MOMENTUM DATA SYSTEMS

http://www.mds.com

Reference platform for development of portable media players using Philips pnx0190e Nexperia processor

Personal Media Player Reference Platform Model MB

The "Media Box" personal media player (PMP) reference design was created by Philips to provide manufacturers of PMP devices a shorter time to market. The PMP kit is supplied with schematics, bill of materials, and gerber files. MDS enhances this hardware platform with a rich selection of software offerings and development tools.

Unlike other media players with limited resolution, the Media Box supports true 720x480/586 (NTSC/PAL) display and capture. More importantly, the pnx1500's built in deinterlacing and video scaling hardware provides true high quality display of SD content on LCD displays up to 1386 x 768, and can support true 24 bit displays. The pnx15xx/019xx's output processor provides picture quality enhancement, as well as support for dithering for lower cost 16 or 18 bit displays.

Offering a complete set of audio and video I/O capability, the system includes flash for booting from as well as a hard drive for media storage. Communications with streaming media sources is possible via addition of a 802.11 a/b/g NIC.

The basic hardware platform can be ordered with optional audio and video codec libraries, including MP3, MPEG2, MPEG4, Divx, and H.264. 3rd party player environments from companies such as Ant Limited are available to reduce the development time needed to create a GUI and/or provide web browsers. Please see the MDS website for more information on libraries.

A complete set of platforms for development

While the Media Box reference design is a good demonstration platform, developers may prefer the MDS Nexperia Development System Model MBE. This unit has several expansion options for software prototyping with different hardware peripherals.

Software development

Software for the pnx15xx/019xx series is compiled using Philips' NDK tools and downloaded to the board via JTAG. Software is written using Philips innovative TSSA (TriMedia Streaming Software Architecture) architecture. By using this tool set and methodology complex video applications can achieve a level of platform feature independence that is unmatched by any other media processor vendor.

The use of TSSA allows a common software base to support differing configurations, such as ones with different LCD resolutions or without video record capability and/or limited A/V out options.

Support that makes a difference

For over 8 years Momentum Data Systems has been offering cutting edge tools for developers of TriMedia/Nexperia applications. In addition to the Philips supplied compilation tools and examples, MDS creates additional examples and extensive documentation on how to get started using the tools. For example, for the pnx15xx/019xx, MDS has developed our "XA" development architecture which decouples your product software from needing to be changed with each Philips update, allowing you to develop faster and more efficiently.
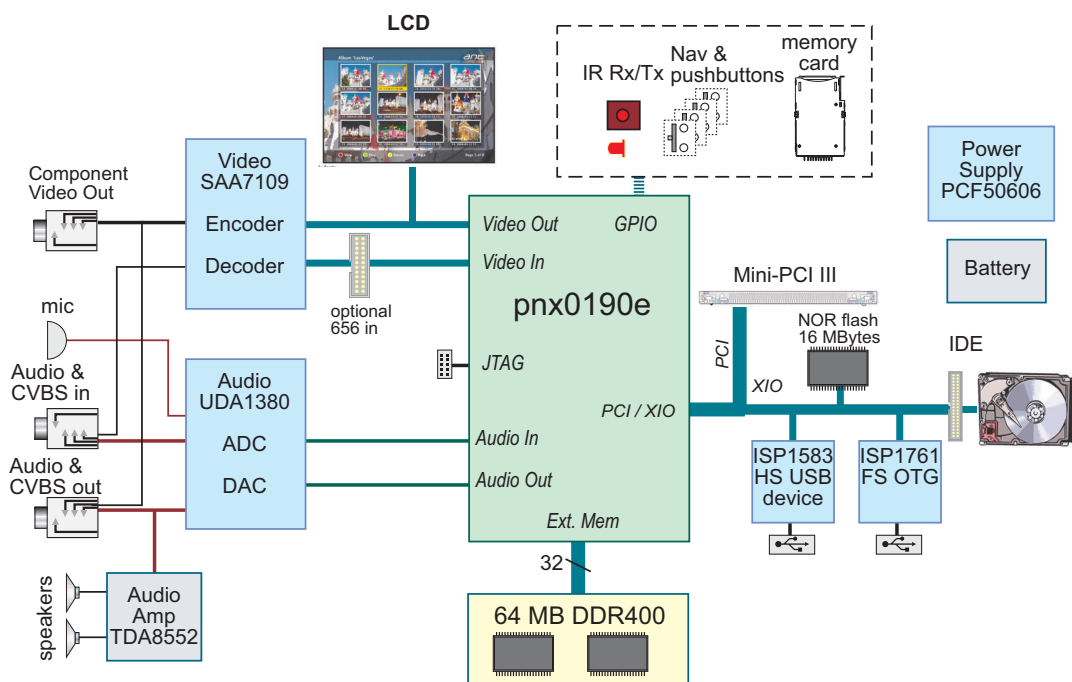
Summary Specifications

Processor & Memory

- 266 MHz pnx0190e, 64 MBytes DDR400 memory, 16 MBytes NOR flash (see pnx1500 datasheet for more information on the processor)

A/V Inputs

- Line level stereo audio (one line can become SPDIF in)
- CVBS (PAL/NTSC)

A/V Outputs

- Line level stereo audio (one line can become SPDIF)
- CVBS (PAL/NTSC) and component video

Other storage/connectivity

- 20 GB IDE drive
- mini PCI slot for 802.11 a/b/g - default drivers include support for Philips TD2 NIC card (based on Philips SA5250/1 chipset)
- TriMedia JTAG port
- USB device and USB OTG ports
- IrTx and Rx

Ordering information

MBREF-KIT: Media Box PMP reference kit.

- PMP unit with cables (A/V in, A/V out, component video out, USB) and AC adapter
- Source code to example applications and device drivers used by the peripherals - note that to rebuild media player example purchase of several libraries is required
- Schematics and layout files (pdf and Orcad), BOM, gerbers
- 90 Day Getting Started support

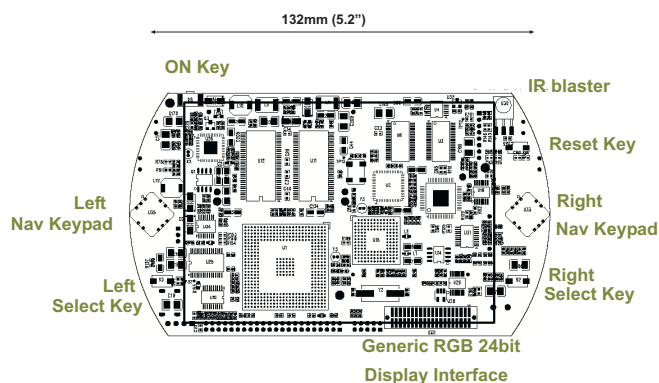*MBREF-DK-FULL*: Media Box PMP reference kit with tools.

- PMP unit with cables (A/V in, A/V out, component video out, USB) and AC adapter
- Source code to example applications and device drivers used by the peripherals - note that to rebuild media player example purchase of several libraries is required
- Schematics and layout files (pdf and Orcad), BOM, gerbers
- Philips NDK-4 compiler
- MDS PCI-JTAG debugger
- 90 Day Getting Started support

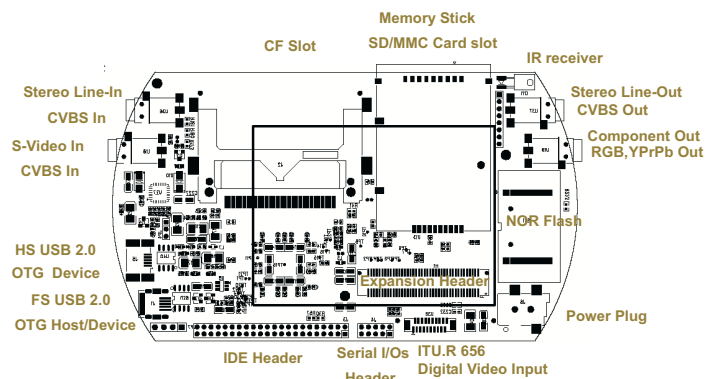### Suggested libraries (available from MDS, see website for more information)

- Philips Basic Decoders disc - MPEG2 and MP3 audio decoder
- Philips MPEG4 Decoder disc - MPEG4 decoder
- Target TCP/IP stack
- Other typical libraries include Ant Pure Play media player, DivX decoder, H.264 decoder, MPEG2 encoder, and MPEG4 encoder.
- MDS port of Ogg Vorbis codec included
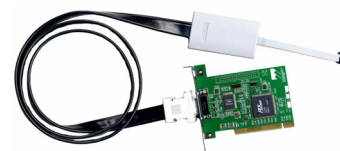
Internal Configuration

The PCB design is sized to fit typical LCD displays used for portable players. Excluding the user interface buttons, the core portions for a system that supports A/V capture and video output is about 130mm x 85mm (5" x 3.5") and about 15 mm (.6") in height (excludes, disk, battery, and display).

Memory Stick
CF Slot
SD/MMC Card slot
IR receiver
Stereo Line-In
CVBS In
S-Video In
CVBS In
Stereo Line-Out
CVBS Out
Component Out RGB,YPrPb Out
NOR Flash
HS USB 2.0 OTG Device
FS USB 2.0 OTG Host/Device
Expansion Header
Power Plug
IDE Header
Serial I/Os Header
ITU.R 656 Digital Video Input

BOTTOM VIEW

132mm (5.2")
ON Key
IR blaster
Reset Key
Left Nav Keypad
Right Nav Keypad
Left Select Key
Right Select Key
Generic RGB 24bit Display Interface

TOP VIEW

JTAG: This MDS product was specifically designed for Nexperia developers and offers unmatched code download speed.

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