

Hybrid DVR reference designs available based on TI technology



Integrated low-cost, low-power DVR and NVR reference designs reduce time to market and push storage cost even further down with 2.6× greater H.264 compression ratio than competition

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.

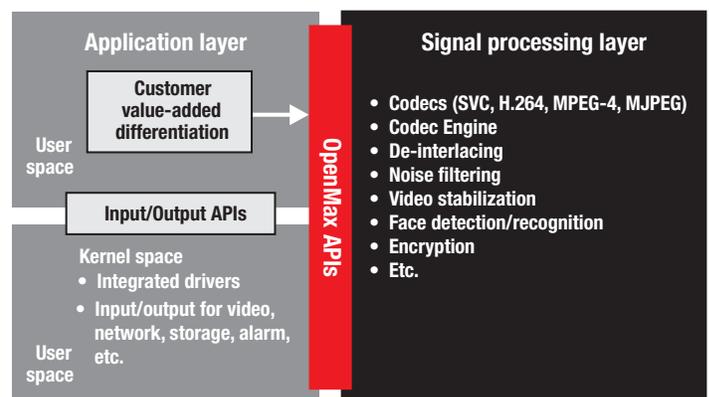
These reference designs:

- 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^T, 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



▲ TMS320DMxx-based DVR reference design software

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^T / H.264 16-channel D1 encode at 30 fps + SVC^T / H.264 16-channel D1 decode at 30 fps + SVC^T / 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 upto 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^T 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 2.6x 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^T/H.264/MPEG-4/MJPEG video coprocessor, Gigabit EMAC, PCIe, encryption engine for BOM savings
- Multi-storage of compressed input (SATA x2 to x8 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



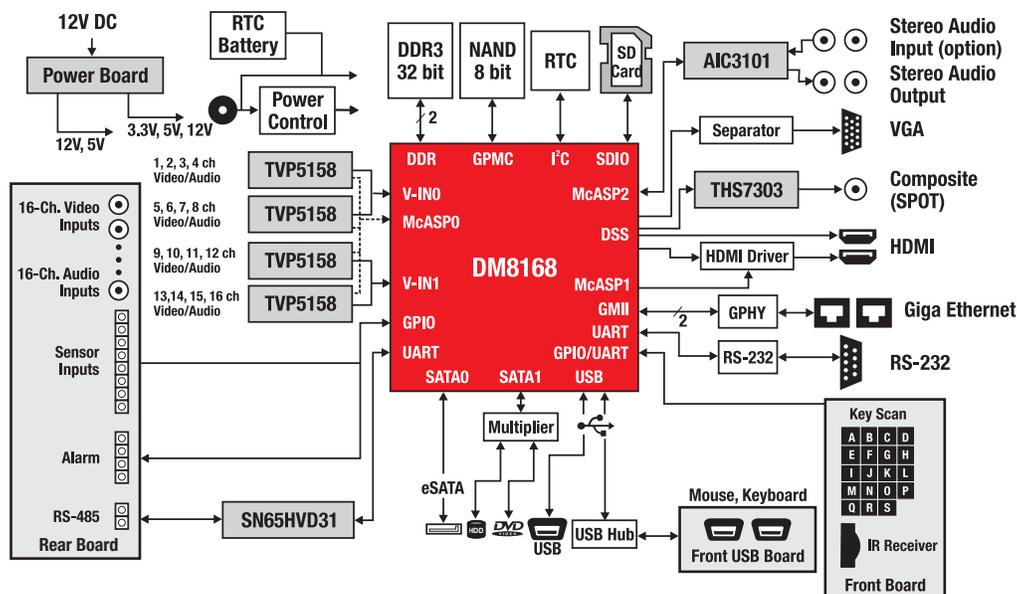
▲ DM8168DVR-UD1 reference design available from Texas Instruments

Software features

- Complete Linux™-based DVR/NVR application including free source code
- Multi-codec system allows triple stream per channel (SVC^T, 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 2x 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



◀ Digital Video Recorder reference design block diagram: DM8168DVR-UD1

DM368 low-cost digital video recorder reference design: DM368DVR-UD1 @ U.S. \$1,195

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 800x600 resolution
- Local user interface support
- Pan, tilt and zoom camera support



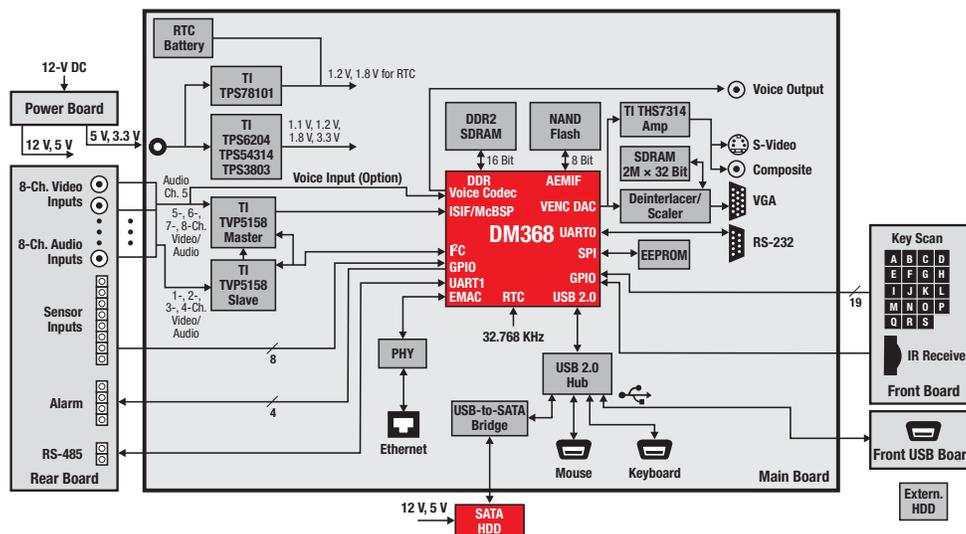
▲ DM368DVR-UD1 reference design available from Texas Instruments

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 for DVS 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 2x 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



◀ Digital Video Recorder reference design block diagram: DM368DVR-UD1

DM365 low-cost digital video recorder reference design: DM365DVR-UD1 @ U.S. \$1,195

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 800x600 resolution
- Local user interface support
- Pan, tilt and zoom camera support



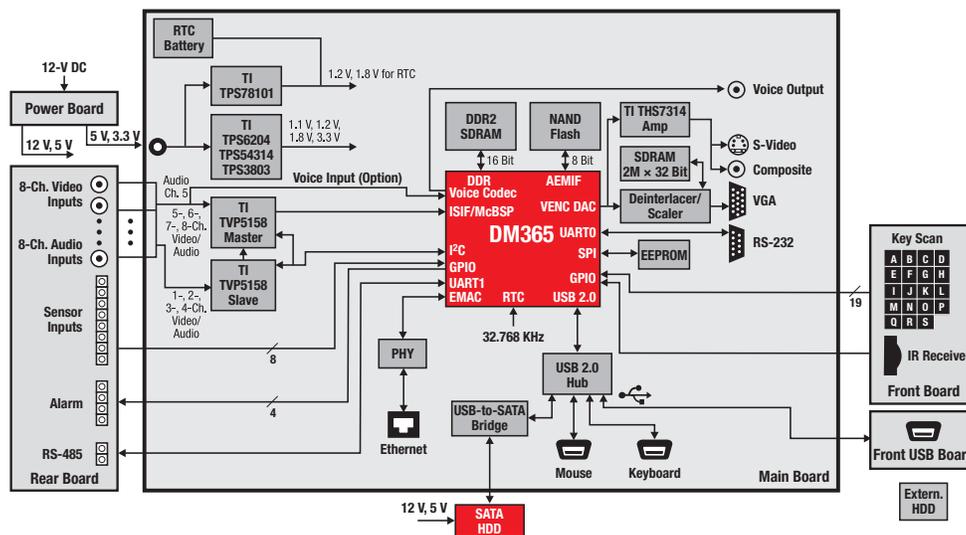
▲ DM365DVR-UD1 reference design available from Texas Instruments

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:
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 - 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



◀ Digital Video Recorder reference design block diagram: DM365DVR-UD1

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