

Overview:

Video Timing Spec for AST1520 and AST1525:

Spec	AST1520	AST1525
Interlace mode	O *Support in and out	O *Support in and out
HDMI 1.4b up to 1080p	O	O
HDMI 1.4b 2160p 30Hz	O	X
HDMI 1.4b 3D	O	O
HDMI 1.4b deep color	O	O
HDMI 2.0a 2160p 60Hz	O *Only 2160p 60Hz YUV420 input *Will do horizontal half down scale and convert 2160p 60Hz YUV420 input to 2160p 30Hz output	X
VESA DVI up to 1920x1200 60Hz Pixel clock < 165MHz	O	O
VESA VGA up to 1920x1200 60Hz Pixel clock < 150MHz	O	O
Maximum Frame Rate	full frame rate up to 60fps	full frame rate up to 60fps

Full List of Supported Timing:

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/*
** HDMI timing SN start from 0
** VESA timing SN start from 0x4000
**
** Ex:
** VESA_SN(20) = 0x4000 + 20 = 0x4014
*/
#define HDMI_TIMING_START 0
#define VESA_TIMING_START 0x4000 /* 16384 */
#define HDMI_SN(a) (HDMI_TIMING_START + a)
#define VESA_SN(a) (VESA_TIMING_START + a)

/*
Table Meaning:
-HA: Horizontal Active
-VA: Vertical Active
-Rate: Refresh Rate
-Hor: Horizontal Polarity
-Ver: Vertical Polarity
-PClk: Pixel Clock
-ScanMode: Scan Mode
-SN: The Unique Serial Number
*/

/* HDTV Timing */
/*  -HA      -VA      -Rate  -Hor   -Ver      -PClk      -ScanMode  -SN */
{640,      480,      60,    P_NEG, P_NEG,    252000,    Prog,      0},
{720,      480,      60,    P_NEG, P_NEG,    270270,    Prog,      1},
{720,      480,      60,    P_NEG, P_NEG,    270270,    Prog,      2},
{1280,     720,      60,    P_POS, P_POS,    742500,    Prog,      3},
{1920,     1080/2, 60,    P_POS, P_POS,    742500,    Interl,    4},
{1440/2,   480/2,   60,    P_NEG, P_NEG,    270270/2,  Interl,    5},
{1440/2,   480/2,   60,    P_NEG, P_NEG,    270270/2,  Interl,    6},
{1440/2,   240,    60,    P_NEG, P_NEG,    270270/2,  Prog,      7},
{1440/2,   240,    60,    P_NEG, P_NEG,    270270/2,  Prog,      8},
{1440/2,   240,    60,    P_NEG, P_NEG,    270270/2,  Prog,      9},
{1440/2,   240,    60,    P_NEG, P_NEG,    270270/2,  Prog,     10},
{1440,     480,    60,    P_NEG, P_NEG,    540450,    Prog,     11},
{1440,     480,    60,    P_NEG, P_NEG,    540450,    Prog,     12},
{1920,     1080,   60,    P_POS, P_POS,    1485000,   Prog,     13},
/*  -HA      -VA      -Rate  -Hor   -Ver      -PClk      -ScanMode  -SN */
{720,      576,    50,    P_NEG, P_NEG,    270000,    Prog,     14},
{720,      576,    50,    P_NEG, P_NEG,    270000,    Prog,     15},
{1280,     720,    50,    P_POS, P_POS,    742500,    Prog,     16},
{1920,     1080/2, 50,    P_POS, P_POS,    742500,    Interl,    17},

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{1440/2, 576/2, 50, P_NEG, P_NEG, 270000/2, Interl, 18},
{1440/2, 576/2, 50, P_NEG, P_NEG, 270000/2, Interl, 19},
{1440/2, 288, 50, P_NEG, P_NEG, 270000/2, Prog, 20},
{1440/2, 288, 50, P_NEG, P_NEG, 270000/2, Prog, 21},
{1440/2, 288, 50, P_NEG, P_NEG, 270000/2, Prog, 22},
{1440/2, 288, 50, P_NEG, P_NEG, 270000/2, Prog, 23},
{1440/2, 288, 50, P_NEG, P_NEG, 270000/2, Prog, 24},
{1440/2, 288, 50, P_NEG, P_NEG, 270000/2, Prog, 25},
{1440, 576, 50, P_NEG, P_POS, 540000, Prog, 26},
{1440, 576, 50, P_NEG, P_POS, 540000, Prog, 27},
{1920, 1080, 50, P_POS, P_POS, 1485000, Prog, 28},
{1920, 1080, 24, P_POS, P_POS, 742500, Prog, 29},
{1920, 1080, 25, P_POS, P_POS, 742500, Prog, 30},
/* HDTV with wrong polarity */
/* -HA -VA -Rate -Hor -Ver -Pclk -ScanMode -SN */
{1440/2, 240, 60, P_POS, P_POS, 270270/2, Prog, 31},
{1440/2, 480/2, 60, P_POS, P_POS, 270270/2, Interl, 32},
{1440/2, 576/2, 50, P_POS, P_POS, 270000/2, Interl, 33},
{1440/2, 288, 50, P_POS, P_POS, 270000/2, Prog, 34},
{720, 480, 60, P_POS, P_POS, 270270, Prog, 35},
{720, 576, 50, P_POS, P_POS, 270000, Prog, 36},
{1280, 720, 50, P_NEG, P_NEG, 742500, Prog, 37},
{1280, 720, 60, P_NEG, P_NEG, 742500, Prog, 38},
{1440, 480, 60, P_POS, P_POS, 540450, Prog, 39},
{1440, 576, 50, P_NEG, P_NEG, 540000, Prog, 40},
{1920, 1080/2, 50, P_NEG, P_NEG, 742500, Interl, 41 }
{1920, 1080/2, 60, P_NEG, P_NEG, 742500, Interl, 42},
{1920, 1080, 24, P_NEG, P_NEG, 742500, Prog, 43},
{1920, 1080, 25, P_NEG, P_NEG, 742500, Prog, 44},
{1920, 1080, 30, P_NEG, P_NEG, 742500, Prog, 45},
{1920, 1080, 50, P_NEG, P_NEG, 1485000, Prog, 46},
{1920, 1080, 60, P_NEG, P_NEG, 1485000, Prog, 47},

/*CEA-861-D Timing*/
/* -HA -VA -Rate -Hor -Ver -Pclk -ScanMode -SN */
{1280, 720, 24, P_POS, P_POS, 594000, Prog, 48},
{1280, 720, 25, P_POS, P_POS, 742500, Prog, 49},
{1280, 720, 30, P_POS, P_POS, 742500, Prog, 50},
{720*2, 240, 60, P_NEG, P_NEG, 310260, Interl, 51},
{720*2, 240, 60, P_NEG, P_NEG, 310260, Interl, 52},
{720*2, 240, 60, P_NEG, P_NEG, 310260, Prog, 53},
{720*2, 240, 60, P_NEG, P_NEG, 310260, Prog, 54},
{720*4, 240, 60, P_NEG, P_NEG, 620520, Interl, 55},
{720*4, 240, 60, P_NEG, P_NEG, 620520, Interl, 56},
{720*4, 240, 60, P_NEG, P_NEG, 620520, Prog, 57},
{720*4, 240, 60, P_NEG, P_NEG, 620520, Prog, 58},
{720*2, 288, 50, P_NEG, P_NEG, 270000, Interl, 59},
{720*2, 288, 50, P_NEG, P_NEG, 270000, Interl, 60},
{720*2, 288, 50, P_NEG, P_NEG, 270000, Prog, 61},

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{720*2,	288,	50,	P_NEG,	P_NEG,	270000,	Prog,	62},
{720*4,	288,	50,	P_NEG,	P_NEG,	540000,	Interl,	63},
{720*4,	288,	50,	P_NEG,	P_NEG,	540000,	Interl,	64},
{720*4,	288,	50,	P_NEG,	P_NEG,	540000,	Prog,	65},
{720*4,	288,	50,	P_NEG,	P_NEG,	540000,	Prog,	66},
{720*2,	576,	50,	P_NEG,	P_NEG,	540000,	Prog,	67},
{720*2,	576,	50,	P_NEG,	P_NEG,	540000,	Prog,	68},
{1920,	1080,	30,	P_POS,	P_POS,	742500,	Prog,	69},
{720*4,	480,	60,	P_NEG,	P_NEG,	1081080,	Prog,	70},
{720*4,	480,	60,	P_NEG,	P_NEG,	1081080,	Prog,	71},
{720*4,	576,	50,	P_NEG,	P_NEG,	1081080,	Prog,	72},
{720*4,	576,	50,	P_NEG,	P_NEG,	1081080,	Prog,	73},
{1920,	540,	50,	P_POS,	P_NEG,	720000,	Interl,	74},
/*CEA-861-D Timing with very high refresh rate. */							
/* -HA -VA -Rate -Hor -Ver -Pclk -ScanMode -SN */							
{1920,	540,	100,	P_POS,	P_POS,	1485000,	Interl,	75},
{1280,	720,	100,	P_POS,	P_POS,	1485000,	Prog,	76},
{ 720,	576,	100,	P_NEG,	P_NEG,	540000,	Prog,	77},
{ 720,	576,	100,	P_NEG,	P_NEG,	540000,	Prog,	78},
{ 720,	288,	100,	P_NEG,	P_NEG,	270000,	Interl,	79},
{ 720,	288,	100,	P_NEG,	P_NEG,	270000,	Interl,	80},
{1920,	540,	120,	P_POS,	P_POS,	1485000,	Interl,	81},
{1280,	720,	120,	P_POS,	P_POS,	1485000,	Prog,	82},
{ 720,	480,	120,	P_NEG,	P_NEG,	540540,	Prog,	83},
{ 720,	480,	120,	P_NEG,	P_NEG,	540540,	Prog,	84},
{ 720,	240,	120,	P_NEG,	P_NEG,	270270,	Interl,	85},
{ 720,	240,	120,	P_NEG,	P_NEG,	270270,	Interl,	86},
{ 720,	576,	200,	P_NEG,	P_NEG,	1080000,	Prog,	87},
{ 720,	576,	200,	P_NEG,	P_NEG,	1080000,	Prog,	88},
{ 720,	288,	200,	P_NEG,	P_NEG,	540000,	Interl,	89},
{ 720,	288,	200,	P_NEG,	P_NEG,	540000,	Interl,	90},
{ 720,	480,	240,	P_NEG,	P_NEG,	1081080,	Prog,	91},
{ 720,	480,	240,	P_NEG,	P_NEG,	1081080,	Prog,	92},
{ 720,	240,	240,	P_NEG,	P_NEG,	540540,	Interl,	93},
{ 720,	240,	240,	P_NEG,	P_NEG,	540540,	Interl,	94},
/* frame packing 3D timings */							
/* -HA -VA -Rate -Hor -Ver -Pclk -ScanMode -SN */							
{1280,	1470,	60,	P_POS,	P_POS,	1485000,	Prog,	95},
{1280,	1470,	50,	P_POS,	P_POS,	1485000,	Prog,	96},
{1280,	1470,	24,	P_NEG,	P_NEG,	594000,	Prog,	97},
{1280,	1470,	30,	P_NEG,	P_NEG,	1485000,	Prog,	98},
{1920,	2205,	24,	P_POS,	P_POS,	1485000,	Prog,	99},
{1920,	2205,	30,	P_POS,	P_POS,	1485000,	Prog,	100},
{1920,	2205,	50,	P_POS,	P_POS,	2970000,	Prog,	101},
{1920,	2205,	60,	P_POS,	P_POS,	2970000,	Prog,	102},
/* 4K (2160p) */							
/* -HA -VA -Rate -Hor -Ver -Pclk -ScanMode -SN */							
{3840,	2160,	24,	P_POS,	P_POS,	2970000,	Prog,	103},
{3840/2,	2160,	50,	P_POS,	P_POS,	2970000,	Prog,	104},

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{3840,      2160,      25,      P_POS, P_POS,      2970000,      Prog,      105},
{3840/2,    2160,      60,      P_POS, P_POS,      2970000,      Prog,      106},
{3840,      2160,      30,      P_POS, P_POS,      2970000,      Prog,      107},
/* 4K SMPTE */
/*  -HA  -VA  -Rate  -Hor  -Ver  -Pclk  -ScanMode  -SN */
{4096,      2160,      24,      P_POS, P_POS,      2970000,      Prog,      108},
{4096/2,    2160,      50,      P_POS, P_POS,      2970000,      Prog,      109},
{4096,      2160,      25,      P_POS, P_POS,      2970000,      Prog,      110},
{4096/2,    2160,      60,      P_POS, P_POS,      2970000,      Prog,      111},
{4096,      2160,      30,      P_POS, P_POS,      2970000,      Prog,      112},
/*  -HA  -VA  -Rate  -Hor  -Ver  -Pclk  -ScanMode  -SN */
{2560,      1080,      24,      P_POS, P_POS,      990000,       Prog,      113},
{2560,      1080,      25,      P_POS, P_POS,      900000,       Prog,      114},
{2560,      1080,      30,      P_POS, P_POS,      1188000,      Prog,      115},
{2560,      1080,      50,      P_POS, P_POS,      1856250,      Prog,      116},
{2560,      1080,      60,      P_POS, P_POS,      1980000,      Prog,      117},
/*****/
/* VESA Digital Timing */
/*  -HA  -VA  -Rate  -Hor  -Ver  -Pclk  -ScanMode  -SN */
{ 640,      350,      85,      P_POS, P_NEG,      315000,      Prog,      VESA_SN(0)},
{ 640,      400,      85,      P_NEG, P_POS,      315000,      Prog,      VESA_SN(1)},
{ 720,      400,      85,      P_NEG, P_POS,      355000,      Prog,      VESA_SN(2)},
{ 640,      480,      60,      P_NEG, P_NEG,      251750,      Prog,      VESA_SN(3)},
{ 640,      480,      72,      P_NEG, P_NEG,      315000,      Prog,      VESA_SN(4)},
{ 640,      480,      75,      P_NEG, P_NEG,      315000,      Prog,      VESA_SN(5)},
{ 640,      480,      85,      P_NEG, P_NEG,      360000,      Prog,      VESA_SN(6)},
{ 800,      600,      56,      P_POS, P_POS,      360000,      Prog,      VESA_SN(7)},
{ 800,      600,      60,      P_POS, P_POS,      400000,      Prog,      VESA_SN(8)},
{ 800,      600,      72,      P_POS, P_POS,      500000,      Prog,      VESA_SN(9)},
{ 800,      600,      75,      P_POS, P_POS,      495000,      Prog,      VESA_SN(10)},
{ 800,      600,      85,      P_POS, P_POS,      562500,      Prog,      VESA_SN(11)},
{ 848,      480,      60,      P_POS, P_POS,      337500,      Prog,      VESA_SN(12)},
{1024,      384,      87,      P_POS, P_POS,      449000,      Interl,    VESA_SN(13)},
{1024,      768,      60,      P_NEG, P_NEG,      650000,      Prog,      VESA_SN(14)},
{1024,      768,      70,      P_NEG, P_NEG,      750000,      Prog,      VESA_SN(15)},
{1024,      768,      75,      P_POS, P_POS,      787500,      Prog,      VESA_SN(16)},
{1024,      768,      85,      P_POS, P_POS,      945000,      Prog,      VESA_SN(17)},
{1152,      864,      75,      P_POS, P_POS,      1080000,     Prog,      VESA_SN(18)},
{1280,      768,      60,      P_POS, P_NEG,      682500,      Prog,      VESA_SN(19)},
{1280,      768,      60,      P_NEG, P_POS,      795000,      Prog,      VESA_SN(20)},
{1280,      768,      75,      P_NEG, P_POS,      1022500,     Prog,      VESA_SN(21)},
{1280,      768,      85,      P_NEG, P_POS,      1175000,     Prog,      VESA_SN(22)},
{1280,      960,      60,      P_POS, P_POS,      1080000,     Prog,      VESA_SN(23)},
{1280,      960,      85,      P_POS, P_POS,      1485000,     Prog,      VESA_SN(24)},
{1280,      1024,     60,      P_POS, P_POS,      1080000,     Prog,      VESA_SN(25)},
{1280,      1024,     75,      P_POS, P_POS,      1350000,     Prog,      VESA_SN(26)},
{1280,      1024,     85,      P_POS, P_POS,      1575000,     Prog,      VESA_SN(27)},
{1360,      768,      60,      P_POS, P_POS,      855000,      Prog,      VESA_SN(28)},
{1400,      1050,     60,      P_POS, P_NEG,      1010000,     Prog,      VESA_SN(29)},

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{1400,      1050,      60,      P_NEG, P_POS,      1217500,Prog, VESA_SN(30)},
{1400,      1050,      75,      P_NEG, P_POS,      1560000,Prog, VESA_SN(31)},
{1400,      1050,      85,      P_NEG, P_POS,      1795000,Prog, VESA_SN(32)},
{1440,      900,       60,      P_POS, P_NEG,      887500, Prog, VESA_SN(33)},
{1440,      900,       60,      P_NEG, P_POS,      1065000,Prog, VESA_SN(34)},
{1440,      900,       75,      P_NEG, P_POS,      1367500,Prog, VESA_SN(35)},
{1440,      900,       85,      P_NEG, P_POS,      1570000,Prog, VESA_SN(36)},
{1600,      1200,      60,      P_POS, P_POS,      1620000,Prog, VESA_SN(37)},
{1600,      1200,      65,      P_POS, P_POS,      1755000,Prog, VESA_SN(38)},
{1600,      1200,      70,      P_POS, P_POS,      1890000,Prog, VESA_SN(39)},
{1600,      1200,      75,      P_POS, P_POS,      2025000,Prog, VESA_SN(40)},
{1600,      1200,      85,      P_POS, P_POS,      2295000,Prog, VESA_SN(41)},
{1680,      1050,      60,      P_POS, P_NEG,      1190000,Prog, VESA_SN(42)},
{1680,      1050,      60,      P_NEG, P_POS,      1462500,Prog, VESA_SN(43)},
{1680,      1050,      75,      P_NEG, P_POS,      1870000,Prog, VESA_SN(44)},
{1680,      1050,      85,      P_NEG, P_POS,      2147500,Prog, VESA_SN(45)},
{1792,      1344,      60,      P_NEG, P_POS,      2047500,Prog, VESA_SN(46)},
{1792,      1344,      75,      P_NEG, P_POS,      2610000,Prog, VESA_SN(47)},
{1856,      1392,      60,      P_NEG, P_POS,      2182500,Prog, VESA_SN(48)},
{1856,      1392,      75,      P_NEG, P_POS,      2880000,Prog, VESA_SN(49)},
{1920,      1200,      60,      P_POS, P_NEG,      1540000,Prog, VESA_SN(50)},
{1920,      1200,      60,      P_NEG, P_POS,      1932500,Prog, VESA_SN(51)},
{1920,      1200,      75,      P_NEG, P_POS,      2452500,Prog, VESA_SN(52)},
{1920,      1200,      75,      P_NEG, P_POS,      2812500,Prog, VESA_SN(53)},
{1920,      1440,      60,      P_NEG, P_POS,      2340000,Prog, VESA_SN(54)},
{1920,      1440,      75,      P_NEG, P_POS,      2970000,Prog, VESA_SN(55)},
{2560,      1600,      60,      P_NEG, P_POS,      2685000,Prog, VESA_SN(56)},
/* VESA New */
/*  -HA  -VA  -Rate  -Hor  -Ver  -Pclk  -ScanMode  -SN */
{ 800,      600,      120,     P_POS, P_NEG,      732500, Prog, VESA_SN(57)},
{1024,      384,      87,      P_POS, P_POS,      449000, Prog, VESA_SN(58)},
{1024,      768,      120,     P_POS, P_NEG,      1155000,Prog, VESA_SN(59)},
{1152,      864,      85,      P_NEG, P_POS,      1196500,Prog, VESA_SN(60)},
{1152,      864,      100,     P_NEG, P_POS,      1434700,Prog, VESA_SN(61)},
{1152,      864,      60,      P_NEG, P_POS,      816200, Prog, VESA_SN(62)},
{1280,      768,      120,     P_POS, P_NEG,      1402500,Prog, VESA_SN(63)},
{1280,      800,      60,      P_POS, P_NEG,      710000, Prog, VESA_SN(64)},
{1280,      800,      60,      P_NEG, P_POS,      835000, Prog, VESA_SN(65)},
{1280,      800,      75,      P_NEG, P_POS,      1065000,Prog, VESA_SN(66)},
{1280,      800,      85,      P_NEG, P_POS,      1225000,Prog, VESA_SN(67)},
{1280,      800,      120,     P_POS, P_NEG,      1462500,Prog, VESA_SN(68)},
{1280,      960,      120,     P_POS, P_NEG,      1755000,Prog, VESA_SN(69)},
{1280,      1024,     120,     P_POS, P_NEG,      1872500,Prog, VESA_SN(70)},
{1360,      768,      120,     P_POS, P_NEG,      1482500,Prog, VESA_SN(71)},
{1366,      768,      60,      P_POS, P_POS,      720000, Prog, VESA_SN(72)},
{1366,      768,      60,      P_POS, P_NEG,      720000, Prog, VESA_SN(73)},
{1366,      768,      60,      P_POS, P_NEG,      855000, Prog, VESA_SN(74)},
{1366,      768,      60,      P_POS, P_POS,      855000, Prog, VESA_SN(75)},
{1400,      1050,     120,     P_POS, P_NEG,      2080000,Prog, VESA_SN(76)},

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{1440,      900,      120,      P_POS, P_NEG,      1827500,Prog, VESA_SN(77)},
{1600,      900,      60,       P_POS, P_NEG,      1080000,Prog, VESA_SN(78)},
{1600,      1200,     120,     P_POS, P_NEG,      2682500,Prog, VESA_SN(79)},
{1680,      1050,     120,     P_POS, P_NEG,      2455000,Prog, VESA_SN(80)},
{1920,      1080,     60,       P_POS, P_POS,      1485000,Prog, VESA_SN(81)},
{2048,      1152,     60,       P_POS, P_POS,      1620000,Prog, VESA_SN(82)},
{2560,      1600,     60,       P_POS, P_NEG,      2685000,Prog, VESA_SN(83)},
/*VESA CVT Timing*/
/*  -HA    -VA    -Rate  -Hor   -Ver    -PClk    -ScanMode  -SN */
{ 640,      480,      50,      P_NEG, P_POS,      197500, Prog, VESA_SN(84)},
{ 640,      480,      60,      P_NEG, P_POS,      237500, Prog, VESA_SN(85)},
{ 640,      480,      75,      P_NEG, P_POS,      307500, Prog, VESA_SN(86)},
{ 640,      480,      85,      P_NEG, P_POS,      350000, Prog, VESA_SN(87)},
{ 640,      480,      60,      P_POS, P_NEG,      235000, Prog, VESA_SN(88)},
{ 800,      600,      50,      P_NEG, P_POS,      307500, Prog, VESA_SN(89)},
{ 800,      600,      60,      P_NEG, P_POS,      382500, Prog, VESA_SN(90)},
{ 800,      600,      75,      P_NEG, P_POS,      490000, Prog, VESA_SN(91)},
{ 800,      600,      85,      P_NEG, P_POS,      567500, Prog, VESA_SN(92)},
{ 800,      600,      60,      P_POS, P_NEG,      355000, Prog, VESA_SN(93)},
{1024,      768,      50,      P_NEG, P_POS,      520000, Prog, VESA_SN(94)},
{1024,      768,      60,      P_NEG, P_POS,      635000, Prog, VESA_SN(95)},
{1024,      768,      75,      P_NEG, P_POS,      820000, Prog, VESA_SN(96)},
{1024,      768,      85,      P_NEG, P_POS,      945000, Prog, VESA_SN(97)},
{1024,      768,      60,      P_POS, P_NEG,      560000, Prog, VESA_SN(98)},
{1280,      960,      50,      P_NEG, P_POS,      830000, Prog, VESA_SN(99)},
{1280,      960,      60,      P_NEG, P_POS,      1012500,Prog, VESA_SN(100)},
{1280,      960,      75,      P_NEG, P_POS,      1300000,Prog, VESA_SN(101)},
{1280,      960,      85,      P_NEG, P_POS,      1482500,Prog, VESA_SN(102)},
{1280,      960,      60,      P_POS, P_NEG,      852500, Prog, VESA_SN(103)},
{1400,      1050,     50,      P_NEG, P_POS,      1000000,Prog, VESA_SN(104)},
{1400,      1050,     60,      P_POS, P_NEG,      1010000,Prog, VESA_SN(105)},
{1600,      1200,     50,      P_NEG, P_POS,      1315000,Prog, VESA_SN(106)},
{1600,      1200,     60,      P_NEG, P_POS,      1610000,Prog, VESA_SN(107)},
{1600,      1200,     75,      P_NEG, P_POS,      2047500,Prog, VESA_SN(108)},
{1600,      1200,     85,      P_NEG, P_POS,      2350000,Prog, VESA_SN(109)},
{1600,      1200,     60,      P_POS, P_NEG,      1302500,Prog, VESA_SN(110)},
{1920,      1440,     50,      P_NEG, P_POS,      1922500,Prog, VESA_SN(111)},
{1920,      1440,     60,      P_NEG, P_POS,      2335000,Prog, VESA_SN(112)},
{1920,      1440,     75,      P_NEG, P_POS,      2980000,Prog, VESA_SN(113)},
{1920,      1440,     60,      P_POS, P_NEG,      1847500,Prog, VESA_SN(114)},
{2048,      1536,     50,      P_NEG, P_POS,      2190000,Prog, VESA_SN(115)},
{2048,      1536,     60,      P_NEG, P_POS,      2672000,Prog, VESA_SN(116)},
{2048,      1536,     60,      P_POS, P_NEG,      2092500,Prog, VESA_SN(117)},
{1280,      1024,     50,      P_NEG, P_POS,      885000, Prog, VESA_SN(118)},
{1280,      1024,     60,      P_NEG, P_POS,      1090000,Prog, VESA_SN(119)},
{1280,      1024,     75,      P_NEG, P_POS,      1387500,Prog, VESA_SN(120)},
{1280,      1024,     85,      P_NEG, P_POS,      1595000,Prog, VESA_SN(121)},
{1280,      1024,     60,      P_POS, P_NEG,      910000, Prog, VESA_SN(122)},
{1280,      768,      50,      P_NEG, P_POS,      652500, Prog, VESA_SN(123)},

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{1280,	768,	60,	P_POS, P_NEG,	682500,	Prog,	VESA_SN(124)},
{ 848,	480,	50,	P_NEG, P_POS,	260000,	Prog,	VESA_SN(125)},
{ 848,	480,	60,	P_NEG, P_POS,	315000,	Prog,	VESA_SN(126)},
{ 848,	480,	75,	P_NEG, P_POS,	410000,	Prog,	VESA_SN(127)},
{ 848,	480,	85,	P_NEG, P_POS,	467500,	Prog,	VESA_SN(128)},
{ 848,	480,	60,	P_POS, P_NEG,	297500,	Prog,	VESA_SN(129)},
{1064,	600,	50,	P_NEG, P_POS,	407500,	Prog,	VESA_SN(130)},
{1064,	600,	60,	P_NEG, P_POS,	505000,	Prog,	VESA_SN(131)},
{1064,	600,	75,	P_NEG, P_POS,	652500,	Prog,	VESA_SN(132)},
{1064,	600,	85,	P_NEG, P_POS,	752500,	Prog,	VESA_SN(133)},
{1064,	600,	60,	P_POS, P_NEG,	452500,	Prog,	VESA_SN(134)},
{1280,	720,	50,	P_NEG, P_POS,	605000,	Prog,	VESA_SN(135)},
{1280,	720,	60,	P_NEG, P_POS,	745000,	Prog,	VESA_SN(136)},
{1280,	720,	75,	P_NEG, P_POS,	957500,	Prog,	VESA_SN(137)},
{1280,	720,	85,	P_NEG, P_POS,	1102500,	Prog,	VESA_SN(138)},
{1280,	720,	60,	P_POS, P_NEG,	640000,	Prog,	VESA_SN(139)},
{1360,	768,	50,	P_NEG, P_POS,	690000,	Prog,	VESA_SN(140)},
{1360,	768,	60,	P_NEG, P_POS,	847500,	Prog,	VESA_SN(141)},
{1360,	768,	75,	P_NEG, P_POS,	1090000,	Prog,	VESA_SN(142)},
{1360,	768,	85,	P_NEG, P_POS,	1252500,	Prog,	VESA_SN(143)},
{1360,	768,	60,	P_POS, P_NEG,	720000,	Prog,	VESA_SN(144)},
{1704,	960,	50,	P_NEG, P_POS,	1105000,	Prog,	VESA_SN(145)},
{1704,	960,	60,	P_NEG, P_POS,	1352500,	Prog,	VESA_SN(146)},
{1704,	960,	75,	P_NEG, P_POS,	1727500,	Prog,	VESA_SN(147)},
{1704,	960,	85,	P_NEG, P_POS,	1985000,	Prog,	VESA_SN(148)},
{1704,	960,	60,	P_POS, P_NEG,	1102500,	Prog,	VESA_SN(149)},
{1864,	1050,	50,	P_NEG, P_POS,	1327500,	Prog,	VESA_SN(150)},
{1864,	1050,	60,	P_NEG, P_POS,	1625000,	Prog,	VESA_SN(151)},
{1864,	1050,	75,	P_NEG, P_POS,	2075000,	Prog,	VESA_SN(152)},
{1864,	1050,	85,	P_NEG, P_POS,	2380000,	Prog,	VESA_SN(153)},
{1864,	1050,	60,	P_POS, P_NEG,	1310000,	Prog,	VESA_SN(154)},
{1920,	1080,	50,	P_NEG, P_POS,	1415000,	Prog,	VESA_SN(155)},
{1920,	1080,	60,	P_NEG, P_POS,	1730000,	Prog,	VESA_SN(156)},
{1920,	1080,	75,	P_NEG, P_POS,	2207500,	Prog,	VESA_SN(157)},
{1920,	1080,	85,	P_NEG, P_POS,	2532000,	Prog,	VESA_SN(158)},
{1920,	1080,	60,	P_POS, P_NEG,	1385000,	Prog,	VESA_SN(159)},
{2128,	1200,	50,	P_NEG, P_POS,	1750000,	Prog,	VESA_SN(160)},
{2128,	1200,	60,	P_NEG, P_POS,	2137500,	Prog,	VESA_SN(161)},
{2128,	1200,	75,	P_NEG, P_POS,	2725000,	Prog,	VESA_SN(162)},
{2128,	1200,	60,	P_POS, P_NEG,	1695000,	Prog,	VESA_SN(163)},
{2560,	1440,	50,	P_NEG, P_POS,	2562000,	Prog,	VESA_SN(164)},
{2560,	1440,	60,	P_POS, P_NEG,	2415000,	Prog,	VESA_SN(165)},
{2728,	1536,	50,	P_NEG, P_POS,	2917000,	Prog,	VESA_SN(166)},
{2728,	1536,	60,	P_POS, P_NEG,	2737000,	Prog,	VESA_SN(167)},
{768,	480,	50,	P_NEG, P_POS,	237500,	Prog,	VESA_SN(168)},
{768,	480,	60,	P_NEG, P_POS,	287500,	Prog,	VESA_SN(169)},
{768,	480,	75,	P_NEG, P_POS,	367500,	Prog,	VESA_SN(170)},
{768,	480,	85,	P_NEG, P_POS,	425000,	Prog,	VESA_SN(171)},
{768,	480,	60,	P_POS, P_NEG,	275000,	Prog,	VESA_SN(172)},


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{960,          600,          50,          P_NEG, P_POS,          370000,Prog,          VESA_SN(173)},
{960,          600,          60,          P_NEG, P_POS,          452500,Prog,          VESA_SN(174)},
{960,          600,          75,          P_NEG, P_POS,          587500,Prog,          VESA_SN(175)},
{960,          600,          85,          P_NEG, P_POS,          677500,Prog,          VESA_SN(176)},
{960,          600,          60,          P_POS, P_NEG,          415000,Prog,          VESA_SN(177)},
{1152,         720,          50,          P_NEG, P_POS,          545000,Prog,          VESA_SN(178)},
{1152,         720,          60,          P_NEG, P_POS,          667500,Prog,          VESA_SN(179)},
{1152,         720,          75,          P_NEG, P_POS,          857500,Prog,          VESA_SN(180)},
{1152,         720,          85,          P_NEG, P_POS,          990000,Prog,          VESA_SN(181)},
{1152,         720,          60,          P_POS, P_NEG,          582500,Prog,          VESA_SN(182)},
{1224,         768,          50,          P_NEG, P_POS,          622500,Prog,          VESA_SN(183)},
{1224,         768,          60,          P_NEG, P_POS,          760000,Prog,          VESA_SN(184)},
{1224,         768,          75,          P_NEG, P_POS,          977500,Prog,          VESA_SN(185)},
{1224,         768,          85,          P_NEG, P_POS,          1125000,Prog,          VESA_SN(186)},
{1224,         768,          60,          P_POS, P_NEG,          655000, Prog,          VESA_SN(187)},
{1536,         960,          50,          P_NEG, P_POS,          997500, Prog,          VESA_SN(188)},
{1536,         960,          60,          P_NEG, P_POS,          1212500,Prog,          VESA_SN(189)},
{1536,         960,          75,          P_NEG, P_POS,          1552500,Prog,          VESA_SN(190)},
{1536,         960,          85,          P_NEG, P_POS,          1785000,Prog,          VESA_SN(191)},
{1536,         960,          60,          P_POS, P_NEG,          1005000,Prog,          VESA_SN(192)},
{1680,        1050,          50,          P_NEG, P_POS,          1195000,Prog,          VESA_SN(193)},
{1680,        1050,          60,          P_POS, P_NEG,          1190000,Prog,          VESA_SN(194)},
{1728,        1080,          50,          P_NEG, P_POS,          1272500,Prog,          VESA_SN(195)},
{1728,        1080,          60,          P_NEG, P_POS,          1557500,Prog,          VESA_SN(196)},
{1728,        1080,          75,          P_NEG, P_POS,          1977500,Prog,          VESA_SN(197)},
{1728,        1080,          85,          P_NEG, P_POS,          2270000,Prog,          VESA_SN(198)},
{1728,        1080,          60,          P_POS, P_NEG,          1257500,Prog,          VESA_SN(199)},
{1920,        1200,          50,          P_NEG, P_POS,          1582500,Prog,          VESA_SN(200)},
{1920,        1200,          85,          P_NEG, P_POS,          2812000,Prog,          VESA_SN(201)},
{1920,        1200,          60,          P_POS, P_NEG,          1540000,Prog,          VESA_SN(202)},
{2304,        1440,          50,          P_NEG, P_POS,          2302500,Prog,          VESA_SN(203)},
{2304,        1440,          60,          P_NEG, P_POS,          2807000,Prog,          VESA_SN(204)},
{2304,        1440,          60,          P_POS, P_NEG,          2187500,Prog,          VESA_SN(205)},
{2456,        1536,          50,          P_NEG, P_POS,          625000, Prog,          VESA_SN(206)},
{2456,        1536,          60,          P_POS, P_NEG,          2477500,Prog,          VESA_SN(207)},
/* PC Timing */
/*  -HA  -VA  -Rate  -Hor  -Ver  -Pclk  -ScanMode  -SN */
{640,          350,          70,          P_POS, P_NEG,          251750, Prog,          VESA_SN(208)},
{720,          400,          70,          P_NEG, P_POS,          283200, Prog,          VESA_SN(209)},
{1024,         384,          87,          P_POS, P_POS,          449000, Prog,          VESA_SN(210)},
{640,          480,          67,          P_NEG, P_NEG,          302400, Prog,          VESA_SN(211)},
{834,          624,          75,          P_NEG, P_NEG,          572800, Prog,          VESA_SN(212)},
{1024,         768,          60,          P_NEG, P_NEG,          639900, Prog,          VESA_SN(213)},
{1024,         768,          75,          P_NEG, P_NEG,          800000, Prog,          VESA_SN(214)},
{1152,         870,          75,          P_NEG, P_NEG,          1000000,Prog,          VESA_SN(215)},
/*SPWG Panel Timing*/
/*  -HA  -VA  -Rate  -Hor  -Ver  -Pclk  -ScanMode  -SN */
{1024,         768,          60,          P_NEG, P_NEG,          560000, Prog,          VESA_SN(216)},
{1400,        1050,          60,          P_NEG, P_NEG,          1010000,Prog,          VESA_SN(217)},

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{1600,      1200,      60,      P_NEG, P_NEG,      1301990,Prog, VESA_SN(218)},
{1280,      800,      60,      P_NEG, P_NEG,      710000, Prog, VESA_SN(219)},
{1440,      900,      60,      P_NEG, P_NEG,      887500, Prog, VESA_SN(220)},
{1680,      1050,     60,      P_NEG, P_NEG,     1190000,Prog, VESA_SN(221)},
{1920,      1200,     60,      P_NEG, P_NEG,     1540000,Prog, VESA_SN(222)},
{2048,      1536,     60,      P_NEG, P_NEG,     2092000,Prog, VESA_SN(223)},
/* GTF */
/*  -HA  -VA  -Rate  -Hor  -Ver  -Pclk  -ScanMode  -SN */
{1024,      768,      75,      P_POS, P_NEG,      810079, Prog, VESA_SN(224)},
{1280,      800,      75,      P_POS, P_NEG,     1070020,Prog, VESA_SN(225)},
/*  -HA  -VA  -Rate  -Hor  -Ver  -Pclk  -ScanMode  -SN */
{852,       480,      60,      P_NEG, P_NEG,      340252, Prog, VESA_SN(226)},
{1400,      788,      60,      P_POS, P_NEG,      757500, Prog, VESA_SN(227)},
{1280,      1024,     96,      P_POS, P_POS,     1258291,Prog, VESA_SN(228)},
{1365,      1024,     60,      P_POS, P_POS,     1200000,Prog, VESA_SN(229)},
{1365,      1024,     75,      P_POS, P_POS,     1440000,Prog, VESA_SN(230)},
{1440,      960,      72,      P_NEG, P_NEG,     1290240,Prog, VESA_SN(231)},
{1920,      1440,     60,      P_NEG, P_POS,     2340000,Prog, VESA_SN(232)},
{1920,      1440,     75,      P_NEG, P_POS,     2970000,Prog, VESA_SN(233)},
{2048,      1280,     60,      P_NEG, P_NEG,     2213280,Prog, VESA_SN(234)},
{832,       624,      75,      P_NEG, P_NEG,     549360, Prog, VESA_SN(235)},
{1024,      576,      60,      P_POS, P_POS,     472032, Prog, VESA_SN(236)},
{1365,      1024,     60,      P_NEG, P_NEG,     1165152,Prog, VESA_SN(237)},
{1400,      788,      60,      P_NEG, P_NEG,     918000, Prog, VESA_SN(238)},
{1600,      1024,     60,      P_NEG, P_NEG,     1363580,Prog, VESA_SN(239)},
/*
 * 2560x1200
 * following 2560x1200 timings are created by VESA CVT generator
 */
/*  -HA  -VA  -Rate  -Hor  -Ver  -Pclk  -ScanMode  -SN */
{2560,      1200,     30,      P_NEG, P_POS,     1197500, Prog, VESA_SN(240)},
{2560,      1200,     60,      P_NEG, P_POS,     2577500, Prog, VESA_SN(241)},
{2560,      1200,     60,      P_POS, P_NEG,     2015000, Prog, VESA_SN(242)},
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