# Introduction to Seamless Switching

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## Glossary

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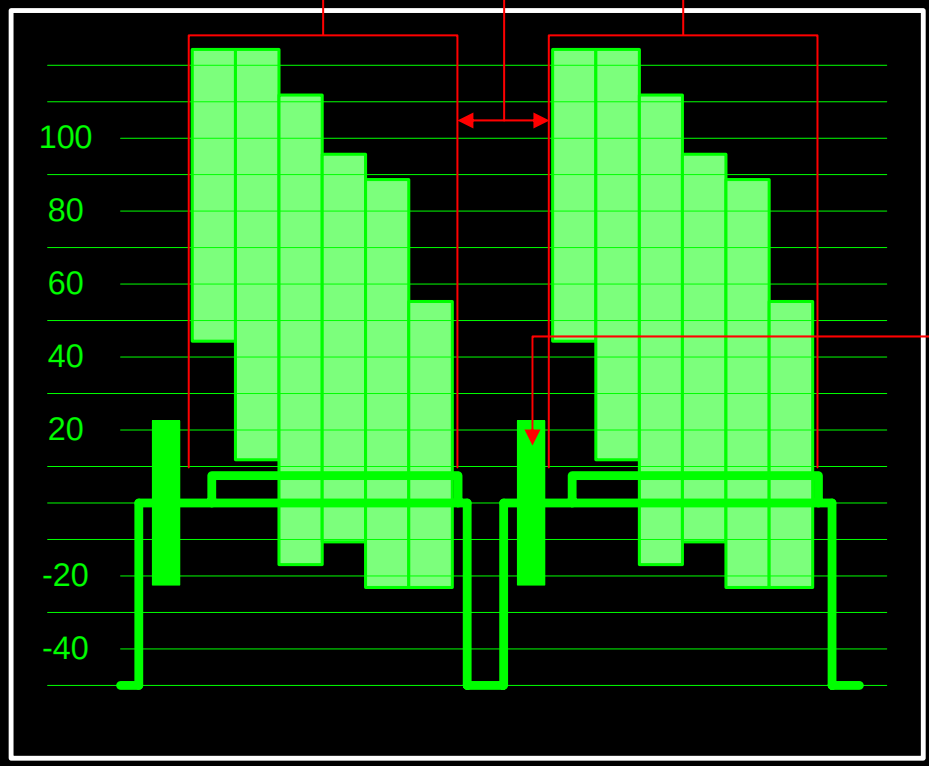
# Anatomy of an NTSC video signal

Blanking includes:
- Front Porch
- Sync
- Back Porch




White level
100 IRE

Black level
7.5 IRE

Blank level
0 IRE

Sync level

Burst
(resides on
Back Porch)

Sync
Interval

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# Raster

- The entire area of a CRT display or CRT video screen that is scanned by an electron beam.

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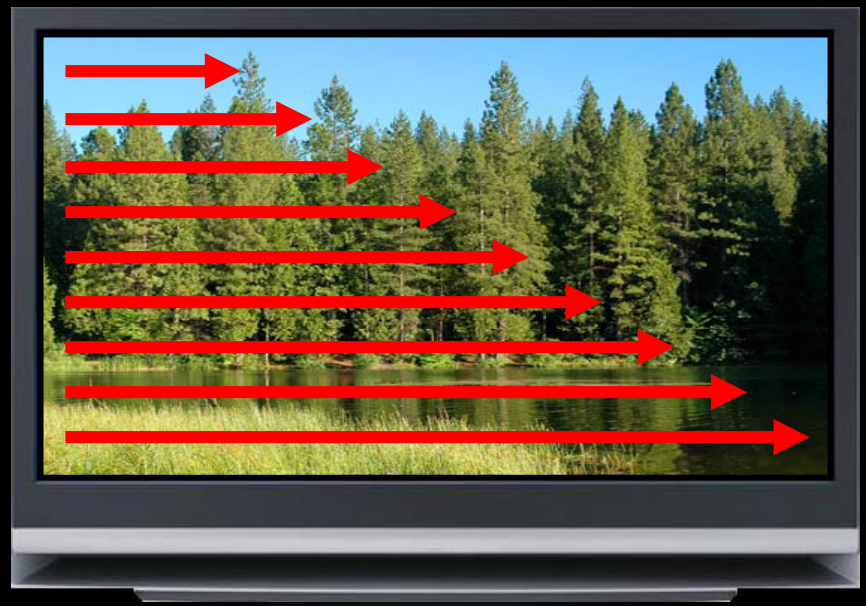
- The entire area of a CRT display or CRT video screen that is scanned by an electron beam.
- To form a “frame,” the beam scans from side to side and from top to bottom in a series of horizontal lines.



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# Raster

- The entire area of a CRT display or CRT video screen that is scanned by an electron beam.
- To form a “frame,” the beam scans from side to side and from top to bottom in a series of horizontal lines.
- Once the first frame is drawn, the beam returns to the top (during the “vertical interval”) to draw the next frame, and the sequence repeats.

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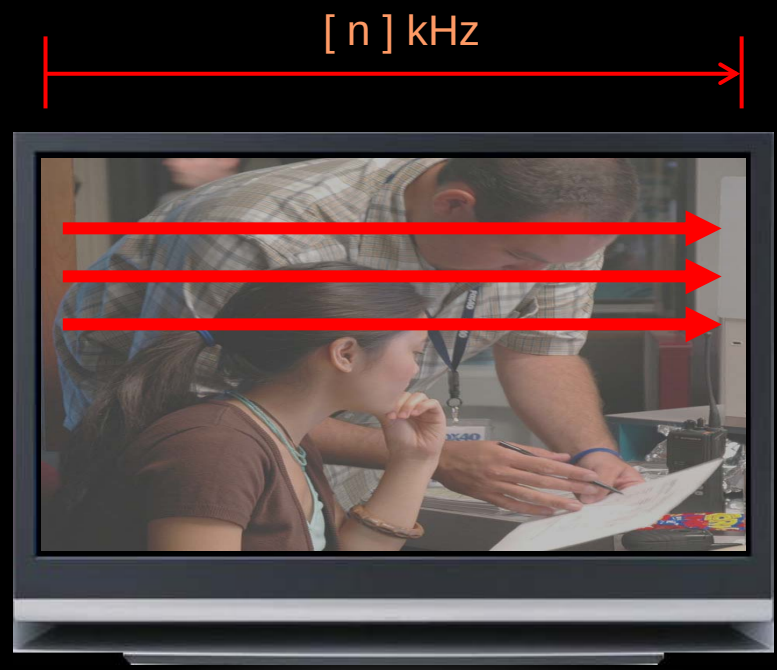
# Resolution and Scan Rate

- **Scan Rate**: The number of lines written on screen in one second, measured in kHz. For example, a resolution of 400 lines refreshed 60 times per second yields a scan rate of 24 kHz (60 x 400).

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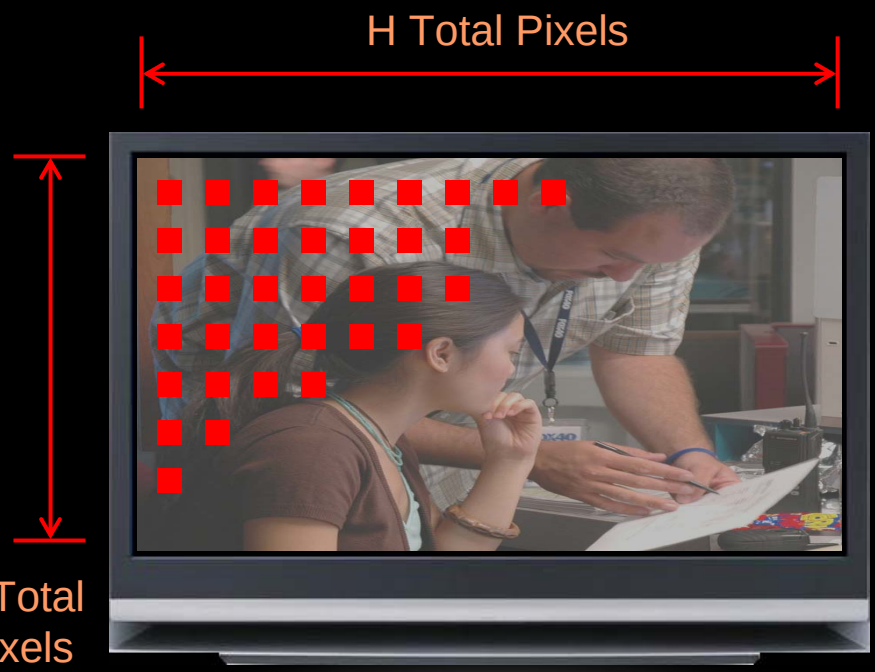
- **Resolution**: The amount of active pixels that make up an image, stated as the horizontal pixel count by the vertical pixel count (e.g., 1024 X 768, XGA).

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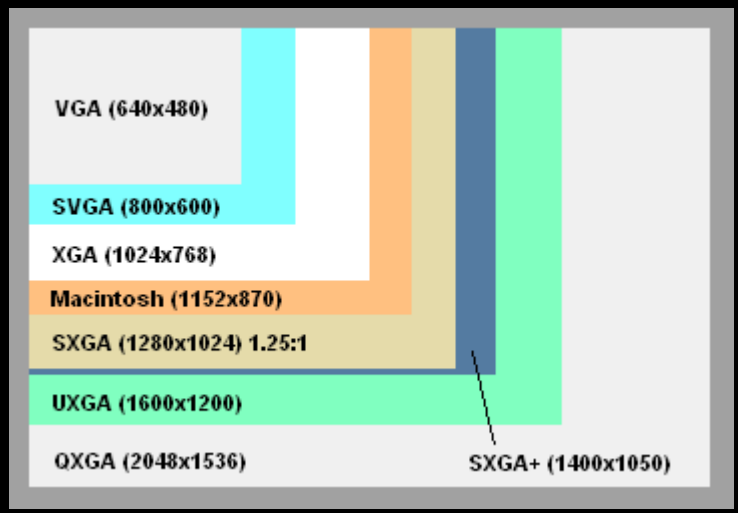
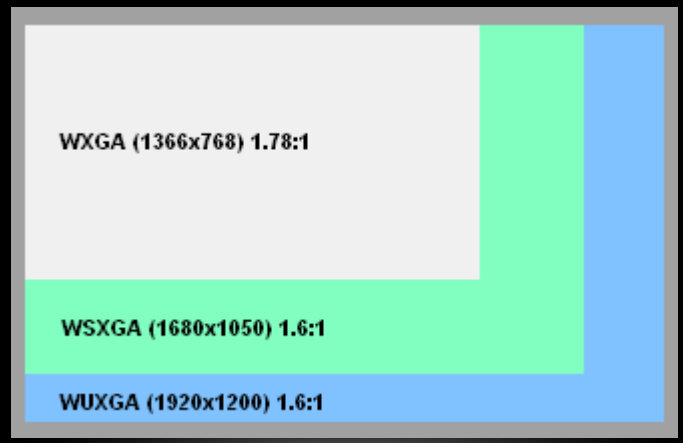
- **Resolution**: The amount of active pixels that make up an image, stated as the horizontal pixel count by the vertical pixel count (e.g., 1024 X 768, XGA).
- **Refresh Rate**: The maximum number of frames per second that a computer monitor can display, expressed in hertz.

# Screen Resolutions

- **Standard** — These resolutions have a 1.33.1 (4:3) aspect ratio, except for SXGA, which is 1.25:1.




- **Wide** — HDTV uses a 1.78:1 aspect ratio (16:9).

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# 1:1 pixel sampling

- 1:1 sampling ensures that all input pixels are sampled one time only, instead of being oversampled.

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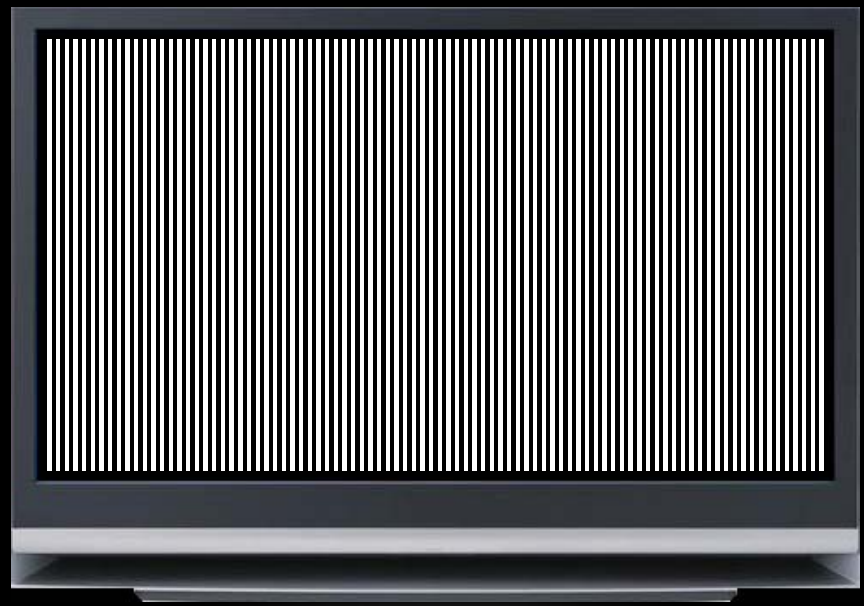
- For example, when you perform 1:1 sampling on a burst pattern (1 pixel on, 1 pixel off), the result is a clear, crisp image.



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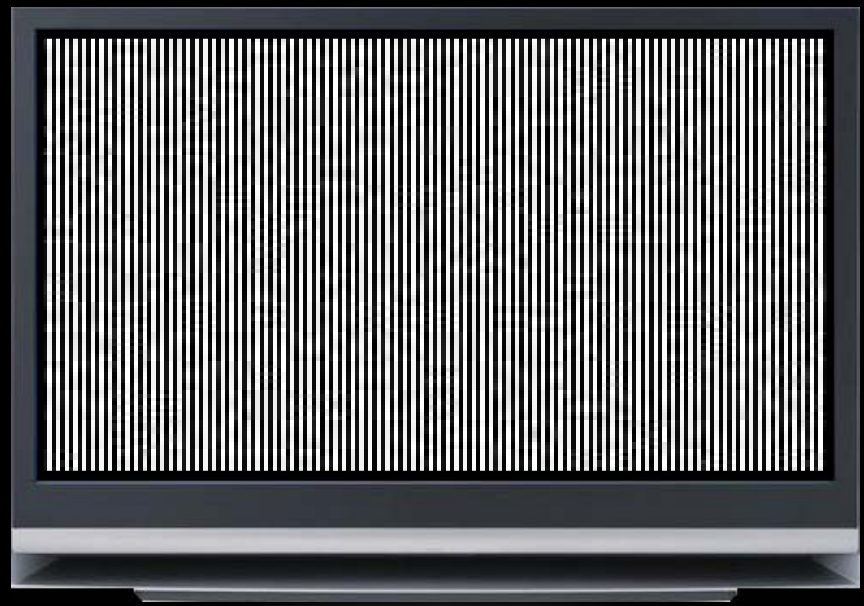
- The benefit is the best color-sampling ratio, yielding a perfect representation of each pixel's color.
- For example, when you perform 1:1 sampling on a burst pattern (1 pixel on, 1 pixel off), the result is a clear, crisp image.
- However, if you oversample the burst pattern, you will see image inaccuracies and a loss of sharpness.



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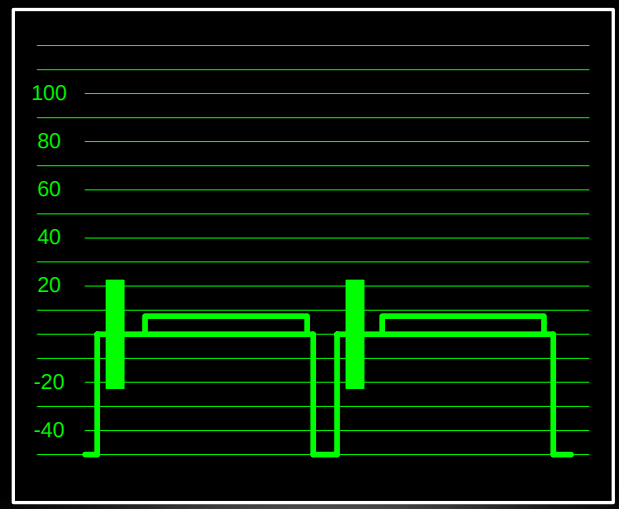
# Black burst

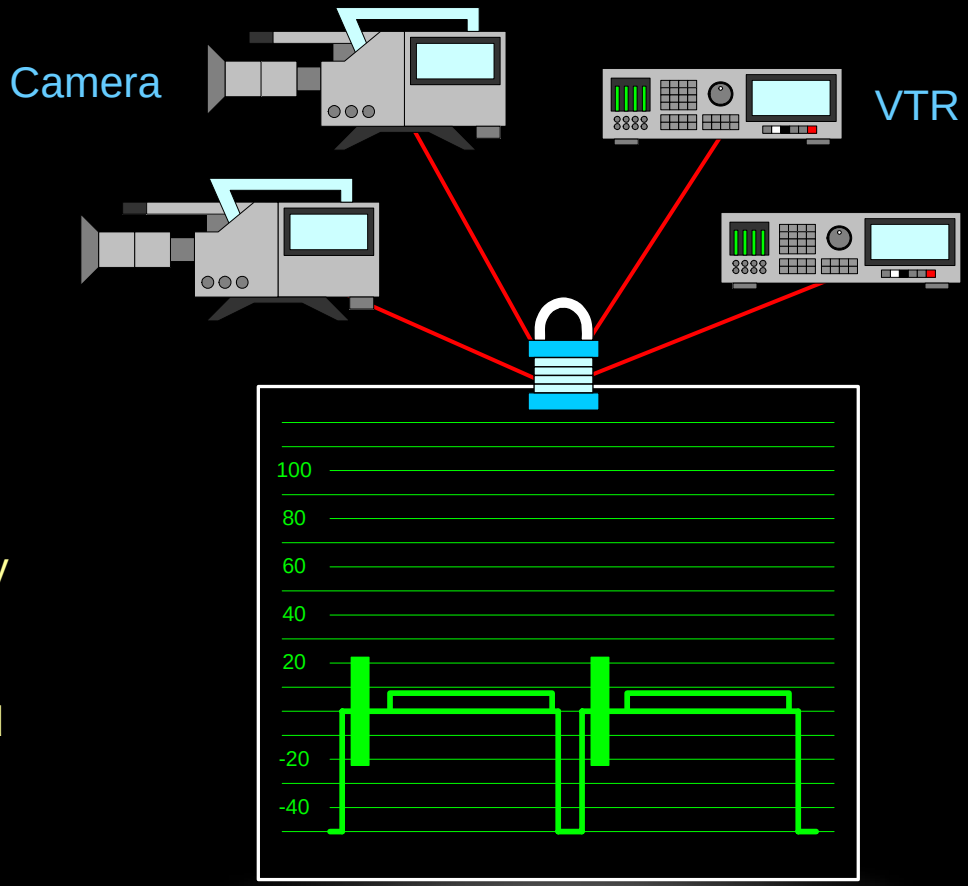
- A video signal that has no luminance or chrominance components, but which contains all the other elements of a video signal.

Video Waveform — Black burst



# Black burst

- A video signal that has no luminance or chrominance components, but which contains all the other elements of a video signal.
- In a video “system,” black burst is the reference signal commonly used for video timing purposes, to ensure that all signals (and all devices) are locked together and fully synchronous.

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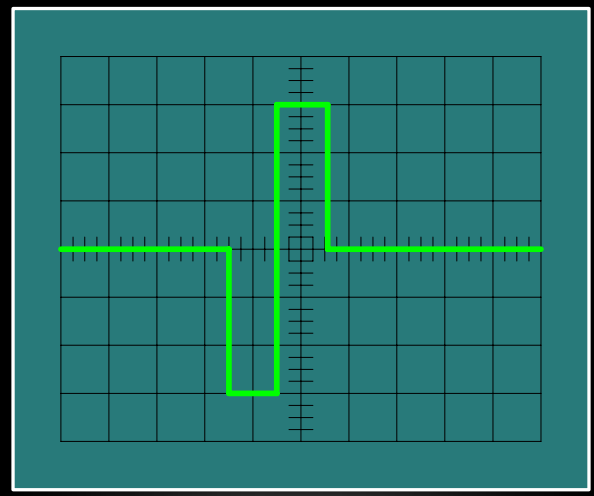
# Tri-level sync

- A sync (synchronization) level scheme developed for HDTV.

Video Waveform — Tri-level sync



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- A sync (synchronization) level scheme developed for HDTV.
- In a tri-level sync signal, the sync line first goes low, then transitions high (while going through the reference voltage level), then drops back down to the reference voltage.

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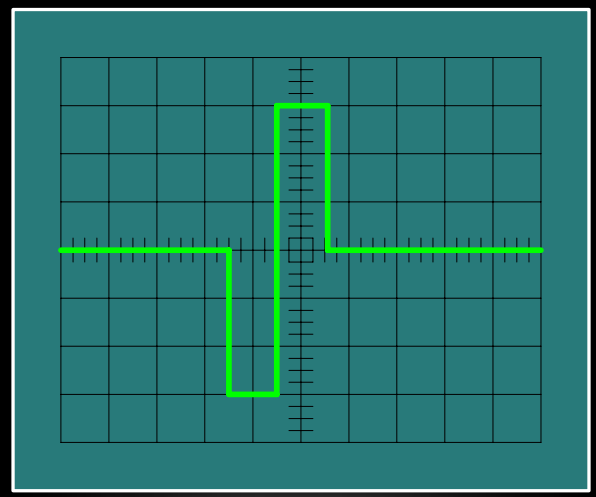

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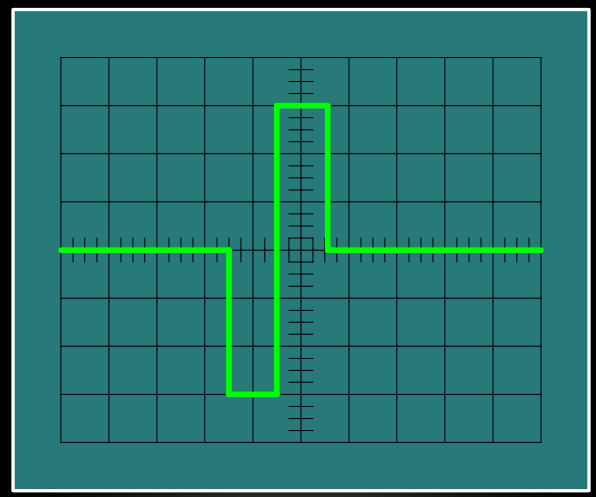
- A sync (synchronization) level scheme developed for HDTV.
- In a tri-level sync signal, the sync line first goes low, then transitions high (while going through the reference voltage level), then drops back down to the reference voltage.
- The transition of the positive-going signal through the reference voltage is the sync trigger.

Video Waveform — Tri-level sync



# Composite video

- A video signal in which the luminance (brightness), chrominance (color), blanking and sync pulses have been combined, rather then kept separate as in component video.

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- Because both luminance and chrominance signals are encoded together, only a single connection wire is required.
- Note:  CVBS is the acronym for Composite Video, Blanking and Sync.


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# Component video

- A video signal in which the luminance (brightness) and chrominance (color) signals are retained separately, rather than combined (encoded).

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- Y = Luminance
  R-Y = Red minus Luminance
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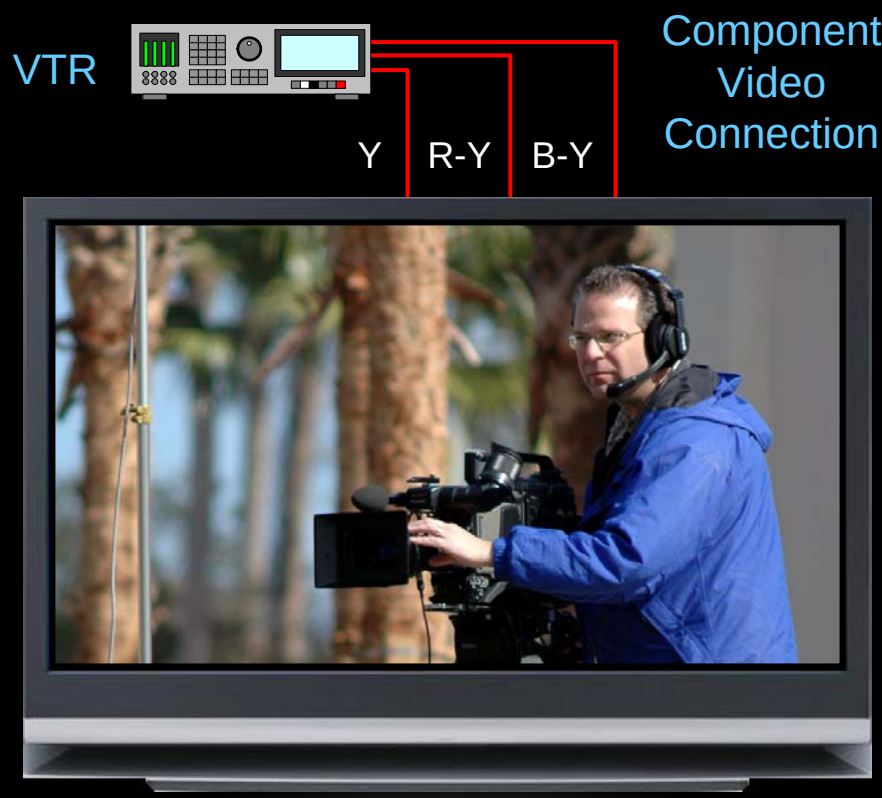


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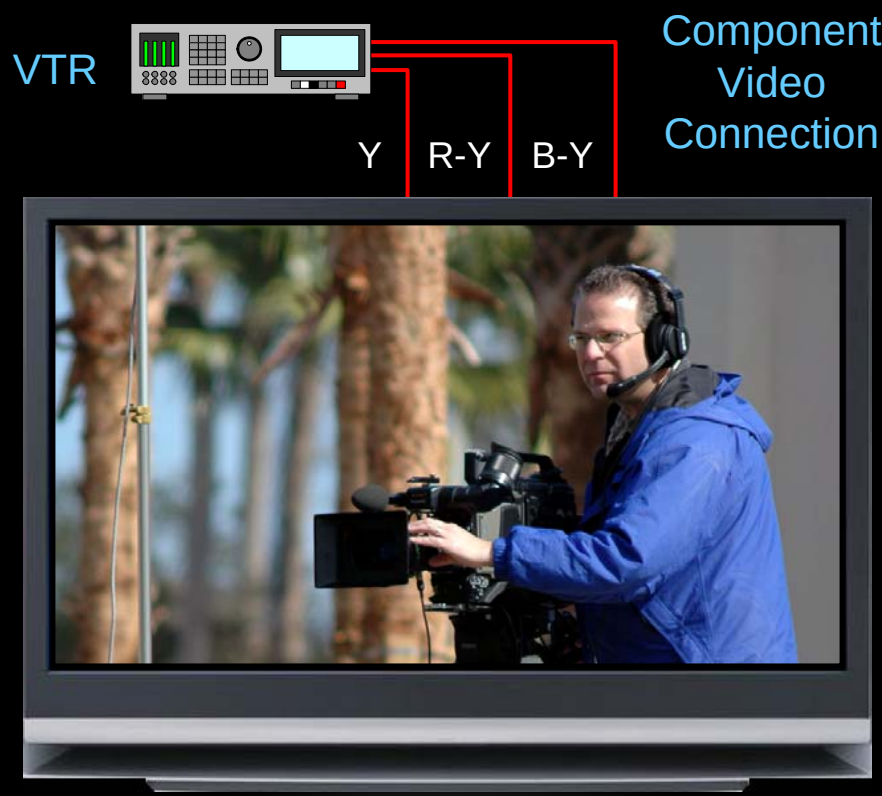
- Common analog component formats are YUV (also known as R, R-Y, B-Y) and S-Video (Y/C).



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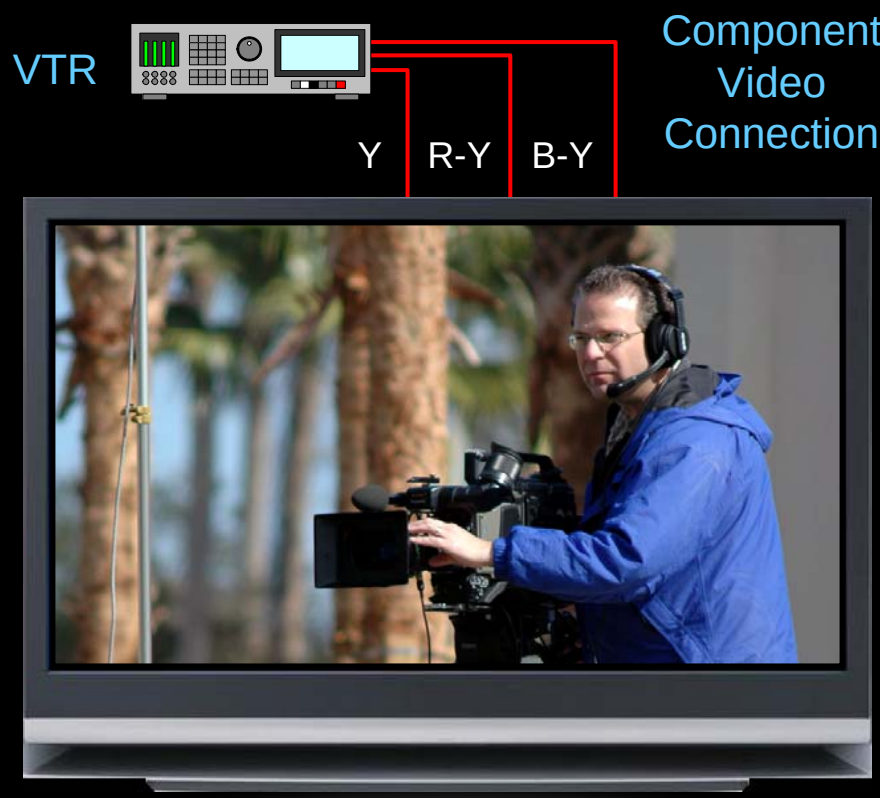
- Component digital video is comprised of separate signals represented digitally. Common formats are ITU-R 601 and Y, Cr, Cb.

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