

# X16 Video File Format Draft #2

This is a specification for an Video file format for the Commander X16 platform. It is not meant for general use on other platforms . Tools will be provided on those Platforms (Linux/BSD/Windows/Mac) to convert standard file formats such as .mp4 & .avi to the X16 format.

## **DETAILED FILE SPECIFICATION**

FILE ELEMENT	SIZE IN BYTES	PURPOSE	Comment
<b>File ID</b> (char)	4	To identify this file as an X16 Video File	Always " <b>SPRV</b> " \$53,\$50,\$52,\$56
<b>V_TYPE</b> (byte)	1	Type of Video Frame	<b>Described in Addendum 1</b>
<b>Bit Depth</b> (byte)	1	What is the color depth of this video ?	1, 2, 4 or 8 (Only 4 or 8 for Type 1 or 2)
<b>FPS</b> (byte)		Frames per Second	Desired Playback rate
<b>Sprite Width</b> (Byte)	1		Sprite Width for Sprite Based Videos
<b>Sprite Height</b> (Byte)	1		Sprite Height for Sprite Based Videos
<b>Frame Width</b> (word little endian)	2		Frame Resolution Width
<b>Frame Height</b> (word little endian)	2		Frame Resolution Height
Number of Frames (Dword little endian)	4		Total number of Frames in this Video. (also used with <b>FPS</b> to calculate the <b>VERA</b> Audio rate)
SCREEN HINT (Char)	1	N – Normal D – Vertical Dbled. T – Tall (TikTok)	Not exactly the aspect Ratio. But a Hint as to how to Display the Video
Vera Rate (Byte)	1	Control byte to VERA for PCM playback Rate (only significant for types with Interleaved Audio, end user program should calculate this from the sound track size for Types with external audio track.	1-128 (practical values 20- 60)
Audio Frame Size 16 bit integer	2	How many bytes of PCM embedded for each frame (only for types with embedded Audio)	Roughly 800 bytes up to a maximum of 3072 bytes (¾ capacity of the VERA audio FIFO)
<b>EXTRA/RESERVED</b>	11		
VIDEO DATA	UNLIMITED		The <b>Frames</b> start here.

## **DESIGN GOALS**

- A format optimized for the X16 that is easily programmed for
- Takes full advantage of all capabilities of the VERA video hardware.
- Portability for software developed for X16

## **QB64PE Type Definition**

Type SVIDHeaderType

```
ID As String * 4
VTYPE As _Unsigned _Byte
BPP As _Unsigned _Byte
FPS As _Unsigned _Byte
SpriteWidth As _Unsigned _Byte
SpriteHeight As _Unsigned _Byte
FrameWidth As _Unsigned Integer
FrameHeight As _Unsigned Integer
NumFrames As _Unsigned Long
SHint As String * 1
VeraRATE AS _Unsigned _Byte
AudFrmSize AS _Unsigned Integer
EXTRA As String * 11
```

End Type

## **C struct Definition**

```
struct SVIDHeaderType {
    char ID[4];
    uint8_t VTYPE;
    uint8_t BPP;
    uint8_t FPS;
    uint8_t SpriteWidth;
    uint8_t SpriteHeight;
    uint16_t FrameWidth;
    uint16_t FrameHeight;
    uint32_t NumFrames;
    char SHint[1];
    uint8_t VeraRate;
    uint16_t AudFrmSize;
    char EXTRA[11];
};
```

## **ADDENDUM #1 (Frame Types 8 bit 256 possible values)**

**TYPE 1:** Sprite Based Video with full Palette following each frame, Palette is 512 bytes in size for 8 bpp or 32 bytes for 4bpp. Video frame is made up of a *Sprite Grid*. The sprite size is specified in Sprite Width & Sprite Height. Frame data is immediately followed by Palette data for the frame.

**TYPE 2: Not implemented (Raw sprites NO palette data)**  
**(for either grayscale 4 bpp or VERA Default (or user loadable) Palette 8 bpp)**

**TYPE 3:** Bitmap Based video with full Palette following each frame. Either 640 or 320 width, though the converter disallows 640 for 4bpp vids (just to big). Bit depths 1, 2 or 4. Sprite size is insignificant for this vid type. (Now implemented) **MAXIMUM FRAME BUFFER: 38400 bytes**

**TYPE 4: Not implemented (bitmap frames no palette)**  
**(for either grayscale 4 bpp or VERA Default (or user loadable) Palette 8 bpp)**

**TYPE 5: Currently undefined.** (Thinking of ASCIIMATION, not written in stone)

**TYPE 6:** Similiar to Type 1 but doesn't use a separate Audio file. Interleaved 8 bit single channel Audio.

**TYPE 7:** Should match Type 2 but with Interleaved Audio **(not implemented)**

**TYPE 8:** Similiar to Type 3 but doesn't use a separate Audio file. Interleaved 8 bit single channel Audio.

**TYPE 9:** Should match type 4 but with Interleaved Audio **(not implemented)**

**ALL OTHER TYPE NUMBERS are TBD.**