Hybrid DVR reference designs available based on TI technology

Texas Instruments offers multiple highly optimized reference designs based on the TMS320DM816x and TMS320DM3xx video processors for the encoder / decoder market to enable developers to speed through the design process as well as reduce overall bill of materials (BOM) costs.

These reference designs:
• Reduce development time by 90 percent
• Deliver up to 32-channel higher quality real-time D1 video with integrated displays and 1-GHz DSP for video analytics for high-end encoders/decoders
• Decrease total electronic bill of materials. Uses up to 2.6× less storage for the same quality than competition
• Empower customers to bring sub-$500 analytics-enabled 16-channel hybrid DVRs or sub-$100 DVS to the market

These solutions reduce development to under four months by including:
• Complete schematics
• Gerber files
• Free Linux™ application source code, including:
• Multi-codec triple stream per channel (SVC, H.264, MPEG-4, MJPEG) for real-time signal processing

• Simultaneous record, search, playback, storage, streaming and display
• NVR decode and display
• De-interlacer, audio/video adjustment and search tools
• Video timestamp support
• DaVinci™ software framework including I/O application programming interfaces (APIs) based on OpenMax video framework
• Software Development Kit (SDK) provided for easy customization

Multiple reference designs available based on TI technology

TI’s DVR solutions include:
• Over 32-channel D1 DVR Reference Design (part #: DM8168DVR-UD1): Single-platform solution provides simultaneous SVC / H.264 16-channel D1 encode at 30 fps + SVC / H.264 16-channel D1 decode at 30 fps + SVC / H.264 16-channel CIF encode at 30 fps + triple display + 1-GHz DSP for analytics + 1-GHz ARM® Cortex™ for host processing, all using a single-chip solution.
• 8-channel CIF / 4-channel D1 DVR/DVS Reference Design (part #: DM368DVR-UD1): Single-platform solution provides performance up to 96 fps at D1 or 240 fps at CIF resolution.
• 4-channel CIF / 2-channel D1 DVR/DVS Reference Design (part #: DM365DVR-UD1): Single-platform solution provides performance up to 65 fps at D1 or 160 fps at CIF resolution.

Order via www.ti.com/dvr
“DVR-on-a-chip” DM816x-based hybrid-DVR (DVR/NVR) reference design: DM8168DVR-UD1 @ U.S. $1,295

The DM816x Hybrid DVR reference design provides over 1000 fps of D1 H.264/SVC encode/decode with dual-HDMI output, 1-GHz host processor and 1-GHz DSP for video analytics on a single chip. The TVP5158 multi-channel companion video decoder, part of the reference design, provides glueless video input interface to the DM816x processor. The reference design can generate streams that use 2.6× times less storage than competition at the same quality.

Hardware features
- Based on DM816x DaVinci™ video processor that includes ARM® Cortex™-A8, C674x DSP, SVC/H.264/ MPEG-4/MJPEG video coprocessor, Gigabit EMAC, PCIe, encryption engine for BOM savings
- Multi-storage of compressed input (SATA ×2 to ×8 with support for DVD backup through eSATA port) and PCI Express
- Streaming of compressed input (Gigabit Ethernet)
- Local display support with up to two HDMI monitors and one spot monitor
- Local user interface support with 3-D graphics engine
- Pan, tilt and zoom camera support

Software features
- Complete Linux™-based DVR/NVR application including free source code
- Multi-codec system allows triple stream per channel (SVC, H.264, MPEG-4 and MJPEG) for real-time signal processing
- Simultaneous record (480 fps D1 enc + 480 fps CIF enc), playback (480 fps D1 dec), storage, streaming and display
- NVR decode and display over 360 megapixels of video per second, which is equivalent to over 960 fps D1 or 180 fps full HD (1080p / 2 megapixel) video
- Audio/video adjustment and search tools
- Video timestamp support
- Software Development Kit (SDK) provided for easy customization

TI’s new TVP5158 multi-channel video decoder provides improved image quality. Features include:
- 4-channel NTSC/PAL video decoder with robust auto detection
- Features for each channel:
  - Independent scalers (half D1/CIF)
  - One 10-bit ADC with 2× oversampling
  - Patented 2-D five-line adaptive comb filter with high-quality video
  - Integrated anti-aliasing filter
  - Advanced features: De-interlacing noise reduction and auto contrast

DM8168DVR-UD1 reference design available from Texas Instruments

Digital Video Recorder reference design block diagram: DM8168DVR-UD1
TI has brought to market a single platform, H.264 reference design based on the TMS320DM368 digital media processor with DaVinci™ technology and the TI TVP5158 multi-channel video decoder for faster development at a reduced cost.

**Hardware features**
- TI TMS320DM368 digital media processor based on DaVinci technology
- TI TVP5158, multi-channel video decoder with integrated audio
- Storage of compressed input (SATA and USB)
- Streaming of compressed input (Ethernet)
- Local display support up to 800×600 resolution
- Local user interface support
- Pan, tilt and zoom camera support

**Software features**
- Multi-codec system allows triple stream per channel (H.264, MPEG-4 and MJPEG) for real-time signal processing
- Supports simultaneous record up to 96 fps at D1 or 240 fps at CIF), playback (30 fps)
- De-interlacer and audio/video adjustment tools
- Video timestamp support
- Software Development Kit (SDK) provided for easy customization

TI’s TVP5158 multi-channel video decoder provides improved image quality. Features include:
- 4-channel NTSC/PAL video decoder with robust auto detection
- Features for each channel:
  - Independent scalers (half D1/CIF)
  - One 10-bit ADC with 2× oversampling
  - Patented 2-D five-line adaptive comb filter with high-quality video
  - Integrated anti-aliasing filter
  - Advanced features: De-interlacing noise reduction and auto contrast
- Multiplexed video output (single-sampling clock – byte or line mode)
- Supports 8-bit BT.656, dual/quad 8-bit BT.656, and 16-bit BT.601-compatible interfaces
- Video/Audio cascade connection
- Two stereo or four mono audio ADCs
- TDM (time-division-multiplexed) audio output

▲ DM368DVR-UD1 reference design available from Texas Instruments

![DM368 low-cost digital video recorder reference design: DM368DVR-UD1 @ U.S. $1,195](www.ti.com/dvr)
TI has brought to market a single platform, H.264 reference design based on the TMS320DM365 digital media processor with DaVinci™ technology and the TI TVP5158 multi-channel video decoder for faster development at a reduced cost.

Hardware features
- TI TMS320DM365 digital media processor based on DaVinci technology
- TI TVP5158, new multi-channel video decoder with integrated audio
- Storage of compressed input (SATA and USB)
- Streaming of compressed input (Ethernet)
- Local display support up to 800×600 resolution
- Local user interface support
- Pan, tilt and zoom camera support

Software features
- Multi-codec system allows triple stream per channel (H.264, MPEG-4 and MJPEG) for real-time signal processing
- Simultaneous record (up to 65 fps at D1 for DVS or 160 fps at CIF), playback (30 fps)
- De-interlacer and audio/video adjustment tools
- Video timestamp support
- Software Development Kit (SDK) provided for easy customization

TI’s TVP5158 multi-channel video decoder provides improved image quality. Features include:
- 4-channel NTSC/PAL video decoder with robust auto detection
- Features for each channel:
  - Independent scalers (half D1/CIF)
  - One 10-bit ADC with 2× oversampling
  - Patented 2-D five-line adaptive comb filter with high-quality video
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- Two stereo or four mono audio ADCs
- TDM (time-division-multiplexed) audio output

| Digital Video Recorder reference design block diagram: DM365DVR-UD1 | DM365DVR-UD1 reference design available from Texas Instruments |
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