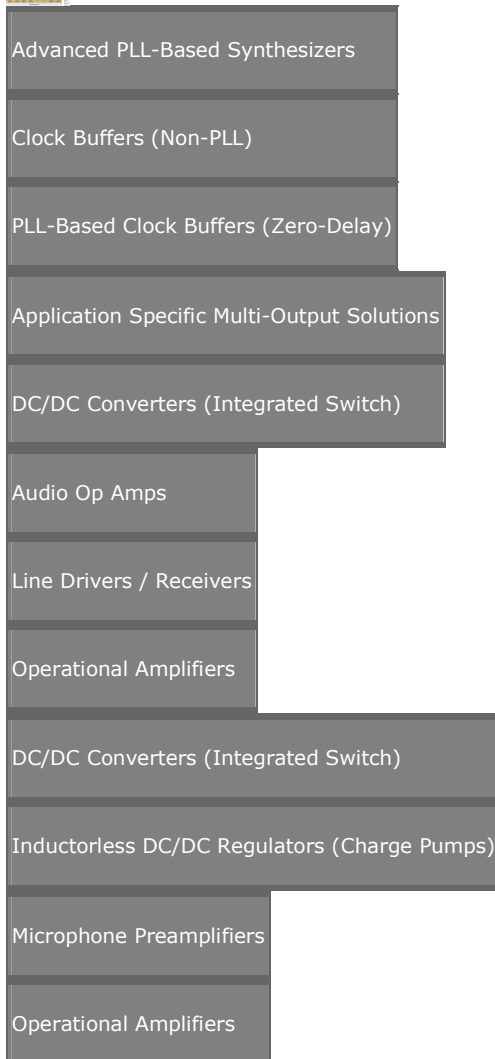


## Digital Video Recorder

Digital Video Recorder (DVR) from Texas Instruments is a consumer video/audio product that can record and play back full-motion video/audio.

<a href="#">Application Notes</a>	<a href="#">Design Considerations</a>
<a href="#">Reference Designs</a>	<a href="#">Product Bulletin &amp; White Papers</a>
<a href="#">Selection and Solution Guides</a>	<a href="#">News Releases &amp; Authored Articles</a>
<a href="#">Tools and Software</a>	<a href="#">Similar End-Equipment Solutions</a>

## Block Diagram



Audio Op Amps

Line Drivers / Receivers

## Design Considerations

A Digital Video Recorder (DVR) is a consumer video/audio product that can record and play back full-motion video/audio using the ISO MPEG audio/video standards for the compression of video and audio content. The storage media include hard disks and recordable CD/DVD disks.

### Core Subsystem Includes:

**Analog Video Decoder** - digitizes and decodes baseband analog video formats (NTSC/PAL/SECAM) into digital component video.

**MPEG Video CODEC/Audio Processor** - performs MPEG video encoding/decoding, MPEG audio encoding/decoding, and multiplexing/demultiplexing of the audio and video bit streams.

**CPU** - controls the DVR operating system software, overlay of text/graphics, and the user interface.

**Triple DAC** - converts digital video into analog video output in different formats: NTSC/PAL, S video, and YPrPb component video. The output stages require high-performance op-amps to amplify the video signals

**FPGA/PCI Interface** - provides data/command transfer between devices connecting to the PCI bus.

**Stereo Audio CODEC** - uses audio ADC and DAC to digitize and playback analog audio.

**User Interface** - allows the user to control the DVR using the panel keypad or the remote control.

**Broadband Connectivity** - allows streaming audio and video to transmit and receive through ADSL and cable modem.

**Power Conversion** - converts the input power from the AC adaptor to run various functional blocks.

A digital video recorder can be used in a variety of markets, but one in particular tends to stand out the most due to recent events.

TI's video surveillance solutions are based on the high performance **TMS320DM64x** Digital Media processors which have on chip video ports for easy connection to video devices. The DM64x family is capable of handling both video and audio encode and decode for IP based video surveillance applications. Cost-competitive video compression/decompression algorithms are available through our partner network for JPEG, MPEG2, MPEG4, H.264, and more. Audio compression/decompression algorithms are also available.

### DVR Platforms Table

Suggested TI DSP Platforms for DVR (typical performance - preliminary).

	<b>DM641 (500 MHz)</b>	<b>DM642 (600 MHz)</b>	<b>C6415/6 (600 MHz)</b>
<b>Standalone Codecs</b>			
MPEG-4 SP Decode	Multi D1	Multi D1	Multi D1
MPEG-4 SP Encode	D1	Multi D1	Multi D1
MPEG-2 MP ML Dec	Multi D1	Multi D1	Multi D1
MPEG-2 MP ML Enc	D1	D1	D1
H.264 (Baseline) Dec	D1	Multi D1	Multi D1
H.264 (Baseline) Enc	Multi CIF	D1	D1
<b>Additional Features</b>			
<b>Capture/Display</b>	<b>Two 8-bit Video Ports</b>	<b>Three 20-bit Video Ports</b>	<b>EMIF/PCI</b>
Network Connectivity	TCP/IP Stack using On-Chip EMAC	TCP/IP Stack using On-Chip EMAC	TCP/IP Stack***
Performance (MIPS)	4000	4800	4800
On-Chip Memory (L1/L2)	32KB/128KB	32KB/256KB	32KB/1024KB
Peripheral Integration	EMAC, HPI	EMAC, PCI**, HPI	PCI*

All performance data is for 30fps YUV 4:2:0 unless otherwise noted.

Note: Performance will vary depending on efficiency of code and data stream used.

Resolution Information: D1(720X480)/CIF (352X288)SP=Simple Profile/ASP=Advanced Simple Profile\* 33MHz 32bit\*\*  
66MHz 32bit\*\*\* TCP/IP Stack can be run on top of the Video Codecs on the DSP

## Application Notes

**H.263 Standard - Overview and TMS320C6000 DSP Implementation White Paper** (spra018.htm, 9 KB)

10 Dec 2001 [Abstract](#)

**H.263 Encoder: TMS320C6000 Implementation** (spra721.htm, 9 KB)

21 Nov 2000 [Abstract](#)

**H.263 Decoder: TMS320C6000 Implementation** (spra703.htm, 9 KB)

13 Sep 2000 [Abstract](#)

**MPEG-2 Video Decoder: TMS320C62x (TM) DSP Implementation** (spra649.htm, 9 KB)

29 Feb 2000 [Abstract](#)

## Selection and Solution Guides

### Selection Guides

**DSP Selection Guide 2Q 2006 (Rev. R)** (ssdv004r.pdf, 7.23 MB)

22 Feb 2006 [Download](#)

## Solution Guides

**Video and Imaging Solutions Guide 2Q 2006 (Rev. D)** (slyb099d.pdf, 5.18 MB)

01 Apr 2006 [Download](#)

Tools and Software

Name	Part #	Company	Software/Tool Type
<a href="#">Code Composer Studio IDE</a>	CCSTUDIO	Texas Instruments	Code Composer Studio(TM) IDE
<a href="#">DM6446 Digital Video Evaluation Module</a>	TMDXEVM6446	Texas Instruments	Development Boards/EVMs
<a href="#">TMS320C64x Image Library</a>	SPRC094	Texas Instruments	Signal Processing Libraries
<a href="#">Video Security over IP (VSIP) (NTSC)</a>	TMDXVSK642	Texas Instruments	Development Platforms

## Product Bulletin & White Papers

### White Papers

**Enhance DMA Efficiently Manages Multiple Real-Time Data Streams White Paper** (spr080.pdf, 92 KB)

13 Feb 2006 [Download](#)

**H.263 Standard - Overview and TMS320C6000 DSP Implementation White Paper** (spra018.htm, 9 KB)

10 Dec 2001 [Abstract](#)

## News Releases & Authored Articles

### Authored Articles

**Video Designers, Are You HD-Ready? - Jeremiah Golston and Gene Frantz, Texas Instruments, Advanced Imaging Pro**

05 Jul 2006 [View Article](#)

**How to exploit 17 tried and true DSP power optimization techniques for wireless applications - Rob Oshana, Texas Instruments, Comms Design**

15 May 2006 [View Article](#)

**Saving power with DSPs in portable apps - Naser Salameh, EE Times**

15 May 2006 [View Article](#)

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