

What is Display Port?

DisplayPort (**DP**) is a digital display interface standard primarily used to connect a computer to a monitor. It was developed by the Video Electronics Standards Association (**VESA**) and was designed as a successor to VGA, DVI, and LVDS. DisplayPort offers several advantages over other display interface standards, including support for high resolution displays, high refresh rates, and the ability to transmit audio and video over a single cable.

Ports and Connectors

DisplayPort connectors come in two sizes: Standard DisplayPort (**DP**) and Mini DisplayPort (**mDP**). While these connectors differ in shape, they both have 20-pins and support the same features. The Standard DP connector is typically used by PCs, laptop and displays. The smaller mDP connector was originally developed by Apple in 2008 and merged into the DisplayPort 1.2 specification in 2010.



DisplayPort Connector



Mini DisplayPort Connector

Active Optical vs. Active Chip vs. Passive DP Cables

A passive DP cable is a simple cable assembly with an DP 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.

Display Stream Compression (DSC)

Beginning with DP 1.4 cables, DSC 1.2a is supported. DSC is a visually lossless compression technique developed by the Video Electronics Standards Association (**VESA**) for use with displays to achieve larger resolutions at higher refresh rates. DP 2.1, for example, is only rated for resolutions up to **5K180Hz** and **8K85Hz**, but with DSC DP 2.1 cables can achieve resolutions up to **8K120Hz** and even **16K** with no loss in perceived visual quality.

Multi Stream Transport (MST)

Beginning with DP 1.2, Multi-Stream Transport allows multiple displays to be connected to a single DP on a desktop PC or laptop. It does this by combining multiple video signals into a single stream (a process known as **multiplexing**) and sending it over a DisplayPort cable to a device that unbundles the signal.

DisplayPort Versions and Standards

SPECIFICATION	YEAR	MAX RESOLUTION REFRESH RATE*	MAX DATA RATE	BIT RATE CLASS
DP 1.0	2006	1440p @ 60Hz	5.18 / 8.64 Gbps	RBR/HBR
DP 1.1	2007	1440p @ 60Hz	8.64 Gbps	HBR
DP 1.2	2009	4K @ 60Hz	17.28 Gbps	HBR2
DP 1.3	2014	4K @ 120Hz / 5K @ 60Hz	25.92 Gbps	HBR3
DP 1.4	2016	4K @ 120Hz / 5K @ 60Hz	25.92 Gbps	HBR3
DP 1.4a	2018	4K @ 120Hz / 5K @ 60Hz	25.92 Gbps	HBR3
DP 2.0	2019	4K @ 240Hz / 8K @ 60Hz	77.36 Gbps	UHBR
DP 2.1	2022	4K @ 240Hz / 8K @ 60Hz	77.36 Gbps	UHBR10/UHBR20

*Higher resolutions and refresh rates are possible using Display Stream Compression (DSC)