

Charging from USB Ports & Hubs - Some Background Information

The fast-growing market for USB charging devices means there are now lots of options available with a wide range of features. The main features you need to consider are:

- **Power**—are you charging a device that needs a normal amount of power, or one that needs high power?
- **Speed**—how important is this to you and are you willing to pay more for it?
- **Number of ports**—how many devices do you want to charge at the same time?

Power

- Most USB charging stations provide 1A or 2.1A of power per USB port. 1A ports are fine for mobile phones, but aren't suitable for tablets. To ensure you can charge a range of devices, it's best to go with 2A ports at minimum.
- High-power USB ports—2.4A to 5A—are available. 2.1A ports are normally sufficient, but a high-powered port will charge your device quicker.
- Some charging stations are able to detect the device connected and provide the optimum amount of power.

Quick definition—what does 'A' mean?

When we talk about '1A', '2.1A' and so on, we mean the amount of electrical current, which is measured in amps (hence the 'A').

Not all electrical devices need the same current to work, and the charger the device comes with will be made to provide the correct amount and no more.

Speed

- Generally, the more power the USB port provides, the faster the charge. So, if you need to charge your device quickly, choose a charging station with high-speed ports (2.4A or 5A).
- Charging a device with less than its optimum current prolongs the time it takes to fully charge the battery, so make sure your charging station provides the power you need.
- Ports on USB charging stations are dedicated charging ports, meaning they provide faster speeds than the ports on PCs and laptops.
- Many Android smartphones incorporate Quick Charge technology, a feature that ensures devices are charged at the fastest rate possible. So, if you have an Android device, combine it with a high-speed charging station and you're away!

Number of Ports

- USB charging stations are designed to charge multiple devices at the same time, and so come in a range of configurations—2-port, 3-port, 4-port and so on. Which one you choose depends on how many devices you'll want to charge.
- Many charging stations will have a maximum output, where the power shared across all its ports will reach a limit. This might mean some devices can only be charged on a lower current than they need.

Can I use a USB hub as a charging station?

It's possible, if the hub has its own AC power source and is capable of charging. A USB hub powered from a USB port on a computer will still charge, but at very low power. It will never be as efficient as a charging station or an AC charger.



An example of a Powered USB Hub

Many computer USB ports can only generate a small amount of power (0.5A or less) for each port.

Some also go into low-power states after being left idle for a time, which means they stop charging altogether.

Can a USB power module charge multiple devices?

Yes. USB power modules are designed to be able to charge multiple devices at the same time.

While voltage will be standard across the different USB ports, some modules 'share' their current across ports. This may result in slower charging times when more devices are connected.

Also keep in mind that different devices have different optimum currents from which to charge. Charging with a lower-than-optimum current can reduce charging time.

Why are some USB chargers faster than others?

This relates to the current that a charging point supplies, measured in amps.

Both voltage and current affect how quickly a device will charge. In order to protect electronic equipment from overloading, chargers take the UK's 240V electricity supply and convert it to a standard 5V.

However, the current (in amps) can vary from charging source to charging source. Computers typically only allow 0.5A of current, making charging quite slow and laborious. Plugs into which you insert a USB charging cord usually offer 1A. Specialised USB charging modules can offer anything from 1–5A.

The cable that you use to charge a device can also affect speed. Thinner cables reduce amperage, leading to longer charging times.

REFERENCE: <https://www.cmd-ltd.com/advice-centre/usb-chargers-and-power-modules/usb-and-power-module-product-help/what-to-consider-when-buying-a-usb-charging-station/>