

# Display Resolutions and Nomenclature (Display Sizes in Pixels) (H x V) (Horizontal by Vertical)

## Display Resolutions

(H x V) (Horizontal x Vertical) measure in pixels (K) Kodak PhotoCD (P) Scanned or Printed Letter Size Page

1 x 1	1 pixel radio control button (depressed or not depressed)
2 x 6	12 pixels Braille character array [ <a href="http://www.NBP.org/alph.html">http://www.NBP.org/alph.html</a> ] (National Braille Press)
2 x 8	16 pixels Braille computer character display with bottom two dots used for XML like metadata such as bold, italic, and cursor position
3 x 5	15 pixels smallest numeric glyph grid
5 x 7	35 pixels smallest Roman alphabet glyph grid (character descenders distorted)
5 x 8	40 pixels small Roman alphabet glyph grid (larger character matrix size varies)
16 x 16	256 pixels low resolution character glyph grid for East Asian Scripts such as Chinese
24 x 24	576 pixels high resolution character glyph grid for East Asian Scripts such as Chinese
16 x 16	256 pixels smallest Microsoft application icon
72 x 72	5.184 thousand pixels example of a large Microsoft application icon
60 x 40	2.400 thousand pixels Internet web page video icon
106 x 106	11.236 thousand pixels maximum size of a PDF (Adobe Portable Document Format) page thumbnail (1/8 scale of full page: portrait and landscape)
(K) <b>192 x 128</b>	24.576 thousand pixels Kodak PhotoCD, 1/16 base ( <b>thumbnail</b> , index print on CD cover) = [3 x 2] [2** 6 x 2 ** 6] [ <a href="http://www.Kodak.com">http://www.Kodak.com</a> ]
320 x 200	64 thousand pixels CGA (Color Graphics Adapter) (IBM PC) = [(2**6)*5] [(2**3)*25]
<b>320 x 240</b>	76.8 thousand pixels QVGA (Quarter VGA) (VGA: Video Graphics Array) = [2**4 x 2**4] [4 x 3] [5 x 5] Used in cell phones and PDA's (Personal digital Assistants)
(K) 384 x 256	98.304 thousand pixels Kodak PhotoCD, 1/4 base (largest Kodak size that is smaller than 640 x 480 NTSC video, see below) = [3 x 2] [2** 7 x 2 ** 7]
640 x 350	224 thousand pixels EGA (Enhanced Graphics Adapter) = [(2**7)*5] [2*7*25]
<b>640 x 480</b>	307.2 thousand pixels <b>VGA</b> (Video Graphics Array) (standard computer screen resolution) (also NTSC Video, see below) = [2**5 x 2**5] [4 x 3] [5 x 5]
720 x 350	252 thousand pixels MDA (Monochrome Display Adapter) = [2**4](3**2)(*5) [2*7*25]
(K) 768 x 512	393.216 thousand pixels Kodak PhotoCD, 1 base (the base for the Kodak PhotoCD image sizes) = [3 x 2] [2** 8 x 2 ** 8]
<b>800 x 600</b>	480 thousand pixels <b>SVGA</b> (Super VGA) = [2**3 x 2**3] [4 x 3] [25 x 25]
<b>1024 x 768</b>	786.432 thousand pixels (often <b>XGA</b> ) eXtended Graphics Array, less often UVGA) = [2**8 x 2**8] [4 x 3]
(P) 1100 x 850	935 thousand pixels 8 1/2 x 11 inch (216 mm x 279 mm), 13.9 inch (353 mm) diagonal, letter size (A size) sheet at 100 dpi is 850 pixels by 1100 pixels = 935 thousand pixels. An A4 sheet, 210 mm x 297 mm (364 mm diagonal) at 4 dpmm is 1188 pixels x 840 pixels = 997.920 thousand pixels.
1152 x 768	884.736 thousand pixels Apple PowerBook G4 laptop (3 to 2 aspect ratio) 2**4 x 72 typeset points per inch) x [(2**8)*3]
1152 x 900	1.036800 million pixels (Sun Microsystems) 1152 x 870 (Mac) (1152 = 2**4 x 72 typeset points per inch). Some Sun Microsystems and Apple / Mac screen resolutions were chosen so that the actual screen resolutions were 72 dpi to match the 72 points per inch used in typesetting.
<b>1280 x 1024</b>	1.310720 million pixels (more often <b>SXGA</b> (Super XGA), sometimes UVGA, less often XVGA) = [2**8 x 2**8] [5 x 4]
<b>1366 x 768</b>	1.049088 million pixels ( <b>WXGA</b> (Wide XGA), sometimes <b>XGAW</b> ) = [2*683 x (2**8)*3] [(((16 / 9) * 768) + .6667) x 768]
(K) 1536 x 1024	1.572864 million pixels Kodak PhotoCD, 4 base (largest Kodak size that is smaller than 1920 x 1152 HDTV) = [3 x 2] [2** 9 x 2 ** 9]
1600 x 1024	1.638400 million pixels SXGAW or SXGA-W or WSXGA or W-SXGA (SXGA Wide) [(2**6)*(25)] [2**10]
<b>1600 x 1200</b>	1.92 million pixels (often <b>UXGA</b> ) (Ultra XGA) (high resolution document imaging workstation) = [2**4 x 2**4] [4 x 3] [25 x 25]
<b>1920 x 1200</b>	2.304 million pixels ( <b>HDTV</b> ) The computer version of HDTV (High Definition TV) resolution is 1920 x 1200 ([Sun.com] Microsystems) [(2**9)*3*5] x (2**4)*3*25] and has the HDTV 16 to 9 (16:9) aspect ratio. aka (also known as) <b>UXGAW</b> or UXGA-W (UXGA Wide) or <b>WUXGA</b> or W-UXGA (Wide UXGA) The 1920 x 1200 resolution is designed to match the NTSC (National Television System Committee) (525 horizontal lines, counted top to bottom, 480 lines visible) derived HDTV video resolutions of 1920 x 1080 and the old analog HDTV (NTSC derived) resolution of 1920 x 1035 and the PAL and SECAM derived analog HDTV video resolution of 1920 x 1152 (1152 = 2 x 576). The current standard HDTV resolutions are 1280 x 720 and 1920 x 1080. The actual resolution of HDTV streams transmitted will usually be 1920 x 1088, because MPEG-2 requires the number of lines to be in multiples of 16 (1088 lines = 68 x 16). On a 22.2 inch (564 mm) diagonal display this is approximately 103 dpi (4 dpmm). Samsung 24 inch (610 mm) display: [ <a href="http://www.samsungelectronics.com/monitor/240t.html">http://www.samsungelectronics.com/monitor/240t.html</a> ]
1800 x 1440	2.592 million pixels (very high resolution grayscale document imaging workstation) = [72 x 72] [25 x 20] = [(2**3)(3**2) x (2**3)(3**2)] [25 x 20]
2048 x 1536	3.146728 million pixels QXGA Quad XGA (very high resolution grayscale document imaging workstation) = [2**9 x 2**9] [4 x 3] Lasergraphics QXGA desktop projector: <a href="http://www.Lasergraphics.com/pages/lg2001.htm">http://www.Lasergraphics.com/pages/lg2001.htm</a>
(P) <b>2200 x 1700</b>	4.32 million pixels 8 1/2 x 11 inch <b>letter size</b> (A size) sheet at <b>200 dpi</b> or C size at 100 dpi or E size at 50 dpi, an A4 sheet at 9 dpmm is 2376 x 1680 = 3.99168 million pixels
2560 x 2048	5.24288 million pixels QSXGA Quad SXGA = [2 x 2] [1280 x 1024] = [2 x 2] [2**8 x 2**8] [5 x 4] = [2**9 x 2**9] [5 x 4]
(K) <b>3072 x 2048</b>	6.291456 million pixels <b>Kodak PhotoCD, 16 base</b> (captures all the resolution on most 35 mm film images) = [3 x 2] [2** 10 x 2 ** 10]
3200 x 2048	6.5536 million pixels QSXGAW or QSXGA-W or WQSXGA or W-QSXGA (Quad SXGA Wide) (4 times SXGAW resolution) [2 x 2] [(2**6)*(25)] [2**10] = [(2**7)*(25)] [2**11]
3200 x 2400	7.68 million pixels QUXGA (Quad UXGA) = [2 x 2] [1600 x 1200] = [2 x 2] [2**4 x 2**4] [4 x 3] [25 x 25] = [2**5 x 2**5] [4 x 3] [25 x 25]
(P) 3300 x 2550	8.415 million pixels 8 1/2 x 11 inch letter size (A size) sheet at 300 dpi or C size at 150 dpi, an A4 sheet at 12 dpmm is 3564 x 2520 = 8.98128 million pixels
<b>3840 x 2400</b>	9.216 million pixels <b>QUXGAW</b> or QUXGA-W (Quad UXGA Wide) or WQUXGA or W-QUXGA (Wide Quad UXGA) or QHDTV ( <b>Quad HDTV</b> ) or HDTVQ (HDTV Quad) approximately HDTV 16:9 aspect ratio. On a 22.2 inch (564 mm) diagonal display, this is approximately 206 dpi. (8.1 dpmm) [2 x 2] [1920 x 1200] = [2 x 2] [(2**9)*3*5] x (2**4)*3*25] = [(2**10)*3*5] x (2**5)*3*25] JVC QXGA and QUXGAW projector: [ <a href="http://www.jvc.com/pro/attributes/present/brochure/dilatech.pdf">http://www.jvc.com/pro/attributes/present/brochure/dilatech.pdf</a> ] and [ <a href="http://www.jvedig.com/digital_cinema.htm">http://www.jvedig.com/digital_cinema.htm</a> ] IBM 22.2 inch QUXGAW display, the T220 [ <a href="http://www.ibm.com/Press/prnews.nsf/jan/3C439AB5262CB49085256A78004B1ABB">http://www.ibm.com/Press/prnews.nsf/jan/3C439AB5262CB49085256A78004B1ABB</a> ]
4080 x 4080	16.6464 million pixels [51*5*(2**4)] x [51*5*(2**4)] Kodak 16 megapixel camera back. Size based on [4096 x 4096] = [(2**12) x (2**12)] = 2**24 pixels = 16,777,216 pixels -- with a few extra rows and columns. 16 bits per pixel (65,536 shades for each of red, green and blue = 281,474,976,710,656 colors or shades of red-green-blue), 96 MegaBytes per image, uncompressed. [ <a href="http://www.kodak.com/global/en/professional/products/cameras/dcsProBack/proBackIndex.jhtml">http://www.kodak.com/global/en/professional/products/cameras/dcsProBack/proBackIndex.jhtml</a> ]
(P) 4400 x 3400	14.96 million pixels 8 1/2 x 11 inch letter size (A size) sheet at 400 dpi or C size at 200 dpi or E size at 100 dpi, an A4 sheet at 16 dpmm is 4757 x 3360 = 15.96672 million pixels
5120 x 4096	20.97152 million pixels HSXGA [projected designation] Hexadecimal SXGA, 16 (hexadecimal) times the resolution of SXGA = [2 x 2] [2 x 2] [1280 x 1024] = [2 x 2] [2 x 2] [2**8 x 2**8] [5 x 4] = [2**10 x 2**10] [5 x 4]
(K) 6144 x 4096	25.165824 million pixels Kodak Professional PhotoCD, 64 base (captures all the resolution for most film formats larger than 35 mm) = [3 x 2] [2** 11 x 2 ** 11]
6400 x 4096	26.2144 million pixels HSXGAW [projected designation] or HSXGA-W or WHSXGA or W-HSXGA (Wide Hexadecimal SXGA), 16 (hexadecimal) times SXGA resolution [2 x 2] [2 x 2] [(2**6)*(25)] [2**10] = [(2**8)*(25)] [2**12]
6400 x 4800	30.72 million pixels HUXGA [projected designation] (Hexadecimal UXGA), 16 (hexadecimal) times the resolution of SUXGA [2 x 2] [2 x 2] [1600 x 1200] = [2 x 2] [2 x 2] [2**4 x 2**4] [4 x 3] [25 x 25] = [2**6 x 2**6] [4 x 3] [25 x 25]
(P) <b>6600 x 5100</b>	33.66 million pixels ( <b>Dynabook</b> ) 8 1/2 x 11 inch <b>letter size</b> (A size) sheet at <b>600 dpi</b> or C size at 300 dpi or E size at 150 dpi. See also Dynabook by Alan Kay (who said "The best way to predict the future is to invent it.", "Simple things should be simple. Complex things should be possible.", and "The Computer "Revolution" Hasn't Happened Yet") [ <a href="http://unrev.stanford.edu/presenters/alan_kay/alan_kay.html">http://unrev.stanford.edu/presenters/alan_kay/alan_kay.html</a> ] [ <a href="http://nano.xerox.com/want/papers/prds-comp-jan99.pdf">http://nano.xerox.com/want/papers/prds-comp-jan99.pdf</a> ] The Habits of Highly Successful Portable Document Readers by Roy Want & Beverly L. Harrison, Xerox PARC Appeared in IEEE Computer, January, 1999 pp.70
(P) 7128 x 5040	35.92512 million pixels (metric Dynabook) A4 size sheet at 24 dpmm (dots per millimeter), or A2 size sheet at 12 dpmm, or A0 size sheet at 6 dpmm.
7680 x 4800	36.864 million pixels HUXGAW [projected designation] or HUXGA-W (Hexadecimal UXGA Wide) or WHUXGA, 16 (hexadecimal) times the resolution of UXGA (HDTV) or 4 times the resolution of QUXGAW. 412 dpi (16.2 dpmm) on a 22.2 inch (564 mm) diagonal display, [2 x 2] [2 x 2] [1920 x 1200] = [2 x 2] [2 x 2] [(2**9)*3*5] x (2**4)*3*25] = [(2**11)*3*5] x (2**6)*3*25] This is probably near the upper limit of what can be perceived by a person in a single display under any and all stationary head conditions. All other display requirements are designed to accommodate the movement of one's head.
11,000 x 7,500	82.5 million pixels half resolution scan of entire aperture (full overscan to edge of aperture) of an aperture card at 200 dpi at 30 X reduction as used for A0 and E size drawings. [ <a href="http://www.WWL.co.uk">http://www.WWL.co.uk</a> ] Wicks and Wilson
<b>22,000 x 15,596</b>	343.112 million pixels, high resolution scan of entire aperture at 400 dpi at 30 X reduction as used for A0 and E size drawings. [ <a href="http://www.edg.dk/default_uk.asp">http://www.edg.dk/default_uk.asp</a> ] Microbox