

Televisions

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Types of Televisions

Four main types of televisions:

- Cathode Ray Tube (CRT)
- Plasma
- Liquid Crystal Display (LCD)
- Digital Light Processing (DLP)

Historic Timeline

- 1885: Paul Nipkov, while a student in Prussia, was granted a patent on the first television
- 1925: John Bird, a Scottish engineer, transmitted the first television picture with a greyscale image: the head of a ventriloquist's dummy
- 1927: Philo Farnsworth created the first electric television with electron scanning (Cathode Ray Tube technology)
- 1936: The Olympic Games in Berlin were the first publicly aired live event
- 1948: Commercial televisions became available
- 1953: Color televisions were introduced, but were not standard until the late 1960s
- 1980s: The Plasma and LCD televisions were invented, but Plasmas were dominate due to their price.
- 1987: The DLP television was invented by Larry Hornbeck at Texas Instruments
- Mid 2000s: LCD televisions became standard as their price fell below Plasmas

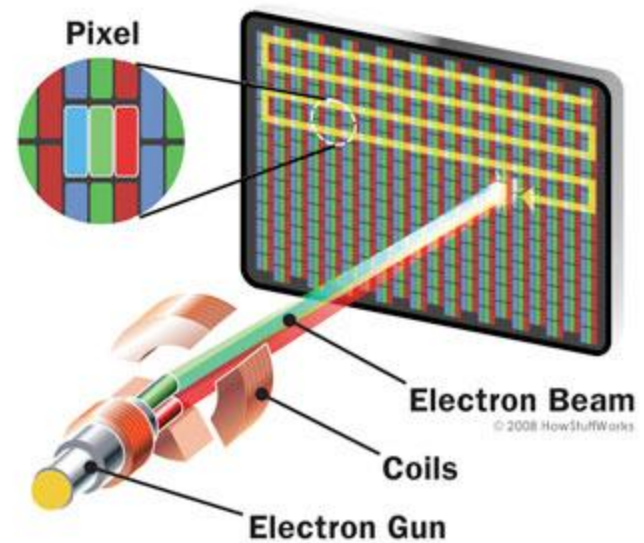
Cathode Ray Tube (CRT)

Three main components:

- Electron Gun(s)
- Coils
- Electron Beam(s)

The coils have a varying current through them, creating a magnetic field which changes the path of the electrons.

The back of the screen is made up of thousands of tiny phosphor atoms.



Plasma

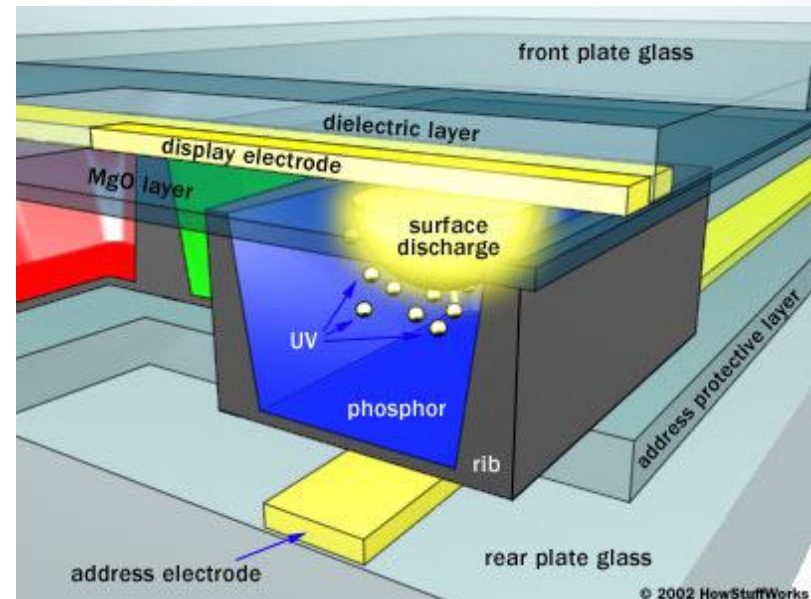
Plasma TVs use the same basic principles as the CRT TVs

Each pixel is made up of three subpixels:

- Red
- Green
- Blue

Xenon and Neon gas is contained in cells, between the two plates of glass.

When there is a potential difference between the electrodes, it creates a current flow through the gas filled cell. This causes the gas to release an ultraviolet photon, which will hit the phosphor material and give off a colored light.



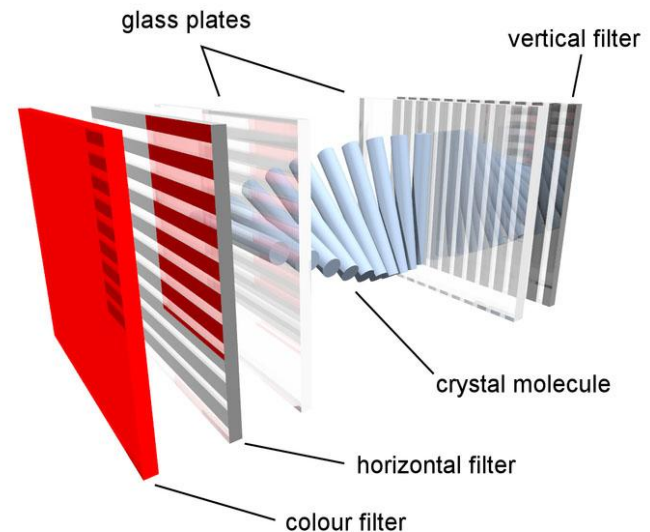
Liquid Crystal Display (LCD)

Became popular during the early 2000s

Utilizes technology called “Liquid Crystals”

Liquid Crystals are a state of matter between liquid and a solid crystal. Liquid Crystals flow like liquids, but the molecules are oriented in a crystal-like way.

An electric potential is put over the two polarizers, which varies the intensity of the beam.



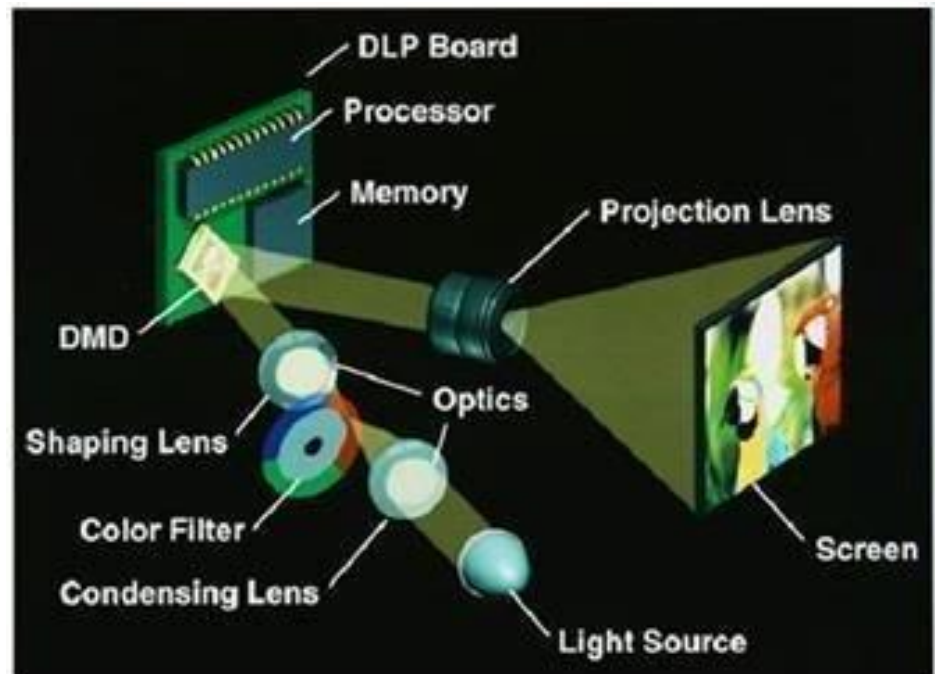
Digital Light Processing (DLP)

Has one main component, the Digital Micromirror Device (DMD)

The DMD consists of millions of tiny individual mirrors that tilt depending on which gray scale color one wants. Each individual mirror has one small image.

The light source is synched with the DMD to determine which color is needed to properly display the image.

Combining the light source and DMD image, creates the colored imaged one will see on a screen.



References

- http://en.wikipedia.org/wiki/Cathode_ray_tube
- http://en.wikipedia.org/wiki/Liquid_crystal_display
- <http://en.wikipedia.org/wiki/Television>
- http://en.wikipedia.org/wiki/Digital_Light_Processing