TriMeleon® DT1108 Board

Video, Audio, and Telecommunication

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Photo in original size

The TriMeleon DT1108 Board is a compact, high performance board for video, audio and telecommunications applications. It integrates on a small area (62 mm x 98 mm) the Philips TriMedia® Multimedia Processor, 16 MBytes SDRAM, 4 MBytes flash memory, and analog audio and video I/O interfaces including all necessary A/D and D/A converters.

With its compact, power-saving and cost effective design, the board penetrates in regions previously reserved for expensive and difficult-to-program custom design DSP solutions.

Fields of Application

Fields of Application of the TriMeleon DT1108 Board include among others:

- video compression and decompression, scrambling and descrambling
- video signal conversion (PAL to NTSC and vice versa)
- audio compression and decompression, scrambling and descrambling
- data encryption
- computer vision
- interactive terminals
- long term recording and playback
- video phones

Philips TriMedia

The Philips TriMedia Multimedia Processor (latest device in volume production: TM-1100 running at 100 MHz) has a VLIW DSP CPU core executing up to 5 parallel instructions in each cycle.

The instruction set includes split ALU and special multimedia instructions. On-chip caches and a 400 Mbytes/sec data highway connecting peripheral interfaces with 8 or 16 Mbytes of SDRAM are designed for high volume multimedia data streams. 4 Mbytes flash memory are available for program and non-volatile data memory. A/D and D/A conversion is integrated on the board using dedicated components.

Thus, the board perfectly connects to commonly used analog multimedia devices like cameras, TV monitors and audio equipment.

Software

For many standard cases, off the shelf software components like

- video codecs H.261, H.263,
- audio codecs G.711, G.723.1, G.729

are available from DResearch Digital Media Systems or Philips.

A hardware abstraction layer library ensures cross compatibility to other TriMedia based boards.

Own applications software can be built using the TriMeleon DT1108 Starter Kit from DResearch. Starting with ANSI C, time critical inner loops are spotted and optimized in a compile–profile cycle or accelerated with processor specific commands.

TriMedia

DRESEARCH

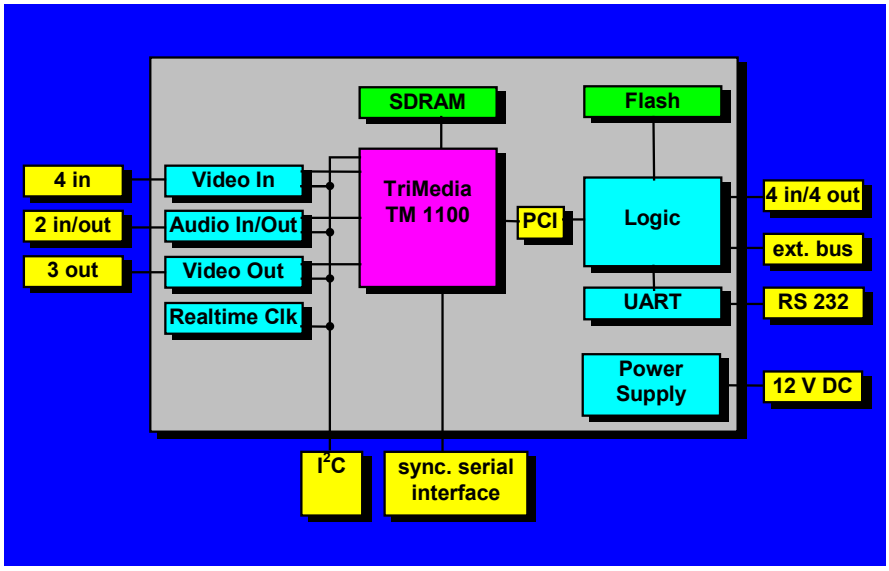
Technical Specification

- Philips TriMedia Processor, 100 MHz
- high performance CPU, 3 – 5 GOPS, VLIW SIMD DSPCPU
- external single 12 V DC power supply
- available memory capacity: 8 or 16 Mbytes SDRAM, 32 bits wide, optional 120 MHz and audio available
- 4 Mbytes flash memory on board (optional: 8 Mbytes)
- full duplex UART, up to 230,4 kbit/s, 64 byte FIFO
- serial interface: RS-232 (e.g. to connect modem or terminal adapter)
- synchronous serial interface up to 20 MHz
- 4 analog video inputs (4 x CVBS or 2 x Y/C or 1 x Y/C and 2 x CVBS) PAL or NTSC
- automatic detection of video format, 50 and 60 Hz field frequencies
- PAL/NTSC video encoder with 3 DACs for analog CVBS, Y and C output
- 3 analog video output for CVBS, Y and C
- 2 analog audio inputs, 2 analog audio outputs, 16 bit, typical 44.1 kHz sample rate
- 4 general purpose logic level inputs
- 4 general purpose logic level outputs
- I²C bus
- 8 bit extension bus
- clock and calendar functions
- JTAG IEEE 1149.1 debugging interface
- board size: 98 mm x 62 mm x 15 mm/ 3.8 in x 2.4 in x 0.7 in

System Structure

The TriMeleon DT1108 Board is very cost-efficient due to low power design and a consistent use of cost-effective components.

It is used as main component in the DResearch TeleObserver® product family for mobile video transmission. Only a camera and a modem are needed as external components.



The TriMeleon DT1108 Board performs the video digitization, compression and modem communication over the serial RS-232 interface. The tremendous CPU performance allows to implement computational intensive compression algorithms to achieve previously unattained image quality at highest possible compression rates.

This makes it possible to use even a cellular GSM modem with only 9,600 Bit/s data channel. Equipped with the TriMeleon Board, the TeleObserver has no competitors in the field of mobile video transmission over low bandwidth transmission channels.