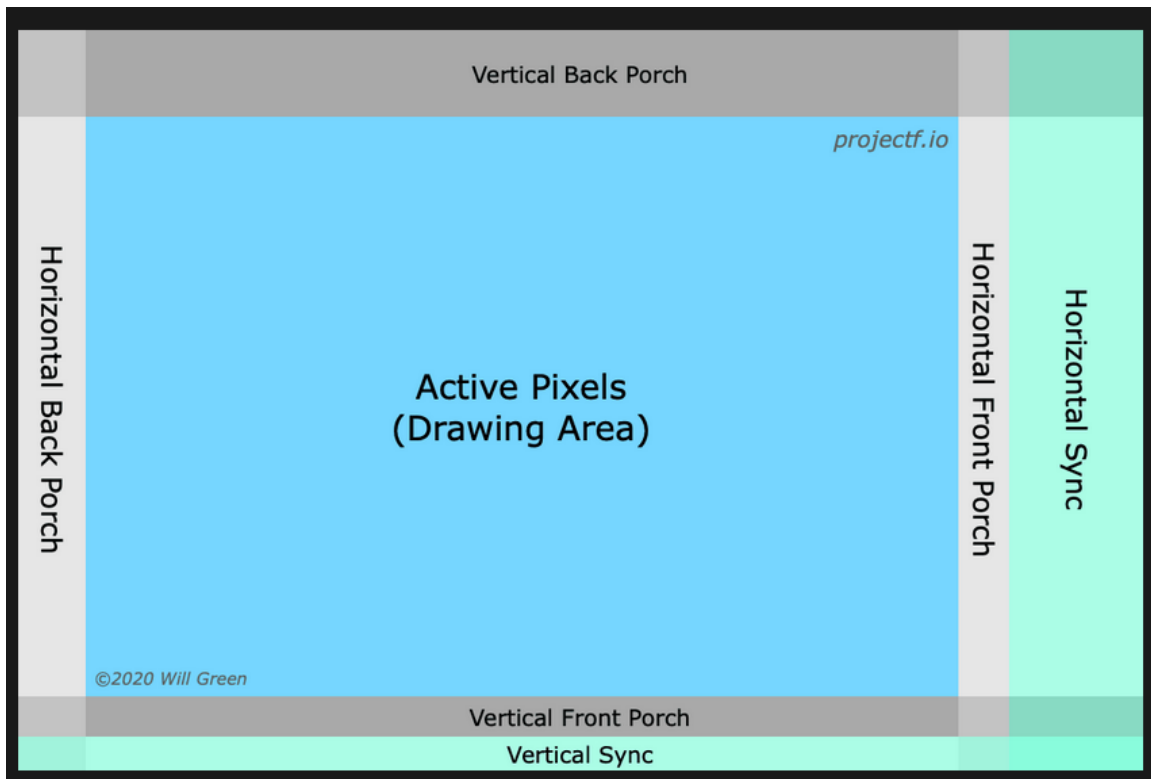# Video Signals in Brief

Video signals have two phases: drawing pixels and the blanking interval. The sync signals occur within blanking intervals; separated from pixel drawing by the **front porch** and **back porch**. **Horizontal sync** demarcates a **line** and **vertical sync** a **frame**.

```
Name            640x480p60
Standard        Historical
VIC                       1
Short Name      DMT0659
Aspect Ratio          4:3

Pixel Clock       25.175 MHz
TMDS Clock       251.750 MHz
Pixel Time          39.7 ns ±0.5%
Horizontal Freq.  31.469 kHz
Line Time           31.8 µs
Vertical Freq.    59.940 Hz
Frame Time          16.7 ms

Horizontal Timings
Active Pixels         640
Front Porch            16
Sync Width             96
Back Porch             48
Blanking Total        160
Total Pixels          800
Sync Polarity         neg

Vertical Timings
Active Lines          480
Front Porch            10
Sync Width              2
Back Porch             33
Blanking Total         45
Total Lines           525
Sync Polarity         neg

Active Pixels     307,200
Data Rate            0.60 Gbps

Frame Memory (Kbits)
 8-bit Memory       2,400
12-bit Memory       3,600
24-bit Memory       7,200
32-bit Memory       9,600
```

```
Name              800x600p60
Standard          VESA DMT
VIC                    N/A
Short Name             N/A
Aspect Ratio          4:3

Pixel Clock        40.000 MHz
TMDS Clock        400.000 MHz
Pixel Time          25.0 ns ±0.5%
Horizontal Freq.  37.897 kHz
Line Time           26.4 µs
Vertical Freq.    60.317 Hz
Frame Time          16.6 ms

Horizontal Timings
Active Pixels        800
Front Porch           40
Sync Width           128
Back Porch            88
Blanking Total       256
Total Pixels        1056
Sync Polarity        pos

Vertical Timings
Active Lines         600
Front Porch            1
Sync Width             4
Back Porch            23
Blanking Total        28
Total Lines          628
Sync Polarity        pos

Active Pixels    480,000
Data Rate           0.90 Gbps

Frame Memory (Kbits)
 8-bit Memory      3,750
12-bit Memory      5,625
24-bit Memory     11,250
32-bit Memory     15,000
```

```
Name            1280x720p60
Standard        CTA-770.3
VIC                      4
Short Name           720p
Aspect Ratio         16:9

Pixel Clock       74.250 MHz
TMDS Clock       742.500 MHz
Pixel Time          13.5 ns ±0.5%
Horizontal Freq.  45.000 kHz
Line Time           22.2 µs
Vertical Freq.    60.000 Hz
Frame Time          16.7 ms

Horizontal Timings
Active Pixels        1280
Front Porch           110
Sync Width             40
Back Porch            220
Blanking Total        370
Total Pixels         1650
Sync Polarity         pos

Vertical Timings
Active Lines          720
Front Porch             5
Sync Width              5
Back Porch             20
Blanking Total         30
Total Lines           750
Sync Polarity         pos

Active Pixels     921,600
Data Rate            1.78 Gbps

Frame Memory (Kbits)
 8-bit Memory       7,200
12-bit Memory      10,800
24-bit Memory      21,600
32-bit Memory      28,800
```

```
Name            1920x1080p60
Standard        SMPTE 274M
VIC                     16
Short Name          1080p
Aspect Ratio         16:9

Pixel Clock        148.5 MHz
TMDS Clock       1,485.0 MHz
Pixel Time           6.7 ns ±0.5%
Horizontal Freq.  67.500 kHz
Line Time           14.8 µs
Vertical Freq.    60.000 Hz
Frame Time          16.7 ms

Horizontal Timings
Active Pixels       1920
Front Porch           88
Sync Width            44
Back Porch           148
Blanking Total       280
Total Pixels        2200
Sync Polarity        pos

Vertical Timings
Active Lines        1080
Front Porch            4
Sync Width             5
Back Porch            36
Blanking Total        45
Total Lines         1125
Sync Polarity        pos

Active Pixels   2,073,600
Data Rate           3.56 Gbps

Frame Memory (Kbits)
 8-bit Memory      16,200
12-bit Memory      24,300
24-bit Memory      48,600
32-bit Memory      64,800
```

```
Name            1920x1080p30
Standard        SMPTE 274M
VIC                      34
Short Name      1080p30
Aspect Ratio        16:9

Pixel Clock       74.250 MHz
TMDS Clock       742.500 MHz
Pixel Time          13.5 ns ±0.5%

Horizontal Freq.  33.750 kHz
Line Time           29.6 µs
Vertical Freq.    30.000 Hz
Frame Time          33.3 ms

Horizontal Timings
Active Pixels       1920
Front Porch           88
Sync Width            44
Back Porch           148
Blanking Total       280
Total Pixels        2200
Sync Polarity        pos

Vertical Timings
Active Lines        1080
Front Porch            4
Sync Width             5
Back Porch            36
Blanking Total        45
Total Lines         1125
Sync Polarity        pos

Active Pixels   2,073,600
Data Rate           1.78 Gbps

Frame Memory (Kbits)
 8-bit Memory     16,200
12-bit Memory     24,300
24-bit Memory     48,600
32-bit Memory     64,800
```

Source : https://projectf.io/posts/video-timings-vga-720p-1080p/