NXP Nexperia IP STB Development Kit STB810

Advanced platform for building IP STB and dual functionality STB products

Combining the advanced Nexperia™ PNX8950 home entertainment engine and the latest AV codecs (H.264, WM9), the flexible Nexperia IP STB Development Kit STB810 enables rapid system development of IP STBs with advanced features such as video telephony, picture enhancement, and more.

Key features

▸ H.264 Main Profile Level 3 SD PAL/NTSC resolution decoding with CABAC or CAVLC
▸ WM9 upto 720p@24fps decode capable
▸ MPEG-2 decode of 2 SD or 1 HD streams;
▸ Dedicated hardware for MPEG-2 TS processing/descrambling
▸ High-quality image scaling and de-interlacing of all image resolutions
▸ Linux 2.6 operating system with support for CE Linux Forum APIs
▸ WinCE 5.0 operating system with DirectShow support
▸ Supports popular middleware such as IP, DVB, ATSC
▸ Supports conditional access: DVB, Multi2, DES/3DES, AES
▸ Smart card interface
▸ USB1.1 (on chip), USB2, SATA, Ethernet, miniPCI for WiFi (on board)

The Nexperia IP STB Development Kit STB810 is the first in a series of flexible, advanced platforms targeting IP and dual functionality (IP and broadcast) set top boxes. It leverages the power of the Philips Nexperia PNX8950 home entertainment engine and the latest AV codecs to support many advanced features. With media access anywhere, any time in mind, the STB810 can fulfill several different vibrant media technology roles in the Connected Living environment. Connected to a hard disk, it becomes a PVR (Personal Video Recorder). It can form the basis for a home media centre, exchanging content with other devices in the home network such as client STBs, audio systems, PCs and even portable devices. Support for high-quality H.264 and WM9 video formats enables features such as IP TV and video-on-demand.

founded by Philips

The development kit can also be supplemented with the latest NXP tuner technology for hybrid IP+DVB (T/S/C) solution, and is capable of supporting ATSC/ISDB broadcast standards, with an option for PVR (additional software required). Migrating existing applications or developing new programs is simple as the software architecture is based on mainstream operating systems and APIs. Manufacturers can choose from Linux or WinCE for fast system development. These are complemented by NXP's 3rd Party Software vendor network which can supply key software components. As well as maximizing compatibility, this also means you don't have to struggle with developing your own low-level drivers.

As delivered, the STB810 includes a hardware development platform, software infrastructure, key codecs for evaluation, and reference examples. Complete gerber files and schematics are provided with the system allowing the design to be customized to meet specific requirements of a production solution. From this single platform, manufacturers can differentiate a variety of end products while minimizing development costs and lowering the risk of new feature adoption.
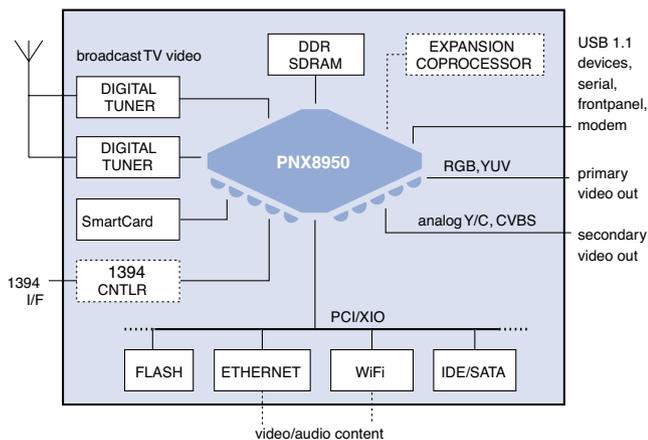
Nexperia PNX8950

The highly integrated PNX8950 combines a MIPS32 application processor with two powerful DSPs for advanced AV processing and dedicated hardware for functions such as MPEG-2 decoding, MPEG-2 transport stream processing, conditional access (DVB, DES, Multi2, AES), video scaling, and graphics. Its sophisticated de-interlacing and picture improvement features can drive high-quality HD displays.

Audio/Video codecs

The STB810 supports the advanced codecs needed for IP video streaming, video telephony, PVR, and broadcast TV features. A main Profile H.264 decoder supports D1 PAL/NTSC resolutions with features such as CABAC at bitrates up to two Mbps. WM9 (to 720p@24fps), MPEG-2 decode, DivX, MPEG4-ASP, Dolby AC-3®, MP3, and MPEG layer I/II audio are also included. A wide range of features such as video telephony, and analogue PVR can be added through codecs available from NXP and third-party companies including MPEG-4 en/decode, AAC-LE/HE, H.263 decode or encode, MPEG-2 encode, H.264 encode.

Connectivity and expansion

The STB810 offers a range of connectivity options. Two USB 2.0 ports support a wide range of peripheral devices. An HDMI interface connects to TVs and TV monitors. General purpose UARTs are available for serial communications together with a dedicated UART for Smart card interface. A fully compliant PCI bus interfaces to onboard Ethernet, and SATA controllers, with both full size and miniPCI slots being available for other expansion devices such as WiFi™ controllers. An XIO bus interfaces with Flash memories and other generic eightbit devices. The development board supports up to 256 MB of DDRAM and 64 MB of NAND flash.
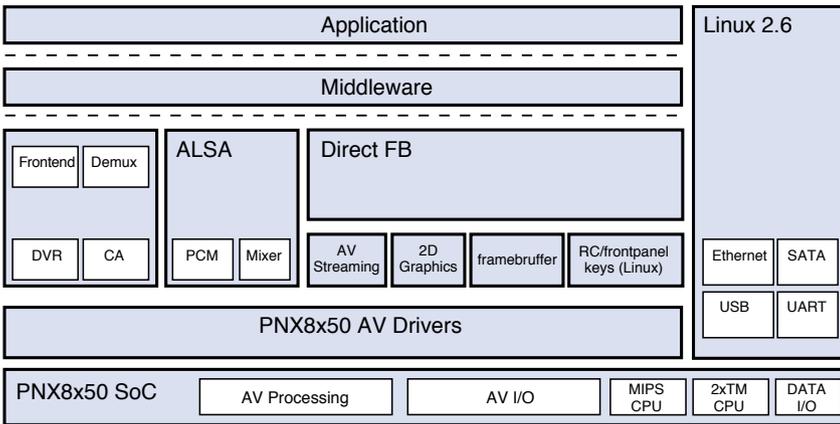
Linux/WinCE software development

The PNX8950 runs the Linux 2.6 kernel or WinCE 5.0 on a dedicated MIPS core. In Linux-based solutions, standard Linux APIs (DirectFB, Linux DVB, ALSA, e.g. CE Linux Forum APIs) abstract on-chip hardware peripherals and 'soft' DSP functionality, simplifying porting of existing Linux applications and eliminating complex DSP programming. Binary codec modules (e.g. H.264,WM9, etc.) can be loaded, configured, and connected with a few lines of code to achieve overall system functionality. For WinCE based solutions, a complete WinCE 5.0 BSP and the standard WinCE development environment are available, with easy access to multimedia functions via/through DirectShow™.

The Linux, and WinCE, platform software is complemented by NXP's 3rd Party Software vendor network which can supply key software components (middleware, application software) giving manufacturers a fast route to market.
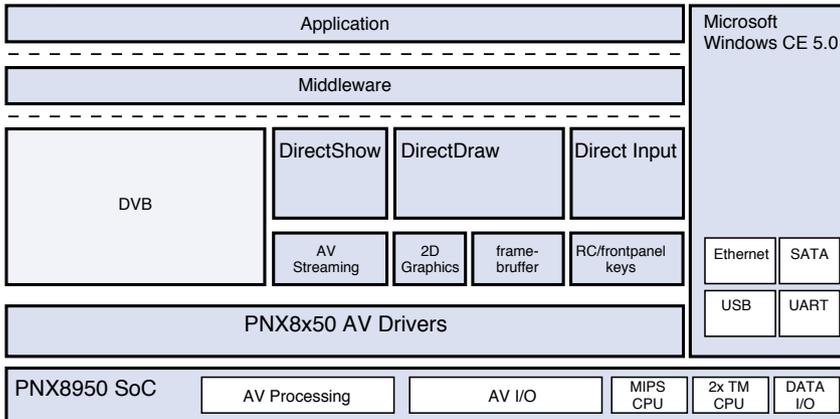
[1] Use of this product in any manner that complies with the MPEG-2 Standard is expressly prohibited without a license under applicable patents in the MPEG-2 patent portfolio, which license is available from MPEG LA, L.L.C., 250 Steele Street, Suite 300, Denver, Colorado 80206.
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Linux

Application	Linux 2.6
Middleware	

Frontend	Demux	ALSA	Direct FB					
DVR	CA	PCM	Mixer	AV Streaming	2D Graphics	framebruffer	RC/frontpanel keys (Linux)	Ethernet / SATA
								USB / UART

PNX8x50 AV Drivers	

PNX8x50 SoC	AV Processing	AV I/O	MIPS CPU	2xTM CPU	DATA I/O

WinCE

Application	Microsoft Windows CE 5.0
Middleware	

DVB	DirectShow	DirectDraw	Direct Input	
	AV Streaming	2D Graphics	frame-bruffer	RC/frontpanel keys
				Ethernet / SATA
				USB / UART

PNX8x50 AV Drivers	

PNX8950 SoC	AV Processing	AV I/O	MIPS CPU	2x TM CPU	DATA I/O