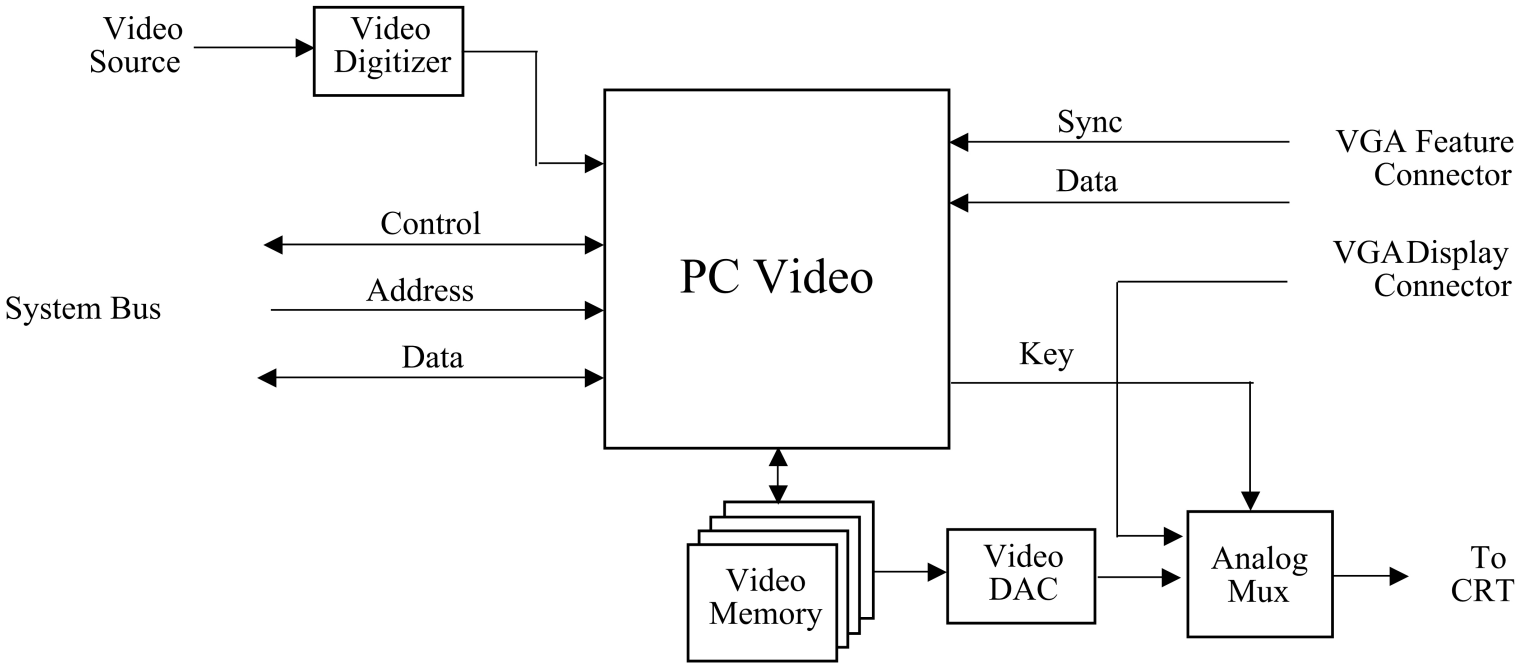
82C9001A
PC Video™
VideoWindowingController

- Scan rate conversion and windowing control for display of a live video image on a computer graphics monitor
- Window positioning controlled by independent X-Y coordinates and by color keying
- Independent X-Y scaling of video image to 1/64 original image size
- Still-frame capture and display of true-color images
- Input resolutions up to 1024H x 512V pixels with full broadcast quality video bandwidth
- Up to 800 x 600 display resolution
- Supports NTSC, PAL, SECAM, S-VHS, and RGB input formats from industry-standard video digitizerchipsets
- Supports standard 4:1:1 and 4:2:2 YUV and 16-bit RGB digital formats
- Supports a memory efficient 2:1:1 YUV format
- Interlaced or non-interlaced input video
- Interlaced or non-interlaced output support
- Output zoom by factors of 2, 4 and 8
- Full-motion color video support on flat-panel displays with the 82C457



PC Video System Block Diagram

Introduction

OVERVIEW

The PC Video video windowing chip is the core component of a video subsystem which converts a standard full-motion video image into a format for display on a computer graphics monitor. PC Video controls positioning and scaling of the video image on the output display and allows the video image to be merged with computer graphics for interactive multimedia applications. Market applications of a subsystem based on PC Video include interactive video training, computer-based education programs, point-of-sale information, business presentations, video conferencing, and desktop publishing. PC Video integrates all the controlling logic for video scan rate conversion, windowing control, and scaling. Operation with VGA graphics is supported via the graphics feature connector.

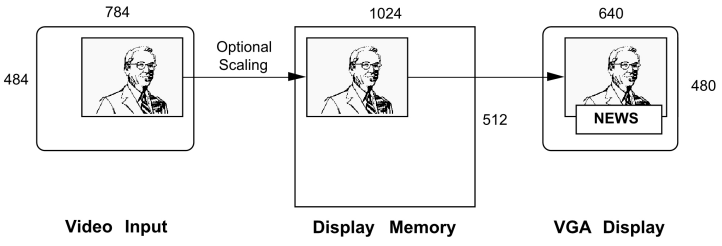
A video windowing sub-system can be implemented with the following components:

- PC Video
- A standard "Digital TV" chip set
- 4 VRAMs

Other optional configurations are supported for higher color and luminance bandwidth.

WINDOW ACQUISITION AND POSITIONING

PC Video provides the control signals for a standard video digitizer chip set. Interlaced and non-interlaced video sources, at full broadcast quality bandwidth, are supported at resolutions up to 1024 x 512 pixels. PC Video may be programmed to capture a full-size video image or a user-defined cropped or reduced area.



Acquisition & Display Process

Video output window positioning is provided by programmable X-Y coordinates and color keying to a specified color. Color Keying is based on the digital color information from the VGA feature connector. Color keying is supported independently or in conjunction with X-Y coordinates.

SCALING

PC Video provides independent X-Y scaling of the input video image in integer increments of 1/64. Images may be compressed down to 1/64 of the original image size, supporting video icons for graphical user interfaces.

MEMORY INTERFACE

PC Video operates with 256K x 4 100 ns VRAMs. Three configurations are supported: 4 VRAMs for 2:1:1 encoding, 6 VRAMs for 4:1:1 encoding, and 8 VRAMs for 4:2:2 and 16-bit RGB encoding.

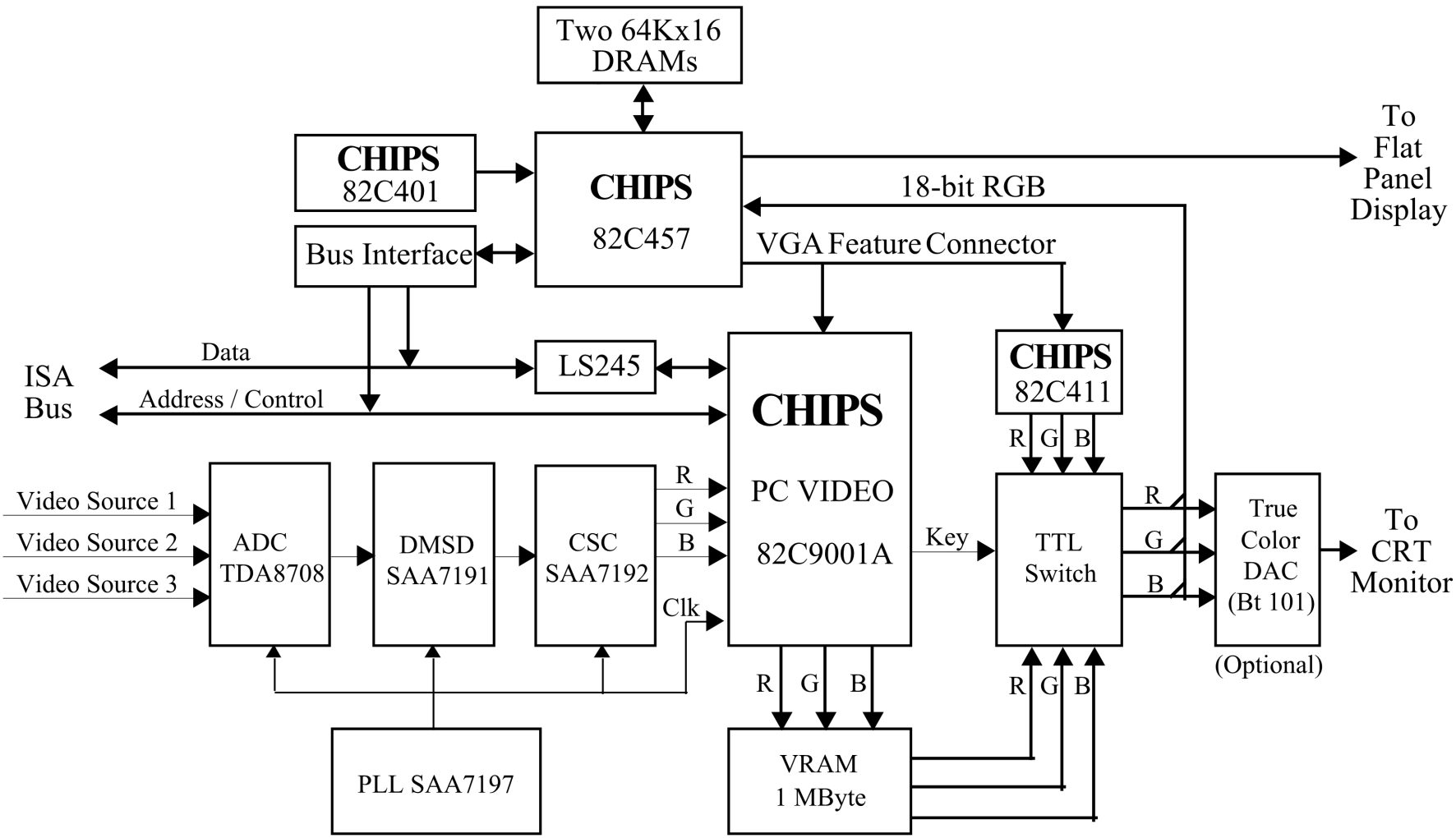
Memory Requirements

Bits per Pixel	Format	Memory Required	VideoQuality
12-bit	2:1:1 YUV	4 VRAM	Compressed luminance bandwidth
12-bit	4:1:1 YUV	6 VRAM	Broadcast video bandwidth
16-bit	4:2:2 YUV	8 VRAM	Improved chroma bandwidth
16-bit	16-bit RGB	8 VRAM	65,536 colors

COLOR FLAT-PANEL SUPPORT

PC Video, with the 82C457 Color flat panel controller and the 82C411 pallette chip, provides full-motion video on a color LCD. The 82C457 dithers the PC Video output data to provide 20,000 colors on a 512-color display.

System Configuration Examples



Full-Motion Video on Color LCD Implementation