Difference Between a USB Type-C and a Micro-USB Connector

USB-C Connector (USB Type-C is the official name) Increasingly Being Used in Modern Smartphones and Other Computing Devices. USB-C is not like the classic USB connectors(including the microUSB and

MiniUSB connectors). USB came as a replacement for the large connectors to replace the serial ports, parallel ports, the port for PC mouse and keyboards. USB Type B was designed for the larger, desktop-sized devices. The USB Mini-B was adopted for much smaller devices. It has two digital signal pins and power, ground pins that we find on Type B connectors. The thing that was added in the Mini-B generation was USB On-the-Go (OTG). USB was originally designed as a Host/Target protocol. One host device (PC) could talk to up to 127 devices per port via hubs. But the targets could not talk directly. That was enough great for a PC for a mouse or keyboard. Slowly, things got smaller. The USB standard forum and the small device manufacturers engineered two improvements. One is the USB Micro B connector and the second is the “On the Go (OTG)” protocol.

USB Type-C is Completely a Different Concept

USB Micro B introduced a thinner, rugged connector, with more duty cycles. It included the contact springs to ensure a tighter connection without making the connector longer. USB Micro B was good enough till USB 3.0 came. USB 3.0 added four new pins and an extra ground signal. It had (and has) a Type Micro B version with that extra connector extension. USB 3.0 cables were not backward compatible. In this background, we got the Type-C connector. **USB-C is a 24-pin USB**

connector system, which uses rotationally-symmetrical connector. So, the complexity of USB Type-C became more closer to the HDMI connectors.

Difference between a USB Type-C and a micro-USB connector is in the difference of the pins (and wires). For having so many pins (or designed to have), USB Type-C can support video, audio, complex data exchange, OTG, charging. A micro-USB connector is limited by functions. There is no actual difference of a micro-USB cable and a USB Type-C cable which handles only charging/power. USB-C has maximum power rating set at 100W. So, we can see that the USB Type-C a complex and too much-advanced system. We can not compare a USB Type-C and a Micro-USB connector beyond charging and OTG. Micro-USB to USB Type-C connector exists – they can support only

power, basic data transfer protocols and OTG.

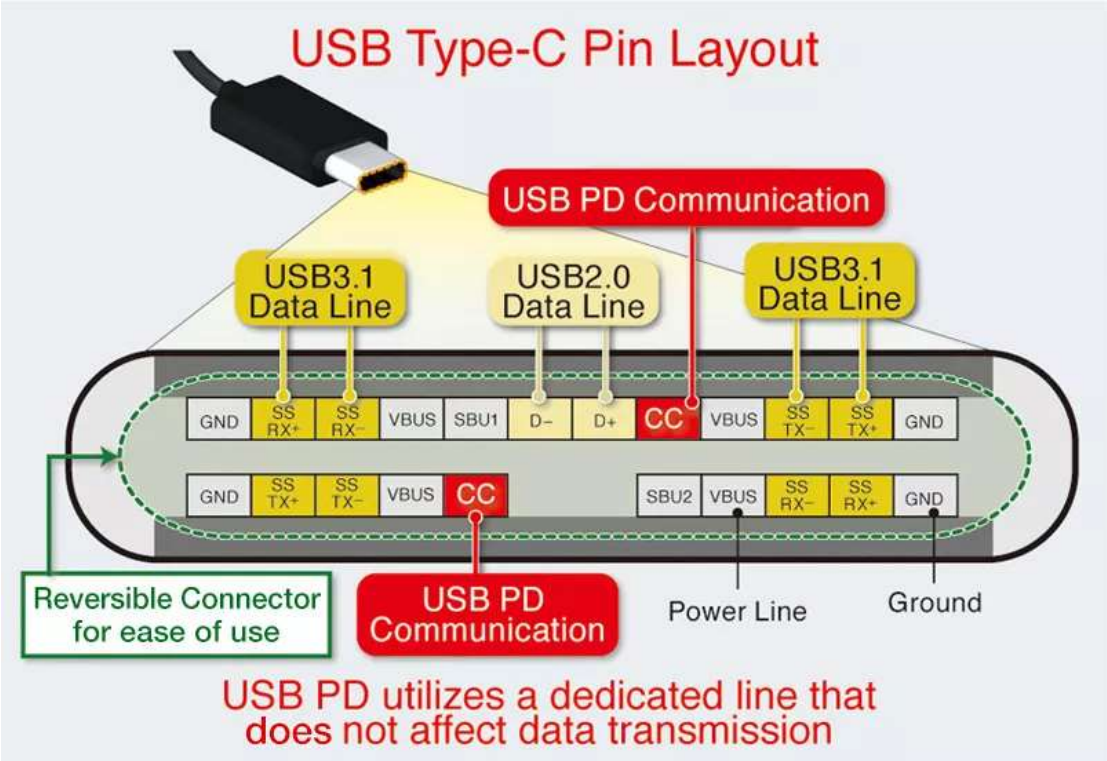
Types of USB Type-C Connectors

There are at least five Alternate Mode partner specifications for the USB Type-C, namely – DisplayPort Alternate Mode, Mobile High-Definition Link (MHL) Alternate Mode, Thunderbolt Alternate Mode, HDMI Alternate Mode and VirtualLink Alternate Mode. Also, the vendors may support proprietary modes for use systems like the dock. The USB Implementers Forum works with the Alternate Mode partners to make sure that the ports are properly labelled with respective logos. Other supported

modes are – Audio Adapter Accessory Mode, Debug Accessory Mode and in future Ethernet Accessory Mode.

USB 3.1 Type-C supports DisplayPort, Mobile High-Definition Link (MHL), HDMI and Thunderbolt. These cables are marked with standard trident SuperSpeed or the SuperSpeed+ USB logo.

Technical Complexity of the USB Type-C Connectors



USB Type-C gives the advantage to make the device thinner with only one port – a hub can be used to translate it to perform MHL, Audio, DisplayPort, Thunderbolt, Basic data transfer, Power etc functions. But, USB Type-C removes the simplicity of the traditional USB. **We must warn the readers** – it is not just easy to buy any USB Type-C connector or converter. USB Type-C made the USB connectors great but it near rubbed out the "universal" nature of this port & connector. Not all USB Type-C ports and cables are

equal. Ideally, you need a USB 3.1 Type-C cable which supports OTG, DisplayPort, Thunderbolt and HDMI.

Compatibility matter with the with audio adapters not easy. Devices which have omitted the 3.5 mm audio jack, designed to use the USB-C port can be used to connect the headphones. There are mainly two types of USB-C adapters – active adapters with DACs, passive adapters without DACs.

Readers must be aware that a USB OTG adapter which works Samsung's USB Type-C port may not work with that of OnePlus. That is because till date most of the larger devices including storage uses the larger USB A plugs. Many cables which claim to support USB-C are not compliant to the standard. Using these cables may have a potential consequence of damaging devices