

TL880 DTVPC Decoder



All Format Digital TV decoder for PC OEMs and add-in card manufacturers

HIGH DEFINITION EXPERIENCE

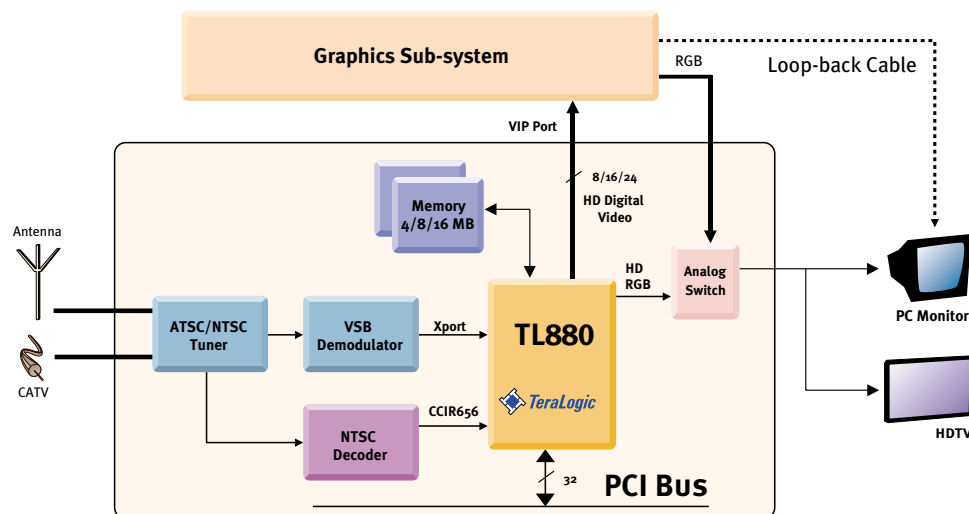
The TL880 IC is a highly integrated All Format Digital TV decoder designed for the PC platform. It is the first IC product in the PC industry to be compliant with all ATSC and ARIB Digital TV formats including high definition DTV resolutions for superior video quality. The TL880 architecture supports multiple international standards including ATSC, the European DVB, the Japanese ARIB standard, as well as proprietary standards such as DIRECTV®. The TL880 can decode a single HD program or up to four SD programs simultaneously for advanced features such as multicasting. The on-chip display processor with its state-of-the-art filtering algorithms can up/down-convert any ATSC-format input and output in any common display resolution while maintaining the high definition video quality. Additionally, the TL880 IC can capture decoded NTSC video and up-convert it to HD video formats for a richer viewing experience.

GLOBAL AND SCALABLE ARCHITECTURE

With its high level of integration and optimized architecture, the TL880 decoder delivers an affordable advanced Digital TV solution for the PC platform. It integrates an All Format MPEG2 MP@HL video decoder, display processor with scan rate converter, an ATSC/DVB/DIRECTV transport demultiplexer and PCI-bus interface on a single chip to enable small footprint circuit board designs. The TL880 architecture is optimized through appropriate system integration to minimize the glue logic needed for interfacing with peripheral components. An integrated 2D graphics accelerator renders text and graphics to an independent on-screen display (OSD) bitmap.



The TL880 architecture is suited for PC applications with its PCI interface, high level of integration and PC screen format support. No external bridge chip is required for connecting the TL880 IC to the PCI bus resulting in significant cost savings for a DTVPC implementation. The TL880 decoder can be programmed to support standard PC resolutions enabling the display of Digital TV on 4:3 aspect ratio PC monitors. The TL880 IC is an ideal solution for bringing the advanced Digital TV experience to the PC consumer at a mainstream price point.



TL880 SYSTEM DIAGRAM

integrated circuits

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APPLICATIONS

- All Format Digital TV on PC
- NTSC/Analog Broadcast on PC
- Cable TV Reception on PC
- Video Capture
- Digital VCR on PC

SUPPORTING TERALOGIC PRODUCTS

- Janus DTVPC Reference Design

HIGH PERFORMANCE DIGITAL VIDEO DECODER

- MP@HL MPEG-2 decoder
- ATSC/DVB/ARIB/DIRECTV compliant
- Decodes 1 HD or 4 SD streams simultaneously

HIGH PERFORMANCE DISPLAY PROCESSOR

- Multiple display formats supported, including 1920x1080i, 1280x720p, 704x480p and 704x480i
- PC display formats supported, including 1280x1024, 1024x768, 800x600, 640x480
- Many nonstandard output and source formats supported
- Letterbox and pan-and-scan options for displaying 16:9 video on 4:3 TVs and PCs
- Multiple video services displayed on the same screen supports viewing of multiplex

- services, picture-in-picture (PIP) and picture-out-of-picture (POP) applications
- Graphics overlay plane with up to 24-bits per pixel and 8-bit alpha channel
- Cursor plane with 32x32 pixel cursor with 4-bit index (16 colors with 8-bit alpha blending)
- Analog RGB or YCrCb output for HDTV display or SD display in down-conversion mode
- 16- or 24-bit digital HD video output
- VIP 1.0 and VIP 2.0 port for interfacing to PC graphics subsystem

FLEXIBLE FORMAT CONVERTER

- High-quality scan conversions from ATSC and NTSC source formats to many output display formats
- High quality up-conversion and down-conversion of source video to selected display format

NTSC VIDEO INTEGRATION

- Video capture port for NTSC/PAL digital video (CCIR656 compatible)
- Simultaneous output in HD and 704x480i supports analog VCR recording of off-air programming

MEMORY CONTROLLER

- 64-bit SDRAM interface
- Programmable clock generator
- Up to 64 Mbytes addressing range

ACCELERATED 2-D GRAPHICS

- Hardware BLT engine
- Up to 32 bpp graphics in RGB space
- Full alpha blend support
- Hardware color expansion and reduction

PROGRAMMABLE TRANSPORT DEMULTIPLEXER

- ATSC/DVB/ARIB/DIRECTV® compliant

PCI BUS INTERFACE

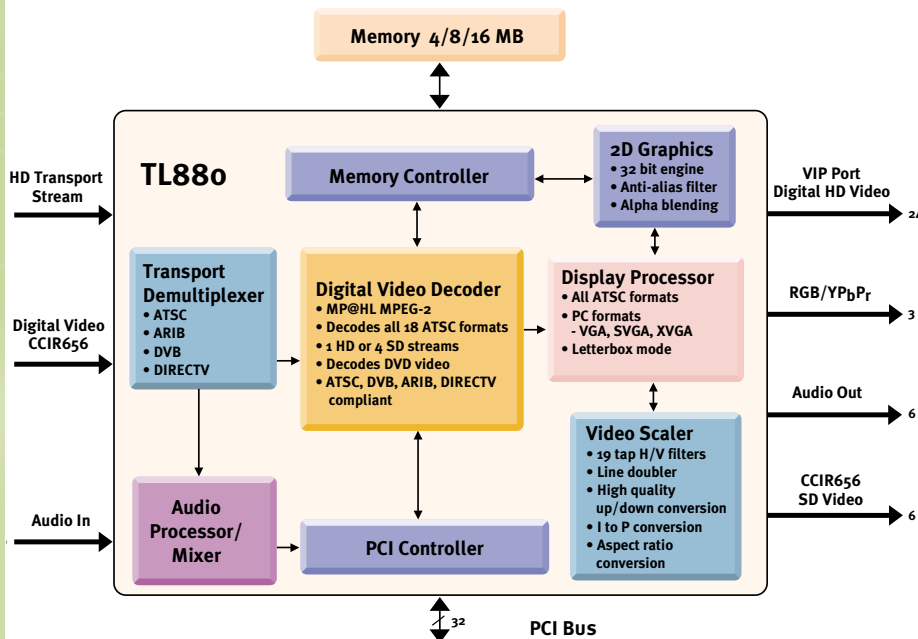
- 32-bit interface
- 66 MHz or 33 MHz bus clock
- PCI bus mastering capability

AUDIO PROCESSING

- Provides audio rate buffer
- Provides audio and video PTS synchronization
- Audio mix, cross-fade and attenuate between sources
- Six-channel audio input and output
- IEC-958 formatted output supported

TECHNOLOGY

- 2.5V core, 3.3V I/O, 0.25µ CMOS
- 348-pin ball grid array package



TL880 BLOCK DIAGRAM



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