

Federal Agencies Digitization Guidelines Initiative

- [Home](#)
- [About](#)
- [Guidelines](#)
- [Resources](#)
- [Review Process](#)
- Pixel
- [News & Events](#)

[Home](#) > [Glossary](#) > [P](#) > Pixel Aspect Ratio (PAR)

[Print](#) [Subscribe](#) [Share/Save](#)

Term: Pixel Aspect Ratio (PAR)

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#)
[U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

Note:

- "Search Glossary" button searches only the glossary. *Temporary note: search not enabled for two- and three-character terms; browse by alphabet.*
- "Search" button at the top right of the page searches the Web site, not the glossary.

Term: Pixel Aspect Ratio (PAR)

Definition:

PAR (Pixel Aspect Ratio) is the ratio between the width and the height of each individual pixel that makes up a video frame. Pixels within a frame are all of a uniform size, and while they may be square, they often are not. If the pixels are square, the PAR value is 1:1 or 1, since the width and the height of the pixels are equal to one another. It is common for NTSC video files to have a PAR of 10:11, or approximately 0.91. In this case the pixels are non-square rectangles that are slightly taller than they are wide.

PAR can be calculated with the following equation: $PAR = DAR / SAR$

Note that some sources (including [Wikipedia](#)) suggest that "PAR is also known as sample aspect ratio and abbreviated SAR, though it can be confused with storage aspect ratio."

The three values related to aspect ratios are intertwined. SAR is an immutable value that is unchanging over time or unable to be changed. It is the size of the file. DAR is the rendering of the file, and PAR is what has changed to achieve that. In other words, PAR is adjusted in order to get the appropriate DAR from the given SAR of the file, as the pixel dimensions of a file (SAR) are immutable. If the desired DAR is different than the SAR, the PAR must be adjusted to be either larger or smaller than 1:1, which represents a perfectly square pixel. For example, a 720x480 file has a SAR of 3:2, but must be displayed with a DAR of 4:3 to be rendered properly. In this case, a PAR of 8/9 must be set in order for the file to be displayed properly, or in other words, the pixels must be slightly taller than they are wide.

Pixel aspect ratio is fundamental to how an image is scaled and displayed on screen. Changes may result in stretched or squeezed images.

Typical values for PAR include:

- Square: 1:1
- NTSC: 10:11 (4:3 DAR)
- NTSC: 40:33 (16:9 DAR)
- PAL: 59:54 (4:3 DAR)

Category:

Video

Resource:

FADGI Significant Properties for Digital Video
<https://www.digitizationguidelines.gov/guidelines/sigpropvideo.html>

See also:

[Aspect ratio](#); [Storage Aspect Ratio \(SAR\)](#); [Display Aspect Ratio \(DAR\)](#)