

# USB Explained

## CABLE EDU

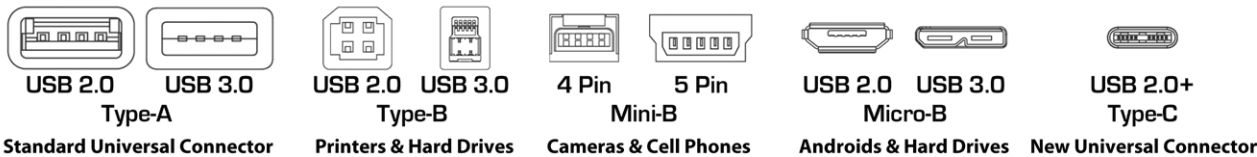


## What is USB?

Universal Serial Bus (**USB**), is an industry standard plug-and-play type of connection for many kinds of devices. Generally, USB refers to the types of cables and connectors used to connect these many types of external devices to computers. USB specifies the physical interfaces and protocols for connecting, data transferring, and powering of hosts.

## Ports and Connectors

On computers, tablets and peripherals you will typically find at least one of these types of USB ports. On newer devices, USB-C is preferred for its small size, fast data transfer rate and ability to carry up to 240W of power. USB-C cables can also carry high-resolution 4K and 8K video.



## Active Optical vs. Active Chip vs. Passive USB Cables

A passive USB cable is a simple cable assembly with an USB connector at each end, and they have a limited range. Active cables on the other hand include a signal booster that enables video and audio to be transmitted over longer distances. Active cables sometimes require a power supply. Active optical cables are fiber optic cables with optoelectronic modules in the connector heads that convert electrical signals to light. This allows for much thinner cables and far greater cable lengths.

## USB Standards and Labeling Issue

The USB naming scheme starting with 3.0 has become quite convoluted with all of its versions and revisions. To help aid with that, here are a couple of charts that detail every USB version as simply as possible.



## USB Versions, Transfer Speeds, and Namings

STANDARD	ALSO KNOWN AS	YEAR	MAX TRANSFER SPEED
USB 1.0	Low Speed USB	1996	1.5 Mbps
USB 1.1	Full Speed USB	1998	12 Mbps
USB 2.0	Hi-Speed USB	2001	480 Mbps
USB 3.2 Gen 1	USB 3.0, USB 3.1 Gen 1, SuperSpeed	2008	5 Gbps
USB 3.2 Gen 2	USB 3.1, USB 3.1 Gen 2, SuperSpeed+, Super Speed 10Gbps	2013	10 Gbps
USB 3.2 Gen 2x2	USB 3.2, SuperSpeed 20Gbps	2017	20 Gbps
USB 4	USB4 Gen 2x2, USB4 20Gbps	2019	20 Gbps
USB 4	USB4 Gen 3x2, USB4 40Gbps	2019	40 Gbps
USB 4 v2.0	USB4 Gen 4	2022	80 Gbps