

Advanced Media Platform for IP Set-Top Box

Benefits

- Create flexible set-top box products that support multiple standards
- Customize functionality via programmable DM642 DSP and quick porting of GPP resources
- Provide outstanding broadcast-quality audio-video with D1 resolution and real-time MPEG-4 encoding and 5.1 audio with HE-AAC
- Differentiate products with multiple features including: VOD, PPV, EPG, web browsing, games and future, emerging services



Other Target Applications

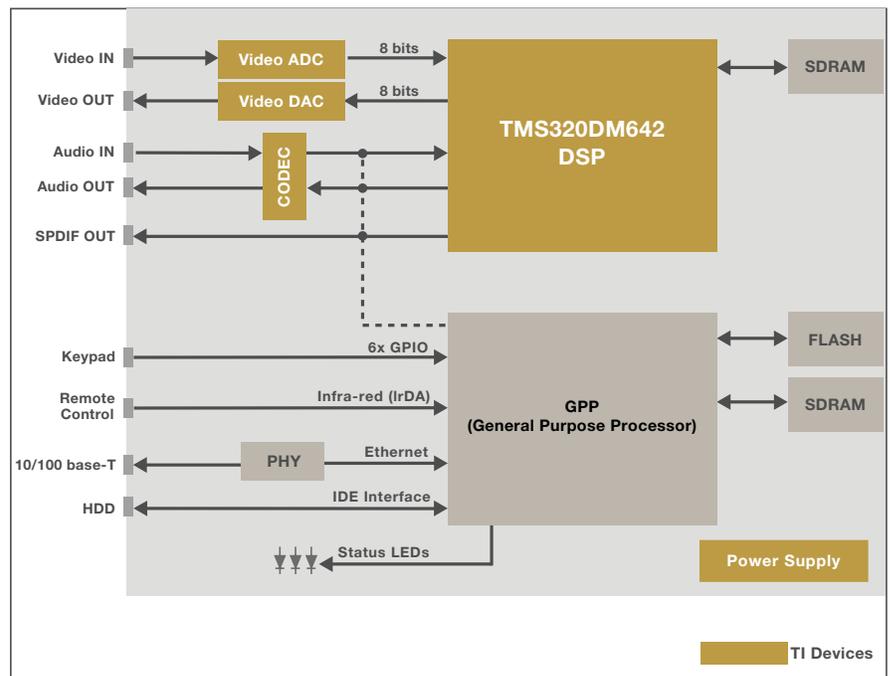
- Satellite
- Cable
- IP set-top box
- Video conferencing
- Personal video recorders
- Multimedia players
- Interactive multimedia applications

Solutions for video/imaging products based on TI DSPs provide developers the flexibility to design a wide range of products. By leveraging the DSP programmability, processing performance, video specific peripherals and support for all major multimedia codecs, developers can design differentiated products with customized features to meet changing market needs.

For developers of Internet protocol set-top boxes, AteMe has developed a TI DSP-based solution to reduce time-to-market and minimize risk with its Advanced Media Platform (Thunder).

The Thunder is a cost-effective programmable hardware and software solution based on an open platform with a fully programmable computing core, which allows a new and innovative development kit concept for OEMs. Its re-usable, cost-optimized dual-core computing board features a TI TMS320DM642 DSP and a General Purpose Processor (GPP) and is connected to a companion connector's board, which allows for an array of I/O that can be easily adapted for a specific end-product. The TI TMS320DM64x™ DSP provides superior video performance and flexibility. Developers can immediately start developing multi-channel, multi-format digital media applications or other future-ready, high-performance video solutions.

System Example: IP Set-Top Box



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Functional Description

Processing Board
<ul style="list-style-type: none">Memory:<ul style="list-style-type: none">- 16 MB (DSP) + 64 MB (GPP) SDRAM- 32 MB Flash- 128 kB Boot Flash
<ul style="list-style-type: none">Operating System:<ul style="list-style-type: none">- Linux OS (2.4xx)
<ul style="list-style-type: none">IDE/UDMA Port:<ul style="list-style-type: none">- Support to 2 drives (DVD + HDD)- Hard Disk Drive (30 GB)
<ul style="list-style-type: none">Dimensions:<ul style="list-style-type: none">- 70 x 100 mm (2.76" x 3.94")
Interfacing Board
<ul style="list-style-type: none">A/V interfaces: (PAL/NTSC Video)<ul style="list-style-type: none">- 1 Y/C Video IN- 1 RCA CVBS Video IN- 1 Y/C Video OUT- 1 RCA CVBS Video OUT- 2 RCA Stereo Audio IN (24 bits/192 kHz)- 6 RCA 6-CH Audio OUT (24 bits/192 kHz)- 1 RCA SPDIF Audio OUT (192 kHz)Peripherals interfaces:<ul style="list-style-type: none">- 10/100 BaseT Ethernet- USB 1.1 Host- RS-232- CAN BUSDimensions:<ul style="list-style-type: none">- 170 x 100 mm (6.70" x 3.94")Available on request:<ul style="list-style-type: none">- SPI, Second USB, GPIOs, IrDA- 3 Video Ports, McBSP/McASP, TSI
Other Hardware
<ul style="list-style-type: none">Front panel user I/F board:<ul style="list-style-type: none">- 5 keys- 3 LEDs- Infra-red Remote Control (RC5)Debug Plug-in connector:<ul style="list-style-type: none">- DSP JTAG debug interface- CPU BDI debug interfaceMetal case:<ul style="list-style-type: none">- Dim.: 248 x 175 x 52 mm (9.76" x 6.89" x 2")
Power Supply
<ul style="list-style-type: none">Voltage:<ul style="list-style-type: none">- 12 V (9 V to 15 V tolerated)Boards consumption:<ul style="list-style-type: none">- 8 W max.

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Component Selection Hardware

TMS320DM642 DSP (600 MHz)

General Purpose Processor (400 MHz)

Software blocks

Windows® Operating System

Board drivers and support library

On DSP:

- Video decompression
 - MPEG-4 ASP (ISO 14496 part 2)
 - WM9 Video
 - MPEG-4 AVC/H.264 (ISO 14496 part 10)
 - Nero Digital
 - DivX 3.11 to 5.x, MSMPEG-4, XviD
 - MPEG-2 / MPEG-1
- Audio decompression (with advanced video decoders it is recommended to perform audio decompression on the CPU to offload the DSP)
 - MPEG-4 LC / HE AAC
 - MPEG Audio (including MP3)
 - AC3
- Design documentation
 - Orcad source files (Option)
 - BOM and schematics (Option)
 - Source code examples
 - Demos and application samples

On Host CPU:

- System layers
 - RTP / RTSP (ISMA)
 - MPEG TS (Transport Stream)
 - ASF (Advanced Streaming Format)
 - Descrambling (AES)
- Audio decompression
 - MPEG-4 LC / HE AAC
 - MPEG Audio (including MP3)
 - AC3
- Documented APIs
 - DSP control
 - User Interface (keys, LED, IR remote control)
 - OSD and graphics overlay management
 - PVR (Record and Playback)
- Board system
 - Bootloader, Linux Kernel, Distribution
 - Board Support Package (BSP)

Getting Started – Development Tools

Tools

- API software from Host CPU. The target will deliver to the customer a whole range of video library interfaces to control the DSP in a transparent manner.
- The DSP is fully controlled from the Host CPU. Development tools are needed to develop on the Linux side. This is achieved by means of documented APIs: DSP control, User Interface (keys/LED/IR remote control), OSD and graphics overlay management, PVR (Record and playback). Please contact Ateame for more information.
- The Thunder Digital Media Player Toolkit from Ateame, features a TI DM642 DSP (running at 600 MHz) dedicated to audio/video compression/decompression, and a GPP (General Purpose Processor) running at 400 MHz supporting Linux OS and Board Support Package. Its interface board supports all the connectivity required by a table-top home video device, including audio and video I/Os, 6-channel plus S/PDIF audio, Ethernet, IDE and USB. The Thunder comes with all the code objects needed for DSP media algorithms, and Linux OS plus Board Support Libraries for GPP, along with applications and example source codes for a fast implementation into end-products. This first version of the Thunder answers current and future product specifications in Consumer Electronics. The GPP can host any middleware, VOD/video-conferencing signaling and streaming media with the PC.

Documentation

- All relevant technical documentation available from Ateame

Contact Information for Questions/Support

To purchase this solution or for more information: products@ateame.fr

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