

# UNIVERSAL SERIAL BUS (USB)

## Introduction and development

The Universal Serial Bus (USB) interface was developed in the 1990s to provide a uniform interface for all devices that needed to be connected to a computer. The introduction of this universal interface was in response to the growing number of different peripherals, each of which used its own specific interface and cable that were not compatible with the computer.

USB technology has evolved significantly over the years to offer higher speeds, improved performance and more versatile connectivity. While the original USB 1.0 cables only allowed a maximum transfer rate of 12 Mbps and the choice of connectors was limited to type A and type B. Today, speeds of up to 80 Gbps can be achieved.

## Properties and application

The USB transmits the data bit-serially. This means that the individual bits are transmitted one after the other differentially via a symmetrical twisted pair. This largely eliminates electrically radiated interference. The electrical connection is a direct connection (point-to-point connection).

USB is suitable for many devices such as mass storage devices, printers, scanners, webcams, mice, keyboards, active speakers, audio interfaces and monitors. For many devices, USB can also take over the complete power supply.

## The most popular USB interfaces at a glance



### Type A-2.0 / 3.0

Standard interface for computers and chargers. Versions 2.0 and 3.0 are cross-compatible. (2.0 plug in 3.0 socket, 3.0 plug in 2.0 socket) The performance corresponds to version 2.0 in both cases.



### Type C

Trendsetting universal interface found on almost all mobile devices, nowadays. The connector can be plugged in both directions. Type C is an „all-rounder“ that transmits data and power and can support video output.



### Type B-2.0 / 3.0

Interface for larger peripheral devices (e.g. printer)



### Type Micro-B

Interface that is still used with very many devices



### Type Mini-B

Interface used on older mobile phones, navigation systems and digital cameras.

## USB standards at a glance

	USB 2.0	USB 3.2 Gen 1x1	USB 3.2 Gen 2x1	USB 3.2 Gen 2x2	USB4	USB4 Version 2.0
<b>Transmission speed</b>	480 Mbps	5 Gbps	10 Gbps	20 Gbps	40 Gbps	80 Gbps
<b>Interfaces</b>	USB-A / B miniUSB-A / B microUSB-A / B	USB-A USB-C microUSB	Type A Type C	Type C	Type C	Type C
<b>Further (former) designations</b>	High Speed	(SuperSpeed)	(SuperSpeed+)	(SuperSpeed+)		
<b>Power</b>	500mA/5V	900mA/5V	Type A / B: 1,5A/5V Typ C: 3A/5V	Type A / B: 1,5A/5V Typ C: 3A/5V	5A/5-20V	5A/5-20V
<b>Supported standards</b>					PCI Express, DisplayPort 1.4 Alternate Mode	PCI Express, DisplayPort 1.4 Alternate Mode, Thunderbolt 3
<b>Cable</b>	Twisted Pair copper	Twisted Pair copper	Twisted Pair copper	Twisted Pair copper MIKRO-KOAXIAL	MIKRO-KOAXIAL	MIKRO-KOAXIAL

We offer a wide range of high quality USB products with different connectors and versions. Download our catalogue or contact us for advice.



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