**Important Notes:**

**Blanking Plate:** Tyo expansion slot ko muni hune metal frame to ensure airflow between components.

**Peripheral Cable:** Allows two bus interfaces to connect with each other. Eg. iPhone charger has two connectors.

**Keying:** Extra design to in the ports and cables to ensure that the cable is inserted in a right manner.

**Kbps:** Kilobits per second

**KBps:** KiloBytes per second

**Host Controller:** Manages the ports. Can manage upto 127 devices.

**USB 2.0:** Speed **480** Mbps and **half duplex**

**USB 3.0 Gen1:** Speed **5** Gbps and **full duplex**

**USB 3.0 Gen 2.1:** Speed **10** Gbps and **full duplex**

**USB 3.0 Gen 2.2:** Speed **20** Gbps and **full duplex**

**USB 3.0 versions** has two sub controller inside: one for 3.0 or higher versions and another for 2.0 versions.

**USB Colors: Black** for 2.0 versions and **Blue** for 3.0 versions

**USB-C:** Introduced in USB 3.1. Can be of same type of connecter at **both ends** like iPhone charger.

**Remember**: Type A USB 2.0 can be plugged into USB 3.0 port. But Type B USB 2.0 cannot be plugged in Type B USB 3.0.

**Cable Length:** 3m for low speed, 5m for high speed and full speed and again 3m for superspeed.

**Power**: Basic port can supply **4.5 watts** whereas a power delivery PD can supply upto **100 watts.**

**HDMI AND DISPLAYPORT VIDEO CABLES:**

**Video cables bandwidth:** Depends on resolution of the image and refresh rate or fps.

**Fps and Refresh Rate (Hz):** Must match each other or may be exactly divisible evenly by themselves to give a smooth flow.

**Resolutions:** **1920x1200** for **HD** videos and **3840x2160** for **4K**.

**HDMI:** supports audio, video, remote control, and digital content protection (HDCP)

**HDMI cable:** Standard (Category 1) and High Speed (Category 2). Cat2 offers greater length.

**Premium HDMI 2.0 and 2.1 cables:** offers speed of **18 Gbps for 2.0** and **48 Gbps for 2.1.**

**Display Port** has one bend on one side rather than two side like HDMI connectors.

**Display Port:** Content protection like **copyright**. Two types: **Full size DP++ and MiniDP.** Uses **4** lanes. Version 2.0 has capacity of **20Gbps** each lane. Main feature of display port over HDMI is **Daisy-Chaining**. Means, one cable goes from your computer to Monitor 1 and another cable goes from Monitor 1 to Monitor 2 and it goes on like this.

**THUNDERBOLT AND LIGHTNING CABLES:**

**Thunderbolt Version 1 and Version 2:** Thunderbolt means **USB-C** mostly. So, **version 1** and **version 2** has same physical appearance like **MiniDisplayPort**. But can be distinguish by **lightning** or **flash** icon on the cable. Speed of these version is upto **20 Gbps.**

**Thunderbolt 3: Speed: 40Gbps** and **length: 0.5m or 1.6 feet**. If longer than this, speed may decrease.

**SATA HARD DRIVE CABLES**

**SATA Cables:** Used to connect **HDDs** or **SSDs** to PC. Can connect only **one device** per SATA cables. Legacy system was **PATA** which uses **Parallel Bus Transfer System**. But SATA uses **Serial Bus Transfer System**.

**SATA Cables:** Data cable (**7pins**) and Power SATA cable (**15 pins**). **7 pin** cable only transfers **data**. That’s why we need **15 pin power cable** to supply power. Length: **1m.**

**Speed of SATA cables:** **SATA 1 -> 150 MBps, SATA 2 -> 300 MBps, SATA 3-> 600 MBps**

**Molex Power Connector:** Old style connectors used to provide **power** to internal components. They are **4-pin** connectors made of **white** or **clear pastic**. **Red** color supplies **5volts** and **yellow** supplies **12 volts** and **black** for **ground**.

**eSATA:** **External SATA.** Used for external HDDs or SSDs that you can connect to the computer. Internal SATA **cannot** be used as eSATA. **Length : 2m (78 inches)**