

# ITFreeTraining



## Computer Case Types and Parts

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In this video from ITFreeTraining, I will look at a number of different computer cases and the parts that are used in these computer cases. It is important to understand what computer cases are available so you can purchase the right computer case to meet your needs.

# Desktop Computer

- Designed not to be used on the move



0:15 Working with computers is like working with Lego. Certain parts will only plug into or be attached to certain places. Knowing what goes where and which parts different computer cases support is most of the work. This is why I often refer to working with computers as Lego for adults.

The first type of computer that I will look at is the desktop computer. Desktop computers are designed to be used in one location once setup. So essentially, they are not mobile. You can of course pick them up and move them. However, they are larger in design and harder to move around than a laptop would be.

Because desktop computers are larger in size than a mobile device like a laptop, they can have more connections and also have more room for expansion cards and devices. The devices inside the computer can also be larger. For example, storage devices can be larger. A hard disk for a laptop is smaller than a hard disk for a desktop computer. Smaller means harder to manufacturer and may also reduce the number of features in the device. That is, some features are lost in order to make something smaller and mobile.

# Computer Case/System Case

- Often referred to as a box, chassis or main unit
- Contains the components of the computer



1:27 The next part of the computer I will look at is the computer case, commonly referred to as the system case. It is also referred to as box, chassis or main unit. It is essentially a metal box that contains the other components of the computer; parts like the motherboard, memory, video card and storage.

The computer case provides a way of securing the parts of the computer in place. This prevents them moving. The computer case also contains the power supply and cables. The power supply provides power and the cables allow additional external devices to be connected to the computer. There are different types of computer cases available, let's have a look.

# Types of Computer Cases



Full Tower

Used for servers and high-end workstations  
Extra room for storage, power and adapter cards



Mini-Tower

High-end/power users/home users  
Some extra room



Small Form Factor

Used in work place  
Limited expansion  
Low profile cards

2:10 There are essentially three different computer cases used for desktop computers. The first is the full tower. A full tower is the largest of the three cases. It is generally used for servers and some high-end workstations. The full tower gives extra room for storage, power and adapter cards. The average user won't require the extra room. For servers, the extra space is generally required since servers often have extra device storage and redundant power supplies.

The next computer case is the mini-tower. The mini-tower is used for high-end users and power users. You will tend to find this case used a lot for home computers. They have extra space for devices like large video cards, extra adapter cards and storage devices. Not as much room as the full tower, but even power users generally only need a little more room and don't need all the space a full tower provides.

The last computer case is the small form factor. This is the smallest out of the standard cases. It is generally used in the work place. It has limited expansion ability. The small form factor only allows low profile cards to be installed, so large video cards won't be able to be installed. It's not that the computer cannot necessarily support it, it's just that it won't fit in the case. You will find limited expansion slots and limited space to install extra devices like storage.

In business, a small form factor is often used for a general user workstation. They may be limited in expansion ability. However, for the average business user, this will not be a problem. The average business user generally doesn't require additional expansion cards. For these reasons, a small computer is preferable over a larger one.

You may also find that a small form factor computer may have additional features that are generally not found in the larger home computer. These are features like drive encryption and remote management. Most home users do not require these features and you generally don't see these features in a home PC until you start getting to the more expensive models.

# All-in-One PC

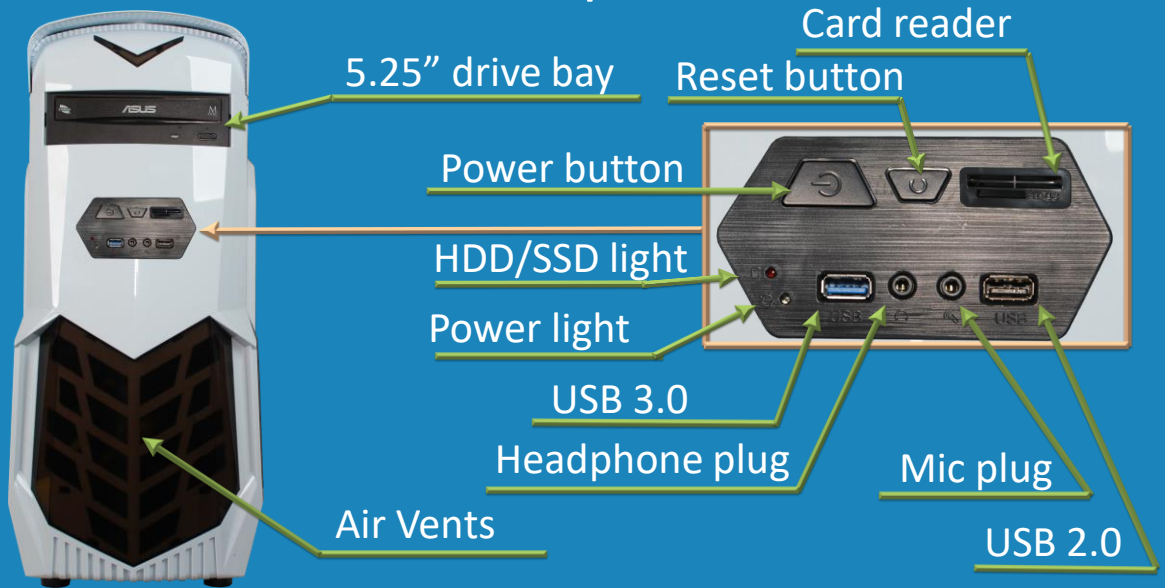
- Other than keyboard and mouse, it's all one unit



4:22 The next type of computer case that you may come across in desktops is the all-in-one. This computer is essentially one unit except for the keyboard and mouse. It is possible for the keyboard to also be part of the computer; however, this is rare. When you come across computers like this, they generally have limited upgrade options. However, they take up less room so some people prefer them when space is limited.

Now that we have had a look at the basic computer cases that you will come across, I will next have a look at the different parts of the computer case.

# Parts of a Computer Case



4:59 To start with, let's look at the front of a computer case. The computer case that you buy will determine what features it will have. A lot of computer cases will have a lot of the same features.

The first feature is the air vents. All the newer style computer cases, referred to as ATX cases, will have air vents at the front. Depending on where the motherboard is inside the computer, the air vents can be in various locations. Most computer cases will have the motherboard at the bottom of the case and, thus, the air vents will also be at the bottom. Modern computers will suck air through these vents so it is important that they are not blocked.

Most computer cases will have one or more large drive bays. These are referred to as five and a quarter inch drive bays as they are five and one quarter inches wide. In this case, the drive bay has an optical drive in it. As the parts inside a computer have gotten smaller, there is less need to have large drive bays. Also, the biggest use of drive bays is for optical drives. With the increasing trend for data being stored on the internet or in the cloud, there is less need for optical drives than there was before.

Some computer cases may also have the smaller three-and-a-half-inch drive bay. These were traditionally used mostly for floppy disks drives which are now an obsolete technology. Generally, nowadays you don't find these on the front of the case, but you will have them inside and I will look at this later in the video.

The next part of the computer case is the I/O panel. This contains a number of external

connectors, lights and buttons. The idea of this panel is that it is an easy-to-get-to place for the user of the computer. Generally, you will find these on the front, the top or the side of computer cases. That is, somewhere they are easy to get to and see.

In the case of this computer, the I/O panel contains the on/off switch. When you press this button, the computer will switch on. No surprises there! When this occurs, the power light button will light up. When you build a computer, this should be one of your checks. The power light is an LED light. LED lights will only work if the power is flowing the correct way. If you plugged in the LED in reverse it will not work. If the power light does not go on when you switch the computer on, the LED has most likely been plugged in incorrectly. Generally, this light is white or clear, although the manufacturer can use any color they want.

To switch the computer off, press the power button, again. If the computer has frozen, you can force the power switch off by holding the power button down for four or more seconds.

The next button is the reset button. This button will, as the name suggests, reset the computer. This is a hardware reset, so you will lose all your work. Try not to accidentally press this button rather than the power button. By default, if the reset button is pressed, the operating system will gracefully shut down the computer. Some cases will make this button very small and you may need a pointy object like a pen to press it. You cannot disable the functionality of the reset button using the operating system, however if you want to disable it you can simply unplug the cable that it is connected to.

On this particular computer case is a card reader. Not all computer cases will have this, but essentially this allows a memory card to be plugged in and read by the computer. If your computer case does not have this, it can be added or an external USB card reader can be used.

The next light is the hard disk activity light. This light is generally red, however it can be any color the manufacturer decides. Traditionally, this light would come on when there was activity on any of the hard disks in the computer. This was before solid-state drives. Nowadays, it will light up for activity on a hard disk or a solid-state drive. Just because it has always been called the hard disk light, you will most likely see it in documentation referred to in this way.

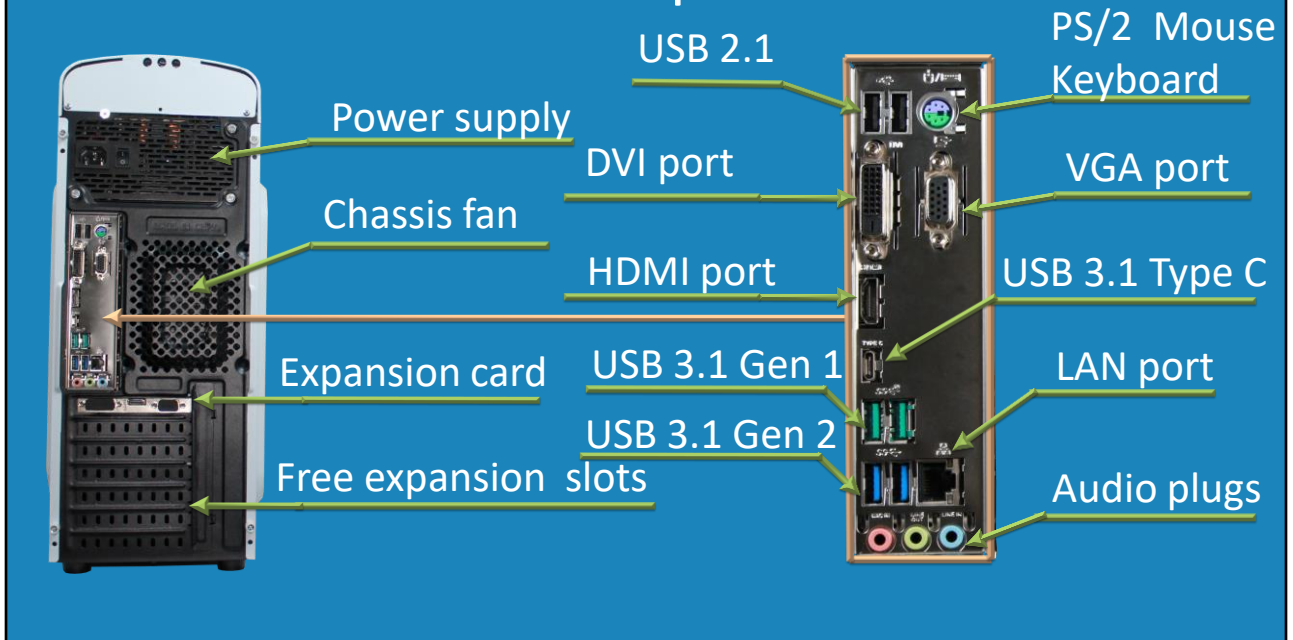
Often you will find one or more USB connectors. If the connector is black, this will be for USB 2.0. If the connector is blue, this will be for USB 3.0. You can plug any USB device into any plug, however if you plug a USB 3 device into a USB 2 plug the USB 3 device will drop down to use a USB 2 speed. Some devices will require USB 3 and



thus will not work if plugged into USB 2. For example, video capture devices may require USB 3 for the extra transmission speed and the software won't operate if the device is plugged into a USB 2 connector.

Lastly there are the headphone and microphone plugs. These allow an external headphone and microphone to be plugged in using an audio jack. Although USB replaced a lot of this functionality, you will still find a lot of headphones and microphones for sale that use the audio jack.

# Back of Computer Case



10:14 Next, I will look at the back of the computer case. At the top of this computer case is the power supply. With some computer cases, the power supply may be at the bottom; however, generally it is found at the top. Regardless of where the power supply is, make sure the power supply fan is not blocked. If it is blocked, this will affect its ability to keep the computer cool.

In the middle of this computer case is a place to add an additional fan. Some computer cases will have space for an extra fan, some will not. Some cases will have the fan pre-installed, while with others you will need to purchase and install your own. If you install an extra fan, you need to ensure you install it the correct way. In later videos I will go into this in more detail.

At the bottom of the computer is an expansion card. In this case, a video card. There are also free expansion slots below this. Different sizes of computer cases will also have a different number of free expansion slots. The number of expansion cards supported will ultimately be determined by the motherboard.

In the middle of this computer is the IO Panel. The maker of the motherboard is free to use this space to include any connectors that they want. So, you will find that each motherboard you come across will have different connectors and they will be in different places.

In this case, at the top is the USB 2.1 connector. Any USB device can be plugged into this plug, however if a USB 3 device is plugged in, it will drop to USB 2 speed.

Next to this USB connector is the PS/2 mouse and keyboard plug. On older motherboards this

will be two connectors. In newer motherboards it is generally combined into the one connector. Given enough time, this connector will most likely disappear altogether. The PS/2 connector is generally only used for mice and keyboards. You may also find it used for devices like a barcode scanner. Nowadays however, you will find that USB is used rather than the PS/2 connector.

Below this is the DVI port. If your motherboard has a built-in video card or it supports video via the CPU, it will have a connector for a monitor to plug into it. DVI is an older standard, so your motherboard may or may not have it. Next to this is the VGA port. VGA is an even older standard, so your motherboard may not have it. If your motherboard does not have the required connectors, there are always adapters you can get to convert them. In a later video I go into that topic in a lot more detail.

Below this is the HDMI port. This is the newer style of video connector. It is not present on this motherboard, but the other new standard is the Display port. As time goes on, you will see the older video connectors disappearing as they are replaced by the HDMI and Display port standards.

The next connector down is the USB 3.1 Type C connector. This is becoming more common with mobile devices. Before this, the Micro connector was very common. However, that connector is very small and easily damaged. The Type C is a little bigger, but a lot more robust than the Micro connector.

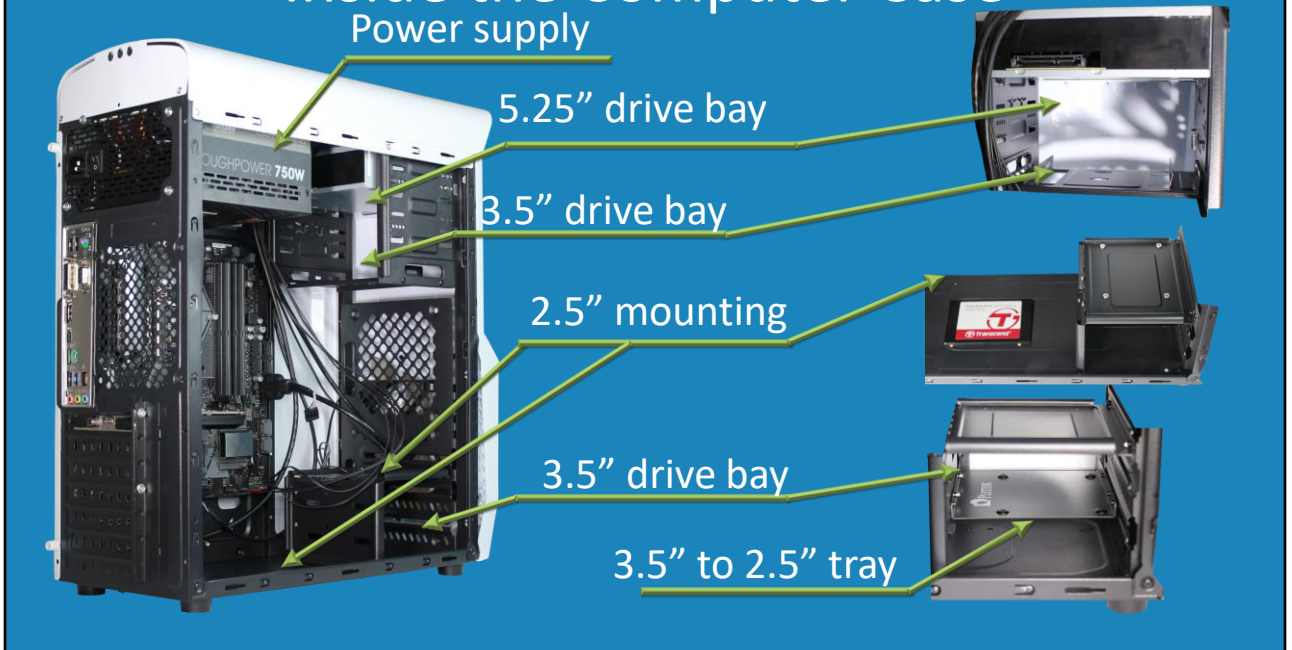
The next connector down is the USB 3.1 generation 1 connector. I will come back to this in a moment. Below this connector is the USB 3.1 generation 2 connector. The difference between these two is the speed they can send data at. If you have a generation 2 device you should put it in the generation 2 connector. However, it will still work in the other connector, it will just run slower. It is important to pay attention to the different colors of the USB connectors as this will give you an idea of what they support. Generally, USB 3 will be a blue connector.

Next to the USB port is a LAN port. The LAN port is used to connect the computer to the network. Since networking is so important nowadays, generally all motherboards will have a LAN port. The more expensive motherboards may have two.

The last connectors are the audio plugs. Generally, you will find on the front of the computer the basic headphone and microphone plugs, and on the back of the computer there will be more plugs to support extra speakers used with surround sound.

That's it for the outside of the computer case, let's have a look at what is inside the case.

# Inside the Computer Case



14:48 The layout of your computer cases will most likely be different. There are a lot of standards in computers, so you will find that, although the layout is different, the dimensions used for components are the same.

At the top, you can see the power supply. The power supply can be found in different locations in the case, however the size of the bay for the power supply and the locations of the screw holes will always be the same. Essentially, you can install any compatible power supply you want. The only time this does not apply is when the manufacturer has designed their own power supply. Only large manufacturers of computers will do this. When this occurs, you will be required to use one of their power supplies as the other power supplies on the market will not fit.

You can see in this computer case the five and one quarter inch drive bays. In this computer, there are three of these drive bays. The top bay has an optical drive installed. The other bays can be used as well; however, not for devices like optical drives. This is because there is only one cut out at the front of the computer case to allow access to the bay, that is, to allow optical disks to be put into the optical drive.

You will notice at the bottom of the bay is a three-and-a-half-inch bay. This will allow for one small device like a hard disk to be installed rather than a larger five and a quarter inch device. In this computer case there is only one three and a half-inch disk bay at the top, so you will generally find that there will be more places in the computer case to install additional devices. This particular case has two additional three-and-a-half-inch drive bays at the bottom.

Solid-state drives are two and a half inches in size so will not fit in either of these bays. There are, however, trays that can be purchased which will allow a small device to be installed. You can see in this case I have installed a tray to allow a solid-state drive to be installed on top.

Trays are easy to purchase, but in some cases you may not have one. Many computer cases will have additional places to install small devices like solid-state drives. Sometimes they are hard to see unless you know what to look for. To find them, look for four screw holes arranged in a square around the computer case.

They can be difficult to spot, but you can see that a solid-state drive can be screwed in the computer case. You can also see that there are four screw holes at the top of the 2.5" mounting bay. This allows a solid-state drive to be mounted upside down in the three and a half-inch bay. Have a good look around your computer case for these as sometimes they are found in very unusual locations and not where you would expect.

That concludes this video on computer cases. I hope you have found this video useful. Until the next video from us, I would like to thank you for watching.

#### References

"The Official CompTIA A+ Core Study Guide (Exam 220-1001)" Chapter 3 Lesson 4020 - 4637

[https://commons.wikimedia.org/wiki/File:Dell\\_Inspiron\\_One\\_23\\_Touch\\_AIO\\_Desktop\\_PC.png](https://commons.wikimedia.org/wiki/File:Dell_Inspiron_One_23_Touch_AIO_Desktop_PC.png) "Slide 5 File: Dell Inspiron One 23 Touch AIO Desktop PC.png"

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