDIF (Sony/Philips Digital Interface) is an audio transfer format interface. It transfers digital audio signals from one device to another without the need to first convert to an analog signal, which can degrade audio quality.



For some laptops with only one audio jack, you will need this adaptor for Mic and Headset. Notice the Plug has four segments.



Four segment audio plug used on newer laptops with only one audio plug used for both speaker and Microphone.



Three segment Audio Plug.



Various other types of audio plugs.

## Laptop Connectors



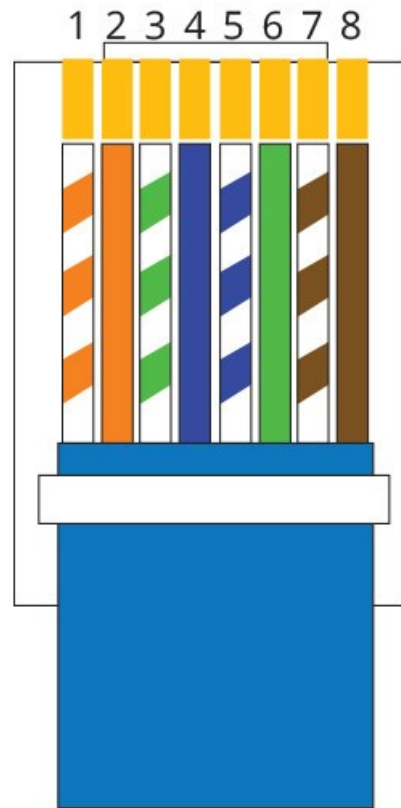
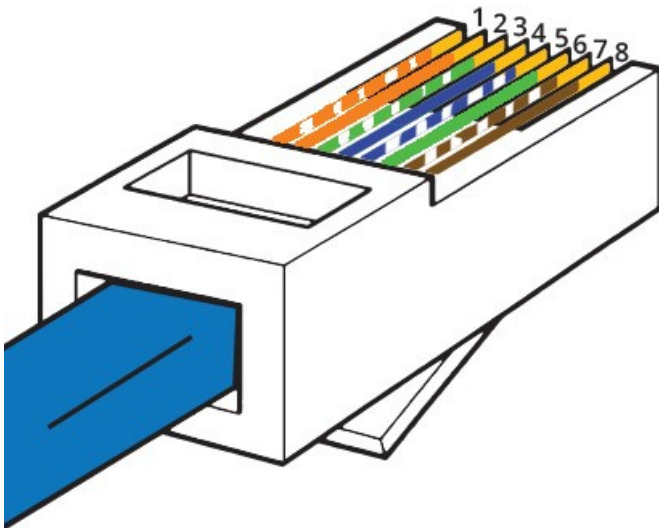
## **ETHERNET**

Ethernet is the technology for connecting devices in a wired local area network (LAN) or wide area network (WAN). It enables devices to communicate with each other via TCP/IP protocol, which is a set of rules or common network language.

*RJ-45 Ethernet port and plug*



# RJ45 Pinout T-568B



- |                 |                |
|-----------------|----------------|
| 1. White Orange | 5. White Blue  |
| 2. Orange       | 6. Green       |
| 3. White Green  | 7. White Brown |
| 4. Blue         | 8. Brown       |

**You can make your own Ethernet cables if you have the right tools. This is the preferred wiring.**

## PS/2

### Keyboard & Mouse

Purple PS/2 port: **keyboard**

•Green PS/2 port: **mouse**  
not interchangeable



On some older computers you may find the keyboard and mouse are still using the PS/2 Connectors. Newer computers are using USB. There is a USB Adaptor.



## Adaptors

Various Adaptors are available.

Display Port to VGA



HDMI to DVI



DVA to VGA



## Display Port to DVI



This is just a sample. There 100's more

Most new laptops do not come with an Optical Drive  
(CD/DVD drive)

External Optical Drive which connects to USB





## Older Connectors:

Serial or COM-1

DB9. Used for older dial up modems and older mice. Replaced by USB



Parallel

DB25

Used for older printers

Replace by USB



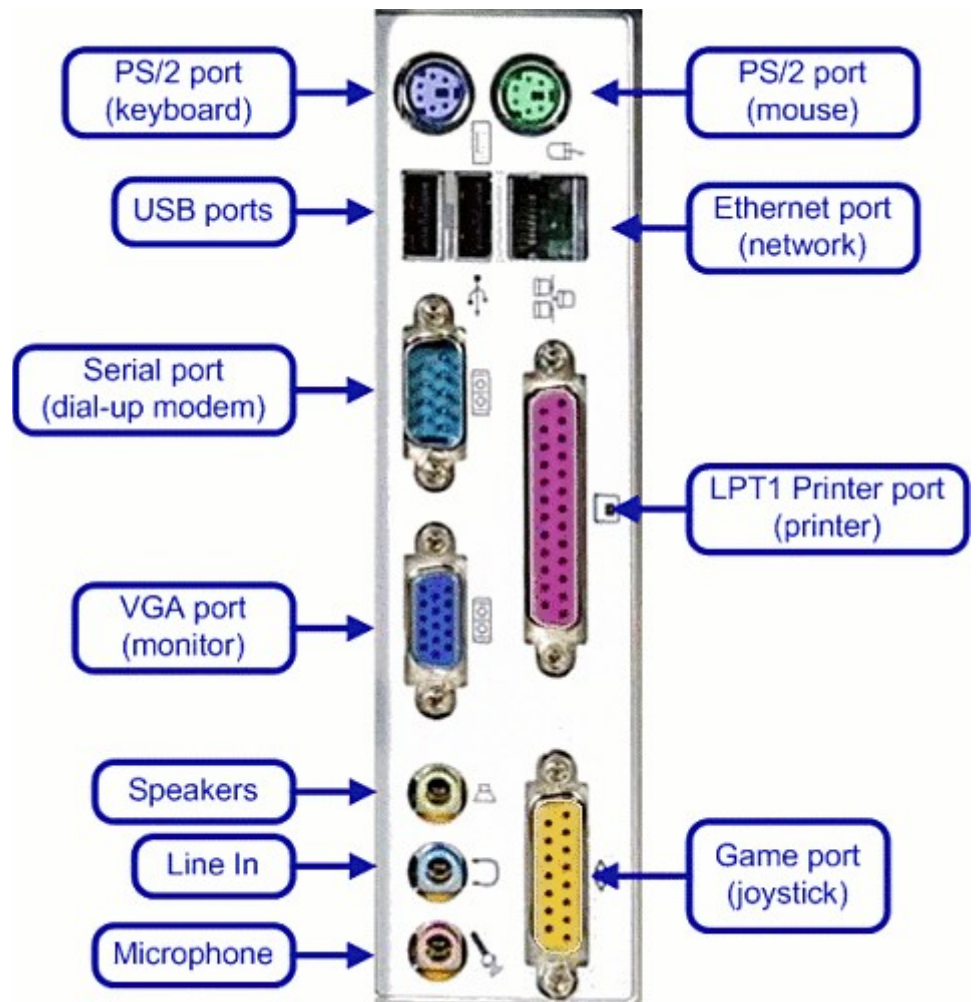
Older type printer connection to DB25



USB to Parallel printer connector.  
Old style printers



Older PCs back panel



# Ultimate Chart of Computer Connectors and Ports

Updated for 2016

## USB, Keyboard and Mouse



## Storage / Disk



## Network / Communications



## Audio



## Video



## Power



Brought to you by:



PRR Computers, LLC  
(239) 244-1579  
www.prrcomputers.com



LegitUpdates.com

The safe source for real software updates.



This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.