

Computer Basics Part 2 – More About Drives

In these instructions we will cover the following:

- What are Drives?
- Different Types of Drives
- What runs the Drive?
- Different Types of Connectors

Here is a list of words you will learn in these instructions:
EEPROM, Drive Controller, IDE, SCSI, SATA

What are Drives?

As explained in our Computer Basics training, drives are a place to store information. The computer needs a place to store the information when it is off and the computer needs to be able to access the information fast.

Different Types of Drives

Again, we have covered some of this information in the Computer Basics training. If you have not first read our Computer Basics training then please read it first since this information will build on that knowledge.

There are mainly three technologies commonly used today for writing data to a drive. One is magnetic, the other is optical, the third is electrical charge. Examples of magnetic are floppy disks, tape drives, and hard drives. Examples of optical drives are CD and DVD. Examples of electrical charge drives, or drives that are given an electrical charge to store the data are drives which contain **EEPROM** (*Electrically Erasable Programmable Read Only Memory*) chips such as Flash Drives.

Flash Drives (drives which use EEPROM chips) usually connect using a USB connect. And connect outside the computer's case.

Hard Drives and CD and DVD drives in most cases are connected inside the computer (however you can purchase external versions of these that usually connect to the USB port).

If you want to add an additional drive (hard drive or CD/DVD drive) to the inside of your computer then you need to know (a) what runs the drive? and (b) the different types of connectors.

Let's start with "What runs the Drive."

What runs the Drive?

The drive is connected to a “**Drive Controller**.” The drive controller sends and receives the information necessary to read from and write to the drive you are using. The drive controller can be an additional card inside the computer, or in most new computers is built-in to the System Board.

Different Types of Connectors

Drive controllers come in mainly three versions today: IDE, SCSI, or SATA. These types apply to both the hard drive and the CD/DVD drives.

IDE

Without getting too technical, the IDE (Intelligent Drive Electronics or Integrated Drive Electronics) drive, or EIDE (Enhanced IDE) drive is actually a general technology, but for this training this will work. The IDE drive was a very common standard drive up until about 2005. If you have a computer that is from 2005 or older then there is a good chance that it will have IDE drives. IDE allows up to two drives to be connected to one controller. Usually you have a Primary controller and a Secondary controller. On each of the controllers you can have up to two drives. One drive has to be the **Master Drive** and the other has to be the **Slave Drive**. If you have an IDE drive set it to “CS” which is cable select then the connector farthest away from the system board will be the Master and the other connector on the cable will be the Slave drive.

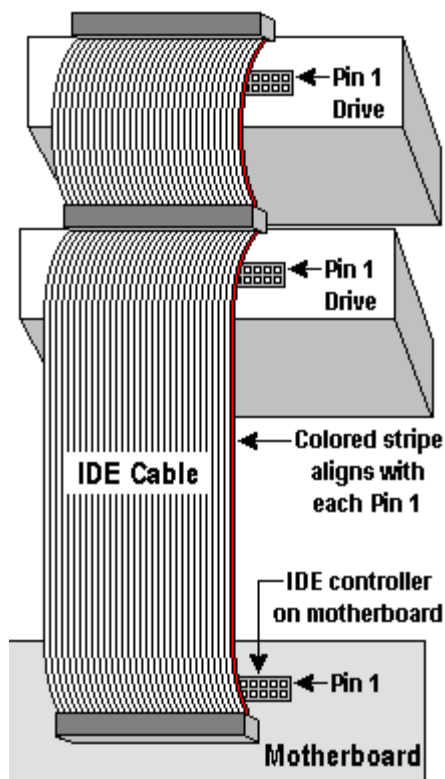


Illustration 1: IDE Drive Connection Example

SCSI

The second type, SCSI (pronounced “*Scuzzy*”) which stands for “Simple Computer System Interface” is an older technology, but is sometimes still seen. There are many different types of SCSI varieties and each variety is not necessarily compatible. The benefit of SCSI was that it was faster than IDE even though it was an older technology than IDE. A second benefit to using SCSI was that you could connect more drives than you could with IDE. SCSI drives are the most complicated to connect. Not only do you have to make sure you have the correct type of SCSI and SCSI cable, but then you also have to be aware of the SCSI chain, the ID of the SCSI device (drive) and in some cases you have to terminate the SCSI chain.

SATA

SATA (Serial - Advanced Technology Attachment) is the newer technology. Computers from 2006 to current usually have SATA connectors. The main benefit of SATA over IDE is the cables are smaller due to less wires and since the cables are smaller then better airflow in the computer's case. SATA cables can be longer than IDE cables too. SATA drives are the easiest to connect since there is a simple cable from the drive controller directly to the drive.



Again, if you are going to purchase a new drive or replace a current drive then make sure you get the same type of drive you have. How large should you get? Get the largest drive you can afford.

I hope this information has been helpful to you.

You may print this information if needed.

Check www.scottfam.us for additional information!